

Minnesota Attorney General: Administrative Rules Proceedings

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STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

STATEMENT OF NEED AND REASONABLENESS

In the Matter of the Proposed Adoption of Rules of the Department of Natural Resources Designating Species of Wild Animals and Plants as Endangered Threatened or Of Special Concern.

Volume I



Division of Fish and Wildlife
Section of Wildlife
Box 6 Centennial Office Building
St Paul Minnesota 55155

Notification of the public review process for this proposed list will appear in the State Register. You are invited to submit your comments to:

Department of Natural Resources
Division of Fish and Wildlife
Attn: Barbara Coffin
Natural Heritage Program
Box 6, Centennial Office Building
St. Paul, Minnesota 55155

PREFACE

The Department of Natural Resources proposes adoption of rules designating species of wild animals and plants as endangered, threatened or of special concern. Minnesota Statute 97.488 Protection of Threatened and Endangered species was revised during the 1981 Legislative session. The revision required that an official state list of endangered, threatened and special concern species be prepared for the legislature by January 1, 1984. In addition, it expanded the law to include plants as well as animals. To assist in the establishment of this list and to make recommendations to the Commissioner of Natural Resources the law stated that a volunteer technical committee of up to 30 individuals be appointed.

This document, a statement of need and reasonableness, includes the Department of Natural Resources proposed list of endangered, threatened and special concern plants and animals and supporting materials that discuss the status and distribution of each proposed endangered and threatened species. The supporting materials are the product of the six group committees - mammals, birds, amphibians and reptiles, fish, invertebrates and plants - of the volunteer Endangered Species Technical Advisory Committee. The Department's proposed list agrees, with only one exception, with the recommendations of the Endangered Species Technical Advisory Committee. In exception to the Committee's recommendations, the Department is not proposing at this time to include the invertebrate groups of jumping spiders and tiger beetles on the official state list.

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6 MCAR S 1.5600 Wild animals and plants designated as endangered, threatened, or of special concern; authority.

Pursuant to Minnesota Statutes, section 97.488, the species of wild animals and plants listed in 6 MCAR SS 1.5601 to 1.5603 are designated as endangered, threatened, or of special concern, as indicated in those parts.

6 MCAR S 1.5601 Animal species.

A. Mammals. The scientific names and the common names in A. are according to the Revised Checklist of North American Mammals North of Mexico, J. K. Jones, et al., 1982. The following species of mammals are designated as:

1. Endangered: none.

2. Threatened: Canis lupus, gray wolf.

3. Of special concern:

a. Cervus elaphus, American elk;

b. Cryptotis parva, least shrew;

c. Felis concolor, mountain lion;

d. Gulo gulo, wolverine;

e. Martes americana, marten;

f. Microtus chrotorrhinus, rock vole;

g. Microtus ochrogaster, prairie vole;

h. Microtus pinetorum, woodland vole;

i. Myotis keenii, Keens' myotis;

j. Odocoileus hemionus, mule deer;

k. Phenacomys intermedius, heather vole;

l. Pipistrellus subflavus, eastern pipistrelle;

m. Rangifer tarandus, caribou;

n. Spilogale putorius, spotted skunk;

o. Synaptomys borealis, northern bog lemming;

p. Thomomys talpoides, northern pocket gopher.

B. Birds. The scientific names and the common names in B. are according to the American Ornithologists Union Checklist, 1983. The following species of birds are designated as:

1. Endangered:

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

a. Ammodramus bairdii, Baird's sparrow;

b. Anthus spragueii, Sprague's pipit;

c. Athene cunicularia, burrowing owl;

d. Calcarius ornatus, chestnut-collared longspur;

e. Charadrius melodus, piping plover;

f. Falco peregrinus, peregrine falcon.

2. Threatened:

a. Haliaeetus leucocephalus, bald eagle;

b. Lanius ludovicianus, loggerhead shrike.

3. Of special concern:

a. Ammodramus henslowii, Henslow's sparrow;

b. Ammospiza caudacutus, sharp-tailed sparrow;

c. Asio flammeus, short-eared owl;

d. Bartramia longicauda, upland sandpiper;

e. Botaurus lentiginosus, American bittern;

f. Buteo lineatus, red-shouldered hawk;

g. Coturnicops noveboracensis, yellow rail;

h. Gallinula chloropus, common moorhen;

i. Grus canadensis, sandhill crane;

j. Limosa fedoa, marbled godwit;

k. Pandion haliaetus, osprey;

l. Pelecanus erythrorhynchos, American white pelican;

m. Phalaropus tricolor, Wilson's phalarope;

n. Podiceps auritus, horned grebe;

o. Rallus elegans, king rail;

p. Seiurus motacilla, Louisiana waterthrush;

q. Sterna forsteri, Forster's tern;

r. Sterna hirundo, common tern;

s. Tympanuchus cupido, greater prairie-chicken.

C. Amphibians and reptiles. The scientific names and the common names in C. are according to Standard Common and Current Scientific Names for North American Amphibians and Reptiles, second edition, J.T. Collins, et al., 1982. The following species of amphibians and reptiles are designated as:

1. Endangered: Eumeces fasciatus, five-lined skink.

2. Threatened:

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

a. Clemmys insculpta, wood turtle;

b. Emydoidea blandingi, Blanding's turtle.

3. Of special concern:

a. Chelydra serpentina, snapping turtle;

b. Coluber constrictor, racer (blue racer);

c. Crotalus horridus, timber rattlesnake;

d. Elaphe obsoleta, rat snake (black rat snake);

e. Elaphe vulpina, fox snake;

f. Heterodon nasicus, western hognose snake;

g. Heterodon platyrhinos, eastern hognose snake;

h. Lampropeltis triangulum, milk snake;

i. Pituophis melanoleucus, gopher snake (bull snake);

j. Sistrurus catenatus, massasauga;

k. Tropidoclonion lineatum, lined snake;

l. Acris crepitans, northern cricket frog (Blanchard's cricket frog);

m. Rana catesbeiana, bullfrog;

n. Rana palustris, pickerel frog.

D. Fish. The scientific names and the common names in D. are according to A list of Common and Scientific Names of Fishes from the United States and Canada, third edition, American Fisheries Society, 1979. The following species of fish are designated as:

1. Endangered: none.

2. Threatened: none.

3. Of special concern:

a. Acipenser fulvescens (Rafinesque), lake sturgeon;

b. Ammocrypta asprella (Jordan), crystal darter;

c. Cycleptus elongatus (Le Sueur), blue sucker;

d. Etheostoma chlorosomum (Hay), bluntnose darter;

e. Fundulus sciadicus (Cope), plains topminnow;

f. Hybopsis x-punctata (Hubbs and Crowe), gravel chub;

g. Ictalurus furcatus (Le Sueur), blue catfish;

h. Lampetra appendix (DeKay), American brook lamprey;

i. Morone mississippiensis (Jordan and Evermann), yellow bass;

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

j. Moxostoma duquesnei (Le Sueur), black redhorse;

k. Notropis amnis (Hubbs and Greene), pallid shiner;

l. Notropis emilae (Hay), pugnose minnow;

m. Notropis topeka (Gilbert), topeka shiner;

n. Noturus exilis (Nelson), slender madtom;

o. Polyodon spathula (Walbaum), paddlefish;

p. Scaphirhynchus platorynchus (Rafinesque), shovelnose sturgeon.

E. Butterflies. The scientific names in E. are according to A Catalogue/Checklist of the Butterflies of America North of Mexico, L.D. Miller and S.M. Brown, 1981. The following species of butterflies are designated as:

1. Endangered:

a. Hesperia assiniboia (Lyman), assiniboia skipper;

b. Hesperia uncas W.H. Edwards, uncas skipper;

c. Oeneis uhleri varuna, (W.H. Edwards) Uhler's arctic.

2. Threatened:

a. Hesperia dacotae (Skinner), Dakota skipper;

b. Hesperia ottoe W.H. Edwards, ottoe skipper;

c. Lycaeides samuelis Nabokov, Karner blue.

3. Of special concern:

a. Clossiana freija (Thunberg), freija fritillary;

b. Clossiana frigga saga (Staudinger), frigga fritillary;

c. Epidemia dorcas dorcas (W. Kirby), dorcas copper;

d. Epidemia epixanthe michiganensis (Rawson), bog copper;

e. Erebia disa mancinus Doubleday & Hewitson, disa alpine;

f. Erebia discoidalis discoidalis (W. Kirby), red-disked alpine;

g. Oarisma poweshiek (Parker), poweshiek skipper;

h. Oeneis jutta ascerta Masters & Sorensen, jutta arctic;

i. Proclossiana eunomia dawsoni (Barnes & McDunnough), bog fritillary.

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

F. Freshwater mollusks. The scientific names in F. are according to Freshwater Mollusca of Wisconsin Part II: Pelecypoda, F.C. Collins, 1982. The following species of freshwater mollusks are designated as:

1. Endangered:
   a. Lampsilis higginsi (Lea), Higgins' eye;
   b. Proptera (Potamilus) capax (Green), fat pocketbook.
2. Threatened: none.
3. Of special concern:
   a. Elliptio crassidens (Lamarck), elephant ear;
   b. Fusconaia ebena (Lea), ebony shell.

6 MCAR S 1.5602 Vascular plants.

The scientific names in A., B., and C. are according to Gray's Manual of Botany, eighth edition, M.L. Fernald, 1950, and include family designation.

A. Endangered. The following species are designated as endangered:

1. Asclepias stenophylla Gray, Asclepiadaceae;
2. Besseya bullii (Eaton) Rydb., Scrophulariaceae;
3. Cacalia suaveolens L., Asteraceae;
4. Chrysosplenium iowense Rydb., Saxifragaceae;
5. Cristatella jamesii T. & G., Capparidaceae;
6. Cypripedium arietinum R. Br., Orchidaceae;
7. Draba norvegica Gunn., Brassicaceae;
8. Eleocharis wolfii Gray, Cyperaceae;
9. Empetrum atropurpureum Fern. & Wieg., Empetraceae;
10. Erythronium propullans Gray, Liliaceae;
11. Gerardia auriculata Michx., Scrophulariaceae;
12. Hydrastis canadensis L., Ranunculaceae;
13. Isoetes melanopoda Gay & Dur., Isoetaceae;
14. Lespedeza leptostachya Engelm., Fabaceae;
15. Lesquerella ludoviciana (Nutt.) S. Wats., Brassicaceae;
16. Littorella americana Fern., Plantaginaceae;
17. Malaxis paludosa (L.) Sw., Orchidaceae;
18. Montia chamissoi (Ledeb.) Durand & Jackson,

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

Portulacaceae;

19. Napaea dioica L., Malvaceae;

20. Oryzopsis hymenoides (R. & S.) Ricker, Poaceae;

21. Osmorhiza chilensis H. & A., Apiaceae;

22. Parthenium integrifolium L., Asteraceae;

23. Platanthera flava (L.) Lindl. var. herbiola (R. Br.) Ames & Correll, Orchidaceae;

24. Platanthera leucophaea (Nutt.) Lindl., Orchidaceae;

25. Poa paludigena Fern. & Wieg., Poaceae;

26. Polygala cruciata L., Polygalaceae;

27. Polystichum braunii (Spenner) Fee var. purshii Fern., Polypodiaceae;

28. Potamogeton lateralis Morong, Potamogetonaceae;

29. Ruellia humilis Nutt., Acanthaceae;

30. Sagina nodosa (L.) fenzl ssp. borealis Crow, Caryophyllaceae;

31. Saxifraga cernua L. var. latibracteata Fern., Saxifragaceae;

32. Scleria triglomerata Michx., Cyperaceae;

33. Sedum rosea (L.) Scop. var. leedyi Rosend. & Moore, Crassulaceae;

34. Subularia aquatica L., Brassicaceae;

35. Sparganium glomeratum Laest., Sparganiaceae;

36. Sullivantia renifolia Rosend., Saxifragaceae;

37. Talinum rugospermum Holzinger, Portulaceaceae; and

38. Tofieldia pusilla (Mich.) Pers., Liliaceae.

B. Threatened. The following species are designated as threatened:

1. Allium cernuum Roth, Liliaceae;

2. Ammophila breviligulata Fern., Poaceae;

3. Androsace septentrionalis L. var. pulverulenta (Rydb.) Knuth, Primulaceae;

4. Arabis holboellii Hornem. var. retrofracta (Graham) Rydb., Brassicaceae;

5. Arenaria macrophylla Hook., Caryophyllaceae;

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

6. Arnica chionopappa Fern., Asteraceae;

7. Asclepias hirtella (Pennell) Woodson, Asclepiadaceae;

8. Asclepias sullivantii Englem., Asclepiadaceae;

9. Asplenium trichomanes L., Polypodiaceae;

10. Cacalia tuberosa Nutt., Asteraceae;

11. Carex conjuncta Boott, Cyperaceae;

12. Carex davisii Schwein. & Torr., Cyperaceae;

13. Carex hallii Olney, Cyperaceae;

14. Carex praticola Rydb., Cyperaceae;

15. Carex sterilis Willd, Cyperaceae;

16. Desmodium illinoense Gray, Fabaceae;

17. Drosera anglica Huds., Droseraceae;

18. Drosera linearis Goldie, Droseraceae;

19. Dryopteris marginalis (L.) Gray, Polypodiaceae;

20. Eleocharis olivaceae Torr., Cyperaceae;

21. Eleocharis rostellata Torr., Cyperaceae;

22. Gerardia gattingeri Sm., Scrophulariaceae;

23. Jeffersonia diphylla (L.) Pers., Berberidaceae;

24. Lycopodium porophilum Lloyd & Underwood, Lycopodiaceae;

25. Lygodesmia rostrata Gray, Asteraceae;

26. Mamillaria vivipara (Nutt.) Haw., Cactaceae;

27. Melica nitens Nutt., Poaceae;

28. Nymphaea tetragona Georgi, Nymphaeceae;

29. Pellaea atropurpurea (L.) Link, Polypodiaceae;

30. Plantago elongata Pursh, Plantaginaceae;

31. Rhynchospora capillacea Torr., Cyperaceae;

32. Rubus chamaemorus L., Rosaceae;

33. Salicornia rubra Nelson, Chenopodiaceae;

34. Saxifraga aizoon Jacq. var. neogaea Butters, Saxifragaceae;

35. Scleria verticillata Muhl., Cyperaceae;

36. Vaccinium uliginosum L. var. alpinum Bigel, Ericaceae;

37. Valeriana edulis Nutt. ssp. ciliata (T. & G.) Meyer, Valerianaceae;

38. Woodsia glabella R. Br., Polypodiaceae;

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

39. Woodsia scopulina D.C. Eat., Polypodiacea; and

40. Xyris torta Sm., Xyridaceae.

C. Special concern. The following species are designated as of special concern:

1. Adoxa moschatellina L., Adoxaceae;

2. Agrostis geminata Trin., Poaceae;

3. Allium schoenoprasum L. var. sibiricum (L.) Hartm., Liliaceae;

4. Antennaria aprica Greene, Asteraceae;

5. Arenaria dawsonensis Britt., Caryophyllaceae;

6. Arethusa bulbosa L., Orchidaceae;

7. Aristida longiseta Steud., Poaceae;

8. Aristida tuberculosa Nutt., Poaceae;

9. Asclepias amplexicaulis Sm., Asclepiadaceae;

10. Astragalus flexuosus Dougl., Fabaceae;

11. Astragalus missouriensis Nutt., Fabaceae;

12. Astragalus neglectus (T. & G.) Sheld., Fabaceae;

13. Athyrium pycnocarpon (Spreng.) Tides, Polypodiaceaea;

14. Bacopa rotundifolia (Michx.) Wettst., Scrophulariaceae;

15. Baptisia leucophaea Nutt., Fabaceae;

16. Botrychium lunaria (L.) Sw., Ophioglossaceae;

17. Botrychium mormo Wagner, Ophioglossaceae;

18. Buchloe dactyloides (Nutt.) Engelm., Poaceae;

19. Carex annectens Bickn., Cyperaceae;

20. Carex exilis Dew., Cyperaceae;

21. Carex laxiculmis Schwein., Cyperaceae;

22. Carex obtusata Lilj., Cyperaceae;

23. Carex scirpiformis Mack., Cyperaceae;

24. Carex woodii Dew., Cyperaceae;

25. Cephalanthus occidentalis L., Rubiaceae;

26. Chamaerhodos nuttallii Pick., Rosaceae;

27. Cirsium hillii (Canby) Fern., Asteraceae;

28. Cladium mariscoides (Muhl.) Torr., Cyperaceae;

29. Claytonia caroliniana Michx., Portulacaceae;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

30. Cyperus acuminatus Torr. & Hook., Cyperaceae;

31. Cypripedium candidum Muhl., Orchidaceae;

32. Decodon verticillatus (L.) Ell., Lythraceae;

33. Deschampsia flexuosa (L.) Trin., Poaceae;

34. Desmanthus illinoense (Michx.) MacM, Fabaceae;

35. Dicentra canadensis (Goldie) Walp., Fumariaceae;

36. Dodecatheon meadia L., Primulaceae;

37. Draba arabisans Michx., Brassicaceae;

38. Dryopteris goldiana (Hook.) Gray, Polypodiaceae;

39. Echinochloa walteri (Pursh.) Nash, Poaceae;

40. Eleocharis pauciflora (Lightf.) Link var. fernaldii Svenson, Cyperaceae;

41. Eryngium yuccifolium Michx., Apiaceae;

42. Euphrasia hudsoniana Fern. & Wieg., Scrophulariaceae;

43. Floerkea proserpinacoides Willd., Limnanthaceae;

44. Gentiana affinis Griseb., Gentianaceae;

45. Gentianella amarella (L.) Borner ssp. acuta (Michx.) Gillett, Gentianaceae;

46. Geocaulon lividum (Richards.) Fern., Santalaceae;

47. Glaux maritima L., Primulaceae;

48. Hamamelis virginiana L., Hamamelidaceae;

49. Haplopappus spinulosus (Pursh) DC., Asteraceae;

50. Helianthus nuttallii T. & G. ssp. rydbergii (Br.) Long, Asteraceae;

51. Hydrocotyle americana L., Apiaceae;

52. Juncus stygius L. var. americanus Buchenau, Juncaceae;

53. Leersia lenticularis Michx., Poaceae;

54. Limosella aquatica L., Scrophulariaceae;

55. Myosurus minimus L., Ranunculaceae;

56. Oenothera rhombipetala Nutt., Onagraceae;

57. Opuntia humifusa Raf., Cactaceae;

58. Orobanche fasciculata Nutt., Orobanchaceae;

59. Orobanche ludoviciana Nutt., Orobanchaceae;

60. Orobanche uniflora L., Orobanchaceae;

61. Panax quinquefolium L., Apiaceae;

62. Paronychia fastigiata Fern., Caryophyllaceae;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

63. Pinguicula vuglaris L., Lentibulariaceae;

64. Platanthera clavellata (Michx.) Luer, Orchidaceae;

65. Poa wolfii Scribn., Poaceae;

66. Polygonum arifolium L., Polygonaceae;

67. Polygonum viviparum L., Polygonaceae;

68. Polystichum acrostichoides (Michx.) Schott., Polypodoaceae;

69. Potamogeton vaseyi Robbins, Potamogetonaceae;

70. Ranunculus lapponicus L., Ranunculaceae;

71. Rhynchospora fusca (L.) Ait. f., Cyperaceae;

72. Rudbeckia triloba L., Asteraceae;

73. Sanicula canadensis L., Apiaceae;

74. Sanicula trifoliata Bickn., Apiaceae;

75. Schedonnardus paniculatus (Nutt.) Trel., Poaceae;

76. Scutellaria ovata Hill var. versicolor (Nutt.) Fern., Lamiaceae;

77. Solidago mollis Bartl., Asteraceae;

78. Solidago sciaphila Steele, Asteraceae;

79. Spartina gracilis Trin., Poaceae;

80. Stellaria longipes Goldie, Caryophyllaceae;

81. Symphoricarpos orbiculatus Moench, Caprifoliaceae;

82. Tephrosia virginiana (L.) Pers., Fabaceae;

83. Thelypteris hexagonoptera (Michx.) Weatherby, Fabaceae;

84. Tofieldia glutinosa (Michx.) Pers., Liliaceae;

85. Tradescantia ohiensis Raf., Commelinaceae;

86. Triglochin palustris L., Juncaginaceae;

87. Trillium nivale Riddell, Liliaceae;

88. Triplasis purpurea (Walt.) Champm., Poaceae;

89. Tsuga canadensis (L.) Carr., Pinaceae;

90. Utricularia gibba L., Lentibulariaceae;

91. Verbena simplex Lehm., Verbenaceae;

92. Viola lanceolata L., Violaceae;

93. Viola novae-angliae House, Violaceae;

94. Viola nuttallii Pursh, Violaceae;

95. Waldesteinia fragarioides (Michx.) Tratt., Rosaceae;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

and

96. Xyris montana Ries., Xyridaceae.

6 MCAR S 1.5603 Lichens; mosses.

A. Lichens. The scientific names in A. are according to A Fourth Checklist of the Lichens of the Continental United States and Canada, M.E. Hale and W.L. Culberson, 1970. The following species of lichens are designated as:

1. Endangered:
   a. Buellia nigra (Fink) Sheard/[Rinodina nigra Fink];
   b. Dermatocarpon moulinsii (Mont.) Zahlbr.;
   c. Leptogium apalachense (Tuck.) Nyl.;
   d. Lobaria scrobiculata (Scop.) DC;
   e. Parmelia stictica (Del.) Nyl.;
   f. Pseudocyphellaria crocata (L.) Vain.
2. Threatened: Lobaria quercizans Michx.
3. Of special concern:
   a. Cetraria aurescens Tuck.;
   b. Cetraria oakesiana Tuck.;
   c. Cladonia pseudorangiformis Asah.;
   d. Coccocarpia cronia (Tuck.) Vain.;
   e. Parmelia stuppea Tayl.;
   f. Sticta fuliginosa (Dicks.) Ach.;
   g. Umbilicaria torrefacta (Lightf.) Schrad.

B. Mosses. The scientific names in B. are according to A New List of Mosses of North America North of Mexico, H.A. Crum, et al., 1973. The following species of mosses are designated as:

1. Endangered: Schistostegia pennata (Hedw.) Web. & Mohr.
2. Threatenened: none.
3. Of special concern:
   a. Bryoxiphium norvegicum (Brid.) Mitt.;
   b. Tomenthypnum falcifolium (Ren ex. Nich.) Tuom.

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

MAMMAL GROUP COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S MAMMALS

A Final Report of the Mammals Group Committee
Submitted to the Chairman
Endangered Species Technical Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Dr. Elmer Birney, Chairman
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Dr. Don Christian
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Dr. Evan B. Hazard
Department of Biology
Bemidji State University
Bemidji, Minnesota 56601

Ms. Gerda Nordquist
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Ms. Katie Hirsch, DNR Liaison
Department of Natural Resources
2114 Bemidji Avenue
Bemidji, Minnesota 56601

Proposed List of Mammals Classified as
Endangered, Threatened or Special Concern
by the Mammal Group Committee

EXTIRPATED*

Bison bison; Bison
Cervus elaphus; American Elk (subspecies originally found in MN)
Ursus arctos; Brown Bear

ENDANGERED

None

THREATENED

Canis lupus; Gray Wolf**

SPECIAL CONCERN

Cervus elaphus; American Elk (western subspecies introduced in MN)
Cryptotis parva; Least Shrew
Felis concolor; Mountain Lion
Gulo gulo; Wolverine
Martes americana; Marten
Microtus chrotorrhinus; Rock Vole
Microtus ochrogaster; Prairie Vole
Microtus pinetorum; Woodland Vole
Myotis keenii; Keens' Myotis
Odocoileus hemionus; Mule Deer
Phenacomys intermedius; Heather Vole
Pipistrellus subfalvus; Eastern Pipistrelle
Rangifer tarandus; Caribou
Spilogale putorius; Spotted Skunk
Synaptomys borealis; Northern Bog Lemming
Thomomys talpoides; Northern Pocket Gopher

*Unofficial category (species that do not occur naturally in the state at this time)
**See basis for Minnesota classification for this species.

SUMMARY STATEMENT OF THE MAMMAL GROUP COMMITTEE

Attached are the final proposed list, status sheets, and distribution maps for the threatened and special concern mammals in Minnesota, as classified by the Mammal Group Committee. The committee met jointly with personnel from the DNR in December and agreed on the major points that follow.

In arriving at decisions the committee initially went through a list of all species recorded for Minnesota and made a list of common, well-known species and one of less common, less well-known species. From this second list the committee discussed each species in great detail, reviewing its historical status in and near Minnesota, its ecological requirements, its overall distribution in Minnesota and adjacent states, and whether or not it is a species that is either in strong conflict with certain human interests or is especially valuable or attractive as a game or furbearing species. This list was submitted as a preliminary list to DNR, and was subsequently reviewed by people not on the committee, including certain DNR field personnel. Extirpated species that are not likely to return to the state were deleted from the list. In addition, several uncommon or poorly known species were given Special Concern status largely because their current status needs to be studied in the field in Minnesota, and until more is known of their status no specific management procedures were recommended. The final list was prepared in a joint session of this committee, H.B. Tordoff, and several members of the DNR.

The following is a summary of the species considered by the committee, grouped into categories of species having similar histories and needs in the state.

Two species of large mammals, Ursus arctos (brown bear) and Bison bison (bison) do not occur naturally in the state at this time. Both were dropped from our list because we do not see the possibility of natural reestablishment of these species in the forseeable future. To leave them on the list seems to us to cloud the issue by obscuring the meaning of whatever category one might assign them to.

Three other large mammal species once were fairly common in at least part of Minnesota but were extirpated or nearly so in the state. These, Gulo gulo (wolverine), Felis concolor (mountain lion), and Rangifer tarandus (caribou), now are known from occasional sightings or documented records, indicating that it is at least conceivable that they either are or could again become a part of the state's mammalian fauna. All three are suggested for Special Concern status. Cervus elaphus is a similar but separate case, the difference being that a non-native subspecies, C. e. nelsoni, has been reintroduced in the state. C. e. canadensis was the native subspecies. The Mammal Group Committee concludes that the subspecific level of classification is inappropriate as the level of management decision making. In fact, there is presently a small population of C. elaphus in the state, this population requires management and study and is by no means secure. Therefore, it must be considered as being of Special Concern.

Odocoileus hemionus (mule deer) occurs occasionally in the state as wanderers from adjacent areas. Insofar as we know, mule deer have never maintained a sustained breeding population in the state. Until such a population is documented, we recommend no special management procedures beyond those currently in practice for this species.

Two carnivores, Canis lupus (gray wolf) and Martes americana (marten), both are highly vulnerable to human activities, predator control and fur trapping, respectively. Both are now apparently secure in at least part of their former range. Both require constant monitoring of populations and carefully designed, flexible management plans that take into account primarily the biology and status of the species and not the emotions of special interest groups. Because of current federal regulations we have agreed to threatened status for the wolf. Special Concern status is recommended for M. americanus.

Three small mammals, Cryptotis parva (least shrew), Phenacomys intermedius (heather vole), and Microtus pinetorum (woodland vole), are each known only from one or at most two locations just within the boundaries of the state and clearly are at the margin of the distribution at these localities. We assign these Special Concern because they are so rare in the state, and we recommend that efforts to further document their current status continue. However, these species have never been truly important elements of our fauna and we do not recommend special management procedures for them.

Three additional species of small mammals, Thomomys talpoides (northern pocket gopher), Synaptomys borealis (northern bog lemming), and Microtus chrotorrhinus (rock vole), are each known by several breeding populations within the state. Again, each is at the margin of its distribution at these locations, but we feel that historically and presently these are important elements of Minnesota's mammalian fauna and therefore that all three should be monitored regularly and given the appropriate management to ensure their long-term survival in the state.

One small rodent, Microtus ochrogaster (prairie vole) and one carnivore, spotted skunk (Spilogale putorius), are assigned Special Concern status by virtue of having once been widespread and common over portions of the state. Both species now appear to be relatively uncommon and may be entirely absent from most of their former ranges in the state. We strongly recommend field study of both, and in the case of M. ochrogaster, action to provide some permanently managed habitat.

Three other relatively uncommon rodents on our preliminary list have been dropped from our final list. These are Perognathus flavescens (plains pocket mouse), Reithrodontomys megalotis (western harvest mouse), and Onychomys leucogaster (northern grasshopper mouse). It was the conclusion of the committee that although relatively uncommon, all three do occur widely, they seem to be detected irregularly but frequently enough to imply that they are not in immediate danger of extirpation, and there is no evidence that any one of the three was previously more common than at present. Any habitat management to protect Microtus ochrogaster probably also would benefit one or more of these prairie species.

Finally, two of the seven species of bats that occur in Minnesota are recommended for Special Concern status. These are Myotis keenii (Keen's myotis) and Pipistrellus subflavus (eastern pipistrelle). Both are poorly known, appear to occur only in very low numbers, and both are extremely vulnerable to the activities of humans becuase of their highly specific roosting requirements during winter.

The committee appreciates this opportunity to serve Minnesota's mammalian fauna through our efforts on this report.

Dr. Elmer Birney, Chairman
Dr. Don Christian
Dr. Evan B. Hazard
Ms. Gerda Nordquist
Ms. Katie Hirsch, DNR liaison

SPECIES STATUS SHEET

SCIENTIFIC NAME: Canis lupus

COMMON NAME: Gray Wolf

STATE STATUS: Threatened

FEDERAL STATUS: Endangered in 48 lower states except Minnesota, and threatened there.

BASIS FOR MINNESOTA STATUS: The overall reduction of the range of this species in North America that has resulted from conflicts of interest between wolves and humans is a factor in listing this species. Because of this conflict wolves probably would not persist without some form of protection.

OCCURRENCES IN MINNESOTA: The wolf is common in northeastern and northern Minnesota. Recent records exist from as far south as Pine County.

PREFERRED HABITAT: Currently the species is restricted primarily to wooded areas and other protected habitats where prey are available.

RECOMMENDATIONS: Current management practices, with controlled trapping of problem packs, appears to be working well. The Group Committee subscribes basically to the wolf recovery plan described by Mech (1977). Because this species is so well studied, expert advice from professional students of wolf biology is readily available and should be solicited regularly in the management of this species.

SELECTED REFERENCES:

Mech, L.D. 1974. Canis lupus. Mamm. Species, 37:16.

_____. 1977. A recovery plan for the eastern timber wolf. Minnesota Volunteer, 40(235):2839.

PREPARED BY: Mammal Group Committee (ECB)



Map 490. *Canis lupus*.

1. *C. l. alces*
2. *C. l. arctos*
3. *C. l. baileyi*
4. *C. l. beothucus*
5. *C. l. bernardi*
6. *C. l. columbianus*
7. *C. l. crassodon*
8. *C. l. fuscus*
9. *C. l. griseoalbus*
10. *C. l. hudsonicus*
11. *C. l. irremotus*
12. *C. l. labradorius*
13. *C. l. ligoni*
14. *C. l. lycaon*
15. *C. l. mackenzii*
16. *C. l. manningi*
17. *C. l. mogollonensis*
18. *C. l. monstrabilis*
19. *C. l. nubilus*
20. *C. l. occidentalis*
21. *C. l. orion*
22. *C. l. pambasileus*
23. *C. l. tundrarum*
24. *C. l. youngi*

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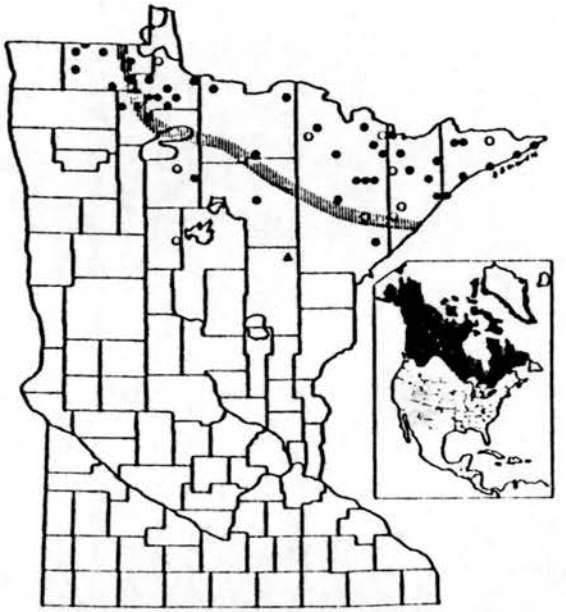
From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 52. Distribution of *Canis lupus*. ● = township specimen, selected locations. ○ = other township records, selected locations. ▲ = county specimen. Area north and east of hatching = primary wolf range (after Berg and Chesness 1968). (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cervus elaphus

COMMON NAME: Elk (or Wapiti)

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species once was common over much of Minnesota, but the native race (C. e. canadensis) was extirpated. Subsequently, a population of C. e. nelsoni was established in Beltrami County (Hazard, 1982). That population is not secure, and although it can easily be debated that it does not represent the native gene pool etc., the Mammal Group Committee feels that the existence of a population of a native species (possible minor genetic differences notwithstanding) requires attention and policy. Thus we recommend Special Concern status for this species.

OCCURRENCES IN MINNESOTA: Once widespread in the western two thirds of the state, the species is now known only as one introduced population in Beltrami County.

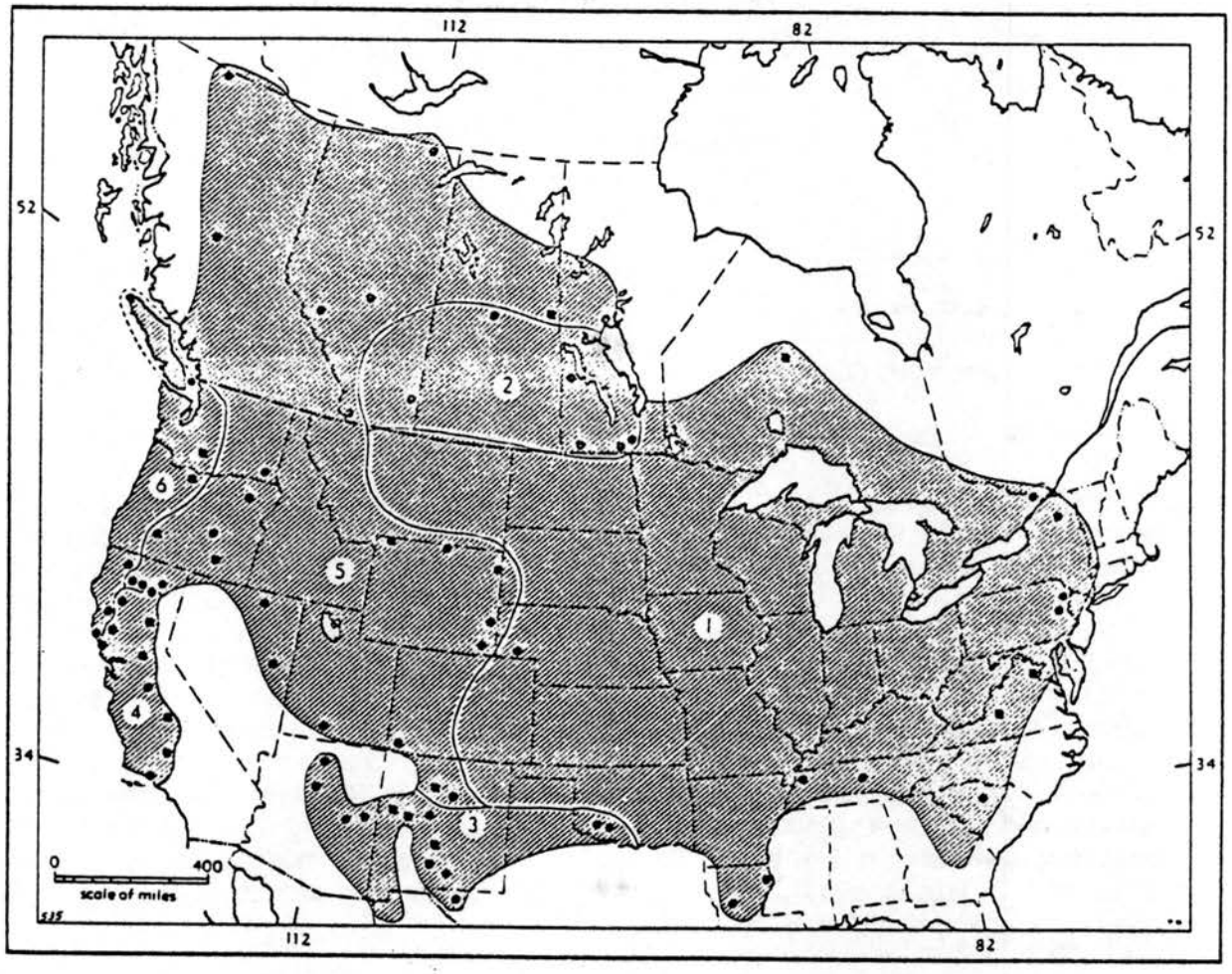
PREFERRED HABITAT: The species occurs in grasslands, including brushy and montane grasslands where these exist.

RECOMMENDATIONS: No specific changes from the current management practices are recommended.

SELECTED REFERENCES:

Hazard, E.B. 1982. The mammals of Minnesota. Univeristy of Minnesota Press, Minneapolis, 280 pp.

PREPARED BY: Mammal Group Committee (ECB)



Map 535. *Cervus elaphus.*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 70. Distribution of *Cervus elaphus*. ● = recent township specimen. ○ = other township records. ◊ = old bones. (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cryptotis parva

COMMON NAME: Least Shrew

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Despite having no record of this species in Minnesota for nearly 70 years, the high probability (see below) that it does occur here makes it imperative that we give this species special consideration until its status is better defined in Minnesota and adjacent states.

OCCURRENCES IN MINNESOTA: The least shrew is known in Minnesota by a single specimen taken at Homer, Winona County in 1914 (Swanson et al., 1945). Extensive trapping, including the use of pitfall traps, in Winona, Houston, and Fillmore counties in summer of 1982 failed to document the current presence of this species in Minnesota. Records from Wisconsin (Jackson, 1961), north-central Iowa (Bowles, 1975), and South Dakota (Hall, 1981) indicate that this shrew may be found in any of the southern two or three tiers of counties in Minnesota. Least shrews are small and inconspicuous, and thus they are not persecuted by humans.

PREFERRED HABITAT: The species occurs in grassy areas and old fields, usually relatively dry but also taken from damp meadows.

RECOMMENDATIONS: Continue collecting effort to determine the current status of this species. All collections of owl pellets from southern Minnesota should be analysed for remains of this species. If populations are located, their status and extent of available habitat should be assessed by professionals. Because of the fairly broad ecological requirements of this species, steps such as regulations on collecting and procurement or management of specific areas of suitable habitat probably will not be necessary.

SELECTED REFERENCES:

Bowles, J.B. 1975. Distribution and biogeography of mammals of Iowa. Spec. Publ. Mus., Texas Technical University, 9:1-184.

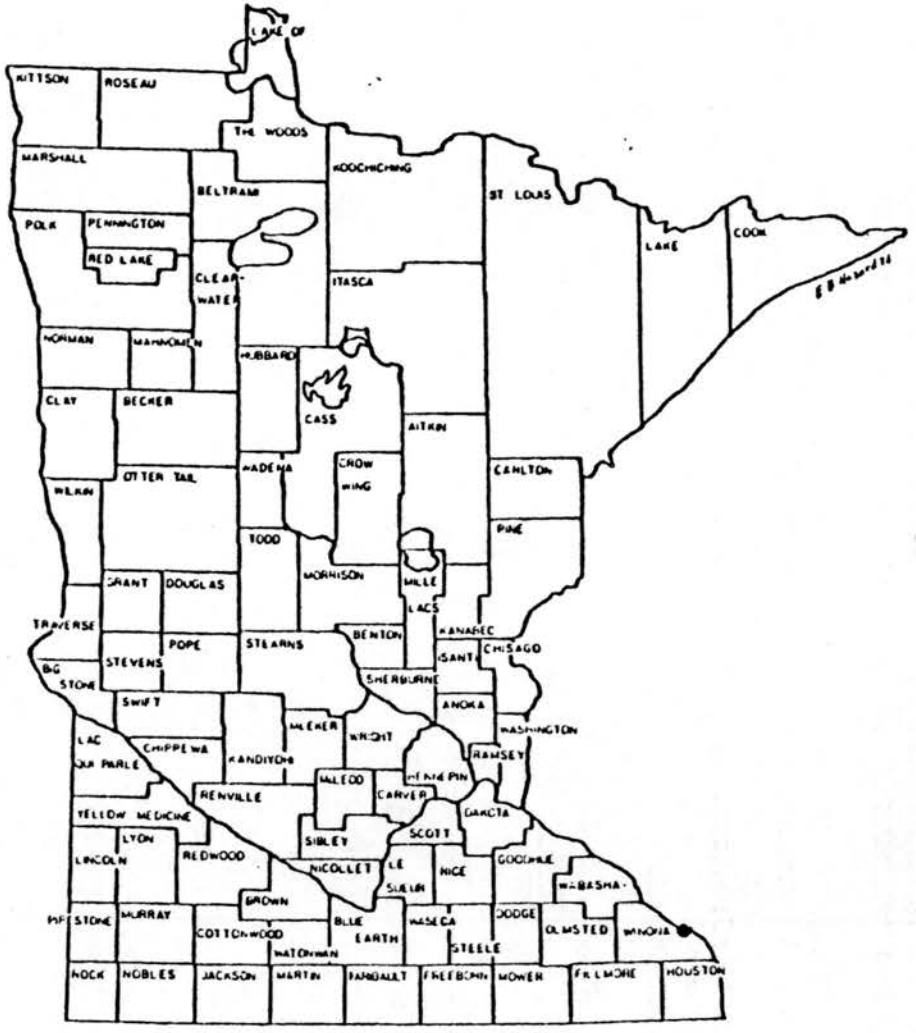
Hall, E.R. 1981. The mammals of North America. John Wiley & Sons, New York (second ed.), 2 vols.

Jackson, H.H.T. 1961. Mammals of Wisconsin. University of Wisconsin Press, Madison, 504 pp.

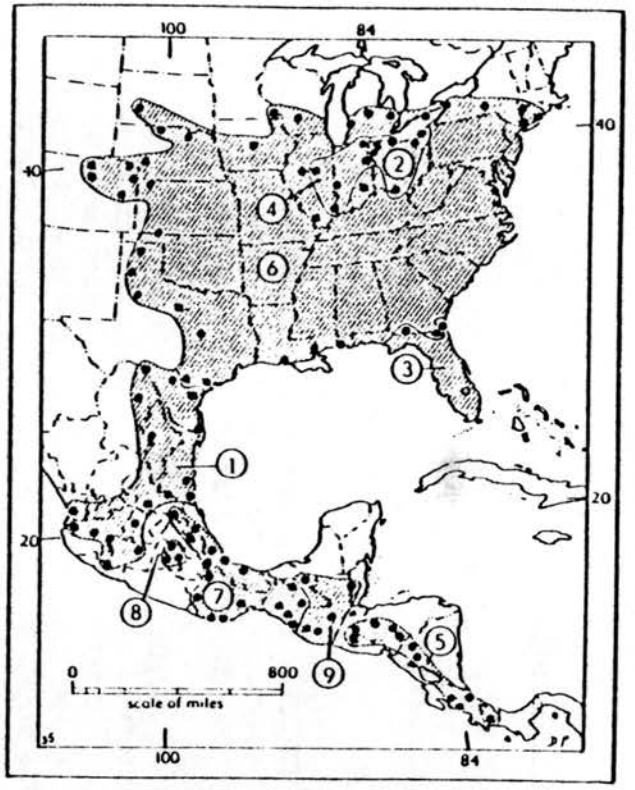
Swanson, G., T. Surber, and T.S. Roberts. 1945. The mammals of Minnesota. Tech. Bull., Minnesota Department of Conservation, 2:1-108.

Whitaker, J.O., Jr. 1974. Cryptotis parva. Mamm. Spec., 43:1-8.

PREPARED BY: Mammal Group Committee (ECB)



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).



Map 35. *Cryptotis parva.*

Guide to subspecies
1. *C. p. berlandieri*
2. *C. p. elasson*
3. *C. p. floridana*
4. *C. p. harlani*
5. *C. p. orophila*
6. *C. p. parva*
7. *C. p. pueblensis*
8. *C. p. soricina*
9. *C. p. tropicalis*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Felis concolor

COMMON NAME: Mountain Lion

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The current status of this species in Minnesota is unknown. It previously roamed over most of the state, though never common, and was particularly sensitive to human disturbance.

OCCURRENCES IN MINNESOTA: Although distributed throughout the state at one time, no authenticated specimens have been taken in Minnesota in the the twentieth century. Periodic sightings or tracks have been reported in the northern counties, and one individual was taken in Manitoba, 56 km NE of Winnipeg, in 1973 (Nero and Wrigley, 1977). It is, therefore, possible that occasional travelers enter the state from Canada.

PREFERRED HABITAT: The species is found in a wide variety of habitats throughout their range, and if present in the state is most likely to be found in heavily forested habitats in remote areas of northern Minnesota.

RECOMMENDATIONS: Collection of evidence to document the current status of this species in Minnesota should continue. In the event that a resident breeding population is verified in the state, their potential impact should be assessed and considerations for their survival and management be made at that time.

SELECTED REFERENCES:

Bue, G.T., and M.H. Stenlund. 1953. Recent records of the mountain lion, Felis concolor, in Minnesota. J. Mammal., 34:390-391.

Nero, R.W., and R.E. Wrigley. 1977. Status and habits of the cougar in Manitoba. Canadian Field-Nat., 91:28-40.

PREPARED BY: Mammal Group Committee (GEN)



Map 525. *Felis concolor.*

Guide to subspecies
1. *F. c. azteca*
2. *F. c. browni*
3. *F. c. californica*
4. *F. c. coryi*
5. *F. c. costaricensis*
6. *F. c. couguar*
7. *F. c. hippolestes*
8. *F. c. improcera*
9. *F. c. kaibabensis*
10. *F. c. mayensis*
11. *F. c. missoulensis*
12. *F. c. oregonensis*
13. *F. c. schorgeri*
14. *F. c. stanleyana*
15. *F. c. vancouverensis*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).

No documented Twentieth Century records for this species in Minnesota. See Hall (1981) for documented records prior to 1900.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Gulo gulo

COMMON NAME: Wolverine

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The last unquestionable documentation of this species in Minnesota was from Itasca County in 1899. Since that time, periodic sightings have been reported (including a sighting by a professional biologist from the Bell Museum of Natural History in 1982). Specimens taken in Iowa and South Dakota suggest that occasional wanderers may enter the state from Canada. Habitat for the re-establishment of this species in Minnesota probably exists, but complete protection will be essential if this is to happen.

OCCURRENCES IN MINNESOTA: The wolverine was once widespread throughout the northern half of the state, but is rare at best today. The last unquestionable documentation was in 1899 from Itasca County. The St. Louis County record of Hazard (1982) is almost certainly a hoax (see Birney, 1974).

PREFERRED HABITAT: An inhabitant of the boreal forests, the species is more frequently found in habitats away from human activity often above the treeline.

RECOMMENDATIONS: This species should be accorded protected status in Minnesota. Efforts should continue to document the current status of this species in the state.

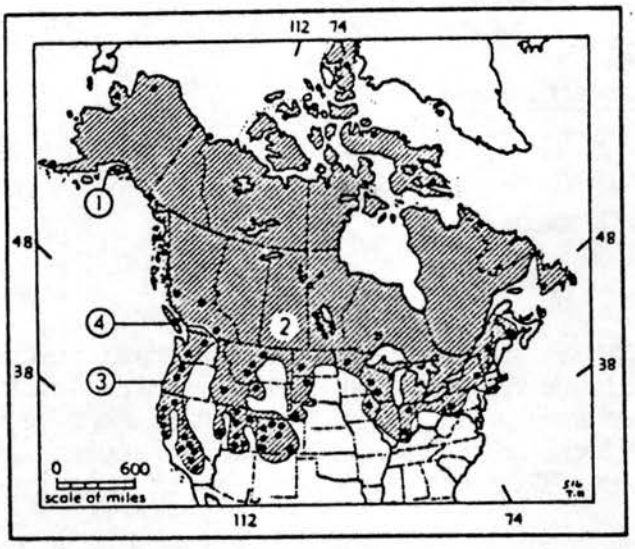
SELECTED REFERENCES:

Banfield, A.W.F. 1974. The mammals of Canada. Univ. Toronto Press, Toronto, 438 pp.

Birney, E.C. 1974. Twentieth century records of wolverine in Minnesota. The Loon, 46:7881.

Hazard, E.B., 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis. 280 pp.

PREPARED BY: Mammal Group Committee (GEN)



Map 516. *Gulo luscus.*

1. *G. l. katschemakensis*
2. *G. l. luscus*
3. *G. l. luteus*
4. *G. l. vancouverensis*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).

No documented Twentieth Century records for this species in Minnesota. See Hall (1981) for documented records prior to 1900.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Martes americana

COMMON NAME: Marten

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although once common in Minnesota, this species was extirpated or nearly so as a result of the combination of logging and trapping. Complete protection and some regrowth of coniferous forests in the northern portion of the state have resulted in appreciable return of this species. History confirms the vulnerability of this species.

OCCURRENCES IN MINNESOTA: As suggested by Mech and Rogers (1977), summarized by Landwehr (1980), and suggested in personal communication from several northern DNR wildlife managers, the marten is not presently uncommon in northeastern Minnesota as far west as Koochiching County. By no means, however, has it yet reoccupied its former range in Minnesota.

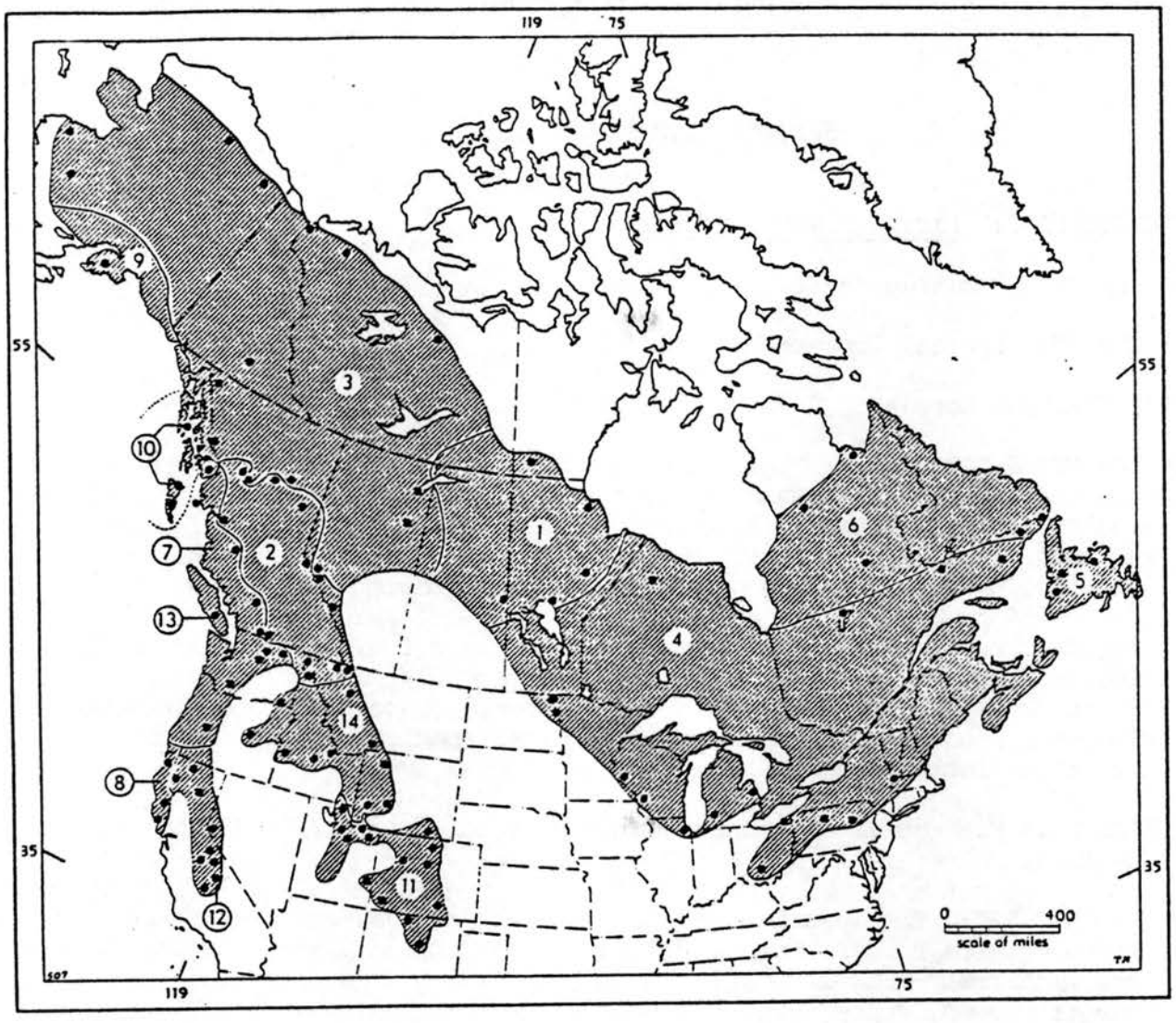
RECOMMENDATIONS: Marten populations should be carefully monitored in Minnesota. The technique used by Landwehr (1980) to census licensed trappers for records of marten trapped accidentally with other fur bearers should be continued. A few years of data of that type would show trends in distribution changes and relative abundance of the species. Regional or county-by-county management requirements may be appropriate for this species, including the possibility of a limited trapping season in some areas and complete protection in others.

SELECTED REFERENCES:

Landwehr, T. 1980. Status of marten in Minnesota. Unpubl. DNR Report (Mimeo).

Mech, L.D., and L.L. Rogers. 1977. Status, distribution, and movements of martens in northeastern Minnesota. U.S.D.A. Forest Serv. Res. Paper, NC-143.

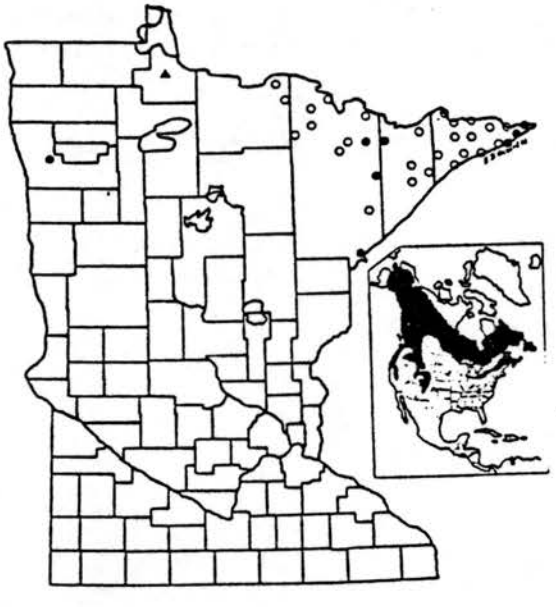
PREPARED BY: Mammal Group Committee (ECB)



Map 507. *Martes americana.*

Guide to subspecies
1. *M. a. abieticola*
2. *M. a. abietinoides*
3. *M. a. actuosa*
4. *M. a. americana*
5. *M. a. atrata*
6. *M. a. brumalis*
7. *M. a. caurina*
8. *M. a. humboldtensis*
9. *M. a. kenaiensis*
10. *M. a. nesophila*
11. *M. a. origenes*
12. *M. a. sierrae*
13. *M. a. vancouverensis*
14. *M. a. vulpina*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 57. Distribution of *Martes americana*. ● = township specimens. Crookston and Duluth specimens are nineteenth-century records. ○ = other township records, selected locations, 1977–79 only. ▲ = county specimen. (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Microtus chrotorrhinus

COMMON NAME: Rock Vole or Yellow-nosed Vole

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Specimens have been collected only from the northeastern corner of Minnesota, where the species seems to exist in generally small patches of rather specialized habitat. Prior to 1982, this species was known from only 8 localities in the state. During summer and fall, 1982, field work supported by the DNR Nongame Program led to the discovery of over 50 new localities for this species in the state, all in Cook County. Despite these recent records, however, the range limits, specific habitat requirements, and particular aspects of the population ecology of rock voles remain poorly known. The history of discovery of rock vole populations in Minnesota suggests the possibility that this species may experience drastic, long-term fluctuations in density on a regional scale.

OCCURRENCES IN MINNESOTA: Specimens have been taken from St. Louis and Cook Counties.

PREFERRED HABITAT: The species has been recorded in a variety of habitat types throughout its range. Preferred habitats in Minnesota appear to be associated with frost-fracture rock outcrops or rocky glacial streambeds, and vary from open, grassy logged areas to mixed or conifer-dominated forests with thick moss cover.

RECOMMENDATIONS: Research on the status of this species in Minnesota should continue, with particular emphasis on better documenting its geographical distribution in the state and on monitoring the long-term stability of known populations. Additionally, information about the impact of forest management practices on this species is needed.

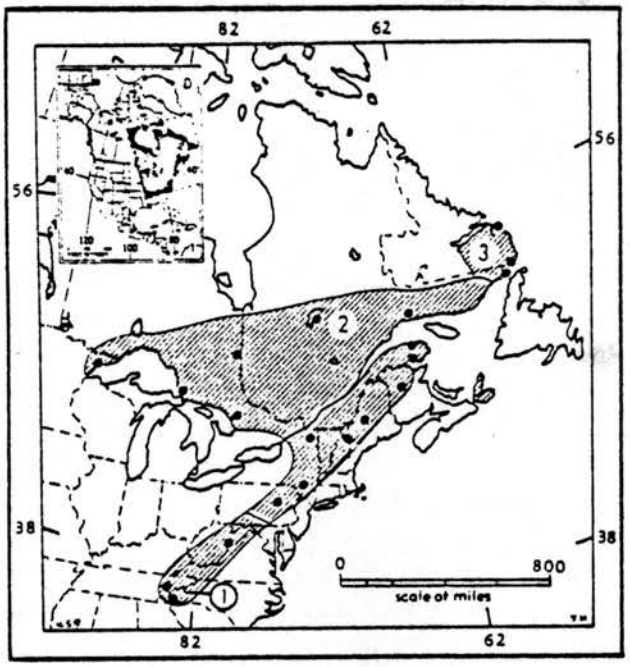
SELECTED REFERENCES:

Buech, R.R., R.M. Timm, and K. Siderits. 1977. A second population of rock voles, Microtus chrotorrhinus, in Minnesota with comments on habitat. Canadian Field-Nat., 91:413-414.

Kirkland, G.L., Jr., and F.J. Jannett, Jr. 1982. Microtus chrotorrhinus. Mammalian Species, 180:1-5.

Timm, R.M., L.R. Heaney, and D.D. Baird. Natural history of rock voles (Microtus chrotorrhinus) in Minnesota. Canadian Field-Nat., 91:177-181.

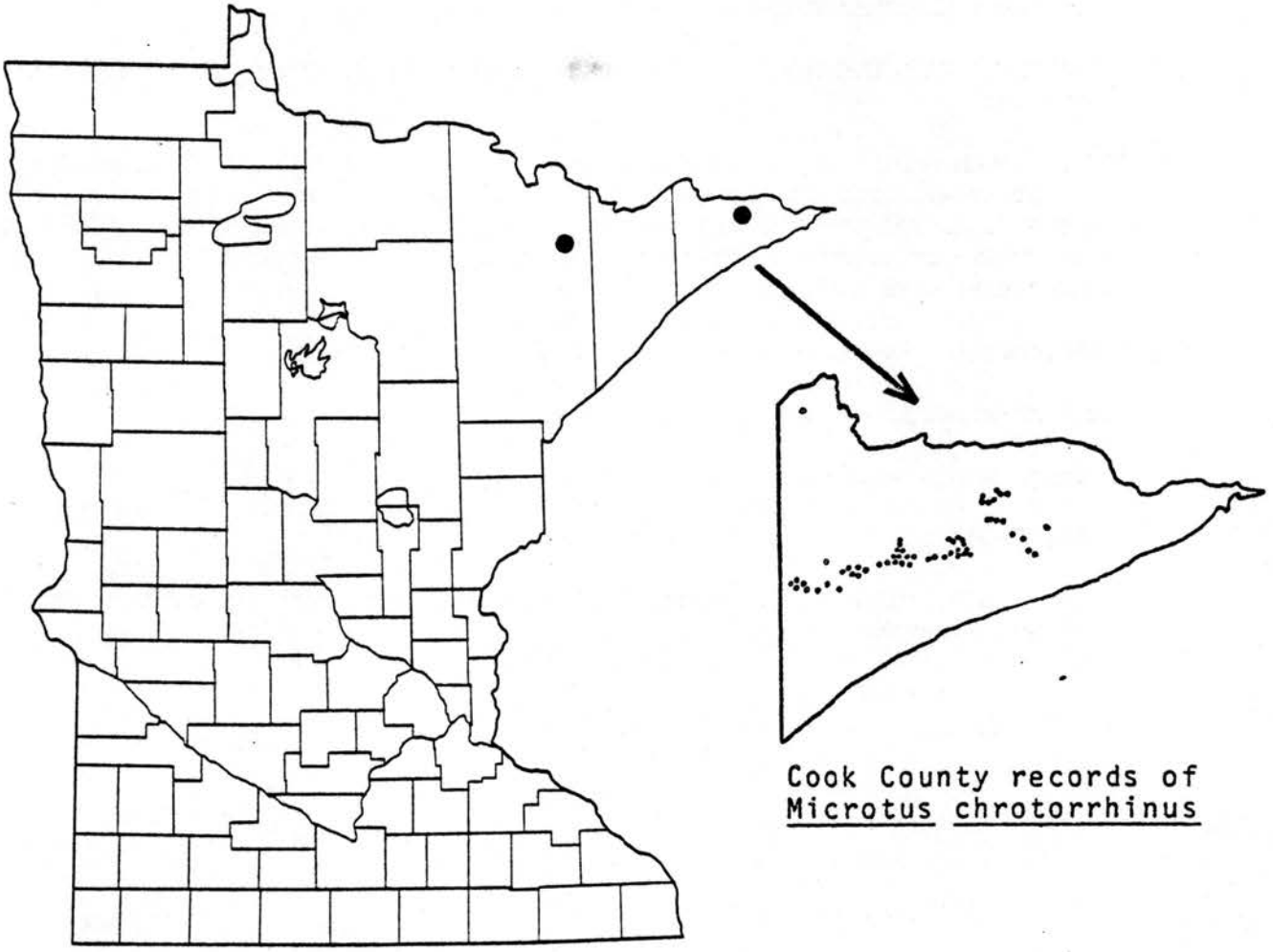
PREPARED BY: Mammal Group Committee (GEN, DPC)



Map 459. *Microtus chrotorrhinus.*

1. *M. c. carolinensis* 2. *M. c. chrotorrhinus*
3. *M. c. ravus*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Cook County records of Microtus chrotorrhinus

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Microtus ochrogaster

COMMON NAME: Prairie Vole

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was once a common, wide-spread element of the Great Plains, including the tall grass prairie of Minnesota. Although still common in some parts of its range, the prairie vole has become very uncommon in Minnesota, due almost exclusively to habitat destruction as the native prairie has been plowed and/or heavily grazed.

OCCURRENCES IN MINNESOTA: Once widespread in southern and western Minnesota, the species is now limited to an occasionally discovered isolated or semi-isolated population. The most recent report of such populations was by Heaney and Birney (1975), but two additional localities are now documented by recently collected material in the Bell Museum.

PREFERRED HABITAT: The species occurs in grassy areas, especially those that are somewhat dry.

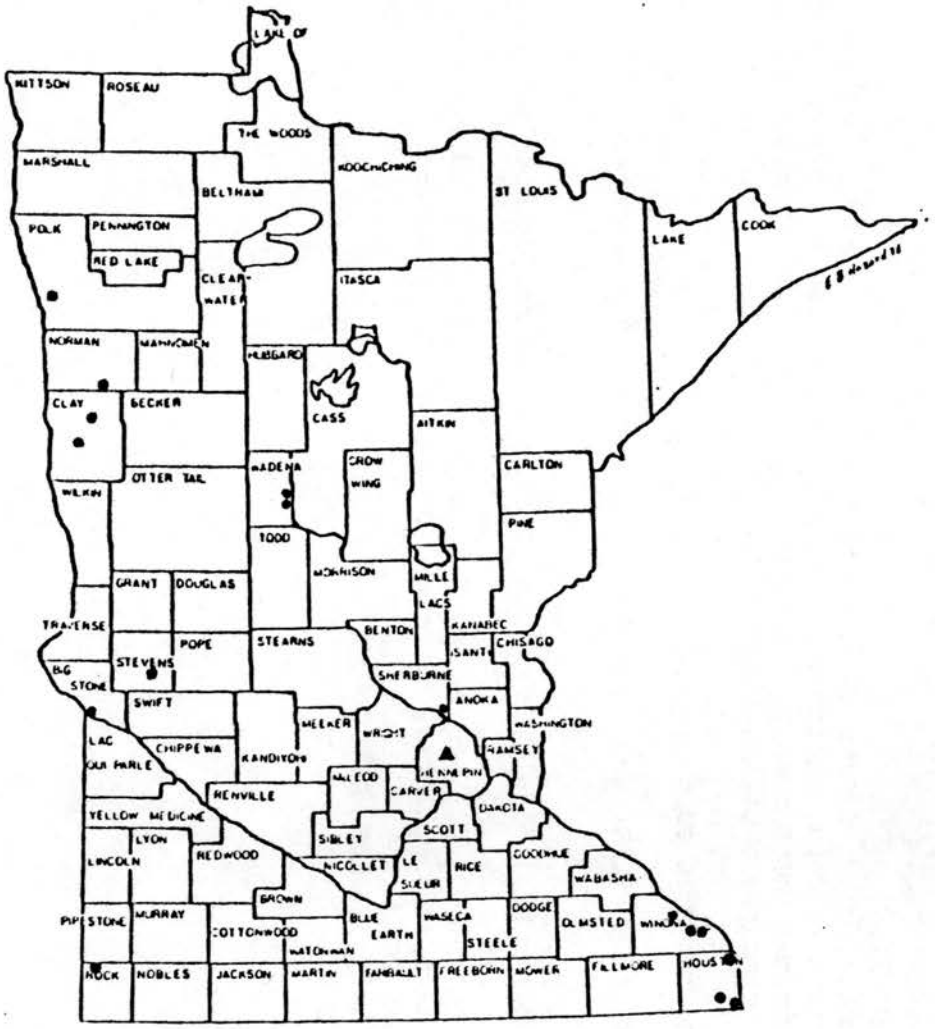
RECOMMENDATIONS: This species needs regular censusing and field collecting to monitor known populatons and discover additional ones. If possible, large tracts (100-200 acres would be ideal, but smaller ones probably could support permanent breeding populations) of suitable grassland habitat should be procured and carefully managed with a rotational scheme of periodic grazing, burning, and complete protection of small areas to maintain parts of the tract as suitable habitat at all times.

SELECTED REFERENCES:

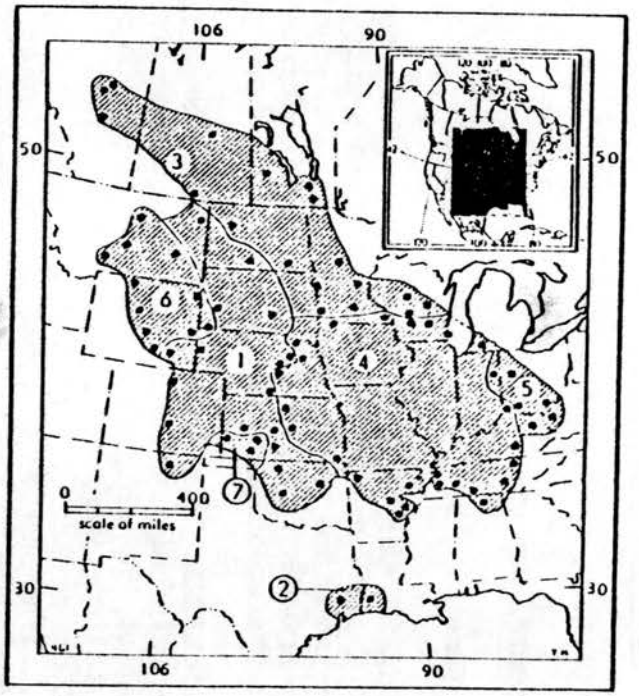
Heaney, L.R., and E.C. Birney. 1975. Comments on the distribution and natural history of some mammals in Minnesota. Canadian Field-Naturalist. 89:29-34.

Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis. 280 pp.

PREPARED BY: Mammal Group Committee (ECB)



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).



Map 461. *Microtus ochrogaster.*

1. *M. o. haydenii*
2. *M. o. ludovicianus*
3. *M. o. minor*
4. *M. o. ochrogaster*
5. *M. o. ohionensis*
6. *M. o. similis*
7. *M. o. taylori*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Microtus pinetorum

COMMON NAME: Woodland Vole

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The woodland vole reaches the northern and western-most limits of its range in the extreme southeastern corner of the state. Only two specimens are known from Minnesota. In adjacent areas of Wisconsin and Iowa the species is known from the vicinity of the Minnesota border, suggesting that the species probably occurs throughout the area in low numbers.

OCCURRENCES IN MINNESOTA: Two specimens have been taken from Houston County (La Crescent and Caledonia). Extensive trapping specifically for this species during summer of 1982 in Winona, Houston, and Fillmore counties failed to produce additional specimens.

PREFERRED HABITAT: The species is found in a wide variety of habitats, most frequently in deciduous forest and along the deciduous forest-grassland ecotone. It commonly occurs in orchards, where it may reach pest proportions.

RECOMMENDATIONS: Efforts to document the current status of this species in Minnesota should be continued. Although the species is known to reach pest proportions farther east, it is unlikely that this situation would arise at the periphery of its range.

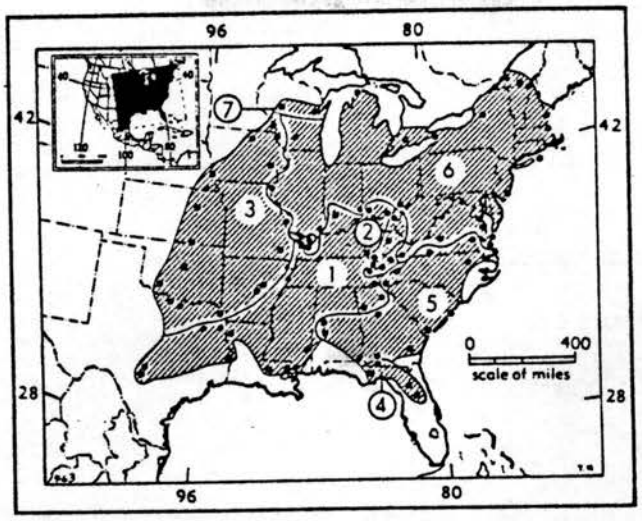
SELECTED REFERENCES:

Hatfield, D.M. 1939. Northern pine mouse in Minnesota. J. Mammal. 10:376.

Smolen, M.J. 1981. Microtus pinetorum. Mammalian Species, 147:1-7.

Swanson, G., T. Surber, and T.S. Roberts. 1945. The Mammals of Minnesota. Technical Bulletin, Minnesota Department of Conservation, 2:1-108.

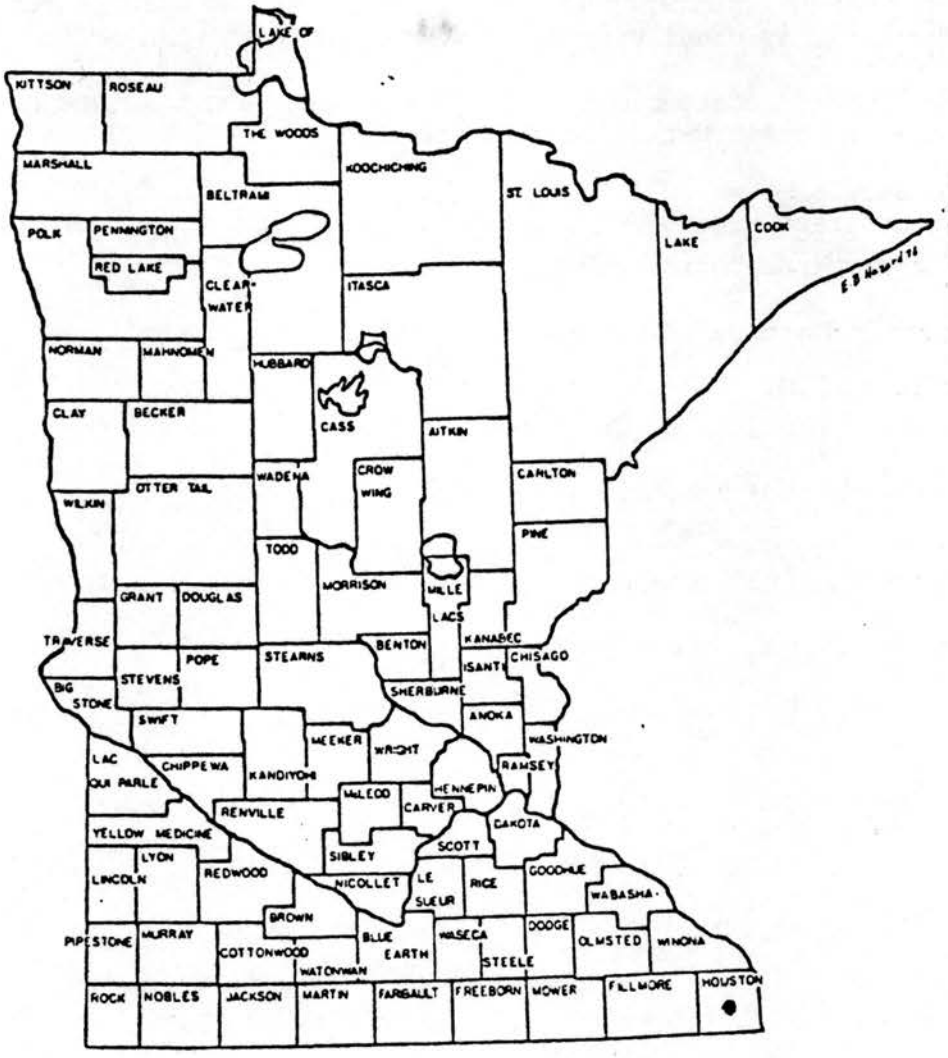
PREPARED BY: Mammal Group Committee (GEN)



Map 463. *Microtus pinetorum.*

Guide to subspecies
1. *M. p. auricularis*
2. *M. p. carbonarius*
3. *M. p. nemoralis*
4. *M. p. parvulus*
5. *M. p. pinetorum*
6. *M. p. scalopsoides*
7. *M. p. schmidti*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Myotis keenii

COMMON NAME: Keen's Myotis

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The rarity with which this bat is detected in Minnesota, its low reproductive rate, and the vulnerability of roosting bats and of bat roosts to human disturbance combine to indicate that the status of this bat in Minnesota is not secure without some special consideration.

OCCURRENCES IN MINNESOTA: According to Hazard (1982), the Keen's myotis is known only from Cook, Cass, Sherburne, and Ramsey counties. Distribution of this species, which never occurs commonly, is poorly known because of a general lack of collecting.

PREFERRED HABITAT: The species probably hibernates primarily in caves, although it may use buildings, undersides of bridges, and perhaps even trees during summer. It is usually found in wooded habitats when active.

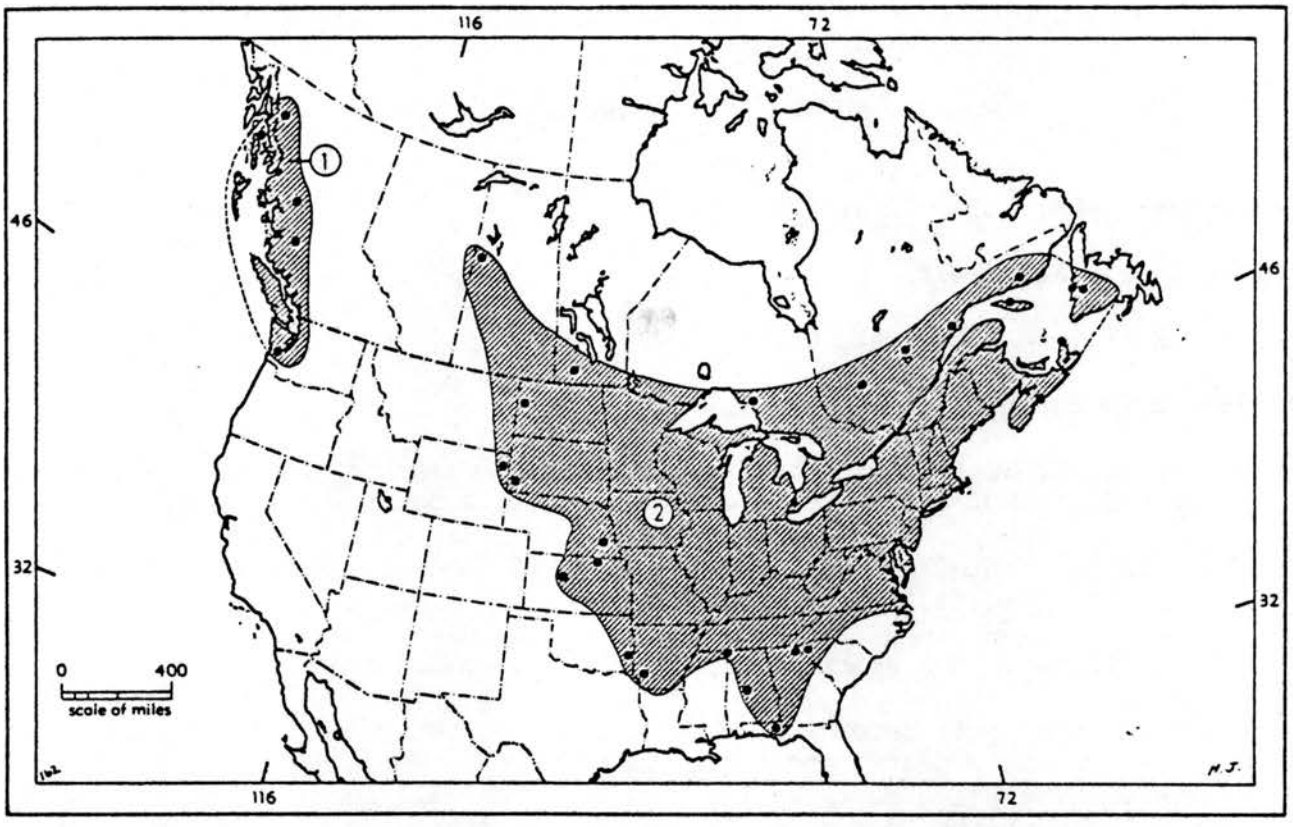
RECOMMENDATIONS: Locate hibernacula in the state and take necessary steps to ensure the preservation of these areas.

SELECTED REFERENCES:

Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis, 280 pp.

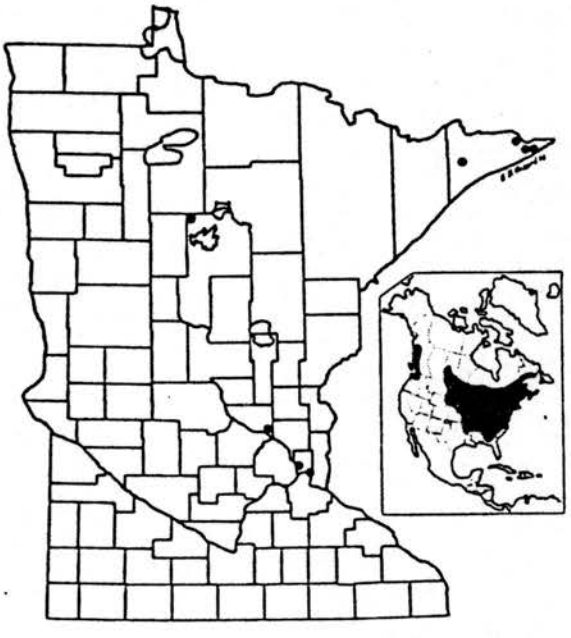
Fitch, J.H., and K.A. Shump, Jr. 1979. Myotis keenii. Mamm. Species, 121:1-3.

PREPARED BY: Mammal Group Committee (ECB)



Map 162. *Myotis keenii keenii* (1) and *Myotis keenii septentrionalis* (2).

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 13. Distribution of *Myotis keenii*. ● = township specimens. (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Odocoileus hemionus

COMMON NAME: Mule Deer

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The Group Committee feels that this little-appreciated element of the state's mammalian fauna is deserving of study.

OCCURRENCES IN MINNESOTA: Occasional records of the species have been documented nearly state-wide, except the northeastern triangle.

PREFERRED HABITAT: The species occurs in brushy wooded areas.

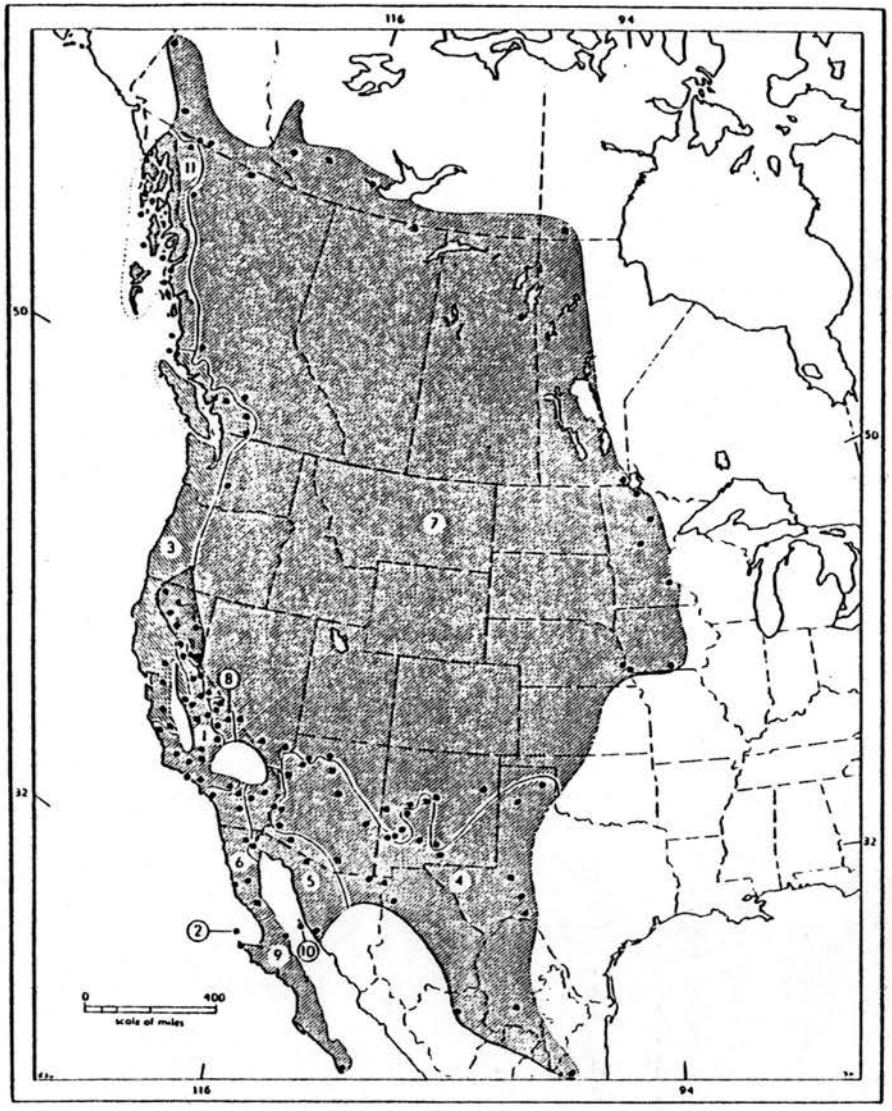
RECOMMENDATIONS: Most records of mule deer are hunter records taken while hunting whitetailed deer (Odocoileus virginianus). We do not recommend any form of protection at this time, but only that all personnel working deer check stations be instructed in the identification of these two congeners, and that careful records be maintained. At this time we do not even know if this species breeds in Minnesota. It probably does not, as most records are of males, especially young males. The presence of does and/or fawns would be of great interest. If a breeding population is discovered, management recommendations, possibly including protection, should be considered.

SELECTED REFERENCES:

Fashingbaur, B.A. 1965. The mule deer in Minnesota. pp. 49-56 in Big game Minnesota (J.B. Moyle, ed.) Tech. Bull. No. 9, Minnesota Department of Conservation.

Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis, 280 pp.

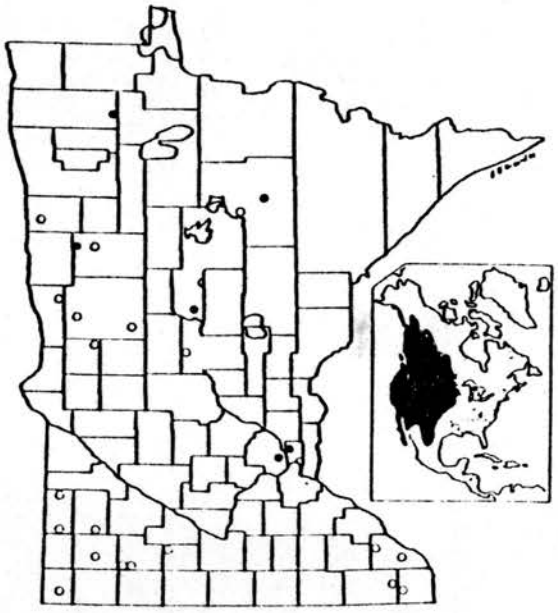
PREPARED BY: Mammal Group Committee (ECB)



Map 536. Odocoileus hemionus

Guide to subspecies
1. O. h. *californica*
2. O. h. *cerrosensis*
3. O. h. *columbiana*
4. O. h. *crooki*
5. O. h. *eremica*
6. O. h. *fuliginata*
7. O. h. *hemionus*
8. O. h. *inyoensis*
9. O. h. *peninsulae*
10. O. h. *sheldoni*
11. O. h. *sitkensis*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 71. Distribution of *Odocoileus hemionus*. ● = township specimens. ○ = other township records. (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Phenacomys intermedius

COMMON NAME: Heather Vole

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The heather vole is poorly known in Minnesota. It was never common and is known to inhabit undisturbed and unsettled areas, suggesting a high susceptibility to human disturbance.

OCCURRENCES IN MINNESOTA: The only specimen known from Minnesota was collected near Ely in 1940 by Shaler Aldous (Handley, 1954). The regional distribution of the species reaches its southernmost limit along the northern border of the state.

PREFERRED HABITAT: The species occurs in open and forested habitats dominated by conifers and ericaceous shrubs.

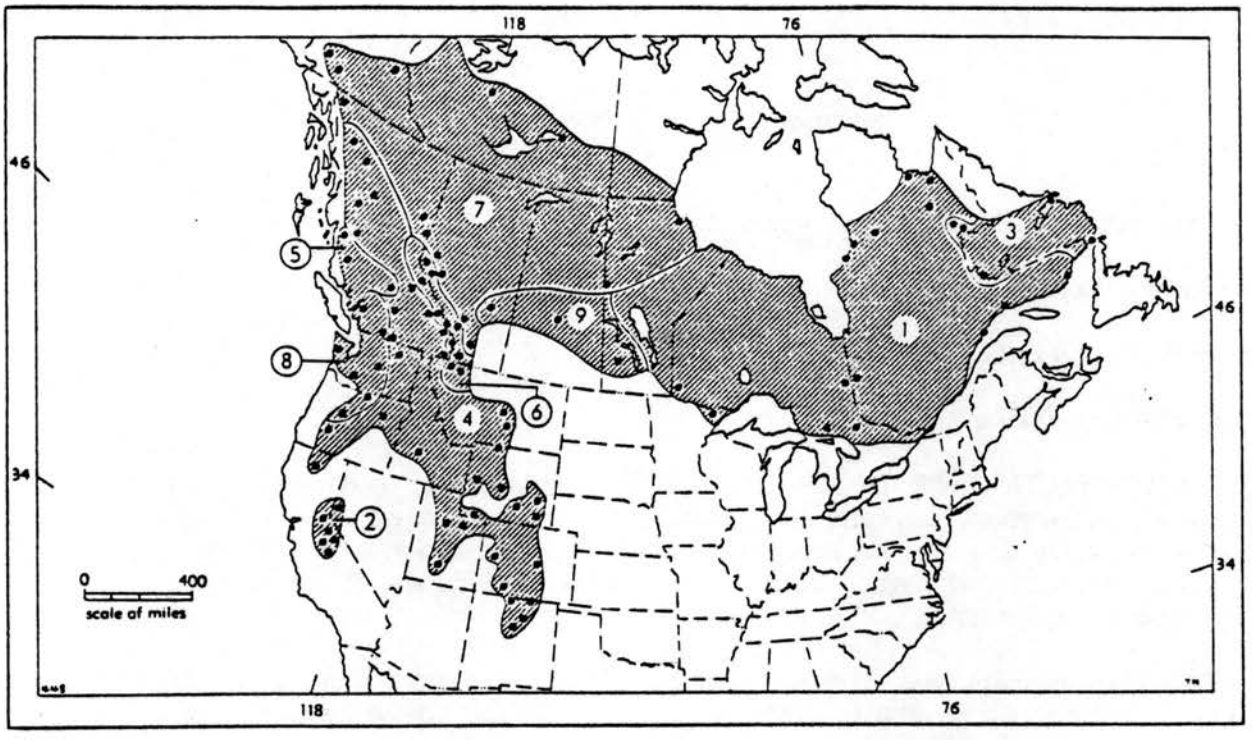
RECOMMENDATIONS: Efforts to document the current status of this species should continue. In the event that populations of this species are found, they should be assessed by qualified professionals and recommendations concerning habitat protection and population survival should be made at that time.

SELECTED REFERENCES:

Handley, C.O., Jr. 1954. Phenacomys in Minnesota. J. Mammal., 35:260.

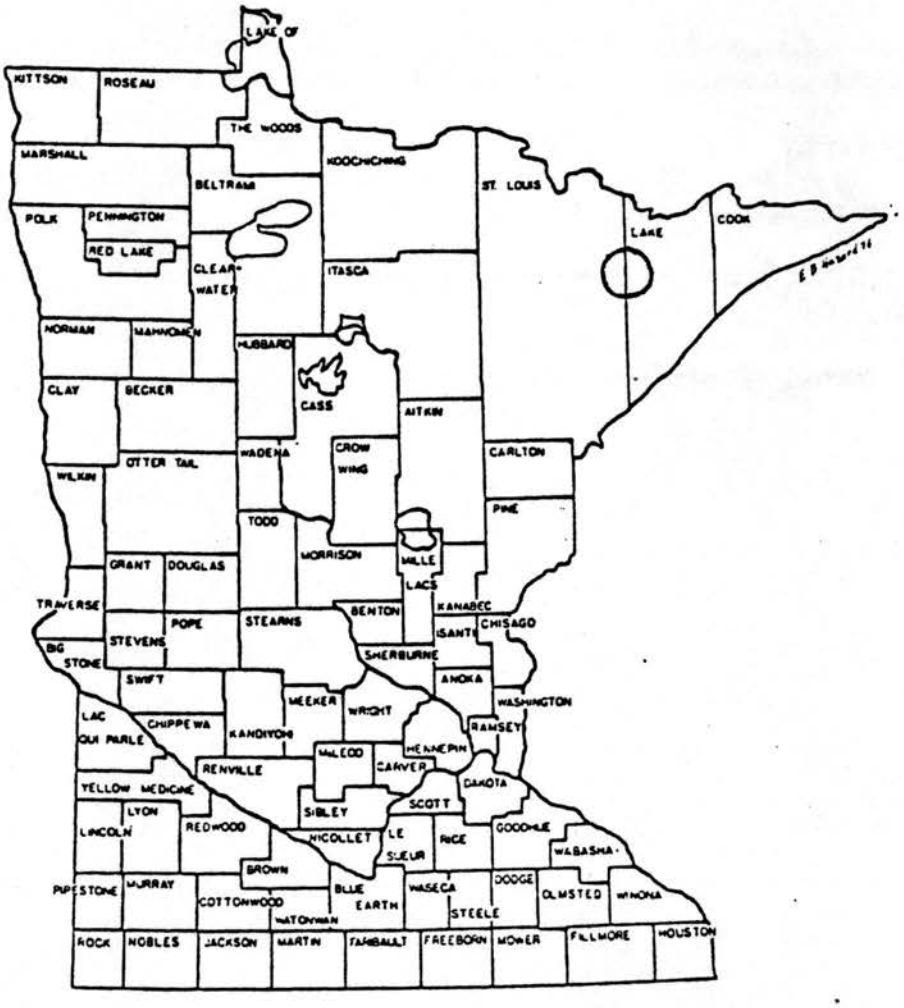
Foster, J.B. 1961. Life history of the phenacomys vole. J. Mammal., 42: 181-198.

PREPARED BY: Mammal Group Committee (GEN)



Map 448. *Phenacomys intermedius.*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Pipistrellus subflavus

COMMON NAME: Eastern Pipistrelle

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The limited distribution in southeastern Minnesota, infrequent detection, and no known maternity colonies in the state all combine with the low reproductive rate of bats and the vulnerability of the highly specific winter habitat of this species to cause concern for its future in Minnesota.

OCCURRENCES IN MINNESOTA: The eastern pipistrelle occurs primarily in southeastern quarter of the state,although Hazard (1982) shows records from Stearns and Traverse counties.

PREFERRED HABITAT: The species roosts in caves, abandoned mine shafts, and occasionally in less protected areas. It requires caves at 7-13°C and humidity above 90% for winter survival (Jackson, 1961).

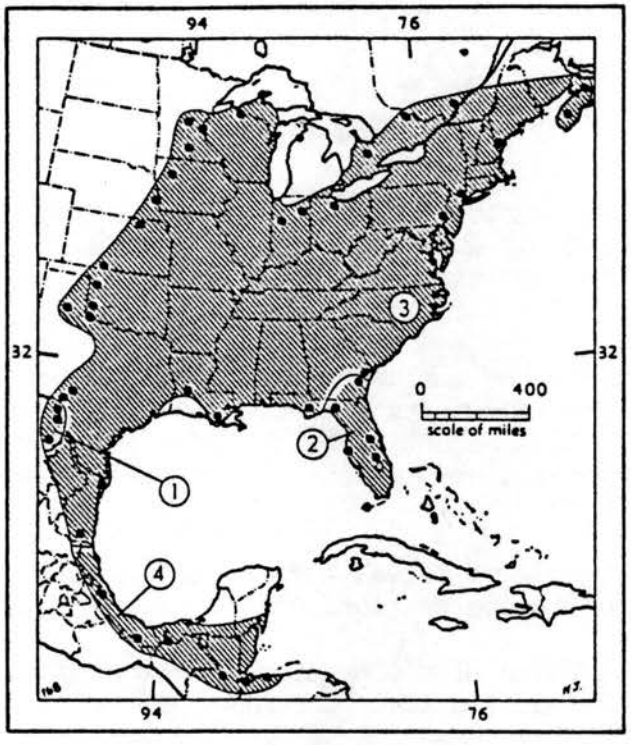
RECOMMENDATIONS: Locate hibernacula in the state and take necessary steps to ensure their presveration and that bats therein are not disturbed by humans.

SELECTED REFERENCES:

Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis, 280 pp.

Jackson, H.H.T. 1961. Mammals of Wisconsin. Univeristy of Wisconsin Press, Madison, 504 pp.

PREPARED BY: Mammal Group Committee (ECB)



Map 168. *Pipistrellus subflavus.*

1. *P. s. clarus*
2. *P. s. floridanus*
3. *P. s. subflavus*
4. *P. s. veraecrucis*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 15. Distribution of *Pipistrellus subflavus*. ● = township specimens. ○ = other township record. ▲ = county specimen. (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Rangifer tarandus

COMMON NAME: Caribou

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Until recent sightings verified its presence (see Peterson, 1981), this species was considered extirpated from the state. Northern Minnesota is the southern limit of its range in the eastern portion of its distribution.

OCCURRENCES IN MINNESOTA: In the recent past, the caribou ranged over much of northern Minnesota, but quickly dwindled in numbers due to human disturbance and hunting pressure (Fashingbauer, 1965). Recent sightings of a few individuals have been recorded in extreme northeast Minnesota, most likely representing wanderers from Canada (Peterson, 1981).

PREFERRED HABITAT: The species inhabits regions of boreal forest, taiga, and tundra, primarily in climax forests and remote peatland areas.

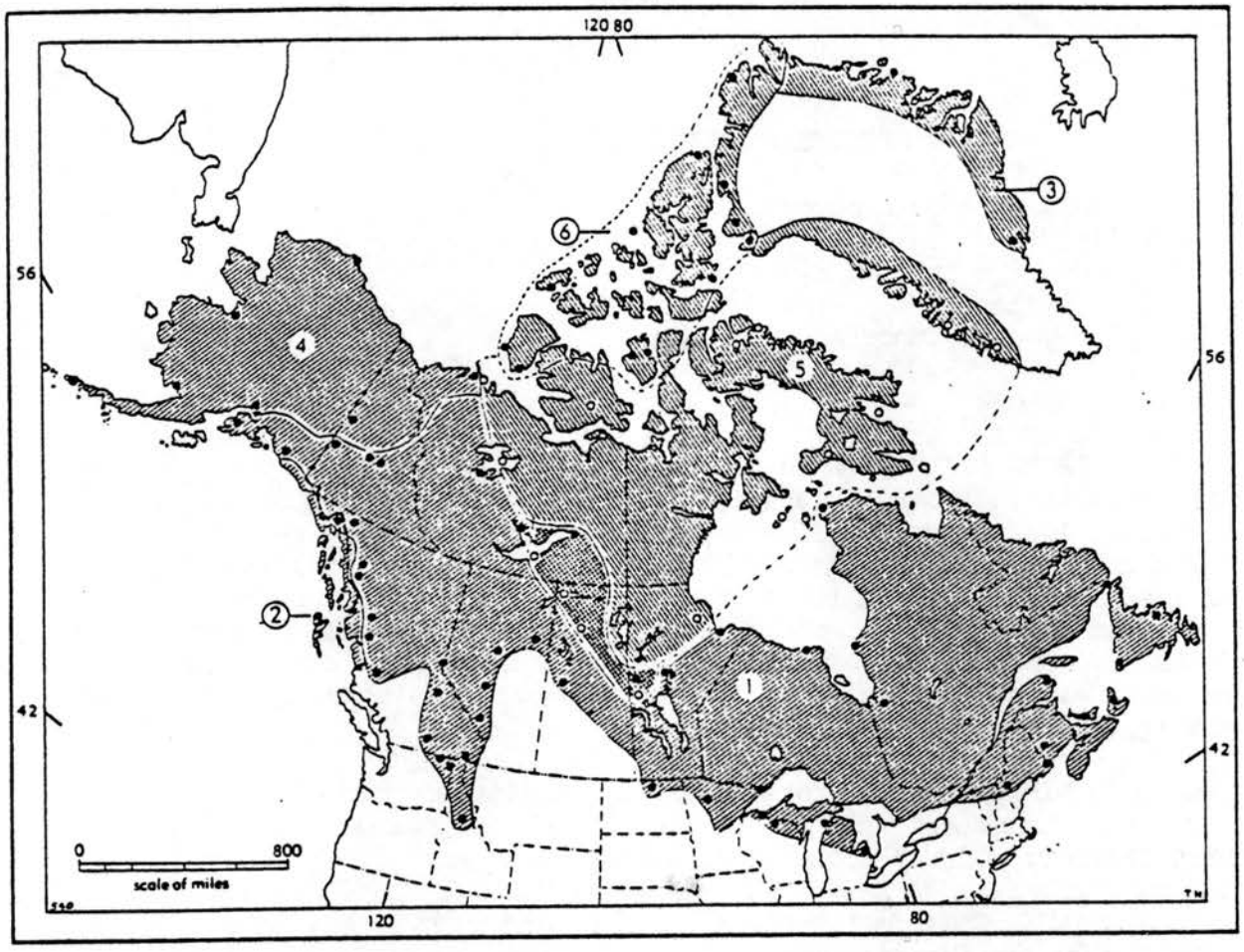
RECOMMENDATIONS: Individuals that enter northern Minnesota should be monitored to determine when they are present and what specific habitats they use.

SELECTED REFERENCES:

Fashingbauer, B.A. 1965. The woodland caribou in Minnesota. pp. 133-166, in J.B. Moyle, ed. Big Game in Minnesota. Tech. Bull. No. 9, Minnesota Dept. Conserv.

Peterson, W.J. 1981. Coming of the caribou. Minnesota Volunteer, 44(259):17-23.

PREPARED BY: Mammal Group Committee (GEN)



Map 540. *Rangifer tarandus.*

1. *R. t. caribou*
2. *R. t. dawsoni*
3. *R. t. eogroenlandicus*
4. *R. t. granti*
5. *R. t. groenlandicus*
6. *R. t. pearyi*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 74. Distribution of *Rangifer tarandus*. ○ = 1981 sighting. ◇ = approximate sites of old bones. (Map produced by the Department of Biology. Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Spilogale putorius

COMMON NAME: Eastern Spotted Skunk

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species once was common in southern Minnesota and present in lower numbers as far north as Kittson and St. Louis counties. This is based primarily on historical trapping records in the DNR files and on specimens preserved in scientific collections (Hazard, 1982). In 1946 alone, for example, over 19,000 pelts of spotted skunks were harvested and sold in Minesota (Boggess, in litt.). The numbers in recent years have decreased greatly. For example, the meager records that do exist suggest that only about 300 spotted skunks were taken in 1981, these mostly from the southern counties of the state.

OCCURRENCES IN MINNESOTA: Historically the species occurred statewide except for the northeastern triangle of the state. Its present status in northern parts of the state is relatively unknown.

PREFERRED HABITAT: The species occurs in open and bushy areas, often in and near farm yards (Hazard, 1982).

RECOMMENDATIONS: Placement of this species is tentative, pending its detailed study in Minnesota. At this time, we recommend careful study of the species, with special attention to the trends in trapping records. If its populations are as low as they may in fact be, based on the data available, commercial trapping may best be reduced or even terminated.

SELECTED REFERENCES:

Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis, 280 pp.

PREPARED BY: Mammal Group Committee (ECB)

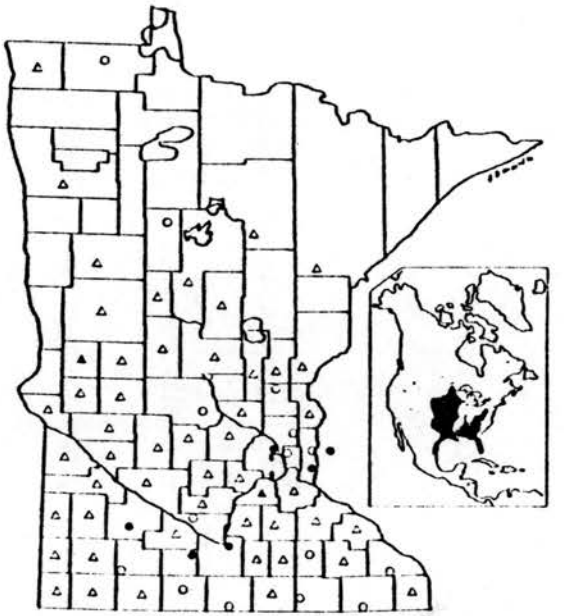


Map 518. *Spilogale*.

Guide to kinds

1. *S. pygmaea australis*
2. *S. pygmaea pygmaea*
3. *S. putorius ambarvalis*
4. *S. putorius amphiala*
5. *S. putorius angustifrons*
6. *S. putorius celeris*
7. *S. putorius elata*
8. *S. putorius gracilis*
9. *S. putorius interrupta*
10. *S. putorius latifrons*
11. *S. putorius leucoparia*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



Map 65. Distribution of *Spilogale putorius*. ● = township specimens. ○ = selected other township records. ▲ = county specimen. △ = other county records (mostly from Swanson et al. 1945). (Map produced by the Department of Biology, Bemidji State University.)

From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Synaptomys borealis

COMMON NAME: Northern Bog Lemming

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: State records for this species are sporadic and obtained only near the Minnesota-Canada border. The species is uncommon throughout its range, occurring in remote areas. Its habits are largely unknown. Evidence suggests that breeding populations within the state occur in small, semi-isolated or isolated pockets.

OCCURRENCES IN MINNESOTA: Specimens have been taken from Roseau, Lake of the Woods, and Koochiching counties.

PREFERRED HABITAT: The species is primarily confined to bogs and tracts of swampy land, both open and forested, with ericaceous shrubs and graminoids.

RECOMMENDATIONS: Periodic sampling of habitats in the northern tier of counties should be conducted by qualified professionals to monitor the status of this species. Large tracks of peatlands in those areas where the species occurs should be preserved to ensure the continued presence of the species.

SELECTED REFERENCES:

Banfield, A.W.F. 1974. The mammals of Canada. University of Toronto Press, Toronto. 438 pp.

Heaney, L.R. and E.C. Birney. 1975. Comments on the distribution and natural history of some mammals in Minnesota. Canadian Field-Naturalist, 89: 29-34.

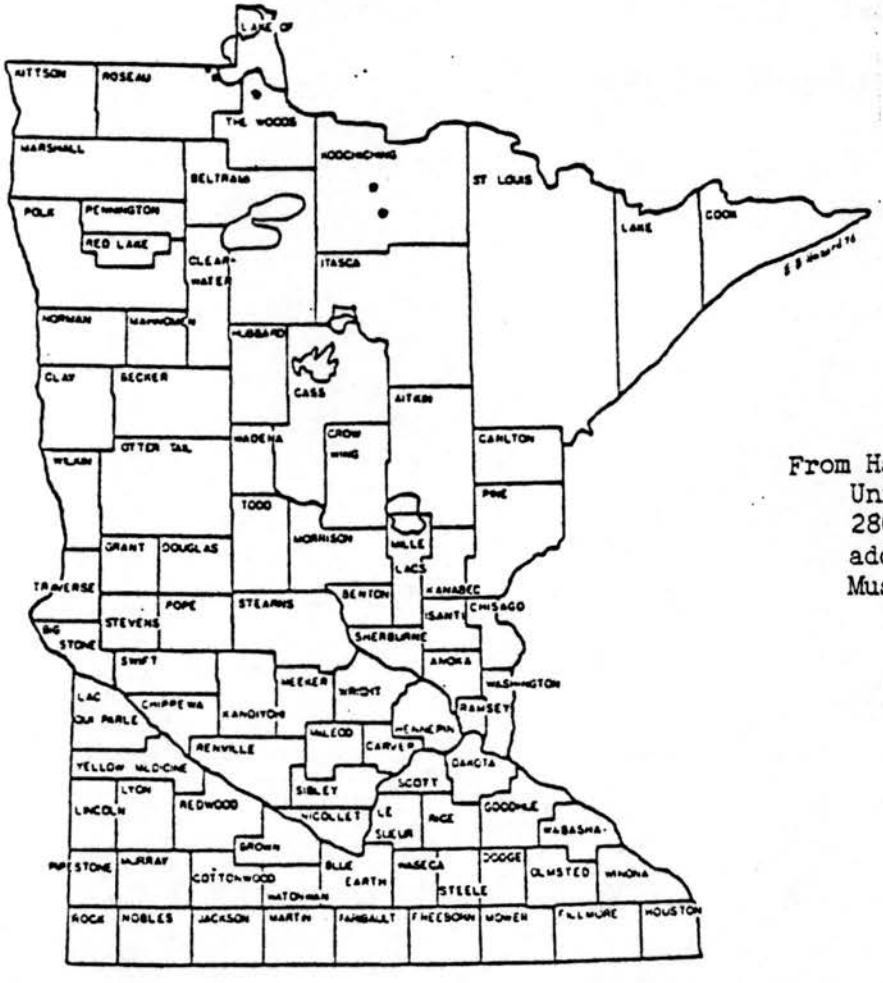
PREPARED BY: Mammal Group Committee (GEN)



Map 472. *Synaptomys borealis.*

1. *S. b. artemisiae*
2. *S. b. borealis*
3. *S. b. chapmani*
4. *S. b. dalli*
5. *S. b. innuitus*
6. *S. b. medioximus*
7. *S. b. smithi*
8. *S. b. sphagnicola*
9. *S. b. truei*

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp.; 1982), and supplimented by additional specimens from the Bell Museum of Natural History.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Thomomys talpoides

COMMON NAME: Northern Pocket Gopher

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The northern pocket gopher has limited distribution in the state. It inhabits a soil type that is limited in its distribution and is highly exploited agriculturally.

OCCURRENCES IN MINNESOTA: The species occurs primarily in western Kittson County, with one record in eastern Marshall County (Hazard, 1982).

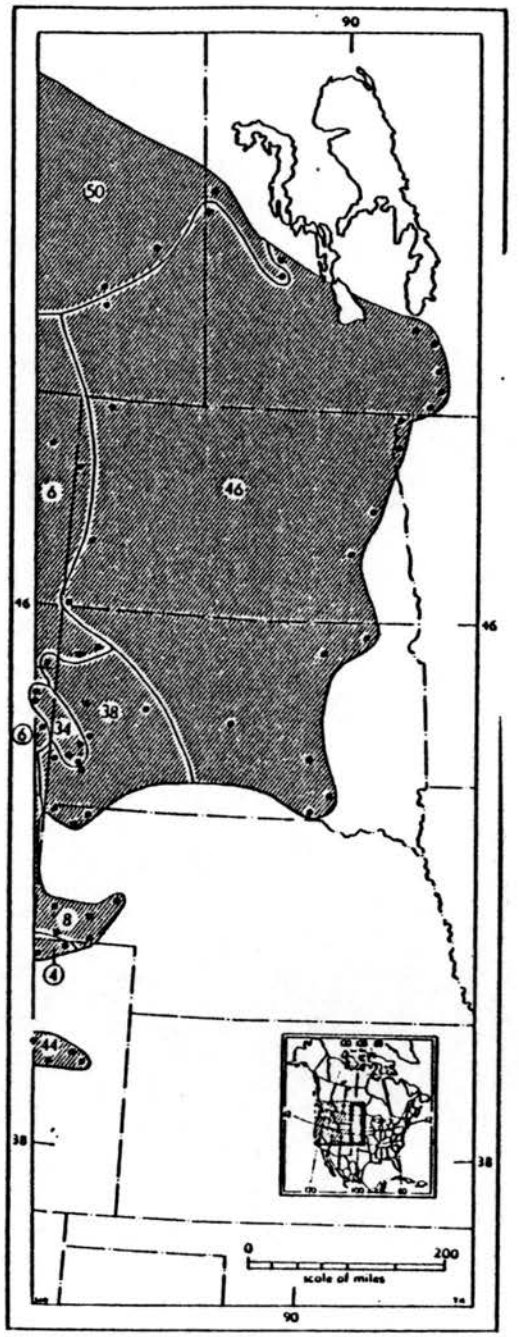
PREFERRED HABITAT: The species prefers rich organic loamy soils, grassy fields and roadside ditches.

RECOMMENDATIONS: Conduct periodic monitoring in areas of documented occurrence, and surveys for determination of total distribution of the species in the state.

SELECTED REFERENCES:

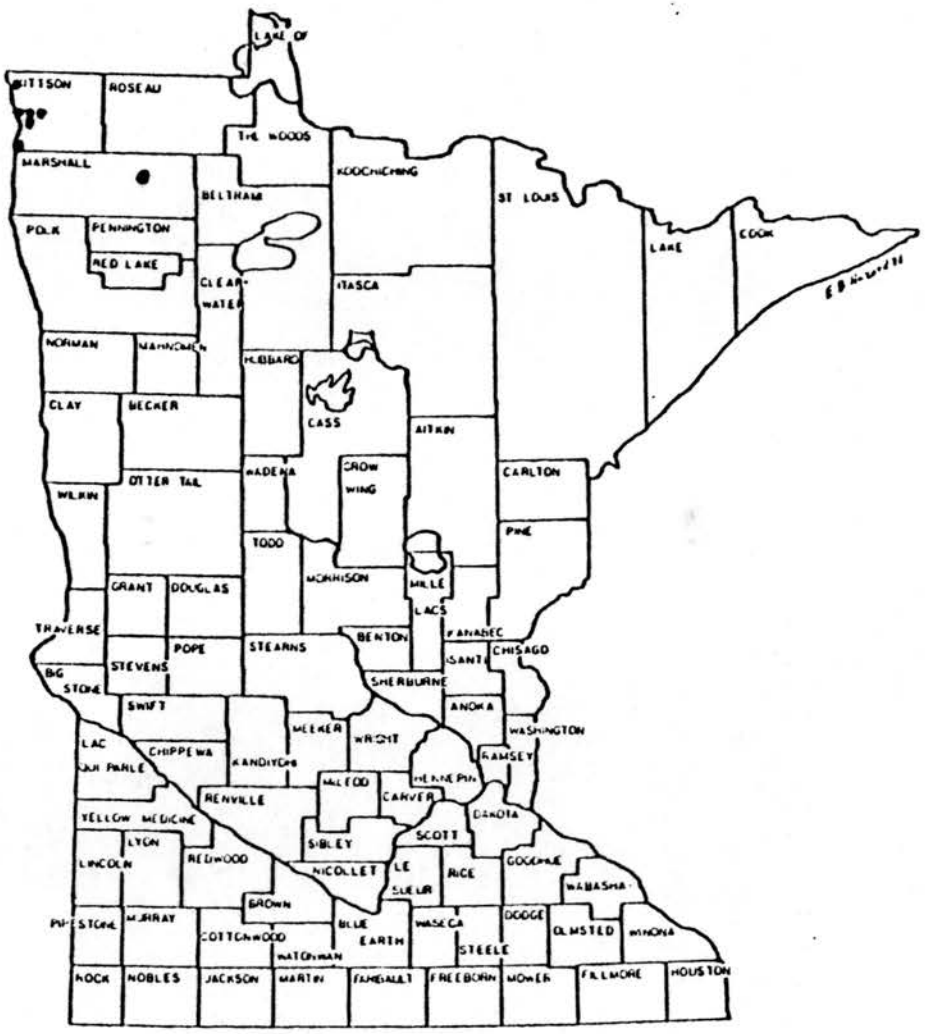
Hazard, E.B. 1982. The mammals of Minnesota. University of Minnesota Press, Minneapolis. 280 pp.

PREPARED BY: Mammal Group Committee (ECB)



Map 300. Some subspecies of *Thomomys talpoides*.

From Hall (The mammals of North America. John Wiley & Sons, New York (second edition), 2 vols., 1981).



From Hazard (The mammals of Minnesota, Univ. Minnesota Press, Minneapolis, 280pp., 1982).

BIRD GROUP COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S BIRDS

A Final Report of the Bird Group Committee
Submitted to the Chairman
Endangered Species Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Ms. Janet Green, Chairwoman
10550 Old North Shore Road
Duluth, Minnesota 55804

Mr. Kim Eckert
9735 North Shore Drive
Duluth, Minnesota 55804

Mr. Art Hawkins
Route #1, Box 240
Hugo, Minnesota 55038

Mr. Robert Janssen
10521 South Cedar Lake Road
Minnetonka, Minnesota 55343

Dr. Daniel Svedarsky
Rural Route #3
Crookston, Minnesota 56716

Dr. Harrison Tordoff
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Ms. Lee Pfannmuller, DNR liaison
Department of Natural Resources
Section of Wildlife
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

Proposed List of Birds Classified as Endangered, Threatened or Special Concern by the Bird Group Committee

EXTIRPATED*

Cygnus buccinator; Trumpeter Swan
Elanoides forficatus; American Swallow-tailed Kite
Grus americana; Whooping Crane
Numenius americanus; Long-billed Curlew
Calcarius mccownii; McCown's Longspur

ENDANGERED

Falco peregrinus; Peregrine Falcon
Charadrius melodus; Piping Plover
Athene cunicularia; Burrowing Owl
Anthus spragueii; Sprague's Pipit
Ammodramus bairdii; Baird's Sparrow
Calcarius ornatus; Chestnut-collared Longspur

THREATENED

Haliaeetus leucocephalus; Bald Eagle
Lanius ludovicianus; Loggerhead Shrike

SPECIAL CONCERN

Podiceps auritus; Horned Grebe
Pelecanus erythrorhynchos; American White Pelican
Botaurus lentiginosus; American Bittern
Buteo lineatus; Red-shouldered Hawk
Pandion haliaetus; Osprey
Tympanuchus cupido; Greater Prairie-chicken
Grus canadensis; Sandhill Crane
Rallus elegans; King Rail
Coturnicops noveboracensis; Yellow Rail
Gallinula chloropus; Common Moorhen
Bartramia longicauda; Upland Sandpiper
Limosa fedoa; Marbled Godwit
Phalaropus tricolor; Wilson's Phalarope
Sterna forsteri; Forster's Tern
Sterna hirundo; Common Tern
Asio flammeus; Short-eared Owl
Seiurus motacilla; Louisiana Waterthrush
Ammodramus henslowii; Henslow's Sparrow
Ammospiza caudacutus; Sharp-tailed Sparrow

* This is not an official category. A species is considered extirpated when it has been gone from the state as a naturally occurring population since the early 1900's but exists elsewhere as a wild population.

INTRODUCTION

The Bird Work Group of the Technical Advisory Committee to the Commissioner of Natural Resources on Endangered Species has produced a list of 32 species of Minnesota breeding birds in the following status categories:

Extirpated (5)
Endangered (6)
Threatened (2)
Special Concern (19)

An extirpated status, although not mentioned in the legislation that created the Advisory Committee, was included to give an accurate historical accounting of the avifauna of Minnesota. The definition used for extirpated is "a species that has been gone from the state as a naturally occurring population since the first half of the century but exists elsewhere as a wild population".

The members of the Bird Work Group gave freely of their time and expertise in this effort, motivated by the hope that a formal Minnesota list of endangered species will lead to better protection and the long-term survival of our native avifauna. The process we devised to develop the list and a summary of our recommendations are given below.

Process

The Bird Work Group used a process of information gathering and consensus decision-making that involved five steps to establish a final list.

First, in September 1981, a tentative working list of all possible species to consider was developed using the Minnesota Natural Heritage Program's breeding bird element list (Loon 53:7-8) plus any other extirpated, peripheral or pioneer species that the members of the committee could identify. This list totalled 82 species which represents approximately one third of the breeding avifauna and reflects Minnesota's geographic position at the intersection of three broad ecosystems - prairie, deciduous forest and coniferous forest. Second, using the definitions developed at the November 1981 meeting of the full Technical Advisory Committee (Attachment B to the minutes of that meeting), the tentative working list was reduced to a final working list of 45 species.

Next, a form for gathering information about these species was devised so that each committee member would have access to the same data. The categories covered were similar to those in the element ranking procedure of the Minnesota Natural Heritage Program with some differences in emphasis and calibration of the sub-units. Range, population size, habitat and breeding vulnerability were the broad categories for which information was sought. A sample of the form (Figure 1) is attached. The species were divided among the committee members and the completed forms were circulated to all members.

FIGURE 1: DATA SHEET

ENDANGERED SPECIES - BIRD GROUP

Species name:

RANGE

Total range size
Describe boundaries:

Include map (attached) with sketched boundaries

Minnesota Range
Describe boundaries:

Include sketch map
Estimate % of state (by 5%'s) -

Distribution within total range - circle one
1. very few locations* <100; estimated number:
2. intermediate number
3. widespread

*location = breeding area where birds within sight/sound of each other

Comments:

Distribution within Minnesota range - circle one
1. very few locations* <20
2. intermediate number
3. widespread

Comments:

Historical range changes
Describe:

POPULATION SIZE

Total population (breeding pairs) - circle one

1. 0-20	3. 101-1000
2. 21-100	4. > -1000

Minnesota population (breeding pairs) - circle one

1. 0-20	3. 101-500
2. 21-100	4. > -500

HABITAT (Breeding)
Type(s) used - describe in as much detail as possible (give references):

Adaptability (to variety of habitats) - circle one
1. rigid (one narrow habitat type)
2. intermediate
3. plastic (many habitat types)

Comments:

Threat of habtat destruction in state - circle one (these are TNC codes)
1. Very Threatened, habitat or community directly exploited, or threatened by natural forces.
2. Moderately Threatened, habitat or community lends itself to alternate uses by man.
3. Not Very Threatened, self-protecting by unsuitability for other uses.
4. Unthreatened

BREEDING VULNERABILITY - Additional factors; circle and/or describe
1. colonial nesting behavior
2. low breeding potential
3. bioaccumulation of pesticides
4. other

TAXONOMIC DISTINCTNESS - Indicate distinctness on a world-wide basis (TNC codes)
1. Very Distinct, e.g. monotypic family or higher taxon.
2. Distinct, e.g. monotypic genus (or one with very few species).
3. Moderately Distinct, e.g. good species but many species genus.
4. Hardly Distinct, e.g. mere subspecies of species in many species genus; questionable species.

STATUS IN OTHER STATES (to be filled in later when DNR compiles other state lists)

Compiler's name:

Using the information on the forms as well as combined committee field experience and knowledge, the fourth step was to make a final placement of species in the extirpated and endangered status categories. This was the easiest judgement to make and was done by consensus at a meeting in March 1982. Eleven species were assigned to these two status classes.

The final step, deciding which species should be given a threatened or special concern status, or eliminated completely, was more difficult. The first screening was a mail vote and produced very little agreement. The final selection was accomplished by discussion at a meeting in May 1982 and resulted in 21 species being placed in either a threatened or special concern status.

Our short-hand definition of the special concern status was as a "watch" category. We were worried about declines in either population or habitat, and thought that the species should be monitored with the aim of learning more about its biology. The factor that was given the most weight in placing a species in the special concern status, rather than eliminating it, was an indication of a decline in numbers or constriction in range in Minnesota and/or elsewhere as a result of known or suspected human activity. Declines that could be attributed to climate were not considered sufficient reason for a special concern status. It should be stressed that in almost no instance is good quantitative data available to document a decline. That is what we hope research on species in the special concern status will accomplish.

The last six months of 1982 were spent writing the status sheets for each species. These were assigned to individual members of the committee with the final editing done by the Bird Work Group Chairman and the Department of Natural Resources staff.

Summary of Recommendations

An analysis of the birds listed as endangered, threatened or special concern reveals that many of them are either predators or occupy two broad habitat types - prairies or wetlands (both shore and marsh).

The prairie birds are the most endangered because only very small remnants of this once widespread ecosystem remain in Minnesota. In fact two of the three upland prairie passerines on the list (Sprague's Pipit and Baird's Sparrow) may no longer survive in the state. Concentrated field work is needed to assess their presence and precise habitat requirements.

Further elimination of the remaining native grasslands by conversion to other land uses should be prevented wherever feasible using a variety of methods: land acquisition, easements, tax incentives, and cooperative agreements. To avoid local extinction of species through excessive fragmentation of habitat, emphasis should be placed on protecting large blocks of prairie rather than small isolated tracts. More attention should be paid to the needs of short-grass species like the Chestnut-collared Longspur and Marbled Godwit on existing

publicly owned or managed prairie tracts. An annual census is presently conducted for the Greater Prairie-Chicken. The Upland Sandpiper, another species that requires large areas of grassland, should also be monitored for population trends.

The wetland species can be considered in two groups. One is composed of marsh-dwelling birds, mostly secretive in habits, about which we know very little. Censuses are needed for a base-line determination of their distribution and population. Information from the field and literature should be gathered to better understand their basic habitat requirements. Species in this group are Horned Grebe, American Bittern, Sandhill Crane, King Rail, Yellow Rail, Common Moorhen, Wilson's Phalarope, Forster's Tern and Sharp-tailed Sparrow.

The other group associated with wetlands consists of colonial species that nest adjacent to water, usually on islands. Only those species with very few breeding locations in Minnesota, making them especially vulnerable to disturbance or habitat destruction, were included: Piping Plover, American White Pelican and Common Tern. Their colony sites should be inventoried and a program for monitoring their numbers should be initiated. Management to prevent disturbance is also a compelling need for these sites.

The last broad category of species on the list are the predators: Burrowing Owl, Bald Eagle, Loggerhead Shrike, Osprey, Red-shouldered Hawk and Short-eared Owl. The population decline of a few of these species is attributable to habitat destruction, but for others the bioaccumulation of chemical poisons in their food chain seems to be a deciding factor in lowering their breeding productivity.

The Peregrine Falcon is the classic example of this latter situation. Efforts are presently underway to reintroduce this species to Minnesota with the goal of establishing a free-flying breeding population. Any efforts to reintroduce other extirpated species should be preceded by a thorough assessment of the chances of success in reaching the same goal.

The status sheets for each species include more specific recommendations. The most common are inventories to identify breeding locations and censuses to monitor populations for any declines that might indicate that the species is in trouble in Minnesota. Wherever possible, programs to accomplish these tasks should be incorporated into on-going inventory and monitoring efforts already underway within the Section of Wildlife.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cygnus buccinator

COMMON NAME: Trumpeter Swan

STATE STATUS: Extirpated (as a breeding bird)

Adjacent states/provinces: Extirpated in Wisconsin

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The last state breeding record for a wild population was about 1885.

OCCURRENCE IN MINNESOTA: The Trumpeter Swan was probably a widespread but uncommon breeder throughout the prairies and parkland regions of the state up to the early 1800s, gradually decreasing as settlements advanced. In 1969, a a captive flock, where some individuals are permitted to free-fly, was started in Hennepin County. By 1982, the size of the flock had grown to 52 birds. As a wild migrant, the species is accidental with only one record in the last 50 years.

DISTRIBUTION: The species once nested from Illinois, Missouri and Nebraska northward through the northern states to Alaska and in Canada from James Bay west to British Columbia. Now the breeding range has shrunk to fewer than a dozen parks and refuges in several western states and to remnants of the original range in western Canada and Alaska. The winter range, which once included the Mississippi River Valley, mid-Atlantic coast and Gulf Coast into northern Mexico, now is limited to a few places in Alaska and British Columbia and the tri-state area of Montana, Idaho and Wyoming.

PREFERRED HABITAT: During the breeding season Trumpeter Swans select small ponds and lakes or bays having extensive beds of cattail, bulrush, sedges and/or horsetail. Muskrat houses and beaver lodges are frequently used for nesting platforms. The swans often protect large territories (100 acres or more) during the nesting period and are intolerant of crowding. For proper growth the cygnets require an abundant supply of aquatic insects, crustacea and a daily supply of certain aquatic plants such as sago, waterweed, water buttercup and duckweed. Lack of adequate wintering areas is considered to be a critical limiting factor.

RECOMMENDATIONS: The state should coordinate and cooperate with the Trumpeter Swan Society, an internationally based organization, in any Trumpeter Swan work undertaken in Minnesota. Until habitat and wintering requirements are well understood any restoration effort should proceed with caution.

SELECTED REFERENCES:

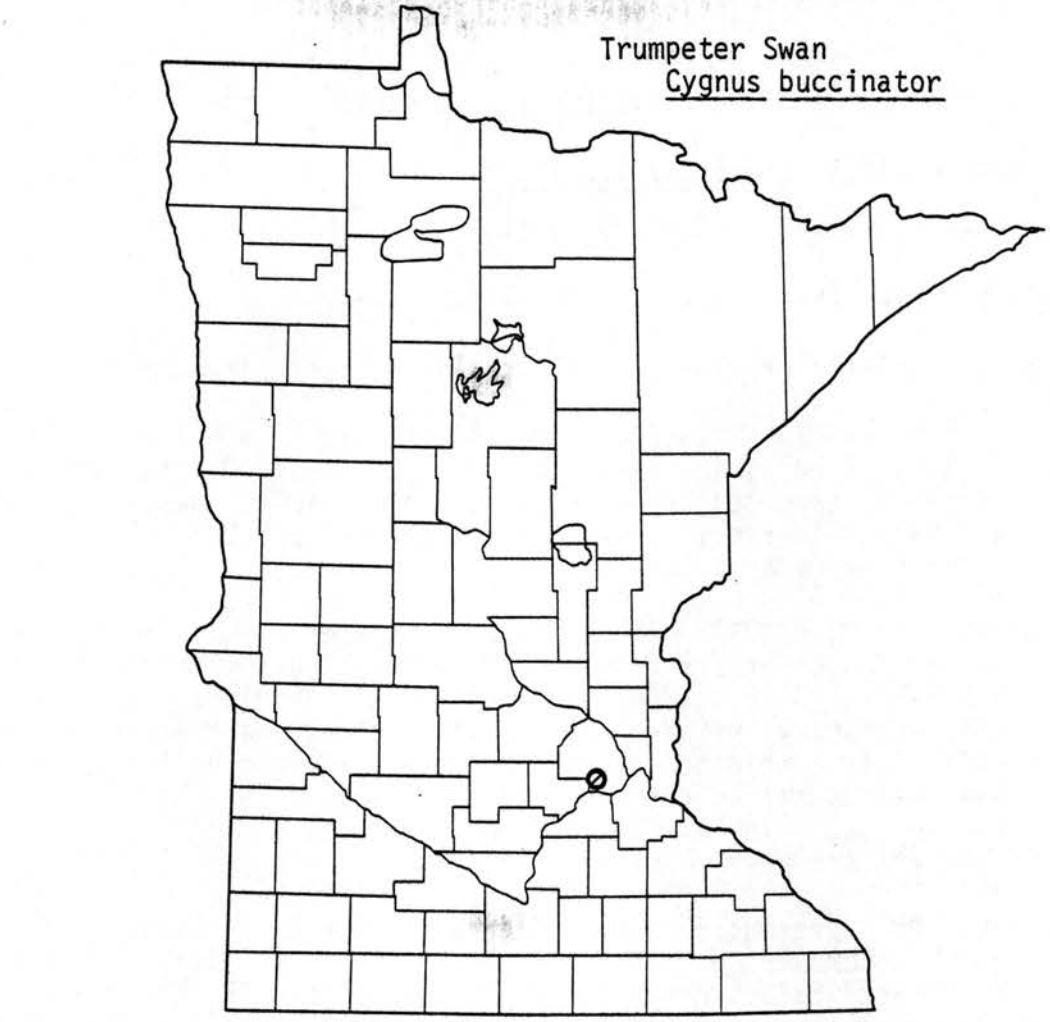
Bellrose, F.C. 1976. Ducks, geese and swans of North America. Stackpole Books, Harrisburg, PA. 544 pp.

Weaver, D.K. (editor). 1981. Proceedings and papers of the 6th Trumpeter Swan Society Conference. The Trumpeter Swan Society. 101 pp.

Anonymous. 1982. The Trumpeter Swan Society Newsletter #23.

PREPARED BY: Art Hawkins

Trumpeter Swan
Cygnus buccinator





SPECIES STATUS SHEES

SCIENTIFIC NAME: Elanoides forficatus

COMMON NAME: Swallow-tailed Kite

STATE STATUS: Extirpated (as a breeding bird)

Adjacent states/provinces: Extirpated in Wisconsin

BASIS FOR MINNESOTA STATUS: The Swallow-tailed Kite was extirpated as a breeding species in Minnesota shortly after 1900. Since the first decade of this century it has occurred as an accidental visitor with a total of 14 records, the most recent in May 1976 at Itasca State Park, Clearwater County.

OCCURRENCE IN MINNESOTA: In the 1800s, the species was reported nesting in deciduous forests from the Twin Cities northwest at least to Itasca State Park. The species declined rapidly in Minnesota around the turn of the century; it was last reported during the breeding season in about 1907. Its precipitous decline probably was caused largely by shooting. The Swallow-tailed Kite is very consipicuous and therefore vulnerable to shooting. The availability of deciduous habitat still seems to be adequate for nesting birds.

DISTRIBUTION: Presently the species range extends across the Gulf Coast of the southeastern United States, from Louisianna to South Carolina. It is considered rare everywhere except in southern Florida. The Kite is also distributed throughout tropical America. It formerly ranged across the interior Mississippi River Valley to northern Minnesota.

PREFERRED HABITAT: The species inhabits deciduous woods, wooded river bottoms and southern pine forests. Its behavior is social, especially in migration. Prey items consist primarily of insects, small reptiles, amphibians, and, rarely, small mammals.

RECOMMENDATIONS: Consideration should be given to reintroduction, probably by cross-fostering with Broad-winged Hawks. The continuation of full legal protection is required.

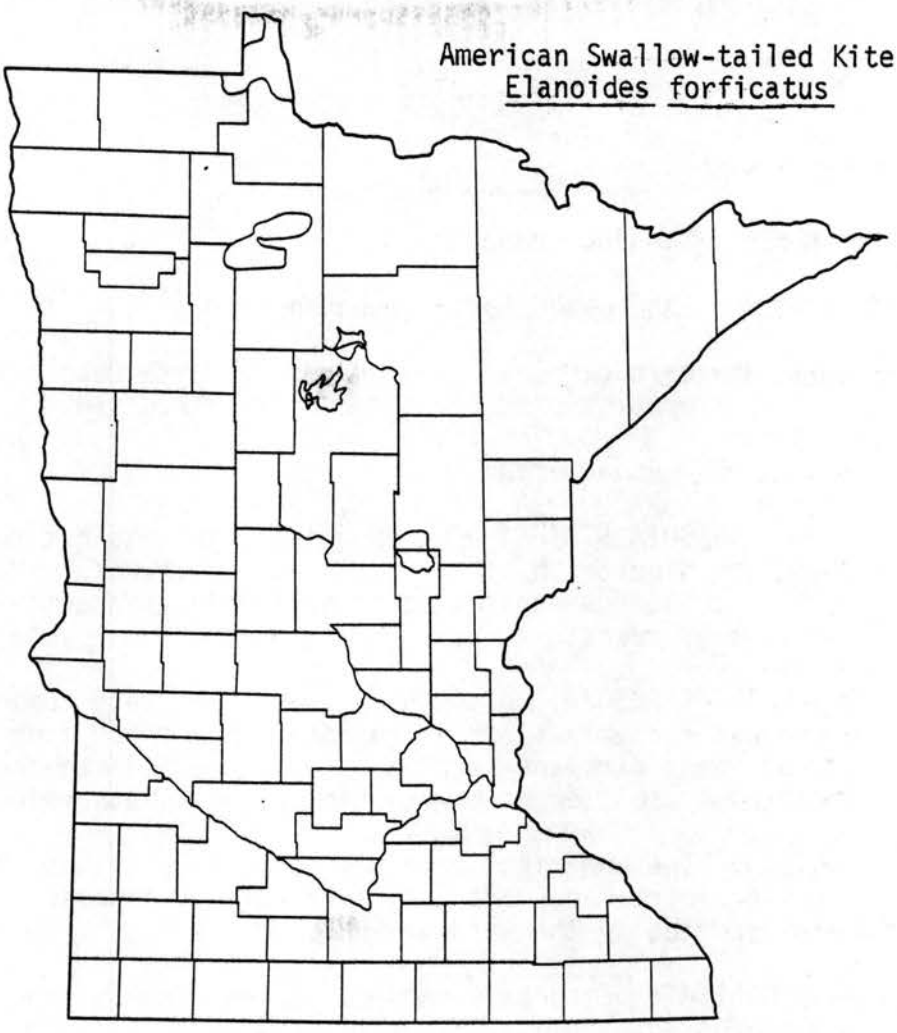
SELECTED REFERENCES:

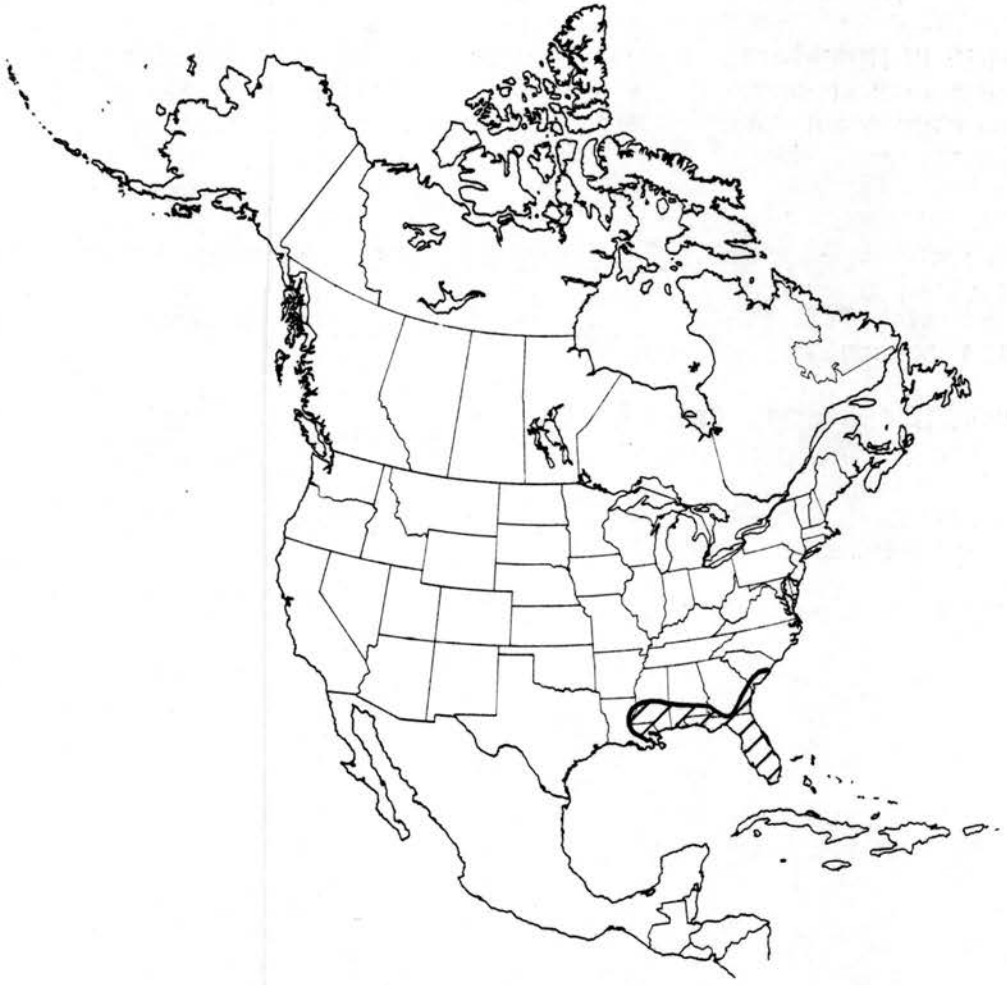
May, J.R. 1935. The hawks of North America. National Association of Audubon Societies, N.Y. 140 pp.

Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Harrison B. Tordoff

American Swallow-tailed Kite
Elanoides forficatus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Grus americana

COMMON NAME: Whooping Crane

STATE STATUS: Extirpated (as a breeding bird)

Adjacent states/provinces: Endangered in North Dakota and South Dakota (as a migrating bird); extirpated in Wisconsin.

FEDERAL STATUS: Endangered

BASIS FOR MINNESOTA STATUS: The Whooping Crane has not nested in Minnesota since the nineteenth century (the last nest was in Marshall County in 1889). It is now considered an accidental migrant with only one record in the last 50 years.

OCCURRENCE IN MINNESOTA: Although it was never very common, the Whooping Crane was formerly a summer resident throughout most of the prairie and adjacent parkland-savannah. This species requires solitude and was impacted by settlement before habitat was destroyed.

DISTRIBUTION: The Whooping Crane now nests only in Wood Buffalo National Park in Alberta and Northwest Territories, Canada. A total of 95 birds were reported in the wild in 1981.

PREFERRED HABITAT: Extensive marshes dotted with numerous shallow ponds are preferred; isolation is extremely important.

RECOMMENDATIONS: Nothing can be done to restore this species as a nesting bird in Minnesota. Proper hunting regulations and education are necessary to protect any migratory strays from accidental shooting, especially in northwestern Minnesota.

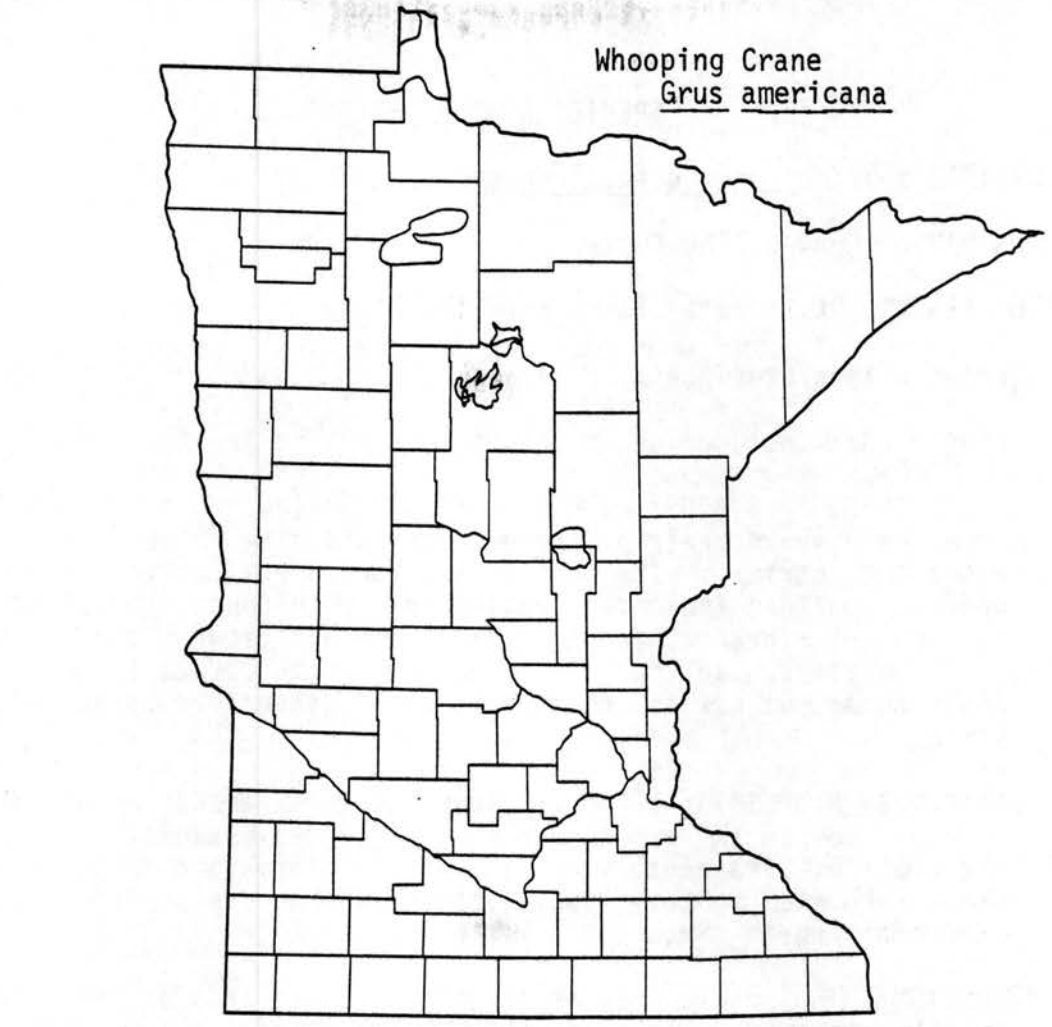
SELECTED REFERENCES:

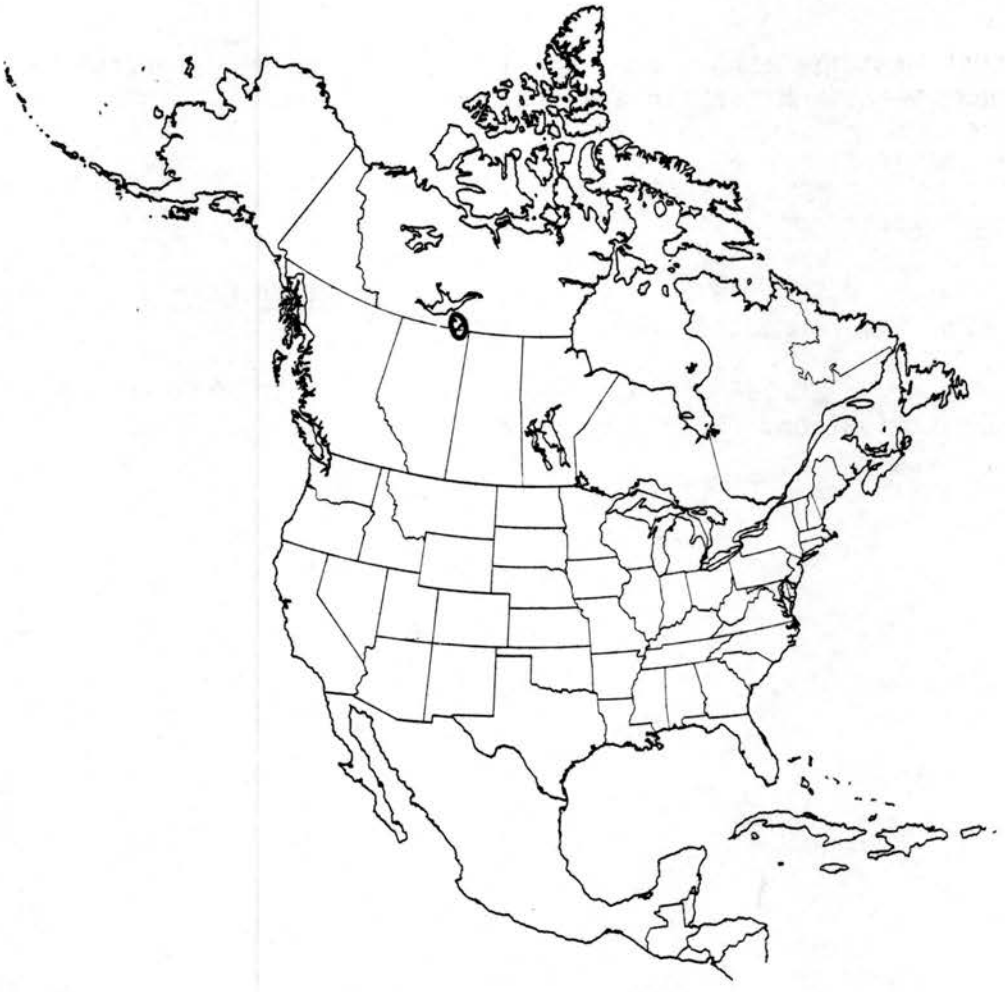
Allen, R. P. 1952. The Whooping Crane. National Audubon Society. 246 pp.

Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Janet C. Green

Whooping Crane
Grus americana





SPECIES STATUS SHEET

SCIENTIFIC NAME: Numenius americanus

COMMON NAME: Long-billed Curlew

STATUS STATUS: Extirpated (as a breeding bird)

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The Long-billed Curlew rapidly disappeared from the western prairie margin of the state by the end of the nineteenth century. The most recent record available is one summer observation that indicated nesting in Norman County in 1920. Now it is a casual migrant throughout the state with four records in the last ten years. In the 19th century in North Dakota it was widely distributed but now is confined to the southwestern corner of the state.

OCCURRENCES IN MINNESOTA: Almost nothing is known about the nesting of this species in the nineteenth century before extensive settlement on the prairie. Fragmentary and anecdotal information indicates that it was a rare and probably local resident on the dry prairies from Jackson County north through the Red River Valley.

DISTRIBUTION: The species ranges across the grasslands of the high plains and intermontane valleys of southern Canada and the western United States.

PREFERRED HABITAT: Short-grass prairie or grazed mixed-grass prairies on gently rolling terrain are preferred.

RECOMMENDATIONS: None

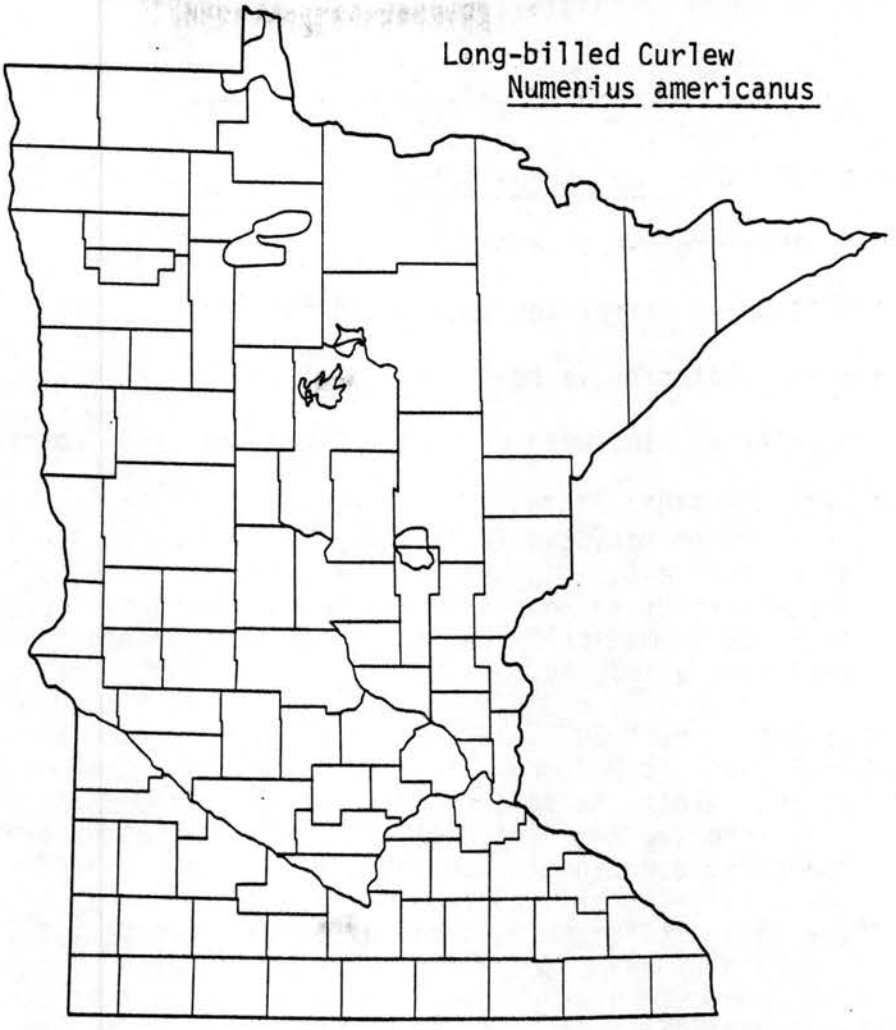
SELECTED REFERENCES:

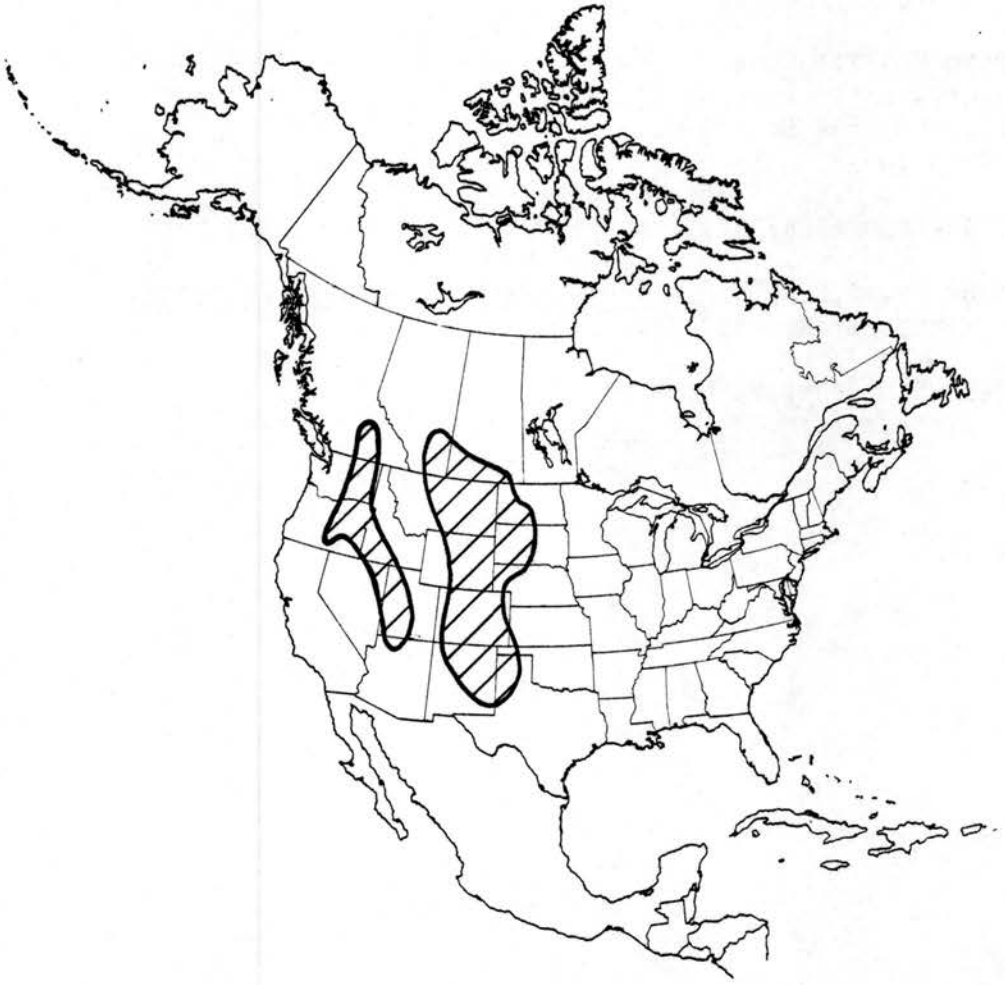
Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

Renaud, W.E. 1980. The Long-billed Curlew in Saskatchewan: status and distribution. Blue Jay 38:221-237.

PREPARED BY: Janet C. Green

Long-billed Curlew
Numenius americanus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Calcarius mccownii

COMMON NAME: McCown's Longspur

STATE STATUS: Extirpated (as a breeding bird)

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The McCown's Longspur has not been recorded as a summer resident in the state since 1900. Now it is classified as an accidental migrant with only one observation since 1900. In North Dakota, in the early decades of the 20th century, populations declined dramatically and the range east of the Missouri River was virtually abandoned.

OCCURRENCES IN MINNESOTA: By 1900 the species had disappeared as a summer resident. It was probably always rare and local on the high, dry prairie along the southwestern border of the state and possibly northward into the Red River Valley. Nesting records are available from Pipestone and Lincoln Counties.

DISTRIBUTION: Its breeding range extends across semi-arid plains from southern Canada to northern Colorado.

PREFERRED HABITAT: The McCown's Longspur selects short-grass prairie and heavily grazed, dry mixed-grass prairie or rangeland.

RECOMMENDATIONS: None

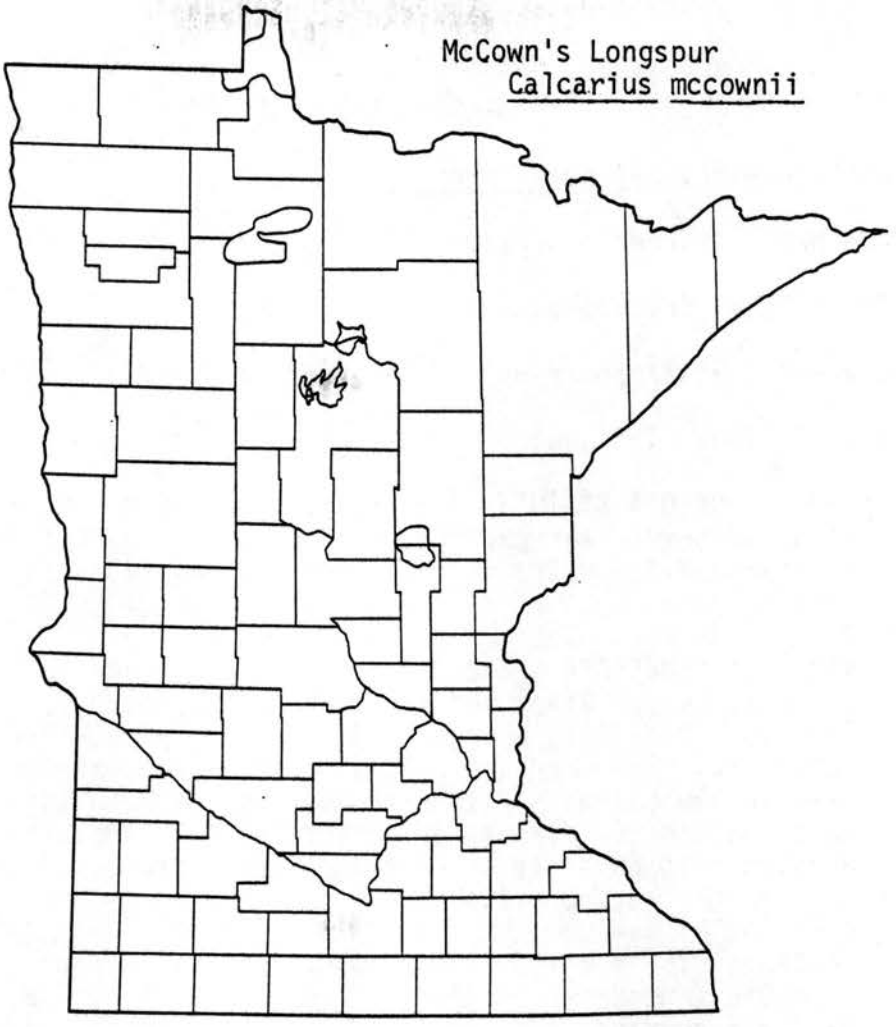
SELECTED REFERENCES:

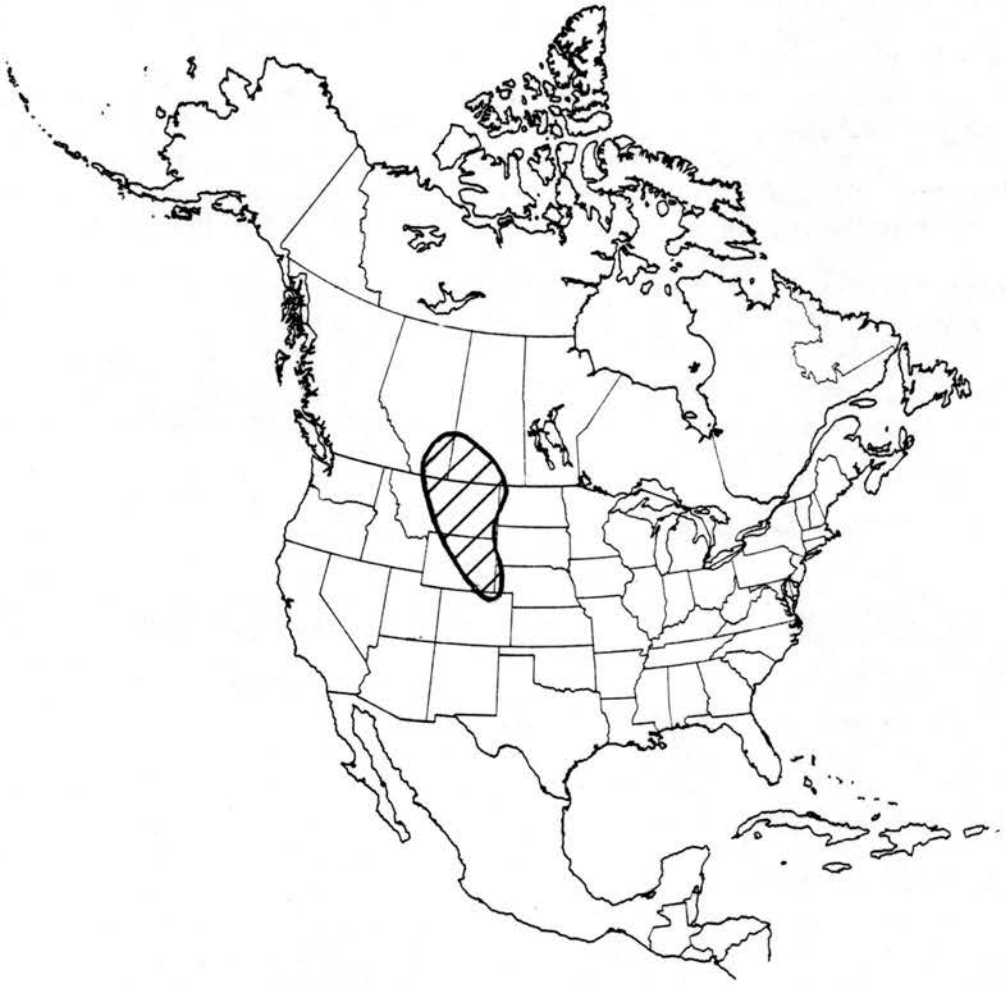
Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Janet C. Green

McCown's Longspur
Calcarius mccownii





SPECIES STATUS SHEET

SCIENTIFIC NAME: Falco peregrinus

COMMON NAME: Peregrine Falcon

STATE STATUS: Endangered

Adjacent states/provinces: Endangered in all adjacent states and Canada

FEDERAL STATUS: Endangered

BASIS FOR MINNESOTA STATUS: A breeding population, which once totaled perhaps 30 or 40 pairs, was extirpated in the state by DDT poisoning between about 1946 and 1962. Migrants from Arctic populations still pass through Minnesota.

OCCURRENCE IN MINNESOTA: The Peregrine Falcon formerly nested on bluffs along the Mississippi River and its tributaries south of Red Wing and into Iowa (perhaps 20 pairs), along the St. Croix river (a few pairs), on cliffs along the North Shore (perhaps half a dozen pairs), and in the Boundary Water Canoe Area (a few pairs). Extirpated by pesticide poisoning, the falcon last nested along the Mississippi River in 1962. Populations elsewhere in the eastern U.S. have also been eliminated. Arctic birds, however, still migrate through the entire state.

DISTRIBUTION: The species is worldwide in distribution. Although it does not breed in some areas of the tropics or in Antarctica, it is probably the most widely occurring land bird, often migrating far out over open oceans. The population in the United States and southern Canada, east of the Rocky Mountains, was eliminated by pesticides in the 1950s.

PREFERRED HABITAT: In Minnesota the falcon nested on cliff ledges, mostly along rivers or lakes. The population may be limited in part by the availability of suitable cliffs for nesting. Elsewhere, the bird nests at times in trees (broken off stubs, tree cavities) and on open ground. Birds ranging in size from warblers to ducks constitute the major prey items.

RECOMMENDATIONS: A substantial reintroduction effort began in 1982, after initial attempts in 1976 and 1977 failed. Protection whould be given to cliffs that are considered essential for nesting in order to discourage development for housing. It is essential that pesticide levels in the avian food supply and in rivers and lakes continue to be monitored to prevent repetition of the disaster of the 1950s.

SELECTED REFERENCES:

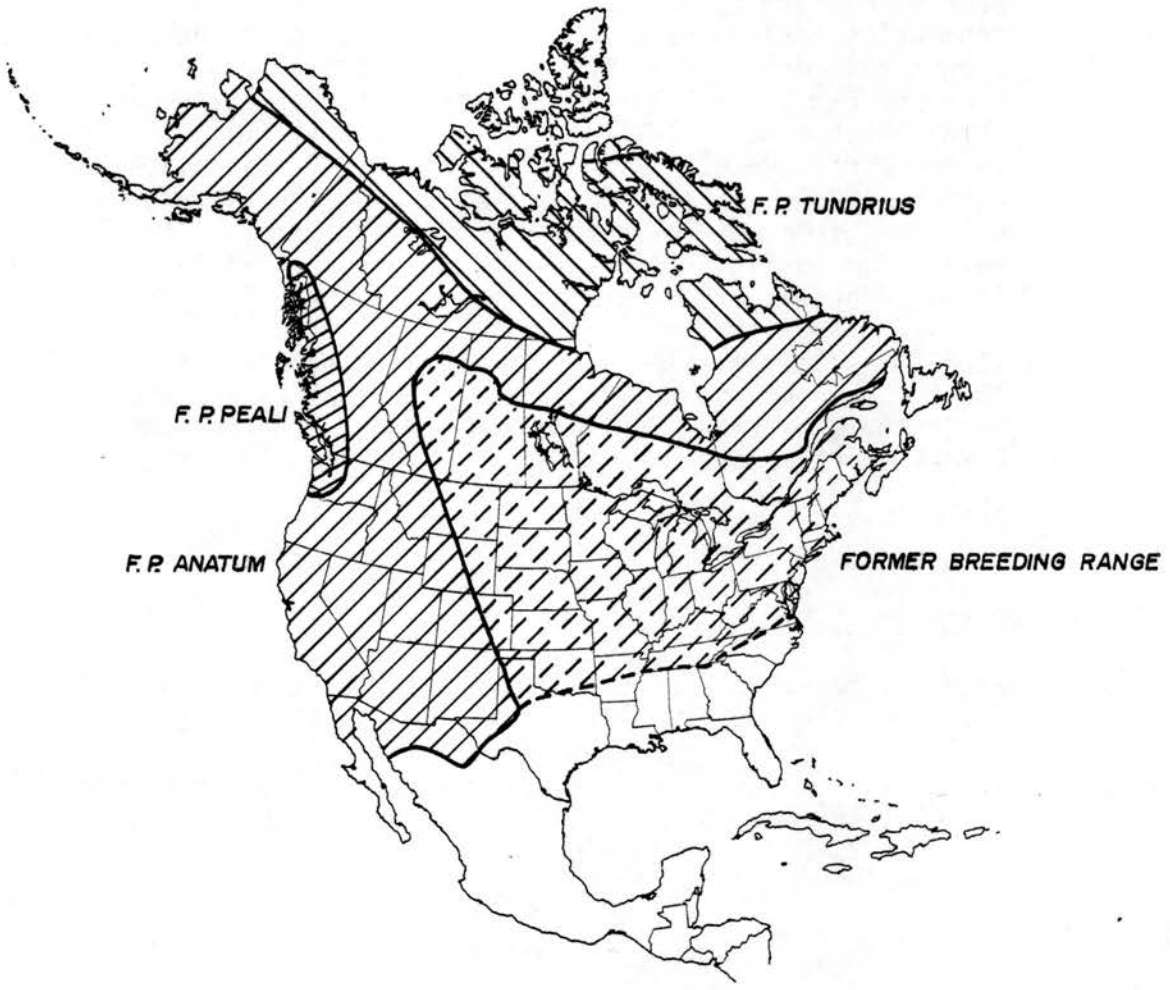
Hickey, J. J. (editor). 1969. Peregrine Falcon populations: their biology and decline. University of Wisconsin Press, Madison. 596 pp.

Johnson, D. H. 1982. Raptors of Minnesota: nesting distribution and population status. Loon 54:89-91.

U.S. Fish and Wildlife Service. 1979. Eastern Peregrine Falcon Recovery Plan. 147 pp.

PREPARED BY: Harrison B. Tordoff

Peregrine Falcon
Falco peregrinus



SPECIES STATUS SHEET

SCIENTIFIC NAME: Charadrius melodus

COMMON NAME: Piping Plover

STATE STATUS: Endangered

Adjacent states/provinces: Endangered in Wisconsin and Ontario; Extirpated in Iowa.

FEDERAL STATUS: Included under the Migratory Bird Treaty Act; nominated for inclusion on the Endangered Species list.

BASIS FOR MINNESOTA STATUS: Recent surveys of the two known nesting colonies with long-term occupancy (Duluth, Lake of the Woods) indicate that about 18 pair breed in the state. The Duluth harbor population has declined from probably no more than 6-8 pair in the early 1970s to two pair in 1982. It is most likely being impacted by predation from an expanding Ring-billed Gull population as well as human disturbance. The Lake of the Woods population is larger and more stable but is concentrated in only one location (the tip of Pine Island) where the sandy beach habitat preferred by this species makes it especially vunerable to disturbance by recreationists who also like beaches. The Great Lakes population has declined dramatically in the last decade to where it is either threatened or endangered in all states.

OCCURRENCE IN MINNESOTA: The two major breeding locations known today were not discovered until the 1930's and nesting observations have been made there sporadically since then. The Duluth-Superior harbor population has nested at a number of sites over the years, usually unvegetated dredge disposal areas, and has always been small, on the order of 6-8 pair. The Lake of the Woods population occupies at least three beach sites in Minnesota but almost all birds (14 pair) occur in the Morris Point - Pine Island colony (T. Wiens, personal communication, 1982). In the 1930s, during low water levels, a very few breeding birds were also found along lake margins in west-central Minnesota. Similarly, in 1980, when the main pool at Agassiz National Wildlife Refuge was dry, four pair nested there.

DISTRIBUTION: There are three North American populations: the Atlantic Coast (Newfoundland to Virginia); the Great Lakes (excluding the rocky, north shore of Lakes Superior and Huron); and the northern Great Plains (particularly the Missouri River and large Canadian Lakes).

PREFERRED HABITAT: Sandy beaches or sparsely vegetated shorelines that have a gravel or pebbly-mud substrate are preferred.

RECOMMENDATIONS:

Lake of the Woods

1. Continue monitoring the population.
2. Pursue land acquisition of the major colony.
3. Develop a management plan and a public education program to preserve open habitat and to minimize disturbance and predation in the major colony.

Con't

RECOMMENDATIONS (con't)

Duluth

1. Pursue habitat alteration on the Hearding Island WMA to produce the bare, sandy ground necessary for nesting.
2. Develop a joint program with the Wisconsin DNR and other state and federal agencies to create or protect other open, bare areas in the harbor that have a minimum disturbance potential and to attract birds to these areas.
3. Study the breeding biology of the few remaining pairs at the Port Terminal industrial site and determine the causes of the population decline.

SELECTED REFERENCES:

Cairns, W. E. 1977. Breeding biology and behavior of the Piping Plover (Charadrius melodus) in southern Nova Scotia. M.S. Thesis. Dalhousie Univ., Halifax, N.S. 115.pp.

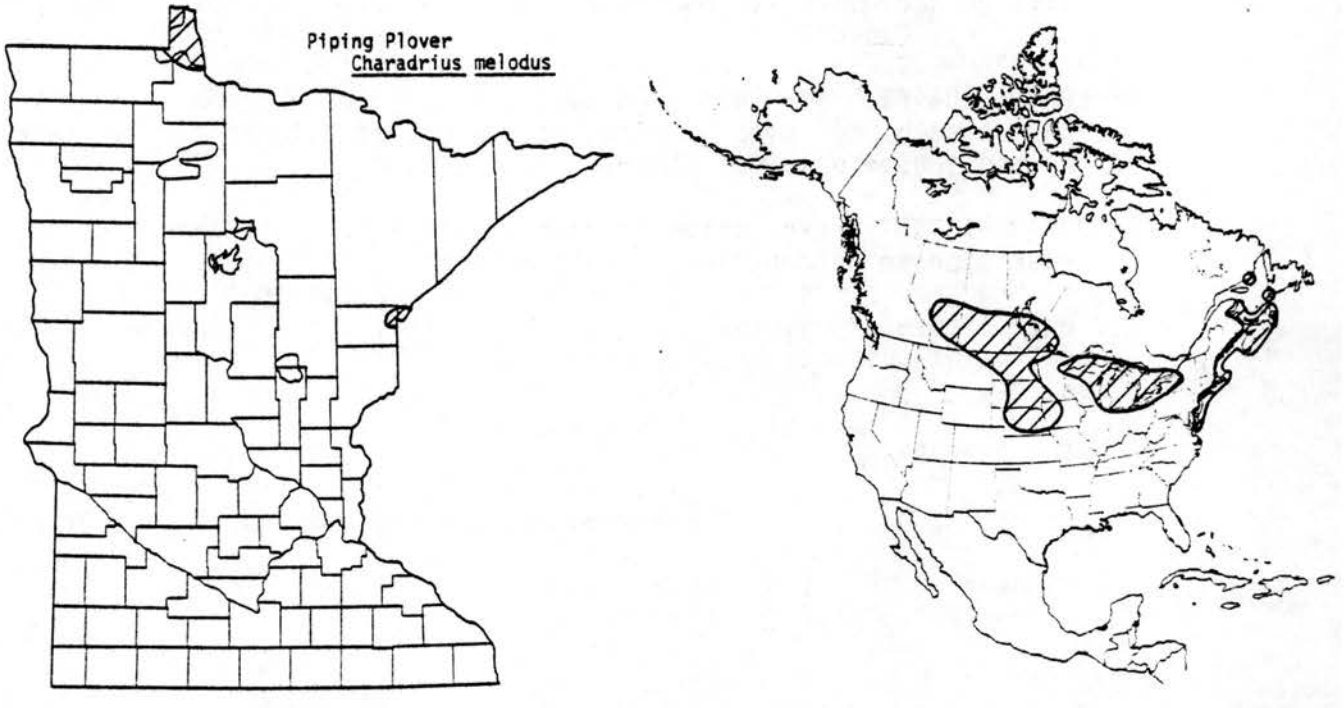
Cairns, W. E., and I. A. McLaren. 1980. Status of the Piping Plover on the East Coast of North America. Amer. Birds 34:206-208.

Committee on Saving Endangered Wildlife in Canada. 1980. The Status of the Piping Plover in Canada. 40 pp.

Lambert, A. and B. Ratcliff. 1981. Present status of the Piping Plover in Michigan. Jack Pine Warbler 59:44-52.

Niemi, G. J., and T. E. Davis. 1979. Notes on the nesting ecology of the Piping Plover. Loon 51:74-79.

PREPAPED BY: Janet C. Green



SPECIES STATUS SHEET

SCIENTIFIC NAME: Athene cunicularia

COMMON NAME: Burrowing Owl

STATE STATUS: Endanagered

Adjacent states/provinces: Endangered in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The abundance of this species in Minnesota has declined dramatically over the past 40 years. The last viable population was in the early 1960s in the west-central part of the state at a time when there was uncultivated land retained in the "soil bank" program. The species was considered common in this area in the 1930s and 1940s. In the last decade there have been only five summer records, all of nesting pairs that have been reported to the DNR or the MOU because of heightened recognition of its rare status. In each case the birds were not found in the same locality in subsequent years. The loss of pastures and prairies in the western part of the state is obviously a factor in the decline of this species, but there still seems to be habitat that remains unused or is only intermittently occupied.

OCCURRENCE IN MINNESOTA: The Burrowing Owl once bred throughout the western prairie margin of the state from Jackson to Marshall County. Field data from the 19th century is so slim that it is hard to judge if the expansion into Minnesota that was identified by T.S. Roberts was real or not. It was a regular breeding bird of the prairie in the first half of this century. Now it is a sporadic nesting bird in the same area with scattered breeding pairs in Cottonwood (1974), Lincoln (1975), Big Stone (1977), Clay (1980) and Stevens (1981) Counties.

DISTRIBUTION: The western race of the species (which includes the Minnesota population) is distributed throughout the western half of the United States, excluding the humid Pacific Northwes, and in the prairie provinces of Canada.

PREFERRED HABITAT: The Burrowing Owl selects heavily grazed pasture or prairie populated by colonies of Richardson's ground squirrels. Badger holes are commonly used as a nest burrow.

RECOMMENDATIONS: Preservation of short-grass habitat is important as is education to help prevent shooting of individual birds and disturbance of breeding pairs. Sites where the owl has occurred in the past should be monitored to see if they are reoccupied, while a thorough investigation of suitable habitat should be initiated to locate more breeding birds.

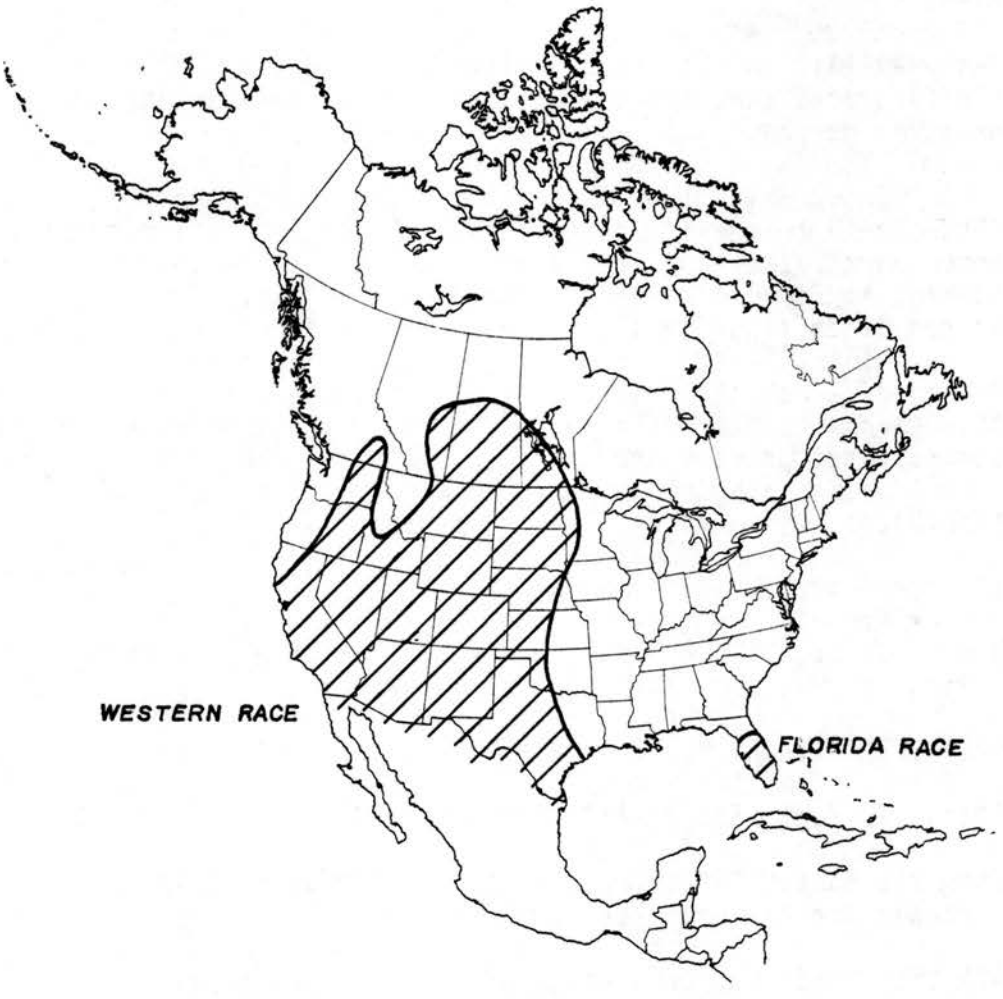
SELECTED REFERENCES:

Grant, R. A. 1965. The Burrowing Owl in Minnesota. Loon 37:2-17.

Johnson, D. H. 1982. Raptors of Minnesota - nesting distribution and population status. Loon 54:95-96.

PREPARED BY: Robert B. Janssen

Burrowing Owl
Athene cunicularia



SPECIES STATUS SHEET

SCIENTIFIC NAME: Anthus spragueii

COMMON NAME: Sprague's Pipit

STATE STATUS: Endangered

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: During the last 20 years this species has been consistently reported in summer, and therefore presumed nesting, from only one location - the Felton Prairie in Clay County. Much of the private grassland on this Glacial Lake Agassiz beach ridge has been converted to cropland in recent years, leaving a small, fragmented prairie habitat that may not even support a population of this species any longer. Furthermore the few protected prairie tracts at this location are not being managed with the requirements of this species in mind. It still occurs, but is rare and local, in the Red River Valley of North Dakota.

OCCURRENCE IN MINNESOTA: The only breeding evidence for Minnesota is from the northwestern prairies; in the 1920s it was one of the common birds of the Red River Valley. There is no information about its decline from then until the 1960s when it was found on the beach ridge at Felton.

DISTRIBUTION: The pipit is a regional endemic species restricted to the Northern Great Plains in the United States and the Canadian Prairie Provinces.

PREFERRED HABITAT: Mixed-grass prairie on uplands are preferred, particularly tracts that are ungrazed, lightly grazed or only occasionally mowed or burned.

RECOMMENDATIONS: Suitable grasslands in Clay County should be surveyed intensively to see if the species still occurs as a nesting bird; other northwestern prairie areas should be surveyed to see if the species is found elsewhere. The remaining prairie habitat on the Felton Beach ridge should be protected from conversion to cropland, gravel mining, etc. Further protection can be accorded by integrating the species habitat requirements into management plans for prairies in Clay County that are already protected. Training workshops for field naturalists, private and public, should also be conducted so that individuals can be taught to recognize the songs of this inconspicuous species.

SELECTED REFERENCES:

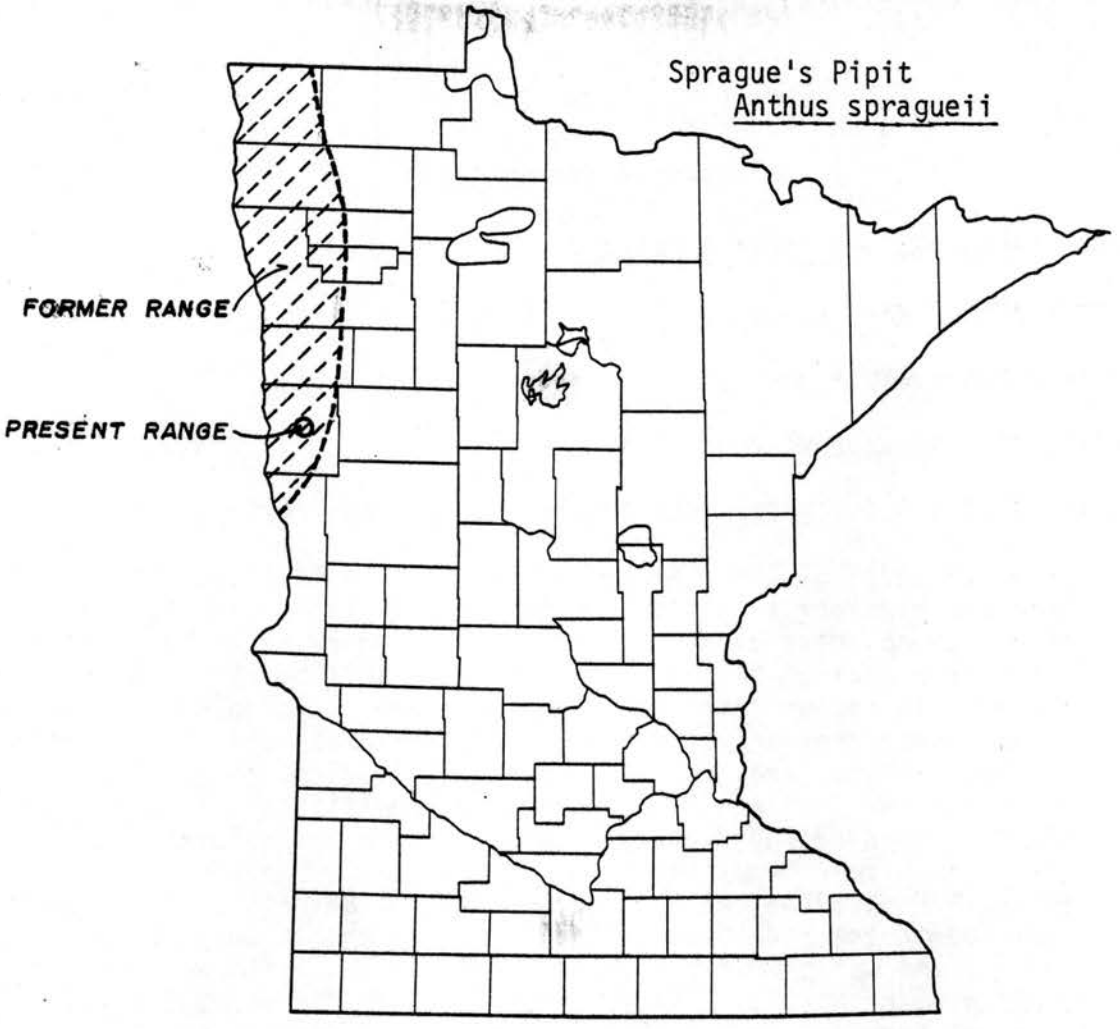
Maher, W. J. 1979. Nestling diets of prairie passerine birds at Matador, Saskatchewan, Canada. Ibis 121:437-452.

Owens, R. A., and M. T. Myres. 1973. Effects of agriculture upon populations of native passerine birds of an Alberta fescue grassland. Can. J. Zool. 51:597-713.

Stewart, Robert E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

PREPARED BY: Janet C. Green

Sprague's Pipit
Anthus spragueii





SPECIES STATUS SHEET

SCIENTIFIC NAME: Ammodramus bairdii

COMMON NAME: Baird's Sparrow

STATE STATUS: Endangered

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: Since the early 1960s this species has been found with any regularity only on the Felton Prairie in Clay County. It has not been located there every year and no nesting evidence has been reported. The native prairie on the Glacial Lake Agassiz beach ridge at Felton has suffered in recent years from the conversion to cropland and is under long-range threat from gravel mining. The remaining habitat, including both public and private land, may no longer be sufficient to sustain a population of this species. In North Dakota breeding populations are greatly reduced; in the Red River Valley it now is found only in Grand Forks County.

OCCURRENCE IN MINNESOTA: As a breeding bird the Baird's sparrow was always confined to the Red River Valley, from Traverse County north to the Canadian border, and was probably never very abundant. Field work by the staff of the Museum of Natural History, University of Minnesota, in the 1920s rated it "common" in suitable dry prairie habitat in the upper Red River Valley. There is virtually no information about this species from the 1920s to the 1960s.

DISTRIBUTION: This sparrow is a regional endemic species restricted to the northern Great Plains in the United States and the Canadian Prairie Provinces.

PREFERRED HABITAT: Dry, native grassland where the grass is fairly long (mixed-grass prairie) is preferred. In the heart of its range the species tolerates more grazing and uses a greater variety of grassland habitats.

RECOMMENDATIONS: An in-depth inventory of the Felton prairie and other suitable grasslands in Clay County should be initiated to document the species presence and status. More prairie in this critical area of Clay County should be protected. Reconnaissance of other northwestern prairies, especially in Polk, Pennington and Marshall counties also is recommended to see if the species is found elsewhere. Because of the difficulty in recognizing both the songs and plumage of this sparrow it would be valuable to organize training workshops for field naturalists, both private and public.

SELECTED REFERENCES:

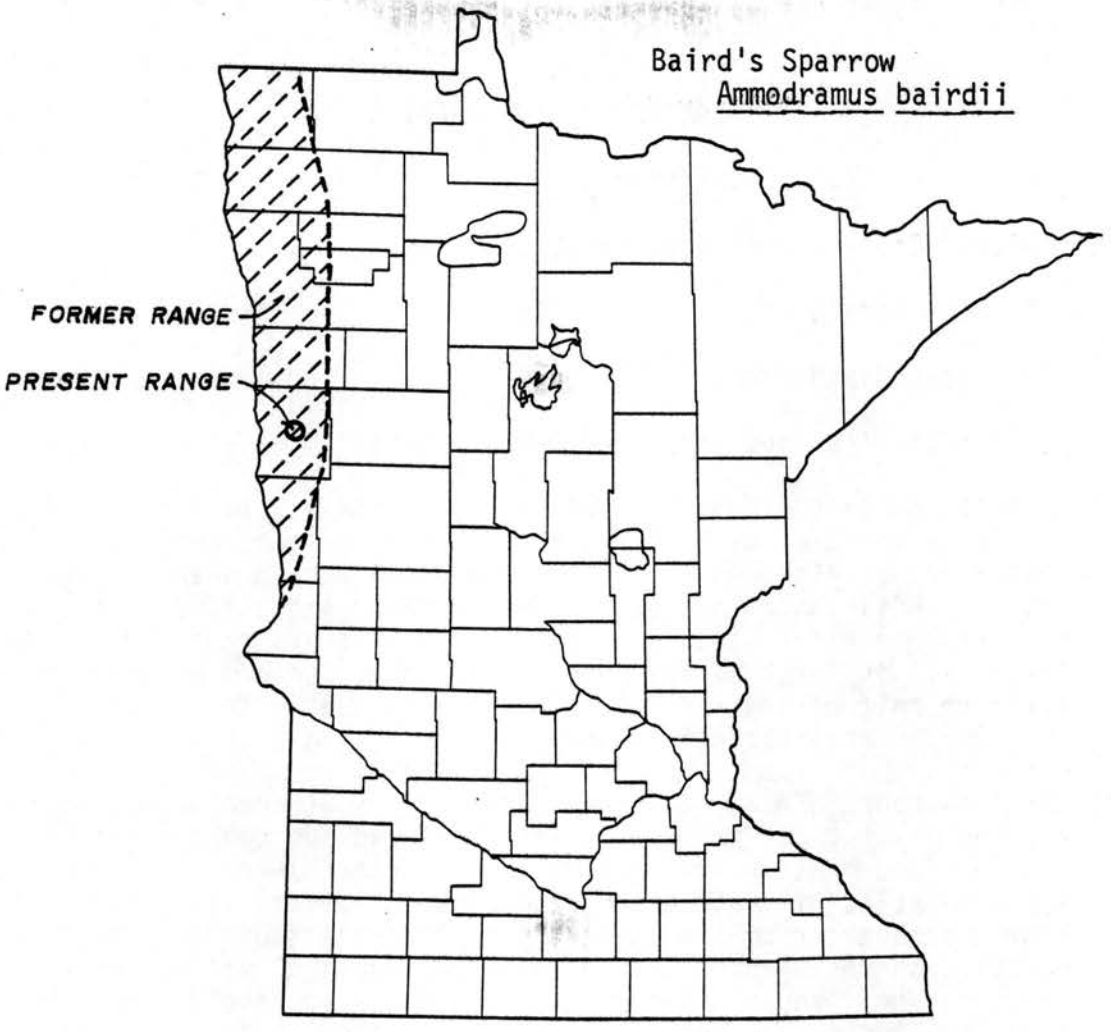
Maher, W. J. 1979. Nestling diets of prairie passerine birds at Matador, Saskatchewan, Canada. Ibis 121:437-452.

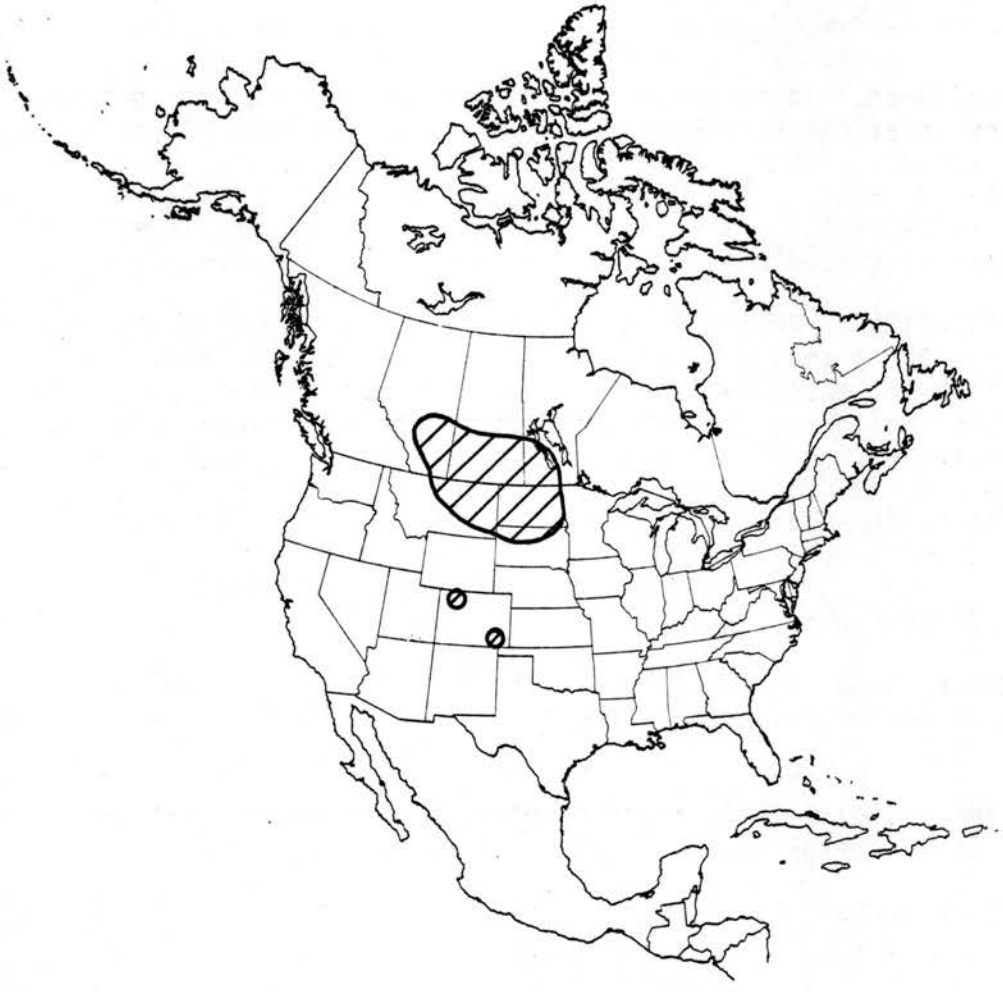
Owens, R.A., and M.T. Myres. 1973. Effects of agriculture upon populations of native passerine birds of an Alberta fescue grassland. Can. J. Zool. 51:697-713.

Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

PREPARED BY: Janet C. Green

Baird's Sparrow
Ammodramus bairdii





SPECIES STATUS SHEET

SCIENTIFIC NAME: Calcarius ornatus

COMMON NAME: Chestnut-collared Longspur

STATE STATUS: Endangered

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The only known viable population of this species exists on the Glacial Lake Agassiz beach ridge east and south of Felton, Clay County. Although up to 50-60 males have been seen in recent years (early 1980s) the colony occurs on private grazing land which easily can be converted to other uses (gravel, cropland) as has happened to the adjacent prairies. In North Dakota this species is described as uncommon in the northern half of the Red River Valley and rare in the southern half; it is uncommon in northeastern South Dakota.

OCCURRENCE IN MINNESOTA: The longspur formerly (19th century) occurred throughout the dry, upland western prairie from Jackson County north to Canada; it was most abundant in the southwestern counties where more suitable habitat was available. As settlement progressed, however, it rapidly disappeared from that quarter of the state and by 1930 was found only in a few isolated colonies on the Glacial Lake Agassiz beach ridges of the Red River Valley. Today the only known breeding colony is in Clay County although there have been isolated summer reports of males in other locations.

DISTRIBUTION: The species is distributed across the northern Great Plains, confined mostly to the United States but including the southern Prairie Provinces. It is considered a regional endemic but is more widespread than the other two northern grassland passerines - the Baird's Sparrow and Sprague's Pipit.

PREFERRED HABITAT: Grazed or hayed mix-grass prairie, mowed hayfields and heavily grazed pasture are preferred, as is short-grass prairie.

RECOMMENDATIONS: Inventory all suitable habitat in Clay County to see how extensive the breeding population is. Other dry prairies from Yellow Medicine County to Marshall County should also be surveyed in an attempt to locate other colonies. Nesting habitat in Clay County, or elsewhere, should be protected.

SELECTED REFERENCES:

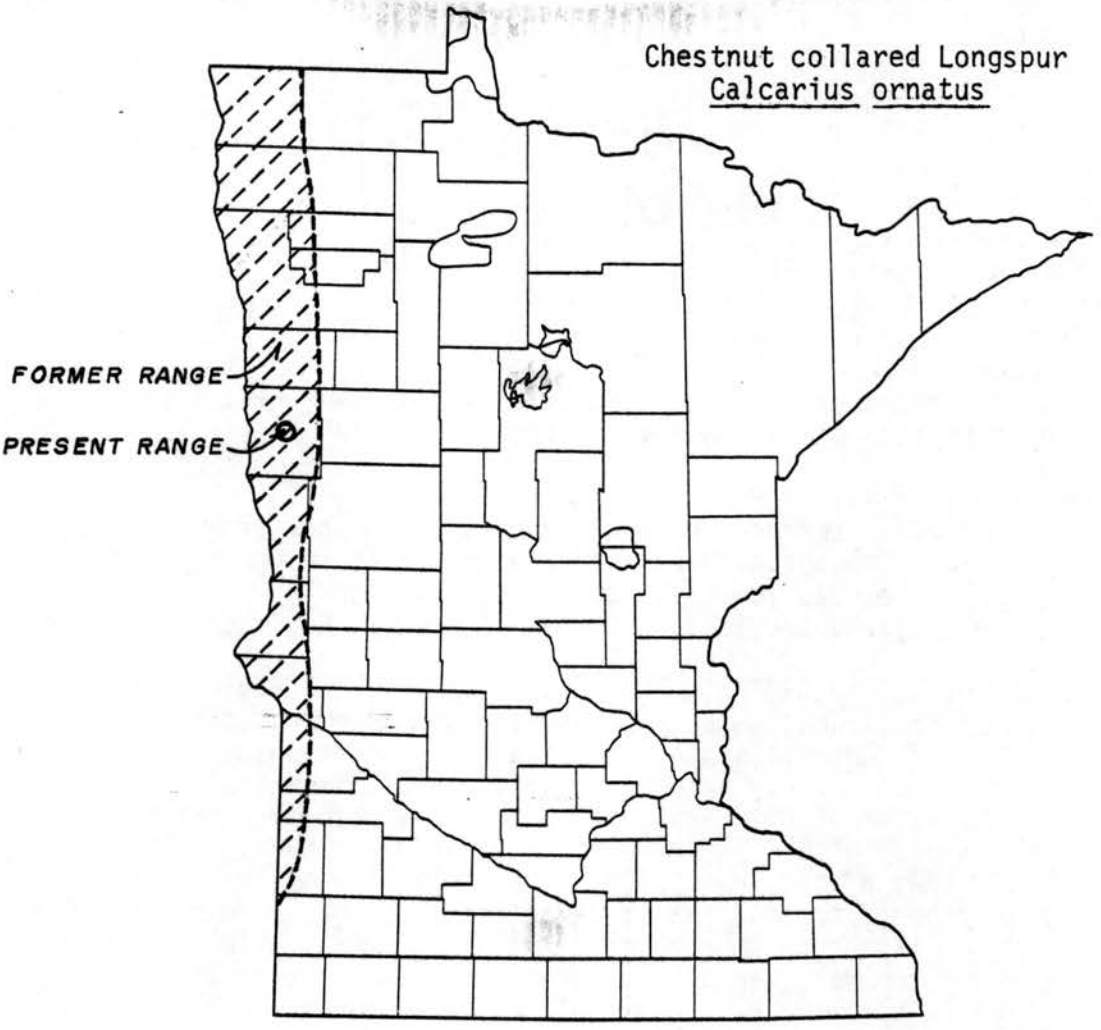
Maher, W.J. 1979. Nestling diets of prairie passerine birds at Matador, Saskatchewan, Canada. Ibis 121:437-452.

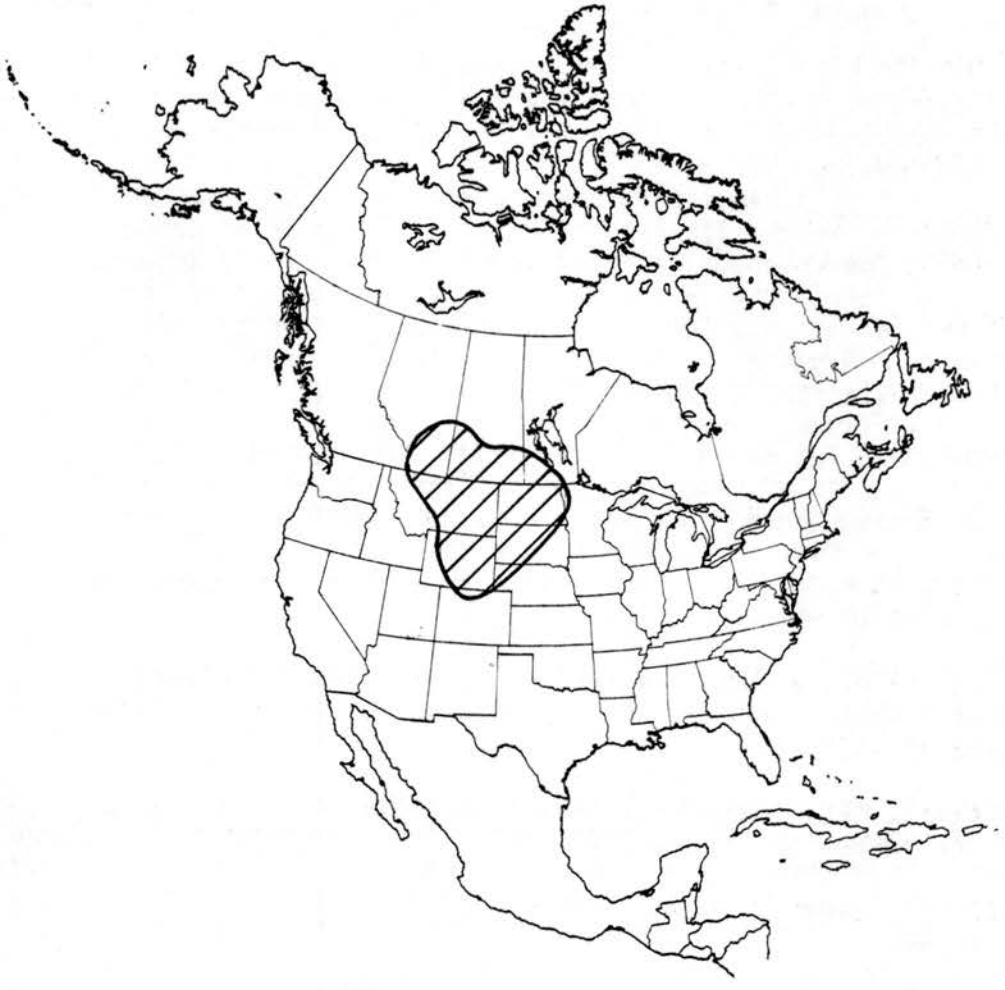
Owens, R.A., and M.T. Myres. 1973. Effects of agriculture upon populations of native passerine birds of an Alberta fescue grassland. Can. J. Zool. 51:697-713.

Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

PREPARED BY: Janet C. Green

Chestnut collared Longspur
Calcarius ornatus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Haliaeetus leucocephalus

COMMON NAME: Bald Eagle

STATE STATUS: Threatened

Adjacent states/provinces: Endangered in Ontario; also listed as Endangered by the state of Wisconsin, despite its federal status as Threatened (see below)

FEDERAL STATUS: "Endangered in all contiguous states except Minnesota, Wisconsin, Michigan, Oregon and Washington, where it is listed as threatened. Fed. Reg. Vol. 43, No. 31, Tuesday, Feb. 14, 1978." from the "Red book for threatened and endangered species", U.S. Department of the Interior.

BASIS FOR MINNESOTA STATUS: The decline of the Bald Eagle over its entire range in the contiguous 48 states has been well documented by studies done by a number of federal, state and private organizations. Environmental contamination by DDT was the primary cause of the decline and the mechanism was the accumulation of DDT residues in fish, the major food of Bald Eagles. Since the banning of DDT in 1972, eagle populations have increased nationwide from their lows of the late 1960s. The Minnesota population was affected by these same general trends, but it never declined to the point of being endangered. The population on the Chippewa National Forest, which is the most productive part of the Bald Eagle's range in Minnesota, has remained stable or increased slightly since 1970. Nevertheless, this species is classified as threatened because of its status nationwide and because of its sensitivity to future environmental contamination, habitat deterioration, and human harassment.

OCCURRENCE IN MINNESOTA: In pre-settlement times this species nested throughout Minnesota, including along the large prairie rivers and the bigger lakes in the southern half of the state. Now, its territories are found in the northern forested half of the state plus one each on the St. Croix and lower Mississippi Rivers. A statewide survey in 1981 located 190 occupied territories of which 171 were found to be active as evidenced by an incubating bird. The Chippewa and Superior National Forests accounted for 65% of the active territories. The number of young fledged per active nest on the Chippewa National Forest has averaged 1.1 over the 13-year span from 1970-1982. Among the 50 states, Minnesota has the third largest Bald Eagle breeding population, following Alaska and Florida.

DISTRIBUTION: Two races are recognized. The northern race ranges throughout Alaska, most of Canada (excepting the archipelago and Hudson Bay lowlands) and across the northern United States from southern Oregon to the Great Lakes and Maine coast. The southern race is found from Virginia south to Florida and west along the Texas coast. Formerly, the eagle ranged across southern California and the southwest.

PREFERRED HABITAT: The bald eagle selects lakes and rivers in forested areas where large trees are available for nesting. In Minnesota red or white pines are often selected.

RECOMMENDATIONS: Populations should continue to be monitored and should include a determination of productivity. Efforts to protect nest trees and to promulgate forest and recreational management practices that minimize disturbance during the nesting season should be expanded. The U.S. Forest Service already has policies that do this, but nests on other lands need similar protection.

Con't

RECOMMENDATIONS (con't):

This can be accomplished through forest management plans on state and county lands and landowner contacts on private land to maximize awareness of the needs of this species. Heavy penalties for the shooting of birds should be continued and these incidents should be widely publicized.

SELECTED REFERENCES:

Anonymous. 1982. Bald Eagle - Osprey status report, 1982, Chippewa National Forest, Cass Lake, MN. Mimeo.

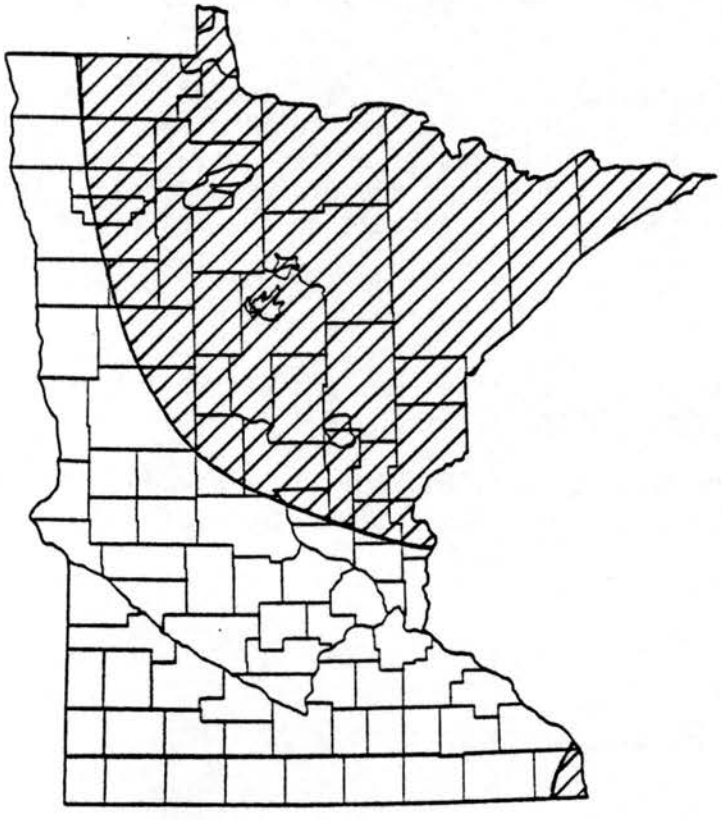
Mattsson, J., J. Mathisen, and K. Siderits. 1979. Bald Eagle nesting in Minnesota. Loon 51:176-178.

Nelson, E. C. 1981. Minnesota Bald Eagle status report, 1981. Mimeo. U.S. Fish and Wildlife Service, Bemidji, MN.

Sprunt, A., IV, W.B. Robertson, Jr., S. Postupalsky, R. J. Hensel, C.E. Knoder, and F. J. Ligas. 1973. Comparative productivity of six Bald Eagle populations. Trans. N. Amer. Wildlife Conf. 38:96-106.

U.S. Department of the Interior, Fish and Wildlife Service. 1979. Red book for threatened and endangered species, North Central Region.

PREPARED BY: Janet C. Green and Robert B. Janssen



Bald Eagle
Haliaeetus leucocephalus



SPECIES STATUS SHEET

SCIENTIFIC NAME: Lanius ludovicianus

COMMON NAME: Loggerhead Shrike

STATE STATUS: Threatened

Adjacent states/provinces: Endangered in Wisconsin; Threatened in Iowa.

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: A drastic decline throughout the shrike's range has been observed during the past 10 - 15 years. It has been on the National Audubon Society's Blue List (a watch category) for 10 years with all regions in the United States reporting declining numbers. Once considered common in farmland habitat, its population in Minnesota has fallen sharply to a point where it is very rare or absent throughout suitable open country. It is not known whether habitat destruction and/or environmental contamination is the reason for the decline.

OCCURRENCE IN MINNESOTA: Formerly, the shrike was a common to uncommon breeding species throughout the state except in the northeastern region and adjacent counties in the north-central region where it was scarce. Today, it is not found in these two regions and is very scarce elsewhere.

DISTRIBUTION: The species is found throughout most of the continental United States and the southern part of the prairie provinces of Canada.

PREFERRED HABITAT: The shrike is primarily an inhabitant of the open country and dry upland prairie where hedgerows, shrubs and small trees occur. It is also found around shelterbelts, cemeteries and farmsteads where this type of habitat is present.

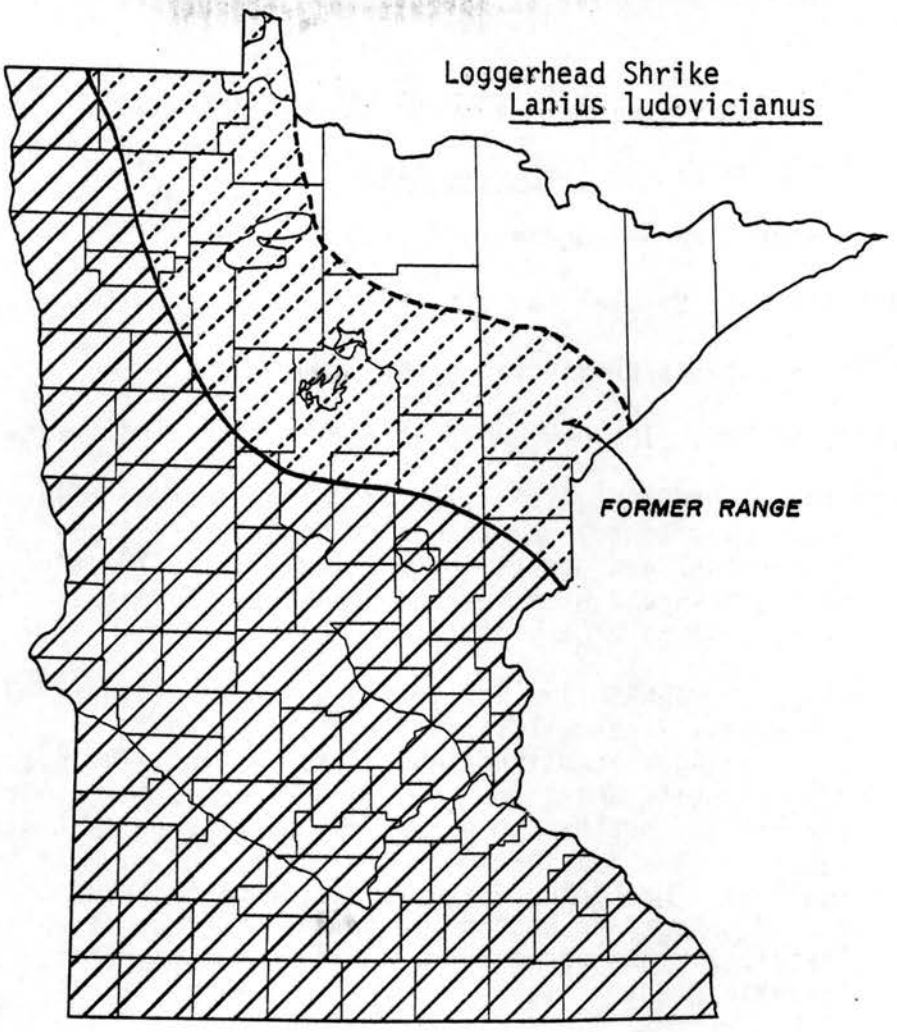
RECOMMENDATIONS: A study of the population biology of this species is needed to determine the causes for decline. Priority should also be given to developing a better understanding of the accumulation of environmental contaminants in this predator's food chain, both in breeding and wintering areas. Finally, perpetuation of shelterbelt and hedgerow habitat on the prairie is a requirement for the species.

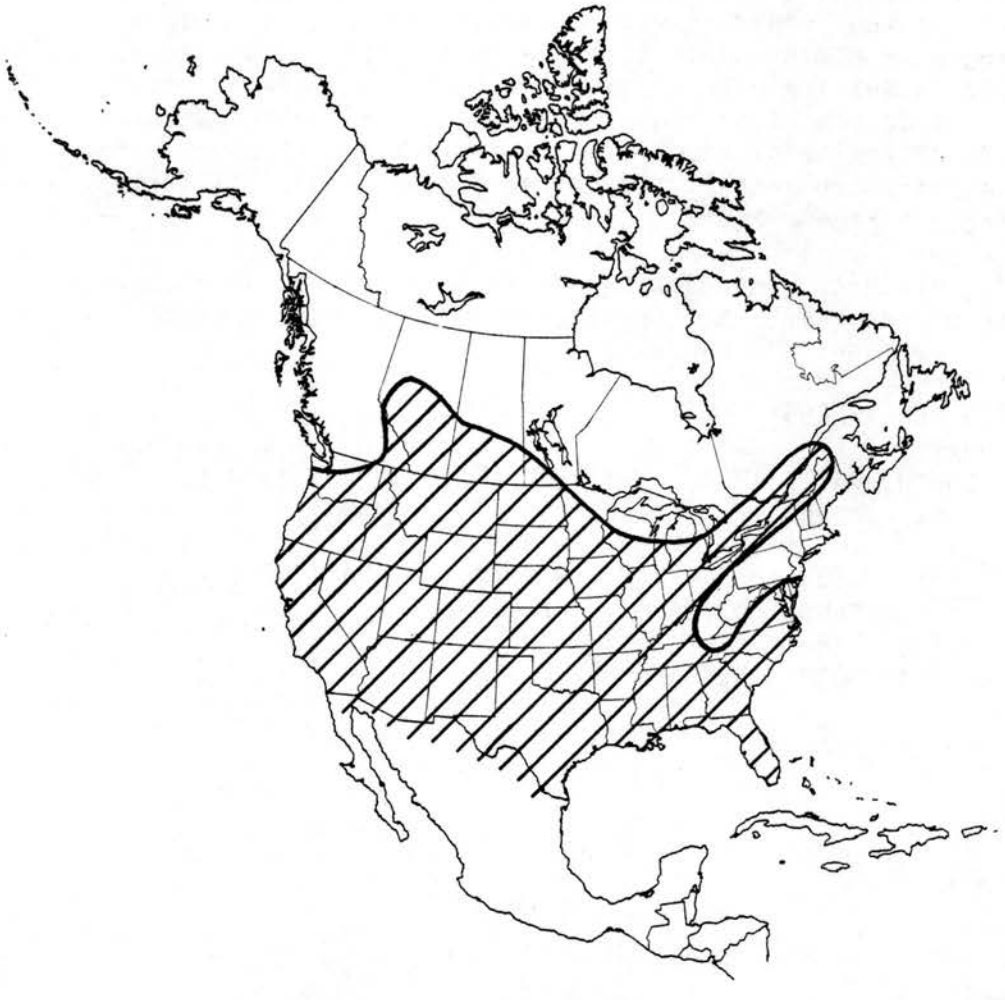
SELECTED REFERENCES:

Anderson, W.L. and R.E. Duzan. 1978. DDE Residues and Eggshell Thinning in Loggerhead Shrikes. Wilson Bull. 90(2):215-220.

Tate, James, Jr. 1981. The blue list for 1981; the first decade. American Birds 35:3-10.

PREPARED BY: Robert B. Janssen


Loggerhead Shrike
Lanius ludovicianus
FORMER RANGE



SPECIES STATUS SHEET

SCIENTIFIC NAME: Podiceps auritus

COMMON NAME: Horned Grebe

STATE STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The breeding range of this species in Minnesota is restricted to four northwestern counties (Kittson, Roseau, Marshall and Pennington) and occurs there at only a few locations. Formerly it was much more widespread with nesting documented for other counties in the western and central parts of the state.

OCCURRENCE IN MINNESOTA: The few recent reports that indicate nesting are from the Roseau River Wildlife Management Area, Thief Lake Wildlife Management Area and Agassiz National Wildlife Refuge. The species is a migrant throughout the state and there are a number of summer sightings of birds in the central and northeastern regions that may be just stragglers.

DISTRIBUTION: The Horned Grebe is distributed across the northern tier of states from Minnesota to Oregon and on through most of western Canada to central Alaska. It was formerly more widespread to the south and east to the Atlantic Coast.

PREFERRED HABITAT: Marshes and lakes are preferred. On large water bodies (over 10 ha) they prefer to use bays and inlets which provide protection from wind and wave action since their nests are built over water. Nests are constructed in shallow water, usually within the emergent vegetation. On larger wetlands and water bodies they tend to be outcompeted by other grebes and probably also by loons. As a result they are usually found on small water bodies often with little emergent vetetation. (Information supplied by Marilyn Kacena Koob).

RECOMMENDATIONS: Preservation of breeding habitat in northwestern Minnesota is important, as is a determination of the species exact nesting requirements and reproductive success.

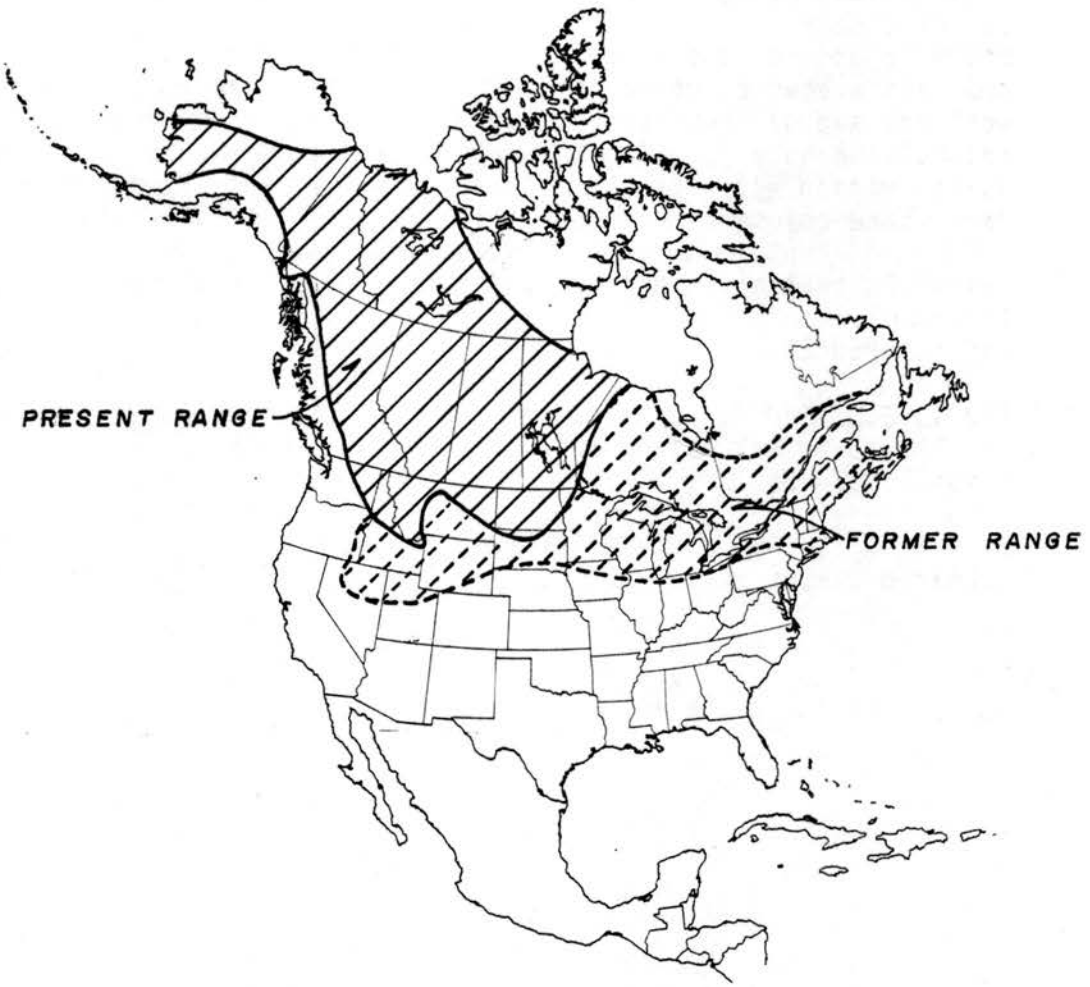
SELECTED REFERENCES:

Faaborg, J. J. 1976. Habitat selection and territorial behavior of the small grebes of North Dakota. Wilson Bull. 88:390-399.

Palmer, R. S. (ed.) 1962. Handbook of North American birds, vol. 1. Yale Univ. Press, New Haven. pp. 72-79.

PREPARED BY: Robert B. Janssen

Horned Grebe
Podiceps auritus



SPECIES STATUS SHEET

SCIENTIFIC NAME: Pelecanus erythrorhynchos

COMMON NAME: American White Pelican

STATE STATUS: Special Consern

Adjacent states/provinces: Endangered in Ontario

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: There are only two colonies in the state: Crowduck Island in Lake of the Woods and in Marsh Lake, Lac qui Parle Wildlife Management Area, Big Stone County. Most recent population estimates are 450-500 pairs in Marsh Lake (1978-1980) and 50 pair on Crowduck Island (1981). There are about 15 colonies in the United States, most on National Wildlife Refuges, and the number nesting in 1979 was down over that reported in 1972 and earlier surveys (Sloan). It has been proposed in American Birds that this species be considered threatened under the Federal Endangered Species Act. Although the Minnesota population seems secure, its colonial breeding habit and occupancy of just two sites makes it vunerable.

DISTRIBUTION: The White Pelican is distributed across the interior of western North America with very few breeding locations within the range boundaries. One non-migratory flock nests on the Texas coast (Laguna Madre).

PREFERRED HABITAT: This bird selects large shallow bodies of water rich in fish, in both treeless and forested country. The nesting site, usually a flat, bare island, is isolated from human disturbance.

RECOMMENDATIONS: The two known colonies should be censused annually, with an emphasis placed on determining the birds' reproductive success. Further work on Lake of the Woods should focus on searching for other occupied islands and on organizing a complete census of the pelican population in collaboration with Ontario. Because of the rapid increase in size of the Marsh Lake colony some researchers have suggested that the vegetation on an island adjacent to the colony be cleared so as to encourage further expansion. Protection should be sought for all pelican nesting islands.

SELECTED REFERENCES:

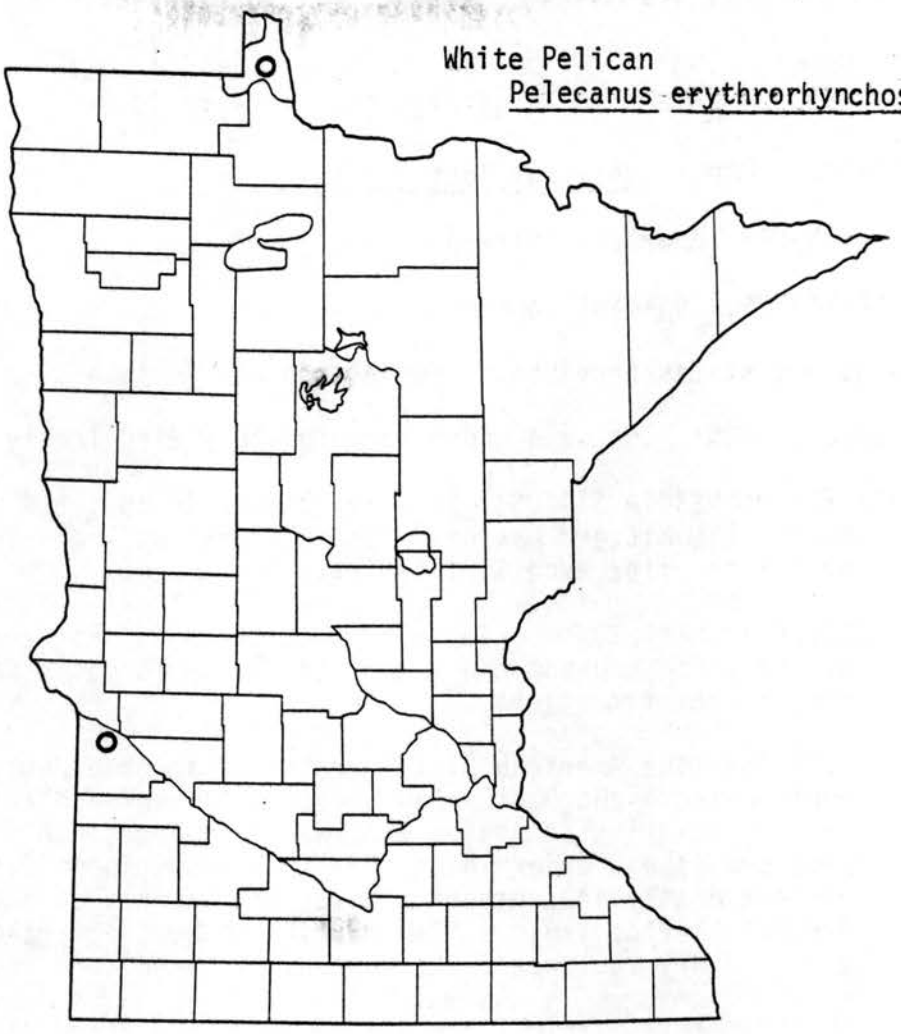
Sidle, J.G. and E. L. Ferguson. 1982. White Pelican populations at Chase Lake, North Dakota, evaluated by aerial photography. The Prairie Naturalist 14:13-26.

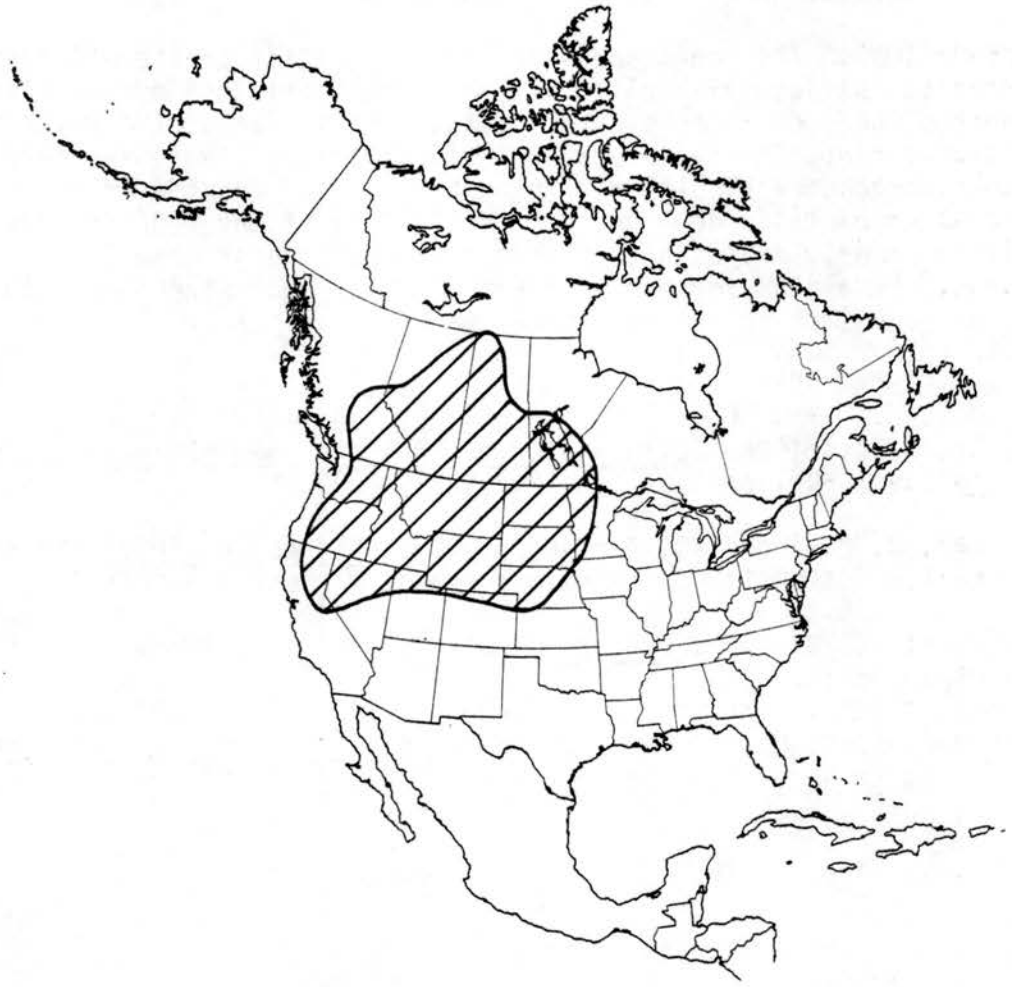
Sloan, N. F. 1982. Status of breeding colonies of White Pelicans in the United States through 1979. American Birds 36:250-254.*

PREPARED BY: Janet C. Green

*Minnesota colonies are erroneously described in this paper.

White Pelican
Pelecanus erythrorhynchos





SPECIES STATUS SHEET

SCIENTIFIC NAME: Botaurus lentiginosus

COMMON NAME: American Bittern

STATE STATUS: Special concern

Adjacent states/provinces: Special concern in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: Formerly common in suitable marshes throughout the state, the bittern has been absent in recent years from many places which appear to offer excellent habitat.

OCCURRENCE IN MINNESOTA: Although the bittern is most common in the central part of the State, during the summer it may be found in any of the counties which have marshy situations.

DISTRIBUTION: The American Bittern ranges throughout North America north to the Arctic Circle and Hudson Bay and east to Newfoundland. It breeds regularly in the mid-Atlantic states and rarely as far south as Florida. It also is recorded as a breeder in New Mexico and southern California. This bittern winters mostly in southern states, the islands of the Caribbean, Mexico and Central America south to Panama. Throughout its range, it is known as a shy and solitary recluse of the marshes, flowages and bogs.

PREFERRED HABITAT: Typical cattail, bulrush, or sedge marshes, large in size, are selected. Bogs also provide acceptable habitat.

RECOMMENDATIONS: The recent decline of this species can be attributed only in part to the loss of habitat. A large decline in the number of frogs, a preferred food, over large parts of the species range also may be partially responsible. The fact remains that much habitat which appears suitable has been unoccupied by bitterns in recent years. In view of this uncertainty as to cause of their decline, a careful study of the requirements of this bird is in order. Any efforts to preserve, restore or create large marshes should be a plus for bitterns but a better understanding of their needs is a prerequisite to improved management.

SELECTED REFERENCES:

Bent, A. C. 1926. Life Histories of North American marsh birds. Reprinted by Dover Publications Inc. New York. 392 pp.

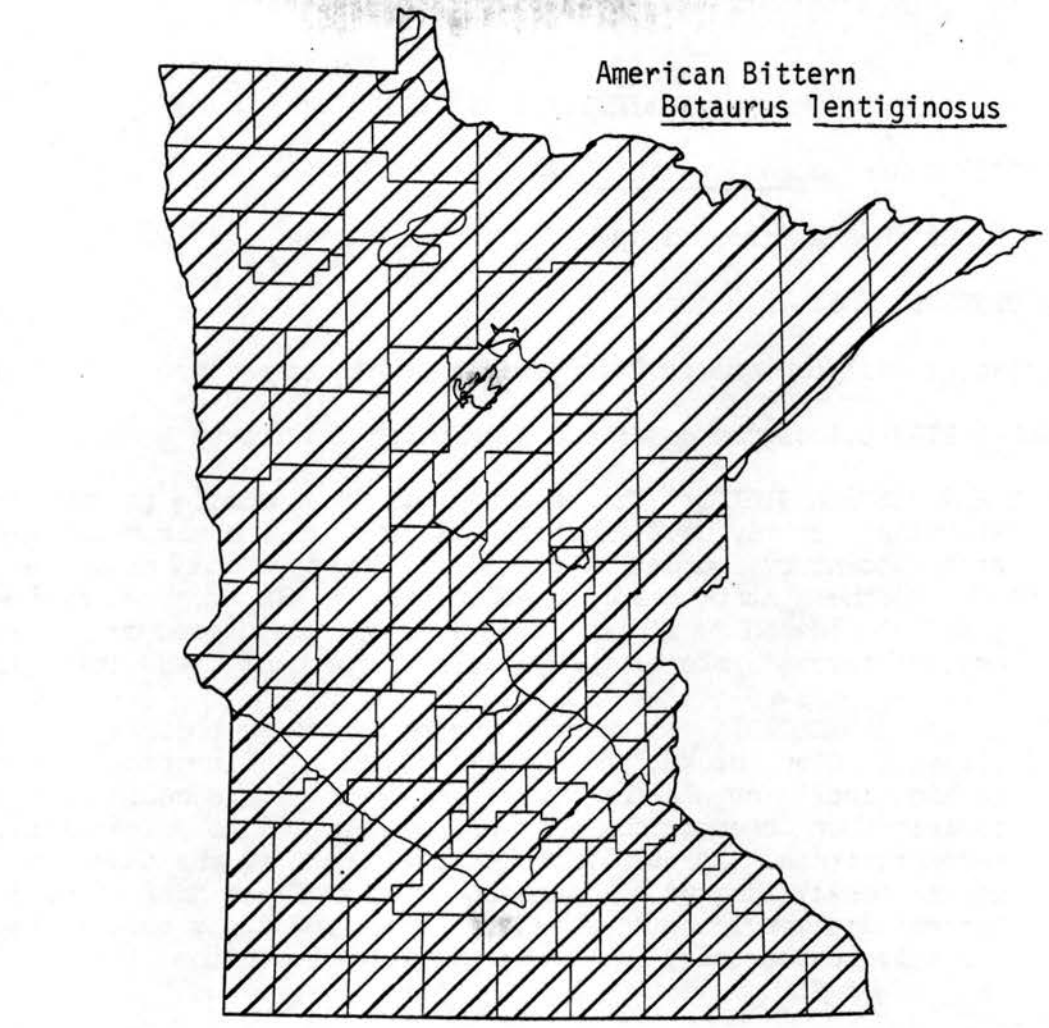
Green, J. C. and R. B. Janssen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

Roberts, T. S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

Sanderson, G. C., ed. 1977. Management of migratory shore and upland game birds in North America. International Association of Fish and Wildlife Agencies, Wash. D.C. 358 pp.

PREPARED BY: Art Hawkins

American Bittern
Botaurus lentiginosus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Buteo lineatus

COMMON NAME: Red-shouldered Hawk

STATE STATUS: Special Concern

Adacent states/provinces: Endangered in Iowa; Threatened in Wisconsin.

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: This species was never common in Minnesota in historical times. It may have expanded its range to the north and west during the last half century, but it is scarce in Minnesota and has declined markedly in the northern states since the late 1940s. In areas where it was abundant, the Red-shouldered Hawk now often seems to be replaced by the Red-tailed Hawk. Minnesota's breeding population is probably less than 200 pairs.

OCCURRENCE IN MINNESOTA: The species occurs across southeastern Minnesota, north and west to Clay, Becker and Hubbard Counties. Historical records indicate that Minnesota's population always has been low. Some individuals winter regularly, but observations increase in later winter, indicating the return of some migrants. It is difficult to evaluate if the range of population size has really changed in Minnesota over the last half century, or if more observers are merely doing a better job of reporting today. Regardless, the species is scarce today in Minnesota, and has declined sharply in the northern part of its range.

DISTRIBUTION: The western population ranges from northern California and southern Oregon south to northwest Baja, California. The eastern population ranges from eastern Nebraska, Minnesota, Wisconsin, Michigan, Ontario and southern Quebec south to the Gulf Coast, from the Florida keys to central Mexico.

PREFERRED HABITAT: Moist lowland woods and river bottoms are selected. The Redshouldered Hawk prefers more extensive woods than the Redtailed Hawk and avoids the interior of large expanses of woods used by Broadwinged Hawks. Timber harvest and conversion of lowland woods to pastures has converted Red-shouldered Hawk habitat into Redtailed Hawk habitat.

RECOMMENDATIONS: A field study designed to assess the nesting distribution and abundance of Redshouldered Hawks in Minnesota is needed. Habitat requirements also need to be described. Continued full legal protection for the species is essential.

SELECTED REFERENCES:

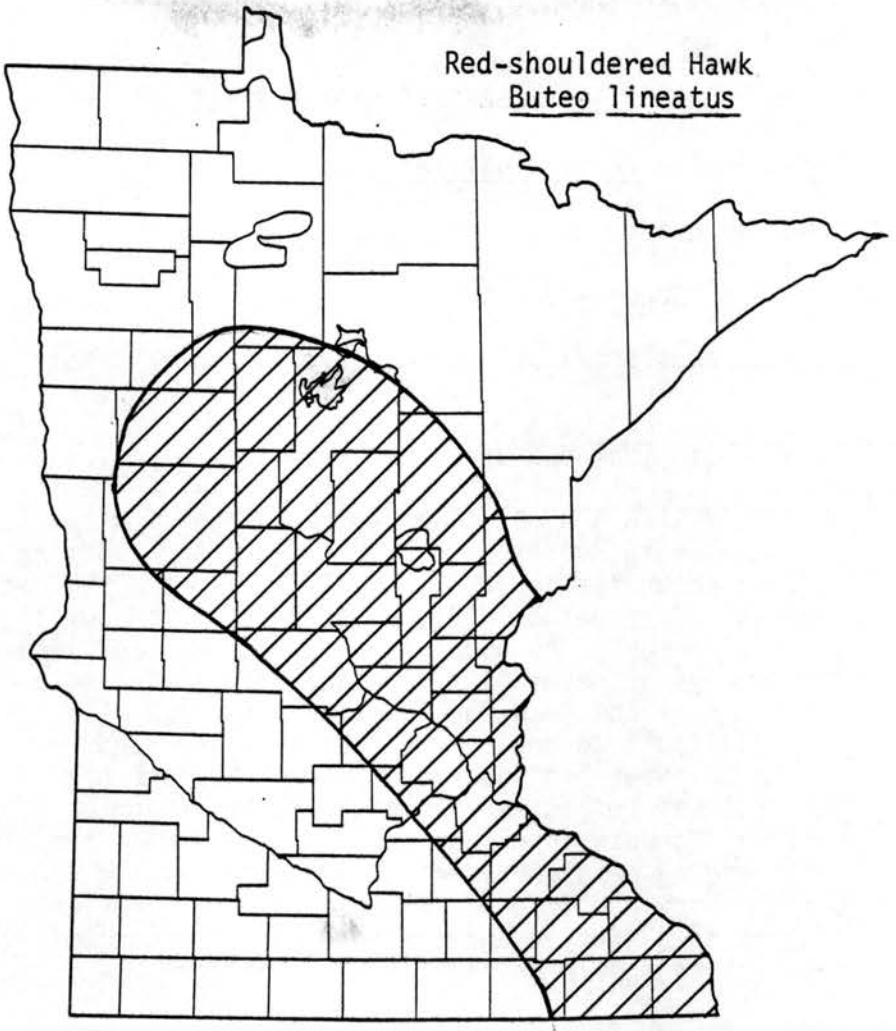
Dinsmore. 1982. Nest-sites and habitat of red-shouldered and red-tailed hawks in Iowa. Wilson Bull. 94(1):31-45.

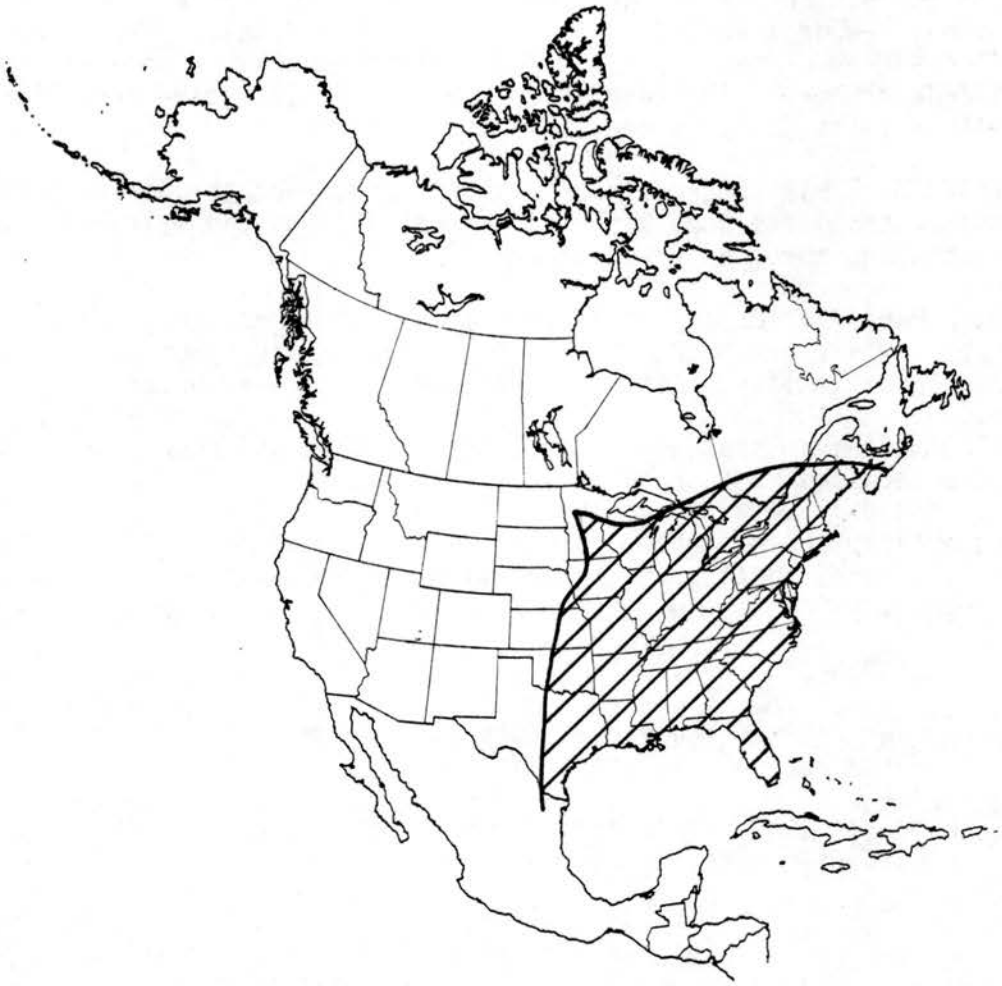
Johnson, D.H. 1982. Raptors of Minnesota: nesting distribution and population status. Loon 54:8283.

Roberts, T.S. 1032. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Harrison B. Tordoff

Red-shouldered Hawk
Buteo lineatus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Pandion haliaetus

COMMON NAME: Osprey

STATE STATUS: Special Concern

Adjacent states/provinces: Endangered in North Dakota and Wisconsin; Threatened in South Dakota.

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The Osprey, along with the Bald Eagle, was reduced drastically in numbers during the 1950s and 1960s primarily from the increased accumulation of DDT in fish which are the exclusive prey item of this species. During the 1970s, with the beginning of the elimination of DDT from the environment, the population showed signs of recovery. However, because the Osprey was never listed on the Federal Endangered Species List, its populations have not been monitored as extensively as the Bald Eagle's, and it is more difficult to document its decline and recovery. Active nests recorded on the Chippewa and Superior National Forests have increased during the 1970s but that may reflect an increased survey effort. Productivity on those National Forests in recent years is lower than the estimate of 1.2-1.3 young per breeding female needed to maintain a stable population on the Atlantic Coast (Henny and Ogden). Because of uncertainties surrounding the productivity of this species and its need for an uncontaminated environment, its populations should continue to be monitored.

OCCURRENCE IN MINNESOTA: In pre-settlement times the osprey nested throughout the state. Now it is confined to the northeastern and north-central regions plus a few adjacent counties to the south and west. There has been no statewide survey of nests but the National Forests have conducted surveys for a decade or more. The results for 1981 were 112 active nests (incubating female) in the Chippewa and 51 in the Superior.

DISTRIBUTION: This species occurs almost throughout the world, but in the United States today its population is concentrated on the Atlantic and Pacific Coasts and through the Great Lakes.

PREFERRED HABITAT: Ospreys are associated with lakes, large rivers and coastal bays. Nests are placed at the top of large living or dead trees and also on top of utility poles and other structures near water.

RECOMMENDATIONS: A statewide survey for locating and reporting nests should be initiated and monitoring the productivity of selected populations within the state should be a continuing activity. Nest sites should be protected, especially during the breeding season. Education to prevent the shooting of all raptors, together with penalties for violations, should be an ongoing program.

SELECTED REFERENCES:

Anonymous. 1981. Bald Eagle, Osprey, and Great Blue Heron nest survey report, Superior National Forest. Mimeo.

Anonymous. 1982. Bale Eagle - Osprey status report, Chippewa National Forest, Cass Lake, Minnesota Mimeo.

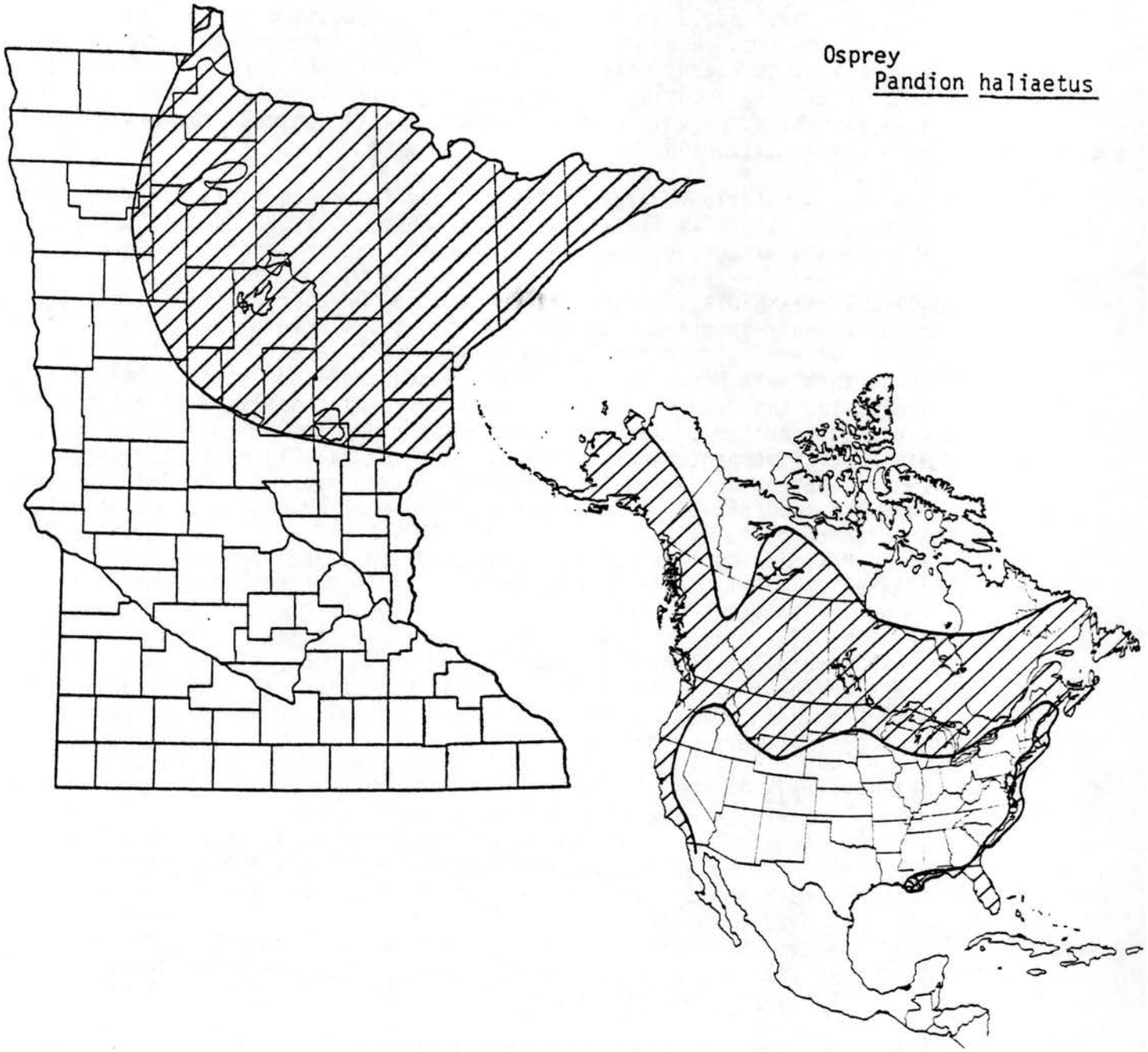
Henny, C.J. 1977. Research, management and status of the Osprey in North America. Pp. 199-222 In Chancellor (ed). World conf. on birds of prey, Vienna; report of proceedings. ICBP, London.

OSPREY (con't)

Henny, C.J. and J.C. Ogden. 1970. Estimated status of Osprey populations in the United Sates. J. of Wildlife Management 34:214-217.

Zarn, M. 1974. Habitat management series for unique or endangered species; Report No. 12 - Osprey. Technical Note, U.S. Department of the Interior, Bureau of Land Management. 41 pp.

PREPARED BY: Janet C. Green and Robert B. Janssen



Osprey
Pandion haliaetus

SPECIES STATUS SHEET

SCIENTIFIC NAME: Tympanuchus cupido

COMMON NAME: Greater Prairie-Chicken

STATE STATUS: Special Concern

Adjacent states/provinces: Threatened in North Dakota and Wisconsin; Extirpated in Iowa and Ontario.

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The Greater Prairie Chicken uses a mix of undisturbed cover for nesting, disturbed cover for brooding, and cropland for winter feeding. Where these habitats occur in the right proportions, populations are stable and, in recent years, expanding. Grassland acreage is being coverted to cropland and becoming forested through planting and natural succession. As grassland acreage is reduced, so are prairie chicken numbers and hence bear close monitoring.

The 1979 population status of the species in adjacent states as reported by Westemeier (1980) is as follows: North Dakota, 1,000 birds; South Dakota, 40,000; and Wisconsin, 1,842. The species was extirpated in Iowa in 1952.

OCCURRENCE IN MINNESOTA: In presettlement time, Greater Prairie Chickens probably occurred only in extreme southern Minnesota. They followed the northward spread of agriculture and logging and by 1880 were found statewide except in northeastern Minnesota. By 1982, intensive land use practices and forest succession has reduced the range to a strip of grasslands in northwestern Minnesota located primarily in the beach ridge complex of Glacial Lake Agassiz. A remnant flock occurs in northcentral Minnesota (Svedarsky, et al. 1982). In the spring of 1982, members of the Minnesota Prairie Chicken Society censused 1653 birds (mostly males) on booming grounds in 14 counties. This compares to 841 in 1978; 948 in 1979; 1258 in 1980 and 1410 in 1981 or an approximate doubling of censused birds in 5 years. Some of this "increase" is likely to have resulted from an increased censusing effort.

DISTRIBUTION: The primary range is in the prairie states of Kansas, Nebraska and South Dakota but remnant populations occur in other states where appropriate grassland habitat is available. The primary range in Minnesota is in northwest Minnesota with a small population of about 150 males (in spring) in the northcentral part of the State.

PREFERRED HABITAT:

Spring - Open expanses of short cover for courtship
- Undisturbed dense nesting cover about 12-15 in. high
- Cropland and burned habitats for feeding and loafing

Summer - Open and shrubby habitats which have been disturbed by burning, grazing or haying

Fall - Croplands and distrubed areas especially important for feeding

Winter - Croplands providing winter food such as corn, sunflower and small grains.

Low areas with dense vegetation are preferred for roost cover year round and snow is used when available.

Greater Prairie-Chicken (con't)

RECOMMENDATIONS: Maintain the vigor and openess of grassland habitats within the species range by rotational burning, haying and possibly grazing. Secure grassland tracts by acquisition, easements, or other incentive programs in areas having prairie chicken populations but with little preserved habitat. While native prairie tracts are an added bonus, if available, tame grasslands of brome and redtop are used as well. Continue censusing spring booming grounds to evaluate population trends and effectiveness of management praccces.

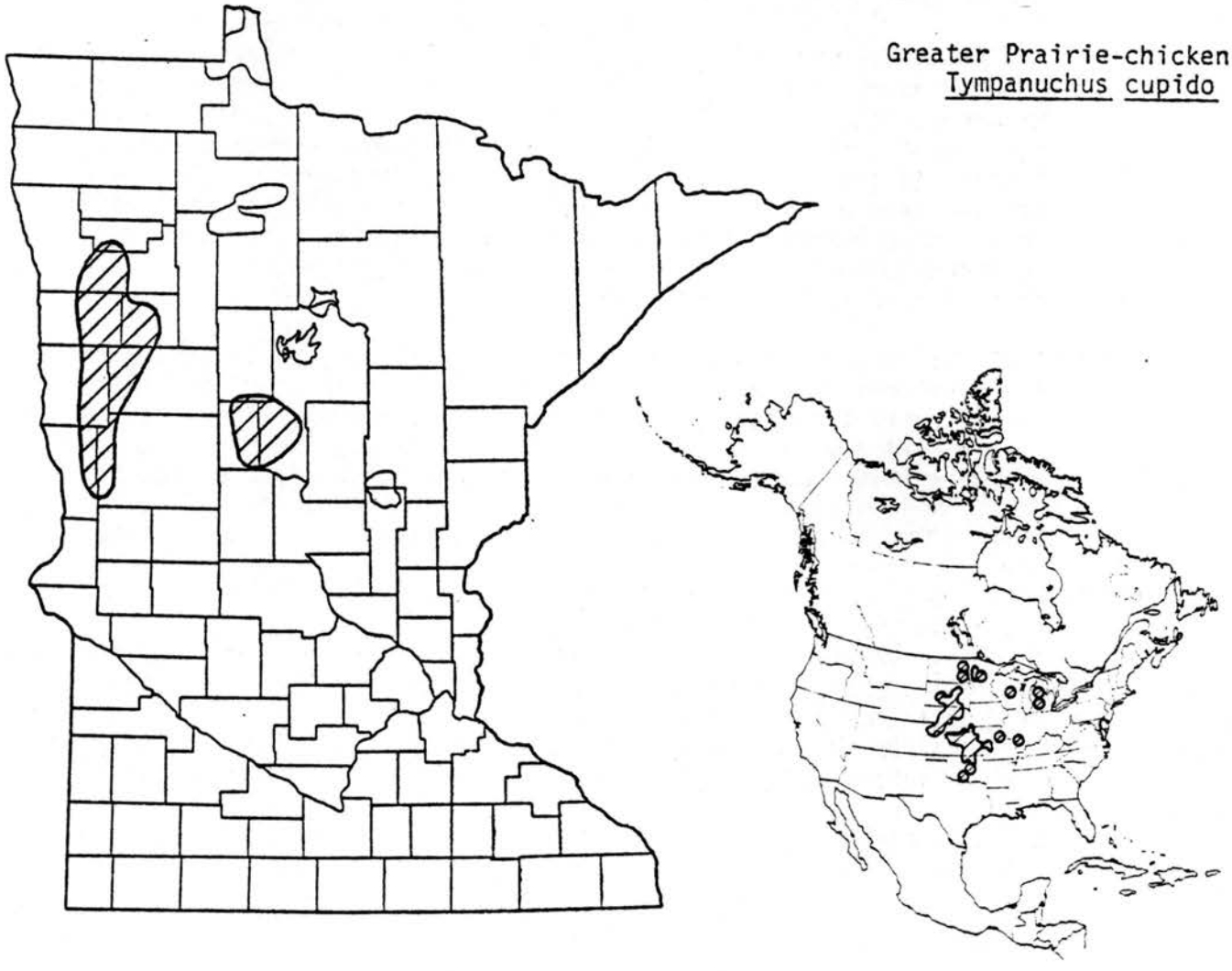
SELECTED REFERENCES:

Svedarsky, W.D. 1979. Spring and summer ecology of female Greater Prairie Chickens in northwestern Minnesota. Ph.D. Thesis. University of North Dakota, Grand Forks. 166 pp.

Svedarsky, W.D., R.J. Oehlenschlager and T.D. Tonsager. 1982. A remnant flock of Greater Prairie Chickens in northcentral Minnesota. Loon 54:5-13.

Westemeier, R.L. 1980. Greater Prairie Chicken status and management - 1968-1979. Pages 8-12 in P.A. Vohs and F.L. Knopf (eds). Proceedings of prairie grouse symposium. Oklahoma State University, Stillwater. 89 pp.

PREPARED BY: W. Daniel Svedarsky



Greater Prairie-chicken
Tympanuchus cupido

SPECIES STATUS SHEET

SCIENTIFIC NAME: Grus canadensis

COMMON NAME: Sandhill Crane

STATE STATUS: Special Concern

Adjacent states/provinces: Extirpated in Iowa and North Dakota

FEDERAL STATUS: Included under the Migratory Bird Treaty Act which occurs in Minnesota. (The subspecies Grus canadensis tabida (Greater Sandhill Crane) was removed in 1973 from the United States Fish and Wildlife Service's list of rare and endangered wildlife.)

BASIS FOR MINNESOTA STATUS: Sandhill Cranes breed in extensive, shallow wetlands that are relatively isolated with minimal human disturbance. Such wetlands are becoming fragmented by drainage and agricultural development, especially in the major breeding range in northwest Minnesota.

OCCURRENCE IN MINNESOTA: The Sandhill Crane formerly occurred over most of the prairie portion of the State and in extensive, open wetland communities of forested areas. Hunting pressure and habitat alteration reduced populations significantly by the 1930s but recent protection efforts have resulted in population increases throughout portions of its former range (Lewis, 1977). The species presently occurs in northwest and eastcentral Minnesota (Green and Janssen, 1975).

DISTRIBUTION: The subspecies Grus canadensis tabida, or the Greater Sandhill Crane, occurs primarily west of the Rockies . The birds in Minnesota belong to the eastern population of this subspecies which is distributed from southern Manitoba to Michigan. The primary Minnesota range is indicated on the accompanying map. Many breeding areas are located on public lands, e.g. Agassiz, Sherburne and Rice Lake National Wildlife Refuges; and Carlos Avery, Mille Lacs, Kunkel, Kimberly, Grayling, Thief Lake and Roseau River Wildlife Management Areas. Cranes also occur on state trust fund lands in northwest Minnesota as well as on private lands.

PREFERRED HABITAT: Old fields and cropland containing waste grain are used during migration and for summer feeding when they are located near extensive, shallow wetlands that are used for breeding. Lewis (1977) emphasizes the importance of isolation from human disturbance during the breeding season since this may cause nest abandonment. Young cranes feed on animal foods obtained in wetlands and adjacent uplands during the preflight period, but then feed readily on agricultural grain in the fall along with the adults.

RECOMMENDATIONS:

1. Preserve and/or restore extensive tracts of crane wetland habitats.
2. Monitor reproductive success in different habitat situations in order to better manage habitat conditions.
3. Continue to collect data on breeding pair locations so as to monitor population trends and assign acquisition and management priorities.

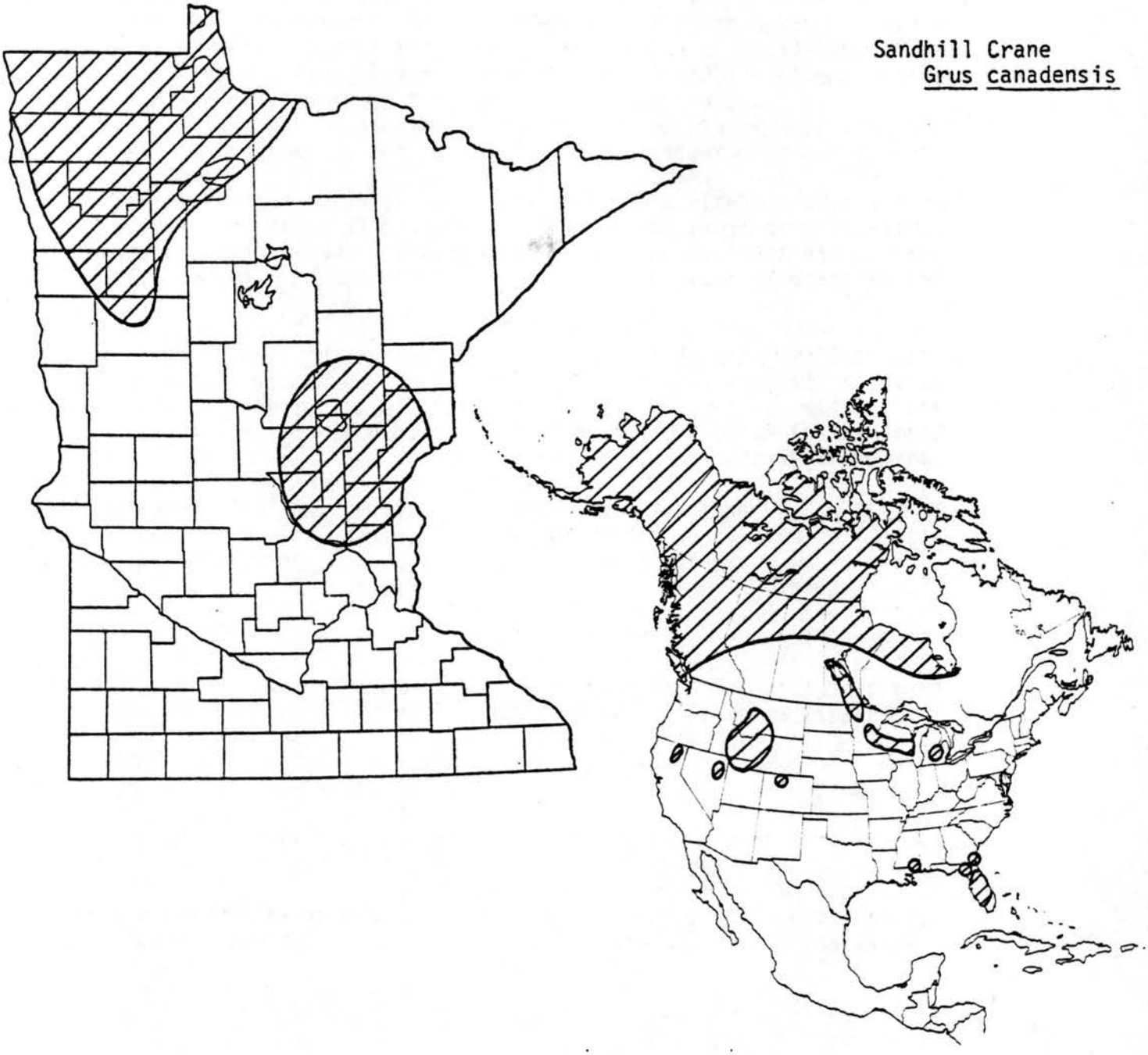
Sandhill Crane (con't)

SELECTED REFERENCES:

Lewis, J.C., Chairman. 1977. Sandhill Crane (Grus canadensis). Pages 5-43 in G.C. Sanderson ed. Management of migratory shore and upland game birds in North America. Int. Assoc. Fish. Wildl. Agencies, Washington, D.C. 358 pp.

Green, J.C. and R.B. Janssen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

PREPARED BY: W. Daniel Svedarsky



Sandhill Crane
Grus canadensis

SPECIES STATUS SHEET

SCIENTIFIC NAME: Rallus elegans

COMMON NAME: King Rail

STATE STATUS: Special Concern

Adjacent states/provinces: Special Concern in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The King Rail occurs only at widely scattered localities in the southern half of the state. It apparently is much less common than formerly.

OCCURRENCE IN MINNESOTA: Dr. Roberts (1932) called this rail "common" at Heron Lake. He referred to Mr. A. Hewitt finding 9 nests in 1898 in Faribault County and Dr. C.T. Cooke considering it as fairly common in Waseca County during the late 1800s. During the past fifty years, Green and Janssen (1975) have found evidence of nesting in 15 southern Minnesota counties. Some years, nowever, no records are received. During the last ten summers it only has been reported from a total of four locations.

DISTRIBUTION: King Rails breed from the Atlantic coast westward almost to the 100th meridian and from the Gulf Coast north to southern Ontario, the Lake States, and the eastern parts of the Dakotas. While their historic range is not known to have changed, in parts of this range they have become less abundant.

PREFERRED HABITAT: King Rails accept a wide variety of shallow fresh water marshes; they are particularly plentiful in freshwater coastal marshes. In the southern states they readily use ricefields for feeding and nesting. Small potholes, such as those that are frequented by nesting ducks, appear attractive to the species.

RECOMMENDATIONS: Programs aimed at preserving marshy wetlands benefit King Rails as well as many other marsh dwellers. Increased efforts should be made to determine more precisely the population size and distribution of this rail in Minnesota.

SELECTED REFERENCES:

Bent, A.C. 1963. Life histories of North American marsh birds. Dover Publications Inc., New York. 392 pp.

Green, J.C. and R.B. Jannsen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

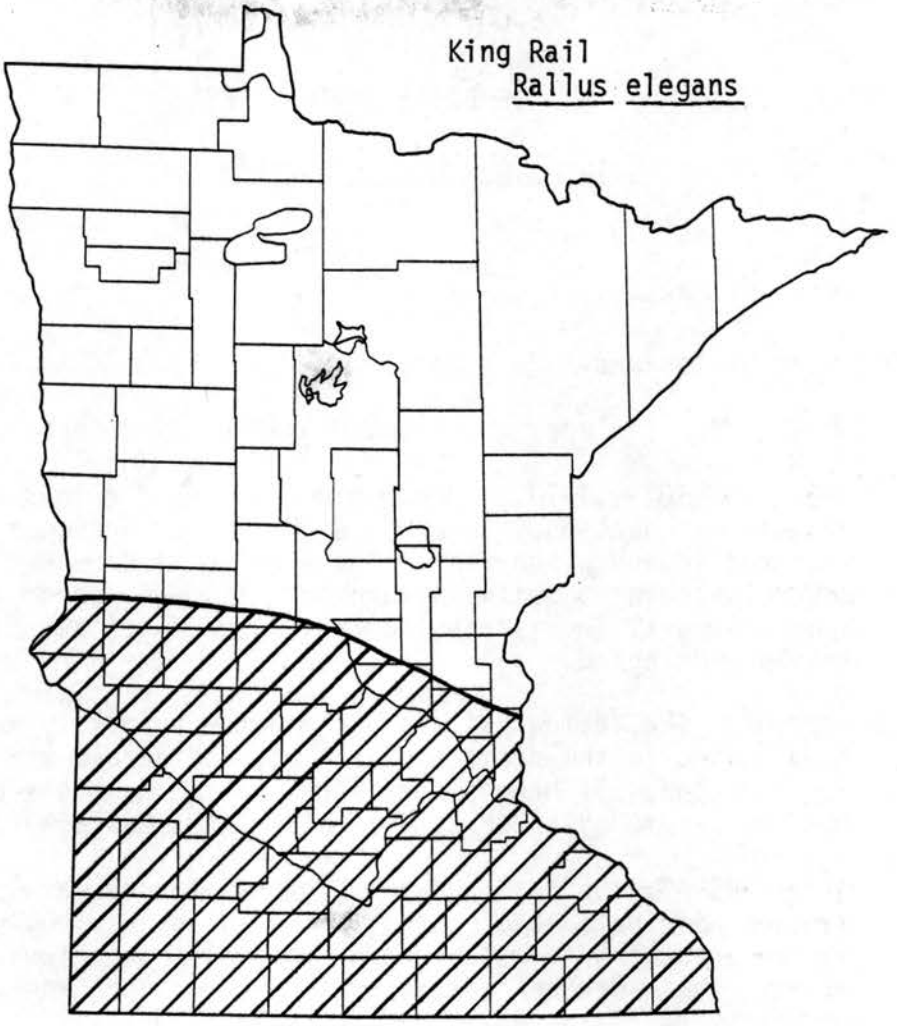
Meanley, B. 1969. Natural History of the King Rail. U.S. Fish and Wildlife Service, North American Fauna Series No. 67. 108 pp.

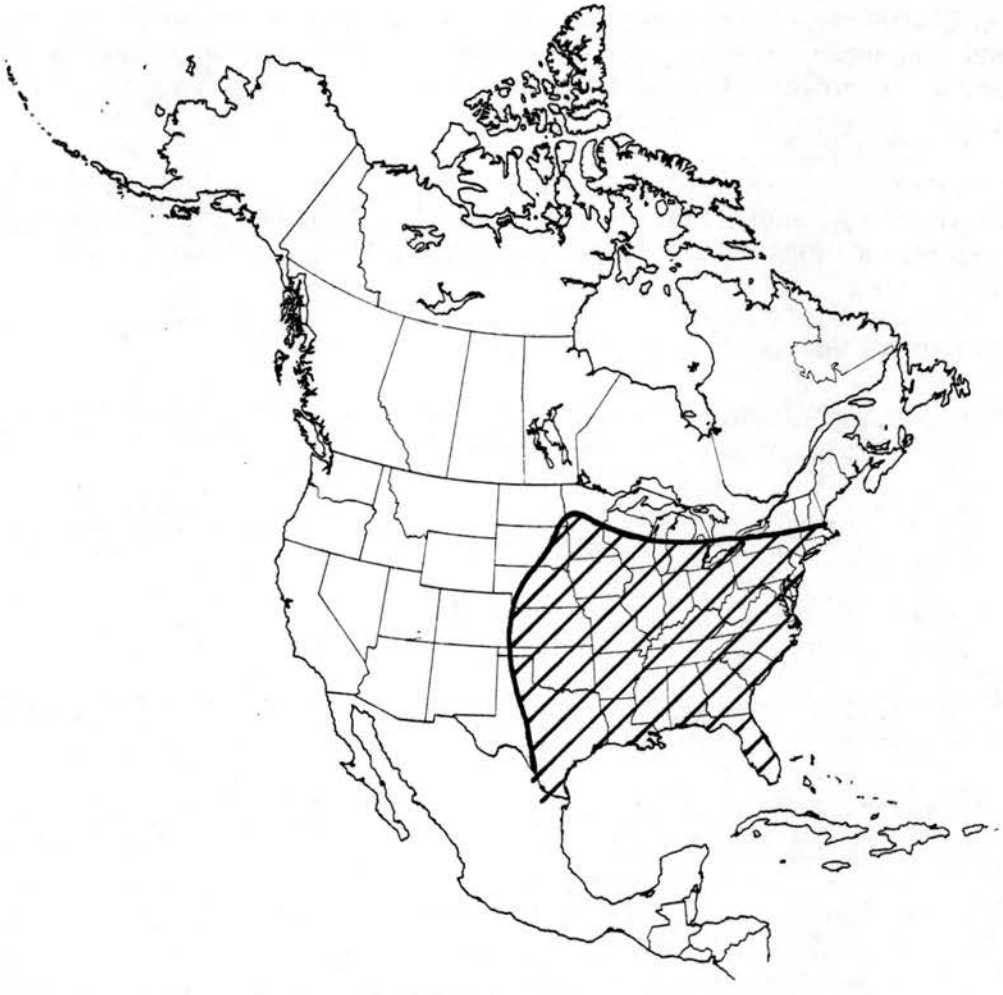
Roberts, T.S. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

Sanderson, G.C. ed. 1977. Management of migratory shore and upland game birds in North America. International Association of Fish and Wildlife Agencies. Washington, D.C. 358 pp.

PREPARED BY: Art Hawkins

King Rail
Rallus elegans





SPECIES STATUS SHEET

SCIENTIFIC NAME: Coturnicops noveboracensis

COMMON NAME: Yellow Rail

STATE STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: Documented nesting for this rail is available only from a few counties. Never more than a few presumed breeding sites are re-reported in any given year. The species is dependent on sedgy marshes that are vulnerable to draining, drought, and wet years; it probably always has been ephemeral in distribution. Because of its secretive habits this rail is easily overlooked.

DISTRIBUTION: The Yellow Rail is distributed primarily across southern Canada, from Quebec to the prairie provinces, and across the Great Lakes states to North Dakota. It breeds very locally within this range. Formerly this species was found south to Illinois, Ohio, Massachusetts and Connecticut.

PREFERRED HABITAT: Sedge meadows and grassy marshes are preferred. It will use marshes with patches of cattails and bulrushes, but generally prefers open marshes, ranging in water depth from moist underfoot to up to 8"-10" of water. These marshes are vulnerable to drought and unusually wet years. Occupancy by Yellow Rails is probably ephemeral.

RECOMMENDATIONS: Prairie marshes are vulnerable to draining, grazing, plowing, and haying. Inventory of breeding birds is needed, along with an identification of critical aspects of the species habitat.

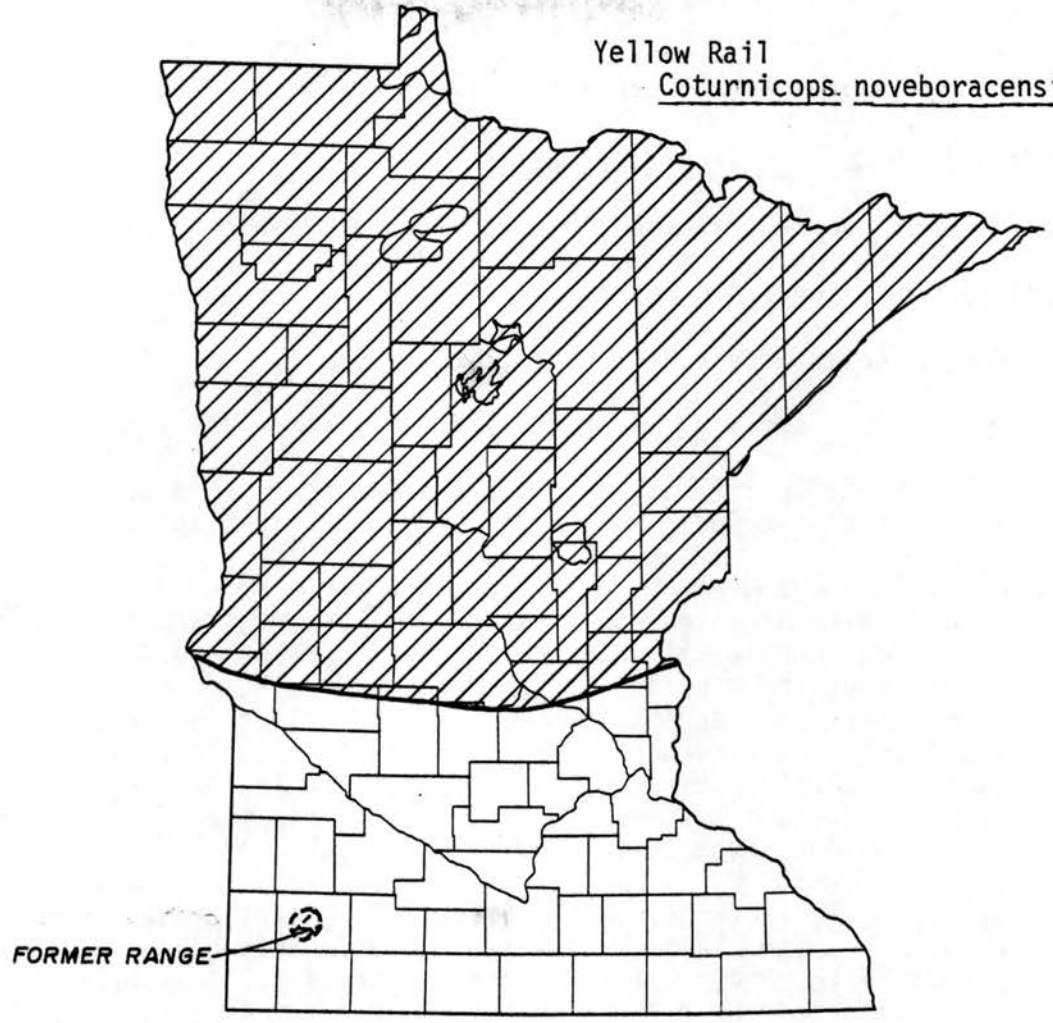
SELECTED REFERENCES:

Green, J. C. and R. B. Janssen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

Stalheim, Scott. 1974. Behavior and ecology of the Yellow Rail. M. S. Thesis, University of Minnesota.

PREPARED BY: Harrison B. Tordoff

Yellow Rail
Coturnicops noveboracensis





SPECIES STATUS SHEET

SCIENTIFIC NAME: Gallinula chloropus

COMMON NAME: Common (Florida) Moorhen (formerly Common Gallinule)

STATE STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: This species apparently has declined during the past 50 years. Recent nesting records and sightings are rare.

OCCURRENCE IN MINNESOTA: Roberts described the moorhen as "a common breeding bird in all the larger sloughs and shallow grass-grown lakes of southern Minnesota reaching its northern limit in Becker and Ottertail Counties". In lakes of the Minnesota River Valley near the Twin Cities he reported seeing as many as a dozen at one time but this was in 1901. In recent years the Moorhen is a rare breeder in the southern half of the state. Because it is a secretive bird and its vocalization is similar to the very abundant American Coot, its abundance is unknown. However, field observations are fewer now than even 10-15 years ago.

DISTRIBUTION: Their range covers most of the Unites States south of Canada, except the high plains states and mountainous regions. That part of eastern Canada south of 49° latitude also is included. They breed as far south as the islands of the Caribbean, Mexico, Central America and most of South America. Their winter range overlaps with the extreme southern portions of their breeding range.

PREFERRED HABITAT: Cattail-bulrush marshes with patches of phragmites, carex, and sparganium are the domaine of this species. In the rice belt, tame rice is also utilized. They share similar habitat with their close relative, the coot, in some areas.

RECOMMENDATIONS: Marsh preservation programs benefit this species along with many others marsh species. Development of a more complete inventory of the Moorhen's distribution, abundance and habitat preferences in Minnesota is a desirable objective.

SELECTED REFERENCES:

Bent, A.C. 1926. Life histories of North American marsh birds. Reprinted by Dover Publications Inc. New York. 392 pp.

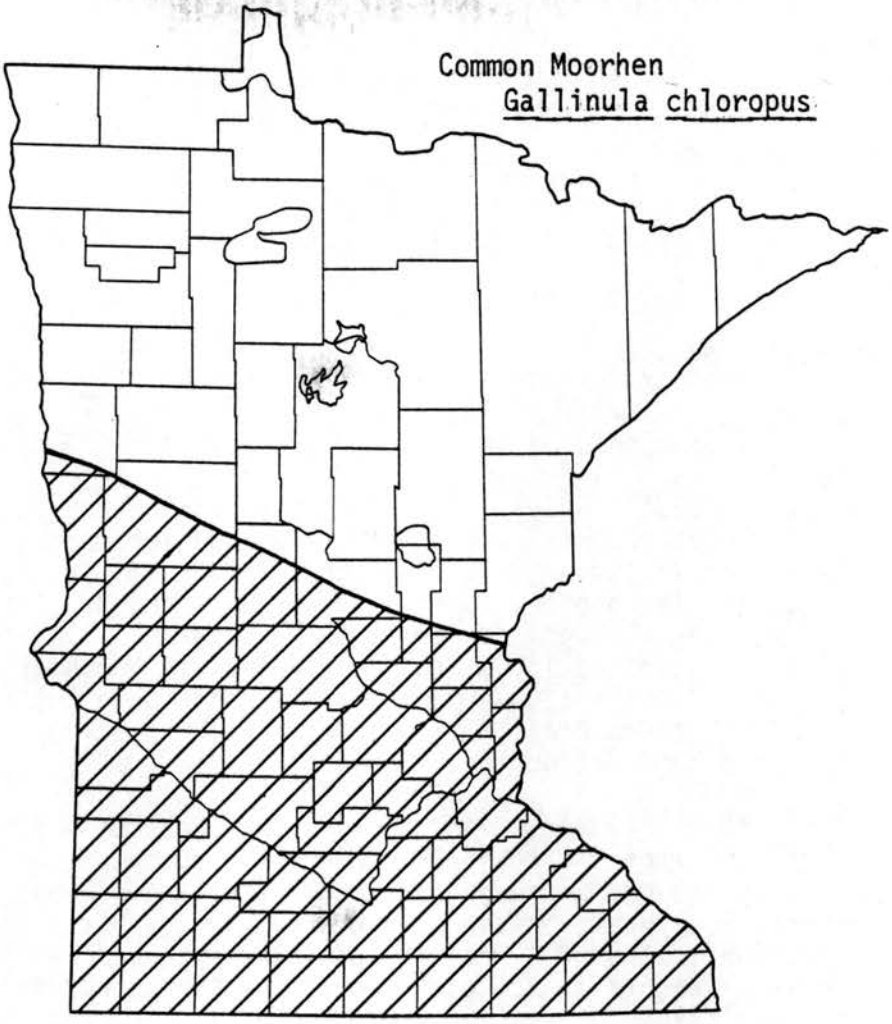
Green, J.C. and R.B. Jannsen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

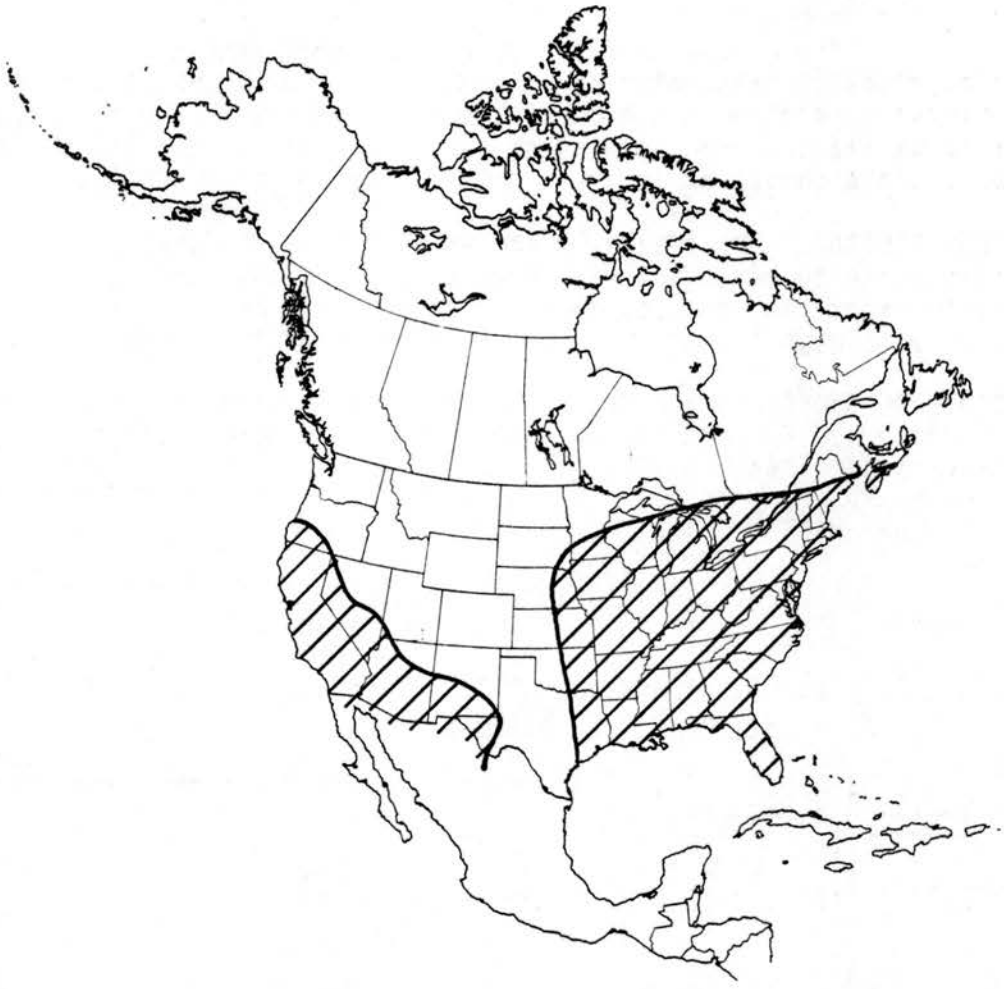
Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

Sanderson, G.C., ed. 1977. Management of migratory shore and upland game birds in North America. International Association of Fish and Wildlife Agencies. Washington, D.C. 358 pp.

PREPARED BY: Art Hawkins

Common Moorhen
Gallinula chloropus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Bartramia longicauda

COMMON NAME: Upland (Plover) Sandpiper

STATE STATUS: Special Concern

Adjacent states/provinces: Endangered in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The species declining abundance is apparent not only in Minnesota but in several other regions across the United States. Nominated for inclusion on the Audubon "Blue List" for 8 consecutive years, the sandpiper is reported to be "slowly declining or stable at low levels or absent over much of its former eastern range". There is also considerable concern regarding its status in the Pacific Northwest states, particularly Oregon and Washington. In contrast, other data suggests a possible increase in the Northern Great Plains. Habitat modification and loss may be the major problems confronting this species.

OCCURRENCE IN MINNESOTA: Even 50 years ago, Roberts was concerned about this bird. He wrote: "formerly exceedingly abundant over this area but now greatly reduced in numbers...Sixty years ago it was present all through the summer everywhere in the open country in countless thousands, now it is a question whether the remnant left can be saved even with careful protection." Today it occurs in scattered locations throughout much of the state where large blocks of grassland habitat, original or man-made (such as airports) remains.

DISTRIBUTION: The plover's breeding range extends from northwestern Alaska to the Atlantic coast, dipping south as far as Oklahoma, Illinois and West Virginia. Within this area prairies and parklands are included, but boreal forests and the Pre-cambrian shield are avoided. Its winter range is primarily the pampas of southern Brazil, Argentina and Chile.

PREFERRED HABITAT: Grasslands, preferably in large blocks, are selected. The birds like to be able to see over or through the cover so it is usually fairly short and not too dense. These conditions are often created artificially through mowing, burning and grazing at the proper times.

RECOMMENDATIONS: Good management for prairies is also good management for Upland Sandpipers. Burning can be a major tool but more basic is the preservation of grassland habitat.

SELECTED REFERENCES:

Bent, A.C. 1928. Life histories of North American shore birds. Part 2. Reprinted by Dover Publications, Inc., New York. 412 pp.

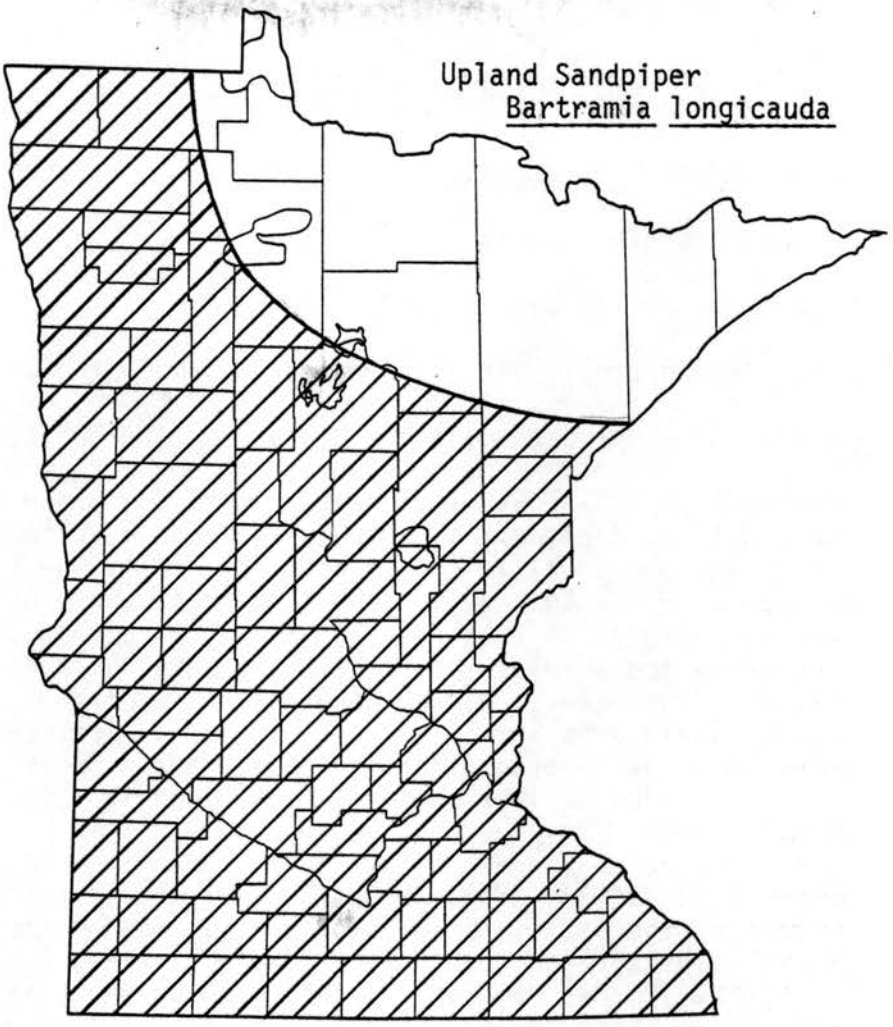
Buss, I.O. and A.S. Hawkins. 1939. The Upland Plover at Fairlle Grove, Wisconsin. Wilson Bull. 51:202-220.

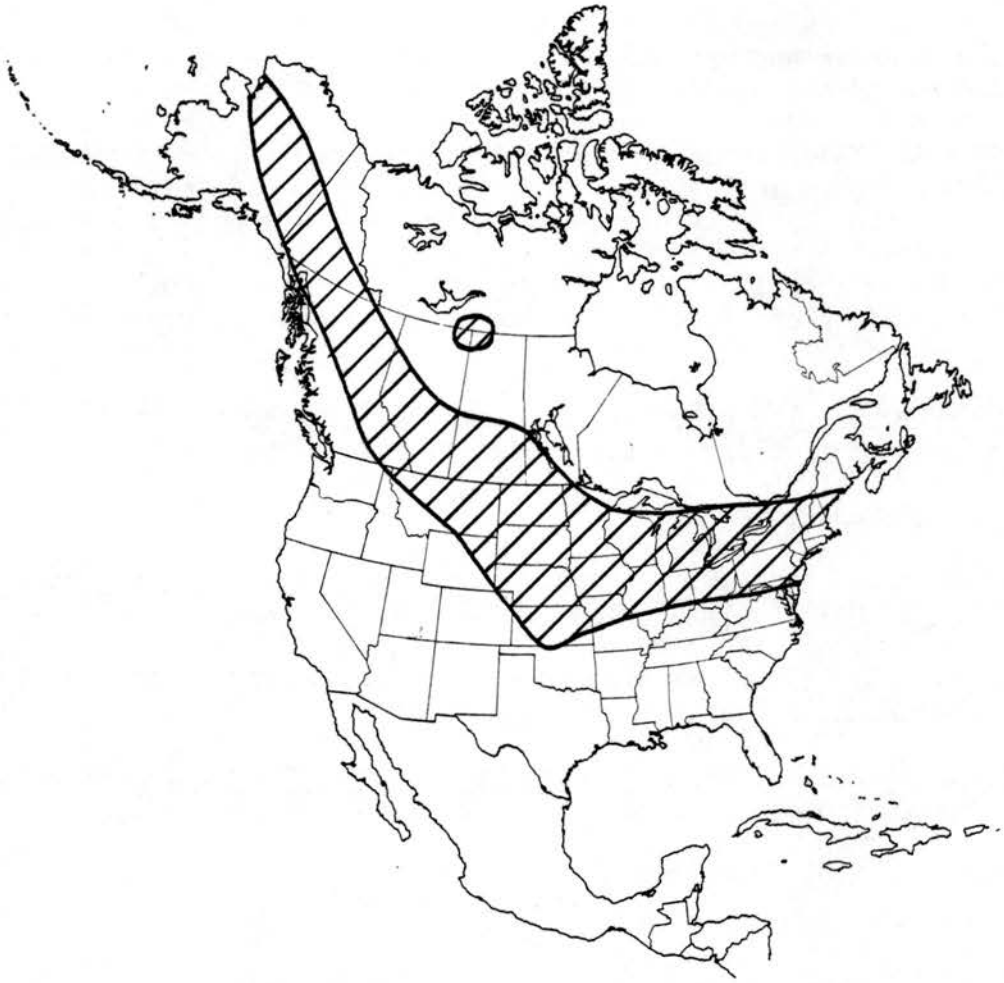
Buss, I.O. 1951. The Upland Plover in southwestern Yukon Territory. Arctic. 4:206-207.

Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Art Hawkins

Upland Sandpiper
Bartramia longicauda





SPECIES STATUS SHEET

SCIENTIFIC NAME: Limosa fedoa

COMMON NAME: Marbled Godwit

STATE STATUS: Special Concern

Adjacent states/provinces: Extirpated in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: This species was widespread during presettlement times but has declined as native grasslands have come under cultivation. Preservation of prairie tracts unintentionally may be responsible for further declines. Prior to acquisition these tracts were often grazed or hayed, keeping the grasses relatively short (< 6 inches). Such short grass cover is used by the godwits for feeding and nesting in spring and summer. Furthermore, the Marbled Godwit generally is a bird of large habitat expanses. Because grasslands are becoming increasingly fragmented, preservation of large units is important for the conservation of this species. Its association with large habitat units gives the godwit value as an "indicator species."

OCCURRENCE IN MINNESOTA: The species formerly occurred throughout the prairie portion of the state, but presently it is most common on or near large prairie tracts along the eastern edge of the Red River Valley in northwest Minnesota. Summer records from Pope, Chippewa, Swift, Kandiyohi and Stearns counties suggests the presence of some breeding birds there.

DISTRIBUTION: The godwit's breeding range extends from the prairies of Alberta, Saskatchewan and Manitoba, south to central Montana, most of North Dakota, northeastern South Dakota and northwestern Minnesota.

PREFERRED HABITAT: Feeding occurs along the edge of semipermanent and seasonal wetlands (Stewart, 1975). Often these have been grazed which results in short cover and possibly enhanced invertebrate populations due to nutrient enrichment by livestock manure. Damp grasslands which have been burned or hayed are also important feeding sites. Nesting occurs in short upland grassland or cropland stubble which is in or close to large expanses of grassland.

RECOMMENDATIONS: The breeding requirements in Minnesota need to be more precisely determined in order to appropriately manage the species.

SELECTED REFERENCES:

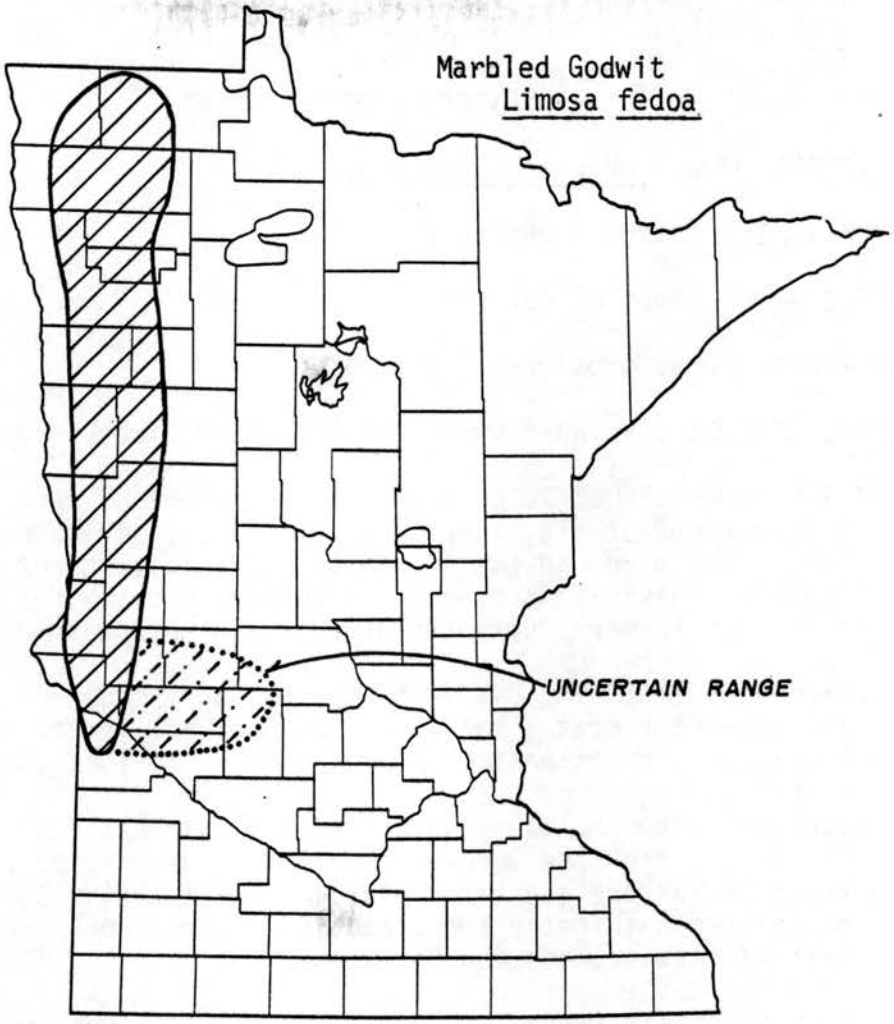
Green, J.C. and R.B. Janssen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press, Minneapolis. 217 pp.

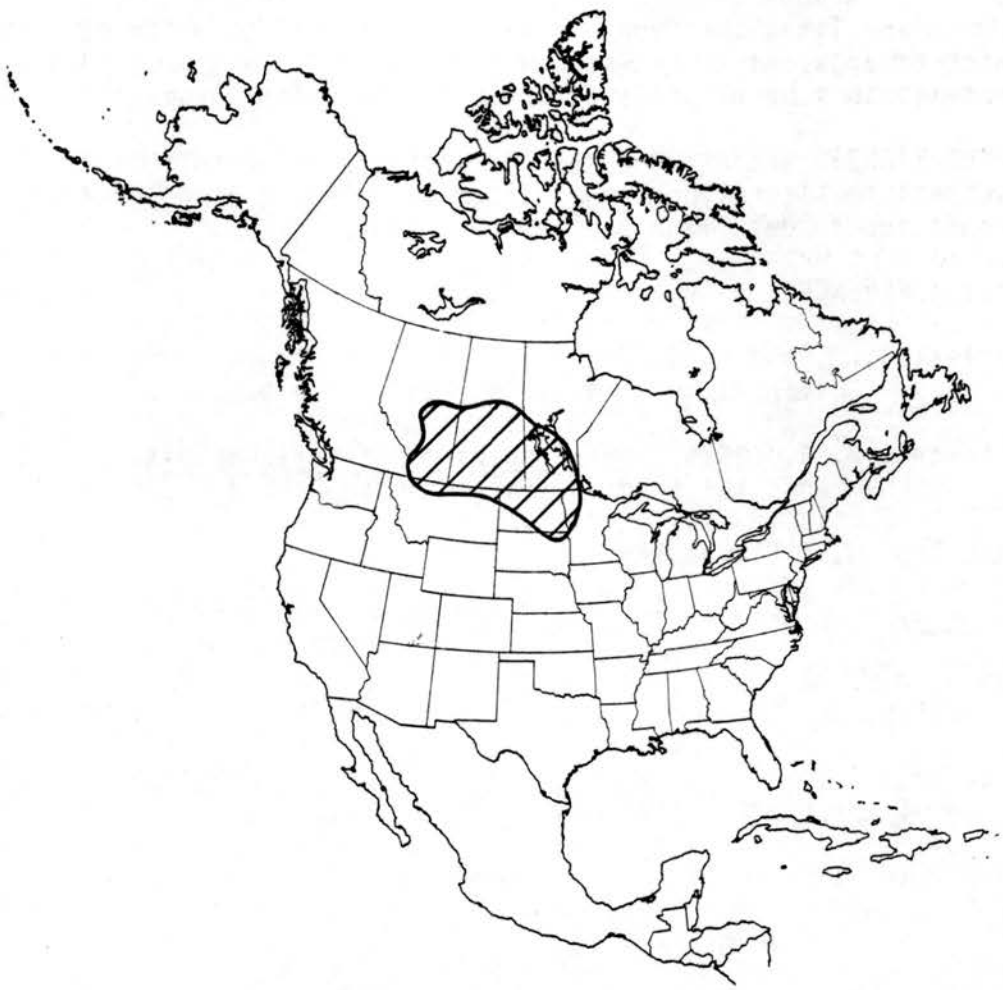
Ryan, M.R. 1982. Marbled Godwit habitat selection in the northern prairie region. M.S. Thesis. Iowa State University, Ames, Iowa. 108 pp.

Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, North Dakota. 295 pp.

PREPARED BY: W.D. Svedarsky

Marbled Godwit
Limosa fedoa





SPECIES STATUS SHEET

SCIENTIFIC NAME: Phlaropus tricolor

COMMON NAME: Wilson's Phalarope

STATE STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: Although the number of recent summer observations has remained stable, there are very few sites where nesting has been reported. Many birds in summer may be only visitants or migrants. The species grassland habitat is especially vulnerable with the rapid pace of agricultural development currently underway in northwest Minnesota.

OCCURRENCE IN MINNESOTA: This species formerly occurred in most of the prairie region of the state, but is now most common in the western and northwestern counties. It has nested in rice paddies in forested, northern Minnesota.

DISTRIBUTION: The phalarope is associated with prairie sloughs and pools ranging, in Canada, from the meadows of British Columbia across the prairie provinces and into extreme southern Ontario and, in the United States, the grasslands of eastern Washington and Oregon across the northern Great Plains to the marshes of Wisconsin and Michigan.

PREFERRED HABITAT: According to Stewart (1975): "wetlands inhabitated by this species include swales along intermittent streams, and various types of ponds and lakes that contain expanses of shallow water that are interspersed with or adjacent to wet-meadow vegetation." Most nests are located in the wet-meadow zone of wetlands or in nearby upland prairie sites.

RECOMMENDATIONS: Because the shallow wetlands on which this species depends are subject to alteration, populations in selected areas of the state should be monitored to determine population status.

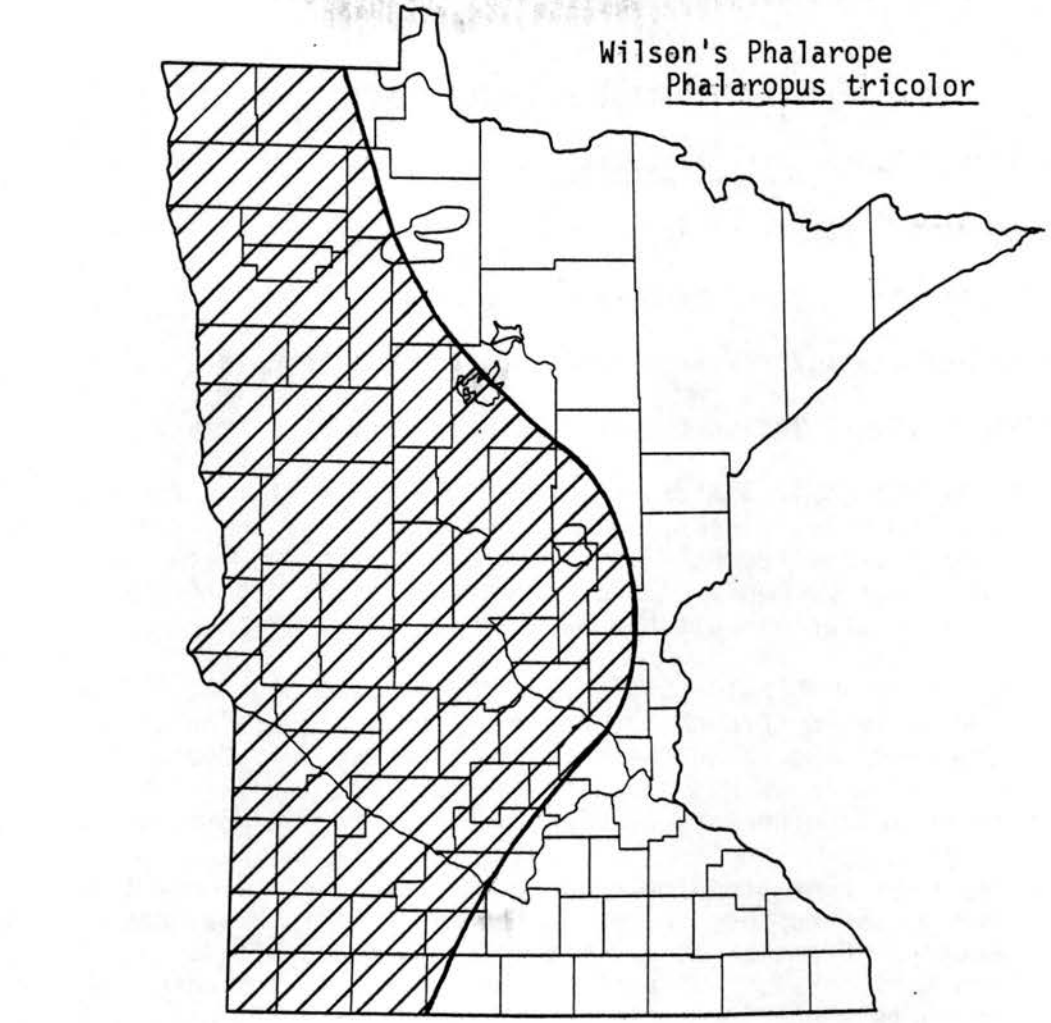
SELECTED REFERENCES:

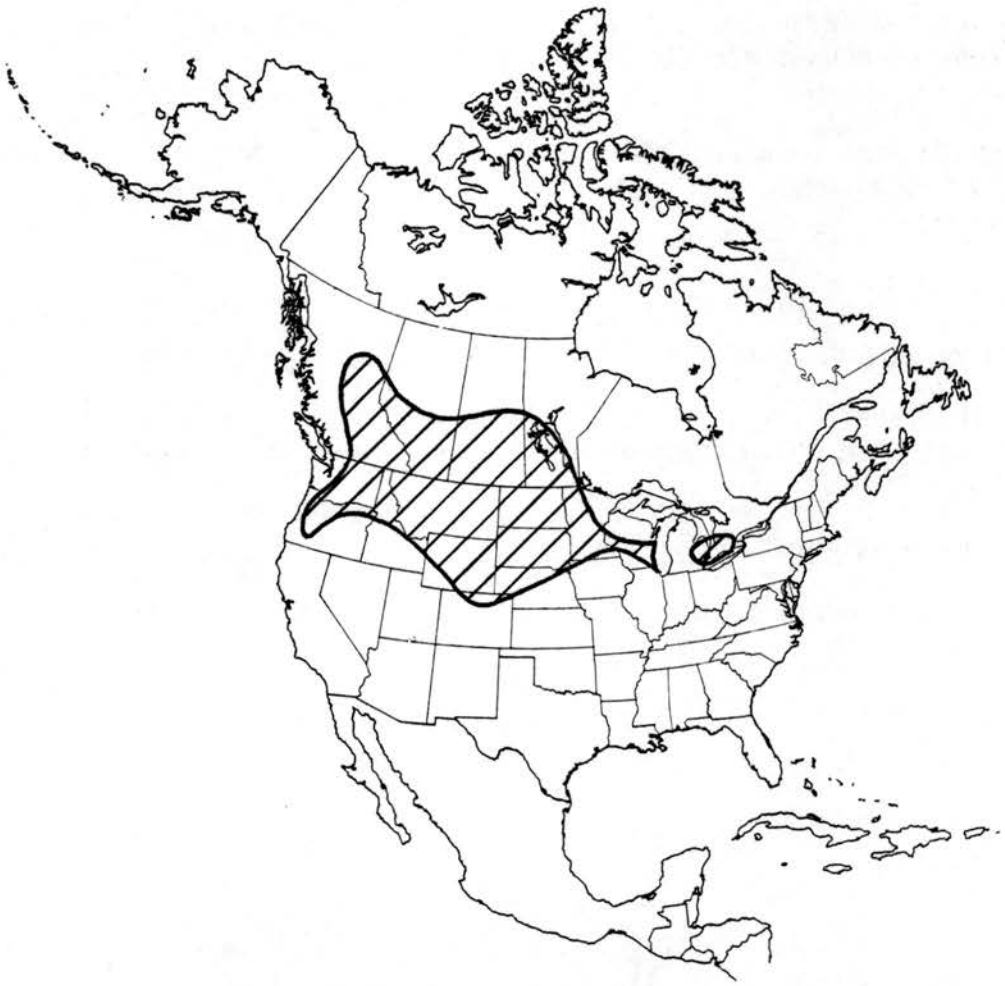
Green, J. C. and R. B. Janssen. 1975. Minnesota birds: where, when and how many. University of Minnesota Press., Minneapolis. 217 pp.

Stewart, R. E. 1975. Breeding birds of North Dakota. Tri-college Center for Environmental Studies, Fargo, North Dakota. 295 pp.

PREPARED BY: W. D. Svedarsky

Wilson's Phalarope
Phalaropus tricolor





SPECIES STATUS SHEET

SCIENTIFIC NAME: Sterna forsteri

COMMON NAME: Forster's Tern

STATE STATUS: Special Concern

Adjacent states/provinces: Ednangered in Wisconsin

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: Although the range of the Forster's Tern in Minnesota covers at least one third of the state, less than 20 nesting sites have been located recently and these are mostly small colonies. The species does not occur commonly on prairie marshes as it did 40 years ago. Furthermore, much apparently suitable habitat is not utilized.

OCCURRENCE IN MINNESOTA: This tern is found throughout the western prairies and eastward through the prairie-woods margin, including an extension into the central part of the state through the Twin Cities to the Wisconsin border. The range has expanded east towards the Twin Cities area in the last 40 years. Minnesota represents the eastern edge of its primary range.

DISTRIBUTION: The breeding range of the Forster's Tern extends across the interior of the western United States and Prairie Provinces with outliers in the southern Great Lakes and mid-Atlantic coast; it is also found along the western Gulf coast. The northern Great Plains, including western Minnesota, comprise this species' primary range.

PREFERRED HABITAT: Large marshes with extensive areas of emergent vegetation or muskrat houses are selected for nesting.

RECOMMENDATIONS: A thorough inventory to locate nesting colonies throughout the state, followed by a continuing program to determine their occupancy and size is needed.

SELECTED REFERENCES:

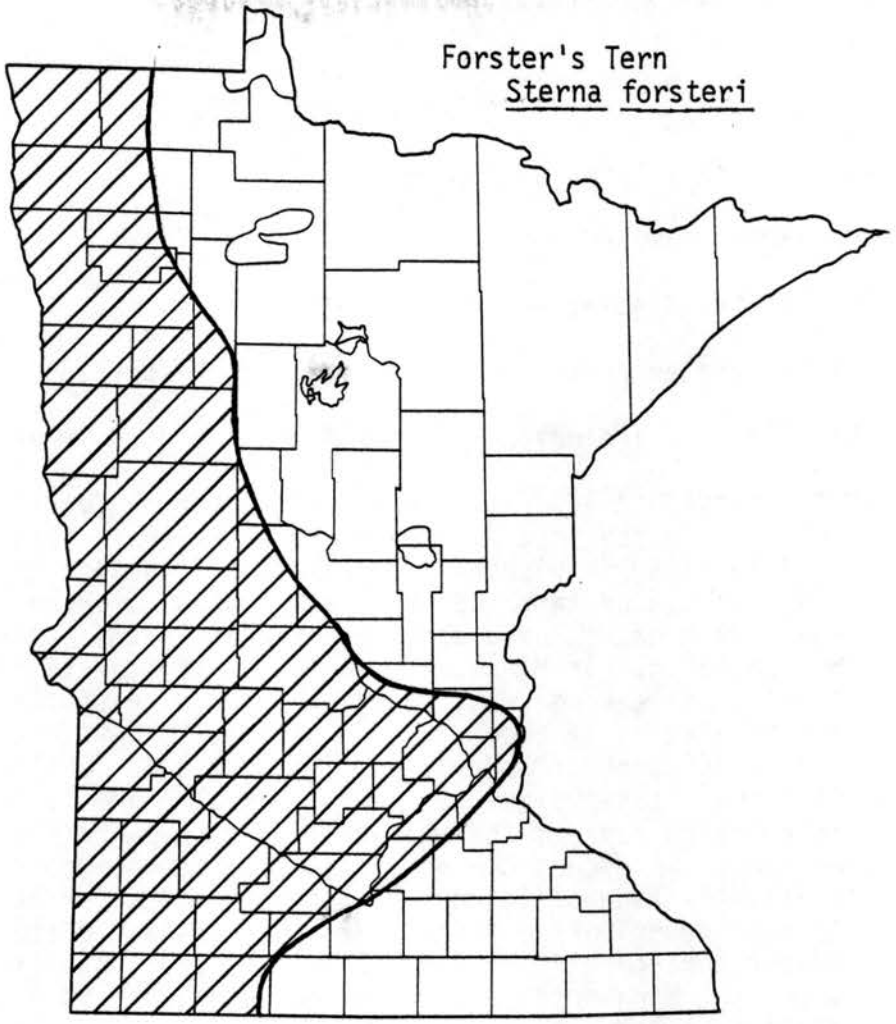
Bergman, R. D., P. Swain, and M. W. Weller. 1970. A comparative study of nesting Forster's and Black Terns. Wilson Bull. 82:435-444.

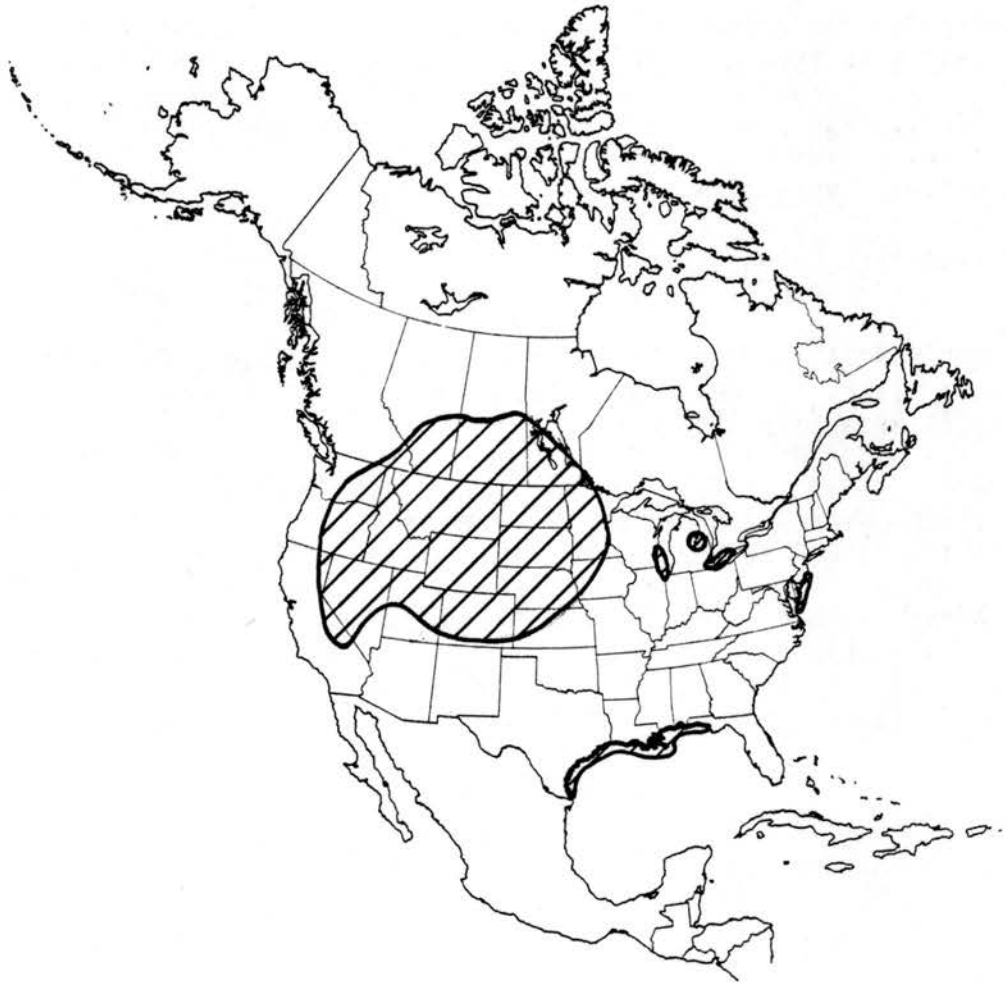
Henderson, C. L., and K. V. Hirsch. 1980. Minnesota colonial waterbird nesting site inventory. Minnesota Department of Natural Resources. 65 pp.

Weller, M. W., and L. H. Fredrickson. 1974. Avian ecology of a managed glacial marsh. The Living Bird 12:269-291.

PREPARED BY: Janet C. Green

Forster's Tern
Sterna forsteri





SPECIES STATUS SHEET

SCIENTIFIC NAME: Sterna hirundo

COMMON NAME: Common Tern

STATE STATUS: Special Concern

Adjacent states/provinces: Endangered in Wisconsin

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The number of Common Terns in the Great Lakes has declined in the last decade to the point where this species is classified as endangered in Wisconsin, Michigan, Illinois and Ohio. The poor reproductive success of terns has been attributed to changing ecological relationships with other larid species, expecially the exploding population of Ring-billed Gulls. In Minnesota the Common Tern nests at only four locations: Duluth, Mille Lacs Lake, Leech Lake and Lake of the Woods. The Duluth harbor population of about 200 pairs seems to have been stable during the 1970s but it is using an industrial fill area that is slated for development. The Mille Lacs Lake colony was down to an all time low of about 50 nests in 1981. There is no current information on the Leech Lake colony (500 pair in 1969) and only one recent census of the Lake of the Woods population (275 nests in 1981). Because of its colonial nesting behavior this species is vunerable to mass reproductive failure due to excessive disturbance, predation, adverse weather or competition from other species. The little information available about the Minnesota population indicates that it is experiencing the same decline as documented elsewhere.

OCCURRENCE IN MINNESOTA: The four locations mentioned above have always been the major ones for this species in Minnesota. There was a colony at Gull Lake, Cass and Crow Wing Counties in the 1920s and an isolated nesting of three pair was reported from Cotton Lake, Becker County in 1963.

DISTRIBUTION: This is a holarctic species with an extensive range through Europe and Asia. In North America it nests primarily in three areas: the Atlantic Coast from Labrador to North Carolina; the Great Lakes; and the northern Great northern Great Plains including all of the Prairie Provinces.

PREFERRED HABITAT: Common Terns select isolated, sparsely vegetated islands in large lakes for nesting. Open edges of sandy and gravelly beaches or dredge spoil areas are also used.

RECOMMENDATIONS: The four colonies in Minnesota should be censused annually with some effort directed at determining the birds' reproductive success. In the Duluth harbor the Hearding Island Wildlife Management Area ought to be managed so as to provide suitable nesting habitat for terns. Meanwhile contact with the Duluth Port Authority should continue in an attempt to minimize disturbance and habitat alteration of the site presently occupied by the terns as long as it remains unconverted to other uses. Finally, research projects designed to better understand the reasons for population declines are needed.

Con't

COMMON TERN (con't)

SELECTED REFERENCES:

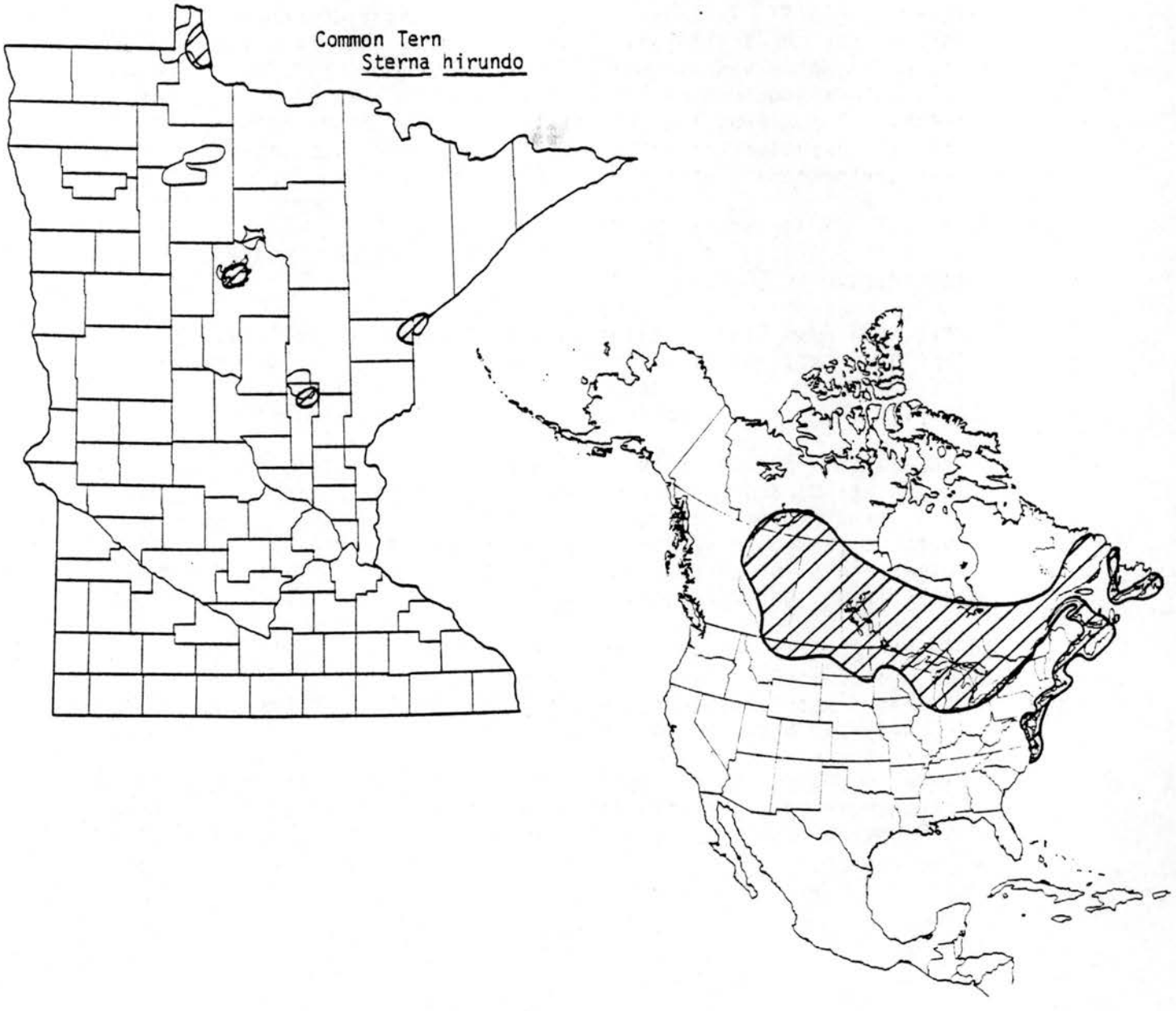
Blokpoel, H. 1977. Gulls and terns in northern Lake Ontario and the Upper St. Lawrence River. Can. Wildl. Serv. Prog. Note 75:1-12.

Drury, W.H. 1974. Population changes in New England seabirds. Bird-Banding 45:1-15.

Nisbit, I. C. T. 1973. Terns in Massachusetts: present numbers and historical changes. Bird-banding 44:27-55.

Shugard, G. W. and W. C. Scharf. In press. Common Terns in the northern Great Lakes: current status and population trends.

PREPARED BY: Janet C. Green



SPECIES STATUS SHEET

SCIENTIFIC NAME: Asio flammeus

COMMON NAME: Short-eared Owl

STATE STATUS: Special Concern

Adjacent states/provinces: Extirpated in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act.

BASIS FOR MINNESOTA STATUS: This owl's nesting habitat includes native grasslands, marshes and open peatlands, all of which have been and continue to be greatly reduced in extent by cultivation and drainage. The bird will nest in grain fields, but is then vulnerable to disturbance by plowing, mowing, and agricultural pesticides. Like other raptors, it is also vulnerable to illegal shooting. The species' range and numbers are greatly reduced from former levels.

OCCURRENCE IN MINNESOTA: The Short-eared Owl was a common and widespread summer resident in the first half of this century, when it occurred widely and was frequently observed throughout the state except for the northeastern and southeastern corners of Minnesota. Now the species is uncommon to rare in summer, with almost all the records limited to the northwestern corner of the state. In winter, and during migration as well, it is also less common than in former years.

DISTRIBUTION: This species is distributed worldwide (holartic and neotropical). In North America, it ranges from the Arctic tundra south to the mid U.S. continent.

PREFERRED HABITAT: Native grasslands, marshes, open peatlands and grain fields - habitats where this species also hunts for prey - are selected for nesting. In winter and during migration, the species will use open country of any type.

RECOMMENDATIONS: Summer inventories are needed to determine this species' population status and to locate areas with current and potential nesting habitat. Expanded efforts to acquire and protect native grasslands, marshes and bogs are needed to preserve the disappearing habitats the species depends on. Public education programs that increase awareness of this and all raptors' value in the natural and agricultural environments should be continued.

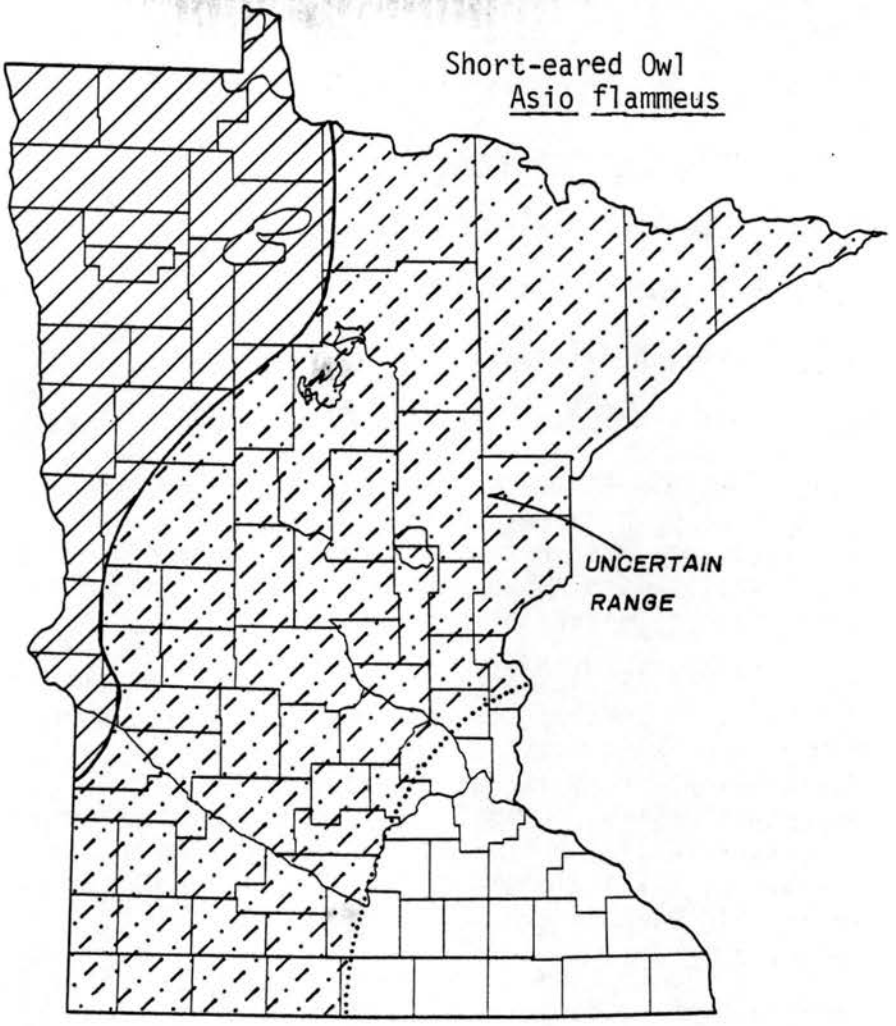
SELECTED REFERENCES:

Roberts, T. S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

Clark, R. J. 1975. A field study of the Short-eared Owl, Asio flammeus (Pontoppidan), in North America. Wildlife Society, Wildlife Monograph 47. 67 pp.

PREPARED BY: Kim R. Eckert

Short-eared Owl
Asio flammeus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Seiurus motacilla

COMMON NAME: Louisiana Waterthrush

STATUS STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The range and abundance of this species has shrunk dramatically in Minnesota in the last 50 years. Although habitat alteration of wooded streams in the southeastern part of the state has certainly occurred, it does not appear a sufficient reason to explain the reduction of known nesting sites to less than ten.

OCCURRENCE IN MINNESOTA: A northwestern finger of the range of this waterthrush extends into southeastern Minnesota. Older observations included the southern St. Croix River, the Mississippi River as far as St. Cloud, and the Minnesota River as far as Mankato. In the early years of this century it was described as "common" in the southeast, especially along wooded tributary streams of the Mississippi River, and "hundreds" were found along the St. Croix. It no longer nests in the Twin Cities metro area except at a couple of locations on the far fringes.

DISTRIBUTION: Found throughout the east-central United States, the breeding range of this waterthrush is centered in the interior drainage of the Ohio-Mississippi Rivers with fingers up river valleys to the north and west, including the Mississippi River in Minnesota. It also occurs along the St. Lawrence River to northern Lake Ontario and into southwestern New England. The species is more abundant in the eastern part of its range than in the western.

PREFERRED HABITAT: The Louisiana Waterthrush is most commonly found along wooded ravines with swiftly flowing streams; sometimes it is found in wooded swamps.

RECOMMENDATIONS: An inventory of southeastern streams is needed to determine the extent of suitable habitat and the nesting population. Research of the species breeding biology is necessary to determine what factors might be causing the decline.

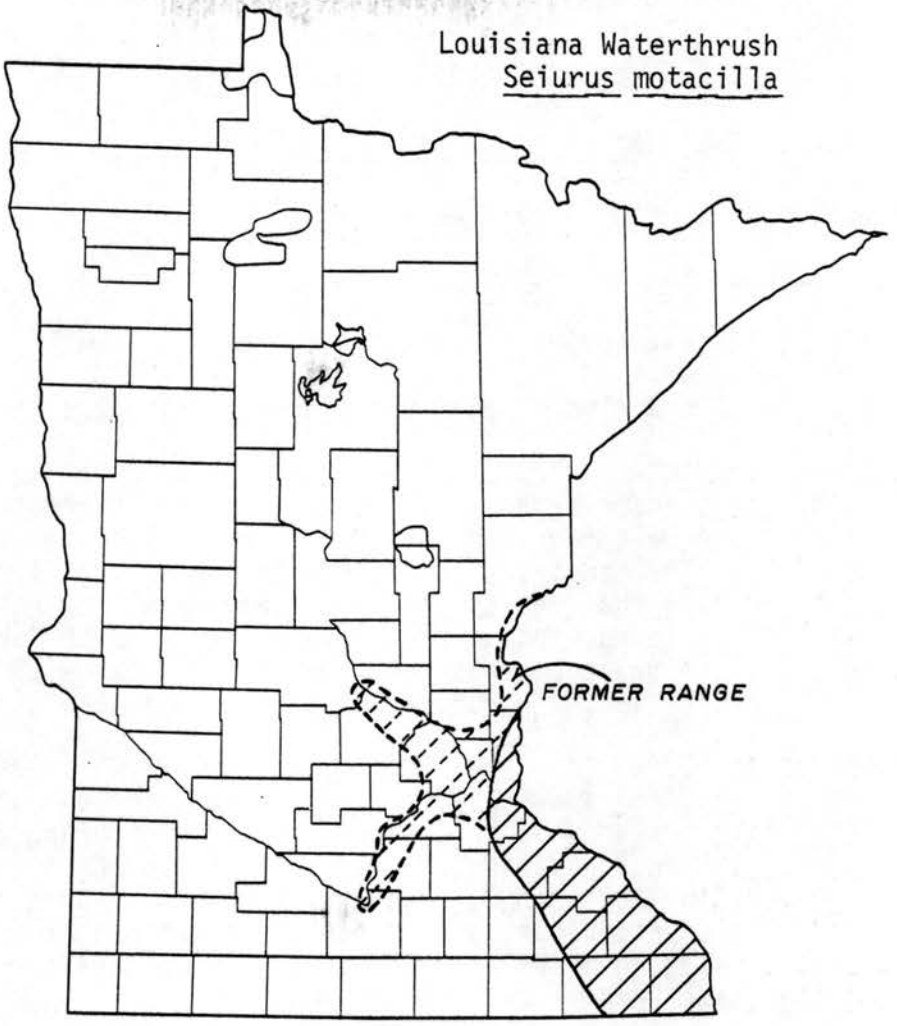
SELECTED REFERENCES:

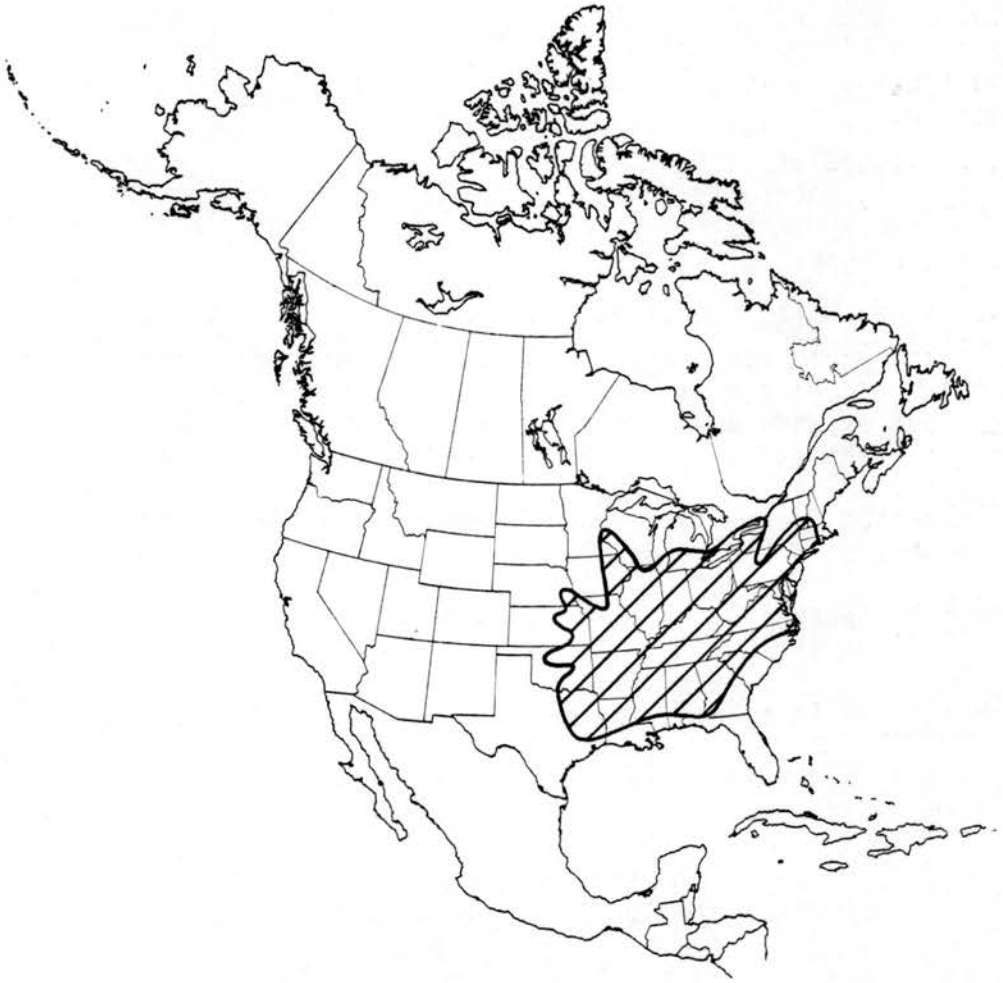
Eaton, S.W. 1958. A life history of the Louisiana Waterthrush. Wilson Bull. 70:211-236.

Roberts, T.S. 1932. The birds of Minnesota. University of Minnesota Press, Minneapolis. 821 pp.

PREPARED BY: Janet C. Green

Louisiana Waterthrush
Seiurus motacilla





SPECIES STATUS SHEET

SCIENTIFIC NAME: Ammodramus henslowii

COMMON NAME: Henslow's Sparrow

STATE STATUS: Special Concern

Adjacent states/provinces: Special Concern in Iowa

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: The sparrow's nesting habitat includes uncultivated grasslands and overgrown fields which may have been formerly cultivated. Such areas have been and continue to be greatly reduced in extent by agriculture. The species also depends on areas comprised of vegetation of certain heights and density, so that fields mown for hay or annually burned will not be used, and an area used one year may be abandoned the following year if the grass becomes too long or too short with an abundance or lack of precipitation. Therefore, distribution in the state is rare and spotty.

OCCURRENCE IN MINNESOTA: The species was formerly a widespread, although relatively uncommon and local, summer resident throughout the southern half of the state. Now it is quite rare and local. During recent summers the species has been found consistently only at O.L. Kipp State Park in Winona County. In 1980 - 1982, however, it was found at a few locations in Wilkin and Clay Counties during an intensive inventory of select prairie tracts. In 1981 singing males also were found in southeastern Becker County and at Afton State Park in Washington County.

DISTRIBUTION: The species ranges across the interior of the northeastern United States, from Minnesota to New York and Missouri to Virginia.

PREFERRED HABITAT: It nests primarily in uncultivated grasslands, wet meadows and overgrown fields which are usually somewhat weedy or shrubby in nature, providing males with stalks for singing perches. An area with appropriate habitat is generally used by this species for only a year or two. It is not known whether this is due to a subtle change in the nature of the habitat or to the species' rare status.

RECOMMENDATIONS: Summer inventories are needed to determine the species' population and to locate current and potential nesting areas. Research efforts should be directed at describing its preferred habitat and clarifying its apparent erratic and local status. Management of the field around the contact station at O.L. Kipp State Park should be an immediate priority in an effort to maintain the only consistent breeding location of this species in Minnesota. Acquisition and management of areas with suitable habitat are also needed.

SELECTED REFERENCES:

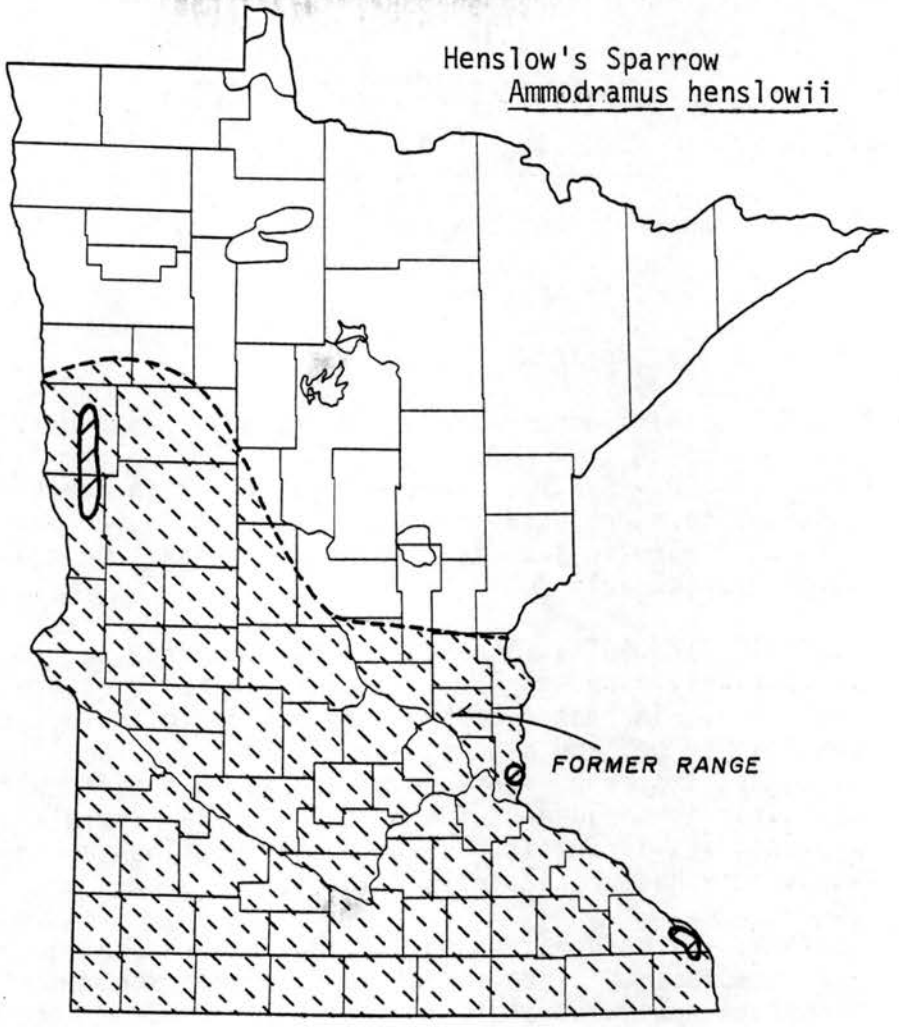
Hyde, A.S. 1939. The life history of Henslow's Sparrow, Passerherbulus henslowii (Audubon). Univ. Mich. Mus. Zool. Misc. Publ. No. 41. 72 pp.

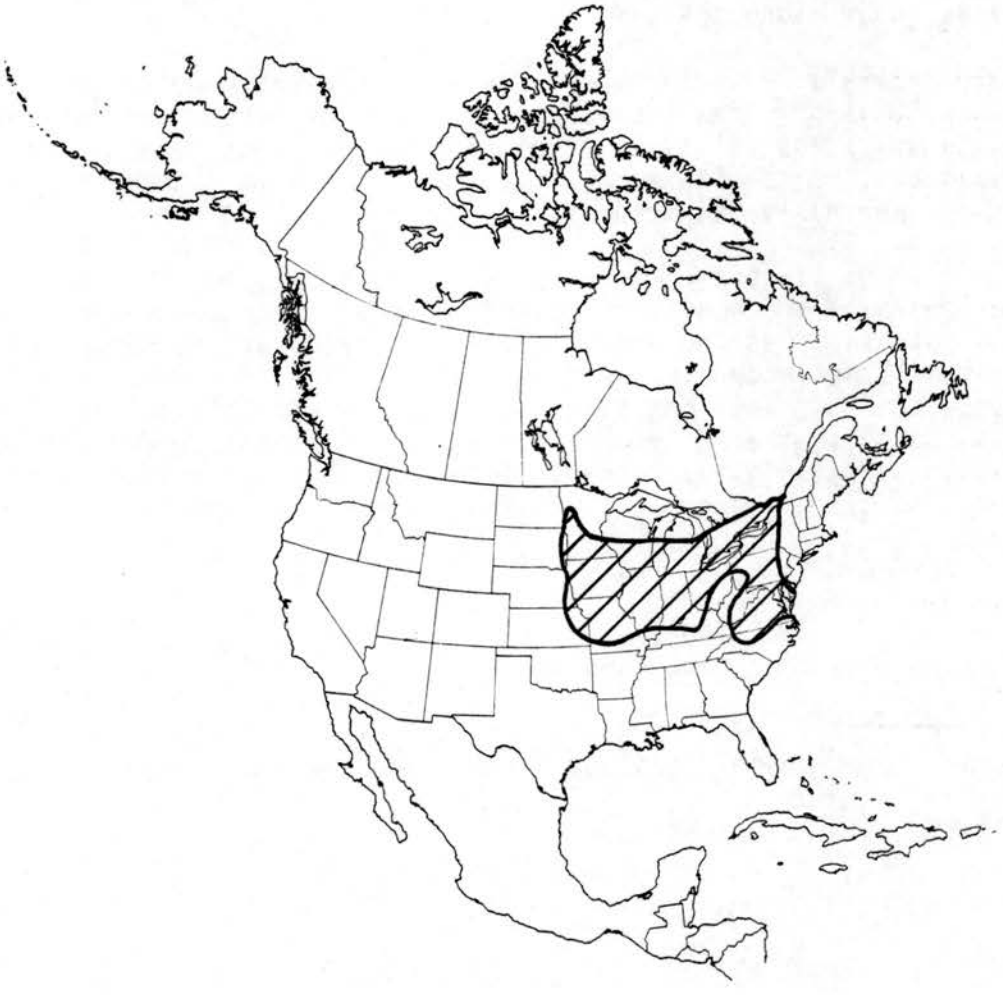
Robins, J.S. 1971. A study of Henslow's Sparrow in Michigan. Wilson Bull. 83:39-48.

Wiens, J.A. 1969. An approach to the study of ecological relationships among grassland birds. Am. Ornith. Union. Ornith. Monogr. No. 8. 93 pp.

PREPARED BY: Kim R. Eckert

Henslow's Sparrow
Ammodramus henslowii





SPECIES STATUS SHEET

SCIENTIFIC NAME: Ammospiza caudacuta

COMMON NAME: Sharp-tailed Sparrow

STATE STATUS: Special Concern

Adjacent states/provinces: None

FEDERAL STATUS: Included under the Migratory Bird Treaty Act

BASIS FOR MINNESOTA STATUS: This sparrow nests in marshes which have been and continue to be reduced in extent by drainage. The species appears to be local and rare in its distribution, and its true status in Minnesota has never been clearly determined.

OCCURRENCE IN MINNESOTA: The Sharp-tailed Sparrow was formerly thought to be a relatively rare and local species limited to the northwestern corner of the state. Increased coverage by field ornithologists, however, suggests the species may be, and always was, uncommon and local in north-central Minnesota as well. Its true Minnesota status is more difficult to determine than most species because of the relatively inaccessible nature of its marsh habitat, its inconspicuous and easily overlooked song, and its inconsistent and mostly nocturnal singing habits.

DISTRIBUTION: Three separate populations are recognized: the subspecies nelsoni ranges across the interior of North America from North Dakota and western Minnesota northwestward to northern Alberta and the Mackenzie district of Yukon; the subspecies altera is found in the James Bay lowland; and three races occur along the east coast.

PREFERRED HABITAT: Prairie marshes and open peatlands which have a permanent water level of a few inches are selected for nesting. These marshes can be quite small and relatively isolated, and need not be as extensive as formerly thought. The species apparently is not found in deeper cattail-type marshes or in marginally wet meadows.

RECOMMENDATIONS: Inventories in summer specifically for this species (and the Yellow Rail) are needed to determine population levels and to locate current and potential nesting areas. Surveys appropriate for other singing passerines will not accurately reflect this species' distribution or relative abundance since it does not sing as much or as consistently as other species, especially in the early morning, since it appears to be more vocal in the evening or at night. Research into this species' preferred habitat would serve to clarify the local nature of its distribution.

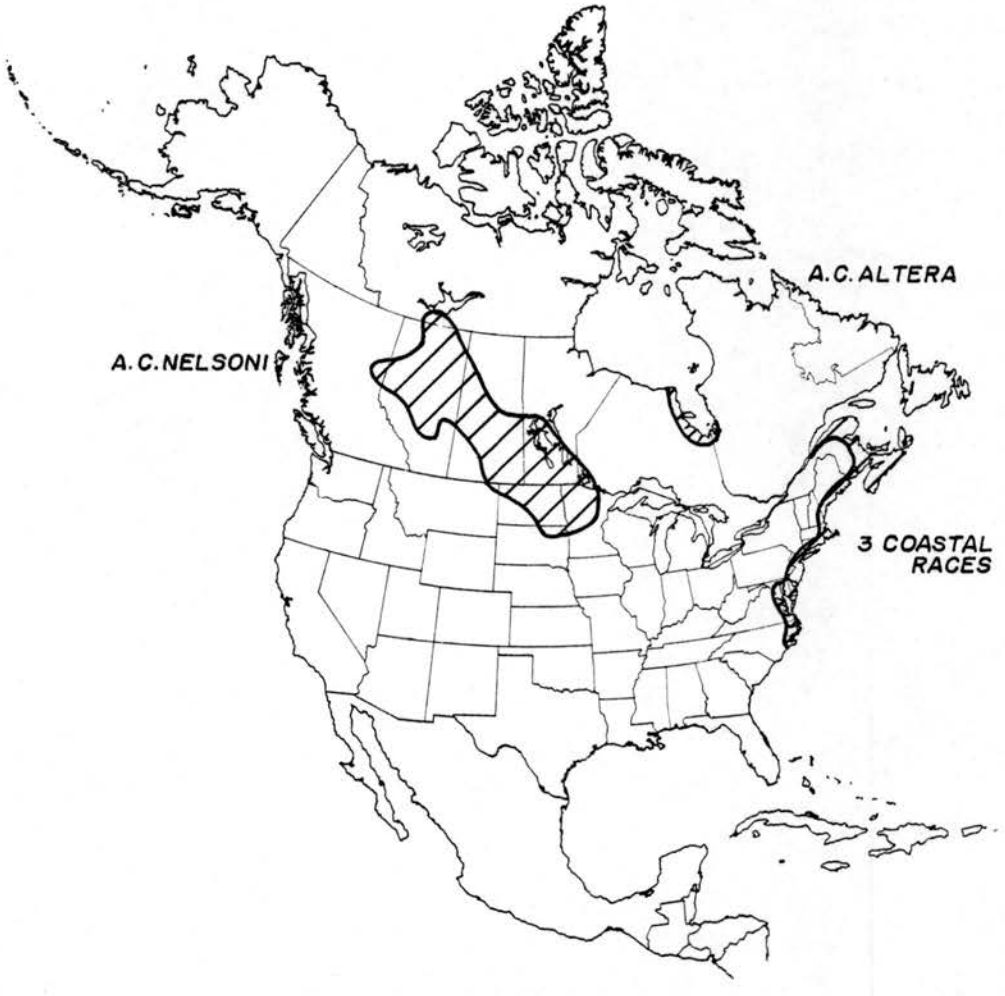
SELECTED REFERENCES:

Marray, B.G. Jr. 1969. A comparative study of the Le Conte's and Sharp-tailed Sparrow. Auk 86:199-231

Stewart, R.E. 1975. Breeding birds of North Dakota. Tri-college Center for Environmental Studies, Fargo, North Dakota. 295 pp.

PREPARED BY: Kim R. Eckert

Sharp-tailed Sparrow
Ammospiza caudacutus



AMPHIBIAN AND REPTILE COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S AMPHIBIANS AND REPTILES

A Final Report of the Amphibians and Reptiles Group Committee
Submitted to the Chairman
Endangered Species Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Dr. Jeffrey W. Lang, Chairman
Department of Biology
University of North Dakota
Grand Forks, North Dakota 58202

with group committee members

Mr. Daryl Karns
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Mr. Doug Wells, DNR Liaison
Department of Natural Resources
1043 4th Avenue
Windom, Minnesota 56101

Mr. Mike Nehl
P.O. Box 258A
Lindstrom, Minnesota 55445

Mr. Mike Pappas
2755 Riverside Lane
Rochester, Minnesota 55901

Proposed List of Amphibian and Reptiles Classified as
Endangered, Threatened or Special Concern
by the Amphibian and Reptiles Group Committee

ENDANGERED

Eumeces fasciatus; Five-lined Skink

THREATENED

Clemmys insculpta; Wood Turtle
Emydoidea blandingi; Blanding's Turtle

SPECIAL CONCERN

Chelydra serpentina; Snapping Turtle
Coluber constrictor; Racer (Blue Racer)
Crotalus horridus; Timber Rattlesnake
Elaphe obsoleta; Rat Snake (Black Rat Snake)
Elaphe vulpina; Fox Snake
Heterodon nasicus; Western Hognose Snake
Heterodon platyrhinos; Eastern Hognose Snake
Lampropeltis triangulum; Milk Snake
Pituophis melanoleucus; Gopher Snake (Bull Snake)
Sistrurus catenatus; Massasauga
Tropidoclonion lineatum; Lined Snake
Acris crepitans; Northern Cricket Frog (Blanchard's Cricket Frog)
Rana caterbeiana; Bullfrog
Rana palustris; Pickerel Frog

AMPHIBIANS AND REPTILES OF MINNESOTA: a checklist with status determinations

Reptiles (29)

TURTLES (9)

SC Snapping Turtle (Chelydra serpentina)
Painted Turtle (Chrysemys picta)
TH Wood Turtle (Clemmys insculpta)
TH Blanding's Turtle (Emydoidea blandingi)
Map Turtle (Graptemys geographica)
Ouachita Map Turtle (Graptemys ouachitensis)
False Map Turtle (Graptemys pseudogeographica)
Smooth Softshell (Trionyx muticus)
Spiny Softshell (Trionyx spiniferus)

LIZARDS (3)

Six-lined Racerunner (Cnemidophorus sexlineatus)
EN Five-lined Skink (Eumeces fasciatus)
Prairie Skink (Eumeces septentrionalis)

SNAKES (17)

SC Racer (Coluber constrictor)
SC Timber Rattlesnake (Crotalus horridus)
Ringneck Snake (Diadophis punctatus)
SC Rat Snake (Elaphe obsoleta)
SC Fox Snake (Elaphe vulpina)
SC Western Hognose Snake (Heterodon nasicus)
SC Eastern Hognose Snake (Heterodon platyrhinos)
SC Milk Snake (Lampropeltis triangulum)
Northern Water Snake (Nerodia sipedon)
Smooth Green Snake (Opheodrys vernalis)
SC Gopher Snake (Pituophis melanoleucus)
SC Massasauga (Sistrurus catenatus)
Brown Snake (Storeria dekayi)
Redbelly Snake (Storeria occipitomaculata)
Plains Garter Snake (Thamnophis radix)
Common Garter Snake (Thamnophis sirtalis)
SC Lined Snake (Tropidoclonion lineatun)

EN = Endangered
TH = Threatened
SC = Special Concern

Amphibians (19)

SALAMANDERS (5)

Blue-spotted Salamander (Ambystoma laterale)
Tiger Salamander (Ambystoma tigrinum)
Mudpuppy (Necturus maculosus)
Eastern Newt (Notophthalmus viridescens)
Redback Salamander (Plethodon cinereus)

TOADS & FROGS (14)

SC Northern Cricket Frog (Acris crepitans)
American Toad (Bufo americanus)
Great Plains Toad (Bufo cognatus)
Canadian Toad (Bufo hemiophrys)
Cope's Gray Treefrog (Hyla chrysoscelis)
Spring Peeper (Hyla crucifer)
Gray Treefrog (Hyla versicolor)
Striped Chorus Frog (Pseudacris triseriata)
SC Bullfrog (Rana catesbeiana)
Green Frog (Rana clamitans)
SC Pickerel Frog (Rana palustris)
Northern Leopard Frog (Rana pipiens)
Mink Frog (Rana septentrionalis)
Wood Frog (Rana sylvatica)

POSSIBLE BORDER ENTRANTS

Slender Glass Lizard (Ophisaurus attenuatus)
Spotted Salamander (Ambystoma maculatum)
Tremblay's Salamander (Ambystoma tremblayi)
Woodhouse's Toad (Bufo woodhousei)
Four-toed Salamander (Hemidactylium scutatum)
Plains Spadefoot (Scaphiopus bombifrons)

Amphibian and Reptile Group,
Endangered Species Tecnical Advisory Committee
to the Commissioner, Minnesota DNR

Jeffrey W. Lang, Chairman

INTRODUCTION

Of the five major vertebrate groups which inhabit the state, Minnesota's amphibians and its reptiles are probably the least known and certainly the least appreciated. Unlike the state's fishes, birds, and mammals, there are no game species of herpetofauna (=amphibians and reptiles) with the possible exception of several species of turtles. Hence, the herpetofauna is often conveniently lumped into the category of "nongame" wildlife, a useful but somewhat artificial term that belies the major contributions and crucial roles of these two important groups of vertebrates in wildlife communities (Bury, et al., 1980a, 1980b).

Although the species diversities of amphibians (=19 species) and reptiles (=29 species) are low relative to those of fishes (~150 species), birds (~350 species), and mammals (~60 species), the abundances of some of the common frogs, salamanders, turtles, and snakes in Minnesota are extraordinary. A short walk in early summer through the woods at Itasca State Park reveals wood frogs hopping about with virtually every footstep; leopard frogs abound in wet meadows and prairies. In the fall in many parts of the state, tiger salamanders by the thousands migrate across roads and highways in search of overwintering sites. On the northwest Minnesota prairies, Canadian toads in the thousands move to mima mound hibernacula; in the forests to the east, redbelly snakes and green snakes gather by the hundreds at ant mound hibernacula.

Once the abundances of these species become apparent, the biological significance of the herpetofauna is evident. For example, in a New Hampshire forest, salamanders outnumbered birds or small mammals and in biomass constituted more than twice the biomass of birds and equaled that of mammals (Burton and Likens, 1975). Although for the present we must rely on inferences from studies conducted elsewhere, certain species of amphibians and reptiles undoubtedly play equally important roles in the diverse Minnesota habitats. Clearly, the state's herpetofauna is important despite its "nongame" designation and deserves our attention.

Amphibians and reptiles are typically secretive and often live in inaccessible habitats, making them difficult to find, observe, and collect. In addition, many species are seasonally active or abundant in yearly cycles, confounding efforts to sample populations adequately. These features demand accurate species' identifications and detailed knowledge of their life histories and habitat preferences before valid status determinations may be made. Management of habitats specifically for species of amphibians and/or reptiles is not widespread, but the effects of particular management techniques on these vertebrates are now being considered (e.g. Landers and Speake, 1980; Means and Campbell, 1982).

Useful keys for the identification of Minnesota herpetofauna are contained in Breckenridge (1944), Eddy and Hodson (1982), and Vogt (1981). Additional identification guides as well as a general synopsis of the habitats and habits of each species are found in Conant (1975) and Behler and King (1979). The common and scientific names used throughout this report are in accordance with Collins et al. (1982).

The Minnesota records for many species, even some of the common forms, remain incomplete; recent sightings and specimens are needed from most counties throughout the state, particularly in the southeast and southwest corners and in the east central region. Collecting specimens along roads including those killed by trafic is a very effective way to sample the local herptofauna. Specific techniques for trapping and sampling amphibians and reptiles in Wisconsin, and widely applicable to Minnesota as well, are outlined by Vogt and Hines (1982). Quantitative sampling utilizing drift fences is also discussed in Gibbons and Semlitsch (1981). Preservation techniques for specimens are detailed in Pisani (1973); freezing is a convenient way to save or hold specimens until fluid preservation is feasible.

The major threats to the herpetofauna of Minnesota are loss of habitat and unrestricted collecting. On the basis of the known distributions and abundances, 17 of the 48 species within the state require special attention and have been categorized as endangered (1 lizard), threatened (2 turtles), or special concern (1 turtle, 10 snakes, and 3 frogs). Each determination was based on criteria developed by the Endangered Species Technical Advisory Committee. Our group did not consider a species on the periphery of its range in Minnesota to be a special concern species unless it was specifically subject to collecting and/or harvest or loss of habitat. Previous status determinations for the state's herpetofauna were reviewed (Breckenridge, in Ashton, 1976; Henderson, 1980; Minnesota Natural Heritage Program, 1980) as well as the status of the species in adjacent states and provinces (Manitoba DMNRE, 1982; Ontario MNR, 1977; Wisconsin DNR, 1982; Iowa NAI, 1982 and Roosa, 1977; South Dakota DGFP, 1979; North Dakota TWS, 1982; summaries on file with Minnesota DNR).

The distributions and abundances of the species included in the status summaries were based on a) Breckenridge (1944), b) recent records in herpetological collections within the state (primarily at the Bell Museum of Natural History, University of Minnesota), c) Ernst (1972), d) miscellaneous regional studies or inventories, e) Henderson (1980) with updates from the DNR Uncommon Wildlife Reports, f) recent data from southern Minnesota for frogs and toads collected by Mike Nehl for the Nongame Program, Minnesota DNR, and g) the personal observations and collections of D. Karns, J. Lang, M. Nehl, M. Pappas, and D. Wells. Information from these sources was incorporated into a Minnesota distribution map which accompanies each status account. Solid circles indicate specimens; open circles indicate sightings not verified with specimens. The circles indicate occurrence in the county, not the exact locality within the county. A North American range map for each species is included from Conant (1975).

MINNESOTA'S HERPETOFAUNA: PRIORITIES

The lists below were formulated by the Amphibian and Reptile Group of the Endangered Species Technical Advisory Committee to assist in establishing priorities for future studies. Conservation of the state's herpetofauna requires different management strategies for the various species. In some instances, habitat protection is desirable; for other species, direct protection by prohibiting collecting or taking is sufficient for other species. For a particular species, additional information on either distribution and/or abundance is often a prerequisite for effective management or conservation.

These lists should be used to establish the appropriate approach or combination of approaches for a particular species. For species marked with an asterisk (*), an individual account of the species' status in Minnesota has been prepared; please consult this account for further details on status and specific recommendations.

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1. Habitat: Each of these species appears to be tightly linked or coupled to (i.e., dependent upon) a particular habitat(s). Protection, preservation, and management of habitat is considered critical to the species' survival.

   *Wood Turtle (Clemmys insculpta)
   *Blanding's Turtle (Emydoidea blandingi)
   *Fivelined Skink (Eumeces fasciatus)
   *Western Hognose Snake (Heterodon nasicus)
   *Eastern Hognose Snake (Heterodon platyrhinos)
   *Rat Snake (Elaphe obsoleta)
   *Massasauga (Sistrurus catenatus)
   *Lined Snake (Tropidoclonion lineatum)
   *Northern Cricket Frog (Acris crepitans)
   *Pickerel Frog (Rana palustris)

2. Direct Protection: Some species are currently collected/harvested/killed by humans. Regulation and/or prohibition of such activities is considered essential to the continued survival of these species. We recommend that the DNR:

   regulate the harvest of Snapping Turtles (Chelydra serpentina) and Spiny Softshell Turtles (Trionyx spiniferus); prohibit commerical trade in all other species of turtle found in Minnesota,

   abolish all bounties or similar incentives for killing or destroying any snakes, particularly rattlesnakes,

   prohibit and/or regulate commercial trade in all species of snakes, especially reaching adult total lengths of = 50 cm.,

   assess the impact of utilizing frogs as a commercial bait,

   protect all species of amphibians and reptiles with exemption for private collectors of nonlisted species and regulation of certain other collecting/taking activities.

3. Distribution: The distributions (specific sites or locations of occurrences) of these species must be documented further before effective conservation may be undertaken; present data are inadequate. Regional surveys of the local herpetofauna would be desirable in the following areas: southeast Minnesota (DNR region 5), southwest Minnesota (region 4S), and east central Minnesota (region 3E).

*Wood Turtle (Clemmys insculpta)
Smooth Softshell (Trionyx muticus)
*Fivelined Skink (Eumeces fasciatus)
Ringneck Snake (Diadophis punctatus)
*Rat Snake (Elaphe obsoleta)
*Massasauga (Sistrurus catenatus)
*Lined Snake (Tropidoclonion lineatum)
Eastern Newt (Notophthalmus viridescens)
Redback Salamander (Plethodon cinereus)
Cope's Gray Treefrog (Hyla chrysoscelis)
*Northern Cricket Frog (Acris crepitans)

4. Abundance: Estimates of the abundance and densities of certain species, including some common forms which occupy a range of habitats, are required to establish the necessary baseline data to assess the effects of various management strategies and/or environmental changes and alterations. Some of these species have recently undergone marked and largely inexplicable fluctuations in numbers in some habitats in Minnesota and nearby states (e.g. Hine et al., 1981; Hird et al., 1981; McKinnell et al., 1982; Tenneson, 1981). Understanding the population dynamics of these species is considered a necessary first step in any conservation program.

*Snapping Turtle (Chelydra serpentina)
Painted Turtle (Chrysemys picta)
Redbelly Snake (Storeria occipitomaculata)
Plains Garter Snake (Thamnophis radix)
Common Garter Snake (Thamnophis sirtalis)
Tiger Salamander (Ambystoma tigrinum)
*Northern Cricket Frog (Acris crepitans)
*Pickerel Frog (Rana palustris)
Mink Frog (Rana septentrionalis)
Northern Leopard Frog (Rana pipiens)
Wood Frog (Rana sylvatica)

GENERAL RECOMMENDATIONS

The general recommendations of the Amphibian and Reptile Group of the Endangered Species Technical Advisory Committee deal with four major areas: preservation of habitat, protection from collecting and/or harvest, relevant research activities, and education programs.

1. Protect, preserve, and manage critical habitat. This approach appears to be the method of choice for the conservation of a number of amphibian and reptile species. It is relatively easy to define the preferred habitat(s) of a particular species; and protection, acquisition, easements, etc. are usually straightforward. Habitat preservation is synergistic because other species of plants and animals benefit, not just the target species.

   For a number of species, specific habitats may be characterized. In Minnesota, important aquatic habitats include rivers, streams, and associated woodland (wood turtles, smooth softshells), springs and springfed streams (northern cricket frog and pickerel frog), and prairie sloughs and marshes (Blanding's turtles). Important terrestrial habitats include rock outcrops in the upper Minnesota River valley and southwestern corner of the state (five-lined skink, lined snake), bottomland and bluff-land of the Mississippi River valley in the southeastern corner of the state (massasauga, rat snake), and oak barrens, sand plains, beach ridges and moraines (western and eastern hognose snakes). Although many of these habitats are seemingly insignificant in areal extent and have been reduced further in historic times, the survival of these species in Minnesota is directly dependent on preserving specific habitats. For an example, see Lang (1982) or individual species' status sheets.

   Undoubtedly, the dramatic loss of native woodland and prairie in recent time due to agriculture has had detrimental effects on the distribution and abundance of herpetofauna in the state. In Iowa, Christiansen (1981) estimates that twothirds of the herpetofauna is endangered, threatened, or declining; if present trends continue, less than a third of the present species will remain in 50-100 years. In Minnesota, loss of native habitat is most severe in the southern half and western third of the state. In these areas, a number of species live in the wooded bottomlands of the Minnesota and Mississippi River valleys and numerous other valleys along their tributaries. These woodland habitats are crucial to a number of species and should be protected from further destruction and degradation through agricultural, residential, or commerical development. Hoppe (in letter, 1982) comments that redbelly snake populations in the Morris area have declined with the loss of woodland to residential development. Populations of other species (e.g., lined snakes and rat snakes) sensitive to the loss of woodlandmeadow edge have likely declined and will continue to decline as these habitats disappear; stable populations will remain only in areas resistant to cultivation, i.e., rocky steep terrain. In Minnesota, documentation of declining populations of amphibians and reptiles due to habitat loss is difficult to substantiate because there is a paucity of baseline data for comparison with present situations.

2. Protect herpetofauna by regulation of collecting and/or harvest. At present, nearly all of the state's 48 species of amphibians and reptiles may be collected or harvested in unlimited numbers without any regulations

or prohibitions (=unprotected). Various restrictions are applicable only to one species of turtle (snapping turtles) and "frogs"; all other species are apparently not protected. The State claims ownership of wild animals and prohibits acquisition or destruction of same (Section 97, 43, p. 24, Minnesota Game and Fish Laws 198182); but it is not clear to what extent, if any, this provision provides legal protection for the state's herpetofauna. We recommend that all species of amphibians and reptiles in Minnesota be protected; all collecting/taking/harvest should be either prohibited or regulated. All such regulations should specify particular species and avoid generic terms, e.g. "turtles", "frogs", etc., to reduce ambiguities. Some provision should be made for a limited number of each species (not listed as endangered or threatened) to be taken and possessed alive by a resident of the state provided it is not bought or sold. Provisions should also be made for specimens acquired by captive propagation, that is, progeny originating from individuals bred in captivity. The restrictions in force in Missouri regarding overall protection with provisions for personal possession may be a useful guide in formulating a general protection for herpetofauna in Minnesota.

The major threat for many species, particularly the common and abundant forms, is very likely an unregulated harvest of specimens for biological supply houses. In Wisconsin, where a number of supply houses are based, the harvest of herpetofauna for this purpose has been substantial (160,000 leopard frogs and 42,000 turtles/year; Vogt, 1981) and likely detrimental to populations of certain species (Hine, et al., 1981). In Manitoba, 60,000 garter snakes were collected during two weeks in September 1981. The estimated value of the harvest is about $25,000. Large number of frogs (limit: 50 tons) and lesser numbers of salamanders have also been harvested under regulations in recent years for this purpose (Bob Grant, Manitoba DNR, personal communication).

There is reason to believe that certain species of amphibians and reptiles are harvested in Minnesota and transported to biological supply houses elsewhere, primarily in Wisconsin. For instance, a harvest of 6965 painted turtles was reported in Minnesota in 1978. This species is not desirable for food or the pet trade ($0.10/pound; average turtle=1 pound); but the species is in demand, either dead or alive, through biological supply houses for educational and/or scientific use ($45/turtle). Some painted turtles from Minnesota, identified by their large size and shell configuration, have been sold by midwestern animal dealers (Michael Ewert, personal communication). In our judgement, certain species in Minnesota are very susceptible to harvest and possibly overcollecting and exploitation by biological supply houses based either within the state or in nearby states. These species include painted turtles, garter snakes, tiger salamanders, and leopard frogs. We recommend prohibition of commerical collecting or harvest by individuals or companies until the impact(s) of these activities are assessed. Wildlife officials in other states/provinces should be consulted to assist in the evaluation of possible impacts and in the formulation of realistic regulations.

Currently, the commercial harvest of turtles in Minnesota is licensed but not regulated (with the exception of minimum size restrictions on snapping turtles) by the Fisheries Section, Division of Fish and Wildlife, DNR.

We recommend that the commercial harvest of turtles in Minnesota be limited to two species only (snapping turtles and spiny softshell turtles) and that the harvest of snapping turtles be regulated as recommended in the individual status account. Recommendations on the regulations applicable to spiny softshell turtles have not been formulated pending specific information on the harvest of this species. Furthermore, we suggest that turtles (and other reptiles and amphibians) be considered "wildlife" rather than "fish"; hence, all the herptofauna of the state, including turtles and frogs, should be under the control of the Wildlife Section.

The taking or harvest of frogs has also been licensed and regulated by the Fisheries Section; presently, frogs may be taken only by holders of fishing licenses for use as bait or by scientific or special permit for study. However, for angling purposes, frogs (6", tip of nose to toes) may be possessed, bought, sold, and transported in any numbers. We recommend that the impact of using frogs for bait be assessed with respect to local populations of particular frog species and, if warranted, that appropriate regulations be adopted to curtail or limit such activities.

In our judgement, certain species may be vulnerable to overcollecting to supply specimens for the pet or skin trades. In particular, some turtles and most of the large snakes occurring in Minnesota are valued at retail prices exceeding $25 per individual. Some species are relatively abundant in the state and may be easily collected in large numbers by experienced collectors for sale to animal or skin dealers. Many species in Minnesota utilize communal hibernacula where individuals aggregate in the spring and fall, and thus are particularly susceptible to this type of exploitation. Such collecting is potentially a serious threat for certain species, especially large snakes; however, we lack documentation of the extent of such activity within Minnesota. Nevertheless, we recommend that collecting for sale to animal or skin dealers or pet stores (including interstate sales) be assessed and thereafter be regulated on a species-by-species basis.

Bounties on snakes, particularly rattlesnakes, are still "on the books" and in effect in some Minnesota counties, notably Houston, Winona, Wabasha, and Fillmore. In 1982, Houston County paid more than $3,000 for rattlesnakes at $1/snake, (Palmquist, 1982). Further comments are included in the status account on the Timber Rattlesnake. We recommend that all such bounties on any species of the Minnesota herpetofauna be abolished.

Recently, there has been considerable interest in the utilization of larval salamanders for bait. "Waterdogs" are available for sale and shipment anywhere in the U.S. and Canada except Saskatchewan; this bait appears to be larval salamanders (Ambystoma tigrinum) originating from stocks in the southern U.S. Once such exotic forms are introduced and established, they pose a threat to native forms, (Anon., 1982). We recommend that the importation of native and particularly nonnative species of amphibians and reptiles in large numbers for commercial purposes (=resale) other than the pet trade be prohibited.

3. Expand research on Minnesota herpetofauna. Several major difficulties were encountered in determining the status categories of amphibians and

reptiles in the state. First, the basic reference on the state's herpetofauna (Breckenridge, 1944) was published almost forty years ago; and even though distribution maps were updated in 1958, individual species accounts have not been revised or rewritten. Consequently, although Breckenridge's book has been an essential, invaluable reference, it is now outofdate and requires extensive supplementation from existing literature. Second, recent surveys and inventories have been regional in scope (within the state) and conducted by diverse agencies usually under the supervision of a nonherpetologist. Furthermore, the results of these studies have been scattered in government reports and publications and are not easily consolidated and integrated on a statewide basis. Clearly, an up-to-date account of the distribution and abundance and natural history of the herpetofauna in Minnesota is needed; we recommend that such a project be undertaken. It would be an essential resource in conducting surveys and inventories, in making regional management decisions, in evaluating the effects of environmental changes, and in increasing public awareness and appreciation of amphibians and reptiles in Minnesota.

In the interim, we recommend that surveys be targeted to specific regions within the state where more information on the distribution and abundance of the herpetofauna is required. The occurrence of many species is not well-documented in numerous counties. For example, on a short-term project to study one species, Lang (1982) documented 15 new county records in a four-county area. Regional surveys would be particularly desirable in the following areas: southeast Minnesota (DNR region 5), southwest Minnesota (region 4S), and east central Minnesota (region 3E).

A clearing house for herpetological information would facilitate record-keeping and greatly simplify mapping distributions, preparing accounts, etc. Furthermore, it would serve as a focus for lodging specimens to be identified, new distribution records, and other herpetological records of statewide importance. The most extensive collection of herptofauna in the state is presently at the James Ford Bell Museum of Natural History (= Minnesota Museum of Natural History MMNH), University of Minnesota, Minneapolis campus. This collection contains nearly all of the specimens cited in Breckenridge (1944), and it is curated by a professional herpetologist.

There is a need to compile existing information on the local herpetofauna from the various state parks, State Scientific and Natural Areas, nature preserves, private tracts, etc. and also to solicit sightings, records, and observations from field professionals. The Uncommon Wildlife Reports filed by DNR personnel were generally useful in supplementing distributions based on specimens. Much more information on amphibians and reptiles could be gathered if specific efforts were made to alert various field personnel to the need for additional specimens and observations. For example, a visit with Bob Chance at Blue Mounds State Park in May resulted in documentation of the occurrence of the lined snake in Minnesota; a specimen accidentally killed later in the summer was saved and sent to the Bell Museum. Many naturalist groups could also be encouraged to contribute to such efforts.

In-service education programs which focused on the identification, observation, and preservation of amphibians and reptiles would greatly enhance such efforts. In this regard, the slide set with audio tape on the frogs

and toads of Minnesota which was prepared for the Nongame Program MN DNR is an excellent start for such a program. We recommend that an effort be made within the existing DNR system to facilitate exchanges of information on amphibians and reptiles in order to upgrade current data on the distributions and abundances of Minnesota herpetofauna.

The importance of establishing and maintaining baseline ecological studies on common species in typical habitats is very often overshadowed by an emphasis on rare and uncommon species with peripheral distributions. A number of species which are rare or occasional in occurrence in states to the south are abundant and, hence, more easily studied in Minnesota. Some examples are Blanding's turtle, painted turtles, redbelly snakes, plains and common garter snakes, tiger salamanders, and wood frogs. In north temperate areas in particular, the herpetofauna constitutes as much biomass as other vertebrate groups; energy flow through a few abundant species may be a significant fraction of the total energy flow through the system (20% for salamanders in a New Hampshire forest; Burton and Likens, 1975). Certain species may be important indicators of habitat quality, e.g., northern cricket frogs, pickerel frogs (Vogt, 1981). Assemblages of amphibians and reptiles and in particular their interspecific interactions are not wellstudied or well understood; common, abundant species inhabiting typical Minnesota habitats provide excellent research opportunities. Finally, understanding the population dynamics of the common Minnesota herpetofauna is a necessary first step in any conservation program. We need to know more about seasonal activity patterns, reproductive behaviors, densities and abundances of these species; and for each species, how these and other parameters respond to specific environmental changes. We recommend that ecological studies be conducted on common abundant species (listed in Minnesota herpetofauna: priorities) in typical Minnesota habitats. Such studies should be coordinated on a regional basis with other states and provinces.

4. Establish public education programs. The biological and economic importance of Minnesota's amphibians and reptiles is generally not acknowledged or appreciated. In fact, most residents are probably not able to identify more than a few of the 48 species in the state; even those living in rural areas often are not able to distinguish between major groups, e.g., lizards vs. salamanders. Clearly, there is a need to increase public awareness of an appreciation for Minnesota's herpetofauna. Information should be made available on how to identify the various species, salient features about their life histories, and the functional significance and ecological roles of these forms in the diverse environments they inhabit. We recommend that public education programs be developed in consultation with professional herpetologists and then be widely distributed throughout the state.

Programs such as the slide presentation on frogs and toads of Minnesota prepared for the Nongame Program are excellent for this purpose; additional programs should be developed, including a presentation on all amphibians and one on reptiles as well as information brochures, identification keys, and other educational tools. DNR personnel in the field, park naturalists, and others professionally engaged in interpretive programs within the state should receive inservice training aimed at increasing public awareness of and appreciation for Minnesota's herpetofauna. The status determinations and recommendations of this committee (Amphibian and Reptile Group,

Endangered Species Technical Advisory Committee) should be incorporated into these programs and publicized. In some states, there is an individual within the state conservation unit who initiates and coordinates programs and policies dealing with amphibians and reptiles (for example, State Herpetologist, Missouri Department of Conservation; Reptile and Amphibian Specialist, New York State Department of Environmental Conservation). We recommend that such a position be established in Minnesota.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Eumeces fasciatus (Linnaeus)

COMMON NAME: Five-lined Skink

STATE STATUS: Endangered
adjacent states/provinces: extirpated in South Dakota; threatened and declining in Iowa

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) Disjunct populations are known only from three specific localities along a 20 mile stretch of the upper Minnesota River valley; similarly disjunct colonies in Iowa and South Dakota are declining or extirpated.

2) The skink's preferred habitat is vulnerable to disturbance/destruction; habitat loss is due to forestation of rock outcrops by eastern red cedar.

DISTRIBUTION: The species is widely distributed throughout the eastern U.S. with disjunct colonies in Minnesota, Iowa, South Dakota and possibly western Wisconsin (Fig. 1b; Vogt, 1981). In Iowa, populations are declining due to agriculture; skinks remain only where terrain is too rough to farm (Christiansen, 1981). Remaining populations are confined to the northeast corner of the state (Iowa NAI, 1982). In Minnesota, five-lined skinks are known from three specific sites associated with granite outcrops along the Minnesota River in Yellow Medicine, Redwood, and Renville Counties (Fig. 1a). These populations appear to be isolated from each other; skinks have not been found on adjacent rock outcrops or in intervening outcrop or riparian habitats (Lang, 1982).

PREFERRED HABITAT: Deciduous forest/woodland, usually moist or damp with abundant debris broadly characterizes the species preferred habitat (Conant, 1975). In Iowa, the habitat has been described as damp woodlands (Christiansen, 1981); in Wisconsin, moist edges and openings of oak savanna, hardwood and conifer forests (Vogt, 1981); in Minnesota, on or near granite outcrops in dissected Minnesota River valley terrain (Breckenridge, 1944; Brecke, 1979; Lang, 1982).

RECOMMENDATIONS:

1) Protect and/or acquire specific sites where skinks are known to occur, particularly localities vulnerable to major alteration/disturbance.

2) Collect further information on local distribution and abundance to assess status and implement recommendation #1 above.

3) Prohibit collection or taking of the species. Specific recommendations are outlined in Lang (1982).

SELECTED REFERENCES: Brecke (1979), Breckenridge (1944), Christiansen (1981), Fitch (1954), Fitch and Von Achen (1977), Lang (1982), Vogt (1981).

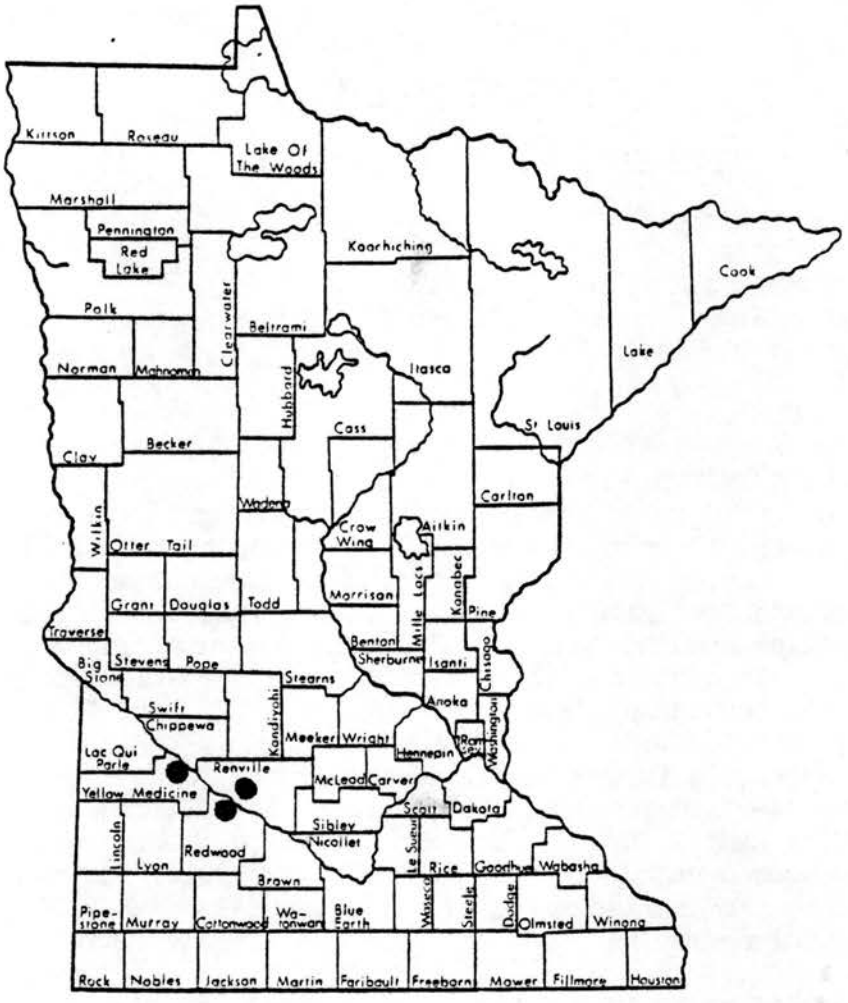


Figure 1 a. Known distribution of the Five-lined Skink (Eumeces fasciatus) in Minnesota.

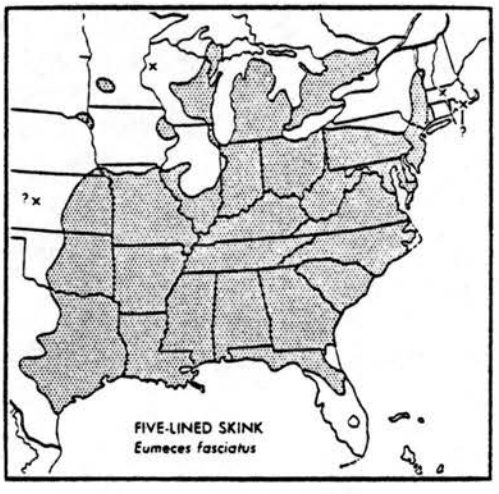


Figure 1 b. North American distribution of the Five-lined Skink (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Clemmys insculpta (Le Conte)

COMMON NAME: Wood Turtle

STATE STATUS: Threatened
adjacent states/provinces: endangered in Iowa; formerly endangered, now threatened in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The loss of forested stream habitat due to agriculture, especially in southern Minnesota has greatly decreased the available habitat for the wood turtle. Aerial photographs of forested zones along the Cannon, Zumbro, and Root Rivers in southeastern Minnesota illustrate the progressive encroachment of cultivation on remaining wood turtle habitat. In addition, the effect of possible stream degradation on turtle population is undetermined.

2) The wood turtle is vulnerable to collection for pet trade ($45 for 4-8" turtle); also the species is collected for biological supply houses during hibernation in Wisconsin, resulting in endangered status in that state (Vogt, 1981). Currently, it is not protected in Minnesota. (Commissioner's Order 2131: "turtles and tortoises may be taken or possessed without limit at any time").

3) The lack of basic information on distribution and abundance of the wood turtle particularly in the northern part of Minnesota makes it difficult to determine its status. In addition, the low reproductive potential of the species, strongly suggested by available data, further increases its vulnerability to #1 and #2 above.

DISTRIBUTION: Minnesota represents the western periphery of the species' range (Fig. 2b). In Minnesota, the species occurs along streams draining into the St. Croix River, on the St. Louis River in northern St. Louis County, and along streams entering the Mississippi River in the southeastern part of state (Fig. 2a).

PREFERRED HABITAT: The wood turtle is semi-terrestrial; it prefers small, fastmoving streams in relatively undisturbed areas in deciduous and coniferous forests. The species prefers clear water streams, grassy meadows alongside streams, and elevated sand bars for nesting. The Minnesota form is distinguishable from eastern forms on the basis of coloration.

RECOMMENDATIONS:

1) Protect and/or acquire preferred habitats, particularly areas adjacent to and along small, fast-moving streams in southeastern Minnesota.

2) Collect further information on the distribution and abundance of the species in the state particularly in the northeastern region. These data are a prerequisite for an accurate assessment of the species' status.

3) Prohibit collecting of the wood turtle. This would require exemption of the species from Commissioner's Order 2131 that allows the taking of all turtles without limit at any time.

SELECTED REFERENCES: Breckenridge (1944), Carroll and Ehrenfeld (1978), Ernst (1973), Harding and Bloomer (1979), Vogt (1981).

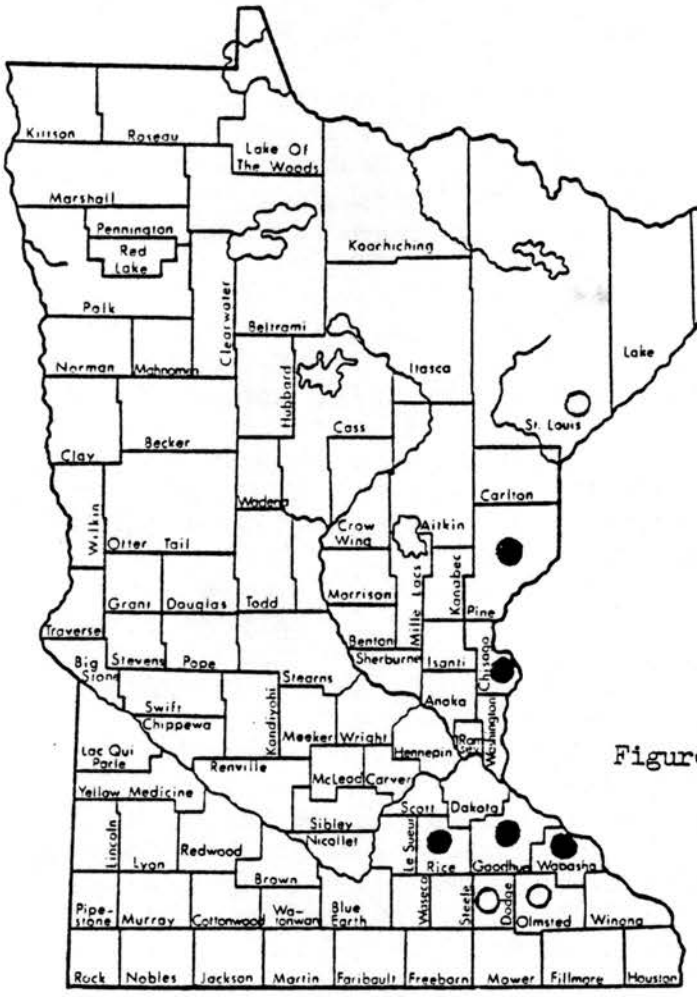


Figure 2a. Known distribution of the Wood Turtle (Clemmys insculpta) in Minnesota.

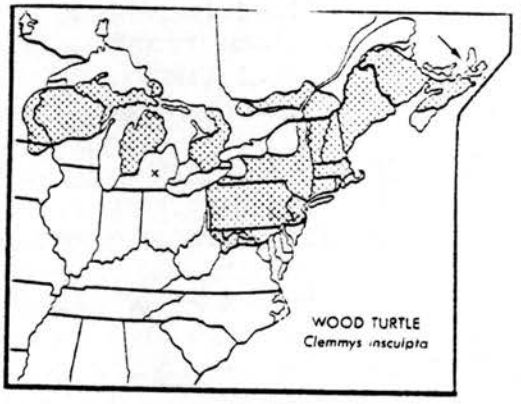


Figure 2b. North American distribution of the Wood Turtle (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Emydoidea blandingi (Holbrook)

COMMON NAME: Blanding's Turtle

STATE STATUS: Threatened
adjacent states/provinces: threatened in Wisconsin, Iowa, and South Dakota

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) Recent destruction of marsh habitats by drainage and/or innundation for agricultural usage, river channelization, and water impoundment has greatly decreased available habitat of the species.

2) The Blanding's turtle is vulnerable to collecting as a desirable pet species ($45 for 6-9" turtle) because it is easily collected where abundant, especially during nesting season. Currently, the species is not protected in Minnesota (Commissioner's Order 2132: "turtles and tortoises may be taken or possessed without limit at any time."

3) Its life history makes this turtle particularly susceptible to human disturbances based on a longterm and intensive study of the population inhabiting Kellogg Dunes (Pappas, in prep.). These features include: late maturation, low reproductive potential, (one clutch/season), longlived adults, and high mortality on eggs and juveniles. Population and reproductive dynamics suggest viable populations of Blanding's turtles are dependent on large numbers of animals and adequate areas of undisturbed habitat.

DISTRIBUTION: Spotty distribution is characteristic for this species within the deciduous, coniferous, and prairie regions of Minnesota, following the Mississippi and St. Croix Rivers northward, and the Minnesota River westward (Fig. 3a). Blanding's turtles are found in open grassy meadows, meic prairies, backwater sloughs and prairie potholes.

PREFERRED HABITAT: The Blanding's turtle is a marsh inhabitant requiring large expanses of marsh and floating sedges with adjacent and elevated sand dunes for nesting. The preferred habitat of this species includes calm shallow water, rich aquatic vegetation, and sandy uplands for nesting (Ewert, unpublished observations).

RECOMMENDATIONS:

1) Continue efforts to identify, protect, and preserve preferred habitats of this species, particularly where populations are locally abundant.

2) Collect additional information on local distribution and abundance to allow accurate assessment of current status and to aid in the implementation of recommendation #1.

3) Prohibit collecting of the Blanding's turtle. This would require exemption of the species from the Commissioner's Order #2131 that allows the taking of all turtles without limit at any time.

SELECTED REFERENCES: Breckenridge (1944), Ewert (unpubl. obs.), McCoy (1973), Pappas (unpubl. obs.), Vogt (1981).

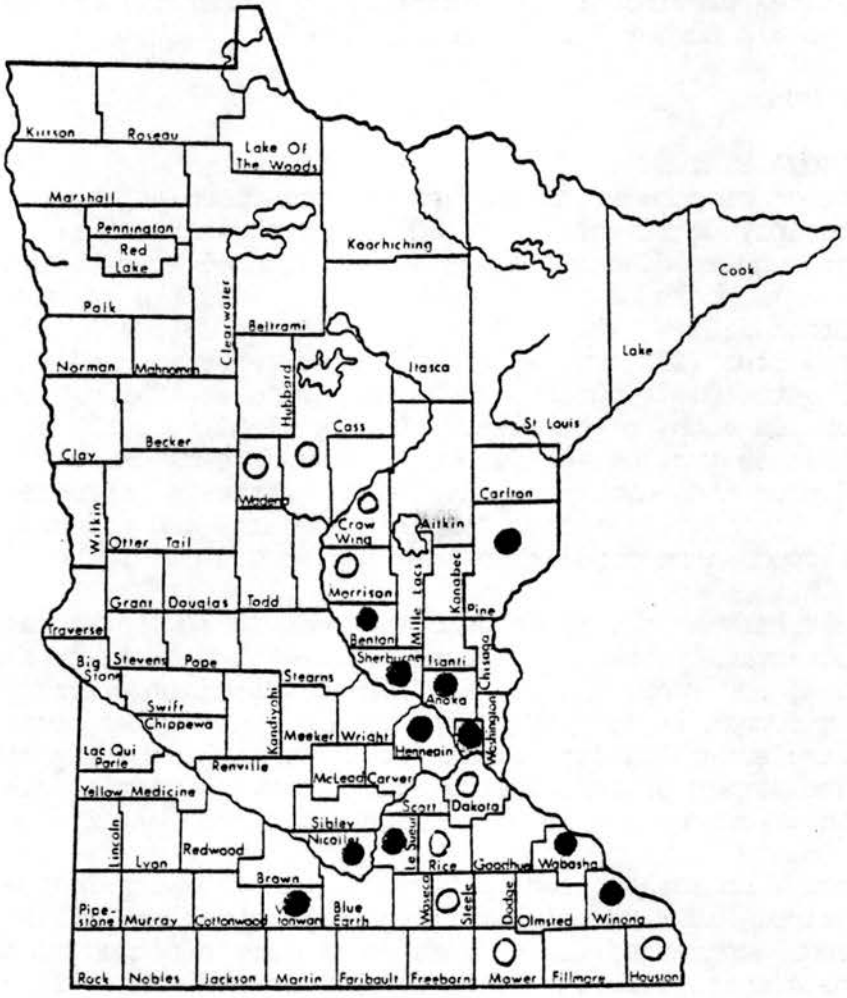


Figure 3a. Known distribution of the Blanding's Turtle (Emydoidea blandingi) in Minnesota.

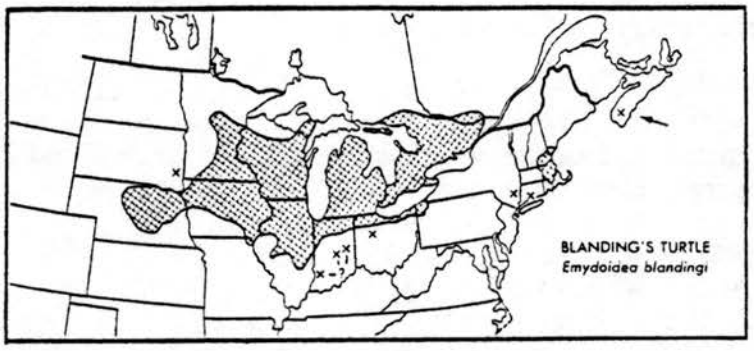


Figure 3b. North American distribution of the Blanding's Turtle (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Chelydra serpentina (Linnaeus)

COMMON NAME: Snapping Turtle

STATE STATUS: Special Concern
adjacent states/provinces: in Manitoba, no commercial harvest; taking limited to small number for personal use only

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The effect of commercial harvest on local populations is unknown and possibly detrimental. In addition, the harvest is substantial but not regulated, only licensed. A licensee is permitted to take unlimited numbers of adults at any time (10"; both sexes) (Commissioner's Order 2131). The 1978 harvest totaled 3859 (55,683 lbs.) snapping turtles, plus 2222 that were caught and returned. Of the 41 licensees fishing, the distribution of the harvest was: 8 individuals took from 110 turtles each, 6 took 11-20, 6 took 21-50, 10 took 51-100, and 11 took 101-453 turtles per person. Eleven licensees harvested over 70% of the turtles taken. Recent harvests indicate a similar trend. Vogt (1981) states "areas can easily and effectively become overtrapped since populations are replaced slowly."

2) The peak harvest occurs in June and coincides with annual egglaying. This potentially has a high level of impact because females are longlived and reproduce for 5-10+ years at minimum size of 9". Nesting occurs at traditional sites and may involve migration of over 3 kms. Harvest figures are also high in early spring and late autumn during hibernation. Snapping turtles are known to overwinter communally in various permanent bodies of water (Vogt, 1981).

3) A recent Minnesota Pollution Control Agency report indicated Mississippi River snapping turtles contained high levels of toxic PCBs and recommended fat be removed and not consumed if these turtles are utilized for human consumption (MPCA, 1982).

DISTRIBUTION: The species has widespread distribution in diverse aquatic habitats throughout the prairie and woodland regions in Minnesota (Fig. 4a). The species may benefit from an increase in the number of farm ponds.

PREFERRED HABITAT: Snapping turtles occur in virtually all aquatic habitats throughout the state. The species prefers slow-moving, quiet water with muddy bottoms and dense vegetation; it is common and often abundant in lakes, rivers, and marshes.

RECOMMENDATIONS:

1) Collect specific information on the pattern of harvest in local areas (date, locality, size/sex of turtle) and assess the impact of the harvest on local populations, especially taking of nesting females of minimum reproductive size (i.e., during the 1st or 2nd laying)

2) Implement the following interim regulations pending the analysis of the pattern of harvesting:

   a) a minimum size of 12" be adopted (increase from present 10")
   b) harvest be allowed only after nesting and before hibernation with an open season only 1 July - 15 October.

SELECTED REFERENCES: Breckenridge (1944), Hammer (1969), MPCA (1982), Obbard and Brooks (1980, 1981), Petokas and Alexander (1980).

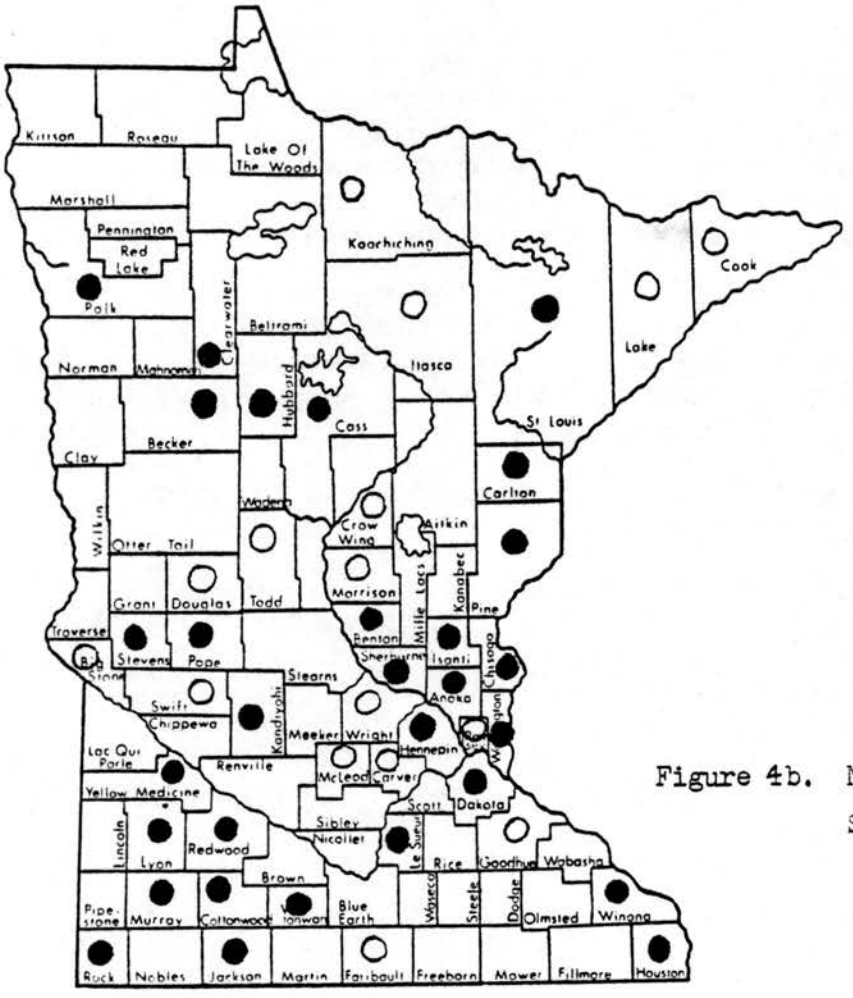


Figure 4a. Known distribution of the Snapping Turtle (Chelydra serpentina) in Minnesota.

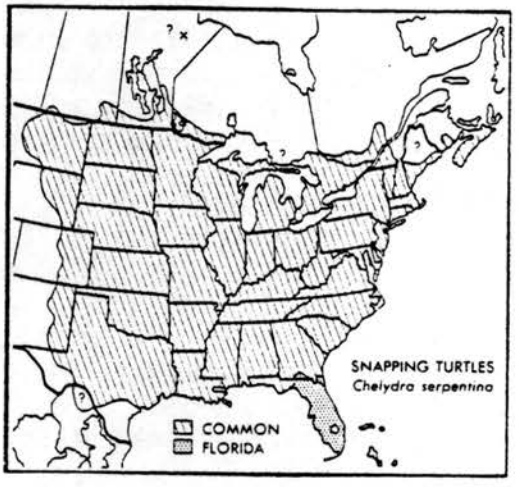


Figure 4b. North American distribution of the Snapping Turtle (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Coluber constrictor Linnaeus

COMMON NAME: Racer [Blue Racer]

STATE STATUS: Special Concern
adjacent states/provinces: endangered in Ontario

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The blue racer is vulnerable to collecting as a desirable pet species ($20 for 2-5' snake). In addition, the species is susceptible to local extirpation by overcollecting at or destruction of den sites used by large numbers of snakes during the spring and fall and for overwintering.

DISTRIBUTION: The species is widely distributed in the central U.S., reaching the northern periphery of its range in southeast Minnesota (Fig. 5b). Sightings and specimens have been recorded as far north as Anoka County and the lower Minnesota River but only from counties bordering the Mississippi River. These river valleys appear to serve as corridors for range extensions to the north and west (Fig. 5a).

PREFERRED HABITAT: The racer occupies a variety of habitats in the deciduous forest regions of Minnesota, including forested hillsides, bluff prairies, grasslands and open woods. Woodland margins and field edges are the preferred summer habitats.

RECOMMENDATIONS:

1) Prohibit the collecting, taking and/or destruction of the species, particularly at overwintering sites.

2) Collect additional information on the distribution, habitat requirements, and abundance of the species in Minnesota.

SELECTED REFERENCES: Breckenridge (1944), Fitch (1963), Vogt (1981), Wilson (1978).

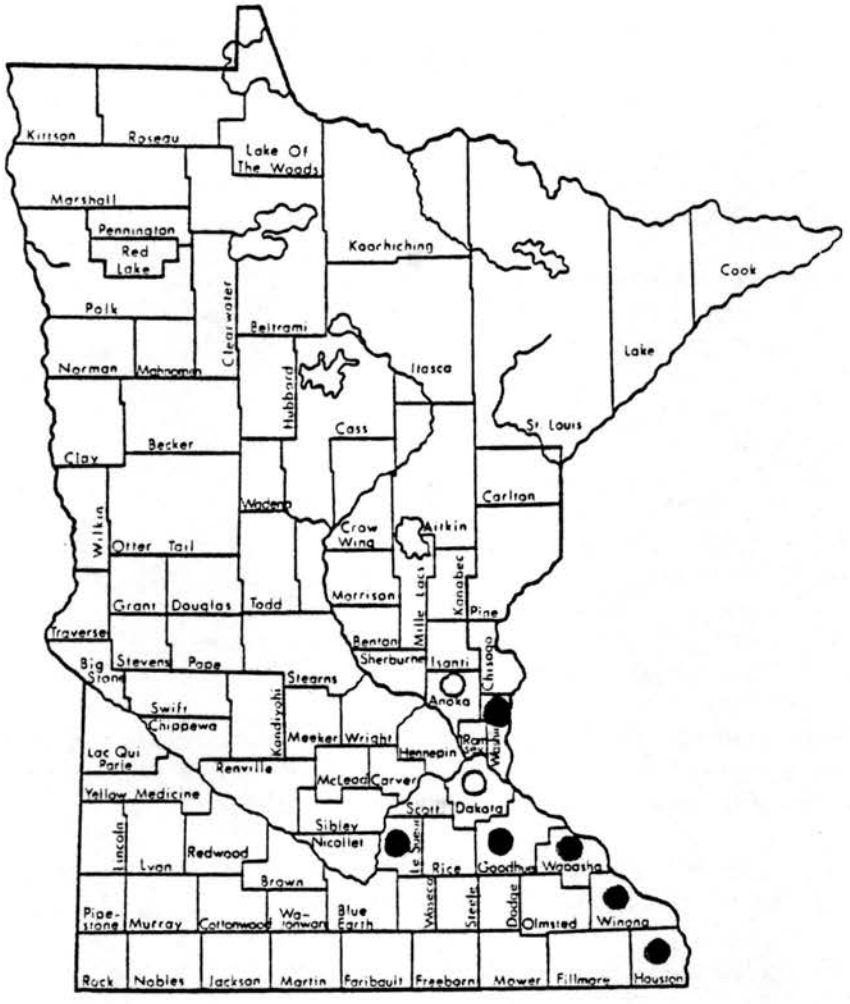


Figure 5a. Known distribution of the Racer (Coluber constrictor) in Minnesota.

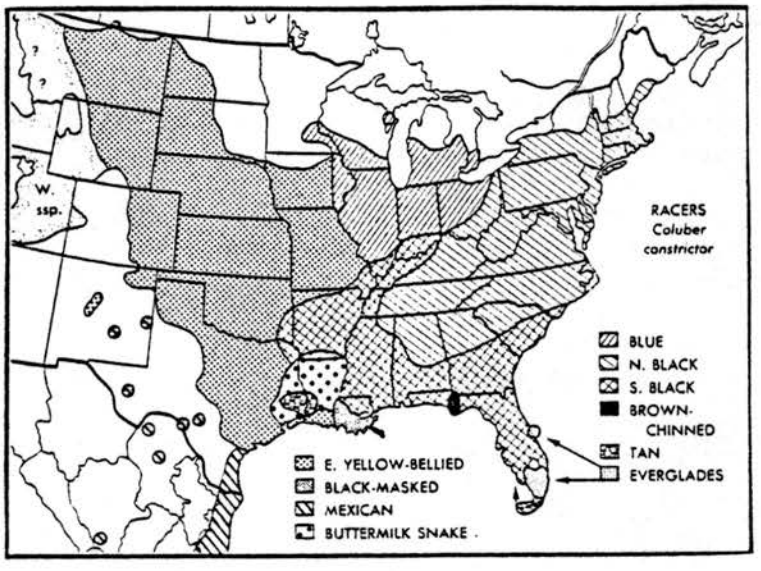


Figure 5b. North American distribution of the Racer (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Crotalus horridus Linnaeus

COMMON NAME: Timber Rattlesnake

STATE STATUS: Special Concern
adjacent states/provinces: declining in Iowa; extirpated in certain areas in eastern US and Canada (Collins and Knight, 1980); endangered in Ontario

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The timber rattlesnake is vulnerable to systematic and willful destruction by humans. This species is currently bountied in Houston, Winona, Wabasha, and Fillmore Counties. In Houston Co., in 1982, over $3,000 was paid on rattlesnakes @ $1/snake (D. Palmquist, unpublished observations).

2) The continued unprotected status of the timber rattlesnake may contribute to significant destruction of other snake species, including the massasauga and nonpoisonous snakes.

3) Communal denning sites essential for the overwintering and survival of the species are vulnerable.

DISTRIBUTION: The species occurs in southeastern Minnesota, along the Mississippi River Valley and its tributaries (Fig. 6a). Timber rattlesnakes appear to be common and abundant at some localities, but populations in certain areas continue to be susceptible to human depredation.

PREFERRED HABITAT: During the summer months, the species inhabits deciduous forests, croplands, and bottomlands along river valleys. In the spring and fall, timber rattlesnakes frequent steep, rugged bluffs and rock ledges and outcrops near overwintering dens (Breckenridge, 1944; Vogt, 1981).

RECOMMENDATIONS:

1) Prohibit bounties and similar incentives and protect from systematic destruction or collection by humans.

2) Collect additional information on the nature and extent of organized efforts to destroy rattlesnakes (e.g. bounties) and on the impact of these activities on rattlesnakes and other species, particularly large snakes and/or special concern species.

3) Preserve river bottomland habitats and den sites.

SELECTED REFERENCES: Breckenridge (1944), Brown (1982), Brown et al. (1982), Collins and Knight (1980), Keenlyne (1972), D. Palmquist (unpublished observations), Vogt (1981).

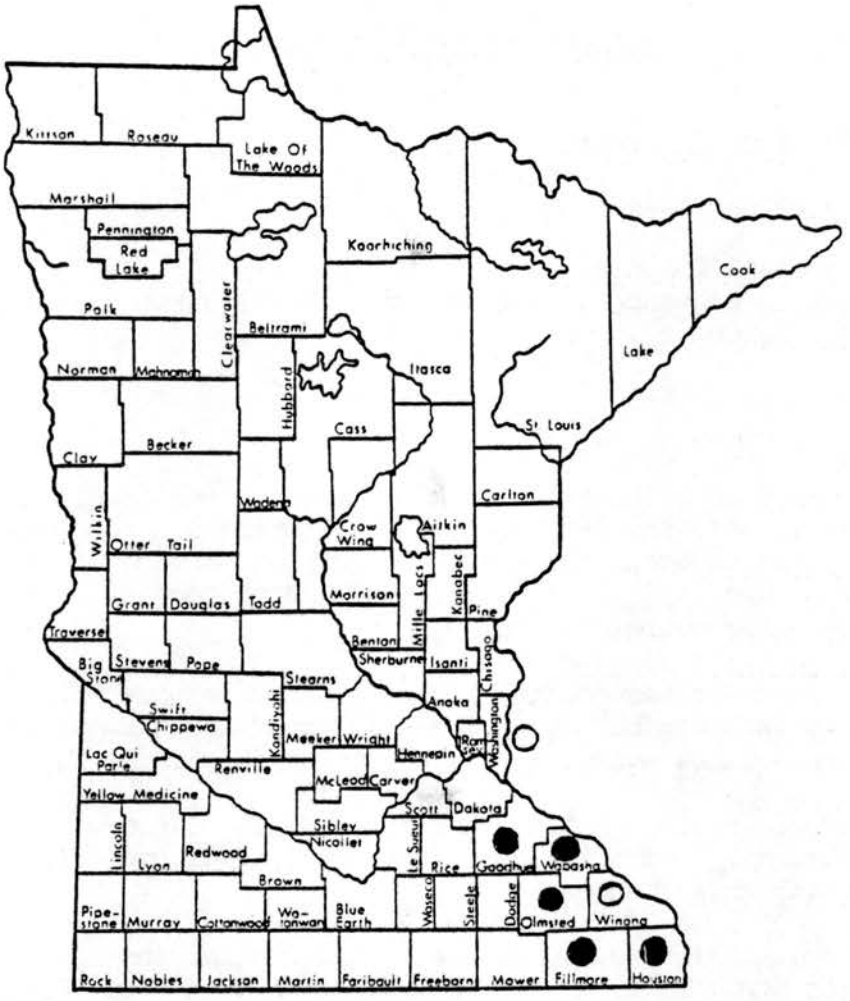


Figure 6a. Known distribution of the Timber Rattlesnake (Crotalus horridus) in Minnesota.

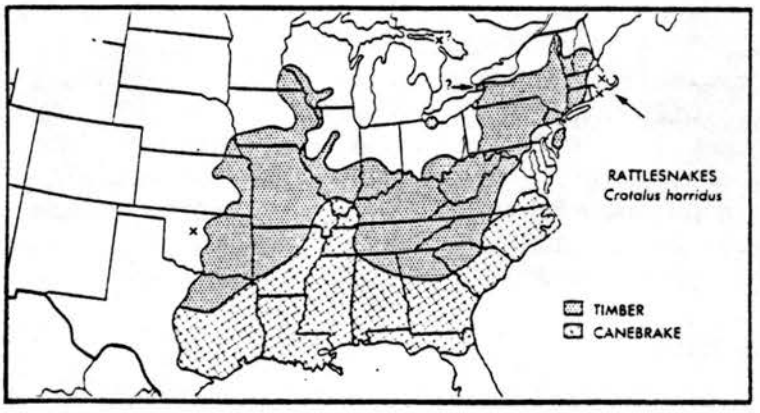


Figure 6b. North American distribution of the Timber Rattlesnake (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Elaphe obsoleta (Say)

COMMON NAME: Rat Snake [Black Rat Snake]

STATE STATUS: Special Concern
adjacent states/provinces: threatened in Iowa; watch list (=Special Concern) in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The species is vulnerable to collecting as a desirable pet species ($25-45 for 2-5' snake). In addition, the species is susceptible to local extirpation by overcollecting or destruction in spring and fall at den sites where large numbers of snakes aggregate for overwintering.

2) Continuation of the bounty on rattlesnakes in southeastern counties is contributing to the killing of nonvenomous species; black rat snakes overwinter with rattlesnakes in bluff outcrops.

3) The loss of bluff grassland habitat and associated woodlands to agricultural, commercial, and industrial development is a factor in listing this species.

DISTRIBUTION: The species is widespread in the central and eastern U.S., reaching its northern limit in the midwest in Minnesota (Fig. 7b). In Wisconsin, the species is restricted to bluff regions along the Mississippi River to LaCrosse and along the Wisconsin River (Vogt, 1981). In Minnesota, black rat snakes are known from Houston and Winona Counties (Fig. 7a). In addition to a few specimens collected by Breckenridge in 1942, there are three verified sightings and two live captures (by Bill Stark in Winona County, 1976; and by Mike Pappas in Houston County in 1982). The scarcity of records suggests that the species persists but is very rare in the extreme southeast corner of the state.

PREFERRED HABITAT: Black rat snakes are woodland snakes that frequent moist forests and forest edges in the summer months and move to rocky outcrops or bluffs where they are found in the fall and spring. In Wisconsin, they inhabit the north and east slopes of wooded river bluffland (Vogt, 1981). In Minnesota, the few records/sightings have been on the tops and backsides of wooded bluffs. Black rat snakes are arboreal, and often found high up in trees where they retreat to tree cavities (M. Pappas, unpublished observations).

RECOMMENDATIONS:

1) Collect information on the distribution, abundance, and habitat requirements of the species in Minnesota.

2) If breeding populations are located, the species should be upgraded in status to threatened.

3) Eliminate the present bounty on rattlesnakes in the southeast counties, particularly in Houston County.

4) Protect blufflands and associated woodlands and control human activities, such as agricultural, residential, and industrial development, in these areas.

SELECTED REFERENCES: Breckenridge (1944), Fitch (1963), Stickel et al., (1980), Vogt (1981).

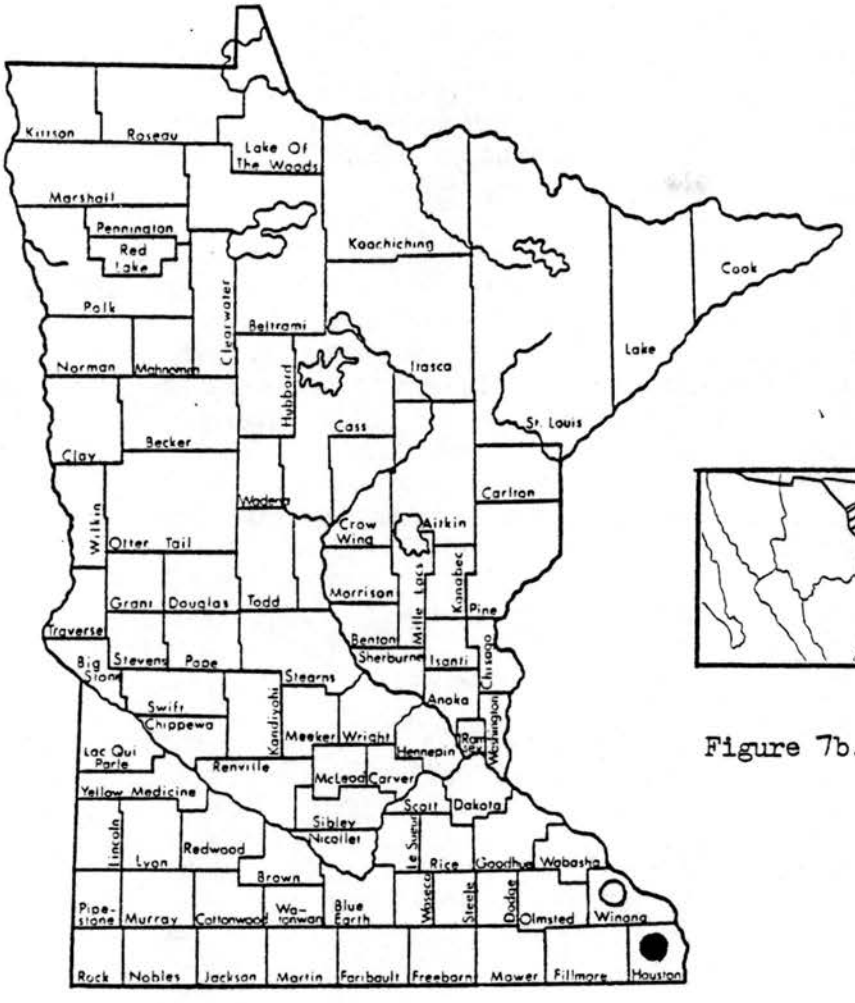


Figure 7a. Known distribution of the Black Rat Snake (Elaphe obsoleta) in Minnesota.

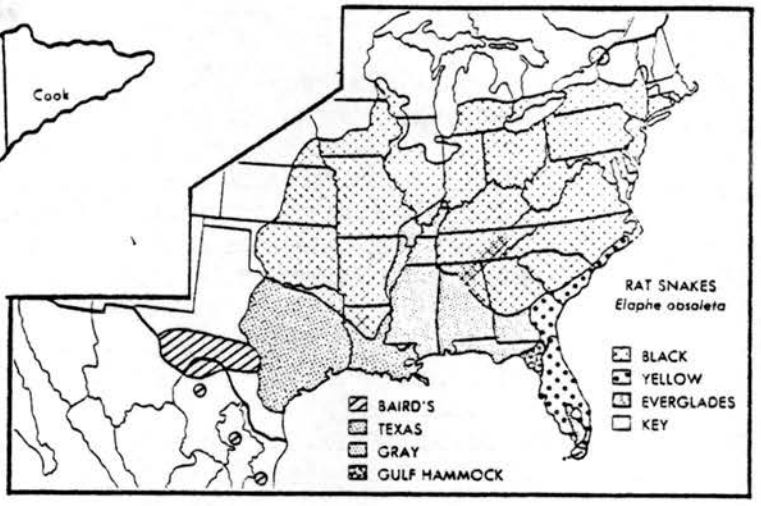


Figure 7b. North American distribution of the Black Rat Snake (from Conant, 1975)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Elaphe vulpina (Baird and Girard)

COMMON NAME: Fox Snake

STATE STATUS: Special Concern
adjacent states/provinces: Watch list (=Special Concern) in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The fox snake is vulnerable to collecting as a desirable pet species ($25-35 for 1-3' snake). In addition, the species is susceptible to local extirpation by overcollecting or destruction in the spring and fall at den sites where large numbers of snakes aggregate for overwintering.

DISTRIBUTION: The species is limited to the north central U.S. with a significant part of the species' range in Minnesota (Fig. 8b). It is widespread in southern Minnesota, particularly along the Minnesota, Mississippi, and St. Croix Rivers and associated tributaries. Fox snakes were considered by Breckenridge (1944) to be "the most abundant of the larger snakes in southern Minnesota".

PREFERRED HABITAT: Fox snakes are common in dry and drymesic forests and edges, frequenting forest clearings and woodlots in Wisconsin (Vogt, 1981). In Minnesota, the fox snake is associated with woody rock bluffs along larger streams and the adjacent moist lowlands. The species is locally common in areas with intact woodlands and is abundant on and near rock outcrops in the upper Minnesota River valley (Lang, unpublished observations).

RECOMMENDATIONS: Prohibit collecting/taking/destruction of the species, particularly at overwintering sites.

SELECTED REFERENCES: Breckenridge (1944), Gillingham (1974), Vogt (1981).

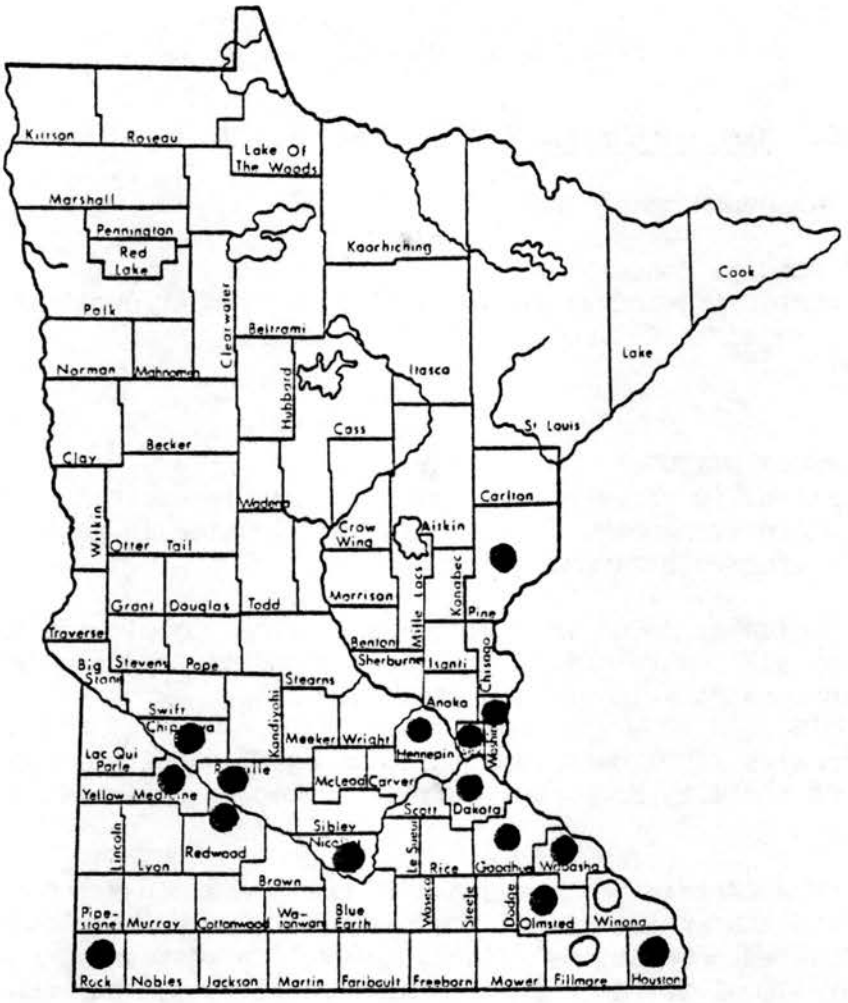


Figure 8a. Known distribution of the Fox Snake (Elaphe vulpina) in Minnesota



Figure 8b. North American distribution of the Fox Snake (from Conant, 1975)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Heterodon nasicus Baird and Girard

COMMON NAME: Western Hognose Snake

STATE STATUS: Special Concern
adjacent states/provinces: endangered in Manitoba; declining in Iowa; threatened in Illinois; rare in Missouri

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The species is threatened by loss of prairie habitat to agriculture in western Minnesota. Its spotty distribution is restricted to this preferred habitat.

2) The species is found in a disjunct (relict) population in eastern Minnesota. Its restricted habitat occurs in intensive agricultural and increasingly industrial regions.

3) The species is vulnerable to collecting due to its large size and desirability as a pet; current market price is $45 for a 1-2' snake.

DISTRIBUTION: The western hognose snake is peripheral in Minnesota. On the periphery of its entire range, the species is rare, but locally common in semiisolated populations (Platt, 1969). In western Minnesota, all records are local or restricted in distribution. In eastern Minnesota, relict (disjunct) colonies occur along the Mississippi River in Anoka, Sherburne, and Ramsey Counties (Breckenridge, 1944; Fig. 9a).

PREFERRED HABITAT: In western Minnesota, the species occurs in sandy and gravelly areas of fluvial or glacial origins. In eastern Minnesota, it occurs in sparse scrub oak and sandy areas (Breckenridge, 1944). The species occupies grassland, prairie and mixed forestprairie habitats throughout its range (Platt, 1969; Conant, 1975).

RECOMMENDATIONS

1) Continue efforts to protect and preserve preferred habitats, particularly sand plains in the east and native prairie in the west.

2) Develop regulations that limit and/or prevent collecting because populations are local and vulnerable to extirpation, especially in eastern colonies near developing areas.

3) Collect additional information on distribution and abundance to allow accurate assessment of current status.

SELECTED REFERENCES: Breckenridge (1944), Christiansen (1981), Platt (1969).

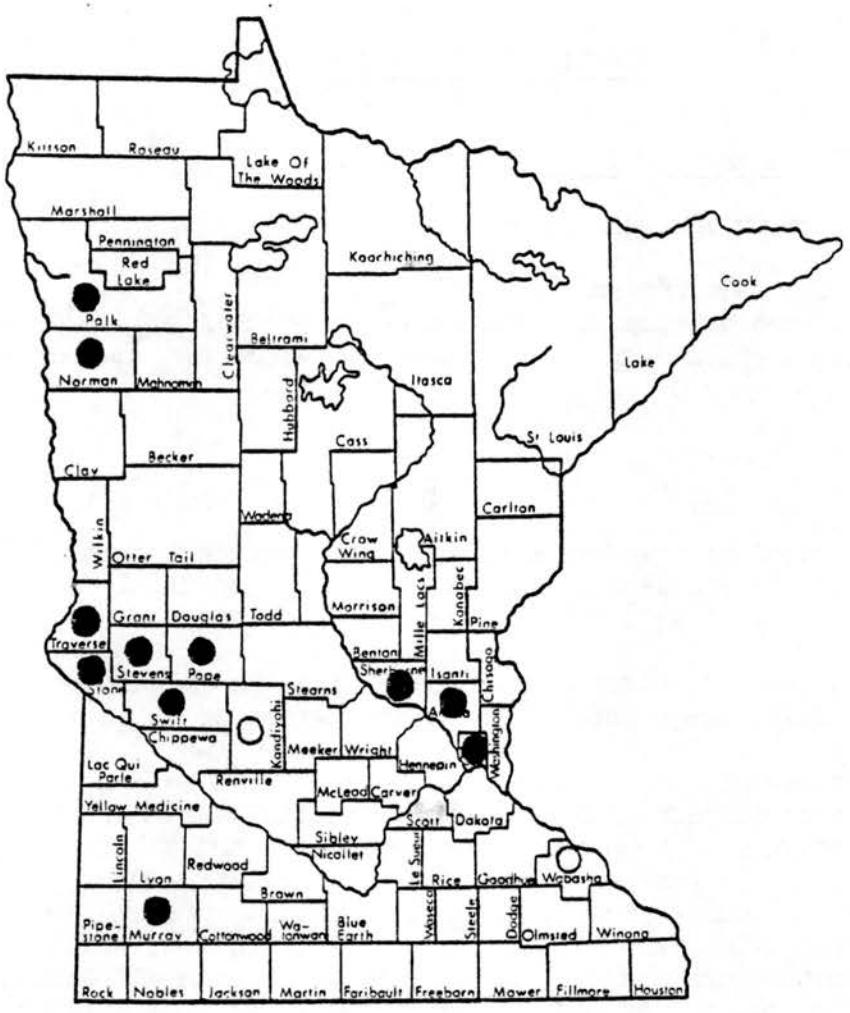


Figure 9a. Known distribution of the Western Hognose Snake (Heterodon nasicus) in Minnesota.

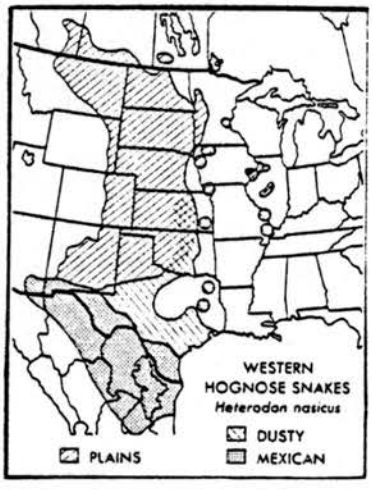


Figure 9b. North American distribution of the Western Hognose Snake (from Conant, 1975)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Heterodon platyrhinos Latreille

COMMON NAME: Eastern Hognose Snake

STATE STATUS: Special Concern
adjacent states/provinces: threatened in South Dakota; declining in Iowa; watch species (=special concern) in Wisconsin; decreasing in Michigan and Ontario

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The eastern hognose snake occurs in a restricted habitat in an intensive agricultural and increasingly industrial region. In some localities, it if is found close to urban areas.

2) The species is vulnerable to collecting due to large size and desirability as a pet. The current market price is $35 for 1-2' animal.

DISTRIBUTION: The eastern hognose snake is at the periphery of its range in Minnesota. At the periphery of its range, the species is rare or locally common in semiisolated populations (Platt, 1969). In Minnesota, its occurrence is limited to the east central section of the state, along the Mississippi and St. Croix Rivers Rivers (Fig. 10a). The eastern hognose snake is local in distribution and does not occur throughout any extensive region (Breckenridge, 1944). The extent of sympatry with Heterodon nasicus is not well documented, but it is known to exist in the same habitats in Wabasha and Anoka Counties.

PREFERRED HABITAT: Throughout its range, the eastern hognose snake occurs in deciduous forest, mixed deciduousconifer forest, sandy regions and river valleys (Platt, 1969). In Minnesota, it is restricted to "fluvial sands and sand dune areas" along the Mississippi and St. Croix Rivers (Breckenridge, 1944). In Wisconsin, it occurs on mesic grassland, oak savanna and mesic prairie, near river courses and especially in "sand counties" (Vogt, 1981).

RECOMMENDATIONS:

1) Continue efforts to identify, protect, and preserve preferred habitats, particularly sandy areas and sand dunes.

2) Develop regulations which limit and/or prevent collecting because populations are local and vulnerable to extirpation and in some localities close to urban areas.

3) Collect additional information on the distribution and abundance of the species in Minnesota for accurate assessment of its current status.

SELECTED REFERENCES: Blem (1981), Breckenridge (1944), Christiansen (1981), Platt (1969), Vogt (1981).

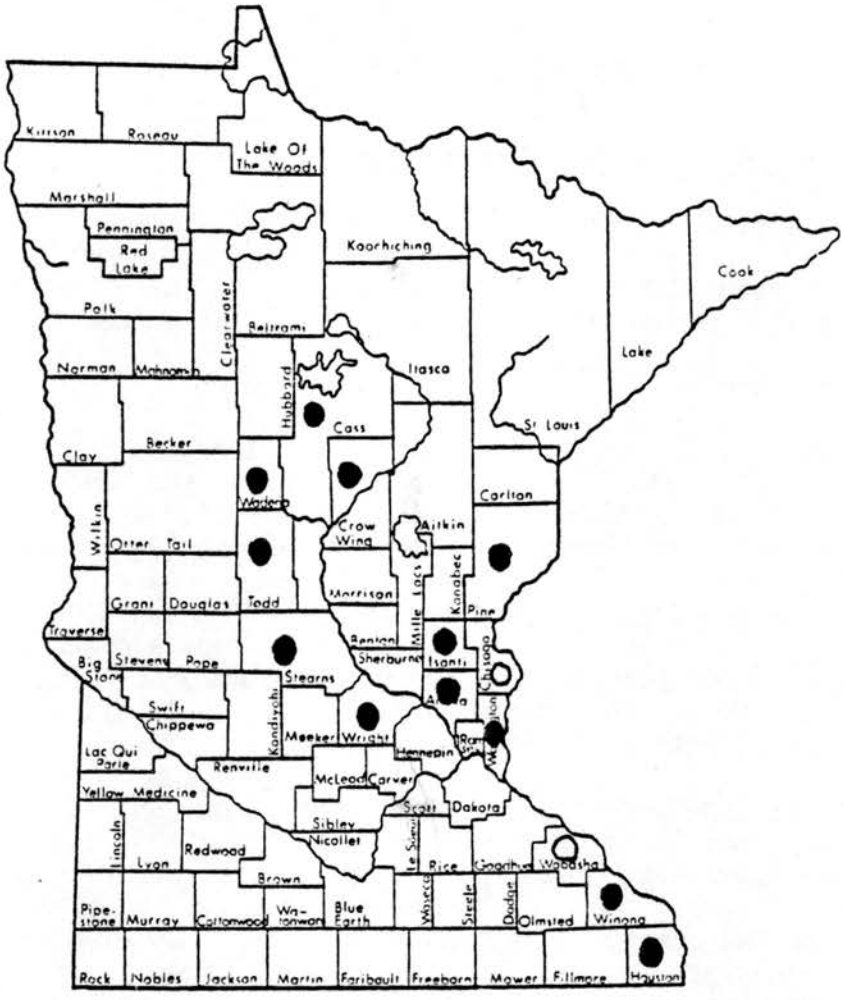


Figure 10a. Known distribution of the Eastern Hognose Snake (Heterodon platyrhinos)



Figure 10b. North American distribution of the Eastern Hognose Snake (from Conant, 1975)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Lampropeltis triangulum (Lacepede)

COMMON NAME: Milk Snake [Eastern Milk Snake]

STATE STATUS: Special Concern
adjacent states/provinces: Watch list (=special concern) in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The milk snake is vulnerable to collecting as a desirable pet species ($25-35 for 1-2' snake) and susceptible to local extirpation by overcollecting or destruction at den sites in spring and fall where large numbers of snakes aggregate for overwintering.

DISTRIBUTION: The species is widespread in the northcentral and northeastern U.S. (Fig. 11b). In Minnesota, milk snakes have been recorded in the southern part of the state, primarily along the Minnesota, St. Croix, and Mississippi Rivers. In addition, the species is locally common in the southeastern corner of the state (Fig. 11a).

PREFERRED HABITAT: In Wisconsin, milk snakes are abundant in old woodlots and pastures adjacent to small streams and marshes (Vogt, 1981). In Minnesota, the species appears to prefer woodlands to open country where they occur in rocky areas and associated forests. Milk snakes may be nocturnal during the summer months when they frequent moist bottomlands but are found in uplands, hills and bluffs in the spring and fall (Breckenridge, 1944). Communal basking apparently is common near hibernacula (Vogt, 1981).

RECOMMENDATIONS: Prohibit the collecting , taking and/or destruction of the species, particularly at overwintering sites.

SELECTED REFERENCES: Breckenridge(1944), Vogt (1981).

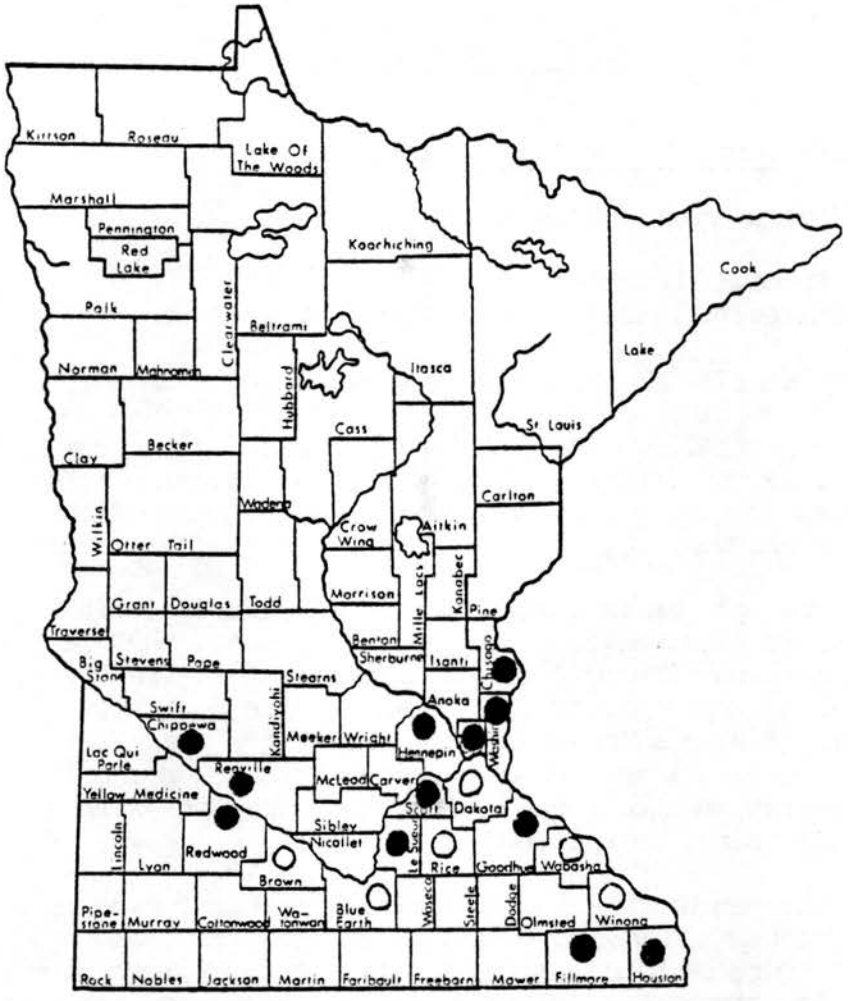


Figure 11a. Known distribution of the Eastern Milk Snake (Lampropeltis triangulum) in Minnesota

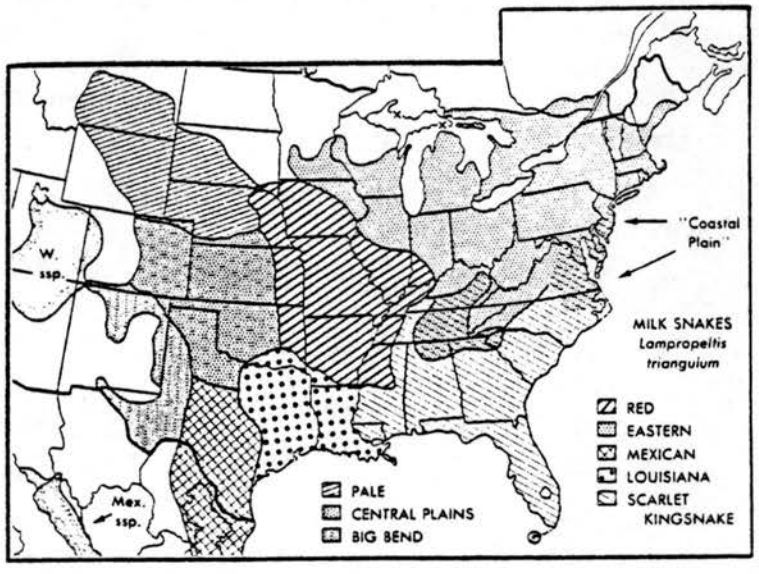


Figure 11b. North American distribution of the Eastern Milk Snake (from Conant, 1975)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Pituophis melanoleucus Daudin

COMMON NAME: Gopher Snake [Bullsnake]

STATE STATUS: Special Concern
adjacent states/provinces: watch list (=special concern) in Wisconsin

BASIS FOR MINNESOTA STATUS: The gopher snake is vulnerable to collecting as a desirable pet species, in part due to its impressive size and docile behavior ($25-35 for 1-3'snake). In addition, this species is susceptible to local extirpation by overcollecting or destruction at den sites in spring and fall where large numbers of snake aggregate for overwingering.

DISTRIBUTION: The species is distributed widely throughout the Great Plains from Mexico to Alberta (Fig. 12b). In Minnesota, the species occurs in the southern half of the state; most of the records are from counties along the Minnesota, Mississippi, and St. Croix Rivers (Fig. 12a). A single specimen from Polk County near Fertile (BMNH #989; collected 8-18-1939) may represent a disjunct colony, but further evidence of the species has not been found despite extensive fieldwork near Fertile (Lang, unpublished observations).

PREFERRED HABITAT: In Wisconsin, the species is most common on sandy soil and frequents drymesic prairies, oak savannas, and grasslands. It is also found on bluffs along the Mississippi River (Vogt, 1981). In Minnesota, the species shows a decided preference for open country rather than woodlands; most of the records are from rocky, sandy, or gravelly habitats. Hibernacula include rock fissures in bluffs and outcrops and mammal burrows. Bullsnakes aggregate, often with other species, at overwintering sites in the fall and spring (Breckenridge, 1944).

RECOMMENDATIONS: Prohibit the collecting, taking and/or destruction of the species, particularly at overwintering sites.

SELECTED REFERENCES: Breckenridge (1944), Guthrie (1926), Hisaw and Gloyd (1926), Imler (1945), Vogt (1981).

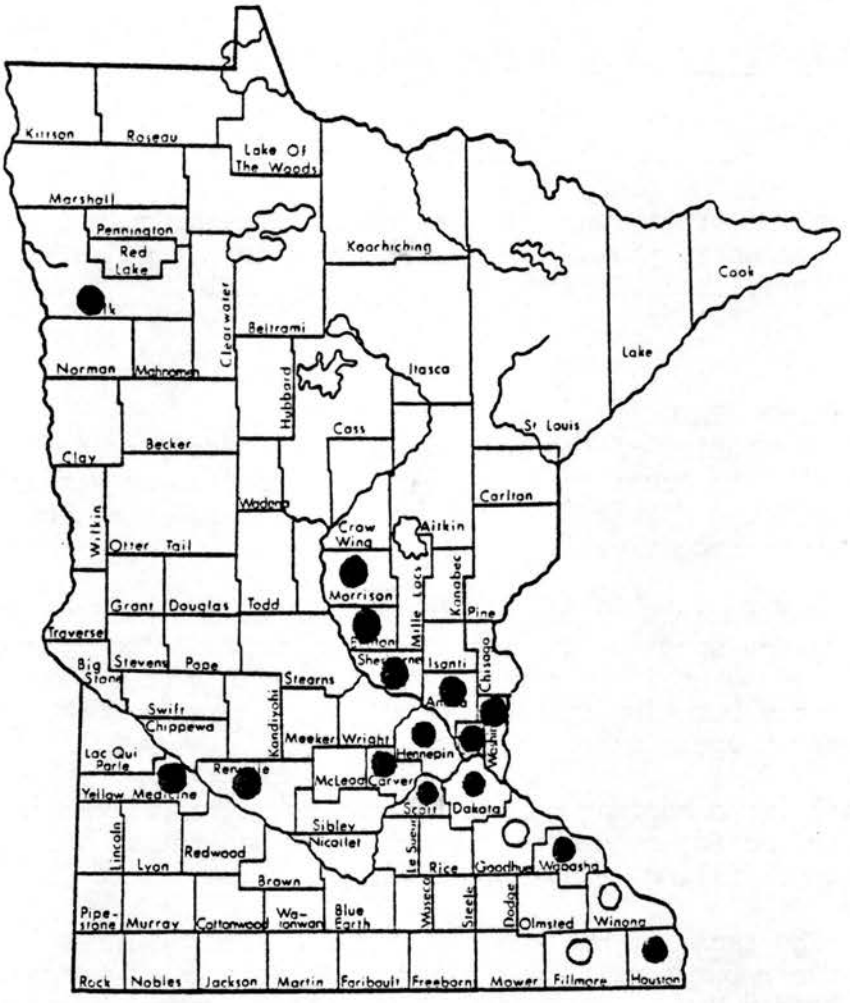


Figure 12a. Known distribution of the Gopher Snake [Bullsnake] (Pituophis melanoleucus) in Minnesota.

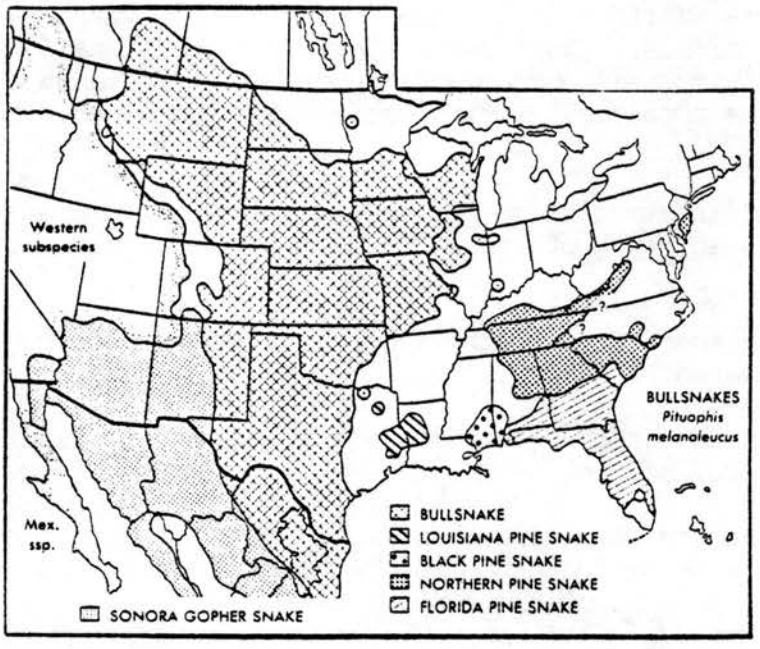


Figure 12b. North American distribution of the Gopher Snake (from Conant, 1975)

SPECIES STATUS SHET

SCIENTIFIC NAME: Sistrurus catenatus (Rafinesque)

COMMON NAME: Massasauga

STATE STATUS: Special Concern
adjacent states/provinces: threatened and declining in Iowa; endangered in Wisconsin (where it was previously bountied); rare in Missouri, protected in Illinois, endangered in Pennsylvania.

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The distribution of the massasauga in Minnesota is based on few records. The local occurrence of this species in a restricted habitat along Mississippi River Valley is probable, but has not been documented recently.

2) The massasauga is vulnerable to systematic and willful destruction because the species is venomous and to depredation by collectors because of its rarity. Confusion with timber rattlesnakes (currently bountied in Houston Co.) may increase the vulnerability of the massasauga.

3) The preferred habitat of the massasauga is restricted to riverbottom forests and adjacent open fields. This habitat is vulnerable to draining, filling, plowing, building and introduced livestock.

DISTRIBUTION: The range of the species in southeastern Minnesota is peripheral, based on two records prior to 1940 from Wabasha County and two specimens from the Zumbro River drainage in 1967 (Stark, unpublished observations). The present occurrence and distribution in Minnesota of this species is unknown (Fig. 13a).

PREFERRED HABITAT: The species occurs in mesic prairies and lowland areas along rivers, marshes, and lakes. In Minnesota, it is known only from river bottomlands. Massasaugas overwinter individually in crayfish burrows in Wisconsin bottomlands; the lack of suitable overwintering sites may be a factor limiting habitable areas (Vogt, 1981).

RECOMMENDATIONS:

1) Collect information needed on distribution and abundance of the species in Minnesota to allow an accurate assessment of its current status.

2) Upgrade the status of the species to threatened if breeding populations are located.

3) Protect the species through regulations from willful destruction and/or collection.

4) Preserve the remaining bottomland habitats along the Mississippi River, especially in Goodhue, Wabasha, Winona, and Houston Counties where viable populations may persist.

SELECTED REFERENCES: Breckenridge (1944), Keenlyne and Beer (1973), Maple (1968), Reinert (1974), Reinert and Kodrich (1982), Schorger (1967-68), Wright (1941), Vogt (1981).

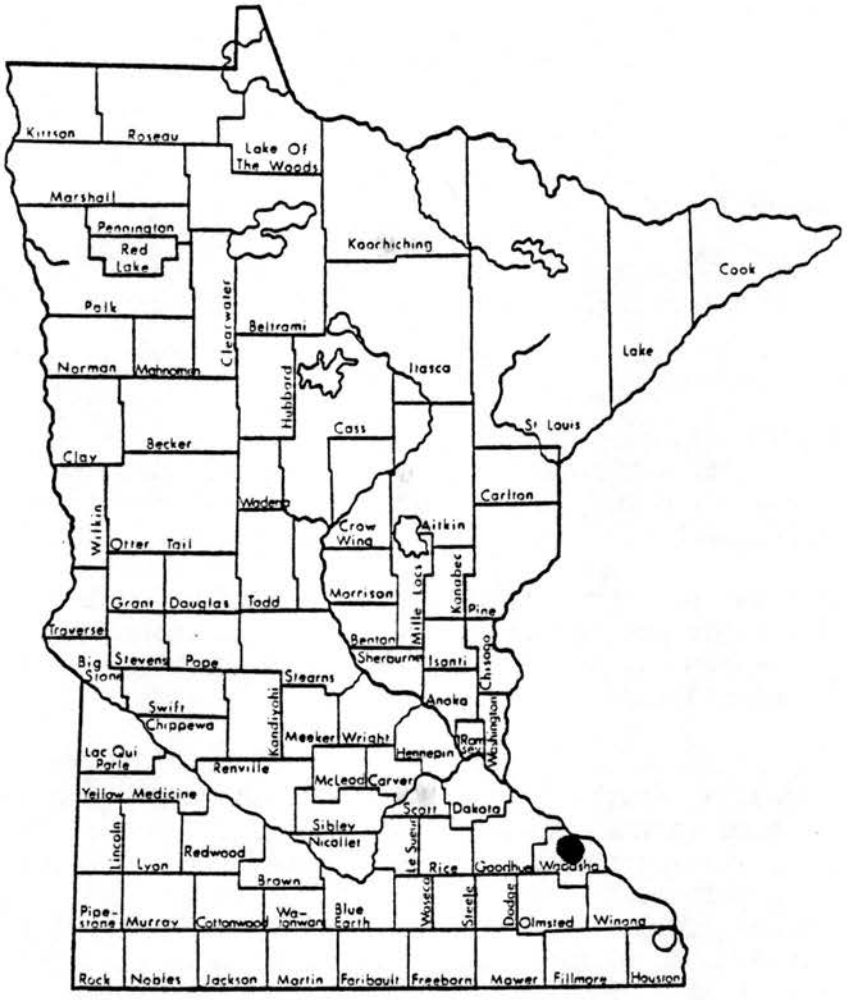


Figure 13a. Known distribution of the Massasauga (Sistrurus catenatus) in Minnesota.

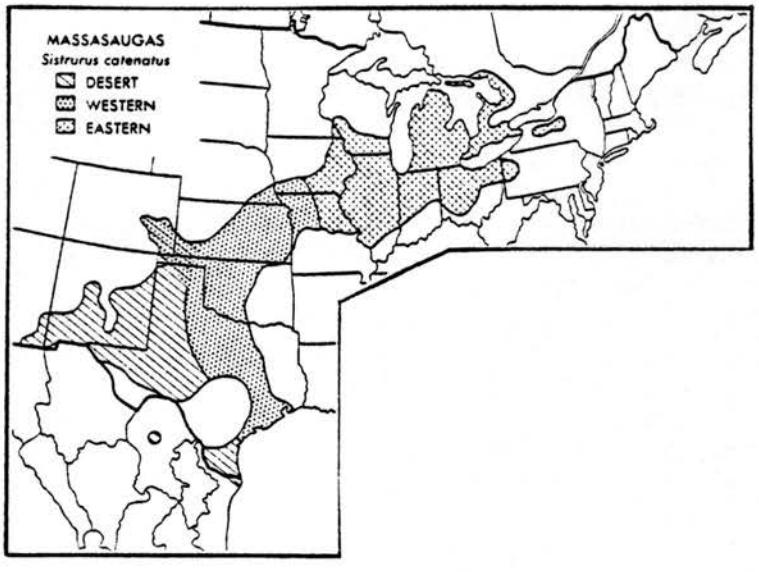


Figure 13b. North American distribution of the Massasauga (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Tropidoclonion lineatum (Hallowell)

COMMON NAME: Lined Snake

STATE STATUS: Special Concern
adjacent states/provinces: threatened in South Dakota and Iowa

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) Information is lacking on the distribution of the species in the state. It is known from only one locality in Rock County in extreme southwestern Minnesota.

2) The species' preferred habitat is vulnerable to agricultural cultivation or grazing or to residential or commercial development. Its only known habitat in the state is a rock outcrop with associated prairie vegetation.

DISTRIBUTION: The species occurs in the southern Great Plains, from Texas north to Nebraska, South Dakota, and Iowa. Disjunct colonies are widely scattered in the southwest and central U.S. (Fig. 14b). In Illinois and Missouri, the scattered colonies are mostly populations in vacant lots within cities. In Iowa, populations are declining with the loss of woodlands and edges (Christiansen, 1981). Recent (after 1960) records from Iowa are restricted to localities 200 miles south and east in south central Iowa (Iowa Natural Areas Inventory, 1982). In Minnesota, the species is known only from a few specimens at a single locality (see above; Fig. 14a). The distribution and abundance of this species in Minnesota is unknown; if a population exists in Rock County, it is likely disjunct from the main range of the species.

PREFERRED HABITAT: A secretive fossorial species with a tendency for hiding under stones, logs, boards, debris or in crevices. Sometimes it is found under piles of leaves and vegetation at the bases of shrubs and hedges in gardens and yards; suburban populations occur near several large midwest cities. Lined snakes also occur in open prairies, woodland edges, and sparsely timbered areas. In Kansas and Nebraska they occupy grassland habitats. In Minnesota, several specimens have been found in and near the Interpretive Center, Blue Mound State Park, located on an isolated grassy rock outcrop amidst agricultural land and close to the Rock River valley.

RECOMMENDATIONS:

1) Collect information on local distribution and abundance in Rock County and adjacent areas required in order to assess preferred habitat of the species in Minnesota.

2) Protect the specific sites where the species is found and similar adjacent areas, particularly rock outcrops and woodlands.

3) Prohibit the collection or taking of lined snakes.

SELECTED REFERENCES: Anderson (1965), Hudson (1958), Over (1923), Smith (1956), Smith (1961).

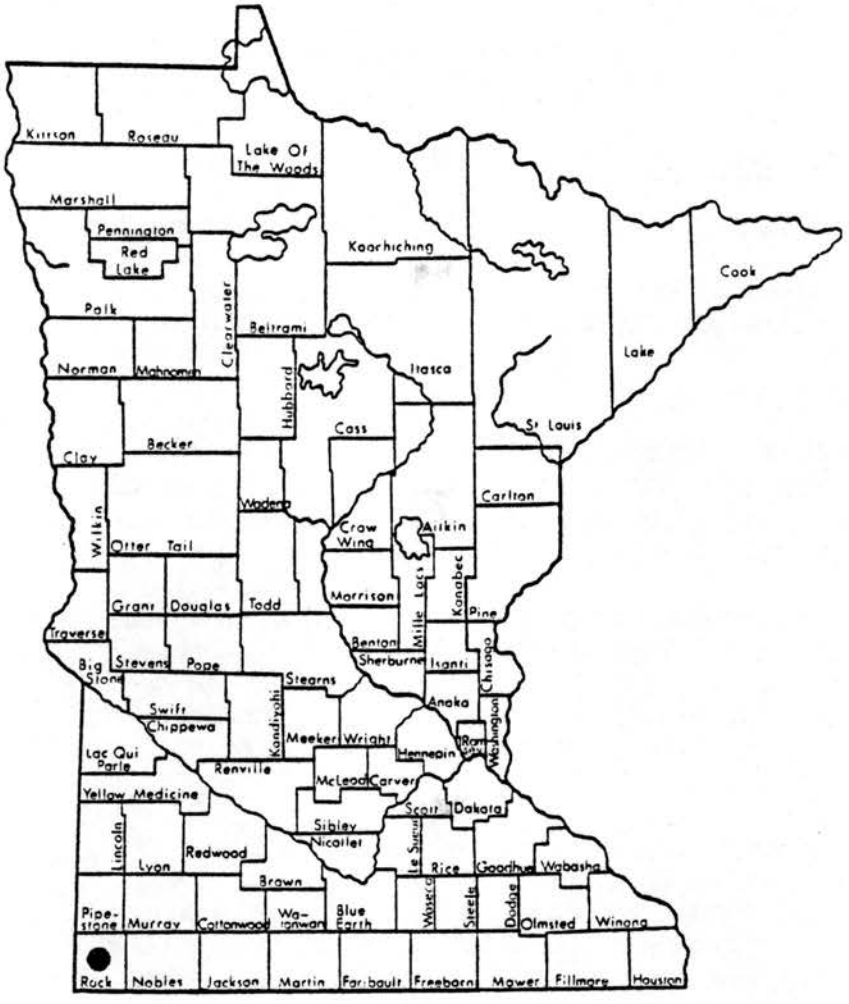


Figure 14a. Known distribution of the Lined Snake (Tropidoclonion lineatum) in Minnesota.

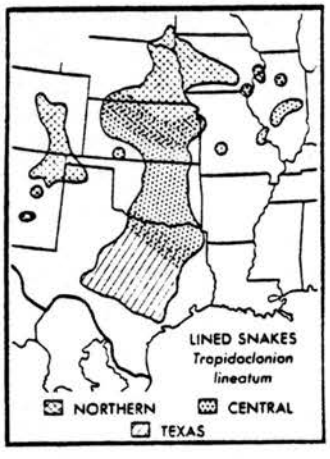


Figure 14b. North American distribution of the Lined Snake (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Acris crepitans Baird

COMMON NAME: Northern Cricket Frog (Blanchard's Cricket Frog)

STATE STATUS: Special Concern
adjacent states/provinces: endangered in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The preferred habitat of this species is vulnerable to human disturbance, especially pollution of breeding sites by fertilizers and various agricultural chemicals.

2) The apparent decline of the species since the publication of Breckenridge (1944), particularly in the southwest (see below) is a factor in listing this species. A rapid decline of the cricket frog has been documented in Wisconsin; Vogt (1981) notes that this once very common frog is becoming extremely rare in Wisconsin.

DISTRIBUTION: The species is widespread in the midwest U.S., reaching its northern limit in Michigan, Wisconsin, and Minnesota (Fig. 15b). In Minnesota, populations of cricket frogs [Blanchard's cricket frog, Acris crepitans blanchardi] have been reported only from the extreme south west and southeast corners of the state (Fig. 15a). Recent specimens from Pipestone, Rock, and Nobles Counties are lacking; and this population may be extirpated on the basis of recent fieldwork (M. Nehl, unpublished observations). Positive sighting and identification of the frog is essential because the frog's call resembles the call of marshdwelling birds, particularly the yellow rail.

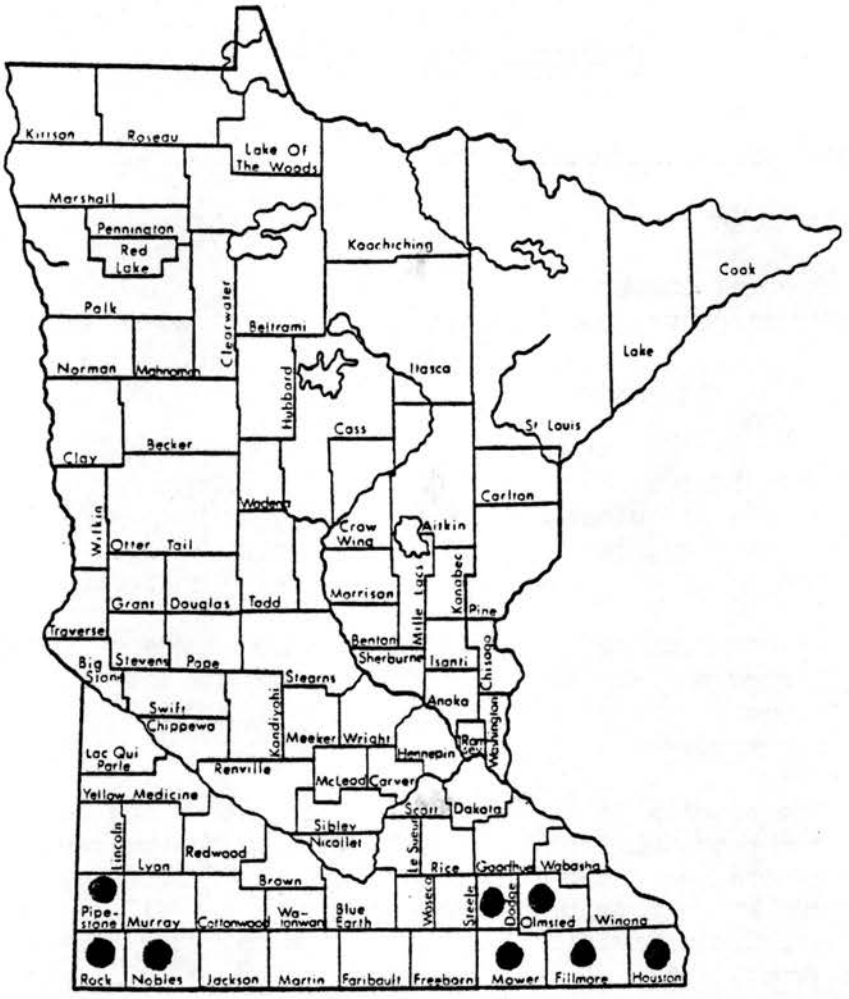
PREFERRED HABITAT: This frog is most often an inhabitant of small, pebbly streams flowing through grasslands, but may also be found near permanent marshes and ponds. Sufficient aquatic vegetation is a prerequisite in both habitats. In Wisconsin, the species prefers open mud flats and banks of streams where there is abundant emergent vegetation (Vogt, 1981).

RECOMMENDATIONS:

1) Collect information on the current distribution and abundance of the species in Minnesota, especially in areas where habitats have been altered or influenced by agriculture.

2) Assess the vulnerability of this species to changes in water quality and alterations in preferred habitats through drainage or channelization.

SELECTED REFERENCES: Breckenridge (1944), Johnson and Christiansen (1976), Minton (1972), Vogt (1981).



Figures 15a. Known distribution of the Northern Cricket Frog (Acris crepitans) in Minnesota.

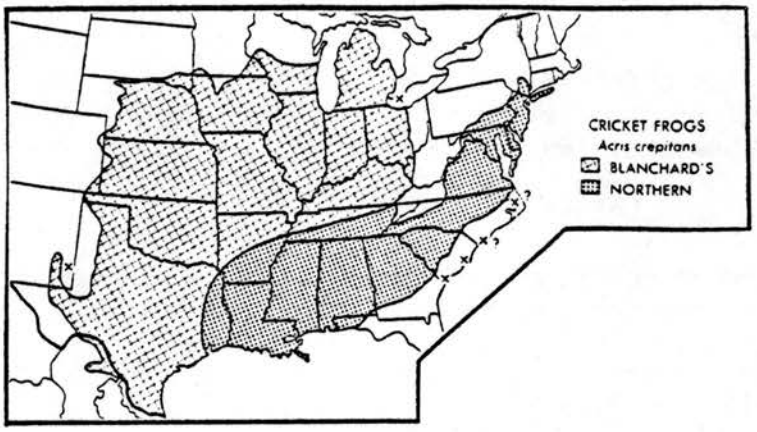


Figure 15b. North American distribution of the Northern Cricket Frog (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Rana catesbeiana Shaw

COMMON NAME: Bullfrog

STATE STATUS: Special Concern
adjacent states/provinces: watch list (=special concern) species in Wisconsin

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The bullfrog is vulnerable to collecting by humans due to the desirability of the species for bait and/or food and due to the ease with which the frogs are collected at night with a light.

2) The lack of information on the current abundance of local populations of bullfrogs and the effect of collecting for use as bait on these populations is a factor in listing this species. Bullfrogs are a longlived species.

DISTRIBUTION: The species is widespread in the eastern and central U.S.. It has been introduced into extensive areas in the western states (Fig. 16b). Minnesota is on the northern periphery of its range in the midwest. Bullfrogs are known from two southeastern counties (Fig. 16a) but may occur along the St. Croix River on the basis of a specimen from Polk County, Wisconsin (Vogt, 1981).

PREFERRED HABITAT: The bullfrog requires permanent water in which to breed; its tadpoles metamorphose at the end of their third summer. In Wisconsin, the species is found along permanent bodies of water (Vogt, 1981). In Minnesota, bullfrogs are restricted to sloughs and backwaters along the Mississippi River in the extreme southeastern corner of the state. Slowmoving water with abundant aquatic vegetation is preferred.

RECOMMENDATIONS:

1) Determine the effect of local collecting for bait [per Commissioner's Order 1912] or food [illegal] on the bullfrog populations in southeastern Minnesota. Bullfrogs mature slowly and so are not able to sustain any intense collecting. Vogt (1981) suggested a ban on collecting in Wisconsin.

2) Information is needed on the abundance of local populations in order to assess the present and future status of the species.

SELECTED REFERENCES: Breckenridge (1944), Hine et al. (1981), Hird et al. (1981), Vogt (1981).

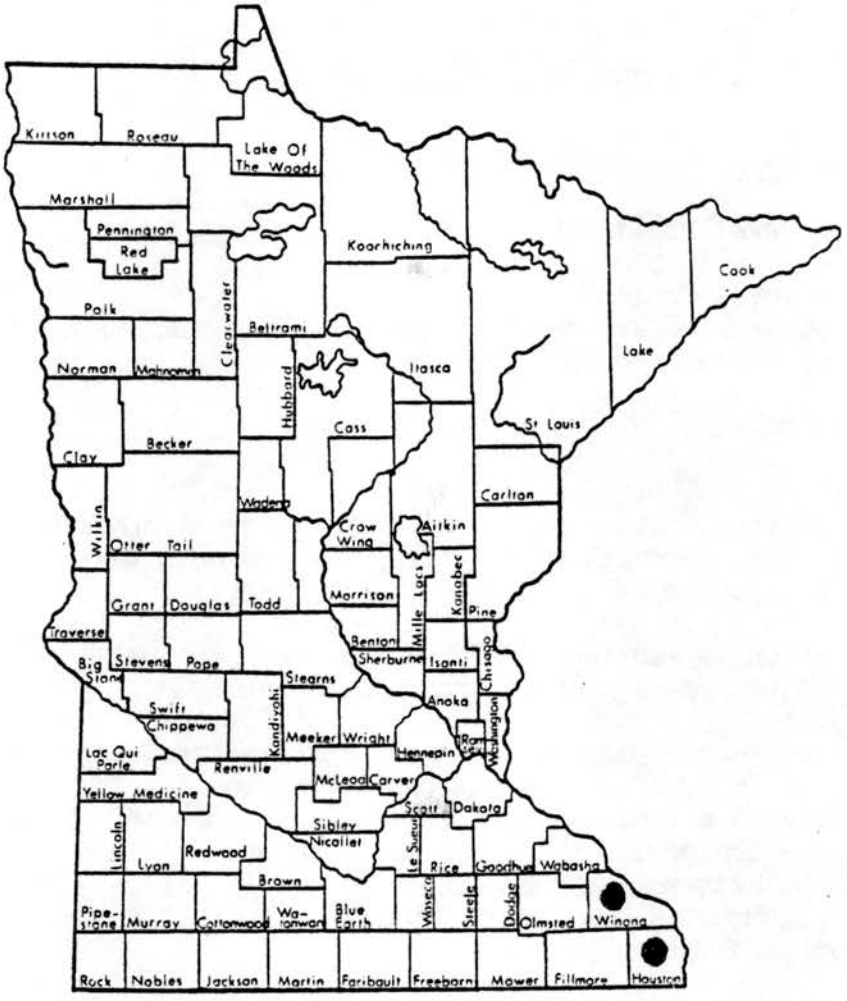


Figure 16a. Known distribution of the Bullfrog (Rana catesbeiana) in Minnesota.

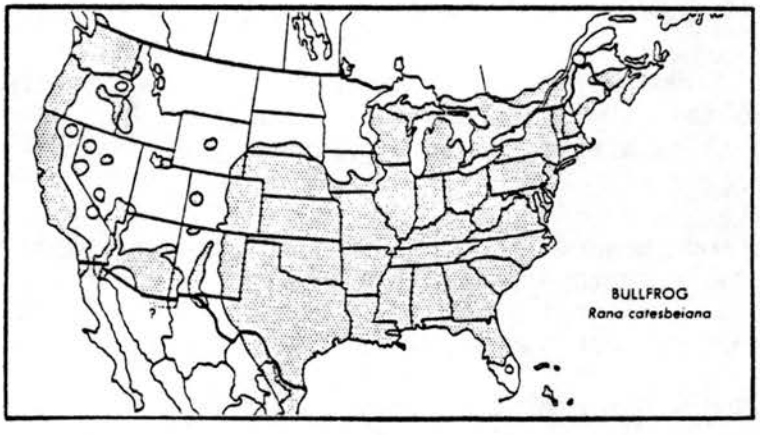


Figure 16b. North American distribution of the Bullfrog (from Conant, 1975).

SPECIES STATUS SHEET

SCIENTIFIC NAME: Rana palustris LeConte

COMMON NAME: Pickerel Frog

STATE STATUS: Special Concern
adjacent states/provinces: formerly threatened in Wisconsin, removed from threatened list in 1982

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS:

1) The preferred habitat of the pickerel frog is vulnerable to human disturbance, especially pollution of breeding sites by fertilizers and various agricultural chemicals (Vogt, 1981).

2) Information is lacking on the current abundance of local populations in order to assess present and future status.

DISTRIBUTION: The species is widespread in northeastern and central United States (Fig. 17b). In Wisconsin, the species is rare, occurring only in isolated colonies (Vogt, 1981). In Minnesota, pickerel frogs reach the western periphery of its northern range; the species is known only from the extreme southeastern counties (Fig. 17a). Pickerel frogs are locally common in some localities, e.g. central Houston County (M. Nehl, unpublished observations).

PREFERRED HABITAT: In Minnesota, the pickerel frog prefers clear, cool waters of springs and springfed streams. After breeding, frogs remain near water in areas where sufficient vegetation affords protective covering, usually densely canopied forests. Vogt (1981) describes similar habitat preferences in Wisconsin.

RECOMMENDATIONS:

1) Monitor abundance of local populations of the pickerel frog in order to assess present and future status. Vogt (1981) notes that this species is sensitive to water pollution and changes in water quality.

2) Protect and preserve the preferred habitats of this species, specifically springs and springfed streams. Work to control various agricultural practices that may adversely affect water quality of preferred aquatic habitats.

SELECTED REFERENCES: Breckenridge (1944), Vogt (1981).

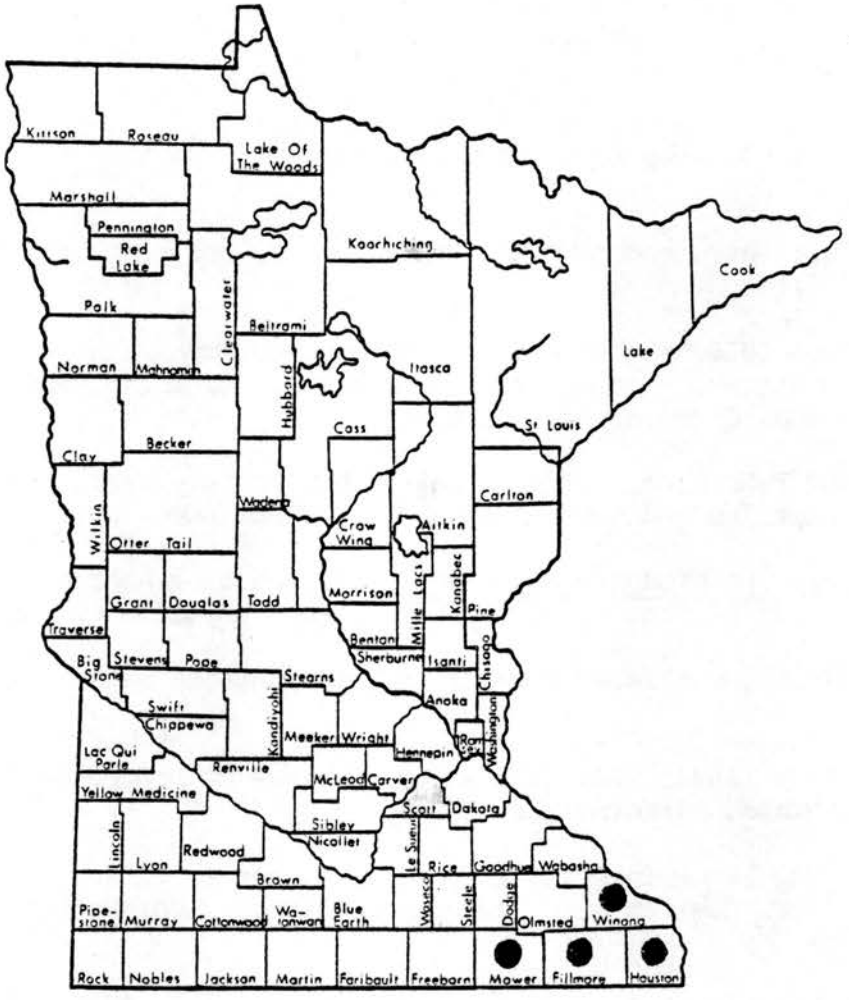


Figure 17a. Known distribution of the Pickerel Frog (Rana palustris) in Minnesota.



Figure 17b. North American distribution of the Pickerel Frog (from Conant, 1975).

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FISH GROUP COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S FISH

A Final Report of the Fish Group Committee
Submitted to the Chairman
Endangered Species Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Dr. James C. Underhill, Chairman
Dept. of Ecology & Behavioral Biology
S-4 Zoology Building
Minneapolis, Minnesota 55455

Dr. Bob Bellig
Department of Biology
Gustavus Adolphus College
St. Peter, Minnesota 56082

Dr. Hollie Collins
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Mr. Don Woods, DNR Liaison
Department of Natural Resources
Section of Fisheries
Box 12, Centennial Office Building
St. Paul, Minnesota 55155

Proposed List of Fish Classified as
Endangered, Threatened or Special Concern
by the Fish Group Committee

ENDANGERED

None

THREATENED

None

SPECIAL CONCERN

Acipenser fulvescens (Rafinesque); Lake Sturgeon
Ammocrypta asprella (Jordan); Crystal Darter
Cycleptus elongatus (Le Sueur); Blue Sucker
Etheostoma chlorosomum (Hay); Bluntnose Darter
Fundulus sciadicus (Cope); Plains Topminnow
Hybopsis x-punctata (Hubbs and Crowe); Gravel Chub
Ictalurus furcatus (Le Sueur); Blue Catfish
Lampetra appendix (DeKay); American Brook Lamprey
Morone mississippiensis (Jordan and Evermann); Yellow Bass
Moxostoma duquesnei (Le Sueur); Black Redhorse
Notropis amnis (Hubbs and Greene); Pallid Shiner
Notropis emilae (Hay); Pugnose Minnow
Noturus exilis (Nelson); Slender Madtom
Notropis topeka (Gilbert); Topeka Shiner
Polyodon spathula (Walbaum); Paddlefish
Scaphirhynchus platorynchus (Rafinesque); Shovelnose Sturgeon

INTRODUCTION

Among Minnesota's four groups of vertebrates, the fishes are second in number of species. In terms of permanent non-migratory residents, fishes rank number one. The fish fauna of the state comprises native and naturalized species. Only the economically important sport fishes and a few non-game fishes, i.e., the marine lamprey and carp, are familiar to the public. A large majority of our native fish fauna is composed of small fishes belonging to many different families, but these are referred to by the general public as "minnows." It is important to note that two fish families, the Cyprinidae or true minnows, and the Percidae or perch family, contain 56 species or 42 percent of the kinds of Minnesota fishes. A few members of the perch family, the perch, sauger and walleye, are familiar to many, but the darters, a group of 15 small colorful species, are also members of the Percidae. The economically important species have had strong advocates for at least a century, but only within the last decade has the public become aware and concerned about other kinds of fish categorized as "non-game species."

There are many reasons to protect and conserve our fish heritage. The press, radio, television, concerned private citizens, and conservation groups have contributed to our awareness. Unfortunately, it is the more dramatic examples that generally gain an audience. The topeka shiner and the crystal darter are certainly not common to everyday conversation as is the now famous snail darter. Many of these small fishes are very important in the food chain or web of life of lakes, rivers and streams. They contribute directly to what we find exciting about a trip to the Boundary Waters or a visit to a wild and scenic river or small brook we remember from our childhood. Such experiences are certainly real but less tangible than the annual sale of fishing licenses. Any person who has visited the Wabash or Illinois rivers will appreciate how fortunate we are to have unspoiled waters in Minnesota such as the Cannon, Cloquet, Crow Wing rivers, etc. Tourism in Minnesota is second only to agriculture as an industry and one of the main attractions is the lake country of the state. Over 399,500 non-resident licensees visited Minnesota in 1981, attesting to the importance of fishing to the state's economy. Preservation of the non-game fishes contributes to the forage base of the sought-after game species. Unfortunately, in many instances, we know little about the biology of these small fishes or where and how they fit into the lake or stream economy. We are attempting to fill in these voids in our knowledge, but our progress is slow. However, once a species of fish has disappeared, there is only an unknowable void. Our goal is to reduce the possibility of extirpation or extinction of species of fish native to Minnesota waters in the future.

The committee has been conservative in preparing the following list of fishes of special interest and concern. In our opinion, none fits the category of endangered or threatened. Several of the species listed are on the northern limits of their ranges in the lower 48 states, i.e., they are peripheral, and have never in our estimation been abundant in the state, but the fact that their ranges have been contracting was given consideration. These peripheral populations are particularly vulnerable to environmental changes and habitat modifications. We are more fortunate than several of our neighboring states where many species have been either extirpated or become so rare as to be endangered. There is no room for complacency. Constant monitoring and continued research are to be encouraged so that should changes occur in populations of our fish species, we can act quickly and, if required, change the status of that species to reflect our concern.

In the preparation of this list we have benefited from the comments and suggestions of associates familiar with the fish fauna of Minnesota. We wish to acknowledge the suggestions of Jack Enblom, Jim Erickson, Jay Hatch, Howard Krosch and Jon Ross. We have excluded fish species native to Lake Superior waters of Minnesota, but we are aware of the fact that several species of the genus Coregonus may have been extirpated or are now endangered or threatened.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Acipenser fulvescens (Rafinesque)

COMMON NAME: Lake Sturgeon

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The lake sturgeon was once very common throughout the state. It was heavily fished in Lake of the Woods and the St. Louis River estuary in the Lake Superior drainage and consequently was nearly extirpated. It is a long lived species, 40 years, that takes almost 20 years to reach sexual maturity (48 inches, 20 to 30 pounds). The growth rate of the lake sturgeon is slow, requiring 5 years to reach a length of 20 inches and a weight of one pound. It is presently rare enough throughout the state to be newsworthy when one is caught.

DISTRIBUTION: The lake sturgeon is a migratory species that is present in the Mississippi River, Hudson Bay and Great Lakes drainages. It is found in all but the Missouri River drainage in Minnesota (Fig. 1). It was very common in Lake of the Woods until the late 1890's, "thousands of large fish being taken annually" (Cox 1897). Scott and Crossman (1973) note that Lake of the Woods was the "largest sturgeon hole in the world." The Canadian 1957 catch was 0.005% of the 1893 catch of 730,000 pounds.

PREFERRED HABITAT: The lake sturgeon inhabits moderately clear large rivers and lakes. It is most often found over firm sandy, gravel or rubble bottoms.

RECOMMENDATIONS: Populations of lake sturgeons should be closely monitored. Research on the feasibility of artificial propagation should be undertaken. Catch and size limits in the sports fishery should be retained.

SELECTED REFERENCES:

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Smith, P. W. 1979. The fishes of Illinois. Univ. Illinois Press, Urbana. 314 pp.

Trautman, M. B. 1957. The fishes of Ohio. Ohio State Univ. Press, Columbus, 683 pp.

PREPARED BY: Fish Group Committee

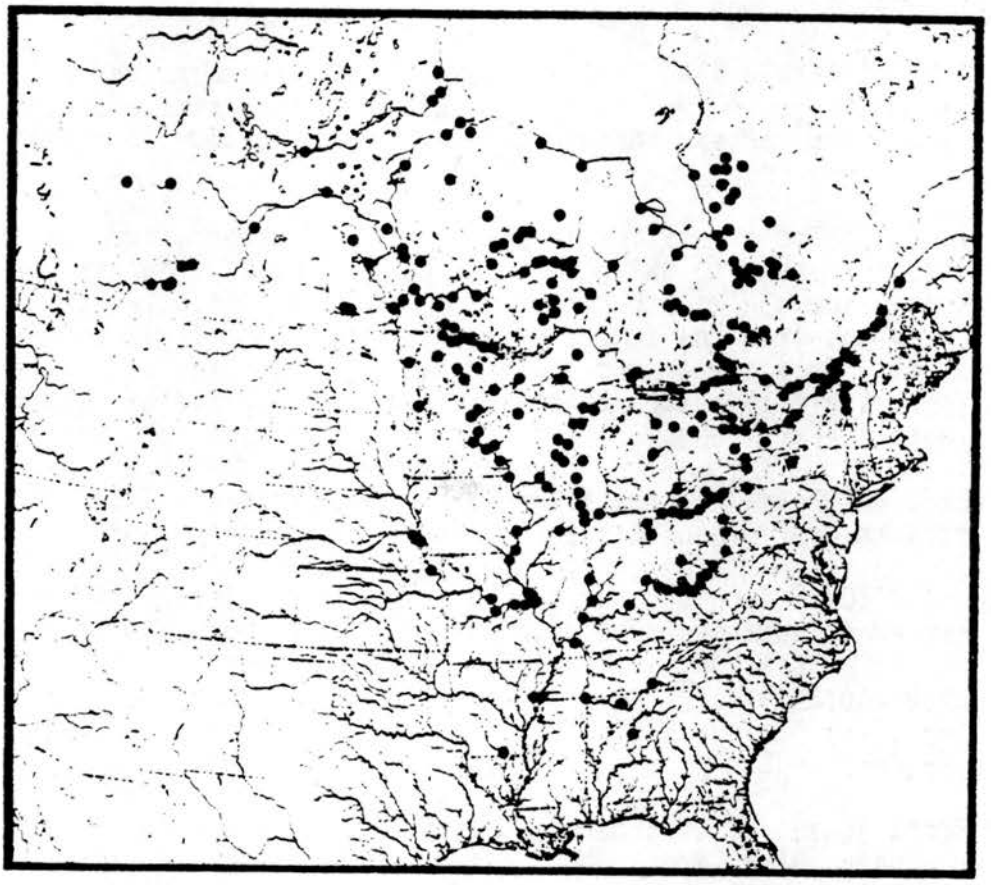

Figure 1. Distribution of Acipenser fulvescens (Rafinesque) in North America. (from Gruchy and Parke 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Ammocrypta asprella (Jordan)

COMMON NAME: Crystal Darter

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The crystal darter reaches the northern limit of its range in the Mississippi River in Minnesota and Wisconsin. Of all the darters in the state this is probably the rarest and least well known.

DISTRIBUTION: The crystal darter ranges from southern Minnesota to southern Ohio and south to Oklahoma to Alabama (Fig. 1). In Minnesota it is known from the main channels of the Mississippi River from Winona south and from the Zumbro River near Kellogg. It is never common, usually only one or two individuals are collected at one time. It is possible to return to the same station and collect individuals from year to year.

PREFERRED HABITAT: The crystal darter occurs in large, clear watered streams over clean sand and gravel in moderate to swift current.

RECOMMENDATIONS: Sampling on sand bars in the Mississippi River and its larger tributaries should be carried out to determine the abundance of the crystal darter. Research on the biology of the species should be encouraged.

SELECTED REFERENCES:

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Smith, P. W. 1979. The fishes of Illinois. Univ. Illinois Press, Urbana, 314 pp.

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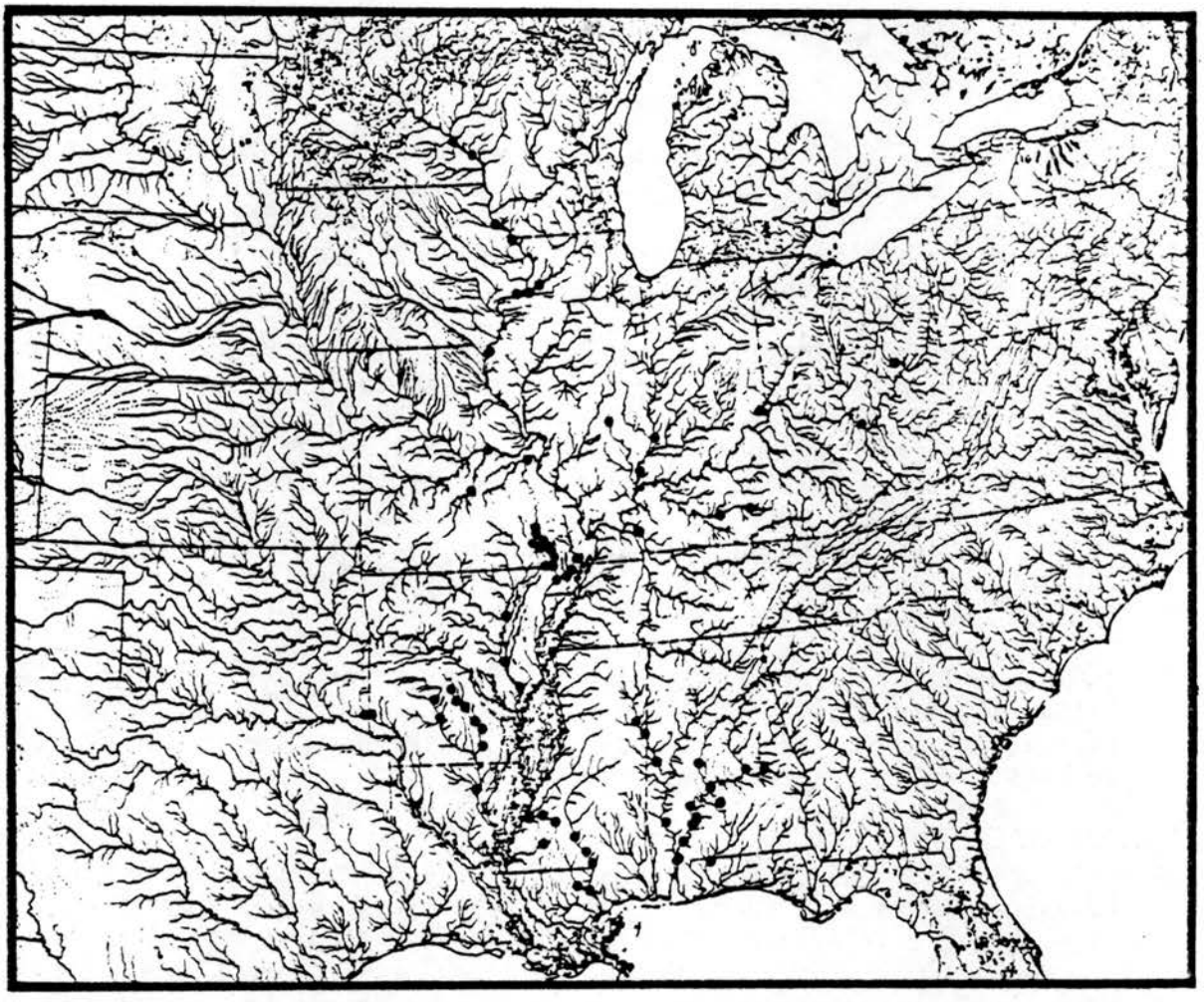

Figure 1. Distribution of Ammocrypta asprella (Jordan) in North America. (from Page 1978)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cycleptus elongatus (Lesueur)

COMMON NAME: Blue Sucker

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although never abundant, the blue sucker is presently much less common than formerly. Its habitat has been reduced by the construction of dams and siltation. In addition, the species is extremely sensitive to pollution. The blue sucker is considered to be the best food fish of all suckers.

DISTRIBUTION: The distribution of the blue sucker is restricted to large rivers from southern Minnesota and Wisconsin to Tennessee, and is the Mobile Bay drainage to Mexico (Fig. 1). Recent decline in numbers of blue suckers have been noted in Illinois and Ohio. The blue sucker is rare in the Mississippi River in Iowa but more common in the Missouri River drainage "but nowhere is it abundant" (Harlan and Speaker 1951). There is a general consensus that siltation and pollution have caused the recent decline but that dams may also be important in obstructing spawning runs.

In Minnesota it is present in the St. Croix River basin north to the Dalles and the Mississippi River south of Hastings. At one time it was present below the St. Anthony Falls in Minneapolis. Blue suckers are still relatively abundant in the Chippewa River, Wisconsin (per comm. Ken Mueller).

PREFERRED HABITAT: The blue sucker occurs in deep, swift water in channels of large rivers with sand, gravel or rubble bottoms. Tolerant of high turbidities if currents are swift enough to prevent siltations.

RECOMMENDATIONS: Routine sampling in large rivers should be carried out to ascertain the numbers of blue suckers. Water quality should be maintained at a high level. In further navigation improvement projects siltation should be minimized.

SELECTED REFERENCES:

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Trautman, M. B. 1957. The fishes of Chio. Chio State Univ. Press, Columbus, 683 pp.

PREPARED BY: Fish Group Committee

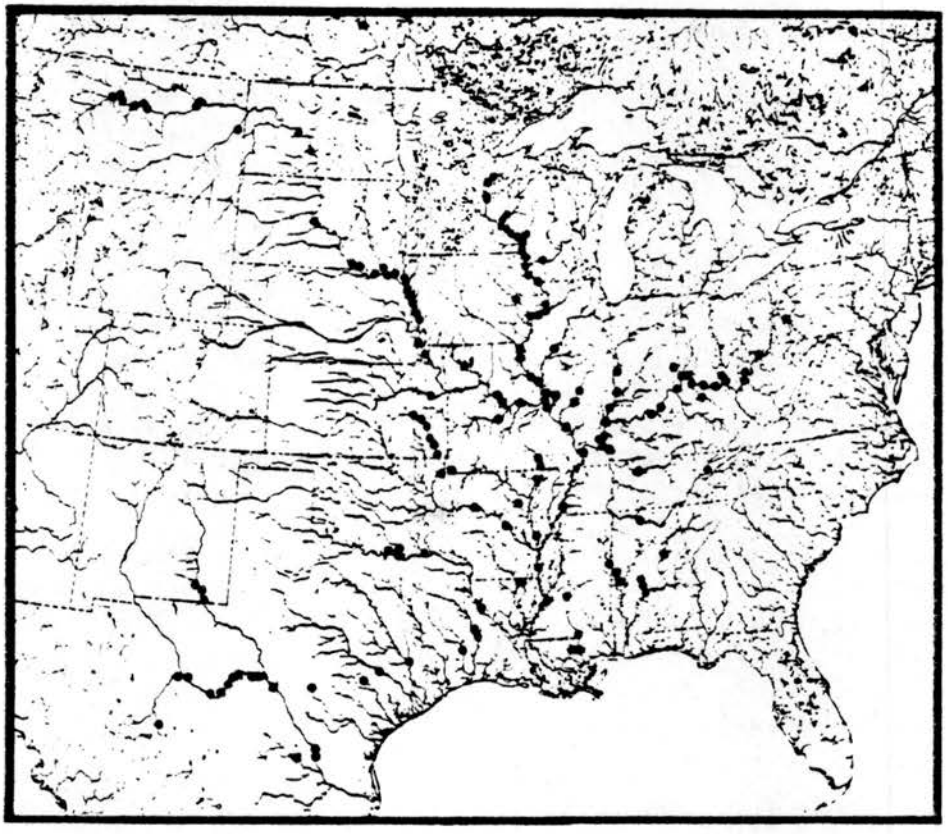

Figure 1. Distribution of Cycleptus elongatus (Lesueur) in North America. (from Gilbert 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Etheostoma chlorosomum (Hay)

COMMON NAME: Bluntnose Darter

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The bluntnose darter is one of several species that reach their northern limit in Minnesota and Wisconsin waters. The species is rare even in preferred habitats in the southeastern part of the state.

DISTRIBUTION: The Bluntnose Darter ranges from Minnesota south to the Gulf Coast in the Mississippi River and its larger tributaries (Fig. 1). It is known from the Mississippi River backwaters south of Wabasha and from a single collection from the Root River in Houston County.

PREFERRED HABITAT: The bluntnose darter occurs in quiet waters, sluggish streams where bottom is sand and organic debris, and sloughs and backwaters of larger rivers.

RECOMMENDATIONS: Regular sampling in the Mississippi River should be carried on to determine the status of this darter in Minnesota. Attention should be given to sampling the lower reaches of the Root River in the Mississippi floodplain.

SELECTED REFERENCES:

Eddy, S., and J. C. Underhill. 1954. Northern fishes. 3rd ed. Univ. Minn. Press, Mpls. 414 pp.

Gilbert, C. R. 1981. Etheostoma chlorosomum (Hay) Bluntnose darter. p. 634 in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh. 854 pp.

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

PREPARED BY: Fish Group Committee

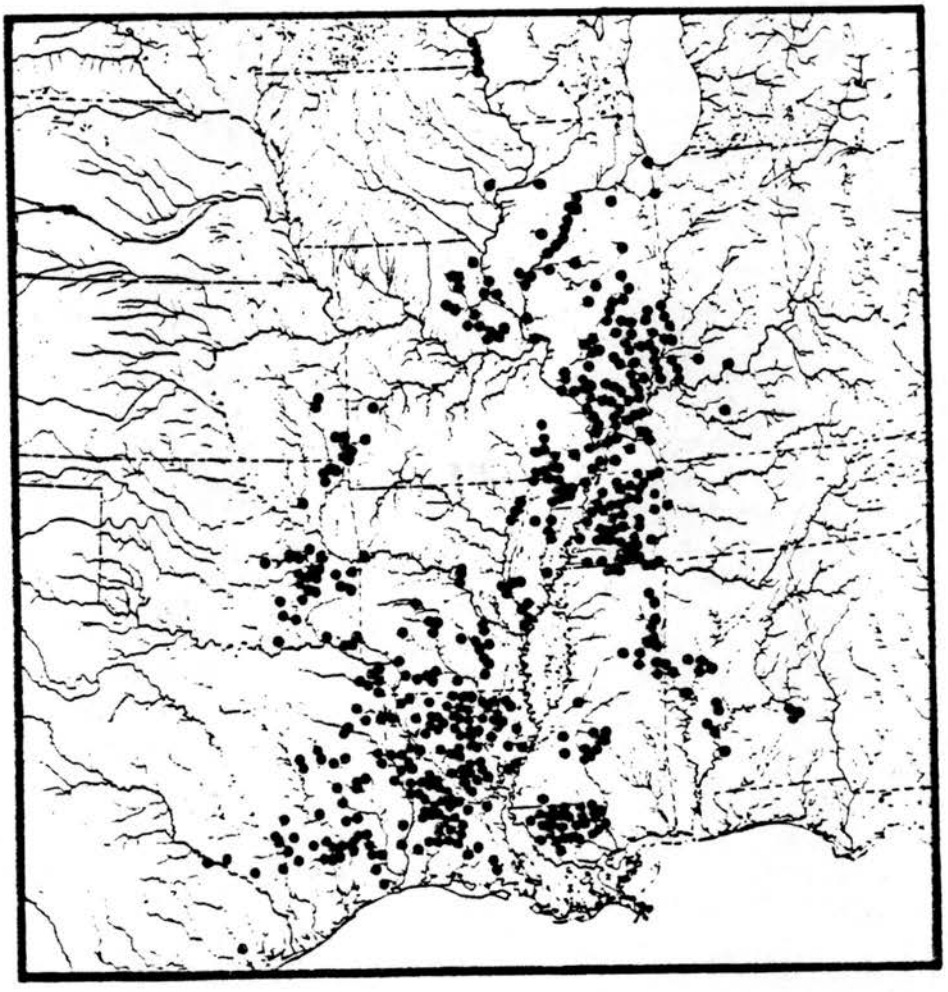

Figure 1. Distribution of Etheostoma chlorosomum (Hay) in North America. (from Gilbert 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Fundulus sciadicus (Cope)

COMMON NAME: Plains Topminnow

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The plains topminnow is restricted in its distribution to the small prairie streams tributary to the Missouri River in Pipestone and Rock counties, Minnesota. Their habitat is fragile and subject to siltation and drought. It is one of two species in the Minnesota ichthyofauna restricted to the Missouri River drainage.

DISTRIBUTION: The plains topminnow is restricted to the Missouri River drainage from South Dakota and Colorado south to Missouri, also present in Neosho River in southwestern Missouri (Fig. 1). It was recently found in the Rock River and Kanaranzi Creek in southwestern Minnesota (Fig. 2). Various students of the fishes of the prairie region have reported a decline in populations of plains topminnow. It was formerly common in South Dakota, now it is uncommon. In Missouri it has declined and in places disappeared. The specialized requirements of the species restricts it to colonies throughout its range.

PREFERRED HABITAT: The plains topminnow occurs in quiet pools of small creeks and backwaters and overflow pools of larger streams. Prefers clear waters with no current and waters adjacent to beds of submergent vegetation.

RECOMMENDATIONS: Water quality of streams in southwestern Minnesota should be maintained at present levels and efforts to minimize siltation should be encouraged. Research on the plains topminnow should be encouraged as little is known of its natural history.

SELECTED REFERENCES:

Bailey, R. M., and M. O. Allum. 1962. Fishes of South Dakota. Univ. Mich. Mus. Zool. Misc. Publ. 119: 131 pp.

Cross, F. B. 1967. Handbook of fishes of Kansas. Univ. Kansas Mus. Nat. Hist. Misc. Publ. 45: 357 pp.

Harlan, J. R., and E. B. Speaker. 1951. Iowa fish and fishing. Iowa State Cons. Comm., Des Moines, 237 pp.

Pflieger, W. L. 1971. A distributional study of Missouri fishes. Mus. Nat. Hist., Univ. Kansas Vol. 20: 225-570.

Shute, J. R. 1981. Fundulus sciadicus plains topminnow. p. 527 in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

PREPARED BY: Fish Group Committee

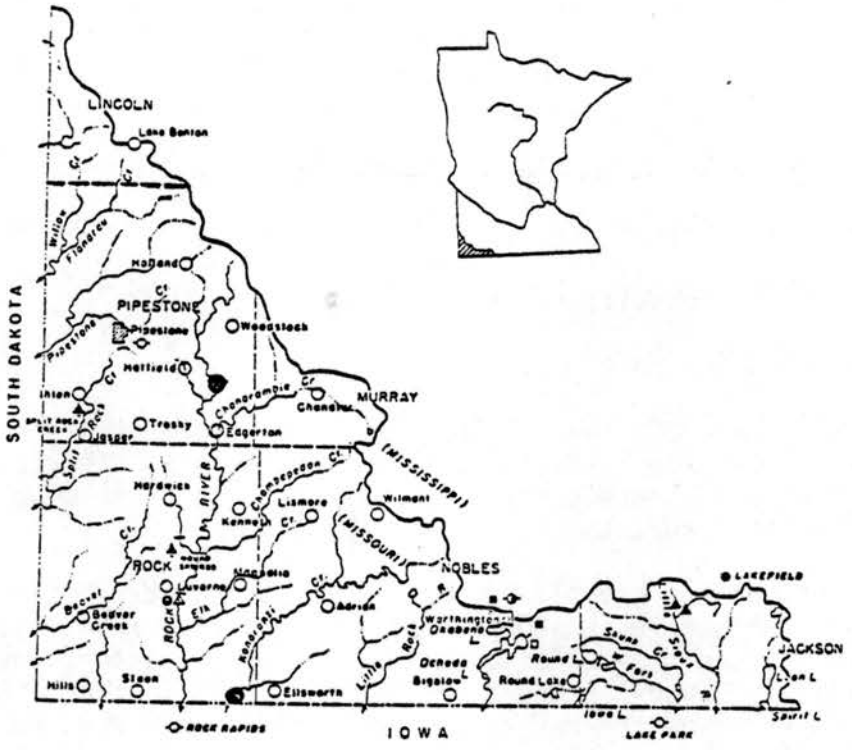

Figure 2. Distribution of the Plains topminnow, Fundulus sciadicus Cope, in the Rock River watershed unit, southwestern Minnesota.

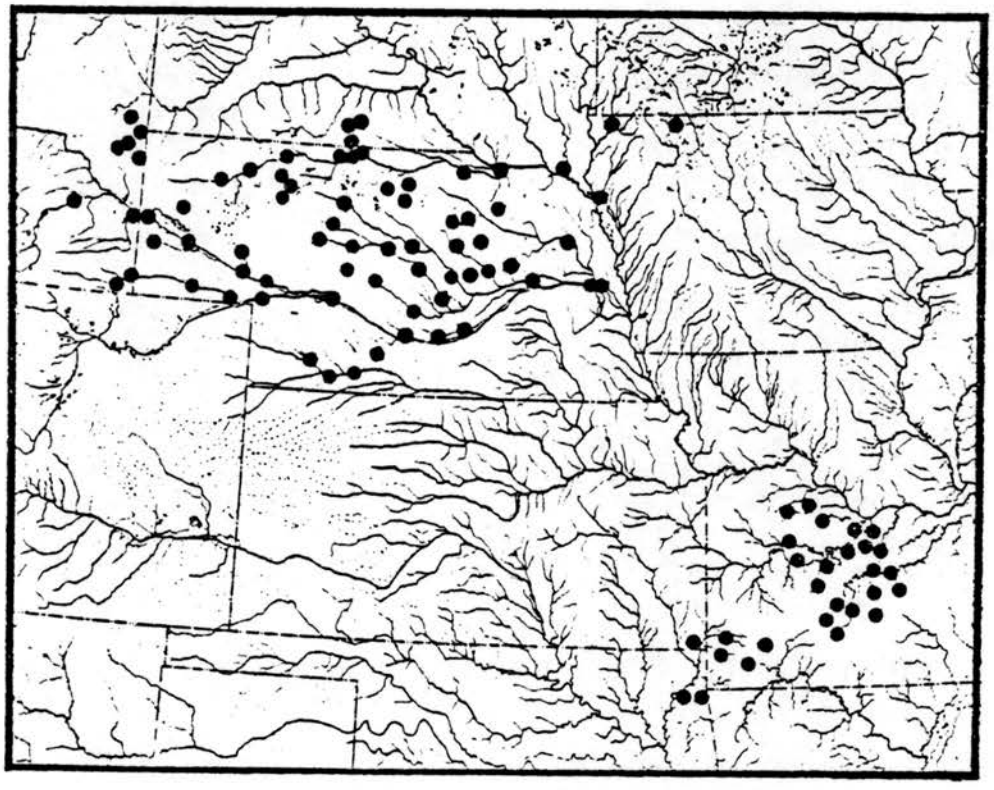

Figure 1. Distribution of Fundulus sciadicus (Cope) in North America. (from Shute 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Hybopsis x-punctata (Hubbs and Crowe)

COMMON NAME: Gravel Chub

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The gravel chub reaches its northern limit in the Mississippi River drainage in Minnesota. It has been extirpated in some northern portions of its range and should be given some concern in Minnesota.

DISTRIBUTION: The gravel chub has a wide but spotty distribution from Minnesota to Ohio and southward to Arkansas (Fig. 1). It is now extirpated from Ontario in the Lake Erie drainage and other localities. Several students of the Mississippi River fish fauna have commented on the rarity of the species and suggested that it may become extinct. In Minnesota the gravel chub is known from the upper Iowa River just east of Granger, Minnesota and from five localities on the Root River, Fillmore County.

PREFERRED HABITAT: The gravel chub is closely restricted to riffles over fine gravel and pea-sized limestone gravel, in clear to slightly turbid waters of large creeks and small rivers.

RECOMMENDATIONS: Maintain regular sampling in the streams of southeastern Minnesota to assess the status of this and other fish species restricted to this portion of the state. Regulate the taking of minnows from these streams based on findings of fishery biologists.

SELECTED REFERENCES:

Baily, R. M. 1969. A revised list of the fishes of Iowa, with keys for identification. In Iowa fish and fishing. Ed. J. R. Speaker and E. B. Speaker, pp. 327-377. Iowa Cons. Comm.

Eddy, S., and J. C. Underhill. 1974. Northern fishes. 3rd Ed. Univ. Minn. Press, Mpls. 414 pp.

Gilbert, C. R. 1981. Hybopsis x-punctata (Hubbs and Crowe) Gravel chub. p. 196, in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh. 854 pp.

Pfleiger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

PREPARED BY: Fish Group Committee

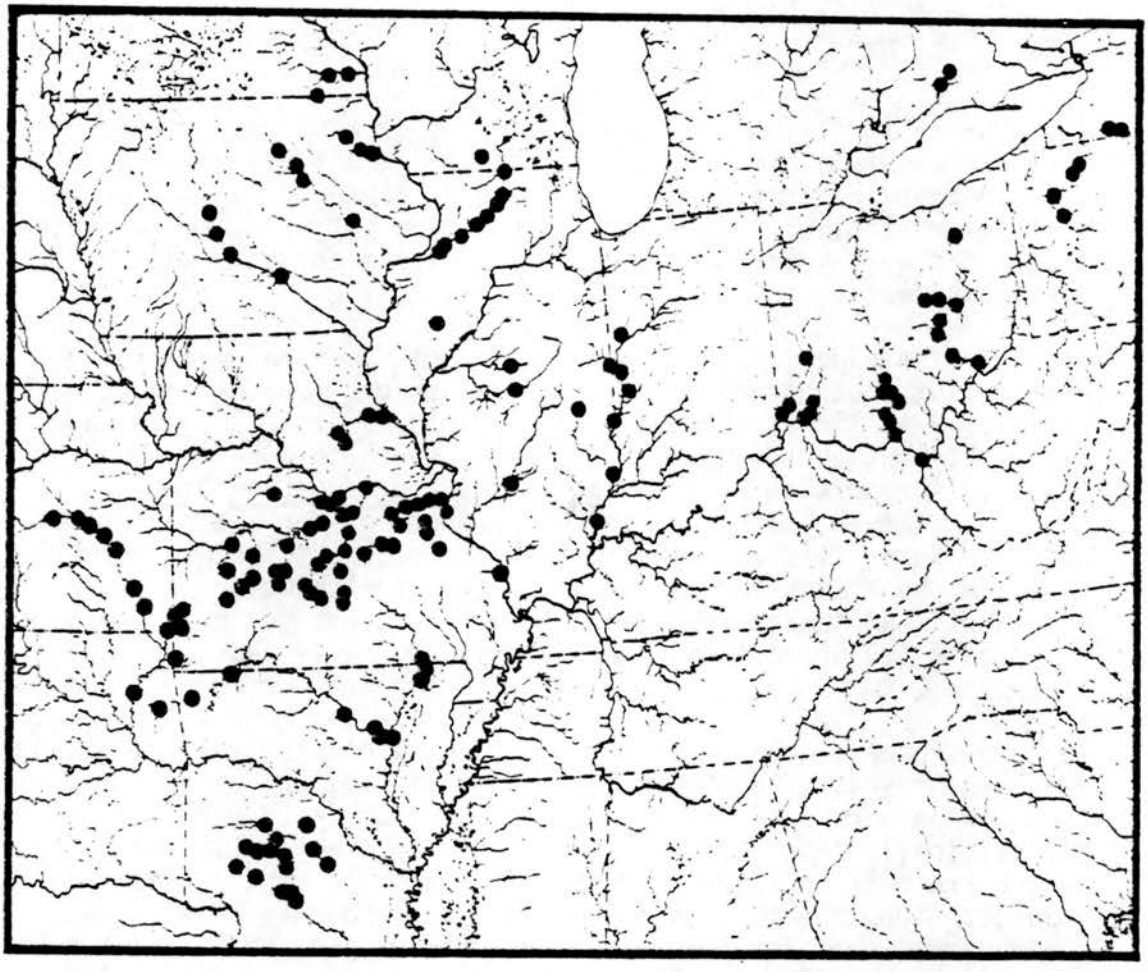

Figure 1. Distribution of Hybopsis x-punctata (Hubbs and Crowe) in North America. (from Gilbert 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Ictalurus furcatus (Lesueur)

COMMON NAME: Blue Catfish

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The blue catfish once occurred in the Mississippi River north to St. Anthony Falls and was present in the Minnesota River from Fort Snelling to Mankato. Lake St. Croix was stocked in 1977 with 6335 yearling blue catfish, and two were caught the next year in Lake Pepin. No specimens have been reported in recent years.

DISTRIBUTION: The blue catfish, largest of North American catfish, was widely distributed throughout the Mississippi River drainage, especially in larger streams (Fig. 1). It is also found in large streams tributary to the Gulf of Mexico south to Yucatan, Mexico. Cox (1897) reported the blue catfish as Ameiurus punctatus in Minnesota waters based on fishermen reports of very large catfish. Eddy and Surber (1947) reported that the blue catfish was formerly found in the Mississippi River and its larger tributaries from Minneapolis southward, but "none taken in recent years." They reported a 160 pound individual from Hanley Falls on the Minnesota River.

There has been a decline in numbers of blue catfish throughout their range. The species was abundant in the Mississippi River near Keokuk, Iowa during warmer months but was absent from these waters in winter. Speculation is that the catfish migrated upstream in spring and summer and back downstream in the late fall and winter. Dams constructed along the Mississippi River after 1900 may have restricted their migration. Trautman (1957) reported a decline in the population of the Ohio River following the construction of dams. Fishery biologists in Iowa, Illinois and Missouri have made similar observations. Blue catfish are still common in Louisiana.

PREFERRED HABITAT: The blue catfish is a large river species that feeds in swiftly flowing chutes or rapids or pools with good currents. It is a somewhat migratory species.

RECOMMENDATIONS: A careful census of all large catfish caught should be carried out on the Mississippi River south of Hastings to ascertain whether the blue catfish is still present in Minnesota waters. Artificial propagation should be considered to reestablish populations where water quality promises success.

SELECTED REFERENCES:

Cox, U. O. 1897. A preliminary report on the fishes of Minnesota. Geol. Hist. Surv. Minn. Zool. Ser. 3: 93 pp.

Douglas, N. H. 1974. Freshwater fishes of Louisiana. Claitor's Publ. Div., Baton Rouge, 443 pp.

Eddy, S. and T. Surber. 1947. Northern fishes. 2nd Ed, Univ. Minn. Press, 252 pp.

Glodek, G. S. 1981. Ictalurus furcatus (Lesueur), blue catfish. p. 439. in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Harland, J. R. and E. B. Speaker. 1951. Iowa fish and fishing. Iowa State Cons. Comm., Des Moines, 237 pp.

Moyle, J. B. 1975. The uncommon ones. Minn. Dept. Nat. Res. 32 pp.

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

Smith, P. W. 1979. The fishes of Illinois. Univ. Illinois Press, Urbana, 314 pp.

Trautman, M. B. 1957. The fishes of Ohio. Ohio State Univ. Press, Columbus, 683 pp.

PREPARED BY: Fish Group Committee

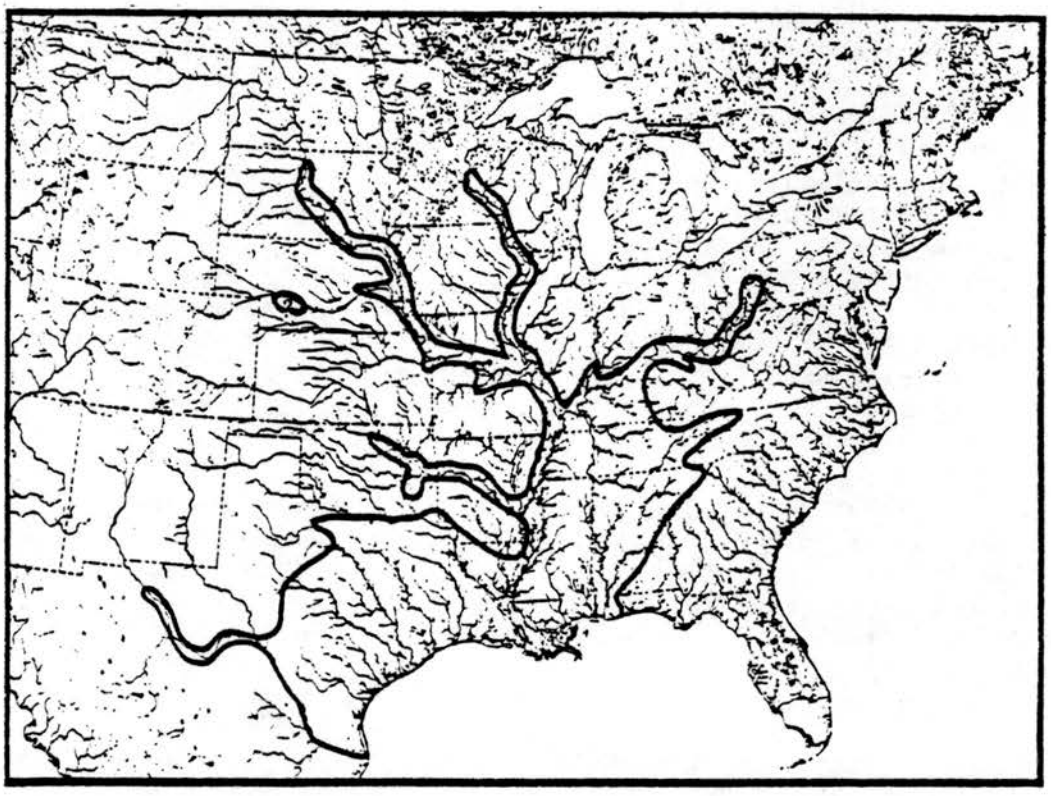

Figure 1. Distribution of Ictalurus furcatus (Lesueur) in North America, area within black line. (from Glodek 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Lampetra appendix (DeKay)

COMMON NAME: American Brook Lamprey

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The American brook lamprey is presently restricted in its distribution to the Zumbro and Root rivers and their tributaries. Prior to 1940 it was common in the Credit River, a tributary of the Minnesota River, near Savage, Minnesota. Professor Samuel Eddy said that in the spring large numbers of adults could be seen in the riffles just below the culvert on the old county highway on the south edge of Savage. Collections exist in the James Ford Bell Museum (JFBM) which corroborate his observations. From 1950 to 1965 attempts were made to collect additional specimens from the Credit River without success. Fortunately the American brook lamprey is still present in the streams of southeastern Minnesota but the extirpation of the species from the Credit River suggests that we should be concerned about the survival of the remaining populations.

DISTRIBUTION: The earliest record of Lampetra appendix from Minnesota waters dates back to 1918 when Thaddeus Surber (Surber 1924) collected a single specimen from the White Water River at Alba. The latter specimen is not extant. As noted previously there are specimens collected from the Credit River during the 1930's in the catalogued collections of the Bell Museum. More recently, 1960 to 1980, collections have been made in the Zumbro and Root rivers. The localities in Minnesota where the species has been collected is shown in Figure 1 and its distribution in North America is shown in Figure 2.

PREFERRED HABITAT: In Minnesota brook lampreys are restricted to small and medium sized streams where the water quality is good and erosion is not serious. The major portion of the 6 to 7 year life cycle of the American brook lamprey is spent in the free living filter-feeding larval stage, the ammocoetes. The ammocoetes live in mud-sand-silt sediments in pools. The non-predaceous adults live only a short time, 6 or 7 months, spawn and die. Spawning occurs in gravel riffles adjacent to the pool where the adults completed their larval development. Adults are usually collected during the spawning period by seining or electro-fishing. The ammocoetes are collected almost exclusively by electro-fishing.

RECOMMENDATIONS: Sampling by electro-fishing should be continued to more accurately determine the distribution of the species in southeastern Minnesota. Such sampling should be designed to capture the ammocoetes stage during routine stream inventories. Specimens collected should be deposited in a museum, e.g. James Ford Bell Museum of Natural History.

SELECTED REFERENCES:

Eddy, S. and J. C. Underhill. 1974. Northern fishes. 3rd Ed. Univ. Minn. Press, Mpls. 414 pp.

Lee, D. S., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R. Stauffer, Jr. 1980. Atlas of North American freshwater fishes. N. C. State Mus. Nat. Hist., Raleigh, 854 pp.

Johnson, R. E., and J. B. Moyle. 1949. A biological survey and fishery management plan for the streams of the Root River basin. Minn. Dept. Cons., Fish. Res. Unit Invest. Rept. No. 87: 129 pp.

Rohde, F. C. 1980. Lampetra appendix (DeKay), American Brook Lamprey. p. 23, in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Surber, Thaddeus. 1924. A biological reconnaissance of the Root River drainage basin, southeastern Minnesota. app. to Bienn. Rep. Minn. State Game and Fish Comm. for the bienn. period ending July 31, 1918.

PREPARED BY: Fish Group Committee

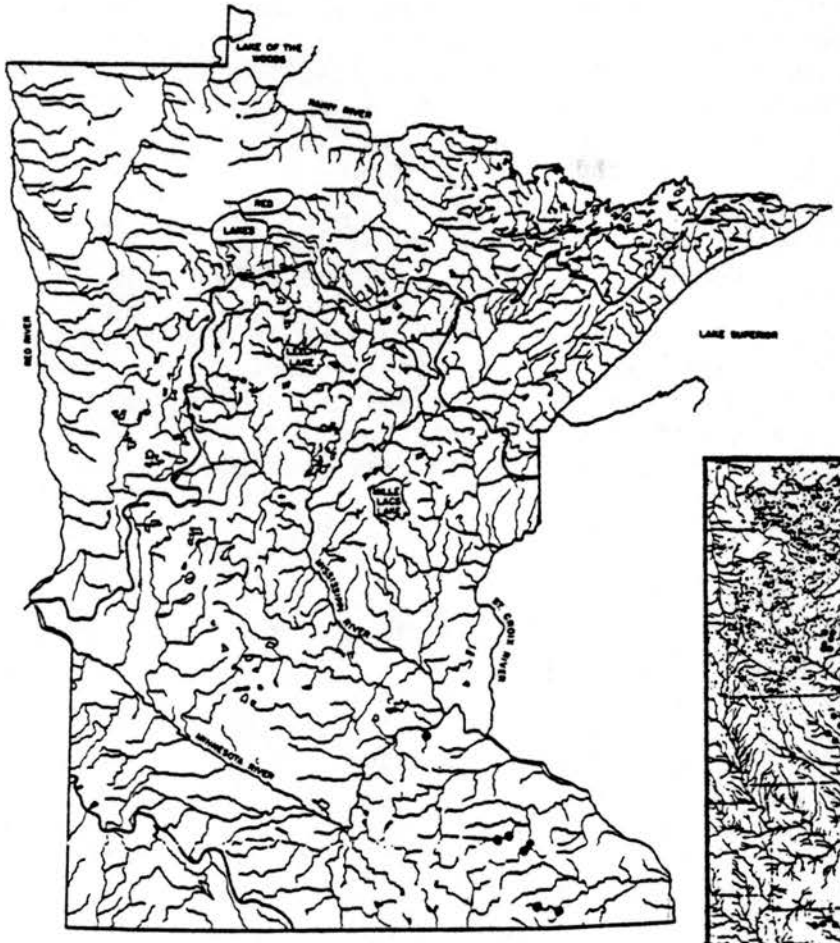

Figure 1. Distribution of Lampetra appendix in Minnesota.



Figure 2. Distribution of Lampetra appendix (Dekay) in North America (from Rhode 1980)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Morone mississippiensis (Jordan and Evermann)

COMMON NAME: Yellow Bass

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The yellow bass reaches its northern limits of distribution in the Mississippi River in Minnesota and Wisconsin. Based on present records it is uncommon or rare. The fragility of the river environment makes concern for survival of rare or uncommon species important, especially since dams now prevent or curtail northward migration of the more southern species.

DISTRIBUTION: The yellow bass is restricted in its natural distribution to the Mississippi River, its larger tributaries and a few larger streams tributary to the Gulf of Mexico (Fig. 1). It has been widely introduced and has successfully colonized impoundments in the southern part of its range. In Minnesota, Iowa, and Wisconsin it is limited to the Mississippi River and its backwaters. We have no records of yellow bass north of Lake Pepin.

PREFERRED HABITAT: The yellow bass occurs in large rivers and their backwaters, and impoundments and river lakes, such as Lake Pepin.

RECOMMENDATIONS: The status of yellow bass populations in the Mississippi River should be determined by means of catch records in the sport fishery and routine fishery management surveys. The interaction between the yellow and white bass in northern waters should be examined. The potential of this species as game species could be examined.

SELECTED REFERENCES:

Burgess, G. H. 1981. Morone mississippiensis (Jordan and Evermann) yellow bass. p. 575 in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Eddy, S., and J. C. Underhill. 1974. Northern fishes. Univ. Minn. Press, Mpls. 414 pp.

Harlan, J. R., and E. B. Speaker. 1951. Iowa fish and fishing. Iowa State Cons. Comm., Des Moines. 237 pp.

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

PREPARED BY: Fish Group Committee

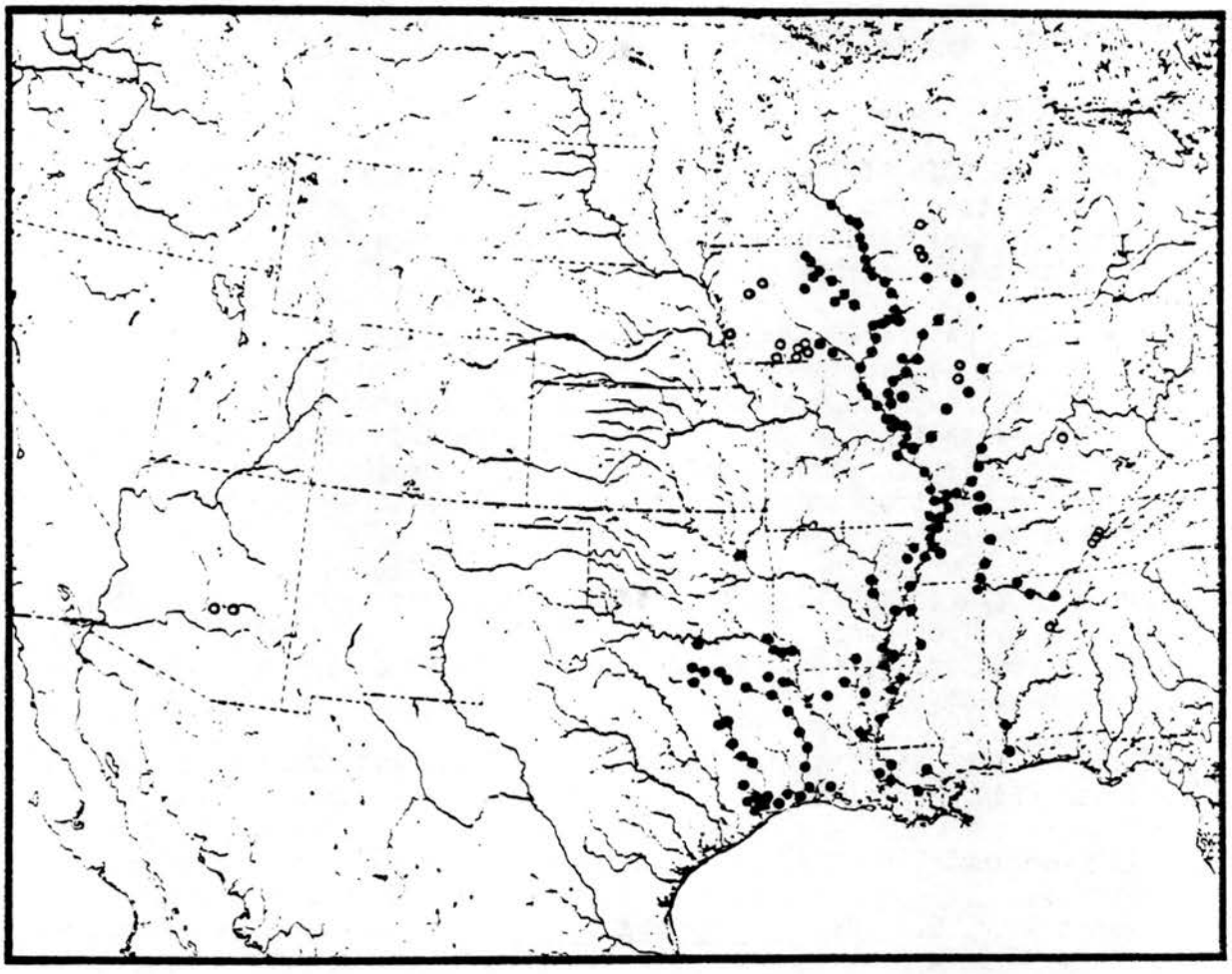

Figure 1. Distribution of Morone mississippiensis (Jordan and Evermann) in North America. (open circles transplanted populations, from Burgess 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Moxostoma duquesnei (Lesueur)

COMMON NAME: Black Redhorse

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The black redhorse is a southern species that reaches its northern limits in Minnesota. Dams on the Mississippi River probably prevent migration from the south into Minnesota waters so extant populations should be protected.

DISTRIBUTION: The black redhorse ranges from southeastern Minnesota and northern Iowa, southern Wisconsin to Ontario and the St. Lawrence drainage, south to Alabama, Arkansas and eastern Oklahoma (Fig. 1). In Minnesota it is known from the headwaters of the Zumbro River and the Root River. In the Zumbro River it is present in small tributaries where the limestone bedrock forms the stream bottom and spring floods sweep the pools free of silt.

PREFERRED HABITAT: The black redhorse occurs in medium to small size streams with gravel or rubble bottoms, and is occasionally present in sandy or silty sections of streams and rivers. The species rarely occurs in impoundments.

RECOMMENDATIONS: Maintain high water quality and land management practices which reduce erosion.

SELECTED REFERENCES:

Jenkins, R. E. 1981. Moxostoma duquesnei (Lesueur) Black redhorse. p. 419 in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Moyle, J. B. 1975. The uncommon ones. Minn. Dept. Nat. Res., 32 pp.

Phillips, G. L., and J. C. Underhill. 1971. Distribution and variation of the Catostomidae of Minnesota. Occ. Pap. Bell Mus. Nat. Hist. 10: 45 pp.

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

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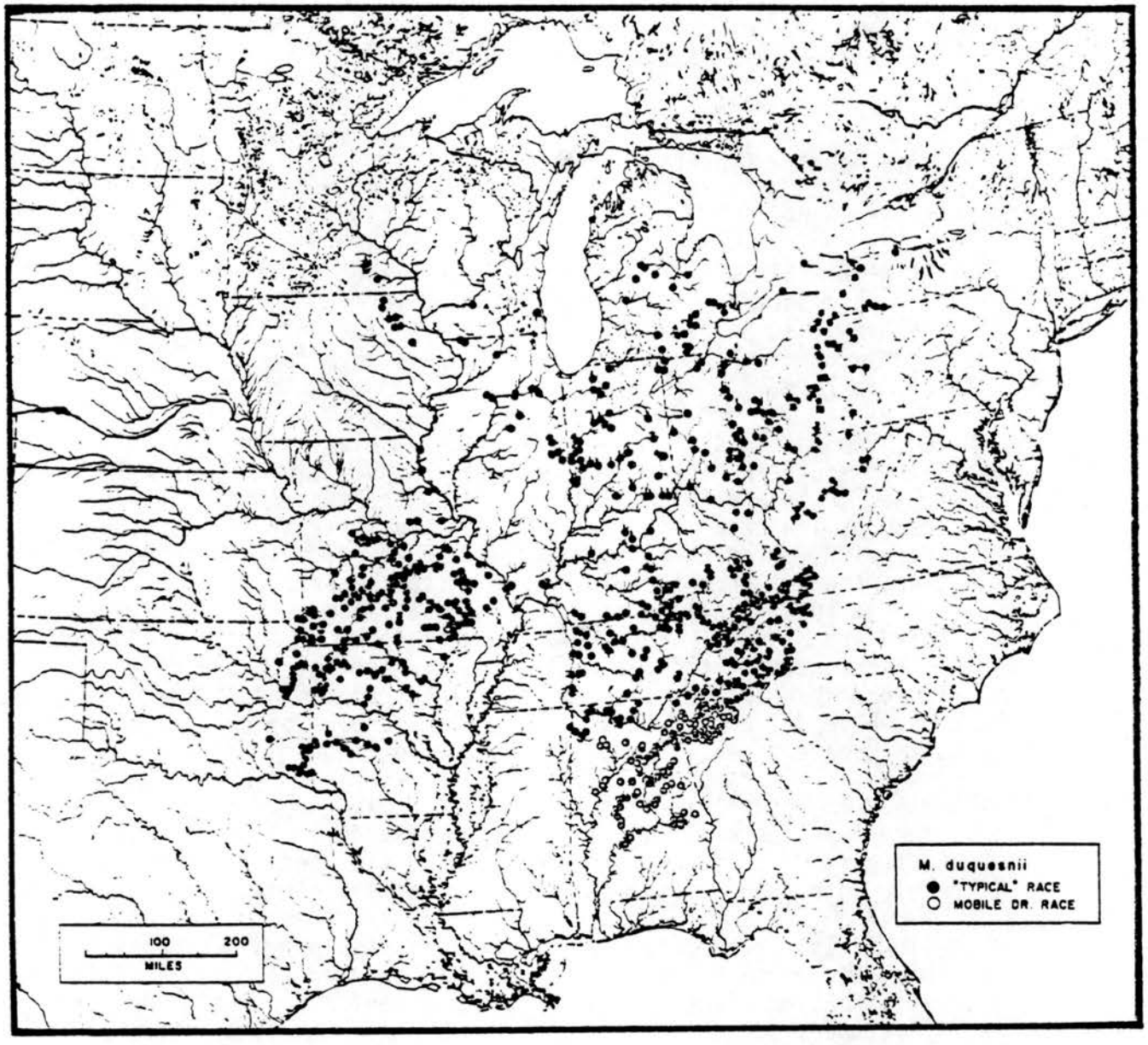


Figure 1. Distribution of Moxostoma duquesnei (Lesueur) in North America. (from Jenkins 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Notropis amnis (Hubbs and Greene)

COMMON NAME: Pallid Shiner

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The pallid shiner reaches its northern limit of distribution in the Mississippi River in Minnesota and Wisconsin. It is a species that inhabits medium and big rivers and the status of the northern population is uncertain but it probably is rare.

DISTRIBUTION: The pallid shiner is present in the Mississippi River basin from southern Minnesota and Wisconsin to Louisiana, as well as streams tributary to the Gulf of Mexico in Texas (Fig. 1). Recent records indicate that the pallid shiner is restricted to the Mississippi River channel south of Lake Pepin. Specimens from Iowa and Wisconsin are from the Mississippi River proper. There is a specimen in the University of Michigan Museum of Zoology that was collected from the St. Croix River above Nevers Dam, north of Taylors Falls, Minnesota. Intensive collecting carried out in the past thirty years has failed to reveal additional specimens. Our collections have all come from the downstream margins of sand bars where currents create a small plume of silt and detritus.

PREFERRED HABITAT: The pallid shiner occurs in medium to large rivers, occasionally streams, in quiet waters over sandy or silty bottoms. Most often found at the down stream ends of sand and gravel bars. It rarely enters the mouths of smaller tributary streams.

RECOMMENDATIONS: Initiate routine sampling of Mississippi River habitats, including waters surrounding sand bars, to be carried on in conjunction with routine fishery management and inventory projects that presently are part of the fisheries program. Determine the status of the pallid shiner in the river.

SELECTED REFERENCES:

Clemmer, G. H. 1981. Notropis amnis (Hubbs and Crowe) Pallid shiner. p. 224, in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

PREPARED BY: Fish Group Committee



Figure 1. Distribution of Notropis amnis (Hubbs and Greene) in North America. (from Clemmer 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Notropis emilae (Hay)

COMMON NAME: Pugnose Minnow

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The pugnose minnow reaches its most northern distribution in the Mississippi River in Minnesota and Wisconsin. The abundance of the species in the Mississippi River is unknown but it is not common.

DISTRIBUTION: The distribution of the pugnose minnow is restricted to Mississippi River drainage north to Minnesota and Wisconsin, Lake Erie in the Great Lakes drainage, Gulf of Mexico drainage from Texas to Florida (Fig. 1). In Minnesota it is found in the Mississippi River south of Red Wing and in the Zumbro and Root Rivers (Fig. 2).

PREFERRED HABITAT: The pugnose minnow occurs in clear, sluggish, often weedy, waters adjacent to rivers.

RECOMMENDATIONS: Sampling should be carried out in the Mississippi River south of Lake Pepin to determine the abundance of the pugnose minnow. Such information is necessary to be certain of the status of the species in Minnesota waters.

SELECTED REFERENCES:

Eddy, S., and J. C. Underhill. 1974. Northern Fishes. 3rd Ed. Univ. Minn. Press, Mpls. 414 pp.

Gilbert, C. R. 1981. Notropis emilae (May), pugnose minnow. p. 262, in D. S. Lee et al. Atlas of North American freshwater fishes, N. C. Mus. Nat. Hist., Raleigh. 854 pp. - and R. M. Bailey. 1972. Systematics and zoogeography of the American cyprinid fish Notropis (Opsopoeodus) emilae. Occ. Paps. Mus. Zool. Univ. Mich. 664: 35 pp.

PREPARED BY: Fish Group Committee

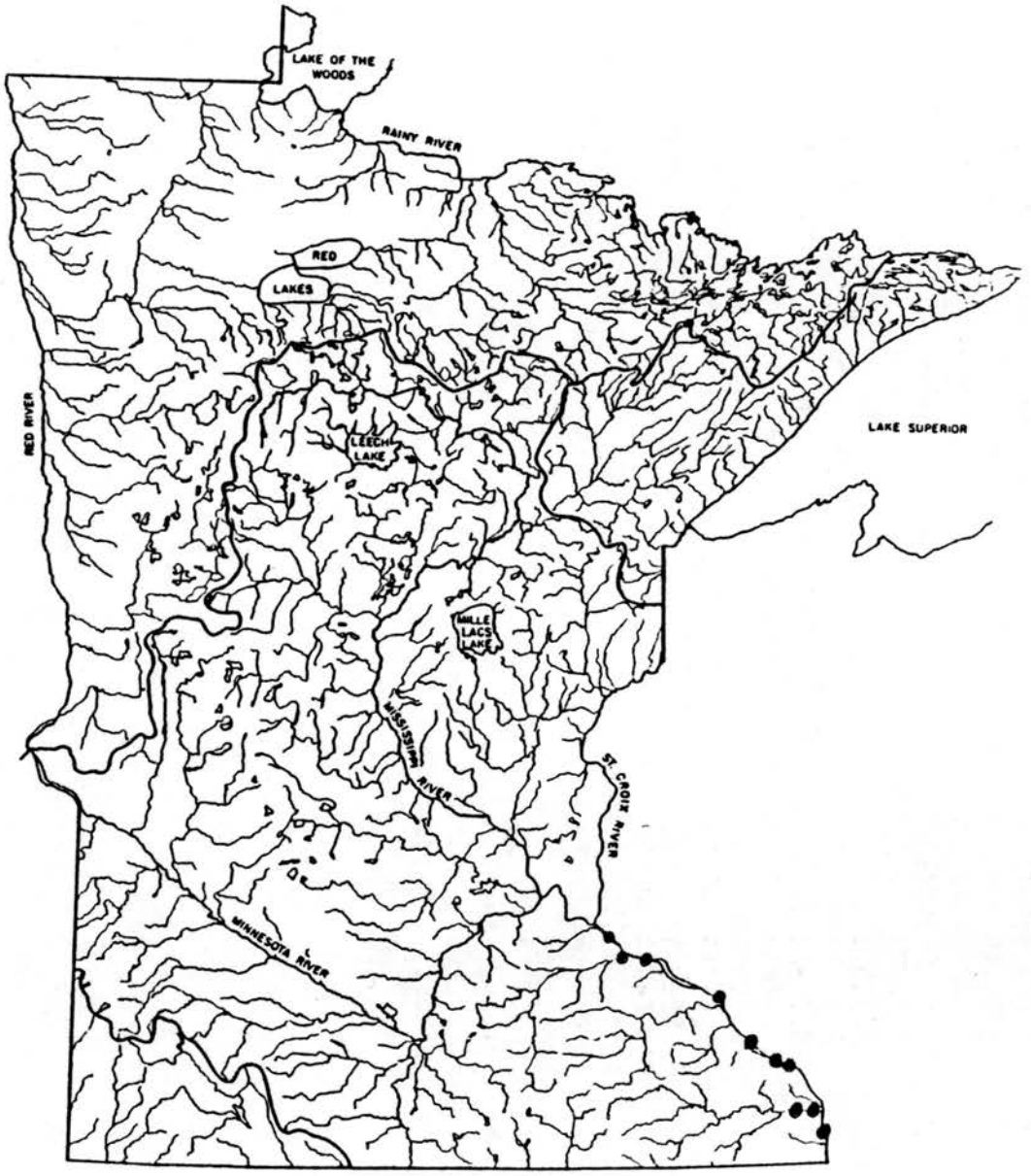


Figure 2. Distribution of Notropis emilae (Hay) in Minnesota.

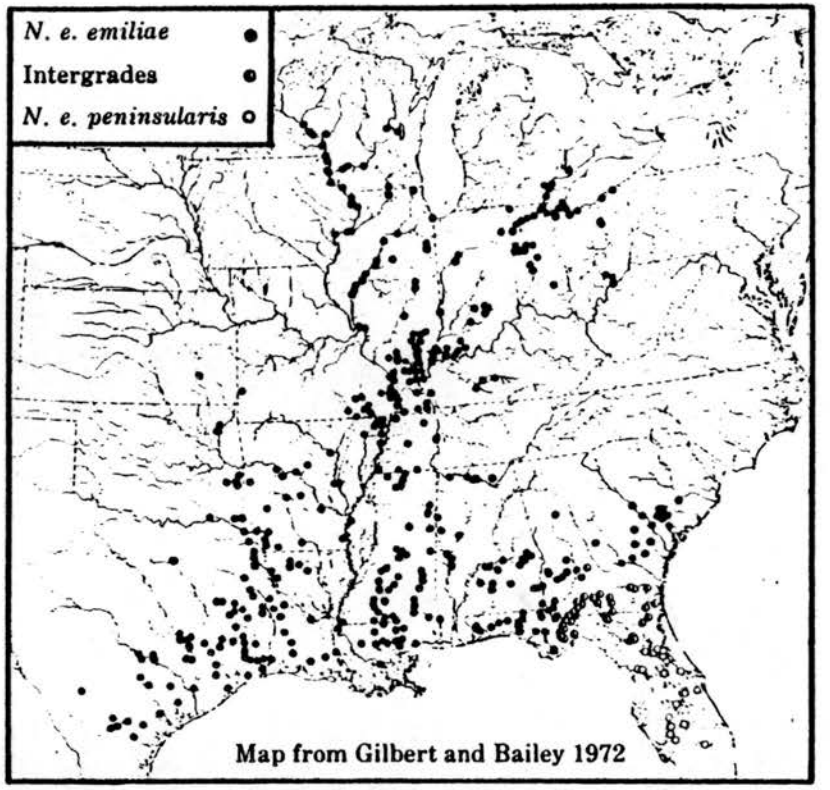


Figure 1. Distribution of Notropis emiliae (Hay) in North America. (from Gilbert 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Notropis topeka (Gilbert)

COMMON NAME: Topeka Shiner

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The Topeka shiner is restricted in its distribution to the small streams tributary to the Missouri River in Nobles, Pipestone and Rock counties in southwestern Minnesota. It is one of only two species of fish in the Minnesota fauna restricted to the Missouri River drainage. The streams of this region lie in an agricultural area that is used for cultivation and grazing. Portions of the area have only a thin veneer of soil over bed rock. Topeka shiners are not tolerant to siltation and their survival is dependent on careful land management.

DISTRIBUTION: The distribution of the Topeka shiner is restricted in southwestern Minnesota to the Rock River and Kanaranzi Creek, tributaries to the Big Sioux River in Iowa and South Dakota (Fig. 1). Specimens were taken by Meek in 1890 from the Cedar River, near Austin, Minnesota. Sampling in the Cedar River south to Lyle, Minnesota over the past thirty years has not revealed additional records. It is assumed that the Topeka shiner has been extirpated from the upper Cedar River drainage. It is rare in the lower Cedar and Iowa rivers in northeastern Iowa. There are no records of this species from the upper Iowa River in Minnesota.

The Topeka shiner is one of only a few species restricted to the prairie regions of the central United States (Fig. 2). Pflieger (1971) notes that increased siltation as a result of intensive cultivation has reduced the numbers of shiners in Misscuri. Cross (1967) points out that prior to 1900 the Topeka shiner was common in western Kansas and he too speculates that the decline in numbers and the reduction in the range of the shiner was a result of increased siltation following the breaking of the prairie sod. Topeka shiners are rare in Nebraska and South Dakota (Bailey and Allum 1962).

PREFERRED HABITAT: The Topeka shiner is characteristic of small prairie streams and inhabits quiet pools of clear upland creeks with sand, gravel or rubble bottoms. Such streams may often cease to flow in dry summers, but subsurface flow in the stream bed maintains permanent pools where shiners can survive.

RECOMMENDATIONS: Water quality of streams in southwestern Minnesota should be maintained at present levels minimizing siltation. Little is known about the biology of this handsome little fish and research should be encouraged in its natural history, especially its reproductive biology, food habits and age and rate of growth.

SELECTED REFERENCES:

Bailey, R. M., and M. O. Allum. 1962. Fishes of South Dakota. Univ. Mich. Mus. Zool. Misc. Publ. 119: 131 pp.

Cross, F. B. 1967. Handbook of fishes of Kansas. Univ. Kansas Mus. Nat. Hist. Misc. Publ. 45: 357 pp.

Gilbert, C. R. 1981. Notropis topeka (Gilbert) Topeka shiner. p. 317. in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Pflieger, W. L. 1971. A distributional study of Missouri fishes. Univ. Kansas Mus. Nat. Hist. Publ. 20: 225-570.

PREPARED BY: Fish Group Committee

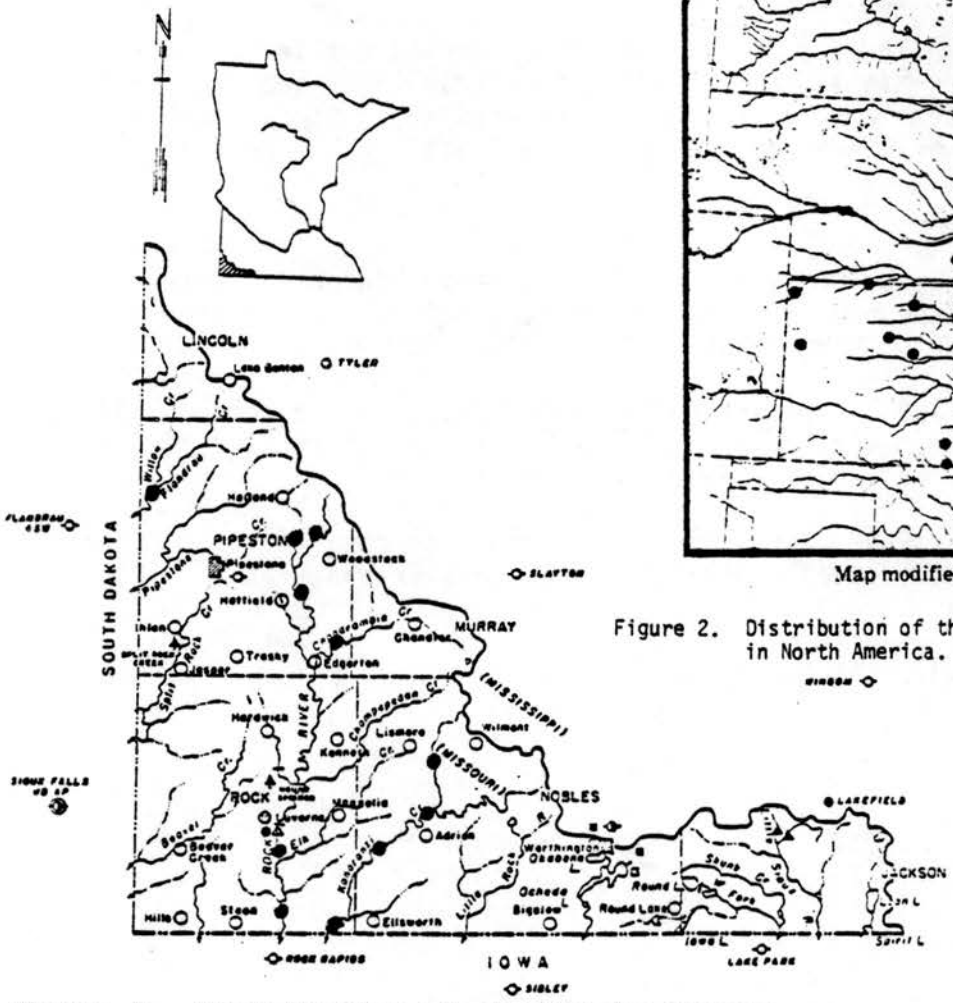
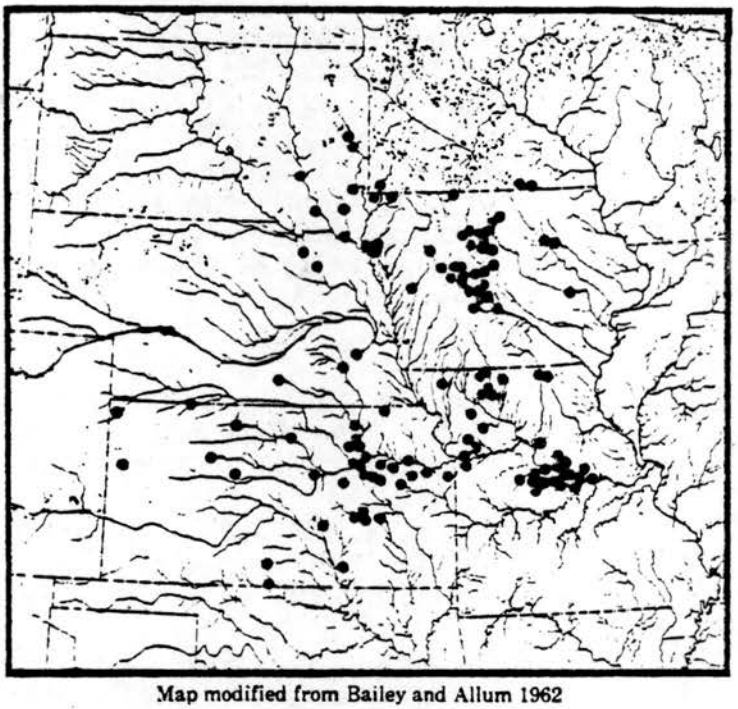


Figure 1. Distribution of the Topeka shiner, Notropis topeka (Gilbert) in the Rock River watershed unit, southwestern Minnesota.



Map modified from Bailey and Allum 1962

Figure 2. Distribution of the Toneka shiner, Notropis topeka (Gilbert in North America.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Noturus exilis (Nelson)

COMMON NAME: Slender Madtom

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Minnesota specimens are the most northern known for North America. The status of the species in Minnesota is poorly known.

DISTRIBUTION: The slender madtom has a disjunct range which includes Minnesota, Iowa, Illinois, Kansas, Missouri and Arkansas and a separate population in the Tennessee and Cumberland basins (Fig. 1). In 1954 three specimens were collected from Otter Creek, a tributary of the Cedar River, just east of Lyle, Minnesota. Subsequent attempts to collect additional specimens have been unsuccessful.

PREFERRED HABITAT: The slender madtom lives in riffles of small streams with moderate swift currents. Bottom types preferred include limestone slabs, rubble or gravel.

RECOMMENDATIONS: Continued sampling should be carried out in the streams of southeastern Minnesota, including the Cedar River and its tributaries to ascertain the status of the slender madtom and other species known only from this area of the state.

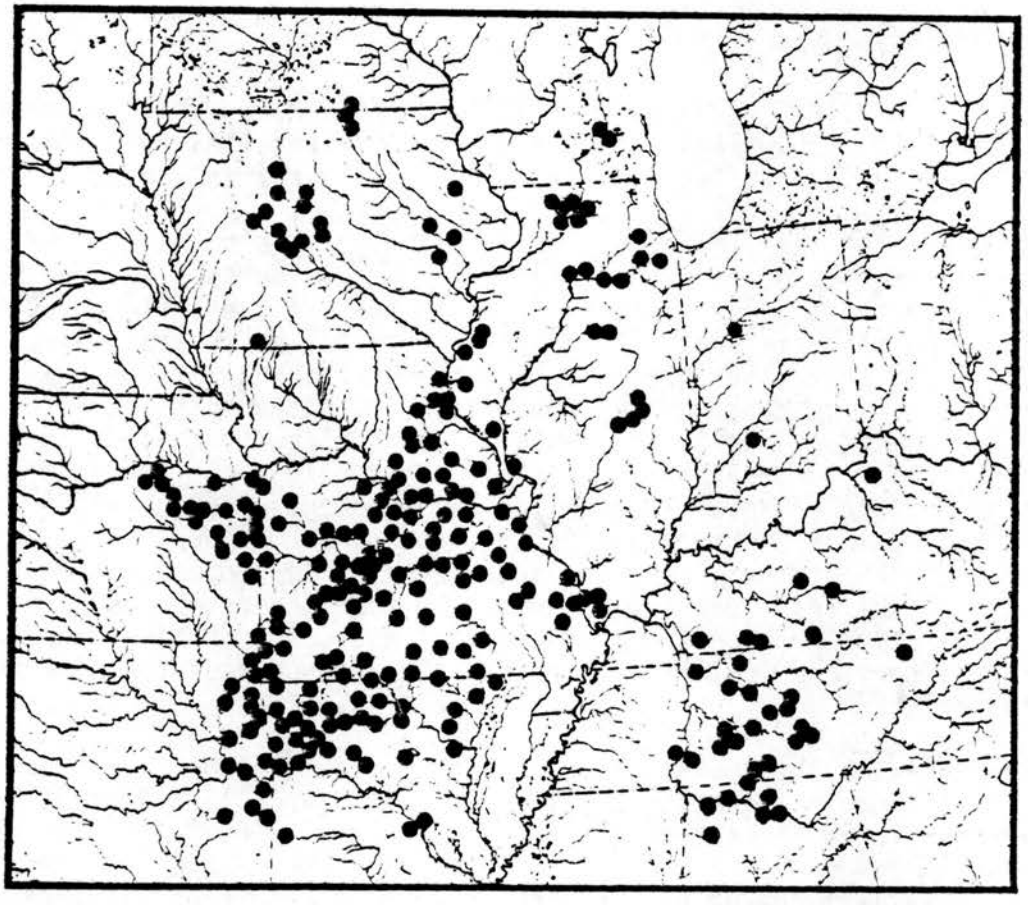
SELECTED REFERENCES:

Eddy, S., and J. C. Underhill. 1959. Recent changes and corrections for the Minnesota fish fauna. Copeia, pp. 342-43. Northern fishes. Univ. Minn. Press, Mpls. 414 pp.

Rohde, F. C. 1981. Noturus exilis Nelson, Slender madtom. p. 452, in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh. 854 pp.

Taylor, W. R. 1969. A revision of the catfish genus Noturus Rafinesque with an analysis of higher groups of Ictaluridae. Bull. U. S. Nat. Mus. 282:

PREPARED BY: Fish Group Committee



Map modified from Taylor 1969

Figure 1. Distribution of Noturus exilis Nelson in North America. (from Rhode 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Polyodon spathula (Walbaum)

COMMON NAME: Paddlefish

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Numbers of paddlefish have declined dramatically since 1900. Spawning sites for the species are limited and movements of spawning adult fish are restricted by navigation dams.

DISTRIBUTION: The paddlefish, Polyodon spathula, is a survivor from an ancient family of fishes with only two surviving species, the other is Psephurus gladius which is found in the Yangtze Valley of China. The paddlefish is presently restricted to the Mississippi River and its tributaries, but prior to 1900 it was present in Lake Erie. Throughout the range of the paddlefish, with the notable exception of the Dakotas, there has been a marked decline in numbers and a restriction of their range. It has apparently benefited from the construction of some flood control impoundments, especially in the Missouri River of North and South Dakota. In Missouri, populations in the Lake of the Ozarks are endangered by an impoundment that will destroy the only spawning grounds. In Iowa the catch has dwindled to the point where paddlefish are no longer of economic importance in the fishery and in Illinois the species is much less common than formerly.

In Minnesota the species once ranged up the Minnesota River to Mankato and in the Mississippi to St. Anthony Falls. Presently it is found only in Lake Pepin and Lake St. Croix (Fig. 1).

PREFERRED HABITAT: The paddlefish occurs in open waters of large rivers and river lakes (Lake Pepin and Lake St. Croix), oxbow lakes and backwaters, especially waters rich in microscopic life, zooplankton, on which it feeds. Spawning requirements are free flowing rivers with gravel bars that are inundated in spring floods.

RECOMMENDATIONS: An inventory of paddlefish populations in Lake Pepin and Lake St. Croix should be undertaken. Potential spawning sites should be located in the region. Little is known of the life history of the species and research should be encouraged on spawning habits, growth rates, age at sexual maturity, etc.

SELECTED REFERENCES:

Burr, B. M. 1981. Polyodon spathula (Walbaum), paddlefish. p. 45-46. in D. S. Lee et al. Atlas of North American freshwater fishes. N. C. Mus. Nat. Hist., Raleigh, 854 pp.

Cox, U. O. 1897. A preliminary report on the fishes of Minnesota. Geol. Nat. Hist. Surv. Minn. Zool. Ser. 3: 93 pp.

Eddy, S. and J. C. Underhill. 1974. Northern Fishes. 3rd Ed. Univ. Minn. Press, Mpls 414 pp.

Moyle, J. B. 1975. The uncommon ones. Minn. Dept. Nat. Res. 32 pp.

Pflieger, W. L. 1975. The fishes of Missouri. Missouri Dept. Cons. 343 pp.

Smith, P. W. 1979. The fishes of Illinois. Univ. Illinois Press, Urbana. 314 pp.

Trautman, M. B. 1957. The fishes of Ohio. Ohio State Univ. Press, Columbus. 683 pp.

PREPARED BY: Fish Group Committee

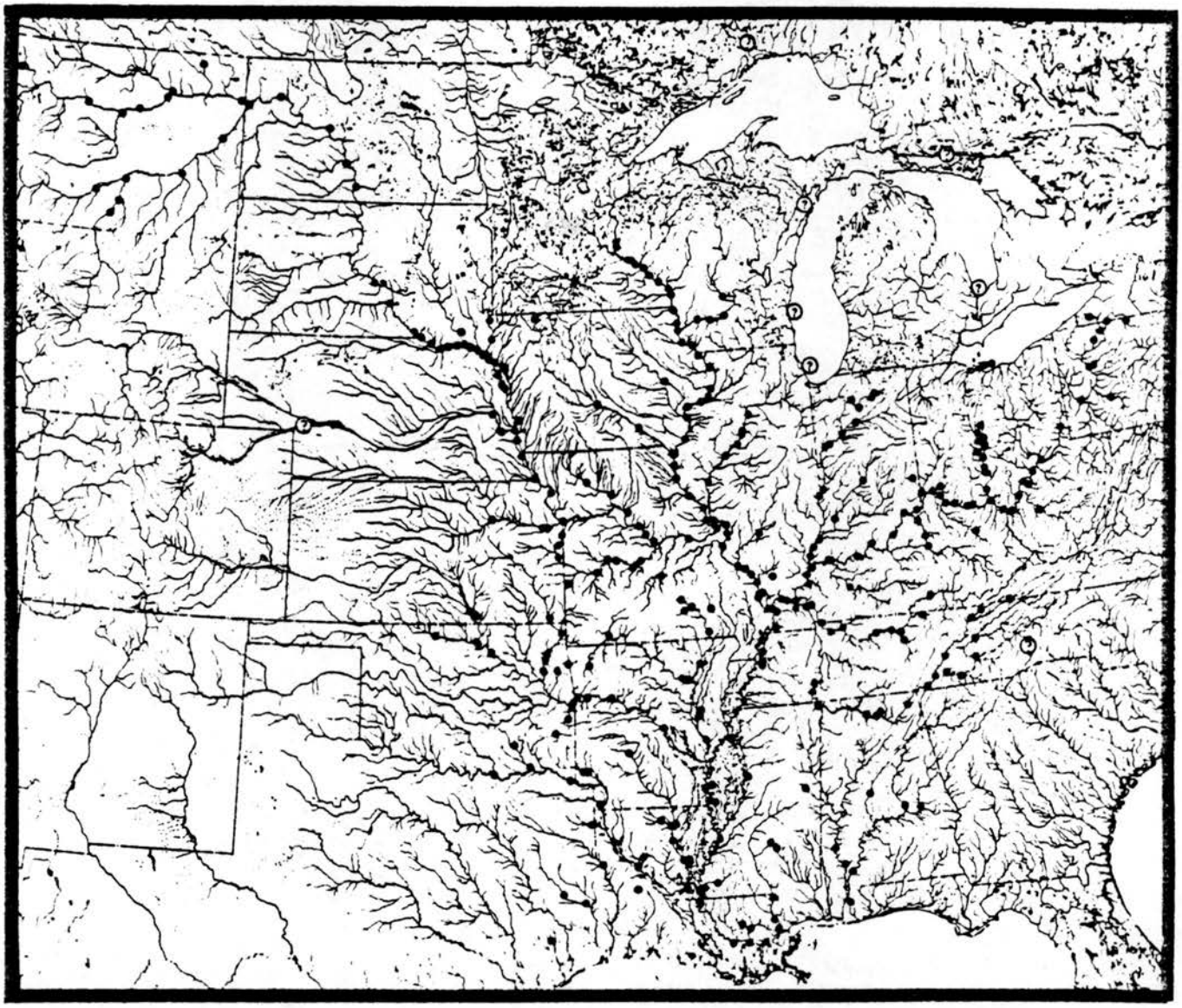


Figure 1. Distribution of Polyodon spathula (Walbaum) in North America. (from Burr 1981)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Scaphirhynchus platorhynchus

COMMON NAME: Shovelnose Sturgeon

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The shovelnose sturgeon is similar to Acipenser fulvescens in that it was once more common in the Mississippi River drainage than at present. It was never as abundant as the river sturgeon (Cox 1897) nor did it have the economic value of that species. The construction of navigational dams on the Mississippi River has restricted its habitat and interfered with its normal spawning migrations.

DISTRIBUTION: The shovelnose sturgeon is a migratory species that is present in the Mississippi River and Rio Grande drainage. It is present in the Mississippi River below St. Anthony Falls, the St. Croix River north to Taylor Falls and in the Minnesota River below Granite Falls in Minnesota. Eddy and Surber (1943) reported that large numbers of shovelnose sturgeon gathered below the dam at Taylor Falls during their spawning run. Bailey and Cross (1954) provided a review of the genus and the distribution of the shovelnose sturgeon in North America (Figure 1).

PREFERRED HABITAT: The shovelnose sturgeon is found in the larger rivers of the Mississippi River basin. They inhabit strong current in channels, over sand and gravel bottoms. They may lie over a soft substrate near the upstream ends of silt beds provided there is a good current. They rarely occur in river lakes such as Lake Pepin.

RECOMMENDATIONS: Populations of shovelnose sturgeon in the state should be closely monitored. Information on their spawning habits and general biology is greatly needed before more specific recommendations can be made, and research should be encouraged on all aspects of its biology.

SELECTED REFERENCES:

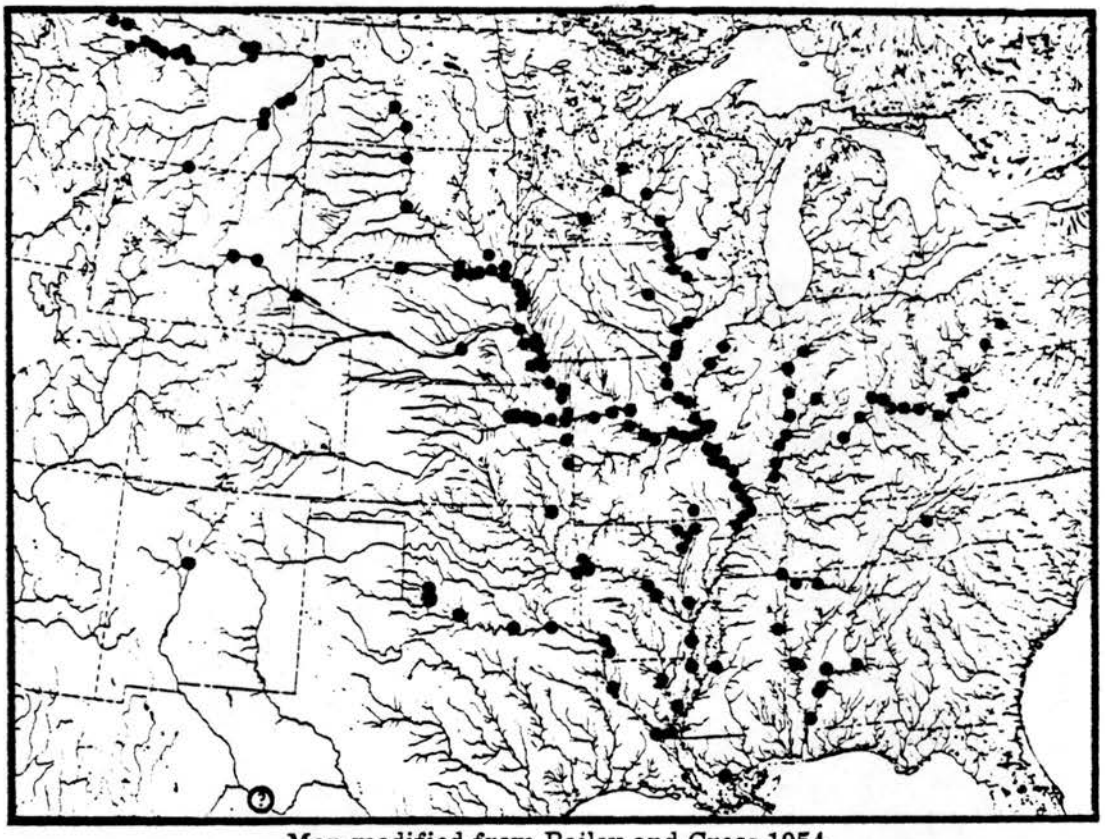
Bailey, R. M., and F. B. Cross 1954. River sturgeons of the genus Scaphirhynchus: characteristics, distribution and synonymy. Paps. Mich. Acad. Sci., Arts, Letts. 39:169-208.

Cox, U. O. 1897. A preliminary report on the fishes of Minnesota Geol. Hist. Surv. Minn. Zool. Ser 3:93 pp.

Eddy, S., and T. Surber 1943. Northern fishes. 1st. Ed., Univ. Minn. Press, 267 pp.

Lee, D. S. 1981. Scaphirhynchus platorhynchus (Rafinesque) shovelnose sturgeon. p. 44 in D. S. Lee et al. Atlas of North American freshwater fishes. N.C. Mus. Nat. Hist., Raleigh. 854 pp.

PREPARED BY: Fish Group Committee



Map modified from Bailey and Cross 1954

Figure 1. Distribution of Scaphirhynchus platorynchus (Rafinesque) in North America (from Bailey and Cross 1954)

INVERTEBRATE COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S INVERTEBRATES

A Final Report of the Invertebrate Group Committee
Submitted to the Chairman
Endangered Species Technical Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Dr. Bruce Cutler, Chairman
1747 Eustis
St. Paul, Minnesota 55113

Mr. Robert Dana
2618 16th Avenue South
Minneapolis, Minnesota 55407

Mr. Ron Huber
2896 Simpson Street
St. Paul, Minnesota 55113

Dr. Robert Bright
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Ms. Lee Pfannmuller, DNR Liaison
Department of Natural Resources
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

INTRODUCTION

The Invertebrate Animals Subcommittee was charged with determining the status of over 80% of all the biological species in Minnesota. Examples of major animal groups falling into our provenance are protozoans, sponges, worms, rotifers, arthropods, and mollusks. Thus our task is operationally very different from that of the other subcommittees. In all the other subcommittees most of the taxa they have to deal with are known, and in many cases have been observed by a cadre of investigators for many decades. With the exception of certain groups of arthropods and mollusks, most of Minnesota's invertebrates have not been identified. The problem is further compounded by the lack of qualified specialists, not only in Minnesota but nationally. As a result most of our invertebrate fauna is unknown, and is likely to remain so for many years. As an illustration of the current ignorance of invertebrate biology, out of the 18 specialists in invertebrates (not including subcommittee members) contacted, all of whom have knowledge of Minnesota fauna, only one substantive reply was received. Most of those contacted did not feel that they had sufficient information to determine the status of the species within their group of expertise.

It should be emphasized that on a biomass basis, as well as in diversity, invertebrates are by far the largest animal group, and to a considerable degree influence the ecology of vertebrate animals, including man. It would be a serious mistake to conclude that invertebrates are insignificant in influence, simply because we do not yet know their role in the ecosystem.

Inclusion of species in this list are the responsibility of a few persons at the most, and usually of only one or two. Judgements as to the status of a species are not those of the subcommittee, although certain examples were discussed, but of the individual specialists. The reason that the individual expert plays this role is that the other members of the subcommittee do not have expertise in areas outside of their specialty. Two members worked on the butterflies and skippers (R.P.D. and R.L.H.), one on tiger beetles (R.L.H.), one on mollusks (R.C.B.), and one on jumping spiders (B.C.). The taxonomic groups represented would have been very different in other states because of the differing locations of specialists in different invertebrate groups.

The most critical requirement for any invertebrate species is the maintenance of appropriate habitat. Most do not have wide home ranges, and a relatively small area often suffices if it is buffered from disturbing influence. If one maintains a habitat for prairie plants, a considerable proportion of the prairie invertebrates will ride along with the plants. This point cannot be overemphasized; correct management of invertebrate species does not usually mean direct manipulation of the species, but of maintenance of the proper habitat. It is important that preservation of suitable habitat be encouraged. The two most important instruments of habitat preservation have been the Nature Conservancy, and more recently, the Scientific and Natural Areas program of the Department of Natural Resources. Because of these programs habitat has been saved, and in many instances populations of unusual invertebrates are known from these areas only. This illustrates the point made earlier in this paragraph; these

areas were not established to preserve an invertebrate, but the protection of the habitat from encroaching human activity also provided a refuge for the invertebrates. Aquatic systems pose a different management problem since it is often the management of an aquatic basin or river system that is crucial.

In the light of the necessity for habitat management, it should be noted that the provisions of this bill are not adequate to protect most invertebrate species. The bill stresses the taking of individuals which in only rare instances poses any danger to invertebrate species. The habitat requirement which is not addressed in the bill is the only means of protecting invertebrates in the view of this subcommittee.

We wish to thank the Natural Heritage Program, the Nongame Wildlife Program, and Cathy Lundeen for their help and continuing interest in the work of the Invertebrates Subcommittee.

Bruce Cutler
Chair for the Subcommittee
on Invertebrates

Molluscs

Proposed List of Freshwater Mollusks Classified as
Endangered, Threatened or Special Concern
by the Invertebrate Group Committee

ENDANGERED

Lampsilis higginsi (Lea); Higgins Eye
Proptera (Potamilus) capax (Green); Fat Pocketbook

THREATENED

None

SPECIAL CONCERN

Elliptio crassidens (Lamarck); Elephant Ear
Fusconaia ebena (Lea); Ebony Shell

STATUS OF THE FRESHWATER MOLLUSKS OF MINNESOTA

The current abundance and condition of populations of freshwater mollusks in Minnesota are poorly known. Inadequate funding for field research at both state and federal levels, lack of research since the 1940s because of the funding situation, and the vast number of waterways requiring examination within the state have all contributed to our unsatisfactory knowledge of this group.

The snail fauna of Minnesota is relatively rich, and although some species are in serious trouble in specific lakes, streams, and regions existing data indicate no serious problem on a state-wide basis. For example, Lymnaea stagnalis has been eliminated from many lakes in the Twin Cities area because of water pollution and aquatic "weed" management, but it thrives in some areas to the north.

Of the 58 species of mussels in Minnesota, two are Endangered (Federal status) and two are recommended here for the State status of Special Concern (see attached work sheets).

There are six species, however, that are probably restricted to the upper Mississippi River (below St. Anthony Falls) and perhaps the St. Croix River (below Taylor's Falls), and that are in various degrees of trouble (Fuller, 1980; Thiel, 1981; Havlik, letter to Bruce Cutler, 30 Jan '82, on file; Fish and Wildlife Service, poster, no date). These species are jeopardized because of habitat destruction and water pollution. They are not recommended for state status at this time because it is unknown if any viable populations exist in major tributaries, especially the St. Croix above Taylor's Falls and in the Minnesota River or in the Mississippi River above the falls. Only when those streams have been adequately studied can the species listed below be evaluated as to their status state-wide.

Quadrula metanerva (Raf.). Monkeyface
Megalonaias gigantea (Barnes). Washboard
Plethobasus cyphyus (Raf.) Bullhead
Ellipsaria (Plagiola) lineolata (Raf.). Butterly
Arcidens confragosus (Say). Rockshell
Alismodonta viridis (Raf.). Slippershell

High priority should be given to field work to establish whether or not these species exist in tributaries to the Mississippi River in Minnesota.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Lampsilis higginsi (Lea)

COMMON NAME: Higgins Eye, freshwater mussel

STATE STATUS: Endangered
adjacent states/provinces: None

FEDERAL STATUS: Endangered

BASIS FOR MINNESOTA STATUS: Existing records prove that populations in the Mississippi River and tributaries have been drastically reduced since the turn of the century owing to habitat destruction and water pollution. Live specimens have been collected at only six localities since 1965.

DISTRIBUTION: The species occurs in the Mississippi and some of its tributaries. See map.

PREFERRED HABITAT: Large rivers, details unclear.

RECOMMENDATIONS: High priority should be given to protect this species and to learn more about its preferred habitat and ecology.

SELECTED REFERENCES:

Fuller, S.L.H. 1980. Freshwater Mussels...of the Upper Mississippi River: Observations at Selected Sites Within the 9-Foot Navigation Challen Project for the St. Paul District, United States Army Crops of Engineers, 1977-1979. Acad. Nat. Sci. Philadelphia, 2 vol.

Havlik, Marion E. 1980. The Historic and Present Distribution of the Endangered Naiad Mollusk Lampsilis higginsi (Lea, 1857). Bull. American Malacological Union, 1980, pp. 19-22 (Abs.).

Mathiak, H.A. 1979. A River Survey of the Unionid Mussels of Wisconsin 1973-1977. Sand Shell Press, Horicon, Wisconsin. 53032 75 p.

Thiel, Pamella A. 1981. A River Survey of Unionid Mussels in the Upper Mississippi River (pools 3-11). Tech. Bull. No. 124, Wisc. Dept. Nat. Res., Madison, Wisconsin. 24 p.

U.S. Fish and Wildlife Service. No date. Fresh-water Mussels of the Upper Mississippi River. Two posters.

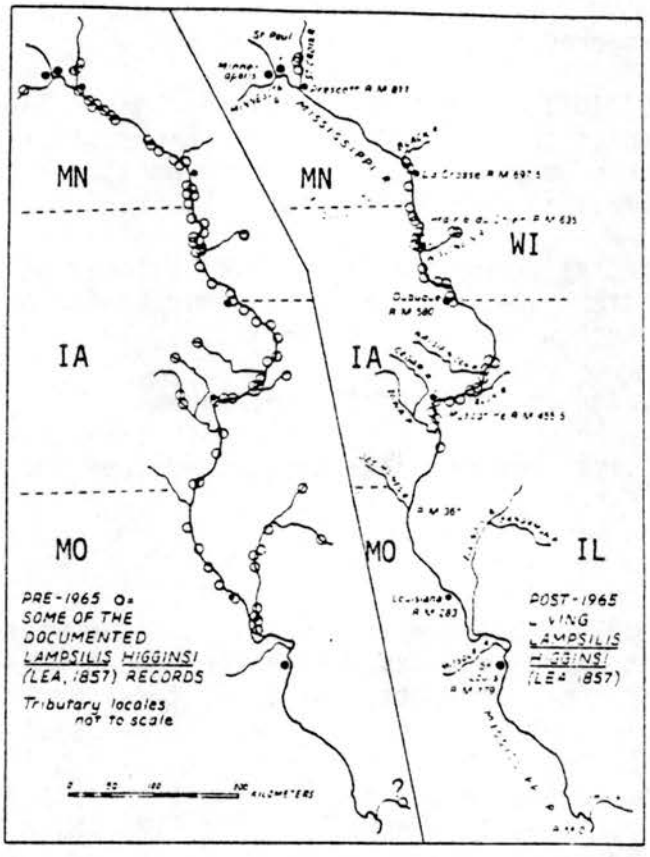


Fig. 1 The distribution of *Lampsilis higginsi* (Lea, 1857) in the Mississippi River and tributaries before and after 1965.

From Havlik, 1980. Black dots represent cities.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Proptera (Potamilus) capax (Green)

COMMON NAME: Fat Pocketbook, freshwater mussel

STATE STATUS: Endangered
adjacent states/provinces: None

FEDERAL STATUS: Endangered

BASIS FOR MINNESOTA STATUS: This species has not been collected live in the Minnesota portion of the upper Mississippi River since before 1947. It was probably always uncommon in this northernmost portion of its range but is now extremely rare or extirpated.

DISTRIBUTION: The species occurs in large rivers; lower Ohio southwest to Arkansas, north to eastern Iowa. It used to occur as far north in the Mississippi River as St. Anthony Falls (type locality).

PREFERRED HABITAT: Large rivers, details not known.

RECOMMENDATIONS: If live specimens are ever found they should be studied and protected.

SELECTED REFERENCES:

Fuller, S.L.H. 1980. Freshwater Mussels...of the Upper Mississippi River: Observations at Selected Sites Within the 9-Foot Navigation Channel Project for the St. Paul District, United States Army Crops of Engineers, 1977-1979. Acad. Nat. Sci. of Philadelphia, 2 vol.

Thiel, Pamella A. 1981. A survey of Unionid Mussels in the Upper Mississippi River (Pools 3-11). Tech. Bull. No. 124, Wisconsin Dept. Nat. Res., Madison, Wisconsin. 24 p.

U.S. Fish and Wildlife Service. No date. Fresh-water Mussels of the Upper Mississippi River. Two posters.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Elliptio crassidens (Lamarck)

COMMON NAME: Elephant Ear, freshwater mussel

STATE STATUS: Special Concern
adjacent states/provinces: None

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Available evidence indicates that this species was never common in the Mississippi River below St. Anthony Falls (to which it is apparently confined in Minnesota). It has been collected live but once (1977) in the state since the 1930s (mouth of the St. Croix) and even that record is now in doubt (Fuller, 1980, p. 64). It if is still alive in Minnesota it faces almost certain extinction as its only glochidial host, the skipjack herring, can no longer migrate up the river beyond Keokuk Dam, Iowa. The elimination of the essential glochidial host, habitat destruction, and river pollution has resulted in its decline and almost certain extirpation in Minnesota waters.

PREFERRED HABITAT: Large rivers, details unknown.

DISTRIBUTION: One questionable site is known from the mouth of the St. Croix River. The species is still established to the south in the Ohio, Green, Tennessee, Alabama-Loosa, Amite (La.), and St. Marys system of Florida.

RECOMMENDATIONS: If future study shows that the "species" (it might be a form of E. dilatata; Fuller, 1980, p. 64) is extirpated then it should be downgraded to that category.

SELECTED REFERENCES:

Fuller, S.L.H. 1980. Freshwater Mussels...of the Upper Mississippi River: Observations at Selected Sites Within the 9-Foot Navigation Channel Project for the St. Paul District, United States Army Corps of Engineers, 1977-1979. Acad. Nat. Sci. Philadelphia, Vol. 1, 175 p.

U.S. Fish and Wildlife Service. No date. Fresh-water Mussels of the Upper Mississippi. Two posters.

Williams, J.C. 1969. Mussel Fishery Investigations, Tennessee, Ohio and Green Rivers. Murray State Univ. Biol. Sta., Murray, Kentucky.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Fusconaia ebena (Lea). Also spelled ebenus by some authors.

COMMON NAME: Ebony shell, freshwater mussel

STATE STATUS: Special concern
adjacent states/provinces: none

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Recent records of live specimens of this species in the Mississippi River are rare, and it is in certain danger of extirpation in the state. Its principal host, the skipjack Herring, can no longer migrate above the Keokuk Dam, Iowa. The elimination of the most important glochidial host, habitat destruction, and river pollution has resulted in its near extirpation in Minnesota.

DISTRIBUTION: Living specimens have been taken from two sites in the Minnesota portion of the Mississippi River, Homer and just north of the mouth of the Wisconsin River. Otherwise the species is still established in the lower Mississippi drainage and the Alabama and Tombigbee Rivers.

PREFERRED HABITAT: Large rivers. Details unknown.

RECOMMENDATIONS: Priority should be given to field survey to determine the current status of the species in Minnesota.

SELECTED REFERENCES:

Fuller, S.L.H. 1980. Freshwater Mussels...of the Upper Mississippi River: Observations at Selected Sites Within the 9-Foot Navigation Channel Project for the St. Paul District, United States Army Corps of Engineers, 1977-1979. Acad. Nat. Sci. Philadelphia, Vol. 1, 175 p.

Mathiak, H.A. 1979. A River Survey of the Unionid Mussels of Wisconsin. Sand Shell Press, Horicon, Wisconsin, 53032. 75 p.

U.S. Fish and Wildlife Service. No date. Fresh-water Mussels of the Upper Mississippi. Two posters.

Butterflies

Proposed List of Butterflies Classified as
Endangered, Threatened or Special Concern
by the Invertebrate Group Committee

ENDANGERED

Hesperia uncas W. H. Edwards Uncas Skipper
Hesperia assiniboia (Lyman), Assiniboia Skipper
Oeneis uhleri varuna (W. H. Edwards) Uhler's Arctic

THREATENED

Hesperia dacotae (Skinner) Dakota Skipper
Hesperia ottoe W. H. Edwards Ottoe Skipper
Lycaeides samuelis Nabokov Karner Blue

SPECIAL CONCERN

Clossiana freija (Thunberg) Freija Fritillary
Clossiana frigga saga (Staudinger) Frigga Fritillary
Epidemia dorcas dorcas (W. Kirby) Dorcas Copper
Epidemia epixanthe michiganensis (Rawson) Bog Copper
Erebia disa mancinus Doubleday & Hewitson Disa Alpine
Erebia discoidalis discoidalis (W. Kirby) Red-disked Alpine
Oarisma poweshiek (Parker) Poweshiek Skipper
Oeneis jutta ascerta Masters & Sorensen Jutta Arctic
Proclossiana eunomia dawsoni (Barnes & McDunnough) Bog Fritillary

SPECIES STATUS SHEET

SCIENTIFIC NAME: Hesperia uncas W. H. Edwards 1863

COMMON NAME: Uncas Skipper

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: A breeding population has been documented to occur in only one locality in Sherburne county. Furthermore, the habitat at this site has been extensively altered by forest management practices which have destroyed the native sand prairie that the skipper depends on. Visits to the site since the implementation of these practices have failed to document the species occurrence.

OCCURRENCES IN MINNESOTA: Apart from two isolated records in Lincoln county all records are from Sherburne county and, with only one exception, from the Sand Dunes State Forest. Records span the period from 1961 to 1972.

DISTRIBUTION: The Uncas Skipper ranges from "Saskatchewan to Alberta and south through the prairies and the Rocky Mountains to Texas and New Mexico" (Howe, 1975). Howe's description, however, does not include Minnesota. Minnesota's population is approximately 400 miles east of the nearest known population in the species primary range. The Sherburne county population is probably a relict from the post-glacial "hypsithermal" when the prairie-forest border was further east than present and when presumably short-grass vegetation also occurred much further east than present. The Lincoln county specimens appear to be the typical phenotype found to the west in the Dakotas. On the basis of the small number of specimens available from Sherburne county the population there appears to be a phenotypically differentiated isolate.

PREFERRED HABITAT: Stabilized sand dunes with relatively sparse vegetative cover are preferred. The vegetation on such sites is dominated by bunchgrasses, including Stipa spartea, Andropogon scoparius, Panicum spp. and Koeleria cristata.

RECOMMENDATIONS: Unfortunately, the species may already be extirpated due to the planting of pines in the open dune area where the species occurred in Sherburne county.

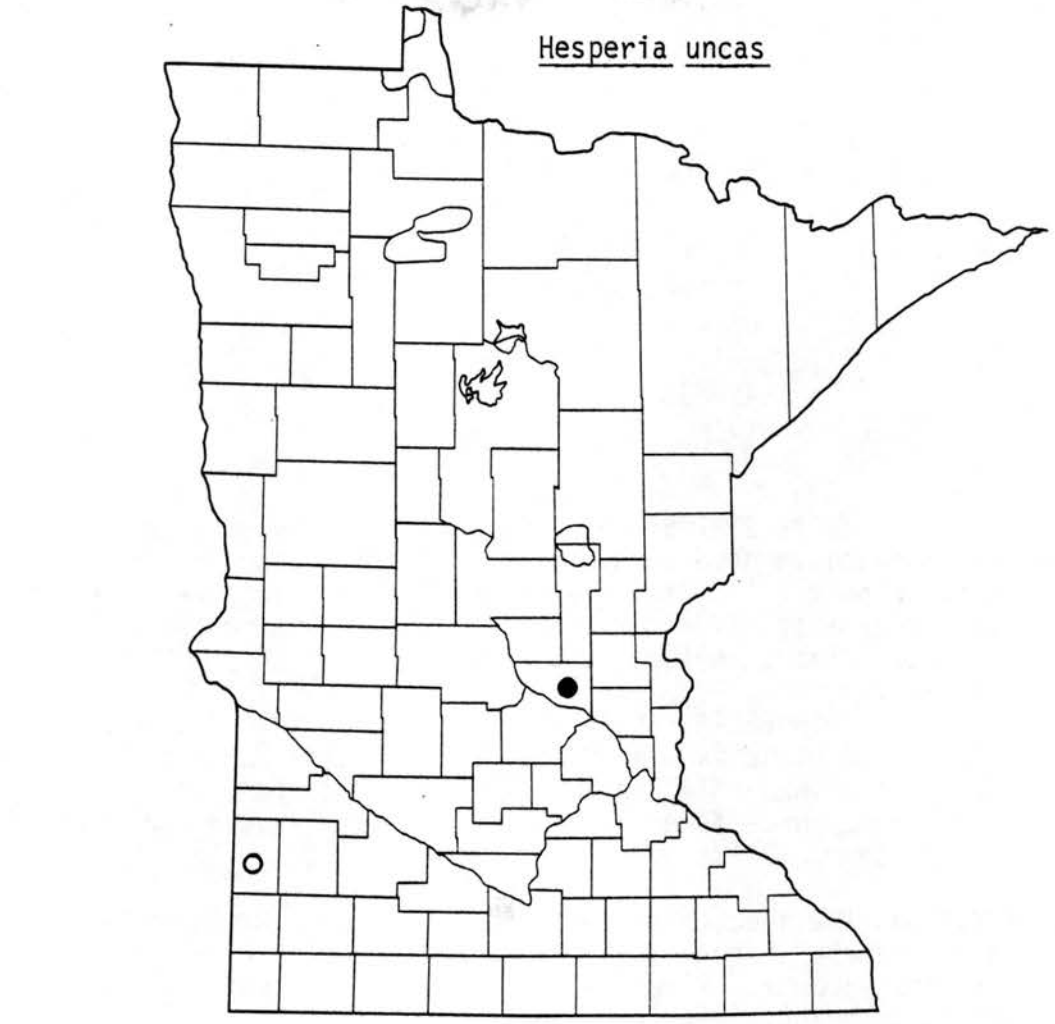
SELECTED REFERENCES:

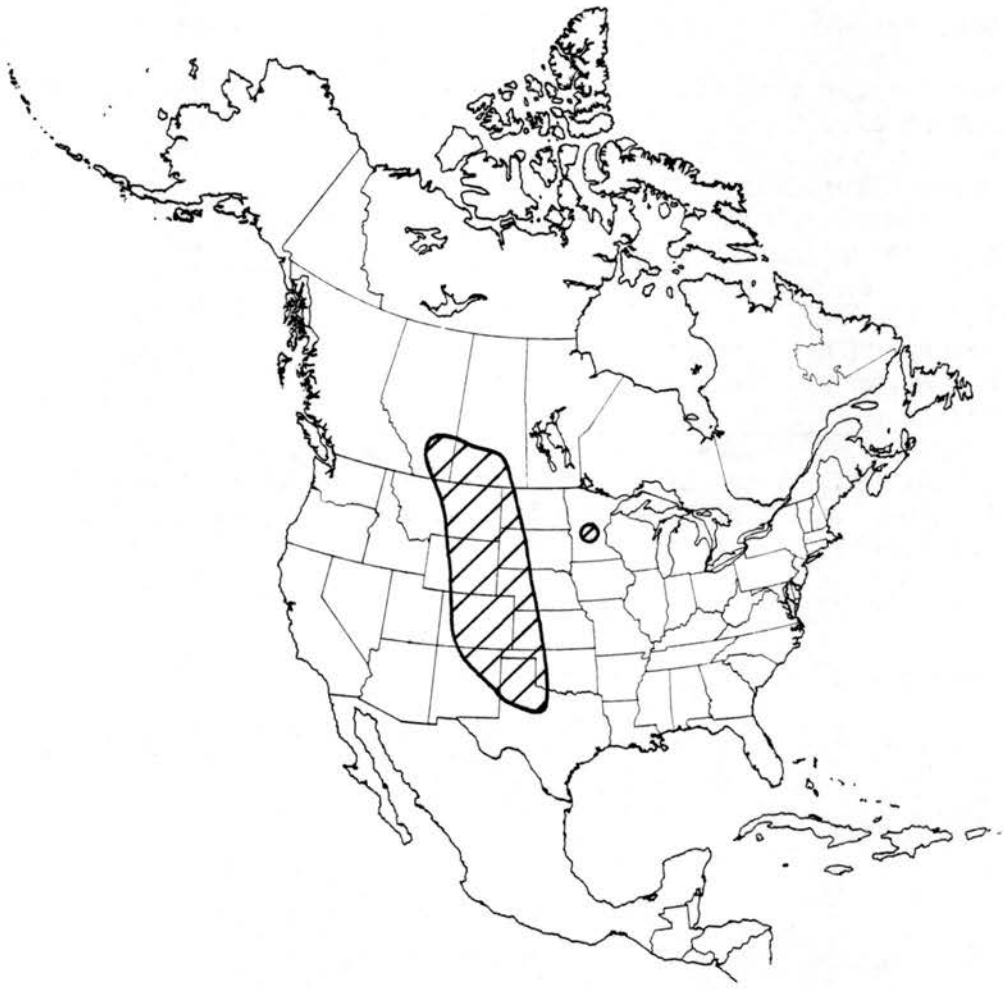
Edwards, W. H. 1863. Phila., Ent. Soc., Proc. 2:19 [original description]

Howe, W. H. (Ed.) 1975. The butterflies of North America. Doubleday and Company. New York. 633 p.

PREPARED BY: R. L. Huber and R. Dana

Hesperia uncas





SPECIES STATUS SHEET

SCIENTIFIC NAME: Hesperia assiniboia (Lyman) 1892

COMMON NAME: Assiniboia Skipper

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Only one well-established breeding colony has been documented in Minnesota. Dependent on native prairie habitat that is continually under pressure for development this butterfly also has a relatively small national range and might be considered as a regional endemic.

OCCURRENCES IN MINNESOTA: Isolated records all available for Polk and Kittson Counties and for Buffalo River State Park in Clay County. The species has only consistently been reported from one locality, Clay County Bicentennial Prairie. It was first documented from this site in 1971.

DISTRIBUTION: The species ranges from "Alberta to Manitoba and south into North Dakota" (Howe, 1975). Minnesota, however, was not mentioned in this account. Museum specimens also document the species presence in eastern South Dakota.

PREFERRED HABITAT: This skipper prefers short-grass prairie.

RECOMMENDATIONS: Habitat critical to the species survival should be preserved.

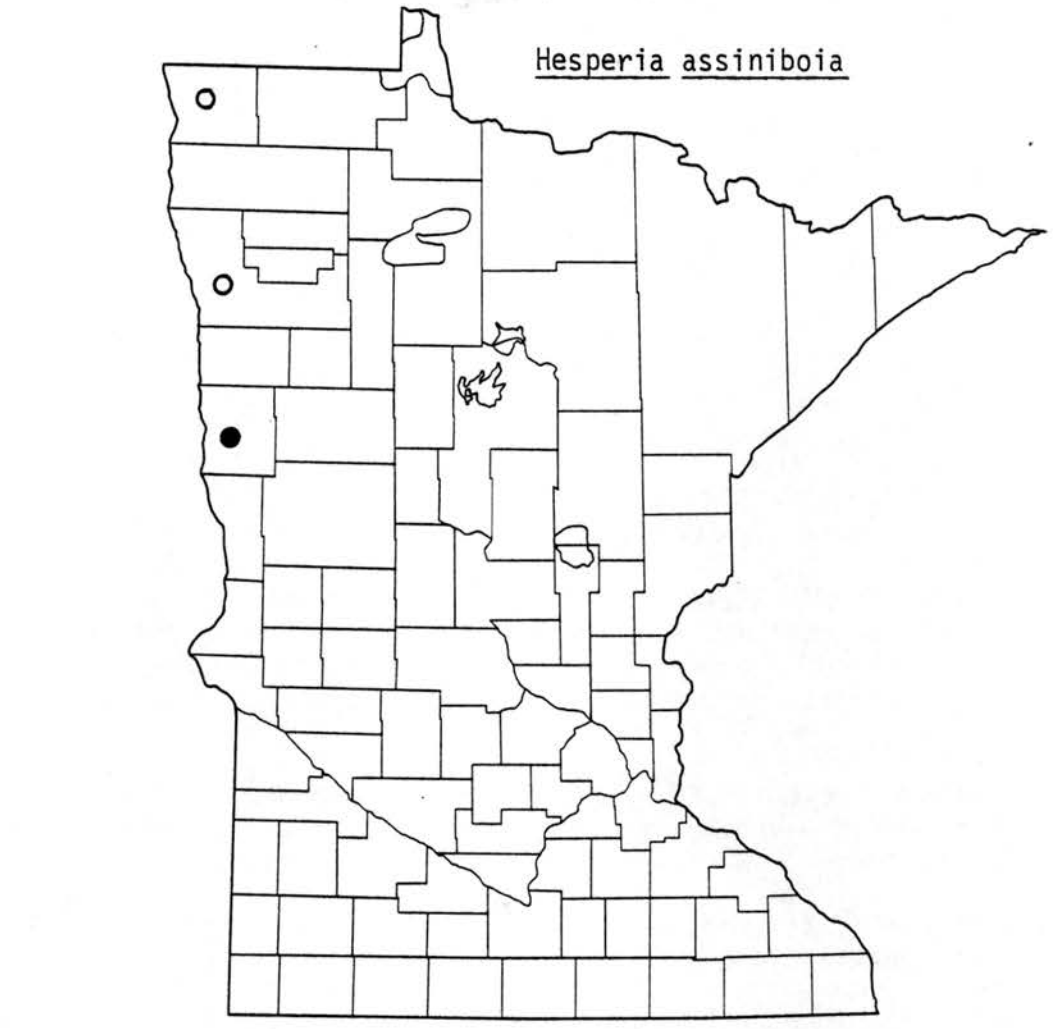
SELECTED REFERENCES:

Howe, W. H. 1975. The butterflies of North America. Doubleday and Company. New York. 633p.

Lyman. 1892. Canadian Ent. 24:57 [original description. TL = Regina, Saskatchewan]

McCabe, T. L. and R. L. Post. 1977. Skippers (Hesperioidea) of North Dakota. Dept. of Entomology and Agricultural Experiment Station. North Dakota State University, Fargo. 70p.

Hesperia assiniboia





SPECIES STATUS SHEET

SCIENTIFIC NAME: Oeneis uhleri varuna (W. H. Edwards) 1882

COMMON NAME: Uhler's Arctic

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: There is only one known breeding colony in the state in Clay County.

OCCURRENCES IN MINNESOTA: Isolated records are available for Mahnomen and Rock Counties. These specimens however, have not been observed by either of the authors. All other records are from Clay County Bicentennial Prairie where the species has been documented since 1965.

DISTRIBUTION: Howe (1975) states the species occurs from "North Dakota.... into South Dakota, western Nebraska, Montana, Manitoba, Saskatchewan and Alberta." Minnesota was not mentioned in this account.

PREFERRED HABITAT: Short-grass prairie along the beach ridges of Glacial Lake Agassiz is the preferred habitat.

RECOMMENDATIONS: Preservation of native prairie habitat is a priority. All efforts should be made to discourage any gravel mining on Clay County Bicentennial Prairie. The gravel rights to this site are currently owned by the county.

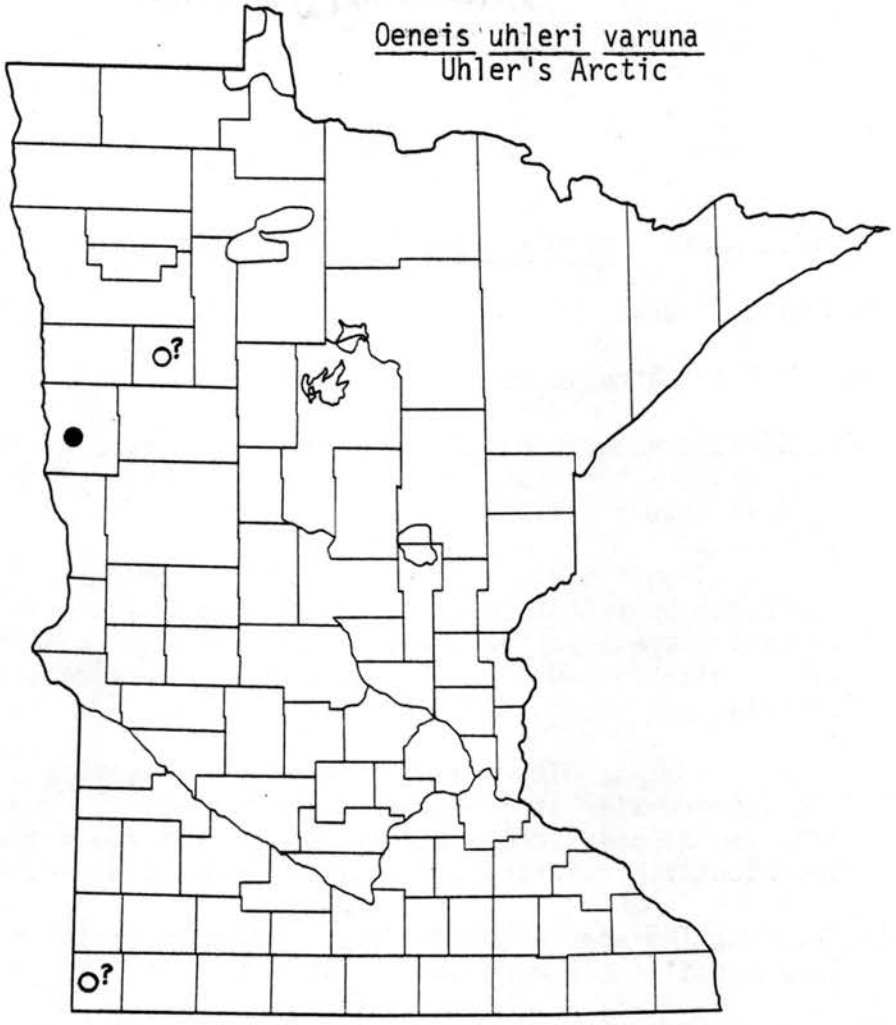
SELECTED REFERENCES:

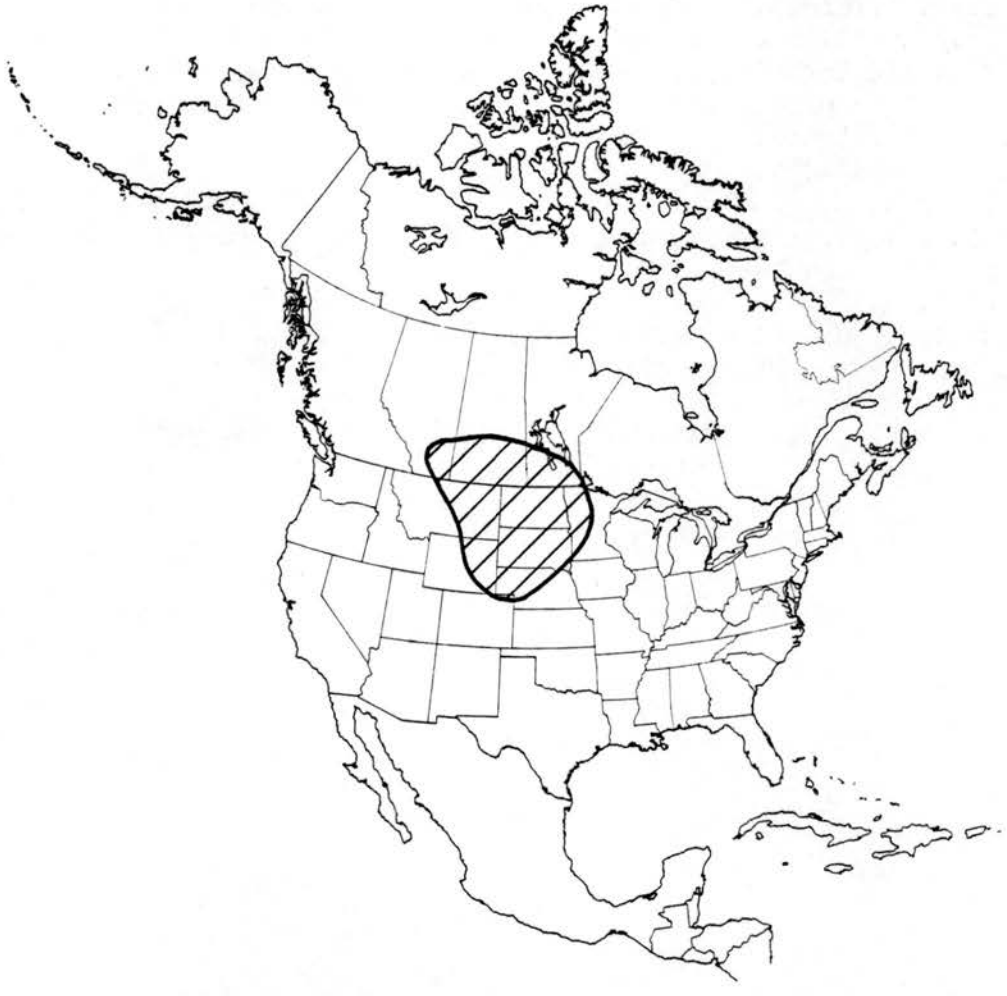
Edwards, W. H. 1882. Canadian Entomologist 14:205 [original description. TL = "plains of Dakotah Territory"]

Howe, W. H. 1975. The butterflies of North America. Doubleday and Company. New York. 633p.

PREPARED BY: R. L. Huber and R. Dana

Oeneis uhleri varuna
Uhler's Arctic





SPECIES STATUS SHEET

SCIENTIFIC NAME: Hesperia dacotae (Skinner) 1911

COMMON NAME: Dakota Skipper

STATE STATUS: Threatened

FEDERAL STATUS: None. The Dakota Skipper was proposed for federal listing as a threatened species but was then withdrawn without a final determination.

BASIS FOR MINNESOTA STATUS: Although it has been recorded from 15 counties, only two large healthy colonies have been located. Many sites are small (a few acres at most) and could easily be destroyed by the plow in one day. The species requires relatively undisturbed prairie;

OCCURRENCES IN MINNESOTA: Isolated records are available throughout the western tier of counties. Over the years, however, the species has been documented consistently only from two sites, the Clay County Bicentennial Prairie and the Lincoln County Hole-in-the-Mountain Prairie.

DISTRIBUTION: The species ranges from "Manitoba south into Minnesota, Iowa and Illinois west to the Dakotas" (Howe 1975).

PREFERRED HABITAT: Short-grass or mid-grass prairie, usually on a moderately calcareous, gravelly substrate, is preferred.

RECOMMENDATIONS: Critical habitat should be preserved while efforts to restrict grazing should be undertaken on select areas.

SELECTED REFERENCES:

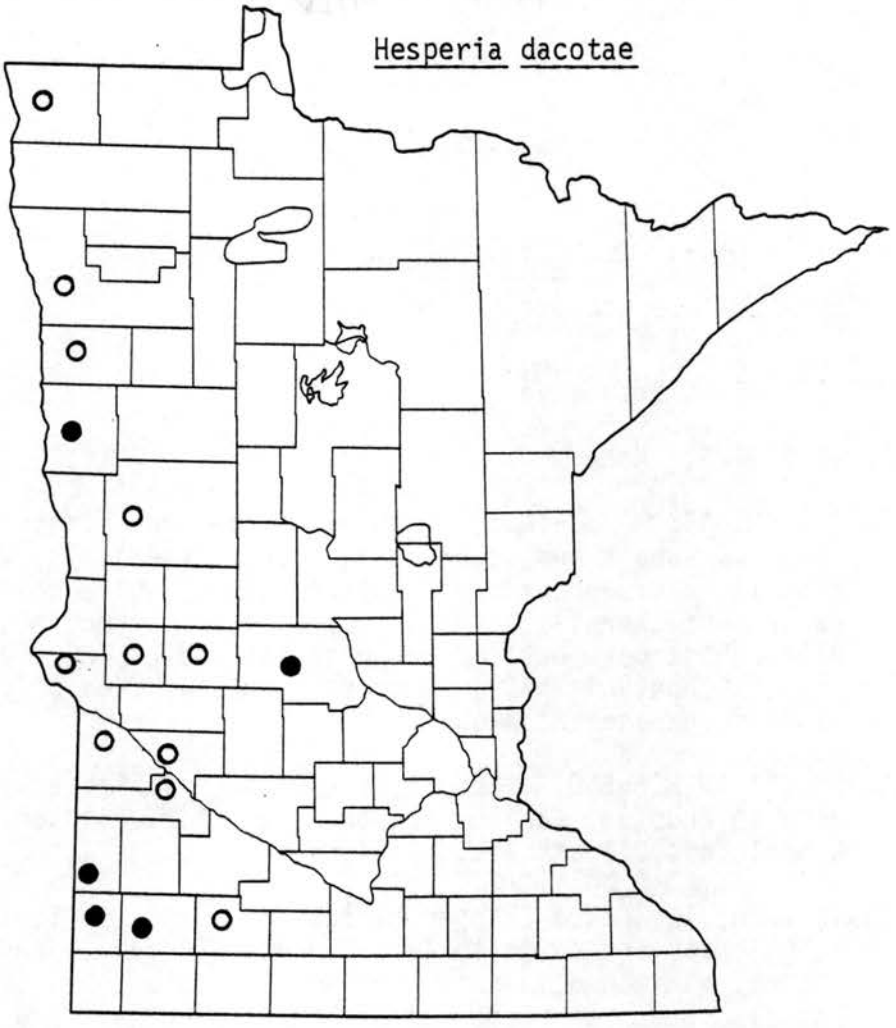
Howe, W. H. 1975. The butterflies of North America. Doubleday and Company. New York. 633p.

Macy, R. W. and H. H. Shepard. 1941. Butterflies. University of Minnesota Press. Minneapolis. 247p.

Skinner. 1911. Ent. News 22:412 [original description. TL = Volga, South Dakota].

PREPARED BY: R. L. Huber and R. Dana

Hesperia dacotae





SPECIES STATUS SHEET

SCIENTIFIC NAME: Hesperia ottoe W. H. Edwards 1866

COMMON NAME: Ottoe Skipper

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although the species is reported from eight counties (and known to breed in four of them), the virgin prairie that it is dependent upon is particularly vulnerable to destruction. At present there is only one protected occurrence in Lincoln County. Although it may possibly occur on SNA and/or TNC preserves in Wabasha County it has been documented only from private land and Wildlife Management Areas.

OCCURRENCES IN MINNESOTA: Specimens have been collected from one site each in Houston, Wabasha, Winona, Renville, Jackson, Redwood, Lincoln and Pipestone Counties.

DISTRIBUTION: The Ottoe Skipper ranges from "Iowa to South Dakota, west to Colorado and south to Texas" (Howe, 1975). Minnesota, however, was not mentioned in this account. In recent years this species has also been reported from Michigan, Wisconsin and northern Iowa.

PREFERRED HABITAT: In southeastern Minnesota this skipper inhabits sandy openings in oak-savanna; in western Minnesota it is found in short-grass prairie.

RECOMMENDATIONS: Habitat critical to the species survival should be protected.

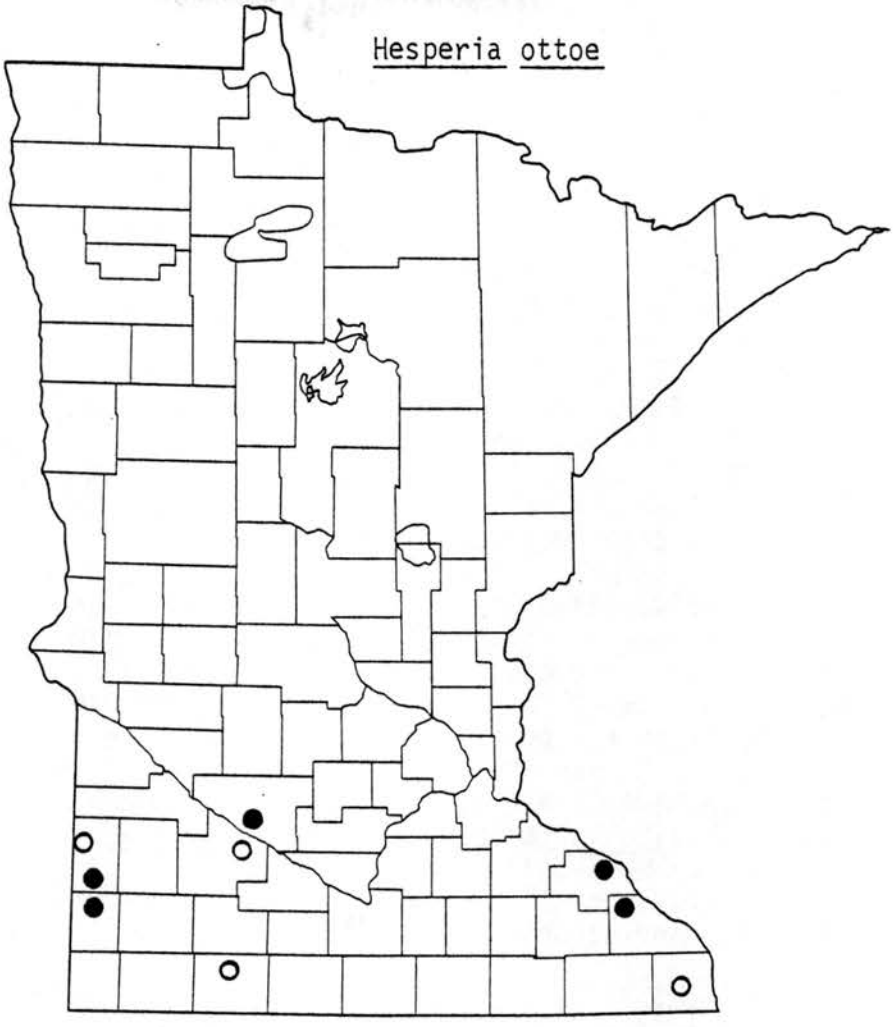
SELECTED REFERENCES:

Edwards, W. H. 1866. Proc. Ent. Soc. Phila. 6:207 [original description. TL = "Kansas"]

Howe, W. H. 1975. The butterflies of North America. Doubleday and Company. New York. 633p.

PREPARED BY: R. L. Huber and R. Dana

Hesperia ottoe





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lycaeides samuelis Nabokov 1944

COMMON NAME: Karner Blue

STATE STATUS: Threatened

FEDERAL STATUS: The species was proposed for inclusion on the federal endangered species list but later withdrawn from consideration. However, the possibility of proposing it as a federally listed species is once again being discussed.

BASIS FOR MINNESOTA STATUS: Only two colonies are known to occur in Minnesota: one in Anoka County and one in Winona County. The Anoka County population occurs within the boundaries of the University of Minnesota's Cedar Creek Natural History Area, but is very small. The Winona County population occurs within a portion of the Whitewater Wildlife Management Area that is presently included on the Minnesota Natural Heritage Register. Some authors consider Lycaeides samuelis a subspecies of L. melissa. Minnesota is the only state where both are known to occur and there is no evidence of intergradation between the species. Both have different life histories and occupy very different habitats.

OCCURRENCES IN MINNESOTA: Specimens have been collected at the Anoka County site from 1975-1977 and from the Winona County site from 1978-1982.

DISTRIBUTION: According to Howe (1975) the Karner Blue ranges throughout the "Great Lakes and the Northeast." Its distribution, however, is spotty throughout its range because it is closely tied to habitat and to its larval host plant Lupinus perennis.

PREFERRED HABITAT: The Karner Blue prefers sandy oak/pine barrens and savannas where the larval host, Lupinus perennis, occurs.

RECOMMENDATIONS: Habitat critical to the species survival needs to be protected.

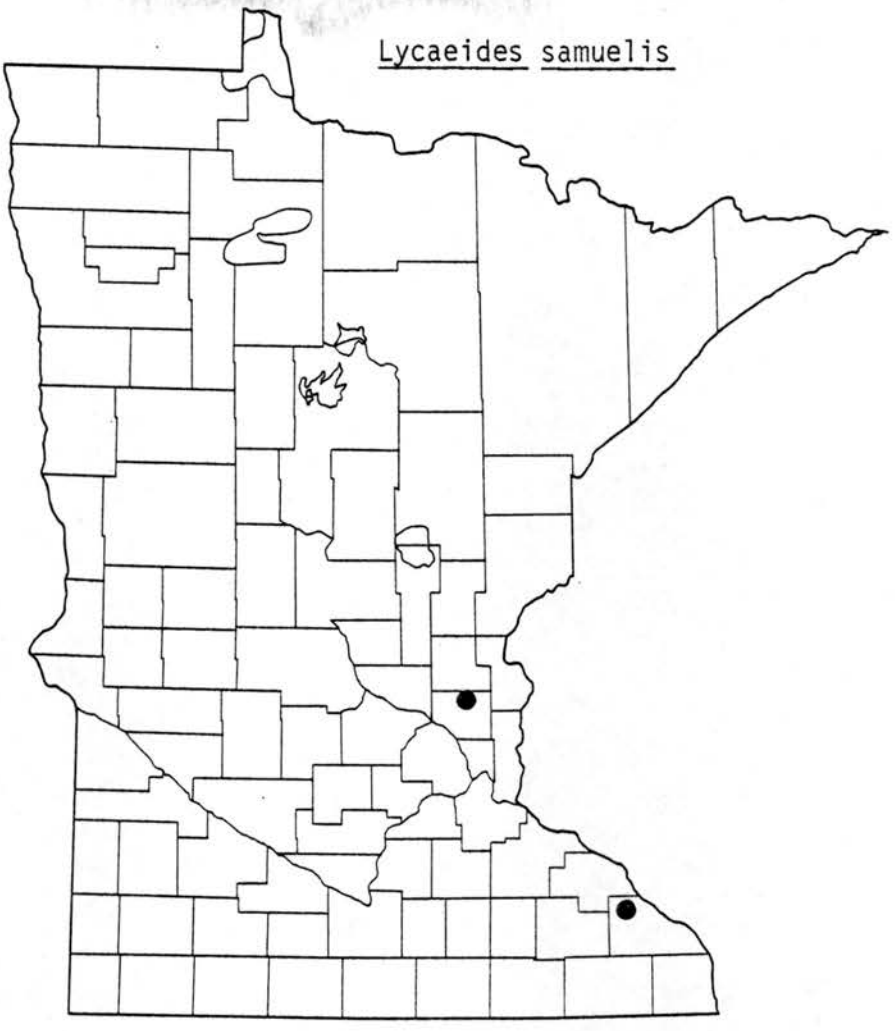
SELECTED REFERENCES:

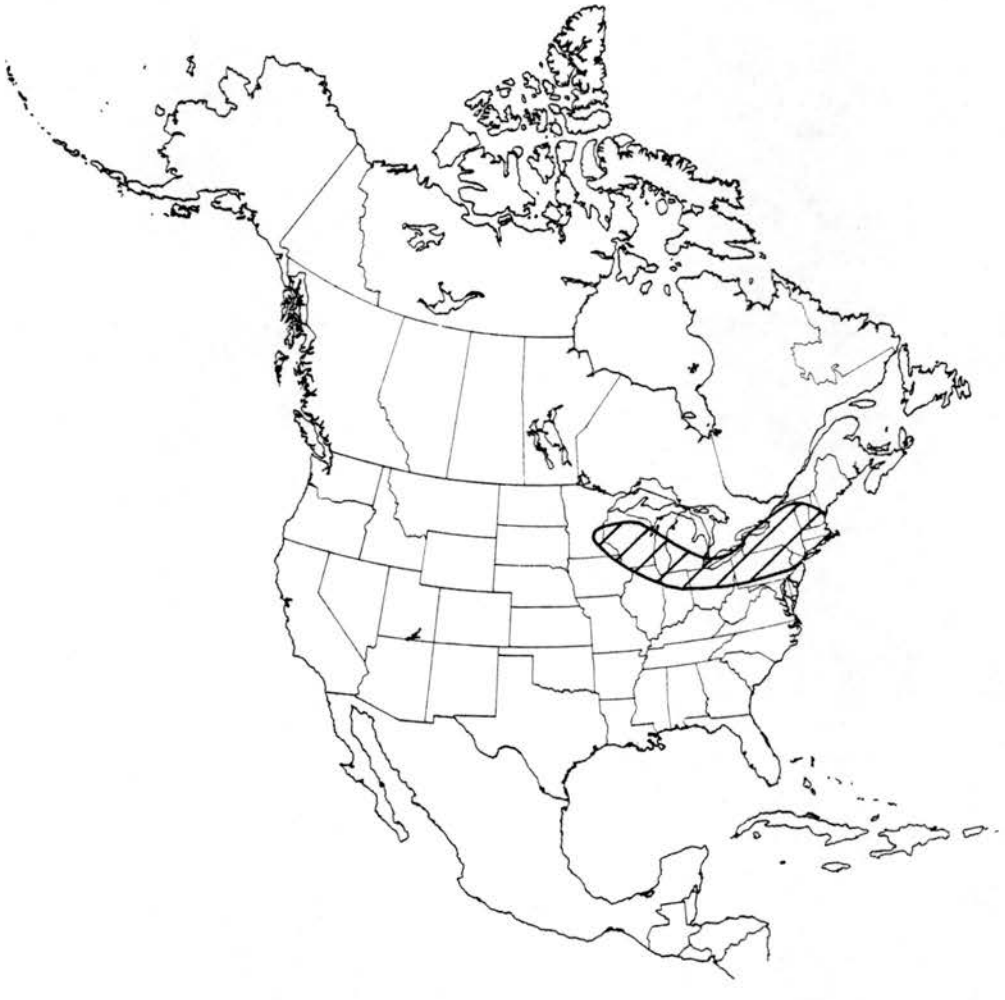
Howe, W. H. (Ed.) 1975. The butterflies of North America. Doubleday and Company. New York. 633p.

Nabokov V. 1944. Psyche 50: 97-99 [original description. TL = "Center" (= Karner), N.Y.]

PREPARED BY: R. L. Huber and R. Dana

Lycaeides samuelis





Tiger Beetles

Proposed List of Tiger Beetles - Classified as
Endangered, Threatened or Special Concern

ENDANGERED

Cicindela denikei W. J. Brown
Cicindela fulgida fulgida Say
Cicindela fulgida westbournei Calder
Cicindela limbata nympha Casey

THREATENED

Cicindela lepida Dejean
Cicindela macra macra Leconte
Cicindela patruela patruela Dejean

SPECIAL CONCERN

Cicindela formosa manitoba Leng
Cicindela hirticollis hirticollis Say
Cicindela hirticollis shermani Casey
Cicindela pusilla pusilla Say
Cicindela scutellaris criddlei Casey
Cicindela terricola Say
Cicindela splendida cyanocephalata Eckhoff
Cicindela limbalis transversa Leng

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela denikei W.J. Brown 1934

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species has been documented from three localities in northern Lake and St. Louis counties. It only has been consistently reported, however, from one of the sites which is located along a sand-gravel ridge that is being slowly excavated for gravel. Less than 15 additional records have been documented outside of Minnesota.

OCCURRENCE IN MINNESOTA: One specimen was collected from an island in Basswood Lake, Lake County in 1958 and one additional specimen from Elbow Lake, St. Louis County in 1979. These are the only records availablefrom these sites. The third site is located along the Ash River Trail in northern St. Louis County. Cicindela denikei has been found repeatedly at this site since 1964.

DISTRIBUTION: This species is a regional endemic restricted to southeast Manitoba, southwest Ontario and extreme northern Minnesota.

PREFERRED HABITAT: Sandy or rocky openings in northern hardwood forest communities are preferred.

RECOMMENDATIONS: Further inventory work is needed to delineate the species range in northern Minnesota. Habitat preservation should also be a priority.

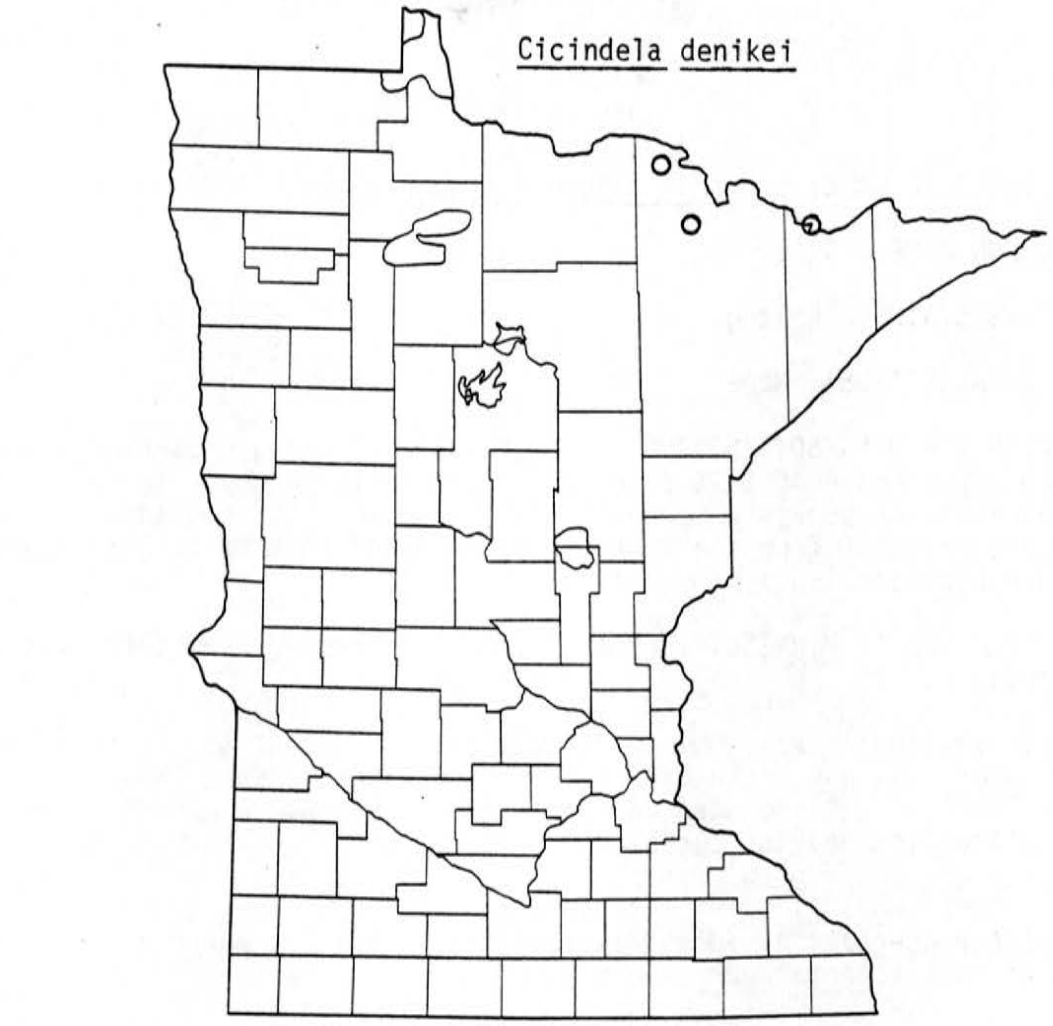
SELECTED REFERENCES:

Brown, W.J. 1934. New species of Coleoptera. V. Canad. Ent. 66:22-24 [original description, TL = Ingolf, Ontario].

Wallis, J.B. 1961. Cicindelidae of Canada. Univ. Toronto Press. 74p.

PREPARED BY: R. L. Huber

Cicindela denikei





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela fulgida fulgida Say 1823

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: In Minnesota this tiger beetle is restricted to the north shore of Salt Lake in Lac qui Parle County. Tampering with water levels to encourage waterfowl breeding would flood the shoreline habitat. Pollution run-off from the surrounding farmland that is on higher ground also may pose a threat.

OCCURRENCE IN MINNESOTA: The one locality record from Salt Lake was first documented in 1967.

DISTRIBUTION: This taxon is distributed throughout the central Great Plains, from Montana and North Dakota south to northern Texas, New Mexico and Arizona. It also has been documented from southern Alberta. Minnesota represents the eastern periphery of the beetle's range.

PREFERRED HABITAT: The site that supports this species in Lac Qui Parle County is characterized by moist alkaline flats that are encrusted with magnesium sulfate. Salicornia rubra, or glasswort, dominates the vegetation.

RECOMMENDATIONS: Natural water levels should be maintained on this large evaporative pond; artificial manipulation should be discouraged. An effort might also be made to periodically monitor the water quality in order to detect any run-off problems from the surrounding farmland.

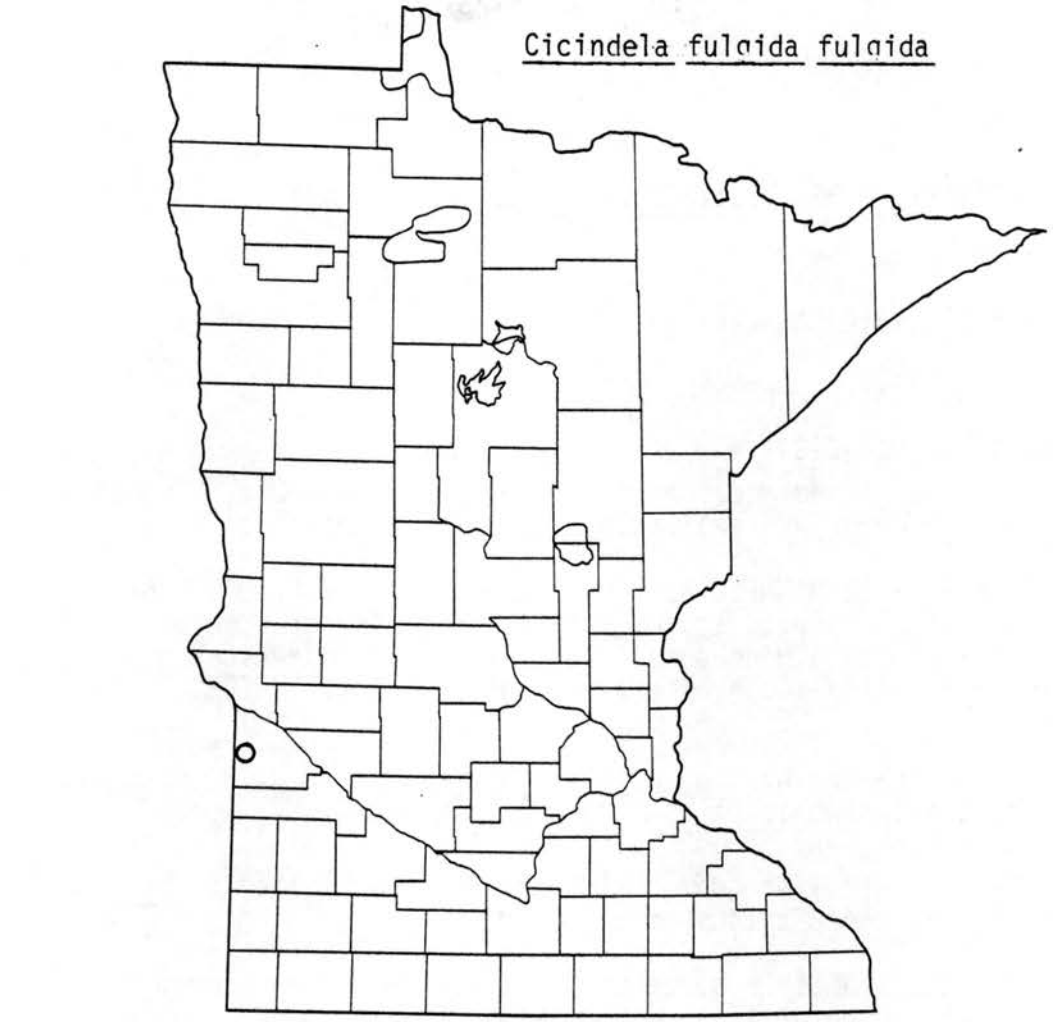
SELECTED REFERENCES:

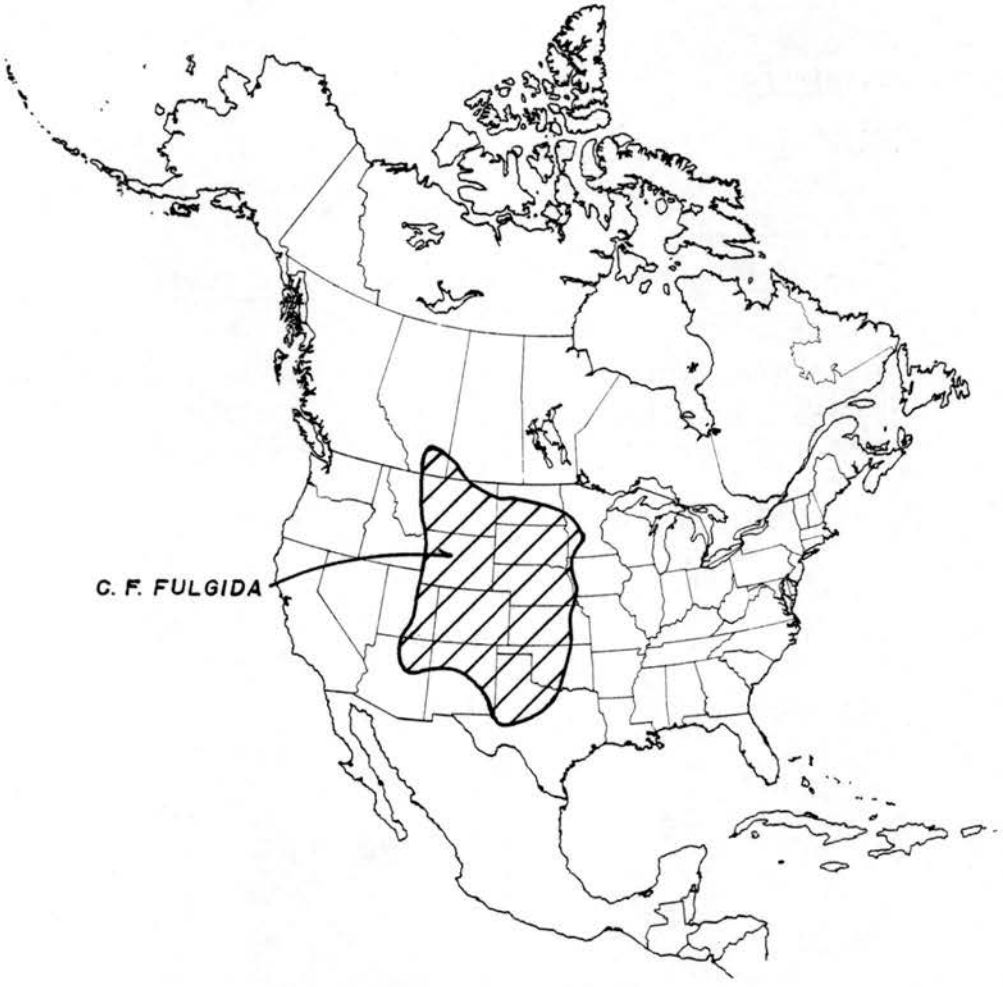
Say, T. 1823. Descriptions of coleopterous insects collected in the expedition to the Rocky Mountains. Phil. Acad. Nat. Sci., Journ. 3 :139-216 [original description].

Willis, H.L. 1967. Bionomics and zoogeography of tiger beetles of saline habitats in the central United States (Coleoptera: Cicindelidae) Kansas Univ. Sci. Bull. 47(5): 143-313.

PREPARED BY: R. L. Huber

Cicindela fulgida fulgida





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela fulgida westbournei Calder 1922

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This tiger beetle occurs only in moist, alkaline areas immediately north and south of Humboldt, Minnesota. Only six additional records are available outside of Minnesota.

OCCURRENCE IN MINNESOTA: Two localities in Kittson County, which are separated from one another by approximately 2.5 miles, are the only sites that support this species in Minnesota. In 1978 C. fulgida westbournei was discovered at a site 1.5 miles south of the town of Humboldt; in 1981 it was found 1 mile north of Humboldt.

DISTRIBUTION: This taxon is restricted to southern Manitoba and Saskatchewan, northern North Dakota and northwestern Minnesota.

PREFERRED HABITAT: Damp, alkaline spots dominated by Salicornia rubra characteriz the sites where this species occurs.

RECOMMENDATIONS: Habitat preservation should be a priority. Because the site north of Humboldt is located between the railroad Right-of-way and an adjacent highway an effort should be made to discourage any herbicide or insecticide spraying.

SELECTED REFERENCES:

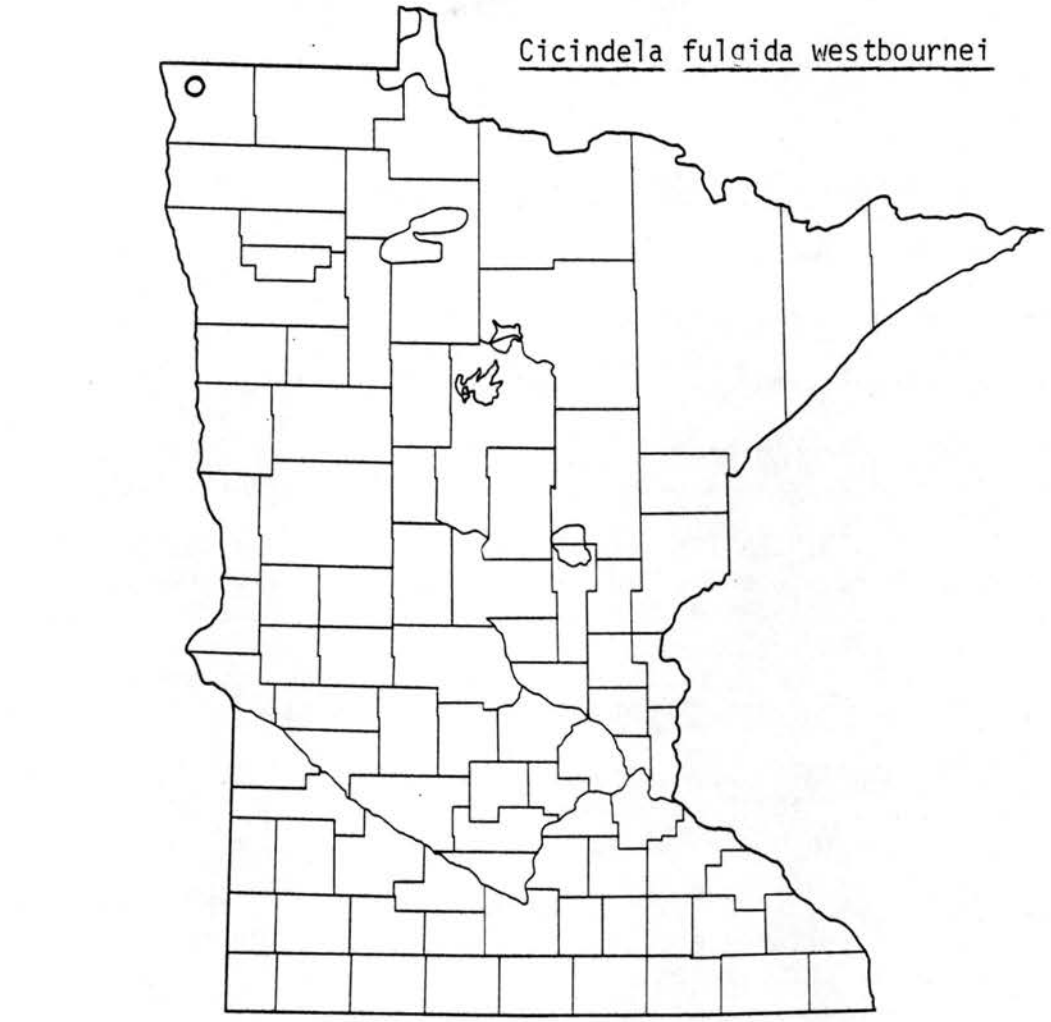
Calder, E.E. 1922. New Cicindelas of the fulgida group (Coleoptera). Canad. Ent. 54:62 [original description, as C.f. elegans - TL = Westbourne, Manitoba]

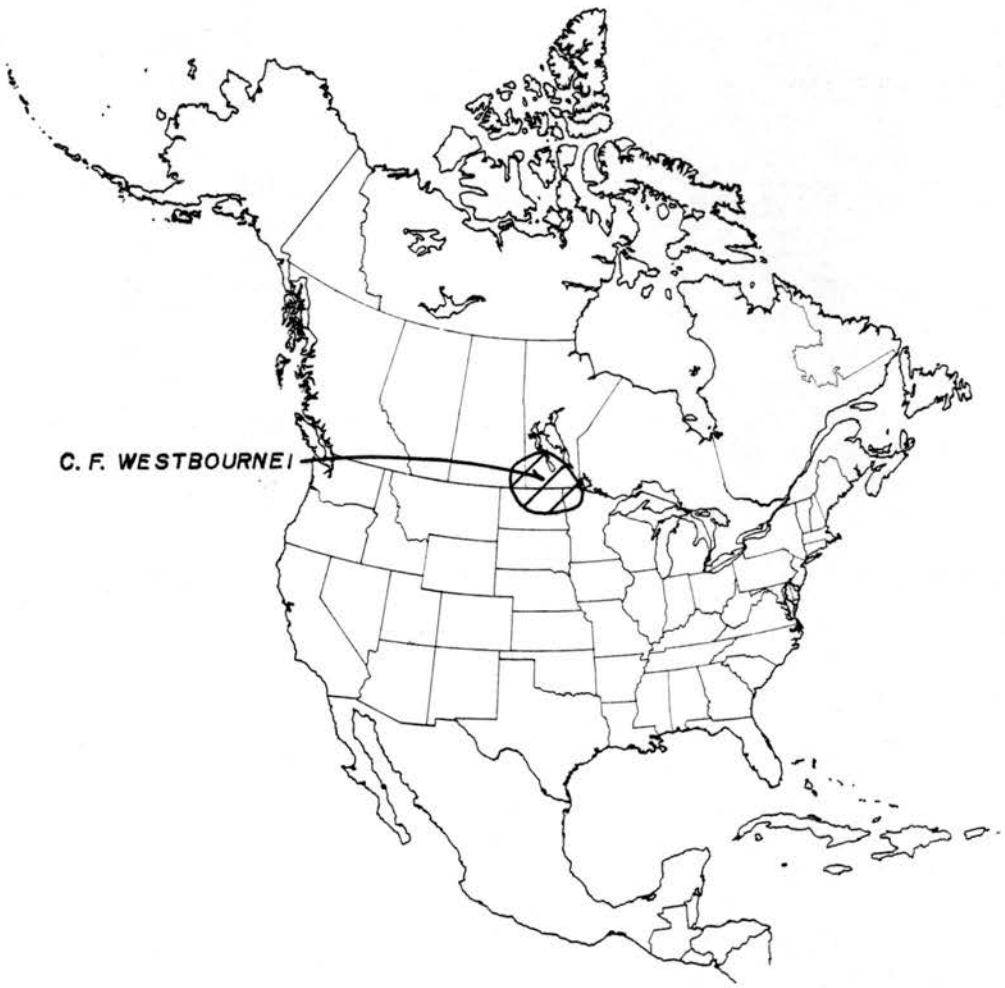
Calder, E.E. 1922. Change of names in Cicindelas. Canad. Ent. 54:191. [changed name to westbournei]

Willis, H.L. 1976. Bionomics and zoogeography of tiger beetles of saline habitats in the central United States (Coleoptera: Cicindelidae) Kansas Univ., Sci. Bull. 47(5): 145-313.

PREPARED BY: R. L. Huber

Cicindela fulgida westbournei





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela limbata nympha Casey 1916

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This taxon has been documented from only one small colony. The site is a large, fragile blowout, several acres in size.

OCCURRENCE IN MINNESOTA: All Minnesota records are available from Garfield Township in Polk County, 1.5 miles southwest of the town of Fertile. It was first discovered at the site in 1967. The most recent record available is 1970.

DISTRIBUTION: The taxon is distributed across the southern half of the Canadian Prairie Provinces, south into the eastern Dakotas and northwestern Minnesota.

PREFERRED HABITAT: High, steep, bald dunes of fine, white, wind-shifted sand are preferred. The Polk County site appears to be the only remnant of this habitat remaining in northwest Minnesota.

RECOMMENDATIONS: The first priority is to revisit the site so as to confirm the continued existence of the colony. Acquisition might be considered if the population is still extant.

SELECTED REFERENCES:

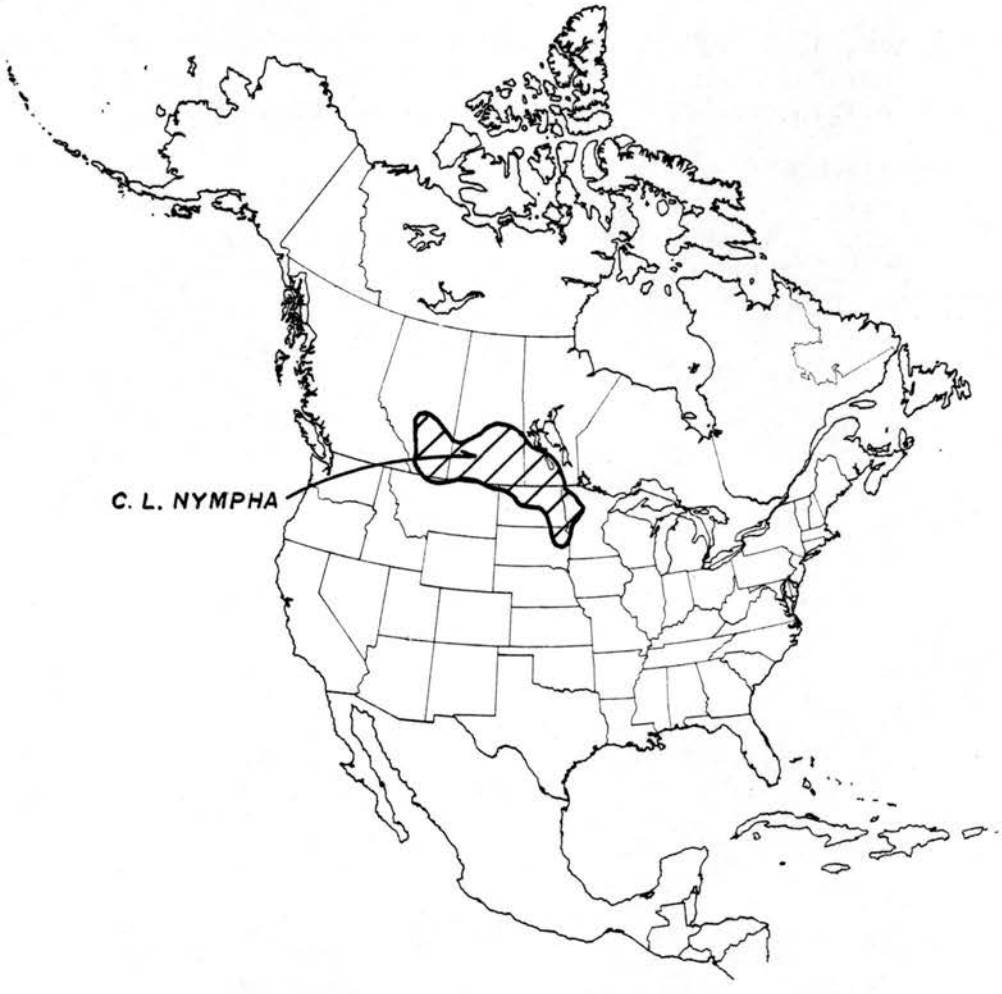
Casey, T.L. 1913. Studies in the Cicindelidae and Carabidae of America. Memiors on the Coeloptera, IV. Lancaster. 192p. [original description TL = Aweme, Manitoba].

Wallis, J.B. 1961. Cicindelidae of Canada. Univ. of Toronto Press. 74p.

PREPARED BY: R. L. Huber

Cicindela limbata nympha





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela lepida Dejean 1831

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This tiger beetle has been reported from five localities in Minnesota. It appears, however, to be extirpated at one site and has been reported only once at two others. Widely distributed despite its relatively isolated ecological niche.

OCCURENCE IN MINNESOTA: Cicindela lepida was first documented in Minnesota in 1922 from a site near Fridley in Anoka County. The Fridley dunes, however, were levelled for construction of a high school and private homes sometime between 1924 and 1954. In 1923 the beetle was reported from Scott County and in 1936 from Polk County. Neither of these records have been reconfirmed. The other two sites are near Dumfries in Wabasha County and 1.5 miles south of Ortonville in Lac qui Parle County. The Ortonville slopes are trod by cattle regularly which may destroy the beetle's larval burrows; the Dumfries slopes, though, probably are still in good condition.

DISTRIBUTION: This tiger beetle is widely distributed throughout the United States and Canada east of the Rocky Mountains. Its range stretches from southern Saskatchewan and Manitoba south to Texas, east to the Ohio River Valley, Quebec and New Jersey. It also spreads west to Utah and Arizona.

PREFERRED HABITAT: High, steep sandy dunes are this beetle's preferred habitat.

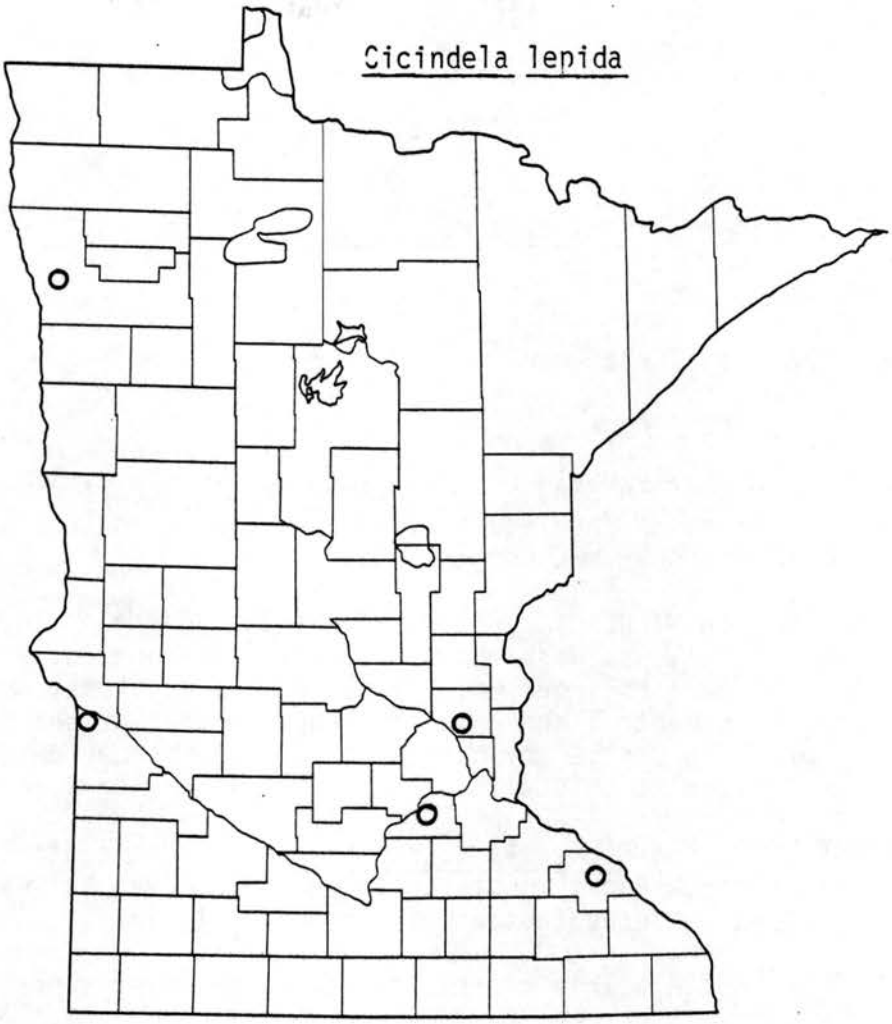
RECOMMENDATIONS: Habitat preservation should be a priority.

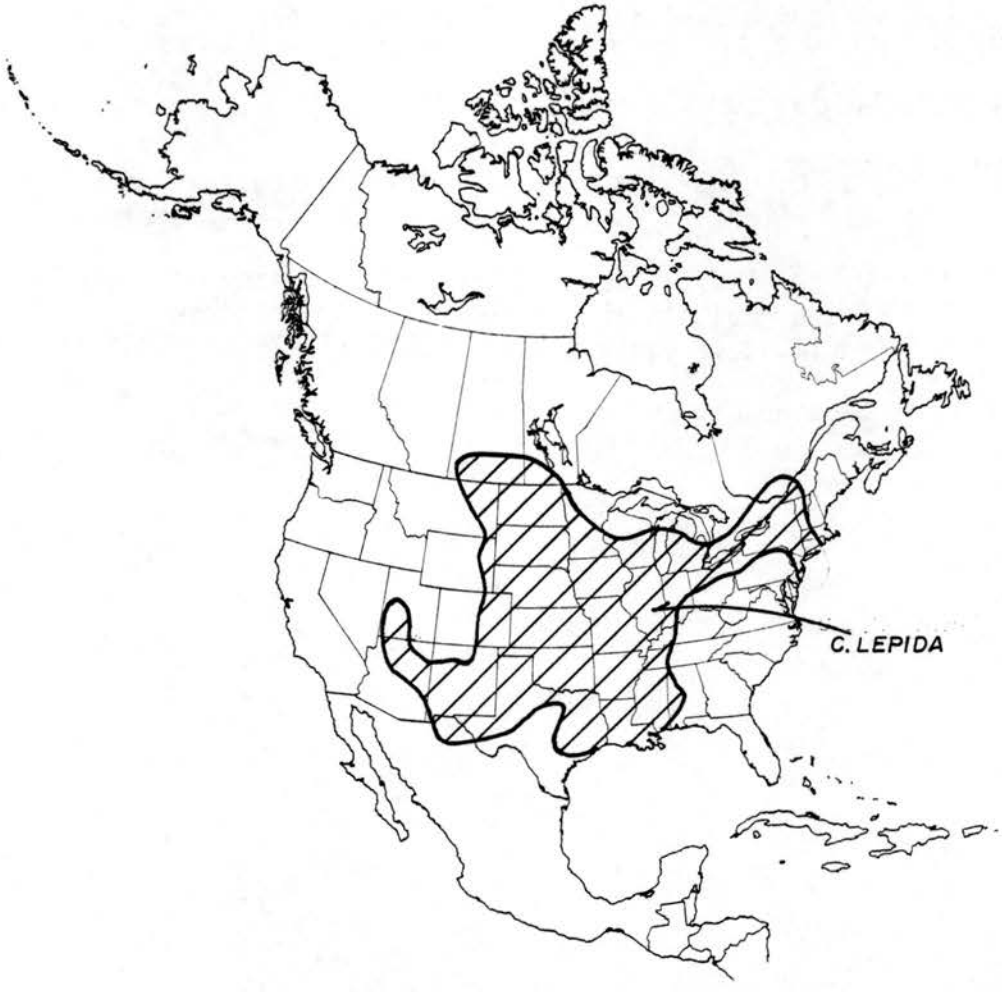
SELECTED REFERENCES:

Dejean, F.M.A.P. 1831. Spécies général des coléoptères de la collection de M. le compte Dejean. V. Mequignon Marvis, Paris. 883 p. [original description]

PREPARED BY: R. L. Huber

Cicindela lepida





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela macra macra Leconte 1857

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This tiger beetle occurs historically in five counties in Minnesota, however recent collections have been made from only two counties.

OCCURRENCES IN MINNESOTA: Records for this cicindelid in Minnesota are as follows: Washington Co. - 1921; Winona Co. - 1920; Scott Co. - 1923; Fillmore Co. - 1965 (colony apparently obliterated by flood control and channel changes); and Wabasha Co. 1960-72 (wandering cattle may have destroyed larval burrows, no recent collection at this site).

DISTRIBUTION: The Cicindela macra macra occurs in central United States from Rocky Mountains to the Ohio River Valley and from southeast Minnesota southward to central Texas.

PREFERRED HABITAT: This cicindelid occurs on moist sandy stream edges.

RECOMMENDATIONS: Suitable habitat for this tiger beetle should be preserved including minimization of physical threats to larval burrows.

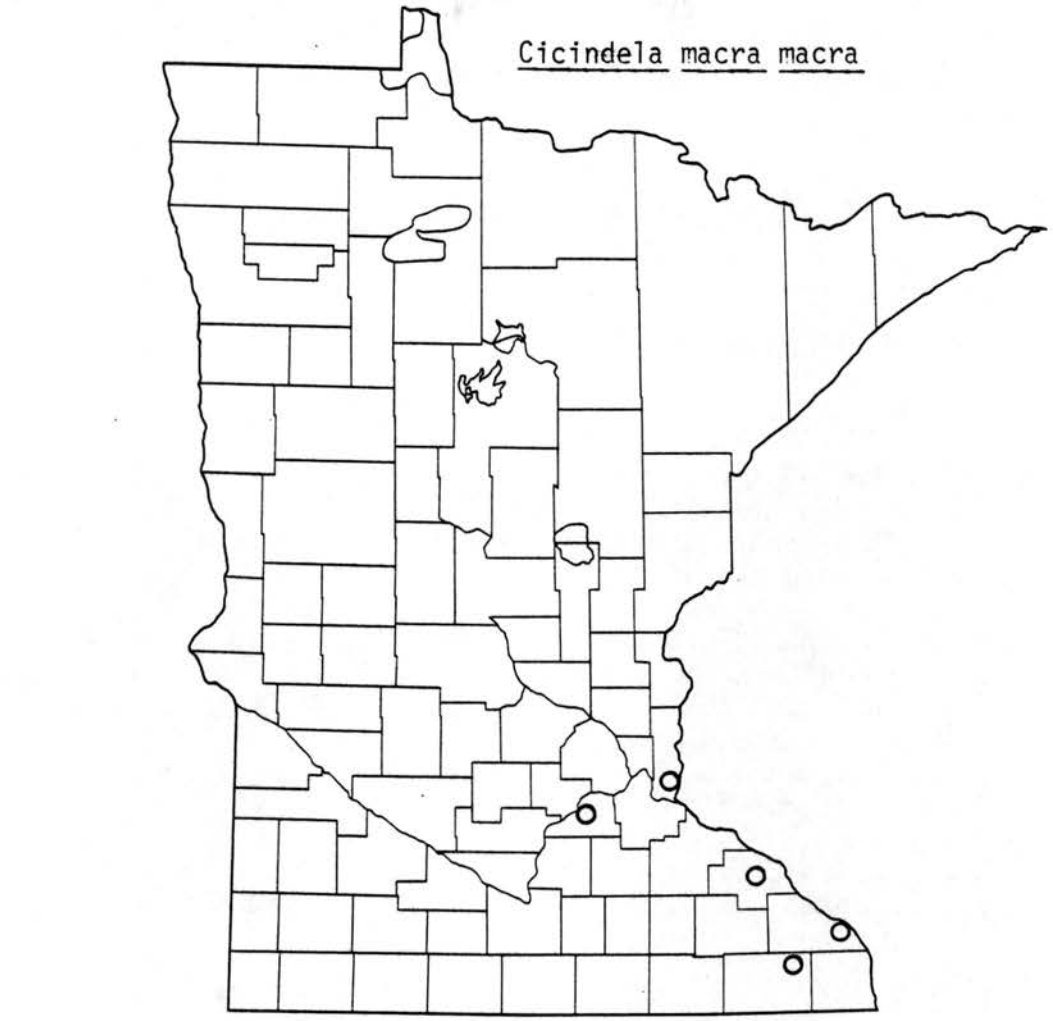
SELECTED REFERENCES:

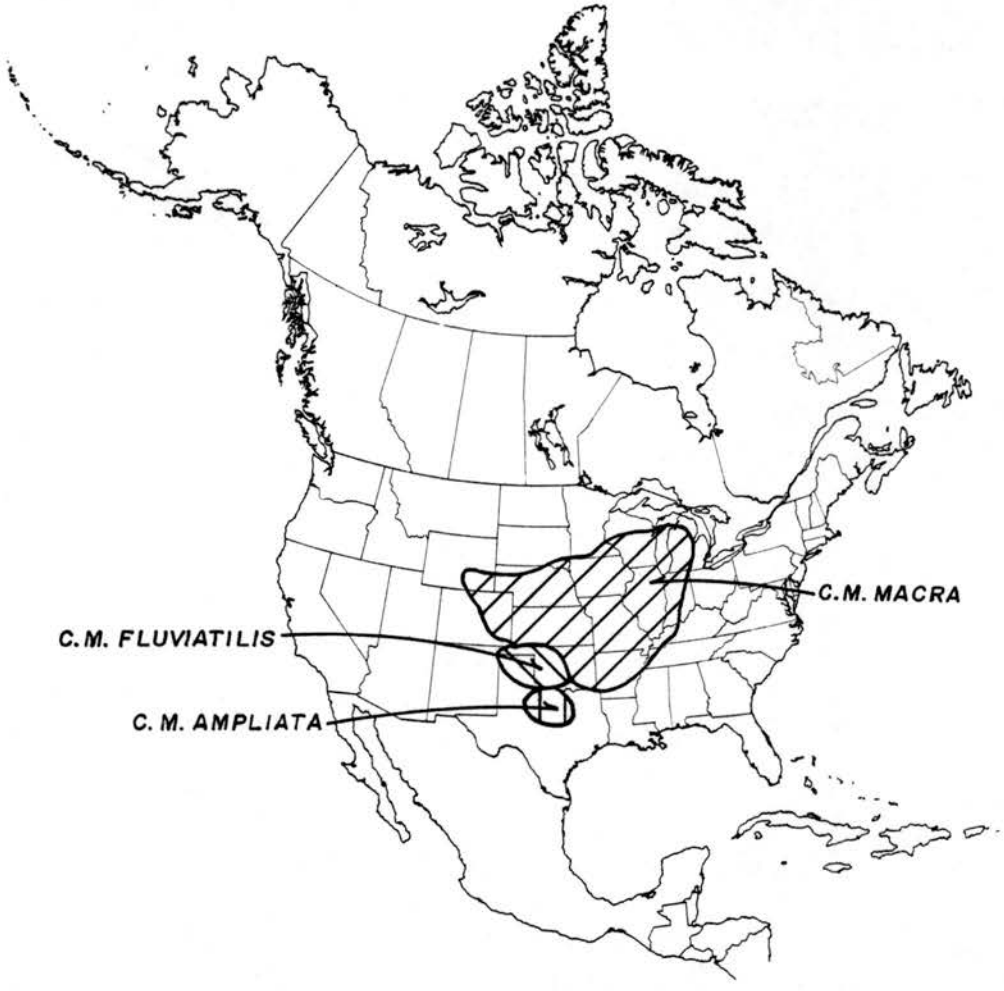
Leconte, J. L. 1857. Revision of the Cicindelidae of the United States. Amer. Philos. Soc, Trans. 11:27-64. [orig. description].

Willis, H. L. 1967. Bionomics and zoogeography of tiger beetles of saline habitats in the central United States (Coleoptera: Cicindelidae). Kansas, Univ. Sci Bull 47(5): 145-313 [Revision].

PREPARED BY: Ron Huber

Cicindela macra macra





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela patruela patruela Dejean 1825

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This tiger beetle occurs in sandy habitats that are very vulnerable to development. Of the ten counties in which this beetle occurs in Minnesota, only three breeding colonies are known and one of these was just recently destroyed.

OCCURRENCE IN MINNESOTA: Records for this cicindelid in Minnesota are as follows: Cass Co. - no date, pre-1900; Morrison Co. - 1960; Sherburne Co. - 1950; Crow Wing Co. - 1953; Chisago Co. - 1928; Pine Co. - 1956; Winona Co. - 1973; Anoka Co. - 1976 (small breeding colony); Wadena Co. 1960-68 (breeding colony); Todd Co. - 1964-71 (colony destroyed).

DISTRIBUTION: The Cicindela patruela patruela occurs in Northeastern United States and Southern Canada reaching the Western edge of its range in Minnesota.

PREFERRED HABITAT: This cicindelid occurs in sandy jackpine habitats.

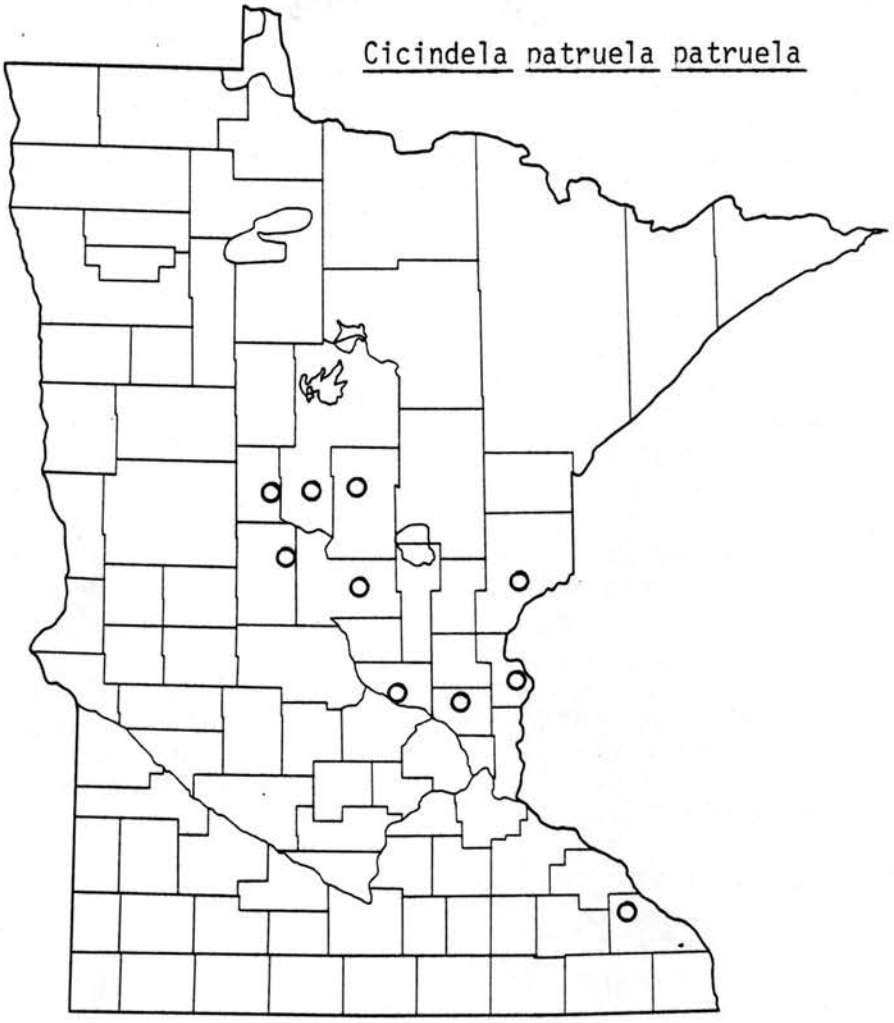
RECOMMENDATIONS: Preserve suitable habitat for the survival of this tiger beetle in Minnesota.

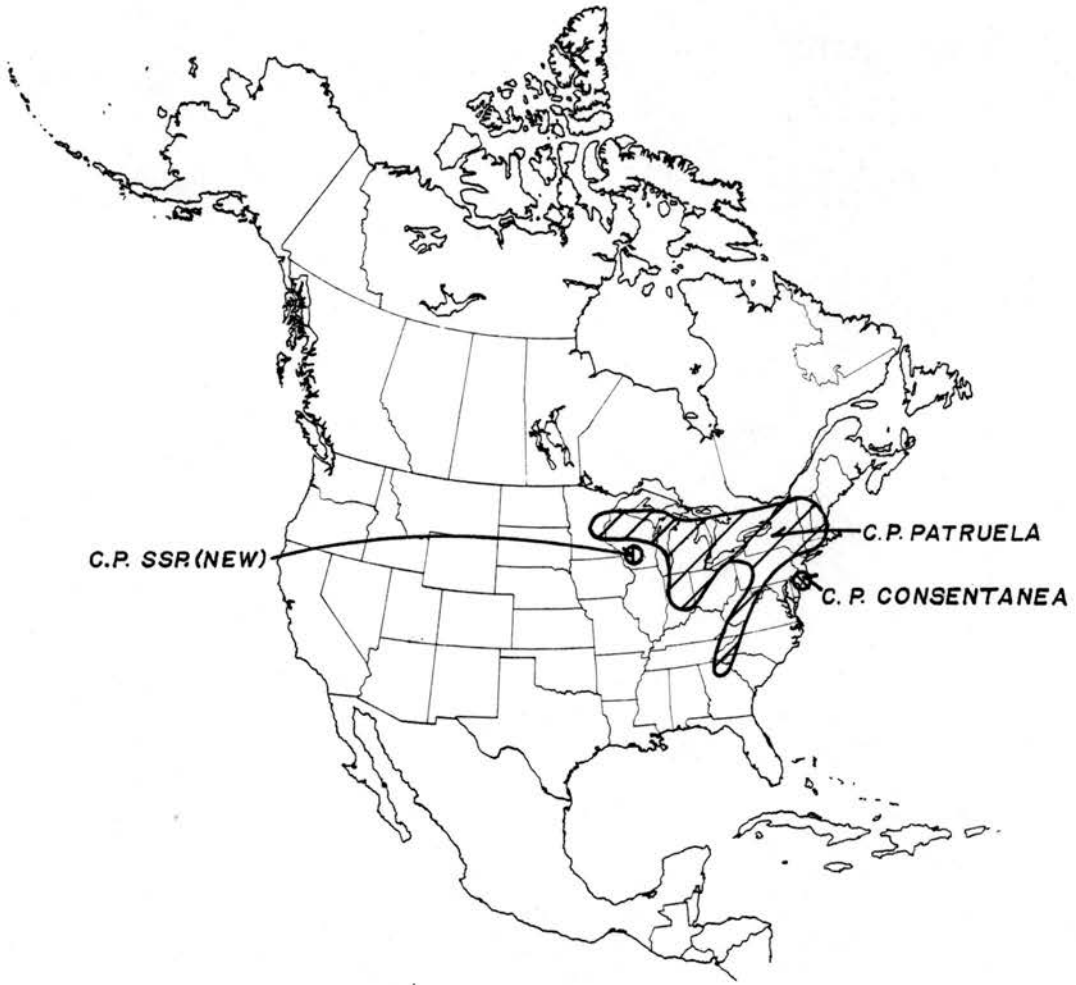
SELECTED REFERENCES:

Dejean, F.M.A.P. 1825. Spécies général des coléoptères de la collection de M. le compte Dejean. I Mequignon Marvis, Paris. 463 p. [orig. description].

PREPARED BY: Ron Huber

Cicindela patruela patruela





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela hirticollis shermani Casey 1916

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The beetle's occurrence in Minnesota is restricted to two sites that are in close proximity to one another in the Duluth area.

OCCURRENCE IN MINNESOTA: Minnesota Point and the Port Terminal on Rice's Point are the only two localities where the subspecies has been documented. These two localities are separated by approximately five miles. The beetle was first documented at Minnesota Point in 1960 and at the Port Terminal in 1974.

DISTRIBUTION: This subspecies is restricted to the Great Lakes. Records are available from the south shore of Lake Superior, the entire shoreline of Lake Michigan, the western shore of Lake Huron, the south shore of Lake Erie and the west shore of Lake Ontario. The Duluth locality represents the western periphery of the beetle's range.

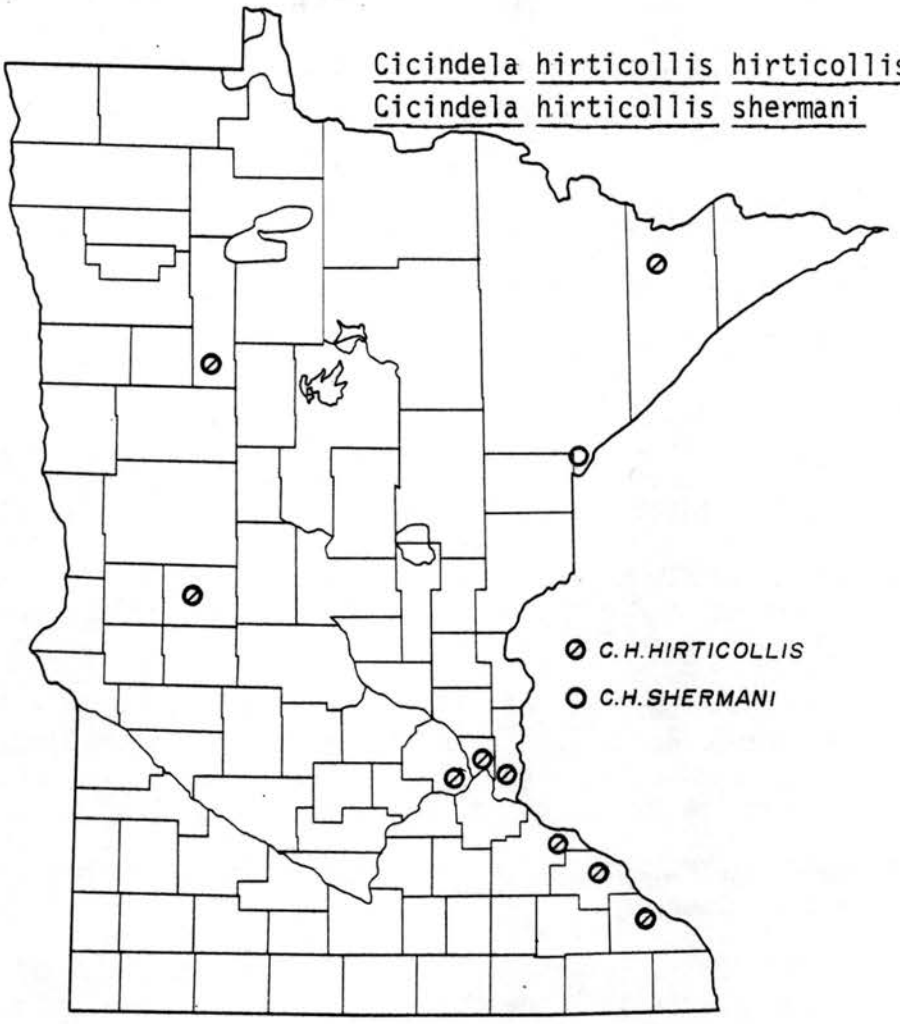
PREFERRED HABITAT: The sandy shorelines of the Great Lakes are the only habitat where this beetle is found.

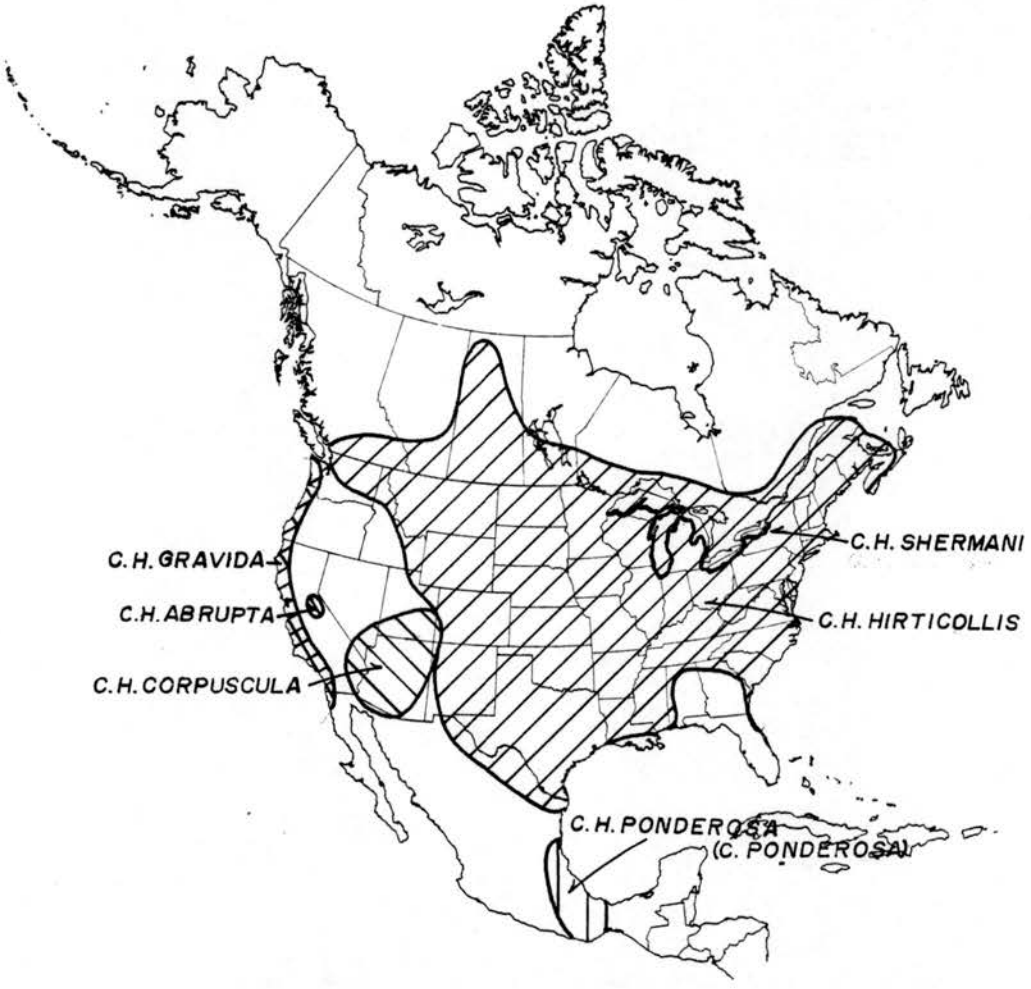
RECOMMENDATIONS: Wide sand beachlines and dunes should be preserved and an effort should be undertaken to eliminate any vehicle disturbance (wheel tracks destroy larval burrows).

SELECTED REFERENCES:

Casey, T.L. 1916. Further studies on the Cicindelidae. Memoirs on the Coleoptera, VII. Lancaster. 34p. [original description. TL = Marquette, Mich.]

PREPARED BY: R. L. Huber


Cicindela hirticollis hirticollis
Cicindela hirticollis shermani
C.H.HIRTICOLLIS
C.H.SHERMANI


C.H. GRAVIDA
C.H. ABRUPTA
C.H. CORPUSCULA
C.H. SHERMANI
C.H. HIRTICOLLIS
C.H. PONDEROSA
(C. PONDEROSA)

SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela scutellaris criddlei Casey 1913

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This tiger beetle is known in Minnesota at only three localities in sandy habitats vulnerable to disturbance.

OCCURRENCE IN MINNESOTA: This cicindelid has been collected in three counties in Minnesota: Roseau Co. - 1967; Polk Co. - 1960-72; and Kittson Co. - 1982.

DISTRIBUTION: The Cicindela scutellaris criddlei occurs in southern Manitoba, northeast North Dakota and northwest Minnesota. This species which is highly polymorphic occurs throughout eastern United States except in the Appalachians.

PREFERRED HABITAT: This cicindelid occurs in dry, sparsely vegetated, sandy blowouts.

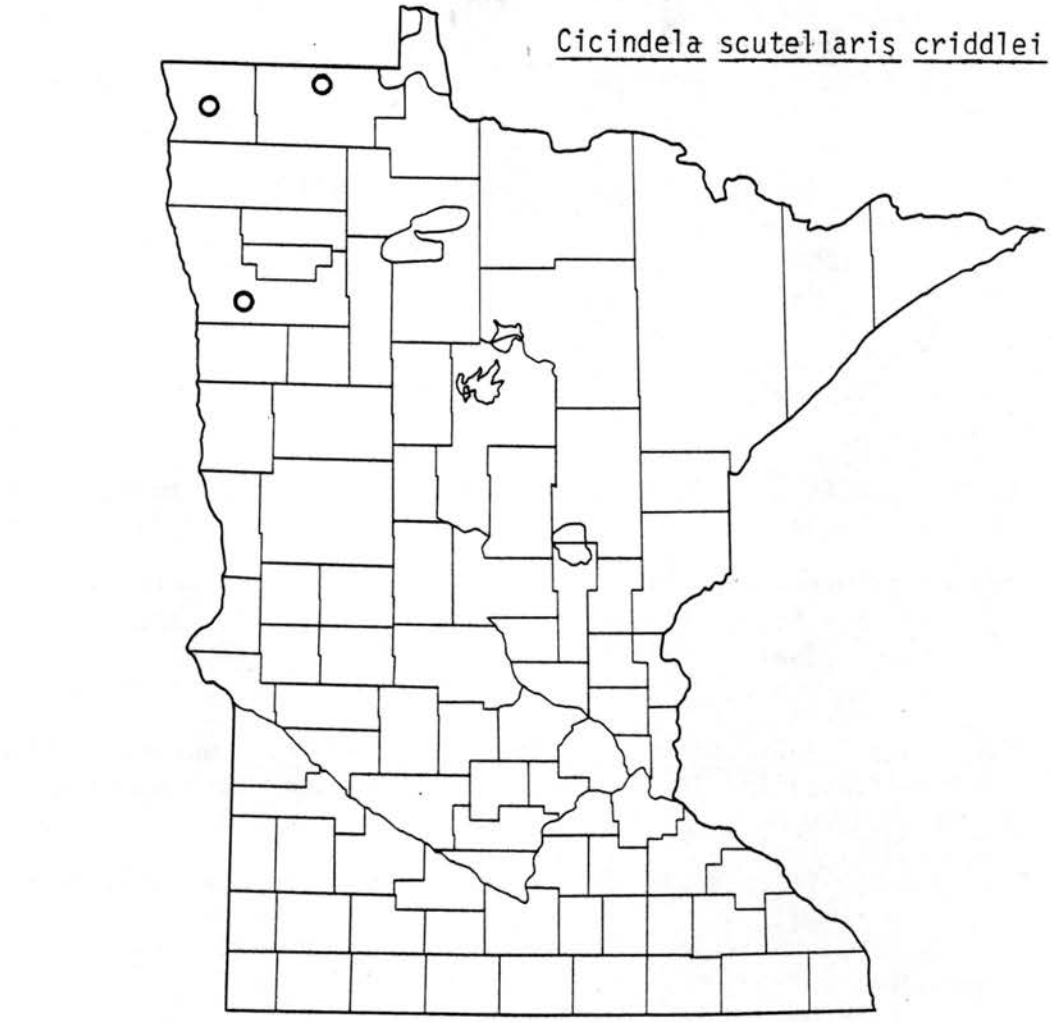
RECOMMENDATIONS: Preserve suitable habitat for the survival of this tiger beetle in Minnesota.

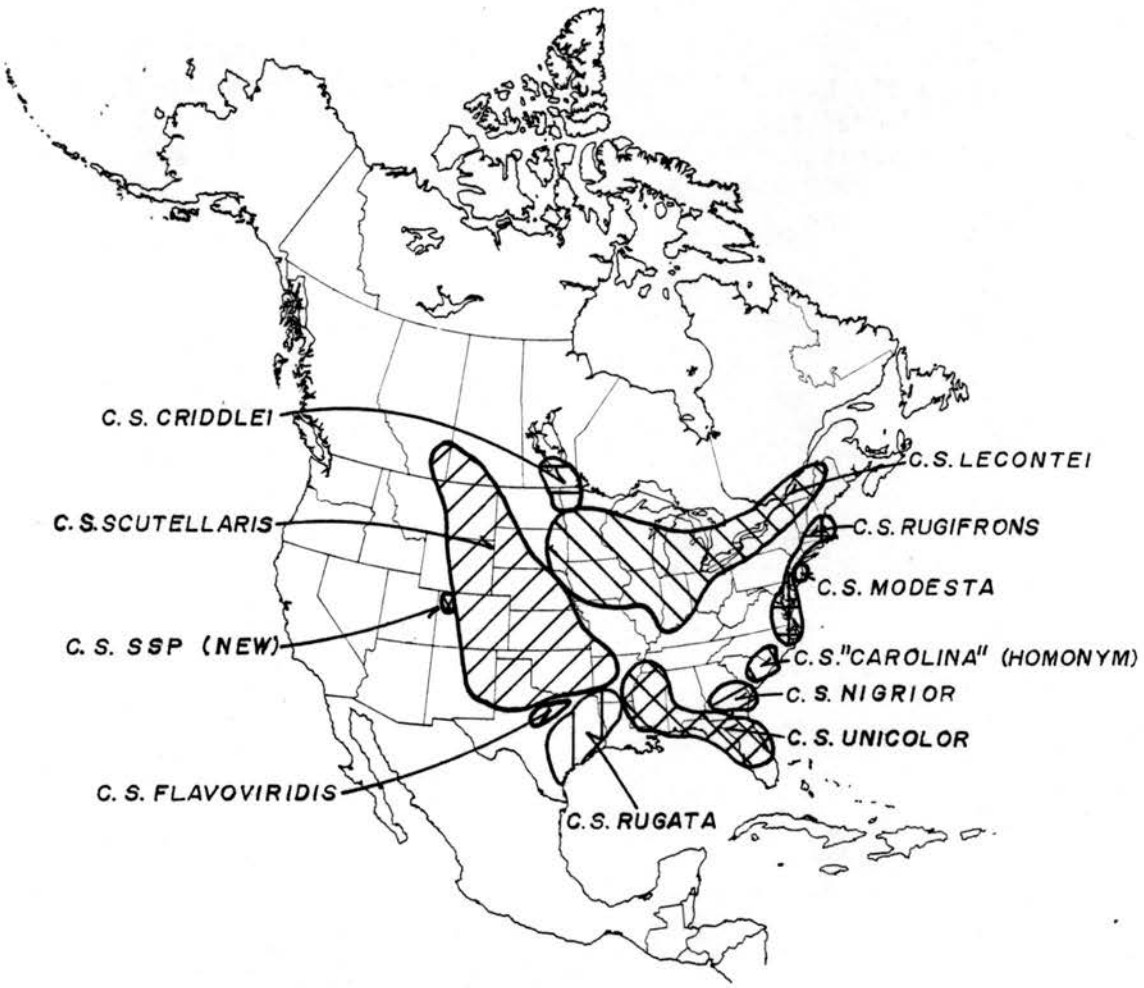
SELECTED REFERENCES:

Casey, T. L. 1913. Studies in the Cicindelidae and Carabidae of America. Memoirs Coleop. IV. Lancaster. 192 p. [orig. description - TL=Aweme, Manitoba].

PREPARED BY: Ron Huber

Cicindela scutellaris criddlei





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cicindela splendida cyanocephalata Eckhoff 1939

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The occurrence of this tiger beetle in Minnesota is limited to three counties in the southeastern part of the state.

OCCURRENCE IN MINNESOTA: This Cicindelid has been collected consistently at one location in Houston County since 1966, at three locations in Winona County in 1981 and 1982, and at one location in Fillmore County in 1966.

DISTRIBUTION: The Cicindela splendida cyanocephalata occurs in central United States and in Minnesota at the northeastern edge of its range.

PREFERRED HABITAT: This Cicindelid occurs on steep clay embankments.

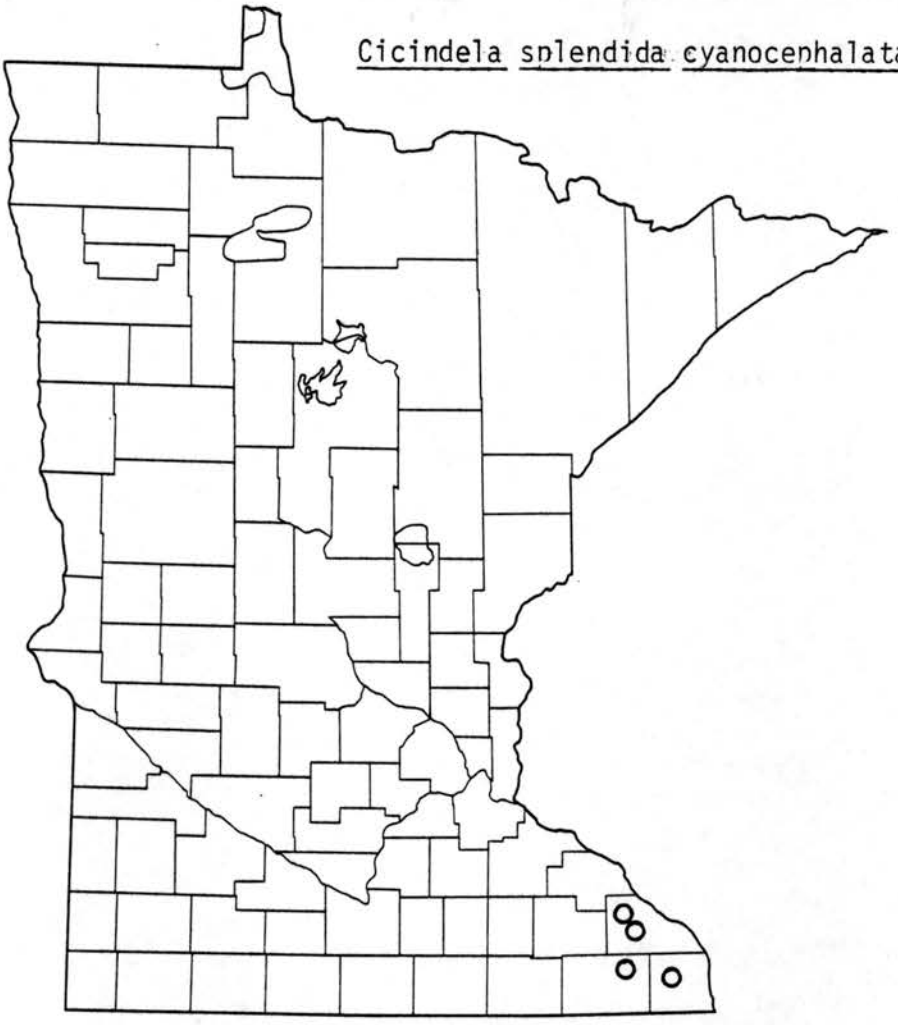
RECOMMENDATIONS: Suitable habitat for this tiger beetle should be preserved.

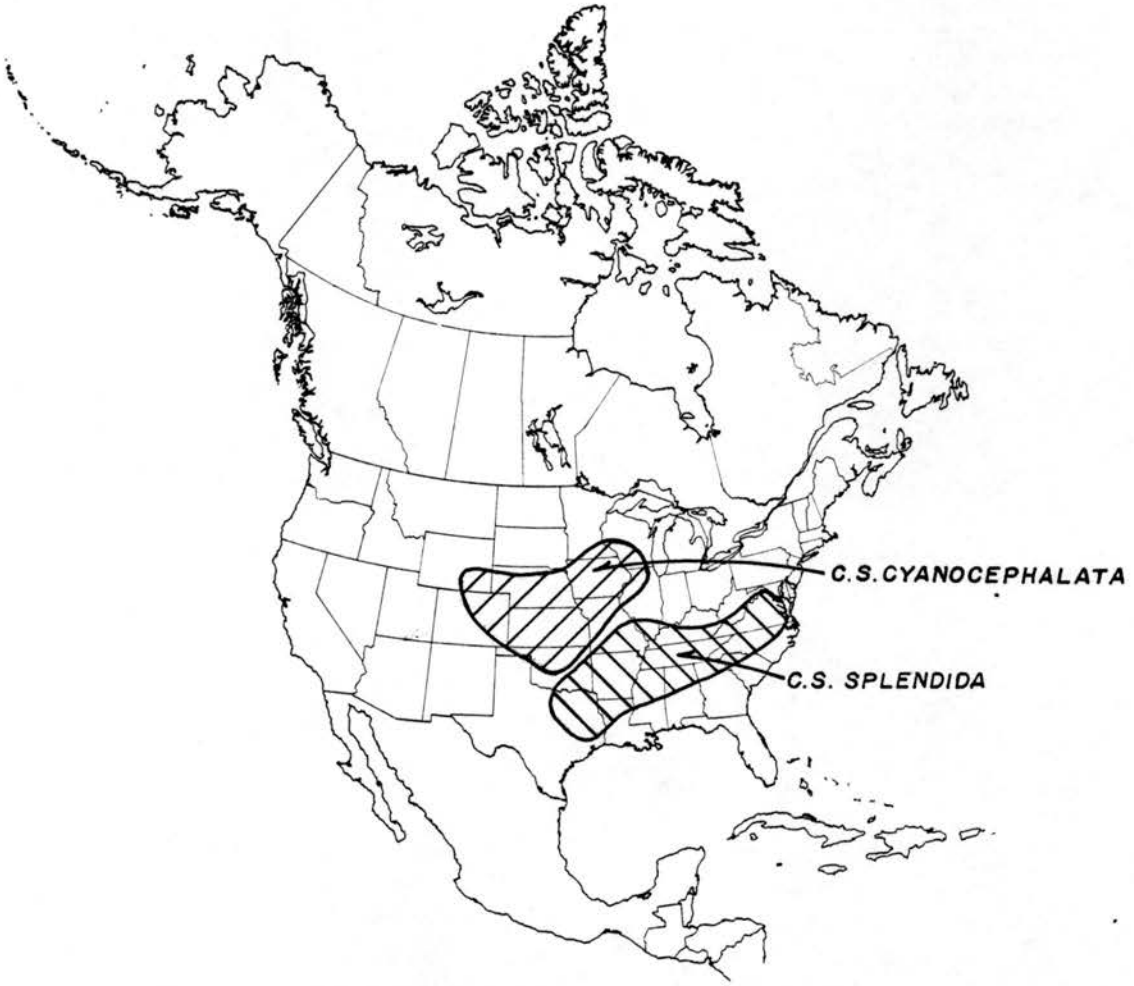
SELECTED REFERENCES:

Eckhoff, D. 1939. Cicindelidae of Iowa (Coleoptera). Iowa State College Journ. Sci. 13:201-230 [new name for the homonym cyanocephala Fabricius].

PREPARED BY: Ron Huber

Cicindela splendida cyanocephalata





Jumping Spiders

Proposed List of Jumping Spiders Classified as
Endangered, Threatened or Special Concern
by the Invertebrate Group Committee

ENDANGERED

Tutelina formicaria (Emerton)

THREATENED

Pellenes rutherfordi (Gertsch and Mulaik)
Sassacus papenhoei (Peckham and Peckham)

SPECIAL CONCERN

Marpissa grata (Gertsch)
Metaphidippus arizonensis (Peckham and Peckham)
Paradamoetas fontana (Levi)
Phidippus apacheanus (Chamberlin and Gertsch)
Phidippus pius (Scheffer)

STATUS OF THE JUMPING SPIDERS (SALTICIDAE) OF MINNESOTA

by
Dr. Bruce Cutler

As mentioned in the introduction to the subcommittee report, each member compiled his list according to criteria developed for the specific animal group and within the general guidelines of the full committee. The basis for the jumping spider listings is as follows:

Endangered - the species has an established population at only one site in Minnesota and is dependent on a scarce, sensitive and/or exploited habitat in Minnesota and neighboring states.

Threatened - the species has established populations at two sites in Minnesota and based on the criteria listed for the endangered category is likely to become endangered within the foreseeable future.

Special Concern - the species has been taken at three or more sites in the state, but preferred habitat is believed vulnerable, or species has a restricted range not only in Minnesota, but elsewhere.

An established population means a number of specimens have been taken per visit to a site, or that repeated visits to the site have produced specimens. Those species which have been taken only infrequently in Minnesota, and about which fragmentary distribution information is available, are included on a supplementary list (Appendix A). Some species from the supplementary list may eventually be included in the three formal categories, as more information becomes available.

The difficulty in developing a list of rare jumping spiders for Minnesota should be appreciated. There have been no more than five collectors keeping an eye out for salticids in Minnesota, and of these five, two have worked intensively on Minnesota jumping spiders. Gertsch (1934, 1936) described a few new species in the 1930s. Woodring (1957) did an unpublished Master's thesis on the family. I have been collecting salticids in Minnesota for eighteen years, but because of personal interest, have concentrated most heavily on the southern prairie portions of the state, particularly in the southeast quarter, and on areas close to the Twin Cities. Woodring (1957) similarly stressed collecting in the Twin Cities area, but also in the north central portion. There are probably many uncollected sites which would prove productive, but because of manpower limitations will remain uncollected. In conclusion, only those species for which adequate information exists statewide have been listed.

Acknowledgements

I wish to thank Mr. R.L. Huber, and Mr. R. Dana for collecting salticids during their own field trips. They have been of considerable help. In addition, I would like to thank the Nature Conservancy of Minnesota, and the University of Minnesota, Cedar Creek Natural History Area for generously allowing me to collect specimens in areas under their administration.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Tutelina formicaria (Emerton)

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species is found only at the Allison Savanna Nature Conservancy preserve, Anoka Co.. It has been sought but not found at Cedar Creek Natural History Area. At present, it is known from only this one small site in an area of rapid suburbanization. This site is the northwesternmost locality for the species in North America.

DISTRIBUTION: The species is at the western edge of its range in Minnesota. Suitable habitat in Cedar Creek Natural History Area approximately one mile away was collected at the appropriate time of the year, but this species was not present. Collecting in similar appearing, but more highly disturbed habitat at Wild River State Park, Chisago Co., and at a locality in Cass Co. failed to reveal the species. It is especially puzzling that collecting at Cedar Creek did not turn up the species in what appears to be identical habitat.

PREFERRED HABITAT: In Minnesota, the species occurs in oak savanna - sand prairie habitat. It occurs in association with characteristic grasses such as Andropogon and Aristida. In addition, the forb Penstemon grandiflorus plays a prominent role in the biology of the species.

SPECIES SPECIFIC FACTORS: In Minnesota this species has a close affinity for old seed pods of Penstemon grandiflorus, which are used as sites for building retreats, and particularly, for making egg sacs. It has not been found building retreats on forbs utilized by other species of salticids. The species occurs in several eastern states, but is not considered common in any (Kaston 1981). The habitat requirements in other states are not clear; it has been collected in localities such as an overgrown hardrock mine dump and a deciduous woodland. Penstemon grandiflorus does not occur in these states.

RECOMMENDATIONS: Maintaining the current habitat at Allison Savanna is vital for the species. Burning should take into account the fact that old Penstemon grandiflorus seed pods may play an important role in providing shelter for the species. Populations of T. formicaria seem to be stable at Allison Savanna. Whenever it has been sought for at Allison, a few specimens have been found. Any locality where P. grandiflorus occurs should be checked for this spider species.

SELECTED REFERENCES:

Cutler, B. Manuscript in preparation on spiders associated with old seed pods of Penstemon grandiflorus.

Kaston, B. J. 1981. The Spiders of Connecticut. Revised edition, Natural History Survey of Conn., Bull. 70, 1020 pp.

Richman, D. B. and B. Cutler. 1977. A list of the jumping spiders (Araneae: Salticidae) of the United States and Canada. Peckhamia 1: 82-109.

PREPARED BY: Bruce Cutler

Tutelina formicaria



SPECIES STATUS SHEET

SCIENTIFIC NAME: Pellenes rutherfordi Gertsch and Mulaik

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species occurs at two locations in Minnesota: Hole in the Mountain Nature Conservancy Preserve, Lincoln Co. and Ottawa Bluffs Nature Conservancy Preserve, Le Sueur Co. at both sites it occurs on dry prairie slopes, in habitat vulnerable to disturbance.

DISTRIBUTION: The species is widespread, but has very spotty distribution in the United States east of the Rocky Mountains.

PREFERRED HABITAT: In Minnesota the species has been taken both on the ground and by sweeping on dry prairie slopes. Its habitat in other states is not known.

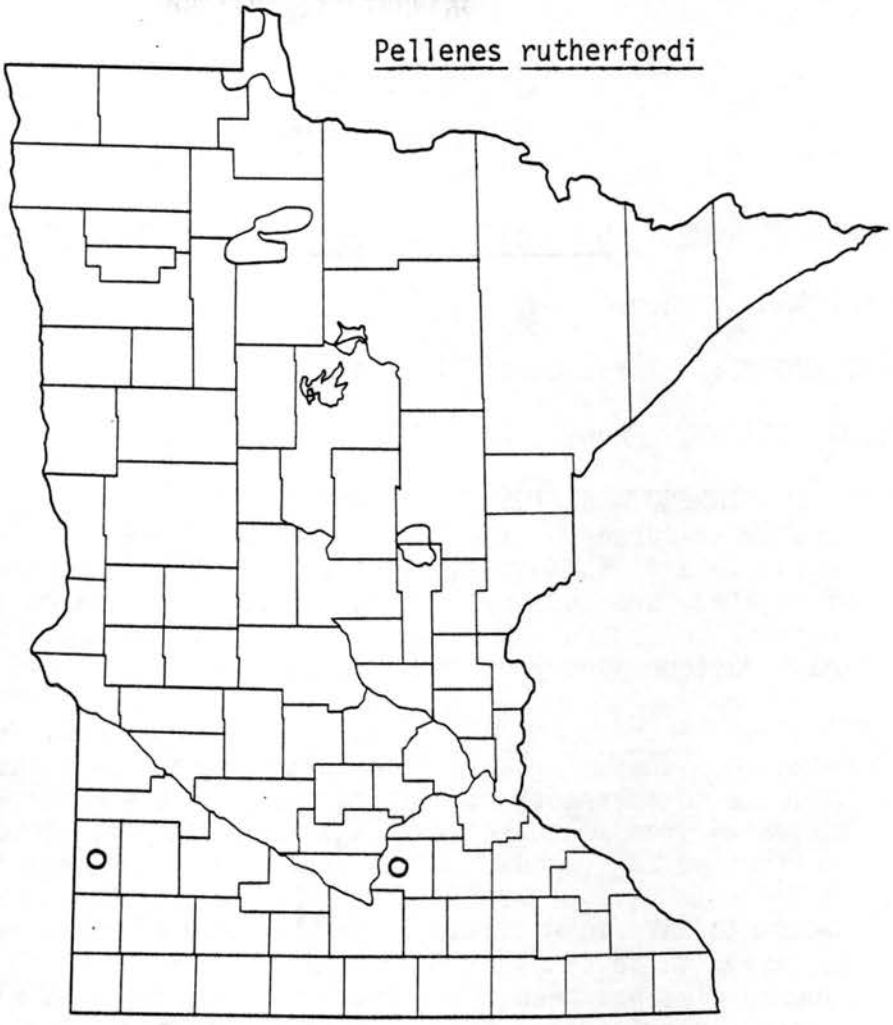
RECOMMENDATIONS: Both sites where the species occurs are managed by The Nature Conservancy. The species is under no threat as long as these sites remain as prairie, and under management by The Nature Conservancy. Some concern might be expressed at the possible encroachment of red cedar, Juniperus virgiana, and the possibility of increased gravel mining near the Ottawa Bluffs locality.

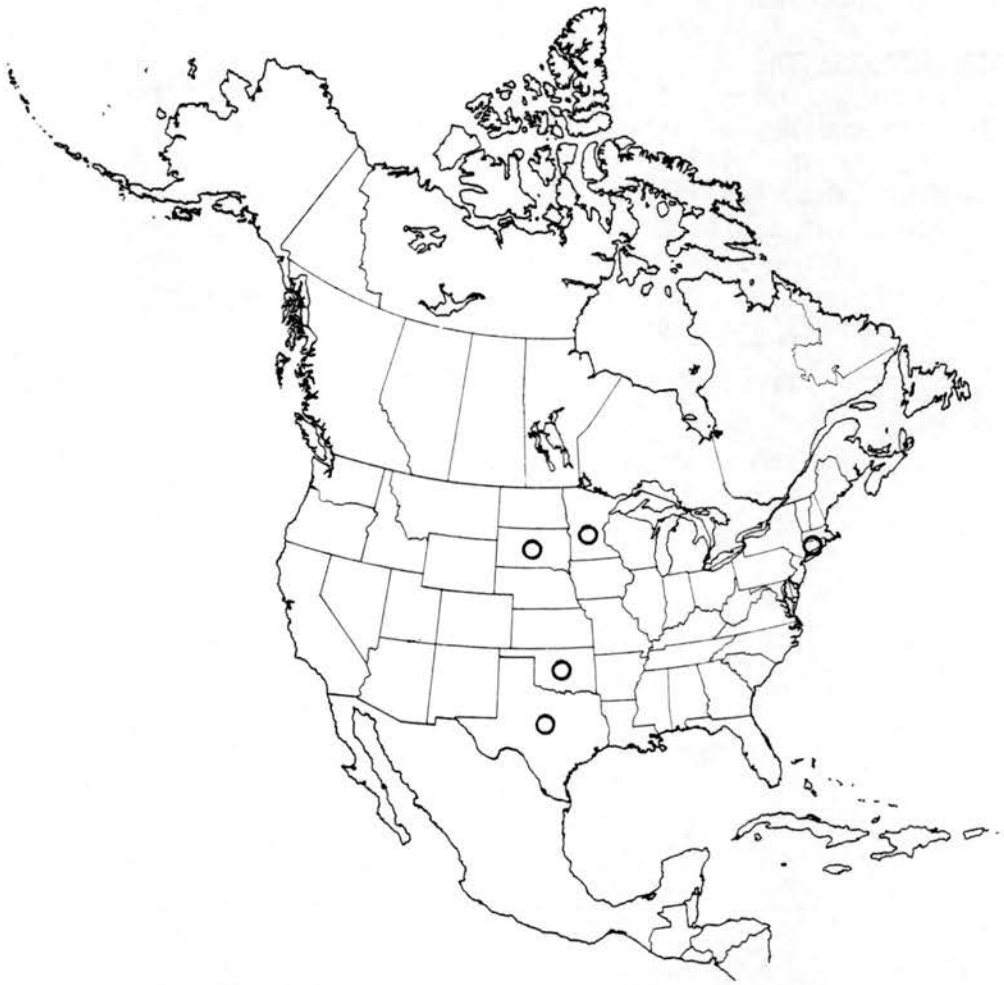
SELECTED REFERENCES:

Richman and Cutler, 1977.

PREPARED BY: Bruce Cutler

Pellenes rutherfordi





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sassacus papenhoei* Peckham and Peckham

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species is found at only two sites in the southeast corner of the state. The preferred habitat in Minnesota is vulnerable to human disturbance, particularly recreational use and irrigated farming. Its habitat probably has to be maintained by burning to control shrub invasion. Minnesota populations are on the northeast periphery of the species range.

DISTRIBUTION: *Sassacus papenhoei* is a common species in southern states with only spotty distribution north of the 35° N latitude. Minnesota has the northernmost populations east of the Great Plains. The species is known from southwest Wisconsin and northwest Iowa. Despite repeated collecting in southwest Minnesota, it has not been found.

PREFERRED HABITAT: In Minnesota, the species occurs in sand prairie, especially those sites rich with native forbs. In southern states, the species has been collected from open areas of almost any sort, including cultivated fields, disturbed meadows, desert bushes, and native prairie.

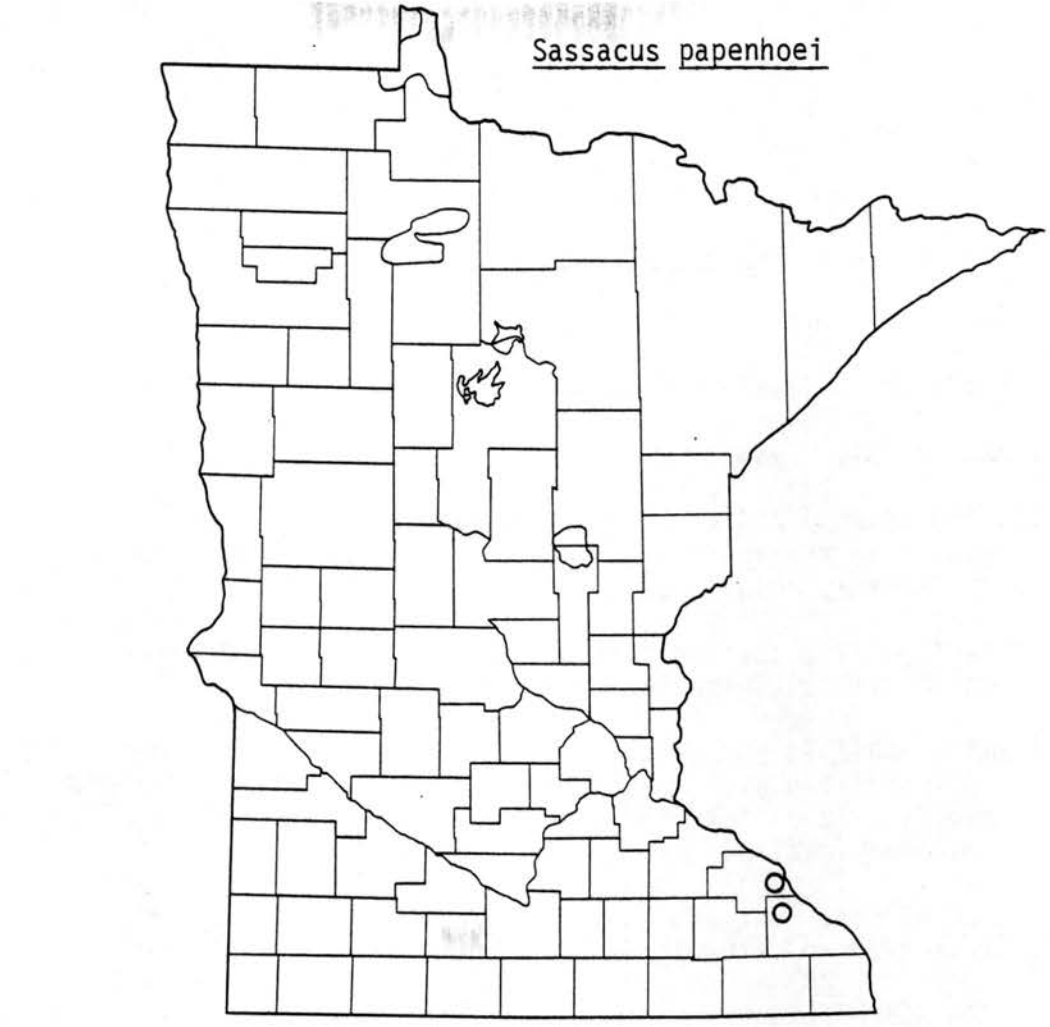
RECOMMENDATIONS: The populations appear stable at the Wabasha Co. locality which occurs on privately owned land just north of the Nature Conservancy site in the Weaver Dunes. This locality is also south of the DNR Scientific and Natural Area, thus at present it receives no protection. However, this locality has been visited over a ten year period and no encroachment has been noted. Because of the recent spread of irrigated farming in the area, protection of this area is strongly encouraged. Furthermore, two species of special concern (*Metaphidippus arizonensis* and *Phidippus apacheanus*) and three on the supplementary list (*Hentzia palmarum*, *Marpissa pikei*, and *Phlegra fasciata*) occur in this small area. The other location for this species is on the Whitewater Game Refuge in Winona Co. Here the populations are stable and large, and no major incursions seem evident.

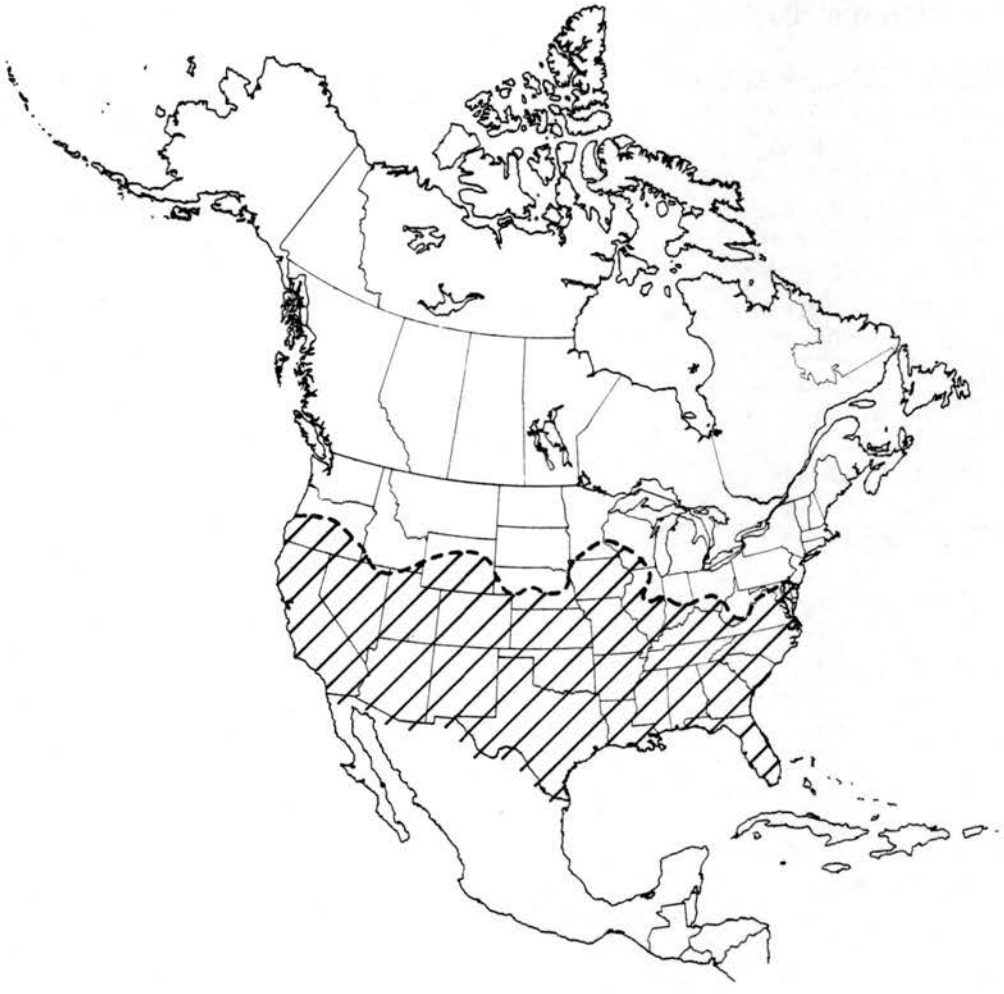
SELECTED REFERENCES:

Richman and Cutler, 1977.

PREPARED BY: Bruce Cutler

Sassacus papenhoei





SPECIES STATUS SHEET

SCIENTIFIC NAME: Marpissa grata (Gertsch)

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This is a Great Lakes endemic species, known only from Michigan and Minnesota (status in Wisconsin uncertain). The habitat requirements need better definition.

DISTRIBUTION: The species is known definitely from Michigan and Minnesota only. Its distribution in Minnesota is spotty.

PREFERRED HABITAT: Most records, but not all, indicate that the species is associated with fresh water habitats, either wetlands, ponds or rivers. It is taken most frequently by sweeping sedges or other emergent vegetation.

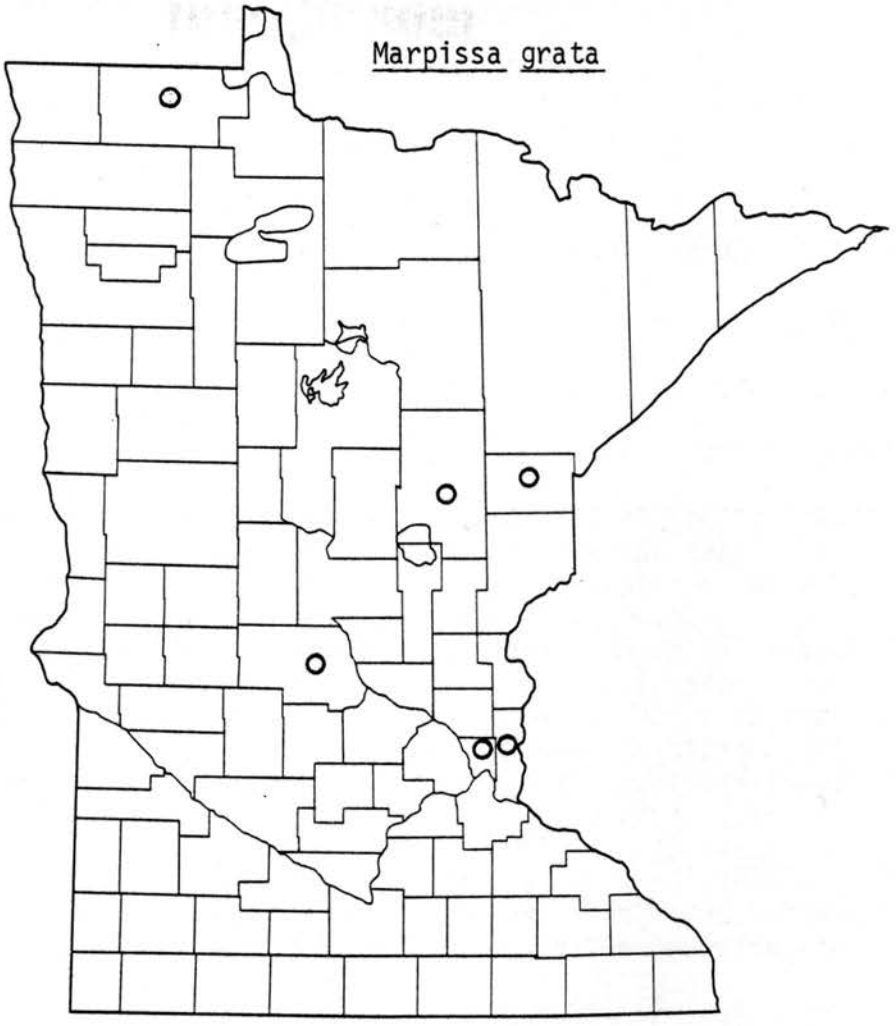
RECOMMENDATIONS: Continue surveillance for the species, with particular attention to determining important habitat requirements.

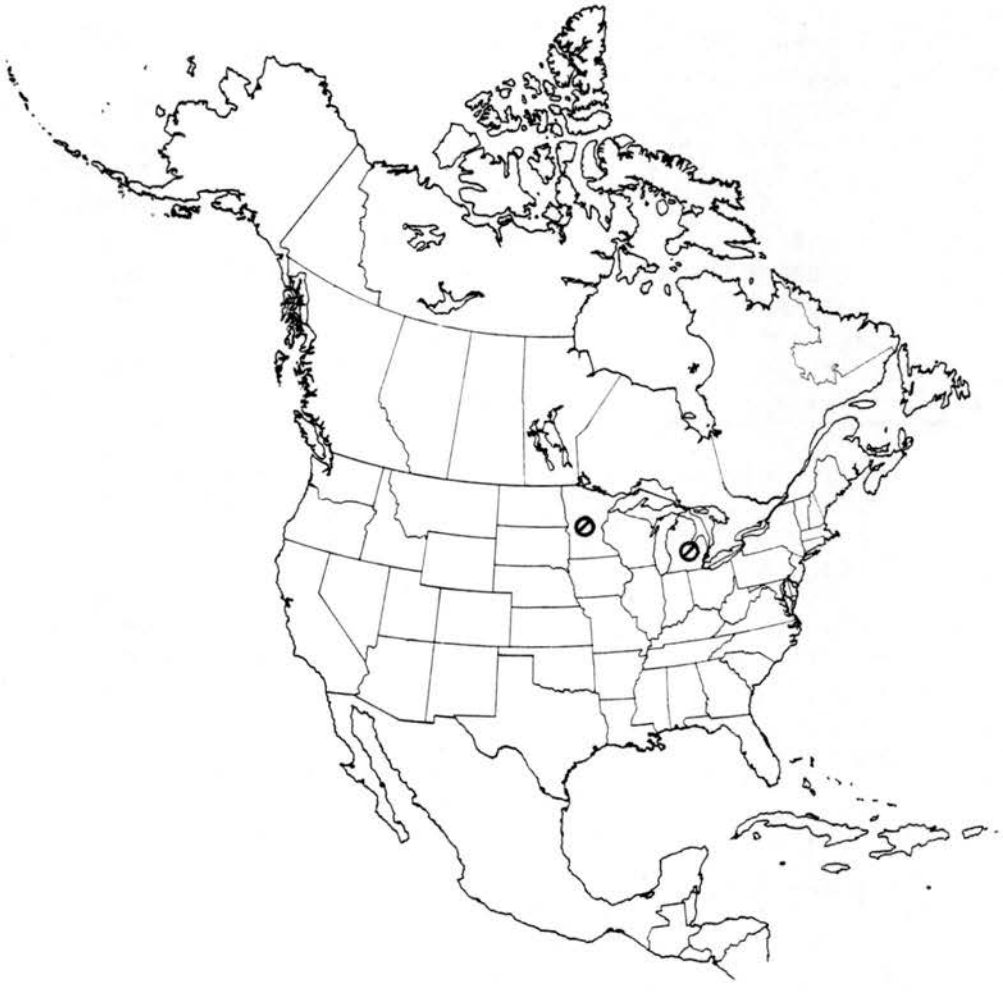
SELECTED REFERENCES:

Richman and Cutler, 1977.

PREPARED BY: Bruce Cutler

Marpissa grata





SPECIES STATUS SHEET

SCIENTIFIC NAME: Metaphidippus arizonensis (Peckham and Peckham)

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species is found at the following three localities in Minnesota: Anoka and Isanti Counties, Cedar Creek Natural History Area-Allison Savanna Nature Conservancy Preserve; Wabasha Co., southeast of Kellogg just north of Nature Conservancy Weaver Dunes Preserve (see comments under Sassacus papenhoei); and Winona Co., Whitewater Wildlife Management Area. The preferred habitat of this species is vulnerable to human disturbance, especially to recreational use, irrigated farming, and in Anoka and Isanti Counties, increasing suburbanization. Its habitat needs to be maintained by periodic burning.

DISTRIBUTION: The species reaches its northeasternmost limit in Minnesota. Throughout North America, its distribution is extremely spotty, probably reflecting the lack of collecting on the Great Plains proper.

PREFERRED HABITAT: The species occurs in sand prairie in Minnesota, particularly in association with prairie forbs.

SPECIES SPECIFIC FACTORS: Of the salticids in Minnesota, the biology of this species is best known. This is a result, in large part, of the author's continuing interest in this species. Two unpublished manuscripts are in preparation discussing the biology and taxonomy of the species. In its habitat it can be very abundant, but it seems to be sensitive to disturbance. In the more suburbanized Bunker Prairie area of Anoka Co., this species was never encountered. The species appears to be dependent on the seed heads and capsules of native forbs for the females to use as egg laying sites, and for immatures and adults to use for retreat sites. Especially favored in this regard are the old capsules of Penstemon grandiflorus, and the old seed heads of Lespedeza capitata.

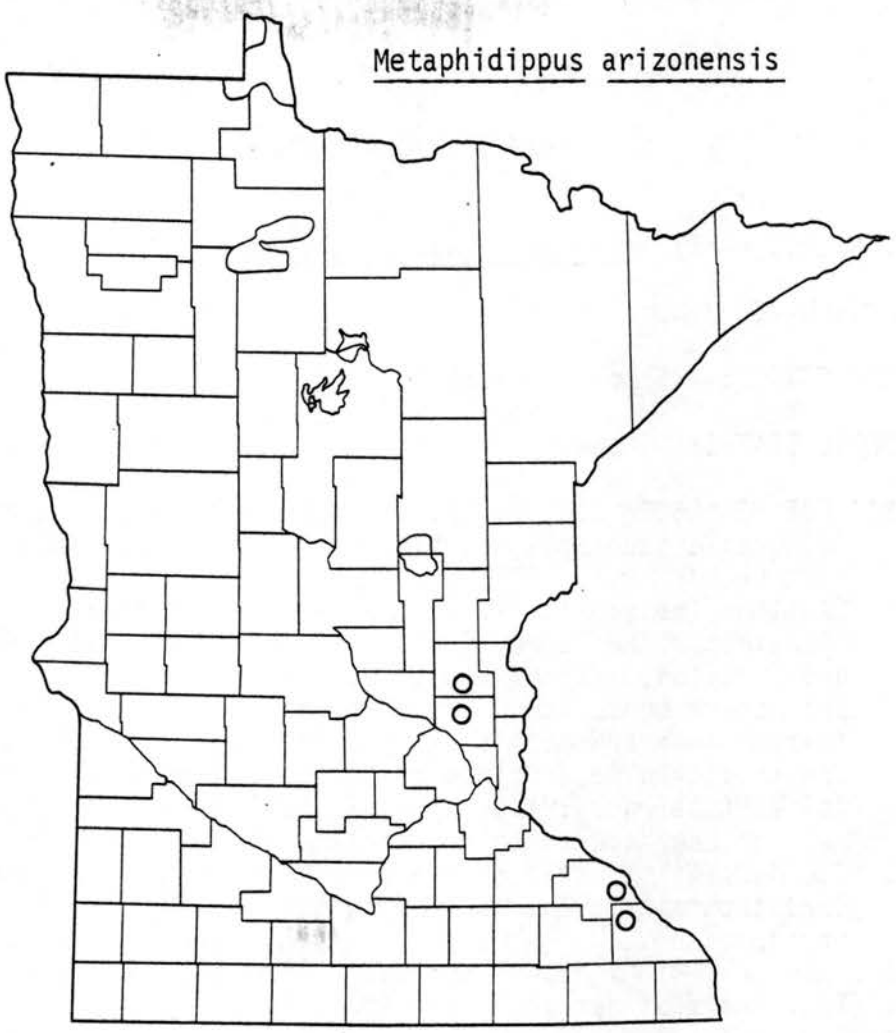
RECOMMENDATIONS: Continue prescribed burns as practiced at Allison Savanna and at Cedar Creek with attention to reserving some areas unburned each year to preserve the old forb stems and monitor the populations at the two other known locations. The Wabasha Co. site is on private land, and is thus vulnerable to habitat change. The management practices currently in use at the Whitewater Wildlife Management Area appear sufficient to provide adequate habitat, burning may become necessary in the future.

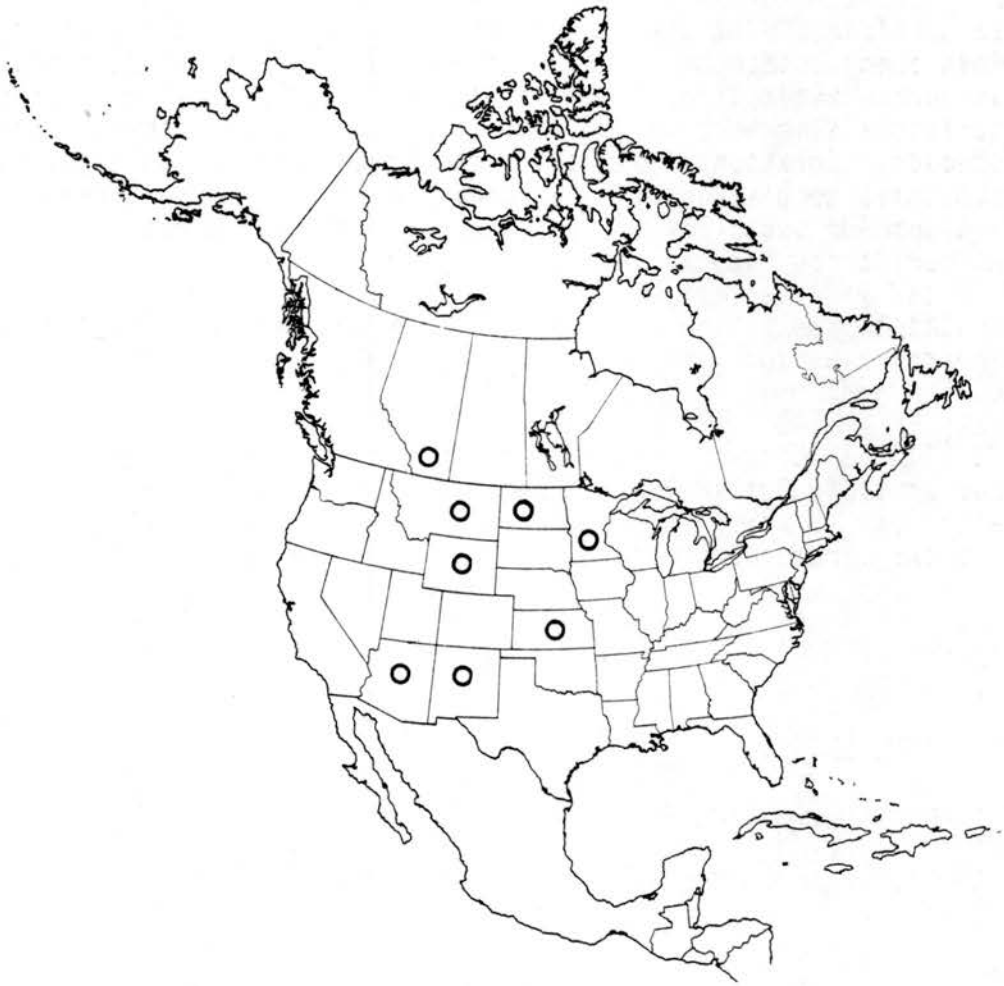
SELECTED REFERENCES:

Richman and Cutler, 1977.

PREPARED BY: Bruce Cutler

Metaphidippus arizonensis





SPECIES STATUS SHEET

SCIENTIFIC NAME: Paradamoetas fontana (Levi)

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species preferred habitat is vulnerable to human disturbance, particularly wetland drainage.

DISTRIBUTION: The species is at the western periphery of its range in Minnesota. The Ramsey Co. site in Roseville has been destroyed by urbanization. Two of the sites, Stearns Co., Rockville Tamarack Bog Nature Conservancy Preserve; and Anoka Co., Cedar Creek Natural History Area are maintained and protected. The largest populations are in Aitkin Co., Solana State Forest, particularly along the East White Pine Truck Trail. This abundance along the trail may merely reflect easy access to the habitat while keeping one's feet dry. The possibility of drainage and peat mining in this area would pose a threat to the species here.

PREFERRED HABITAT: The species occurs in wetland areas characterized by low levels of permanent shallow water.

SPECIES SPECIFIC FACTORS: It is not clear exactly what wetland habitats are preferred. It has been collected in sedge bogs (fens), shrubs near a bog, heath bogs, and a small wetland marsh without any obvious bog vegetation. Many seemingly suitable areas have been collected elsewhere in the state, and the species has not been found. Populations at Solana State Forest are very healthy and the small population at Cedar Creek (Cedar Bog Lake) appears stable. The species has a restricted range in the Great Lakes area of the United States and Canada.

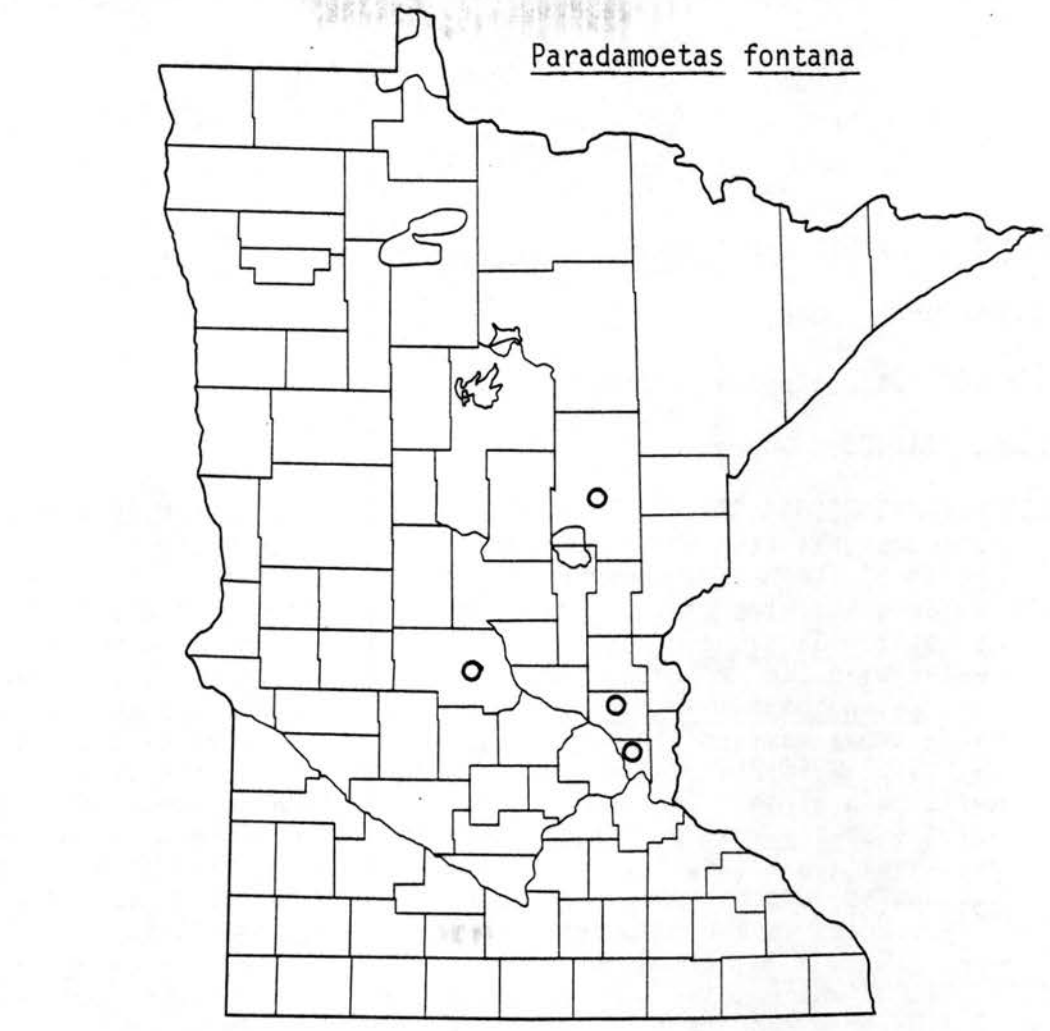
RECOMMENDATIONS: Maintain and monitor wetlands where the species is known to occur.

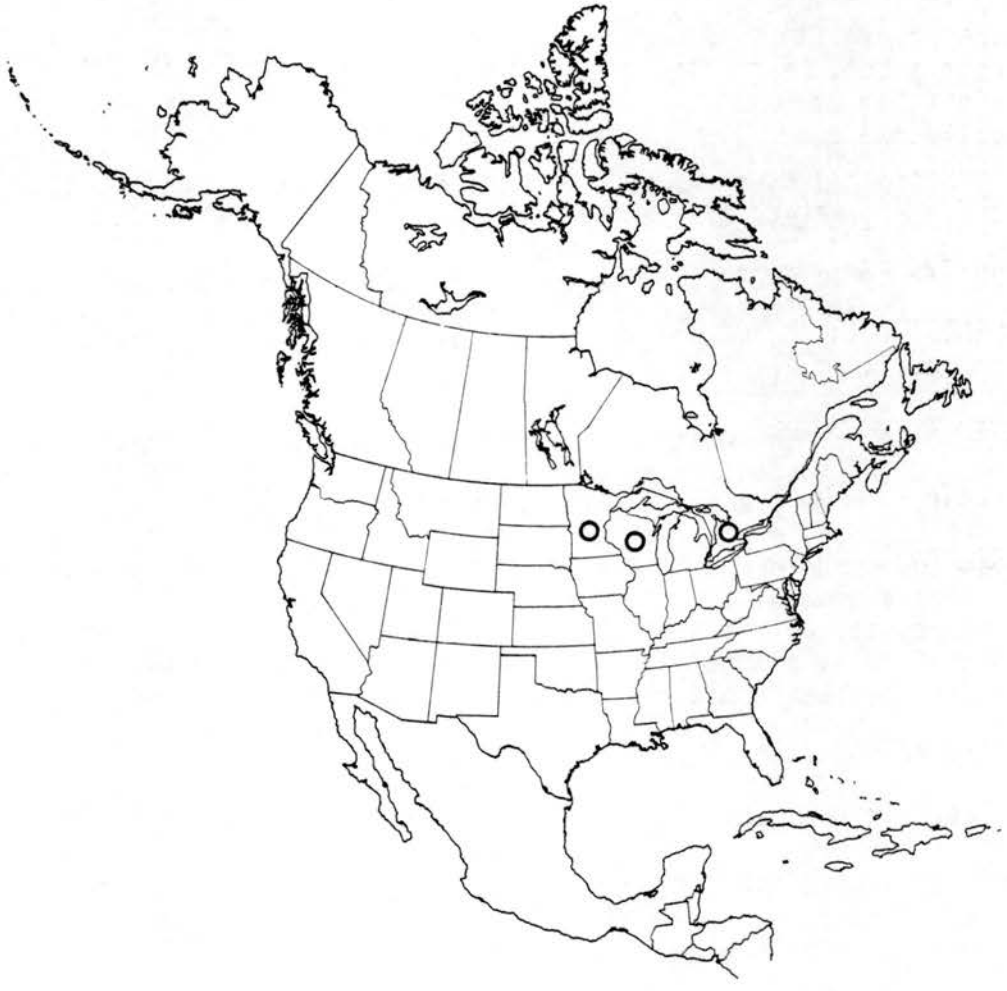
SELECTED REFERENCES:

Cutler 1981; Cutler 1982; Richman and Cutler 1977.

PREPARED BY: Bruce Cutler

Paradamoetas fontana





SPECIES STATUS SHEET

SCIENTIFIC NAME: Phidippus apacheanus Chamberlin and Gertsch.

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Found at three locations in Minnesota. The one that has been known the longest is the strip of private land just north of The Nature Conservancy holding southeast of Kellogg in Wabasha Co. The status of this area is discussed under the status sheet for Sassacus papenhoei. It has also been found on the Whitewater Wildlife Management Area in the same habitat as S. papenhoei and Metaphidippus arizonensis. The most recent find was at a site in extreme eastern Fillmore Co., about 1 1/2 miles east of Peterson, T104N, R8W, S.21, SW 1/4. All of these sites are sandy oak savanna or sand prairie. These represent the northeasternmost populations of the species. The closest known populations are in extreme southwestern Wisconsin. The species is restricted, in Minnesota, to undisturbed native prairie a rapidly diminishing habitat type. The species is known to occur in only three localities in Minnesota.

DISTRIBUTION: While this is a common species in the southern United States from Florida to California, it appears to be of local occurrence north of 30° - 35° N latitude. It is rare in the upper Midwest known only from a few localities in southwest Wisconsin (Levi and Field, 1954; Levi et al., 1958), other than the Minnesota sites.

PREFERRED HABITAT: In Minnesota the species occurs only in relatively undisturbed sand prairie. In the southern United States occurs in a great variety of open habitats.

SPECIES SPECIFIC FACTORS: Like other salticids in its habitat, it is associated with broad or compound leaved forbs, and old seed heads. Juveniles have been found in retreats on old infloresences of Lespedeza capitata.

RECOMMENDATIONS: The Whitewater Wildlife Management Area site would appear to be under adequate management, but the situation at the Wabasha Co. spot is more precarious, see comments under Sassacus papenhoei. The Fillmore Co. area is at the edge of a plowed field, but its exact status is unknown, it may be under State Forest management. The species probably occurs elsewhere in similar habitat in southeast Minnesota. It is a striking animal, the males are bright orange, and the females orange with a few black marks. Survey and inventory for this species should be conducted in sand prairie habitat.

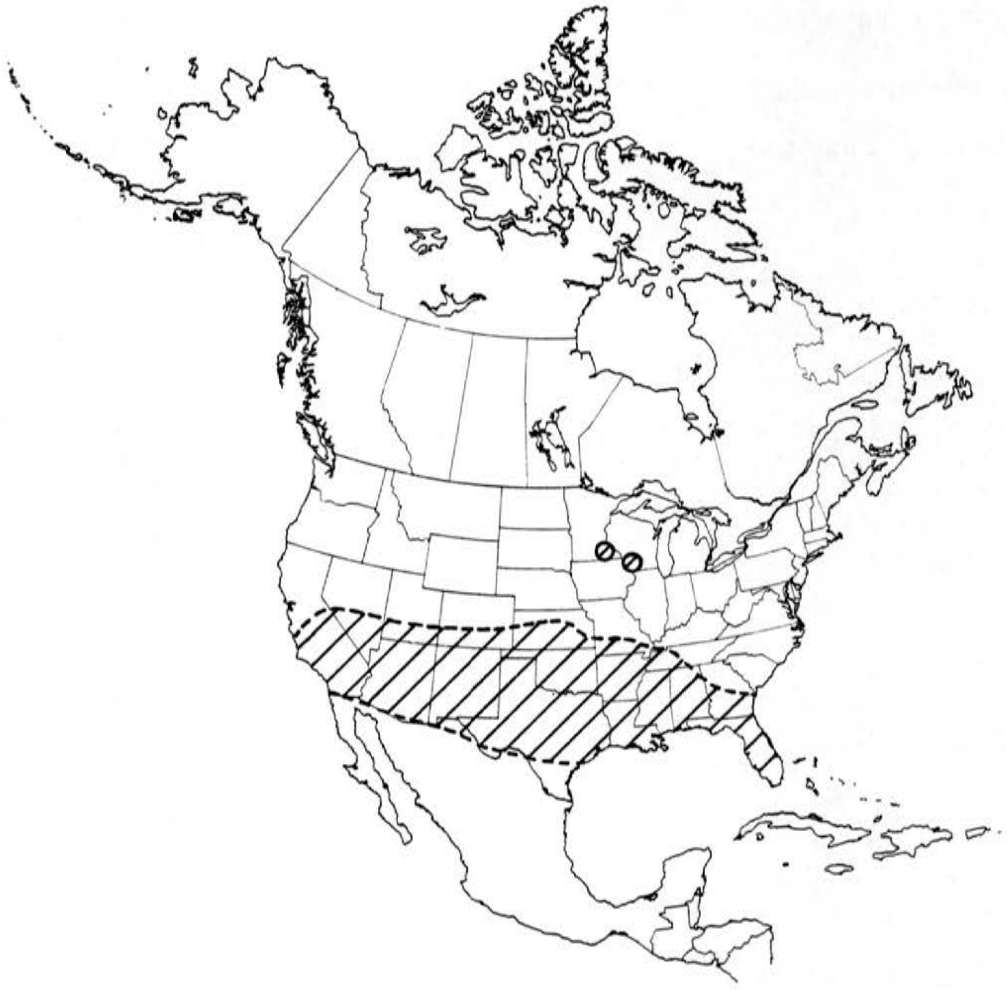
SELECTED REFERENCES:

Levi and Field, 1954; Levi et al., 1958; Richman and Cutler 1977.

PREPARED BY: Bruce Cutler

Phidippus apacheanus





SPECIES STATUS SHEET

SCIENTIFIC NAME: Phidippus pius Scheffer

COMMON NAME: None

STATE STATUS: Special Concern

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The species is restricted to unplowed prairie sites in southcentral and southwest Minnesota. This habitat is extremely vulnerable to agricultural development.

DISTRIBUTION: In Minnesota, the species occurs on two Nature Conservancy Preserves, Hole-in-the-Mountain Prairie in Lincoln Co., and Kasota Prairie in LeSueur Co. It also occurs on the Minnesota Historical Society Indian Petroglyphs site in Cottonwood Co., and on a railway right of way, 1 mile south of Pipestone in Pipestone Co. Distribution throughout North America is spotty. The species is considered to be rare, probably because of destruction of native grassland.

PREFERRED HABITAT: The species is associated with virgin or regenerating grazed prairie, in particular with native shrubs and forbs.

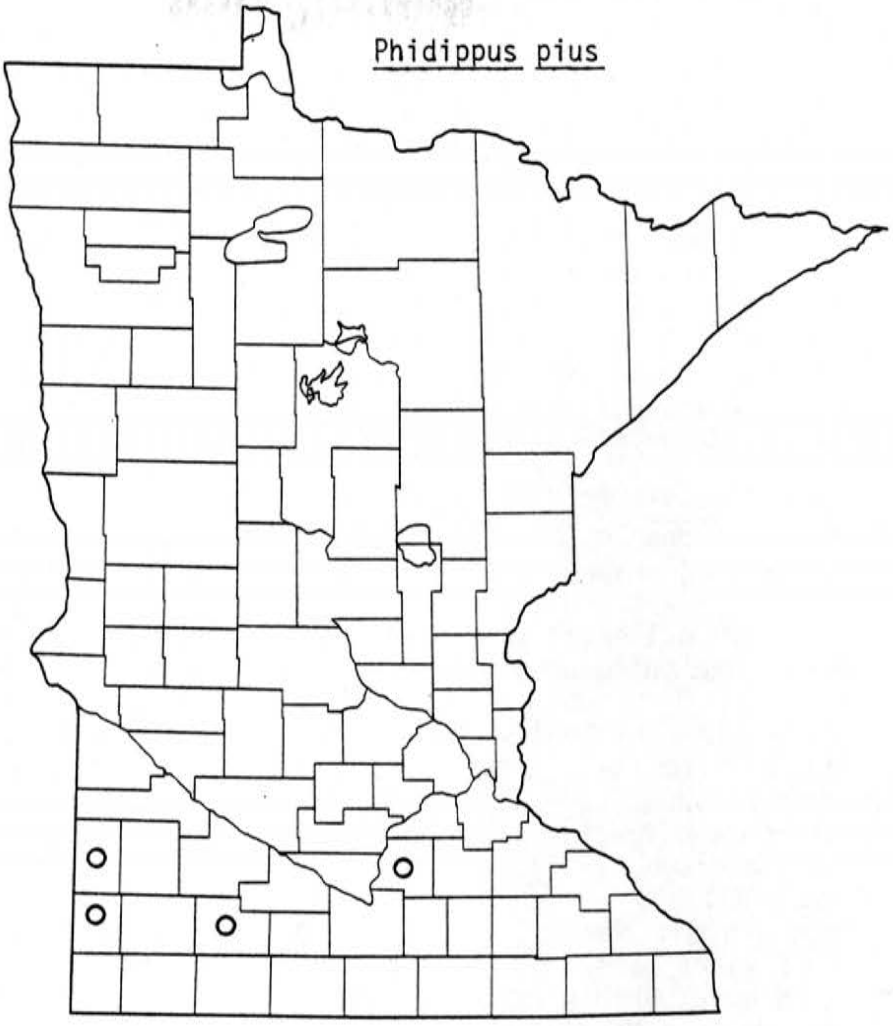
RECOMMENDATIONS: Protect and preserve tracts of native prairie to provide habitat for the species.

SELECTED REFERENCES:

Richman and Cutler, 1977.

PREPARED BY: Bruce Cutler

Phidippus pius





APPENDIX A: Supplementary List

This is a list of those species of jumping spiders known from very few records from the state and whose statewide status are too poorly known to warrant a definite listing. Some are probably common in their specific habitat, but the habitat may be poorly surveyed or relatively inaccessible. Other species may be truly rare or peripheral. Species on this list are possible candidates for inclusion in the more formal categories when more information becomes available.

Admestina tibialis (C.L. Koch) - The two localities recorded for this species in Winona Co. and Itasca Co. are both characterized by conifer plantations. I suspect that this is a true arboreal species in the crowns of conifers and only rarely comes down to collecting height. Coppel (1960) collected an incredible series of 60 females from empty cocoons of the introduced pine sawfly in Wisconsin.

Bianor aemulus (Gertsch) - The type locality and only known Minnesota specimen is from Itasca State Park (Gertsch, 1934). There are three Wisconsin records (Levi and Field, 1954; Cutler, unpubl.). All other records for the species are from Canada from New Brunswick west to Alberta (Maddison, 1977).

Euophrys diminuta (Banks) - This species in Minnesota is known only from Allison Savanna Nature Conservancy Preserve from two female specimens. This is a considerable range extension, the nearest records for this species are from Michigan and Missouri.

Hentzia palmarum (Hentz) - This species which is common in the eastern states is very sporadic in southeastern Minnesota. Our common species of the same genus is Hentzia mitrata (Hentz).

Marpissa pikei (Peckham and Peckham) - This slender grassland species has been taken twice eight years apart at the site southeast of Kellogg in Wabasha Co. This is the westernmost record of the species, further collecting should give better evidence of its status.

Pellenes americanus (Keyserlin[illegible]) - A common species in western North America, it extends eastward to Newfoundland in the boreal forest. Records are scattered east of the Rocky Mountains. The species has been taken twice in an overgrown blowout in Carlton Co.

Pellenes sp. - A possibly new species taken once at the Fertile Dunes, near Fertile in Polk Co. The species needs more study and comparison with western species.

Phidippus insignarius (C.L. Koch) - An elusive species whose requirements are not well known. Known from several localities in north central and south eastern Minnesota, and scattered records throughout the eastern United States.

Phidippus n. sp. cf. johnsoni - This species is known in Minnesota from two specimens from Itasca Co., also known from Canada. The species is currently being described. Superficially it resembles the common P. princeps (Peckham and Peckham).

Phlegra fasciata (Hahn) - A common species in the more southern states in the eastern U.S., it has been taken at four localities in southeastern Minnesota. It prefers drier sites.

Sitticus cutleri (Proszynski) - The species is known from two specimens, the type locality from Grand Rapids, and another female from the North West Territories of Canada. (Proszynski, 1980). It closely resembles S. striatus Emerton.

Sitticus finschii (L. Koch) - A species with a vast range from eastern Siberia east to New Hampshire. It is very poorly known, with few collections. In Minnesota, it is known from Itasca State Park and near Grand Rapids.

Sitticus striatus (Emerton) - The species is known from two localities in northern Minnesota, this is a close relative of S. cutleri, both species occur in Minnesota. Concerted collecting in the northern third of the state is necessary to elucidate the range of these two species.

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APPENDICES

97.488 PROTECTION OF THREATENED AND ENDANGERED SPECIES.

Subdivision 1. **Prohibition.** Notwithstanding any other provision of law, the taking, import, transport, or sale of any endangered species of wild animal, plant or parts thereof, or the sale or possession with intent to sell any article made in whole or in part from the skin, hide, or any parts of any endangered species of wild animal or plant is prohibited, except as provided in subdivisions 1a and 6.

Subd. 1a. **Application.** The provisions of subdivision 1 do not apply to plants on land classified for property tax purposes as class 3 or 3b agricultural land pursuant to section 273.13, or on ditches and roadways. The provisions of subdivision 1 do not apply to noxious weeds designated pursuant to sections 18.171 to 18.315 or to weeds otherwise designated as troublesome by the department of agriculture. When control of noxious weeds is necessary, it takes priority over the protection of endangered plant species, as long as reasonable effort is taken to preserve the endangered plant species first.

The taking or killing of an endangered plant species on land adjacent to class 3 or 3b agricultural land as a result of the application of pesticides or other agricultural chemical on the class 3 or 3b land shall not be a violation of subdivision 1, as long as reasonable care is taken in the pesticide or other chemical application to avoid impact on adjacent lands.

The accidental taking of an endangered plant, where the existence of the plant is not known at the time of the taking, shall not be a violation of subdivision 1.

For the purpose of this subdivision, class 3 or 3b agricultural land does not include timber land, waste land, or any land for which the owner receives a state paid wetlands or native prairie tax credit.

Subd. 2. **Designation.** The commissioner of natural resources, not later than January 1, 1984, by adoption of rules pursuant to chapter 14, shall designate any species of wild animal or plant as:

(1) Endangered, upon a showing that such species is threatened with extinction throughout all or a significant portion of its range; or

(2) Threatened, upon a showing that such species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range; or

(3) Species of special concern, upon a showing that while a species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range which are not listed as threatened may be included in this category along with those species which were once threatened or endangered but now have increasing or protected, stable populations.

For purposes of this section, the range of the species in Minnesota shall be a factor in determining its status as endangered, threatened or of special concern. A designation by the secretary of the interior that a species is threatened or endangered shall be a prima facie showing for the purpose of this section. Until the commissioner adopts rules, those species designated as endangered by Section 4 (c) (3) of the Endangered Species Act of 1973 (PL 93-205) at the time of enactment thereof shall be considered endangered within the meaning of this section.

The commissioner shall reevaluate the designated species list every three years after it is first adopted and make appropriate changes. In particular, the review shall consider the need for further protection of species on the species of special concern list. Species may be withdrawn from designation in the same manner that species are designated pursuant to this subdivision.

Subd. 3. **Studies.** The commissioner of natural resources may conduct such investigations as he shall deem appropriate to determine the status and requirements for survival of any resident species of wild animal or plant.

Subd. 4. **Management.** Notwithstanding any other provision of law, whenever any resident species of wild animal or plant has been designated as threatened or endangered pursuant to this section, the commissioner of natural resources may undertake management programs and in connection therewith may issue orders, related to wild animals, and adopt rules as he deems necessary to bring the species to a point at which it is no longer threatened or endangered. Subject to the provisions of subdivision 6, management programs for endangered or threatened species may include, but need not be limited to, methods and procedures such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, transplantation and regulated taking.

Subd. 5. **Enforcement.** Any peace officer or conservation officer, pursuant to chapter 626, may execute a warrant to search for and seize any goods, merchandise, plant or animal taken, sold or offered for sale in violation of this section, or any thing used in connection with a violation of this section. Seized property shall be held pending judicial proceedings. Upon conviction, seized property is forfeit. Goods, merchandise, plants or animals shall be offered to a scientific or educational institution or destroyed.

Subd. 6. **General exceptions.** The commissioner may permit, on prescribed conditions, any act otherwise prohibited by subdivision 1 if:

(1) The act is for the purpose of zoological, educational or scientific study;

(2) The act enhances the propagation or survival of the affected species;

(3) The act prevents injury to persons or property; or

(4) The social and economic benefits of the act outweigh the harm caused by it.

No member of an endangered species may be destroyed pursuant to clause (3) or (4) until all alternatives, including but not limited to live trapping and transplantation, have been evaluated and rejected. The commissioner may permit, on prescribed conditions, the propagation of a species or subspecies for its preservation. A member of a threatened or endangered species may be captured or destroyed without permit by any person when necessary in an emergency to avoid an immediate and demonstrable threat to human life or property.

The commissioner shall give any approval under this subdivision for forest management, including as part of a permit, sale, or lease of land for timber harvesting.

Subd. 7. **Application.** This section shall not apply retroactively or so as to prohibit importation into this state and subsequent possession, transport and sale of wild animals or, wild plants or parts thereof legally imported into the United States or legally acquired and exported from another territory, state, possession or political subdivision of the United States.

Subd. 8. **Violations.** A violation of this section is a misdemeanor.

History: *1971 c 825 s 1; 1974 c 465 s 1; 1981 c 285 s 1; 1982 c 424 s 17,130*

Appendix B: Laws of Minnesota 1981, Chapter 285, Section 2 *

Sec. 2. TECHNICAL COMMITTEE

The commissioner shall appoint a technical committee of not more than 30 persons with knowledge and experience in botany, zoology, and other relevant disciplines to recommend criteria for determining the special concern, endangered or threatened status of species and those species appropriate for designation. For purposes of these recommendations, the commissioner shall organize appropriate working subcommittees in various species areas. In addition, the committee shall generally advise the commissioner regarding administration of this section and shall review current programs of the department and recommend appropriate changes and new programs for restoration, recovery, habitat improvement and habitat protection for designated species. The committee shall be appointed not later than July 1, 1981, and shall recommend its list of species for designation to the commissioner and the legislature not later than January 1, 1983, and shall make a written report to the commissioner and the legislature on program recommendations prior to January 1, 1984. Members of the committee shall serve without compensation but shall be reimbursed for expenses in the same manner and amount as state employees. The committee shall terminate upon the adoption of rules designating animal species and the proposal of designated plant species to the legislature under section 97.488, subdivision 2, but in no event later than January 1, 1984.

* This provision is part of the same legislation currently codified as Minnesota Statutes Section 97.488 (1982). This provision is not included in the statutory codification because it is of temporary effect, i.e., the technical committee's existence terminates upon adoption of the rule.

APPENDIX C

MEMBERS OF THE COMMISSIONER'S ENDANGERED SPECIES TECHNICAL ADVISORY COMMITTEE MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Chairman: Dr. Harrison Tordoff
DNR Liaison: Barbara Coffin

Fish Group

Dr. James C. Underhill, Chairman
Dept. of Ecology Behavioral Biology
S-4 Zoology Building
Minneapolis, Minnesota 55455

Dr. Bob Bellig
Deaprtment of Biology
Gustavus Adolphus College
St. Peter, Minnesota 56082

Dr. Hollie Collins
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Mr. Don Wood, DNR Liaison
Department of Natural Resources
Section of Fisheries
Box 12, Centennial Office Building
St. Paul, Minnesota 55155

Herp Group

Dr. Jeffrey W. Lang, Chairman
Department of Biology
Box 8238, University Station
University of North Dakota
Grand Forks, North Dakota 58202

Mr. Mike Pappas
2755 Riverside Lane
Rochester, Minnesota 55901

Mr. Daryl Karns
Bell Museum of Natural History
10 Church Street
University of Minnesota
Minneapolis, Minnesota 55455

Mr. Mike Nehl
P.O. Box 258A
Lindstrom, Minnesota

Herp Group (con't)

Mr. Doug Wells, DNR Liaison
Department of Natural Resources
1508 4th Avenue
Windom, Minnesota 56101

Mammal Group

Dr. Elmer Birney, Chairman
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Mr. Don Christian
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Dr. Evan B. Hazard
Department of Biology
Bemidji State University
Bemidji, Minnesota 56601

Ms. Gerda Nordquist
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Ms. Katie Hirsch, DNR Liaison
Department of Natural Resources
2114 Bemidji Avenue
Bemidji, Minnesota 56601

Invertebrate Group

Dr. Bruce Cutler, Chairman
1747 Eustis
St. Paul, Minnesota 55113

Mr. Robert Dana
2618 16th Avenue South
Minneapolis, Minnesota 55407

ENDANGERED SPECIES TECHNICAL ADVISORY COMMITTEE - continued

Invertebrate Group (con't)

Mr. Ron Huber
2896 Simpson Street
St. Paul, Minnesota 55113

Dr. Robert Bright
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Ms. Lee Pfannmuller, DNR Liaison
Department of Natural Resources
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

Plant Group

Dr. Tom Morley, Chairman
Department of Botany
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Gerald Ownbey
Department of Botany
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Clifford Wetmore
Department of Botany
Box 7, Centennial Office Building
220 Biological Science Center
St. Paul, Minnesota 55108

Mr. Mark Heitlinger
The Nature Conservancy
Midwest Regional Office
328 East Hennepin Avenue
Minneapolis, Minnesota 55414

Dr. Paul Monson
Department of Biology
University of Minnesota - Duluth
Duluth, Minnesota 55812

Mr. Welby Smith, DNR Liaison
Department of Natural Resources
Natural Heritage Program
Box 11, Centennial Office Building
St. Paul, Minnesota 55155

Bird Group

Ms. Janet Green, Chairwoman
10550 Old North Shore Road
Duluth, Minnesota 55804

Dr. Harrison Tordoff
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Mr. Kim Eckert
9735 North Shore Drive
Duluth, Minnesota 55804

Dr. Daniel Svedarsky
Rural Route #3
Crookston, Minnesota 56716

Mr. Art Hawkins
Route #1, Box 240
Hugo, Minnesota 55038

Mr. Robert Janssen
10521 South Cedar Lake Road
Minnetonka, Minnesota 55343

Ms. Lee Pfannmuller, DNR Liaison
Department of Natural Resources
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

APPENDIX D

Pursuant to its mandate under laws of Minnesota 1981, Chapter 285, Section 2 (see Appendix B) the Endangered Species Technical Advisory Committee developed the following criteria to use in its assessment of wild animal and plant species of Minnesota.

Endangered:	a species threatened with extinction throughout all or a significant portion of its range.
	a species threatened with extirpation within Minnesota and dependent on a scarce, sensitive and/or exploited habitat in Minnesota and neighboring states.
Threatened:	a species likely to become endangered (based on the criteria listed for the endangered category) within the foreseeable future.
Special concern:	a species, that although not endangered or threatened, is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status.
	a species on the periphery of its range which is not listed as threatened or endangered.
	a species which was once threatened or endangered but now has increasing or protected, stable populations.
	a species whose breeding biology is affected by human activities.

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

STATEMENT OF NEED AND REASONABLENESS

In the Matter of the Proposed Adoption of Rules of the Department of Natural Resources Designating Species of Wild Animals and Plants as Endangered Threatened or Of Special Concern.

Volume II

Division of Fish and Wildlife
Section of Wildlife
Box 6 Centennial Office Building
St Paul Minnesota 55155

Notification of the public review process for this proposed list will appear in the State Register. You are invited to submit your comments to:

Department of Natural Resources
Division of Fish and Wildlife
Attn: Barbara Coffin
Natural Heritage Program
Box 6, Centennial Office Building
St. Paul, Minnesota 55155

PREFACE

The Department of Natural Resources proposes adoption of rules designating species of wild animals and plants as endangered, threatened or of special concern. Minnesota Statute 97.488 Protection of Threatened and Endangered species was revised during the 1981 Legislative session. The revision required that an official state list of endangered, threatened and special concern species be prepared for the legislature by January 1, 1984. In addition, it expanded the law to include plants as well as animals. To assist in the establishment of this list and to make recommendations to the Commissioner of Natural Resources the law stated that a volunteer technical committee of up to 30 individuals be appointed.

This document, a statement of need and reasonableness, includes the Department of Natural Resources proposed list of endangered, threatened and special concern plants and animals and supporting materials that discuss the status and distribution of each proposed endangered and threatened species. The supporting materials are the product of the six group committees - mammals, birds, amphibians and reptiles, fish, invertebrates and plants - of the volunteer Endangered Species Technical Advisory Committee. The Department's proposed list agrees, with only one exception, with the recommendations of the Endangered Species Technical Advisory Committee. In exception to the Committee's recommendations, the Department is not proposing at this time to include the invertebrate groups of jumping spiders and tiger beetles on the official state list.

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Proposed Rules: 6 MCAR Sections 1.5600 - 1.5603
- Mammals
- Birds
- Amphibians and Reptiles
- Fish
- Invertebrates
- Plants

Supporting Materials:
(including status sheets and distribution maps for each proposed endangered and threatened species)

- Mammal Group Committee Report: Volume I
- Bird Group Committee Report: Volume I
- Amphibian and Reptile Group Committee Report: Volume I
- Fish Group Committee Report: Volume I
- Invertebrate Group Committee Report: Volume I
- Plant Group Committee Report: Volume II

Appendices

A. Law: Minnesota Statutes Section 97.488, Protection of Threatened and Endangered Species
B. Laws of Minnesota 1981, Chapter 285, Section 2
C. Members of the Commissioners Endangered Species Technical Advisory Committee
D. Criteria for Listing Species - developed by the Endangered Species Technical Advisory Committee

Rules as Proposed (all new material)

6 MCAR S 1.5600 Wild animals and plants designated as endangered, threatened, or of special concern; authority.

Pursuant to Minnesota Statutes, section 97.488, the species of wild animals and plants listed in 6 MCAR SS 1.5601 to 1.5603 are designated as endangered, threatened, or of special concern, as indicated in those parts.

6 MCAR S 1.5601 Animal species.

A. Mammals. The scientific names and the common names in A. are according to the Revised Checklist of North American Mammals North of Mexico, J. K. Jones, et al., 1982. The following species of mammals are designated as:

1. Endangered: none.
2. Threatened: Canis lupus, gray wolf.
3. Of special concern:
   a. Cervus elaphus, American elk;
   b. Cryptotis parva, least shrew;
   c. Felis concolor, mountain lion;
   d. Gulo gulo, wolverine;
   e. Martes americana, marten;
   f. Microtus chrotorrhinus, rock vole;
   g. Microtus ochrogaster, prairie vole;
   h. Microtus pinetorum, woodland vole;
   i. Myotis keenii, Keens' myotis;
   j. Odocoileus hemionus, mule deer;
   k. Phenacomys intermedius, heather vole;
   l. Pipistrellus subflavus, eastern pipistrelle;
   m. Rangifer tarandus, caribou;
   n. Spilogale putorius, spotted skunk;
   o. Synaptomys borealis, northern bog lemming;
   p. Thomomys talpoides, northern pocket gopher.

B. Birds. The scientific names and the common names in B. are according to the American Ornithologists Union Checklist, 1983. The following species of birds are designated as:

1. Endangered:

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

a. Ammodramus bairdii, Baird's sparrow;

b. Anthus spragueii, Sprague's pipit;

c. Athene cunicularia, burrowing owl;

d. Calcarius ornatus, chestnut-collared longspur;

e. Charadrius melodus, piping plover;

f. Falco peregrinus, peregrine falcon.

2. Threatened:

a. Haliaeetus leucocephalus, bald eagle;

b. Lanius ludovicianus, loggerhead shrike.

3. Of special concern:

a. Ammodramus henslowii, Henslow's sparrow;

b. Ammospiza caudacutus, sharp-tailed sparrow;

c. Asio flammeus, short-eared owl;

d. Bartramia longicauda, upland sandpiper;

e. Botaurus lentiginosus, American bittern;

f. Buteo lineatus, red-shouldered hawk;

g. Coturnicops noveboracensis, yellow rail;

h. Gallinula chloropus, common moorhen;

i. Grus canadensis, sandhill crane;

j. Limosa fedoa, marbled godwit;

k. Pandion haliaetus, osprey;

l. Pelecanus erythrorhynchos, American white pelican;

m. Phalaropus tricolor, Wilson's phalarope;

n. Podiceps auritus, horned grebe;

o. Rallus elegans, king rail;

p. Seiurus motacilla, Louisiana waterthrush;

q. Sterna forsteri, Forster's tern;

r. Sterna hirundo, common tern;

s. Tympanuchus cupido, greater prairie-chicken.

C. Amphibians and reptiles. The scientific names and the common names in C. are according to Standard Common and Current Scientific Names for North American Amphibians and Reptiles, second edition, J.T. Collins, et al., 1982. The following species of amphibians and reptiles are designated as:

1. Endangered: Eumeces fasciatus, five-lined skink.

2. Threatened:

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

a. Clemmys insculpta, wood turtle;

b. Emydoidea blandingi, Blanding's turtle.

3. Of special concern:

a. Chelydra serpentina, snapping turtle;

b. Coluber constrictor, racer (blue racer);

c. Crotalus horridus, timber rattlesnake;

d. Elaphe obsoleta, rat snake (black rat snake);

e. Elaphe vulpina, fox snake;

f. Heterodon nasicus, western hognose snake;

g. Heterodon platyrhinos, eastern hognose snake;

h. Lampropeltis triangulum, milk snake;

i. Pituophis melanoleucus, gopher snake (bull snake);

j. Sistrurus catenatus, massasauga;

k. Tropidoclonion lineatum, lined snake;

l. Acris crepitans, northern cricket frog (Blanchard's cricket frog);

m. Rana catesbeiana, bullfrog;

n. Rana palustris, pickerel frog.

D. Fish. The scientific names and the common names in D. are according to A list of Common and Scientific Names of Fishes from the United States and Canada, third edition, American Fisheries Society, 1979. The following species of fish are designated as:

1. Endangered: none.

2. Threatened: none.

3. Of special concern:

a. Acipenser fulvescens (Rafinesque), lake sturgeon;

b. Ammocrypta asprella (Jordan), crystal darter;

c. Cycleptus elongatus (Le Sueur), blue sucker;

d. Etheostoma chlorosomum (Hay), bluntnose darter;

e. Fundulus sciadicus (Cope), plains topminnow;

f. Hybopsis x-punctata (Hubbs and Crowe), gravel chub;

g. Ictalurus furcatus (Le Sueur), blue catfish;

h. Lampetra appendix (DeKay), American brook lamprey;

i. Morone mississippiensis (Jordan and Evermann), yellow bass;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

j. Moxostoma duquesnei (Le Sueur), black redhorse;

k. Notropis amnis (Hubbs and Greene), pallid shiner;

l. Notropis emilae (Hay), pugnose minnow;

m. Notropis topeka (Gilbert), topeka shiner;

n. Noturus exilis (Nelson), slender madtom;

o. Polyodon spathula (Walbaum), paddlefish;

p. Scaphirhynchus platorynchus (Rafinesque), shovelnose sturgeon.

E. Butterflies. The scientific names in E. are according to A Catalogue/Checklist of the Butterflies of America North of Mexico, L.D. Miller and S.M. Brown, 1981. The following species of butterflies are designated as:

1. Endangered:

a. Hesperia assiniboia (Lyman), assiniboia skipper;

b. Hesperia uncas W.H. Edwards, uncas skipper;

c. Oeneis uhleri varuna, (W.H. Edwards) Uhler's arctic.

2. Threatened:

a. Hesperia dacotae (Skinner), Dakota skipper;

b. Hesperia ottoe W.H. Edwards, ottoe skipper;

c. Lycaeides samuelis Nabokov, Karner blue.

3. Of special concern:

a. Clossiana freija (Thunberg), freija fritillary;

b. Clossiana frigga saga (Staudinger), frigga fritillary;

c. Epidemia dorcas dorcas (W. Kirby), dorcas copper;

d. Epidemia epixanthe michiganensis (Rawson), bog copper;

e. Erebia disa mancinus Doubleday & Hewitson, disa alpine;

f. Erebia discoidalis discoidalis (W. Kirby), red-disked alpine;

g. Oarisma poweshiek (Parker), poweshiek skipper;

h. Oeneis jutta ascerta Masters & Sorensen, jutta arctic;

i. Proclossiana eunomia dawsoni (Barnes & McDunnough), bog fritillary.

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

F. Freshwater mollusks. The scientific names in F. are according to Freshwater Mollusca of Wisconsin Part II: Pelecypoda, F.C. Collins, 1982. The following species of freshwater mollusks are designated as:

1. Endangered:
   a. Lampsilis higginsi (Lea), Higgins' eye;
   b. Proptera (Potamilus) capax (Green), fat pocketbook.
2. Threatened: none.
3. Of special concern:
   a. Elliptio crassidens (Lamarck), elephant ear;
   b. Fusconaia ebena (Lea), ebony shell.

6 MCAR S 1.5602 Vascular plants.

The scientific names in A., B., and C. are according to Gray's Manual of Botany, eighth edition, M.L. Fernald, 1950, and include family designation.

A. Endangered. The following species are designated as endangered:

1. Asclepias stenophylla Gray, Asclepiadaceae;
2. Besseya bullii (Eaton) Rydb., Scrophulariaceae;
3. Cacalia suaveolens L., Asteraceae;
4. Chrysosplenium iowense Rydb., Saxifragaceae;
5. Cristatella jamesii T. & G., Capparidaceae;
6. Cypripedium arietinum R. Br., Orchidaceae;
7. Draba norvegica Gunn., Brassicaceae;
8. Eleocharis wolfii Gray, Cyperaceae;
9. Empetrum atropurpureum Fern. & Wieg., Empetraceae;
10. Erythronium propullans Gray, Liliaceae;
11. Gerardia auriculata Michx., Scrophulariaceae;
12. Hydrastis canadensis L., Ranunculaceae;
13. Isoetes melanopoda Gay & Dur., Isoetaceae;
14. Lespedeza leptostachya Engelm., Fabaceae;
15. Lesquerella ludoviciana (Nutt.) S. Wats., Brassicaceae;
16. Littorella americana Fern., Plantaginaceae;
17. Malaxis paludosa (L.) Sw., Orchidaceae;
18. Montia chamissoi (Ledeb.) Durand & Jackson,

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

Portulacaceae;

19. Napaea dioica L., Malvaceae;

20. Oryzopsis hymenoides (R. & S.) Ricker, Poaceae;

21. Osmorhiza chilensis H. & A., Apiaceae;

22. Parthenium integrifolium L., Asteraceae;

23. Platanthera flava (L.) Lindl. var. herbiola (R. Br.) Ames & Correll, Orchidaceae;

24. Platanthera leucophaea (Nutt.) Lindl., Orchidaceae;

25. Poa paludigena Fern. & Wieg., Poaceae;

26. Polygala cruciata L., Polygalaceae;

27. Polystichum braunii (Spenner) Fee var. purshii Fern., Polypodiaceae;

28. Potamogeton lateralis Morong, Potamogetonaceae;

29. Ruellia humilis Nutt., Acanthaceae;

30. Sagina nodosa (L.) fenzl ssp. borealis Crow, Caryophyllaceae;

31. Saxifraga cernua L. var. latibracteata Fern., Saxifragaceae;

32. Scleria triglomerata Michx., Cyperaceae;

33. Sedum rosea (L.) Scop. var. leedyi Rosend. & Moore, Crassulaceae;

34. Subularia aquatica L., Brassicaceae;

35. Sparganium glomeratum Laest., Sparganiaceae;

36. Sullivantia renifolia Rosend., Saxifragaceae;

37. Talinum rugospermum Holzinger, Portulaceaceae; and

38. Tofieldia pusilla (Mich.) Pers., Liliaceae.

B. Threatened. The following species are designated as threatened:

1. Allium cernuum Roth, Liliaceae;

2. Ammophila breviligulata Fern., Poaceae;

3. Androsace septentrionalis L. var. pulverulenta (Rydb.) Knuth, Primulaceae;

4. Arabis holboellii Hornem. var. retrofracta (Graham) Rydb., Brassicaceae;

5. Arenaria macrophylla Hook., Caryophyllaceae;

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

6. Arnica chionopappa Fern., Asteraceae;

7. Asclepias hirtella (Pennell) Woodson, Asclepiadaceae;

8. Asclepias sullivantii Englem., Asclepiadaceae;

9. Asplenium trichomanes L., Polypodiaceae;

10. Cacalia tuberosa Nutt., Asteraceae;

11. Carex conjuncta Boott, Cyperaceae;

12. Carex davisii Schwein. & Torr., Cyperaceae;

13. Carex hallii Olney, Cyperaceae;

14. Carex praticola Rydb., Cyperaceae;

15. Carex sterilis Willd, Cyperaceae;

16. Desmodium illinoense Gray, Fabaceae;

17. Drosera anglica Huds., Droseraceae;

18. Drosera linearis Goldie, Droseraceae;

19. Dryopteris marginalis (L.) Gray, Polypodiaceae;

20. Eleocharis olivaceae Torr., Cyperaceae;

21. Eleocharis rostellata Torr., Cyperaceae;

22. Gerardia gattingeri Sm., Scrophulariaceae;

23. Jeffersonia diphylla (L.) Pers., Berberidaceae;

24. Lycopodium porophilum Lloyd & Underwood, Lycopodiaceae;

25. Lygodesmia rostrata Gray, Asteraceae;

26. Mamillaria vivipara (Nutt.) Haw., Cactaceae;

27. Melica nitens Nutt., Poaceae;

28. Nymphaea tetragona Georgi, Nymphaeceae;

29. Pellaea atropurpurea (L.) Link, Polypodiaceae;

30. Plantago elongata Pursh, Plantaginaceae;

31. Rhynchospora capillacea Torr., Cyperaceae;

32. Rubus chamaemorus L., Rosaceae;

33. Salicornia rubra Nelson, Chenopodiaceae;

34. Saxifraga aizoon Jacq. var. neogaea Butters, Saxifragaceae;

35. Scleria verticillata Muhl., Cyperaceae;

36. Vaccinium uliginosum L. var. alpinum Bigel, Ericaceae;

37. Valeriana edulis Nutt. ssp. ciliata (T. & G.) Meyer, Valerianaceae;

38. Woodsia glabella R. Br., Polypodiaceae;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

39. Woodsia scopulina D.C. Eat., Polypodiacea; and

40. Xyris torta Sm., Xyridaceae.

C. Special concern. The following species are designated as of special concern:

1. Adoxa moschatellina L., Adoxaceae;

2. Agrostis geminata Trin., Poaceae;

3. Allium schoenoprasum L. var. sibiricum (L.) Hartm., Liliaceae;

4. Antennaria aprica Greene, Asteraceae;

5. Arenaria dawsonensis Britt., Caryophyllaceae;

6. Arethusa bulbosa L., Orchidaceae;

7. Aristida longiseta Steud., Poaceae;

8. Aristida tuberculosa Nutt., Poaceae;

9. Asclepias amplexicaulis Sm., Asclepiadaceae;

10. Astragalus flexuosus Dougl., Fabaceae;

11. Astragalus missouriensis Nutt., Fabaceae;

12. Astragalus neglectus (T. & G.) Sheld., Fabaceae;

13. Athyrium pycnocarpon (Spreng.) Tides, Polypodiaceaea;

14. Bacopa rotundifolia (Michx.) Wettst., Scrophulariaceae;

15. Baptisia leucophaea Nutt., Fabaceae;

16. Botrychium lunaria (L.) Sw., Ophioglossaceae;

17. Botrychium mormo Wagner, Ophioglossaceae;

18. Buchloe dactyloides (Nutt.) Engelm., Poaceae;

19. Carex annectens Bickn., Cyperaceae;

20. Carex exilis Dew., Cyperaceae;

21. Carex laxiculmis Schwein., Cyperaceae;

22. Carex obtusata Lilj., Cyperaceae;

23. Carex scirpiformis Mack., Cyperaceae;

24. Carex woodii Dew., Cyperaceae;

25. Cephalanthus occidentalis L., Rubiaceae;

26. Chamaerhodos nuttallii Pick., Rosaceae;

27. Cirsium hillii (Canby) Fern., Asteraceae;

28. Cladium mariscoides (Muhl.) Torr., Cyperaceae;

29. Claytonia caroliniana Michx., Portulacaceae;

APPROVED BY THE REVISOR OF STATUTES OFFICE BY:

30. Cyperus acuminatus Torr. & Hook., Cyperaceae;

31. Cypripedium candidum Muhl., Orchidaceae;

32. Decodon verticillatus (L.) Ell., Lythraceae;

33. Deschampsia flexuosa (L.) Trin., Poaceae;

34. Desmanthus illinoense (Michx.) MacM, Fabaceae;

35. Dicentra canadensis (Goldie) Walp., Fumariaceae;

36. Dodecatheon meadia L., Primulaceae;

37. Draba arabisans Michx., Brassicaceae;

38. Dryopteris goldiana (Hook.) Gray, Polypodiaceae;

39. Echinochloa walteri (Pursh.) Nash, Poaceae;

40. Eleocharis pauciflora (Lightf.) Link var. fernaldii Svenson, Cyperaceae;

41. Eryngium yuccifolium Michx., Apiaceae;

42. Euphrasia hudsoniana Fern. & Wieg., Scrophulariaceae;

43. Floerkea proserpinacoides Willd., Limnanthaceae;

44. Gentiana affinis Griseb., Gentianaceae;

45. Gentianella amarella (L.) Borner ssp. acuta (Michx.) Gillett, Gentianaceae;

46. Geocaulon lividum (Richards.) Fern., Santalaceae;

47. Glaux maritima L., Primulaceae;

48. Hamamelis virginiana L., Hamamelidaceae;

49. Haplopappus spinulosus (Pursh) DC., Asteraceae;

50. Helianthus nuttallii T. & G. ssp. rydbergii (Br.) Long, Asteraceae;

51. Hydrocotyle americana L., Apiaceae;

52. Juncus stygius L. var. americanus Buchenau, Juncaceae;

53. Leersia lenticularis Michx., Poaceae;

54. Limosella aquatica L., Scrophulariaceae;

55. Myosurus minimus L., Ranunculaceae;

56. Oenothera rhombipetala Nutt., Onagraceae;

57. Opuntia humifusa Raf., Cactaceae;

58. Orobanche fasciculata Nutt., Orobanchaceae;

59. Orobanche ludoviciana Nutt., Orobanchaceae;

60. Orobanche uniflora L., Orobanchaceae;

61. Panax quinquefolium L., Apiaceae;

62. Paronychia fastigiata Fern., Caryophyllaceae;

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

63. Pinguicula vuglaris L., Lentibulariaceae;

64. Platanthera clavellata (Michx.) Luer, Orchidaceae;

65. Poa wolfii Scribn., Poaceae;

66. Polygonum arifolium L., Polygonaceae;

67. Polygonum viviparum L., Polygonaceae;

68. Polystichum acrostichoides (Michx.) Schott., Polypodoaceae;

69. Potamogeton vaseyi Robbins, Potamogetonaceae;

70. Ranunculus lapponicus L., Ranunculaceae;

71. Rhynchospora fusca (L.) Ait. f., Cyperaceae;

72. Rudbeckia triloba L., Asteraceae;

73. Sanicula canadensis L., Apiaceae;

74. Sanicula trifoliata Bickn., Apiaceae;

75. Schedonnardus paniculatus (Nutt.) Trel., Poaceae;

76. Scutellaria ovata Hill var. versicolor (Nutt.) Fern., Lamiaceae;

77. Solidago mollis Bartl., Asteraceae;

78. Solidago sciaphila Steele, Asteraceae;

79. Spartina gracilis Trin., Poaceae;

80. Stellaria longipes Goldie, Caryophyllaceae;

81. Symphoricarpos orbiculatus Moench, Caprifoliaceae;

82. Tephrosia virginiana (L.) Pers., Fabaceae;

83. Thelypteris hexagonoptera (Michx.) Weatherby, Fabaceae;

84. Tofieldia glutinosa (Michx.) Pers., Liliaceae;

85. Tradescantia ohiensis Raf., Commelinaceae;

86. Triglochin palustris L., Juncaginaceae;

87. Trillium nivale Riddell, Liliaceae;

88. Triplasis purpurea (Walt.) Champm., Poaceae;

89. Tsuga canadensis (L.) Carr., Pinaceae;

90. Utricularia gibba L., Lentibulariaceae;

91. Verbena simplex Lehm., Verbenaceae;

92. Viola lanceolata L., Violaceae;

93. Viola novae-angliae House, Violaceae;

94. Viola nuttallii Pursh, Violaceae;

95. Waldesteinia fragarioides (Michx.) Tratt., Rosaceae;

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and

96. Xyris montana Ries., Xyridaceae.

6 MCAR S 1.5603 Lichens; mosses.

A. Lichens. The scientific names in A. are according to A Fourth Checklist of the Lichens of the Continental United States and Canada, M.E. Hale and W.L. Culberson, 1970. The following species of lichens are designated as:

1. Endangered:
   a. Buellia nigra (Fink) Sheard/[Rinodina nigra Fink];
   b. Dermatocarpon moulinsii (Mont.) Zahlbr.;
   c. Leptogium apalachense (Tuck.) Nyl.;
   d. Lobaria scrobiculata (Scop.) DC;
   e. Parmelia stictica (Del.) Nyl.;
   f. Pseudocyphellaria crocata (L.) Vain.
2. Threatened: Lobaria quercizans Michx.
3. Of special concern:
   a. Cetraria aurescens Tuck.;
   b. Cetraria oakesiana Tuck.;
   c. Cladonia pseudorangiformis Asah.;
   d. Coccocarpia cronia (Tuck.) Vain.;
   e. Parmelia stuppea Tayl.;
   f. Sticta fuliginosa (Dicks.) Ach.;
   g. Umbilicaria torrefacta (Lightf.) Schrad.

B. Mosses. The scientific names in B. are according to A New List of Mosses of North America North of Mexico, H.A. Crum, et al., 1973. The following species of mosses are designated as:

1. Endangered: Schistostegia pennata (Hedw.) Web. & Mohr.
2. Threatenened: none.
3. Of special concern:
   a. Bryoxiphium norvegicum (Brid.) Mitt.;
   b. Tomenthypnum falcifolium (Ren ex. Nich.) Tuom.

APPROVED IN THE REVISOR OF STATUTES OFFICE BY:

PLANT GROUP COMMITTEE REPORT

STATUS REPORT ON MINNESOTA'S PLANTS

A Final Report of the Plant Group Committee
Submitted to the Chairman
Endangered Species Advisory Committee
Minnesota Department of Natural Resources

December 1982

by

Mr. Welby Smith, DNR Liaison
Department of Natural Resources
Natural Heritage Program
Box 11, Centennial Office Building
St. Paul, Minnesota 55155

with group committee members

Dr. Tom Morley, Chairman
Department of Biology
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Gerald Ownbey
Department of Biology
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Clifford Wetmore
Department of Botany
220 Biological Science Center
St. Paul, Minnesota 55108

Mr. Mark Heitlinger
The Nature Conservancy
Midwest Regional Office
328 East Hennepin Avenue
Minneapolis, Minnesota 55414

Dr. Paul Munson
Department of Biology
University of Minnesota - Duluth
Duluth, Minnesota 55812

STATUS OF RARE PLANTS IN MINNESOTA

INTRODUCTION

There are about 2,000 species of vascular plants and 550 species of lichens which occur in Minnesota without the aid of cultivation. Many of these species occur only in very specific and fragile habitats, or in habitats frequently exploited by human developments. A few of these species, most notable the lichens, are extremely sensitive to airborne pollutants that may be transported many miles from their point of origin.

The native populations of these species declined drastically when the landscape of Minnesota was altered by human settlement. Activities such as logging and agriculture have eliminated most of Minnesota's original forests and 99.5% of the prairies. The widespread and often indescriminate use of herbicides has changed many wetlands and remnant grasslands into pure stands of non-native weed species. Although nearly all native plant species have suffered a decrease in populations due to habitat loss, a few species have suffered losses so great that their survival in Minnesota is in jeopardy.

To determine which species are in jeopardy, the plant group of the Endangered Species Technical Admisory Committee relied largely on plant specimens collected by Minnesota botanists over the last 120 years. These specimens are housed in the herbarium of the University of Minnesota which contains over 100,000 specimens of vascular plants and 20,000 specimens of lichens collected in Minnesota. By examining the frequency with which individual species were collected and the change over time in their frequency, the plant group was able to determine which species are the rarest, and which species show recent decline.

Species which have been collected very rarely in recent years and are known to rely on a disappearing habitat type are believed to be in the greatest danger. In many cases, this historical data was supplemented by field research conducted by members of the group. This usually involved returning to the site where a candidate species had been collected in the past to determine if the population or habitat still exists. Information concerning the status of species in neighboring states and throughout North America was also considered.

STATUS CATAGORIES

The accompanying lists contain the legislated catagories of endangered, threatened and special concern. In addition, a fourth catagory with unofficial status is presented. This catagory is termed "undetermined".

In general, species were assigned to the undetermined catagory if they appear to fit the definition of endangered, threatened or special concern, but their presence in Minnesota has not been recently verified. For the purpose of producing this list, 1960 was chosen as the cut-off date. This date is entirely artificial and does not reflect any biological process affecting plant rarity. It does, however, reflect the beginning of a period of ambitious land clearing activity and the widespread use of organic herbicides which together have done much to eliminate native habitats.

In a few cases, compelling reasons (i.e. reliable sight records) have led us to make exceptions and list species as endangered or threatened which have not been collected since 1960. This is the case with Ammophila breviligulata.

Some of the species in the undetermined catagory may now be extinct in Minnesota. This may be the case with Astragalus racemosa, Eleocharis halophila, Achillea sibirica or Triodanis leptocarpa. Other species are almost certainly extant but it will require a highly directed search to find them. This includes: Caltha natans, Osmorhiza obtusa and Selaginella selaginoides. Also in the undetermined catagory are species known to have occurred in Minnesota but their presence here may be the result of human activities. Two examples are Baptisia tinctoria (possibly introduced as a garden plant) and Gaura biennis (possibly introduced along railways and other transportation corridors).

ENDANGERED: The endangered catagory includes species which have experienced a decline in range or frequency severe enough to threaten its survival throughout all or a significant portion of its range (for the purpose of this definition the range of the species in Minnesota has been considered a factor in determining its status). This describes species such as Platanthera leucophaea and Lespedeza leptostachya which have been reduced to critically low numbers throughout their range. Also included in this catagory are species which have not suffered a large scale decline but because of their natural rarity would be immediately threatened by any future decline. This situation is exemplified by Potamogeton lateralis, Sullivantia renifolia and the midwest populations of Chrysosplenium iowense.

Some of the species in the endangered catagory occur in Minnesota at the periphery of their range and are probably secure in the center of their range. If, however, they are in danger of extinction in a significant portion of their range and if that portion of their range includes Minnesota, they may be listed as endangered. This situation is illustrated by Polygala cruciata, Isoetes melanopoda and Polystichum braunii. Because the phrase "significant portion of their range" is an integral part of the legislated definition of endangered, much consideration has been given to its interpretation. A purely objective interpretation proved impractical, but in most cases the combined range of a species in Minnesota and adjacent states and provinces was considered a significant portion of its total range. Exceptions were made for species with very large ranges as well as those with very restricted ranges. In all cases, an effort was made to apply the interpretation consistantly among the taxa.

Some species in the endangered catagory are present in Minnesota but absent from adjacent states and provinces. These species, in fact, may be disjunct from the next nearest population of their species by several hundred miles. These isolated populations have exceptional biological significance and may possess genetic material unique to the local populations. This is the case with Montia chamissoi, Sedum rosea and Saxifraga cernua.

The only species that is endangered by a species specific threat is Hydrastis canadensis (it is sought for its commerically valuable root). Most of the species are endangered because they occur in habitat types that are especially sensitive or frequently exploited. This is the case with (Parthenium integrifoluim and Platanthera flava var herbiola which have a significant portion of their range in the midwest prairie region where their native grassland habitats are fast disappearing.

THREATENED: Species in the threatened catagory exhibit patterns of geographic distribution similar to the endangered species, but the factors affecting their rarity are not as severe. Fox example, Saxifraga aizoon and Saifraga cernua are both arctic species with disjunct populations in the border lakes region of Cook County. S. aizoon occurs at 8 distinct sites along an 18 mile series of cliffs where S. cernua is restricted to a single site on one cliff face. S. cernua is considered to be in greater jeopardy because a single event (natural or otherwise) could extirpate the species from the midwest. S. aizoon, however, could presumable survive such an event because it is not restricted to a single site. On the basis of the evaluation, S. cernua is listed as endangered and S. aizoon is listed as threatened. It must be stated that threatened species may become endangered in the future if they suffer a decline in number or size of populations.

SPECIAL CONCERN: The special concern catagory generally contains species that are declining, threatened or endangered in Minnesota, but not in adjacent states or over a significant portion of their range. This is the case with Hamamelis virginiana, Tsuga canadensis and Dodecatheon meadia. Also included in the special concern catagory is a small group of species which are not threatened or endangered in Minnesota, but are threatened over a significant portion of their range. In such cases, Minnesota may be the stronghold of the species. There are four species that fit this criteria: Arethusa bulbosa, Cirsium hillii, Cypripedium candidum and Viola novae-angliae. In all cases, the preservation of special concern species is vitally important from a state point of view. Intensive efforts may be needed to prevent extirpation of these species and the resulting depletion of our state flora.

DISTRIBUTION AND RANGE MAPS

The maps accompanying this report are presented as an aid to understanding the status recommendations. The maps by themselves do not provide adequate justification for the status recommendations, but must be supplemented by the specific occurrence data presented in the status reports.

The North American maps show a generalized range for each species, but they do not infer distribution within that range. For example, a species shown to range throughout eastern North America may not occur in every state included within its range. It may be restricted to specific habitat types which are discontinuous or disjunct. Where such disjunctions are well documented, they are shown on the maps. Unfortunately, plant distributions are often poorly known and must frequently be represented by generalized maps.

The Minnesota maps show the known distribution of each endangered or threatened species in Minnesota. Each dot represents the location where a voucher specimen was collected. Sight records are excluded because they are unverifiable. Open dots represent collections dated earlier than 1960. Solid dots represent collections dated 1960 or later. If a given population has been collected several times, the date of the most recent collection is used. In a few cases, populations may be separated by only a few miles and are represented by a single dot.

RECOMMENDATIONS

Because of the large number of species being considered and the constantly changing landscape of Minnesota, the status of these species will not remain

constant. For this reason, the plant group strongly recommends that a thorough review of the plant list be conducted at three year intervals as provided for in the legislation. This review process is especially important for species in the undetermined catagory. If in the future any of the undetermined species are found to be extant in Minnesota, they should be considered for addition to the official list in an appropriate status catagory.

During the course of this project it became clear to members of the group that additional research is needed on the flora of Minnesota. Specific research needs include distribution, habitat requirements and management potential for critical species. Such research should be directed towards the production of a "conservation plan" and ultimately a "recovery plan". The production and implementation of a recovery plan would ideally result in an endangered species becoming secure within its native habitat and allow its removal from the list. However, research should not be limited to endangered species but should also include species in the threatened, special concern and undetermined catagories. One possible method of supporting such research would be in the form of grants and contracts from the DNR nongame fund. Limiting these funds to animal species neglects the largest portion of Minnesota's biotic community and ignores the primary role that plants fulfill in the maintenance of Minnesota's natural diversity.

PROPOSED LIST OF VASCULAR PLANTS CLASSIFIED AS
ENDANGERED, THREATENED OR SPECIAL CONCERN
BY THE PLANT GROUP COMMITTEE

ENDANGERED

SPECIES	FAMILY
Asclepias stenophylla Gray	Asclepiadaceae
Besseya bullii (Eaton) Rydb.	Scrophulariaceae
Cacalia suaveolens L.	Asteraceae
Chrysosplenium iowense Rydb.	Saxifragaceae
Cristatella jamesii T.&G.	Capparidaceae
Cypripedium arietinum R. Br.	Orchidaceae
Draba norvegica Gunn.	Brassicaceae
Eleocharis wolfii Gray	Cyperaceae
Empetrum atropurpureum Fern. & Wieg.	Empetraceae
Erythronium propullans Gray	Liliaceae
Gerardia auriculata Michx.	Scrophulariaceae
Hydrastis canadensis L.	Ranunculaceae
Isoetes melanopoda Gay & Dur.	Isoetaceae
Lespedeza leptostachya Engelm.	Fabaceae
Lesquerella ludoviciana (Nutt.) S. Wats.	Brassicaceae
Littorella americana Fern.	Plantaginaceae
Malaxis paludosa (L.) Sw.	Orchidaceae
Montia chamissoi (Ledeb.) Durand & Jackson	Portulacaceae
Napaea dioica L.	Malvaceae
Oryzopsis hymenoides (R.&S.) Ricker	Poaceae
Osmorhiza chilensis H.&A.	Apiaceae
Parthenium integrifolium L.	Asteraceae
Platanthera flava (L.) Lindl. var. herbiola (R.Br.) Ames & Correll	Orchidaceae
Platanthera leucophaea (Nutt.) Lindl.	Orchidaceae
Poa paludigena Fern. & Wieg.	Poaceae
Polygala cruciata L.	Polygalaceae
Polystichum braunii (Spenner) Fee var. purshii Fern.	Polypodiaceae
Potamogeton lateralis Morong	Potamogetonaceae
Ruellia humilis Nutt.	Acanthaceae
Sagina nodosa (L.) fenzl ssp. borealis Crow	Caryophyllaceae
Saxifraga cernua L. var. latibracteata Fern.	Saxifragaceae
Scleria triglomerata Michx.	Cyperaceae
Sedum rosea (L.) Scop. var. leedyi Rosend.& Moore	Crassulaceae
Subularia aquatica L.	Brassicaceae
Sparganium glomeratum Laest.	Sparganiaceae
Sullivantia renifolia Rosend.	Saxifragaceae
Talinum rugospermum Holzinger	Portulaceaceae
Tofieldia pusilla (Mich.) Pers.	Liliaceae

THREATENED

SPECIES	FAMILY
Allium cernuum Roth	Liliaceae
Ammophila breviligulata Fern.	Poaceae
Androsace septentrionalis L. var. pulverulenta (Rydb.) Knuth	Primulaceae
Arabis holboellii Hornem. var. retrofracta (Graham) Rydb.	Brassicaceae
Arenaria macrophylla Hook.	Caryophyllaceae
Arnica chionopappa Fern.	Asteraceae
Asclepias hirtella (Pennell) Woodson	Asclepiadaceae
Asclepias sullivantii Englem.	Asclepiadaceae
Asplenium trichomanes L.	Polypodiaceae
Cacalia tuberosa Nutt.	Asteraceae
Carex conjuncta Boott	Cyperaceae
Carex davisii Schwein.&Torr.	Cyperaceae
Carex hallii Olney	Cyperaceae
Carex praticola Rydb.	Cyperaceae
Carex sterilis Willd.	Cyperaceae
Desmodium illinoense Gray	Fabaceae
Drosera anglica Huds.	Droseraceae
Drosera linearis Goldie	Droseraceae
Dryopteris marginalis (L.) Gray	Polypodiaceae
Eleocharis olivaceae Torr.	Cyperaceae
Eleocharis rostellata Torr.	Cyperaceae
Gerardia gattingeri Sm.	Scrophulariaceae
Jeffersonia diphylla (L.) Pers.	Berberidaceae
Lycopodium porophilum Lloyd & Underwood	Lycopodiaceae
Lygodesmia rostrata Gray	Asteraceae
Mamillaria vivipara (Nutt.) Haw.	Cactaceae
Melica nitens Nutt.	Poaceae
Nymphaea tetragona Georgi	Nymphaeceae
Pellaea atropurpurea (L.) Link	Polypodiaceae
Plantago elongata Pursh	Plantaginaceae
Rhynchospora capillacea Torr.	Cyperaceae
Rubus chamaemorus L.	Rosaceae
Salicornia rubra Nelson	Chenopodiaceae
Saxifraga aizoon Jacq. var. neogaea Butters	Saxifragaceae
Scleria verticillata Muhl.	Cyperaceae
Vaccinium uliginosum L. var. alpinum Bigel	Ericaceae
Valeriana edulis Nutt. ssp. ciliata (T.&G.) Meyer	Valerianaceae
Woodsia glabella R. Br.	Polypodiaceae
Woodsia scopulina D.C. Eat.	Polypodiacea
Xyris torta Sm.	Xyridaceae

SPECIAL CONCERN

SPECIES	FAMILY
Adoxa moschatellina L.	Adoxaceae
Agrostis geminata Trin.	Poaceae
Allium schoenoprasum L. var. sibiricum (L.) Hartm.	Liliaceae
Antennaria aprica Greene	Asteraceae
Arenaria dawsonensis Britt.	Caryophyllaceae
Arethusa bulbosa L.	Orchidaceae
Aristida longiseta Steud.	Poaceae
Aristida tuberculosa Nutt.	Poaceae
Asclepias amplexicaulis Sm.	Asclepiadaceae
Astragalus flexuosus Dougl.	Fabaceae
Astragalus missouriensis Nutt.	Fabaceae
Astragalus neglectus (T.&G.) Sheld.	Fabaceae
Athyrium pycnocarpon (Spreng.) Tides	Polypodiaceae
Bacopa rotundifolia (Michx.) Wettst.	Scrophulariaceae
Baptisia leucophaea Nutt.	Fabaceae
Botrychium lunaria (L.) Sw.	Ophioglossaceae
Botrychium mormo Wagner	Ophioglossaceae
Buchloe dactyloides (Nutt.) Engelm.	Poaceae
Carex annectens Bickn.	Cyperaceae
Carex exilis Dew.	Cyperaceae
Carex laxiculmis Schwein.	Cyperaceae
Carex obtusata Lilj.	Cyperaceae
Carex scirpiformis Mack.	Cyperaceae
Carex woodii Dew.	Cyperaceae
Cephalanthus occidentalis L.	Rubiaceae
Chamaerhodos nuttallii Pick.	Rosaceae
Cirsium hillii (Canby) Fern.	Asteraceae
Cladium mariscoides (Muhl.) Torr.	Cyperaceae
Claytonia caroliniana Michx.	Portulacaceae
Cyperus acuminatus Torr. & Hook.	Cyperaceae
Cypripedium candidum Muhl.	Orchidaceae
Decodon verticillatus (L) Ell.	Lythraceae
Deschampsia flexuosa (L.) Trin.	Poaceae
Desmanthus illinoense (Michx.) MacM	Fabaceae
Dicentra canadensis (Goldie) Walp.	Fumariaceae
Dodecatheon meadia L.	Primulaceae
Draba arabisans Michx.	Brassicaceae
Dryopteris goldiana (Hook.) Gray	Polypodiaceae
Echinochloa walteri (Pursh.) Nash	Poaceae
Eleocharis pauciflora (Lightf.) Link var. fernaldii Svenson	Cyperaceae
Eryngium yuccifolium Michx.	Apiaceae
Euphrasia hudsoniana Fern. & Wieg.	Scrophulariaceae
Floerkea proserpinacoides Willd.	Limnanthaceae
Gentiana affinis Griseb.	Gentianaceae
Gentianella amarella (L.) Borner ssp. acuta (Michx.) Gillett	Gentianaceae
Geocaulon lividum (Richards.) Fern.	Santalaceae
Glaux maritima L.	Primulaceae

SPECIAL CONCERN (con't)

SPECIES	FAMILY
Hamamelis virginiana L.	Hamamelidaceae
Haplopappus spinulosus (Pursh) DC.	Asteraceae
Helianthus nuttallii T.&G. ssp rydbergii (Br.) Long	Asteraceae
Hydrocotyle americana L.	Apiaceae
Juncus stygius L. var. americanus Buchenau	Juncaceae
Leersia lenticularis Michx.	Poaceae
Limosella aquatica L.	Scrophulariaceae
Myosurus minimus L.	Ranunculaceae
Oenothera rhombipetala Nutt.	Onagraceae
Opuntia humifusa Raf.	Cactaceae
Orobanche fasciculata Nutt.	Orobanchaceae
Orobanche ludoviciana Nutt.	Orobanchaceae
Orobanche uniflora L.	Orobanchaceae
Panax quinquefolium L.	Apiaceae
Paronychia fastigiata Fern.	Caryophyllaceae
Pinguicula vuglaris L.	Lentibulariaceae
Platanthera clavellata (Michx.) Luer	Orchidaceae
Poa wolfii Scribn.	Poaceae
Polygonum arifolium L.	Polygonaceae
Polygonum viviparum L.	Polygonaceae
Polystichum acrostichoides (Michx.) Schott.	Polypodiaceae
Potamogeton vaseyi Robbins	Potamogetonaceae
Ranunculus lapponicus L.	Ranunculaceae
Rhynchospora fusca (L.) Ait. f.	Cyperaceae
Rudbeckia triloba L.	Asteraceae
Sanicula canadensis L.	Apiaceae
Sanicula trifoliata Bickn.	Apiaceae
Schedonnardus paniculatus (Nutt.) Trel.	Poaceae
Scutellaria ovata Hill var. versicolor (Nutt.) Fern.	Lamiaceae
Solidago mollis Bartl.	Asteraceae
Solidago sciaphila Steele	Asteraceae
Spartina gracilis Trin.	Poaceae
Stellaria longipes Goldie	Caryophyllaceae
Symphoricarpos orbiculatus Moench	Caprifoliaceae
Tephrosia virginiana (L.) Pers.	Fabaceae
Thelypteris hexagonoptera (Michx.) Weatherby	Fabaceae
Tofieldia glutinosa (Michx.) Pers.	Liliaceae
Tradescantia ohiensis Raf.	Commelinaceae
Triglochin palustris L.	Juncaginacea
Trillium nivale Riddell	Liliaceae

SPECIAL CONCERN (con't)

SPECIES	FAMILY
Triplasis purpurea (Walt.) Champm.	Poaceae
Tsuga canadensis (L.) Carr.	Pinaceae
Utricularia gibba L.	Lentibulariaceae
Verbena simplex Lehm.	Verbenaceae
Viola lanceolata L.	Violaceae
Viola novae-angliae House	Violaceae
Viola nuttallii Pursh	Violaceae
Waldesteinia fragarioides (Michx.) Tratt.	Rosaceae
Xyris montana Ries.	Xyridaceae

STATUS UNDETERMINED

SPECIES

Achillea sibirica Ledeb.	Asteraceae
Agrostis hyemalis (Walt.) BSP.	Poaceae
Anemone multifida Poir	Ranunculaceae
Asclepias purpurascens L.	Asclepiadaceae
Aster pilosus Willd.	Asteraceae
Aster shortii Lindl.	Asteraceae
Aster undulatus L.	Asteraceae
Astragalus racemosus Pursh	Fabaceae
Astragalus tennellus Pursh	Fabaceae
Baptisia tinctoria (L.) R.Br.	Fabaceae
Bartonia virginica (L.) BSP.	Gentianaceae
Bidens discoidea (T.&G.) Britt.	Asteraceae
Botrychium lanceolatum (Gmel.) Angstr.	Ophioglossaceae
Calamagrostis lacustris (Kearney) Nash	Poaceae
Calamagrostis purpurascens R.Br.	Poaceae
Caltha natans Pall.	Ranunculaceae
Carex crus-corvi Kunz.	Cyperaceae
Carex formosa Dew.	Cyperaceae
Carex garberi Fern.	Cyperaceae
Carex katahdinensis Fern.	Cyperaceae
Carex laevivaginata (Kukenth.) Mack.	Cyperaceae
Carex lurida Wohlemb.	Cyperaceae
Carex michauxiana Boeckl.	Cyperaceae
Carex pallescens L.	Cyperaceae
Carex plantaginea Lam.	Cyperaceae
Carex rossii Boott	Cyperaceae
Carex squarrosa L.	Cyperaceae
Carex supina Willd.	Cyperaceae
Carex xerantica Bailey	Cyperaceae
Castilleja septentrionalis	Scrophulariaceae
Crataegus douglasii Lindl.	Rosaceae
Cymopteris acaulis (Pursh.) Raf.	Apiaceae
Desmodium cuspidatum (Muhl.) Loud. var. longifolium (T.&G.) Schub.	Fabaceae
Desmodium nudiflorum (L.) DC.	Fabaceae
Didiplis diandra (Nutt.) Wood.	Lythraceae
Eleocharis halophila Fern.&Brack.	Cyperaceae
Eleocharis nitida Fern.	Cyperaceae
Eleocharis parvula (R.&S.) Link	Cyperaceae
Empetrum nigrum L.	Empetraceae
Eupatorium sessilifolium L. var. brittonianum Porter	Asteraceae
Euphorbia missurica Raf.	Euphorbiaceae
Festuca paradoxa Desv.	Poaceae
Gaura biennis L.	Onagraceae
Gentiana macounii Holm.	Gentianaceae
Gleditsia triacanthos L.	Fabaceae

STATUS UNDETERMINED (con't)

SPECIES	FAMILY
Hedeoma pulegioides (L.) Pers.	Lamiaceae
Heteranthera limosa (Sw.) Willd.	Pontederiaceae
Iodanthus pinnatifidus (Michx.) Steud	Brassicaceae
Juncus articulatus L.	Juncaceae
Juncus brachycarpus Engelm.	Juncaceae
Juncus marginatus Rostk.	Juncaceae
Lactuca floridana (L.) Gaertn.	Asteraceae
Listera auriculata Wieg.	Orchidaceae
Listera convallarioides (Swartz) Nutt.	Orchidaceae
Luzula parviflora (Ehrh.) Desv.	Juncaceae
Marsilea mucronata A.Br.	Marsileaceae
Monolepsis nuttalliana (R.&S.) Greene	Chenopodiaceae
Muhlenbergia uniflora (Muhl.) Fern.	Poaceae
Myriophyllum tenellum Bigel.	Haloragaceae
Najas gracillima (A.Br.) Magnus	Najadaceae
Oenothera laciniata Hill	Onagraceae
Osmorhiza obtusa (C.&R.) Fern.	Apidaceae
Oxytropis viscida Nutt.	Fabaceae
Paronychia canadensis (L.) Wood	Caryophyllaceae
Penstemon digitalis Nutt.	Scrophulariaceae
Phacelia franklinii (R.Br.) Gray	Hydrophyllaceae
Polemonium occidentale Green var. lacustre (Wherry) Lakela	Polemoniaeae
Polygonum careyi Olney	Polygonaceae
Polytaenia nuttallii DC.	Apiaceae
Potamogeton bicupulatus Fern.	Potamogetonaceae
Potamogeton diversifolius Raf.	Potamogetonaceae
Potentilla effusa Dougl.	Rosaceae
Potentilla nicolletii (S.Wats.) Sheld.	Rosaceae
Prenanthes crepidinea Michx.	Asteraceae
Psoralea tenuiflora Pursh.	Fabaceae
Pyrola minor L.	Pyrolaceae
Quercus prinoides Willd. var. acuminata (Michx.) Gl.	Fagaceae
Rorippa sessiliflora (Nutt.) Hitchc.	Brassicaceae
Rotala ramosior (L.) Koehne	Lythraceae
Sagittaria graminea Michx.	Alismataceae
Salix pellita Anderss.	Salicaceae
Scirpus pedicellatus Fern.	Cyperaceae
Selaginella selaginoides (L.) Link	Selaginellaceae
Senecio canus Hook.	Asteraceae
Senecio indecorus Greene	Asteraceae
Silene nivea (Nutt.) Otth	Caryophyllaceae
Tillaea aquatica L.	Crassulaceae
Triodanis leptocarpa (Nutt.) Nieuwl.	Campanulaceae
Vernonia baldwini Torr. var. interior (Sm.) Schub.	Asteraceae

Proposed List of Mosses and Lichens - Classified as
Endangered, Threatened and Special Concern
by the Plant Group Committee

Lichens

ENDANGERED

Buellia nigra (Fink) Sheard (*Rinodina nigra* Fink)
Dermatocarpon moulinsii (Mont.) Zahlbr.
Leptogium apalachense (Tuck.) Nyl.
Lobaria scrobiculata (Scop.) DC
Parmelia stictica (Del.) Nyl.
Pseudocyphellaria crocata (L.) Vain.

THREATENED

Lobaria quercizans Michx.

SPECIAL CONCERN

Cetraria aurescens Tuck.
Cetraria oakesiana Tuck.
Cladonia pseudorangiformis Asah.
Coccocarpia cronia (Tuck.) Vain.
Parmelia stuppea Tayl.
Sticta fuliginosa (Dicks.) Ach.
Umbilicaria torrefacta (Lightf.) Schrad.

UNDETERMINED

Sticta weigelii (Ach.) Vain.

Mosses

ENDANGERED

Schistostegia pennata (Hedw.) Web. & Mohr

THREATENED

None

SPECIAL CONCERN

Bryoxiphium norvegicum (Brid.) Mitt.
Tomenthypnum falcifolium (Ren ex. Nich.) Tuom.

Vascular Plants

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Allium cernuum* Roth

FAMILY: Liliaceae

COMMON NAME: Wild Onion

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although this species is wide ranging, its distribution in the midwest is quite local. It is rare or uncommon in adjacent states and was only recently discovered in Minnesota. The single Minnesota population is small but the site is in public ownership and protection of its habitat may be possible.

PREFERRED HABITAT IN MINNESOTA: This species occurs on wooded slopes.

RECOMMENDATIONS: An effort should be made to secure protection for the only Minnesota population of this species.

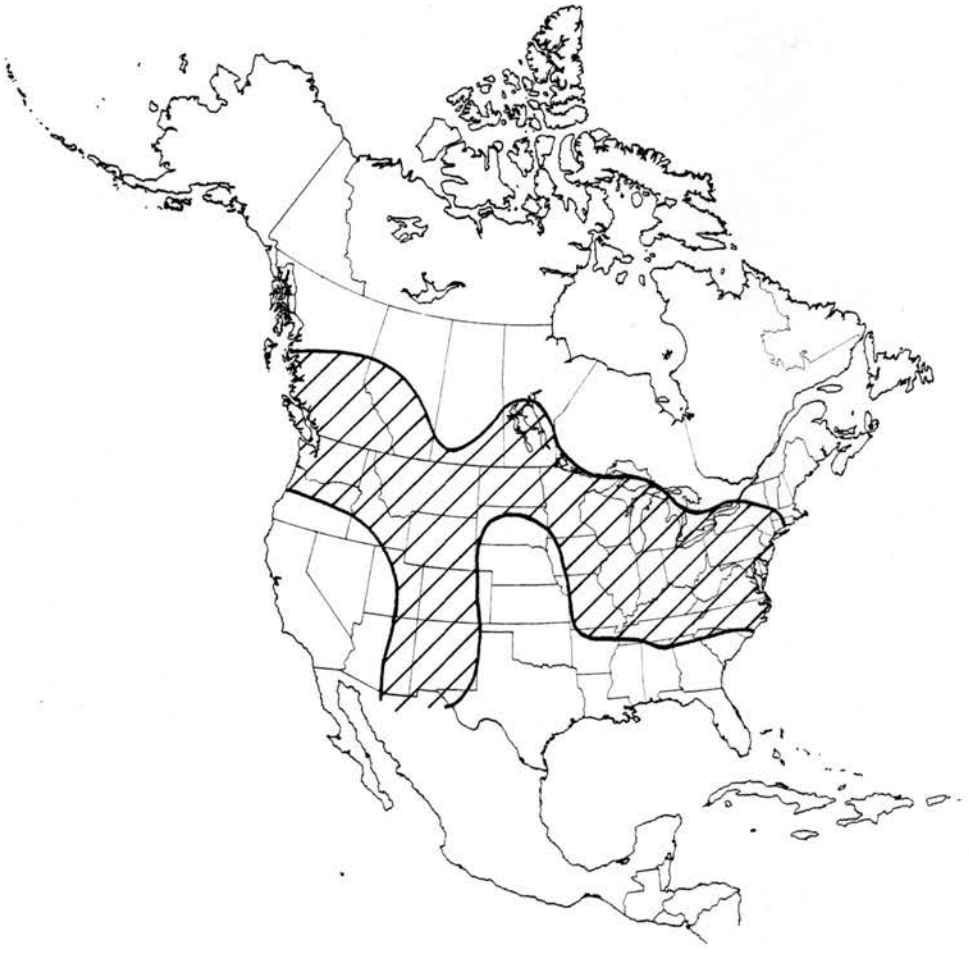
SELECTED REFERENCES:

Jacobsen, T. D. 1979. Numerical analysis of variation between *Allium cernuum* and *Allium stellatum* (Liliaceae). Taxon 28(5/6):517-523.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Allium cernuum Roth





SPECIES STATUS SHEET

SCIENTIFIC NAME: Ammophila breviligulata Fern.

FAMILY: Poaceae

COMMON NAME: Beach Grass

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species reaches Minnesota at the extreme western edge of its range. Its distribution inland is limited to sensitive dune habitats associated with the Great Lakes, and its only population in the state occurs on Minnesota Point in Duluth. Although it appears to be well established at this site, its proximity to residential and commercial areas may make it vulnerable to land development and other disturbances. It may also be threatened by a nonnative strain of this species which has been introduced on Minnesota Point to stabilize the dunes.

PREFERRERD HABITAT IN MINNESOTA: The population on Minnesota Point occurs on sand dunes on the shore of Lake Superior.

RECOMMENDATIONS: The population of A. breviligulata on Minnesota Point needs to be censused. Land use trends should be studied to determine the extent of the threat to its habitat.

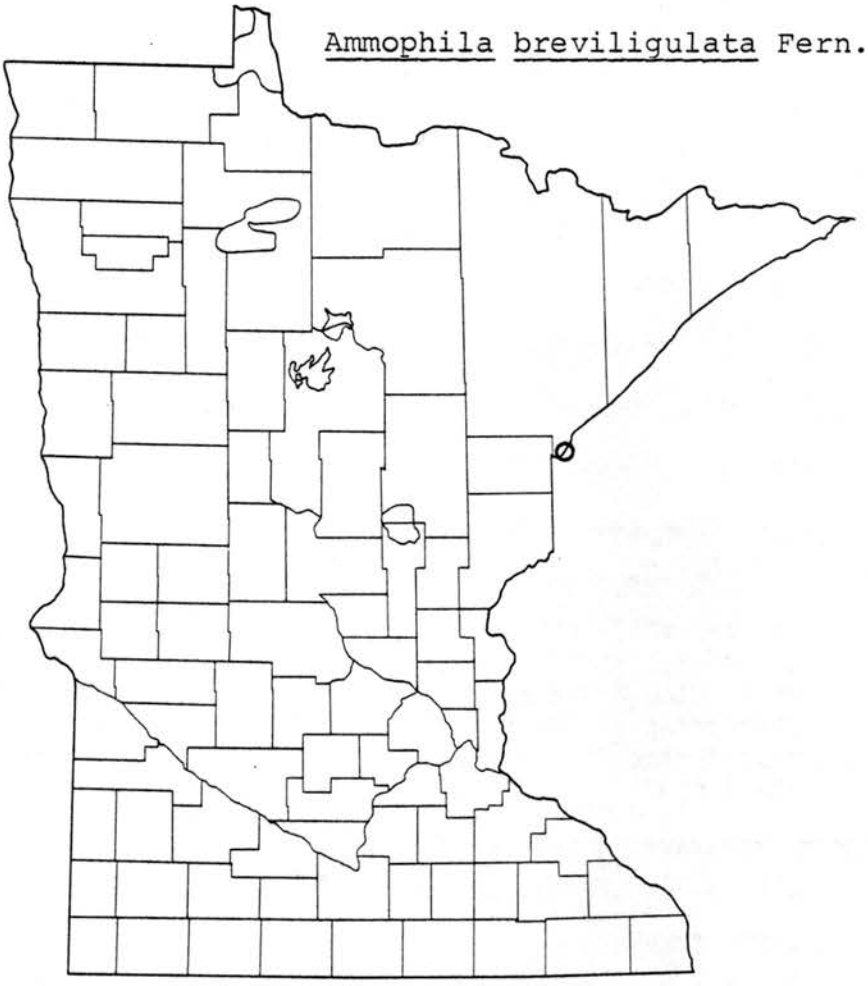
SELECTED REFERENCES:

Dore, W. G. and J. McNeill. 1980. Grasses of Ontario. Agriculture Canada, Ottawa.

Guire, K. E. and E. G. Voss. 1963. Distribution of distinctive shoreline plants in the Great Lakes region. Mich. Bot. 2:99114.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Ammophila breviligulata Fern.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Androsace septentrionalis L. var. puberulenta (Rydb.) Knuth

FAMILY: Primulaceae

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: In Minnesota, this species is restricted both geographically and ecologically. Known occurrences are limited to Kittson and Roseau Counties where hundreds of square miles of native habitat are being converted to agricultural use each year. These lands had previously been thought unsuitable for agricultural development because of their low productivity and high susceptibility to erosion. Recent trends in land use, however, indicate that even these marginal lands will continue to be exploited. There are five historical collections of this species, none since 1960.

PREFERRED HABITAT IN MINNESOTA: This species occurs in sand prairies and on gravel ridges.

RECOMMENDATIONS: The possible occurrence of this species on protected public lands in northwestern Minnesota needs to be investigated.

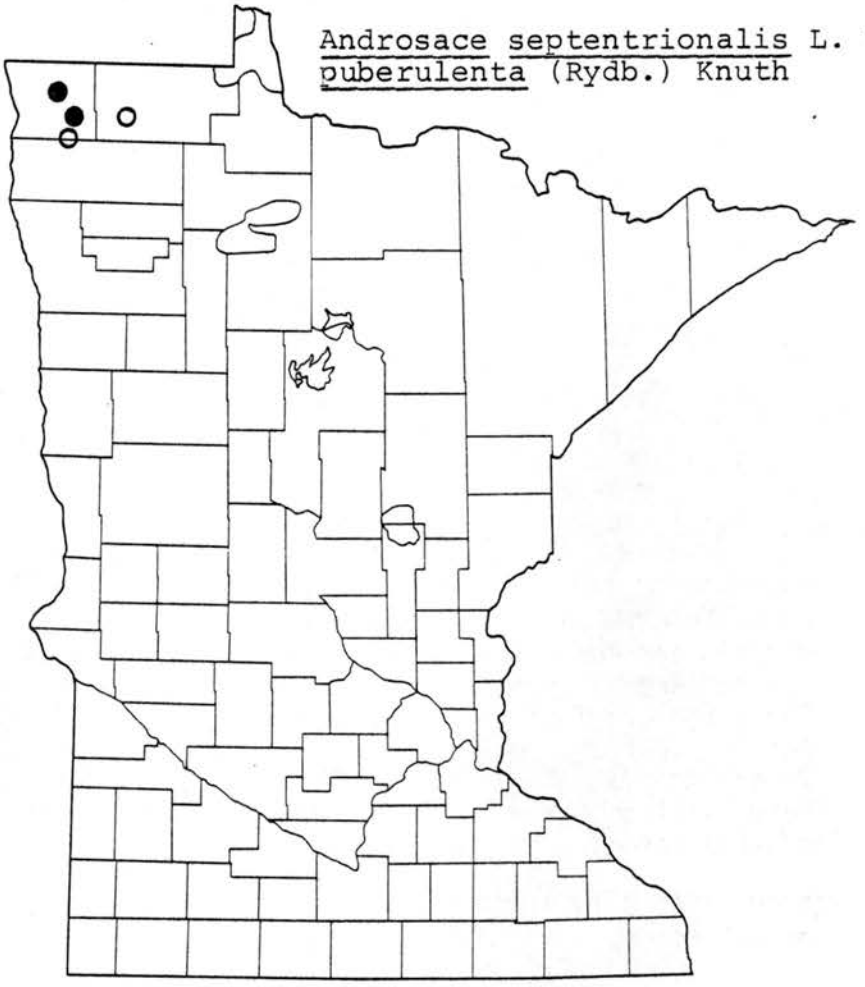
SELECTED REFERENCES:

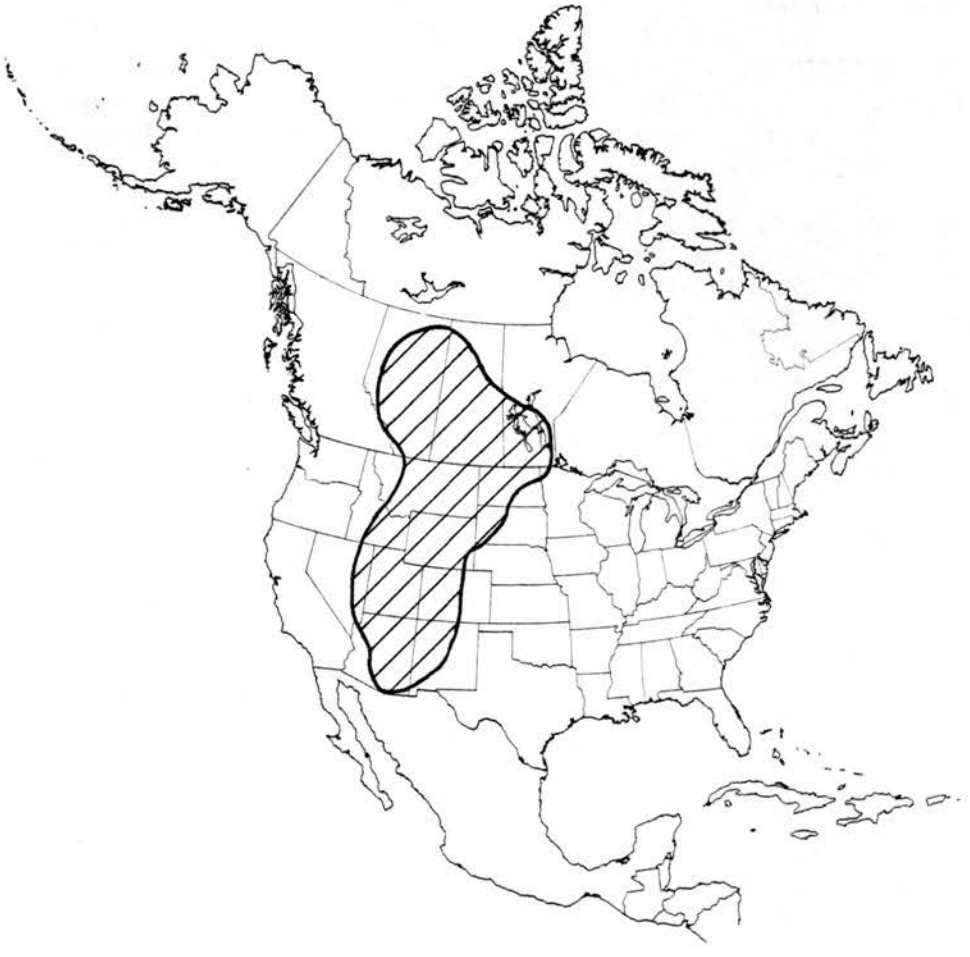
Moore, J. W. 1966. A provisional list of flowering plants, ferns and fern allies of Kittson County, Minnesota. Dept. of Bot., Univ. of Mn., Minneapolis.

Robbins, G.T. 1944. North American species of Androsace. Am. Midl. Nat. 32:137-163.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Androsace septentrionalis L. var. puberulenta (Rydb.) Knuth





SPECIES STATUS SHEET

SCIENTIFIC NAME: Arabis holboellii Hornem. var. retrofracta (Graham) Rydb.

FAMILY: Brassicaceae

COMMON NAME:

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species has wide distribution but is characteristically a species of the plains and cordillaras. It is quite rare and local in the Great Lakes Region. One of the two Cook County populations was verified in 1980 and appears to be secure. One of the two populations in Kittson County was discovered in 1982 and efforts are being made to preserve its habitat.

PREFERRED HABITAT: The Kittson County populations occur on dry prairies and dunes. The populations in Cook County occurs in crevices on north-facing cliffs.

RECOMMENDATIONS: The preservation of critical sand dune habitat in Kittson County may be necessary to ensure the survival of this species in western Minnesota.

SELECTEDREFERENCES:

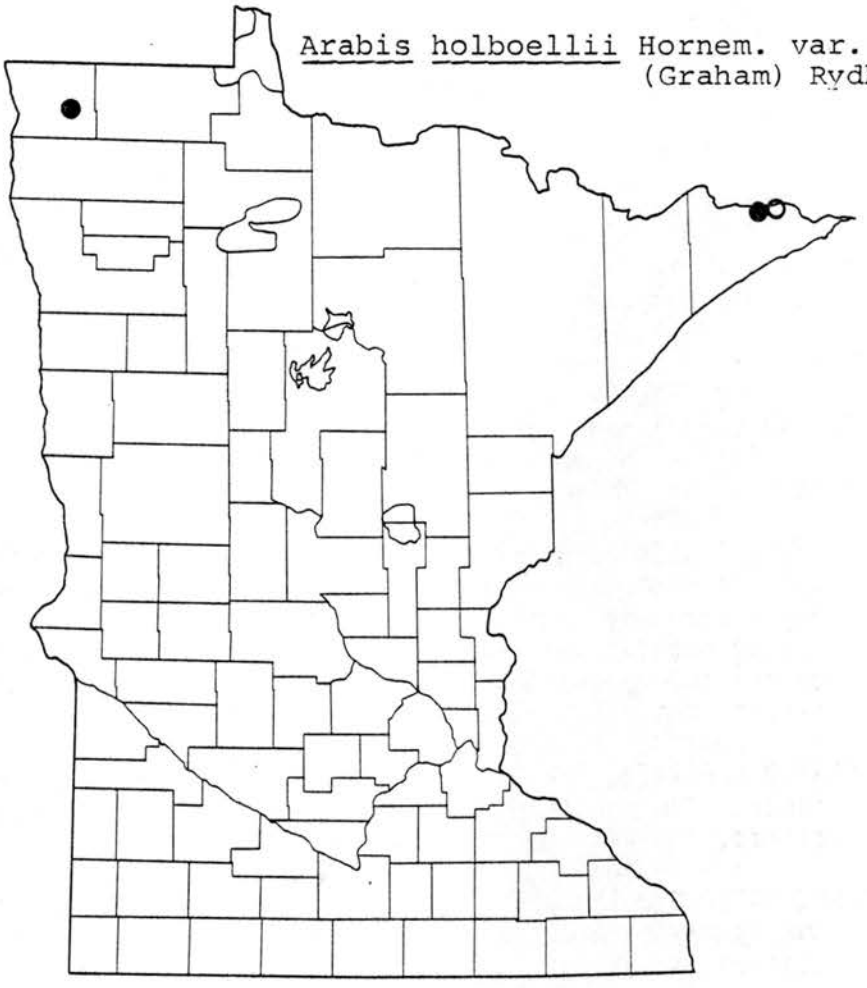
Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

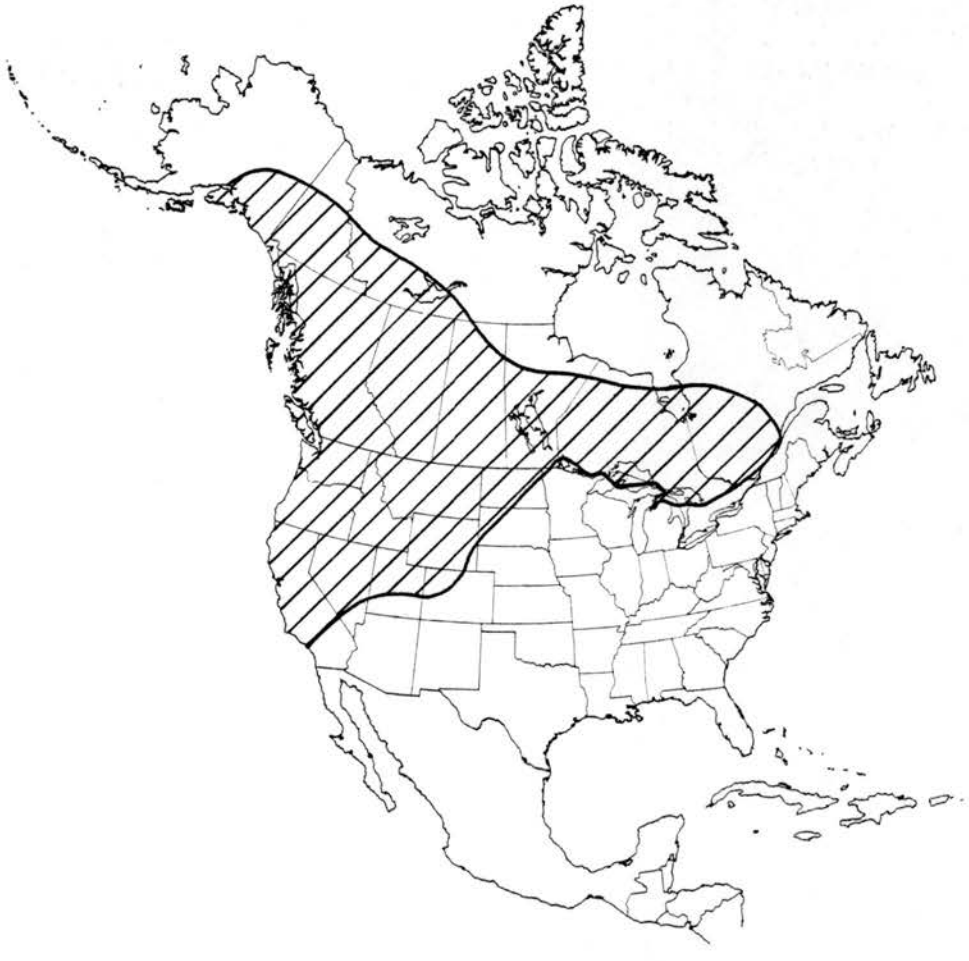
Hopkins, M. 1937. Arabis in eastern and central North America. Rhodora 39:63-98; 106-148; 155-186.

Marquis, R. J. and E. G. Voss. 1981. Distribution of some western North American plants disjunct in the Great Lakes region. Mich. Bot. 20(2):53-82.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Arabis holboellii Hornem. var. retrofracta (Graham) Rydb.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Arenaria macrophylla* Hook.

FAMILY: Caryophyllaceae

COMMON NAME: Broadleaved Sandwort

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species is most typically found in the alpine and subarctic regions of northwestern North America. Populations in central and eastern North America are local and often disjunct. One of the populations in Lake County is presumed to have been destroyed when its forest habitat was clearcut in 1976. Extant populations are probably restricted to the Border Lakes area and are believed to be small.

PREFERRED HABITAT IN MINNESOTA: Four of the collections are from crevices in dry cliffs. The fifth collection is from an aspen woods.

RECOMMENDATIONS: All of the populations need to be revisited and their status reevaluated.

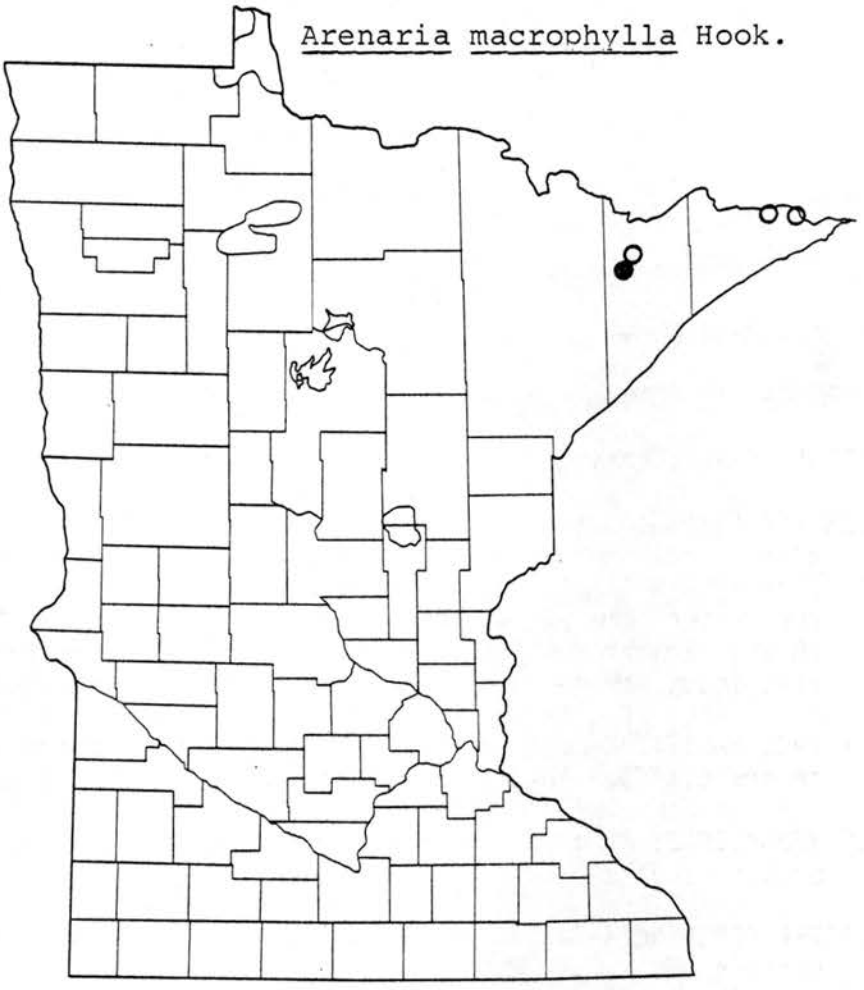
SELECTED REFERENCES:

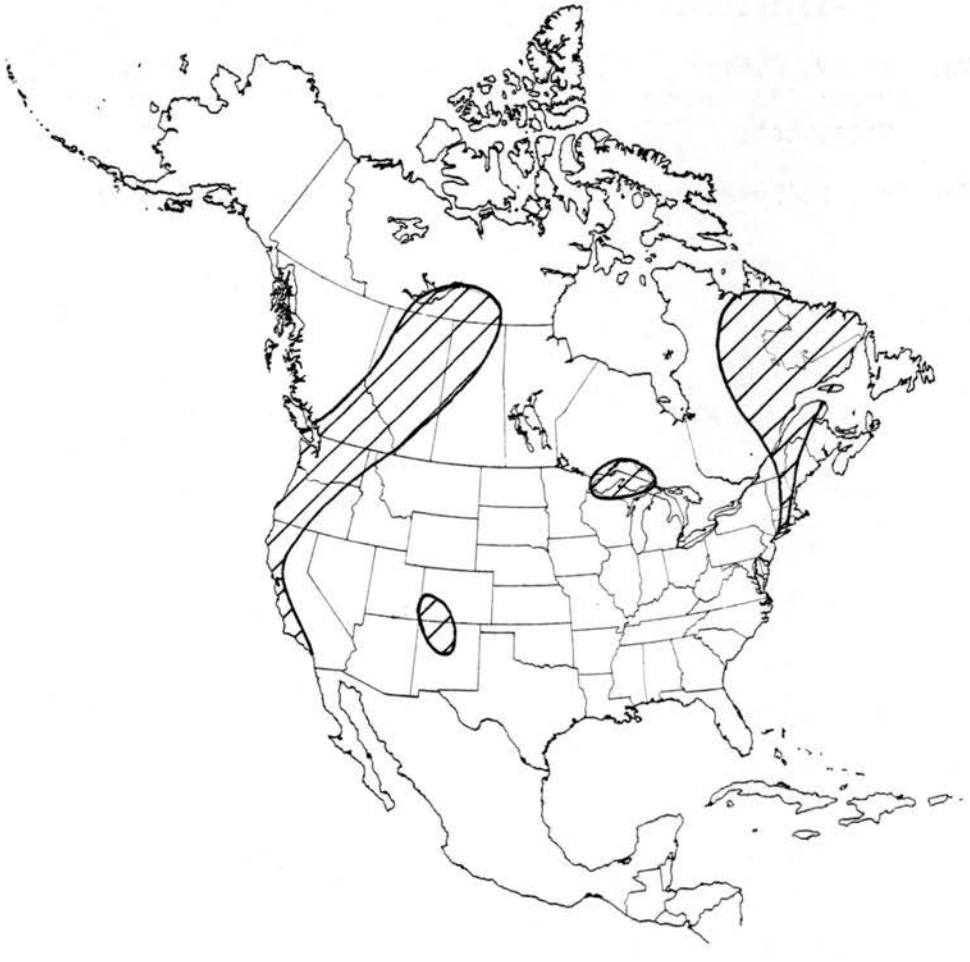
Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, Northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

Marquis, R. J. and E. G. Voss. 1981. Distributions of some western North American plants disjunct in the Great Lakes Region. Mich. Bot. 20(2):53-79.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Arenaria macrophylla Hook.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Arnica chionopappa Fern. [Arnica lonchophylla Greene]

FAMILY: Asteraceae

COMMON NAME: Arnica

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota near Clearwater Lake (Cook County) in 1932. It was next found on the shore of Lake Superior near Silver Bay (Lake County) in 1938. The third population was found in 1941 along the Gooseberry River (Lake County) near where it enters Lake Superior. None of these three populations have been collected recently, although there is a reliable sight record from Gooseberry State Park for 1981. These populations are the only ones reported from the Great Lakes region and are hundreds of miles from the next nearest population.

PREFERRED HABITAT IN MINNESOTA: The Minnesota collections of this species are from north-facing basalt and slate cliffs.

RECOMMENDATIONS: A search should be made for the three documented populations of this species to confirm their existence and assess their status.

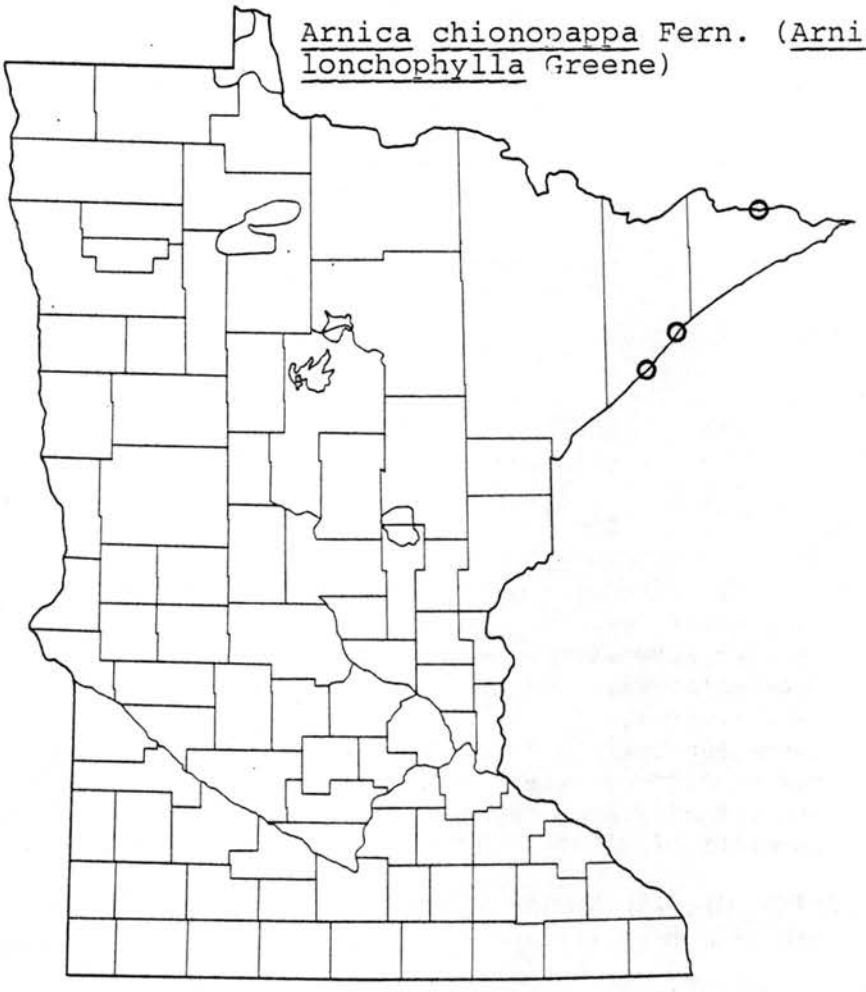
SELECTED REFERENCES:

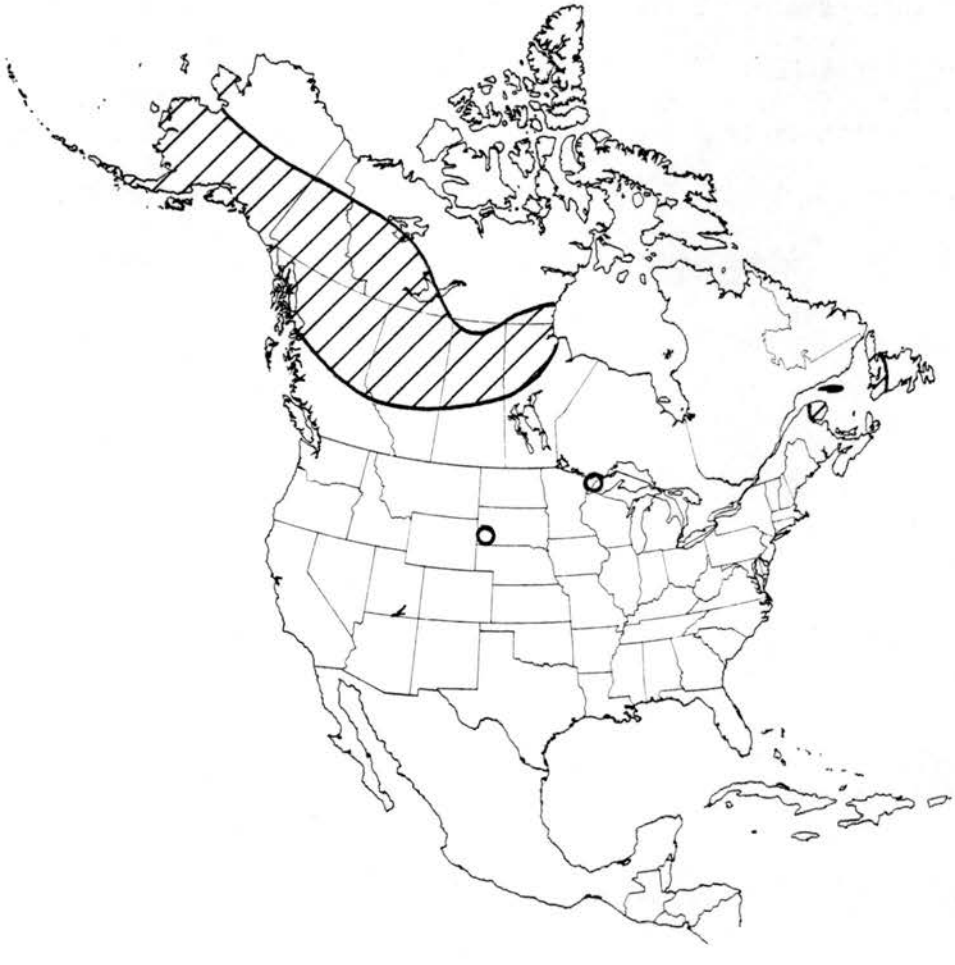
Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55: 21-55; 63-101; 116-154; 161-201.

Maguire, B. 1943. A monograph of the genus Arnica. Brittonia 4:386-510.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Arnica chionopappa Fern. (Arnica lonchophylla Greene)





SPECIES STATUS SHEET

SCIENTIFIC NAME: Asclepias hirtella (Pennell) Woodson

FAMILY: Asclepiadaceae

COMMON NAME: Green Milkweed

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: A literature citation had previously credited this species with occurring in Minnesota (Woodson 1954), but no supporting specimen had been seen in Minnesota herbaria. In 1978, however, the species was discovered in a native habitat at Cartney Wildlife Management Area (Mower County). The population consists of about 50-100 plants and appears to be well established. The site has been registered with the Minnesota Natural Heritage Register Program and is currently protected from major human disturbance. Intensive searches of remnant prairies in southeastern Minnesota have failed to locate any additional populations.

PREFERRED HABITAT IN MINNESOTA: The site at Cartney WMA is an unbroken mesic prairie that had been grazed by cattle until the early 1960's.

RECOMMENDATIONS: Because this species was only recently re-discovered in Minnesota very little is known about the status of its population. For this reason it should be closely monitored to determine its response to typical prairie management techniques such as burning and mowing.

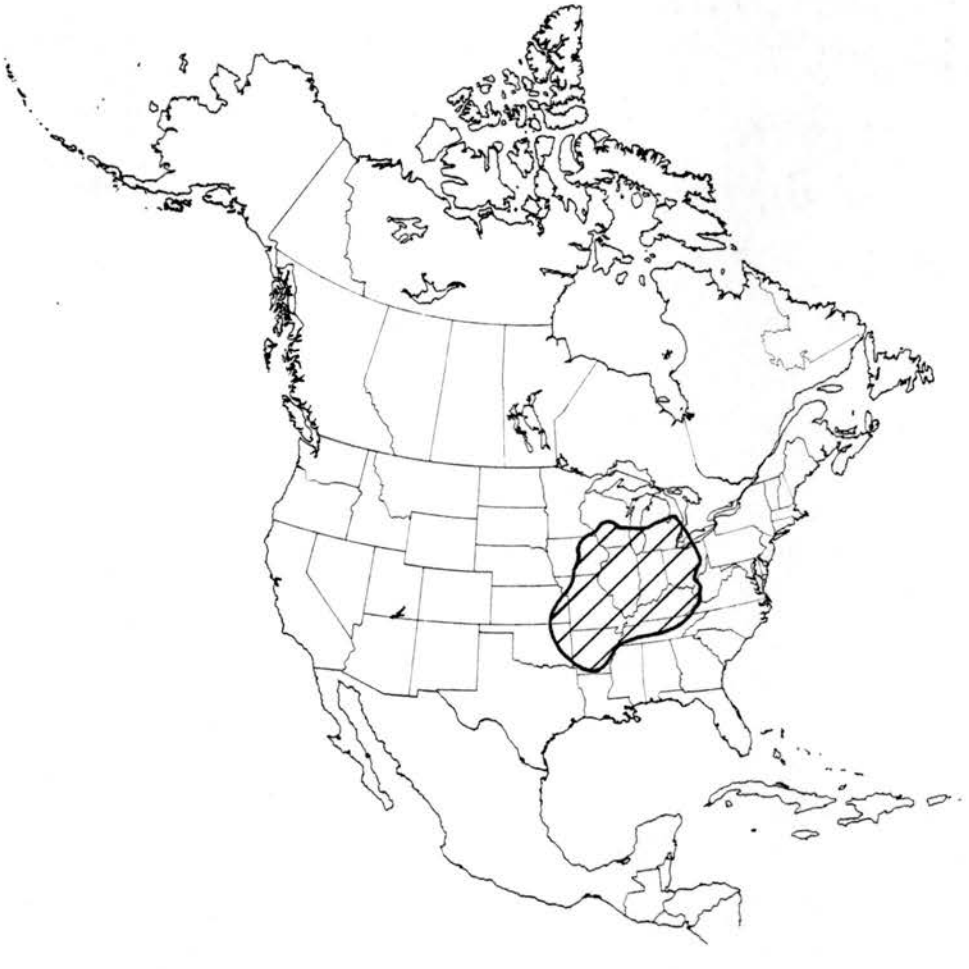
SELECTED REFERENCES:

Woodson, R. E. 1954. The North American species of Asclepias. Ann. Mo. Bot. Gard. 41:1-211.

PREEPARED BY: Welby Smith, Botanist, Natural Heritage Program

Asclepias hirtella (Pennell) Woodson





SPECIES STATUS SHEET

SCIENTIFIC NAME: Asclepias stenophylla Gray

FAMILY: Asclepiadaceae

COMMON NAME: Narrow-leaved Milkweed

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was not known to occur in Minnesota until 1978 when it was discovered near Hokah (Houston County). The population consists of about 10 flowering plants and is disjunct 300 miles from the main range of the species. Although the population is apparently well established, its long-term viability is uncertain. The site is on public land and efforts are being made to preserve it.

PREFERRED HABITAT IN MINNESOTA: The Minnesota population occurs in gravelly soil at the base of a hillside prairie.

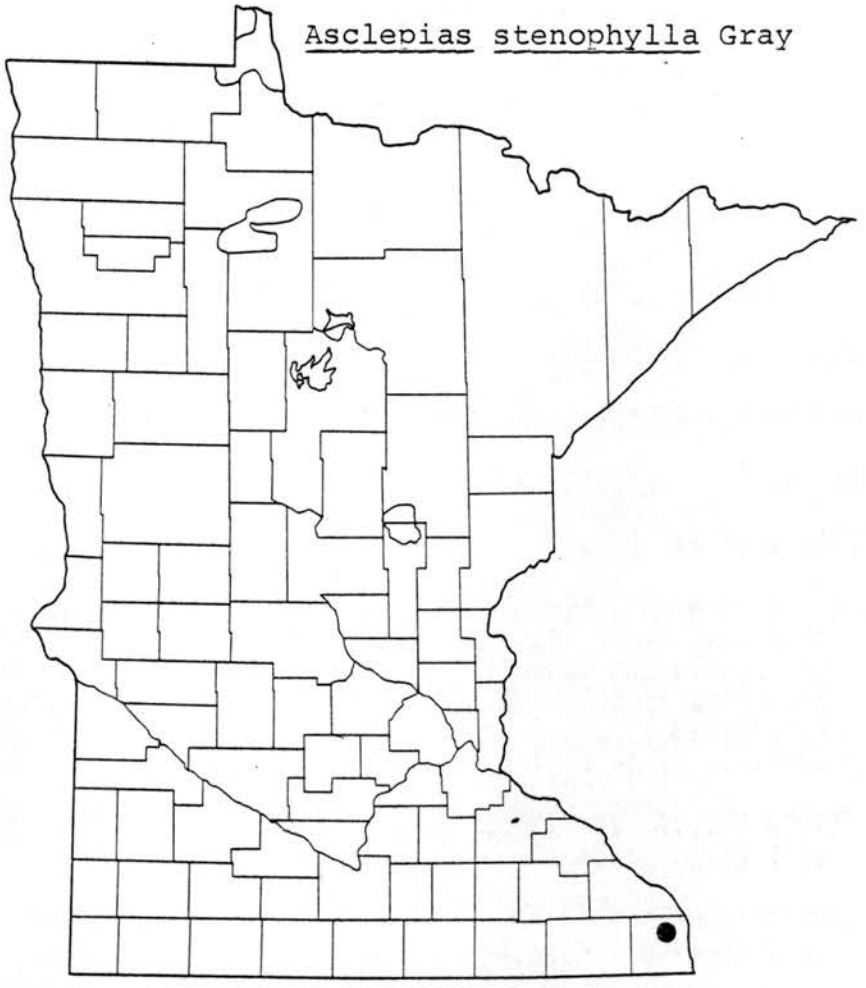
RECOMMENDATIONS: This population should be monitored on an annual basis to determine population trends and management needs.

SELECTED REFERENCES:

Woodson, R. E. 1954. The North American species of Asclepias. Ann. Mo. Bot. Gard. 41:1-211.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Asclepias stenophylla Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: Asclepias sullivantii Engelm.

FAMILY: Asclepiadaceae

COMMON NAME: Prairie Milkweed

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The original range of this species coincided with that of the tall grass prairie. This range now serves as the major corn producing region of the country and very little of the native prairie remains. In Minnesota, most of the surviving plants occur in prairie remnants on railroad right-of-ways. These right-of-ways are rapidly being abandoned and are invariably sold to adjacent landowners who incorporate them into farms for crop production. If this process continues at it present rate, most of the extant populations will be eliminated within the decade. The anomalous collection from Cass County is dated 1890 and has never been verified.

PREFERRED HABITAT IN MINNESOTA: This species is entirely restricted to native tall grass mesic prairies and shows little ability to survive in degraded habitats. It frequently occurs with other rare prairie species such as Cacalia tuberosa and Parthenium integrifolium.

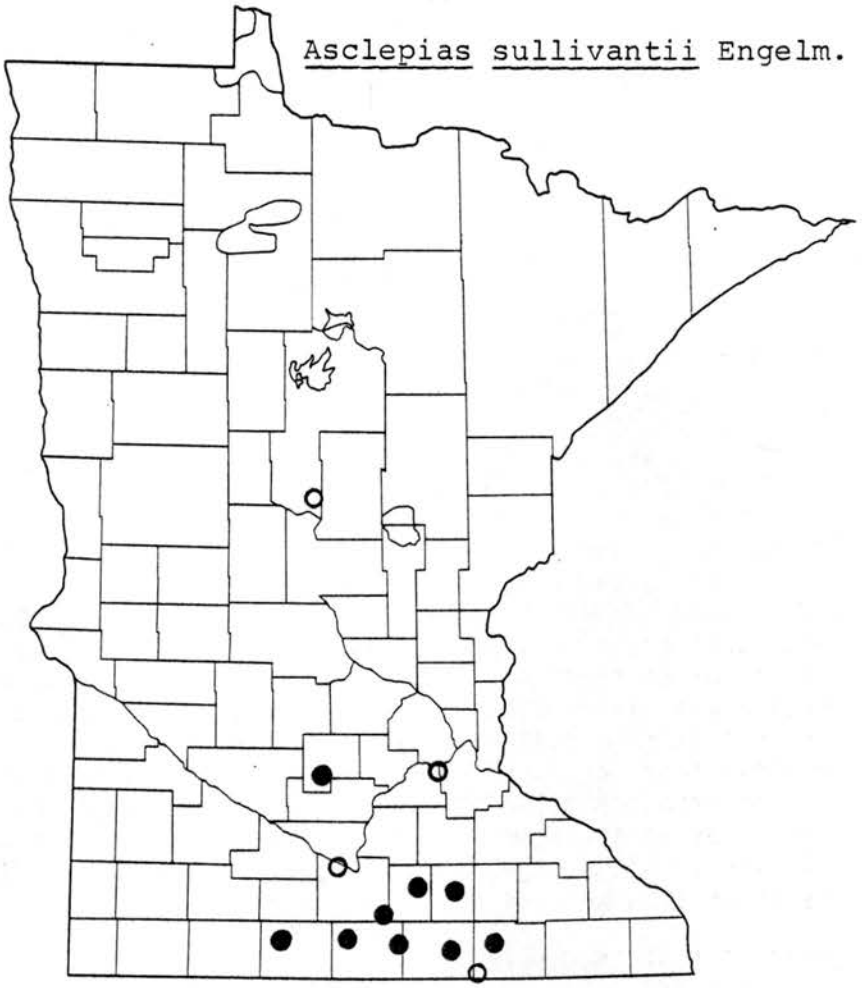
RECOMMENDATIONS: The only way to preserve this species in its native habitat in Minnesota may be to acquire remnant prairies occurring on railroad right-of-ways and manage them for the perpetuation of the native plant community.

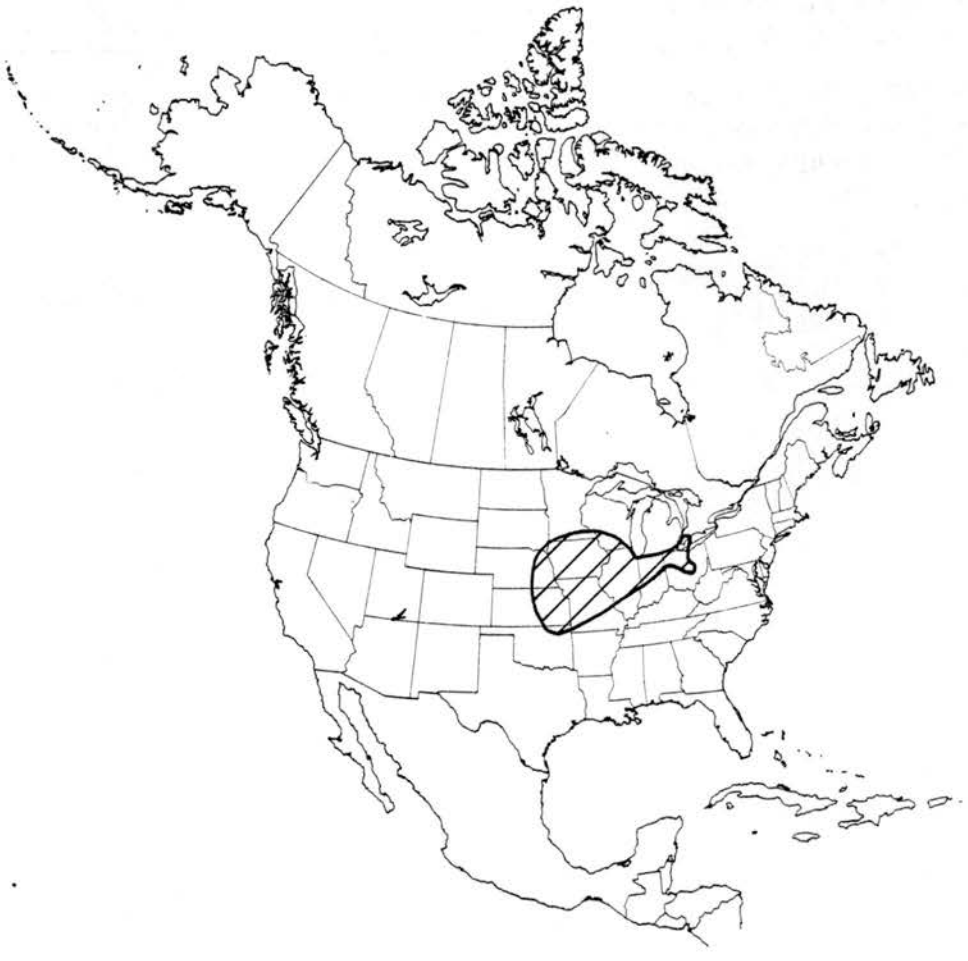
SELECTED REFERENCES:

Woodson, R. E. 1954. The North American species of Asclepias. Ann. Mo. Bot. Gard. 41:1-211.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Asclepias sullivantii Engelm.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Asplenium trichomanes* L.

FAMILY: Polypodiaceae

COMMON NAME: Maidenhair Spleenwort

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The only populations of this species known to be extant in Minnesota occur along a narrow strip of border lakes in Cook County. The populations are very local and situated in a fragile, although inaccessible habitat. The collection from Goodhue County is dated 1895 and the location is given only as "Vasa". Repeated attempts to locate this site have failed and it may be gone.

PREFERRED HABITAT IN MINNESOTA: This species occurs on ledges and crevices on moist, east-facing cliffs and occasionally on associated talus. Minnesota populations belong to the diploid subspecies *trichomanes* which apparently prefer noncalcareous rocks.

RECOMMENDATIONS: Populations of this species may still survive on sandstone exposures in southeastern Minnesota. This is probably where future inventory work should be concentrated.

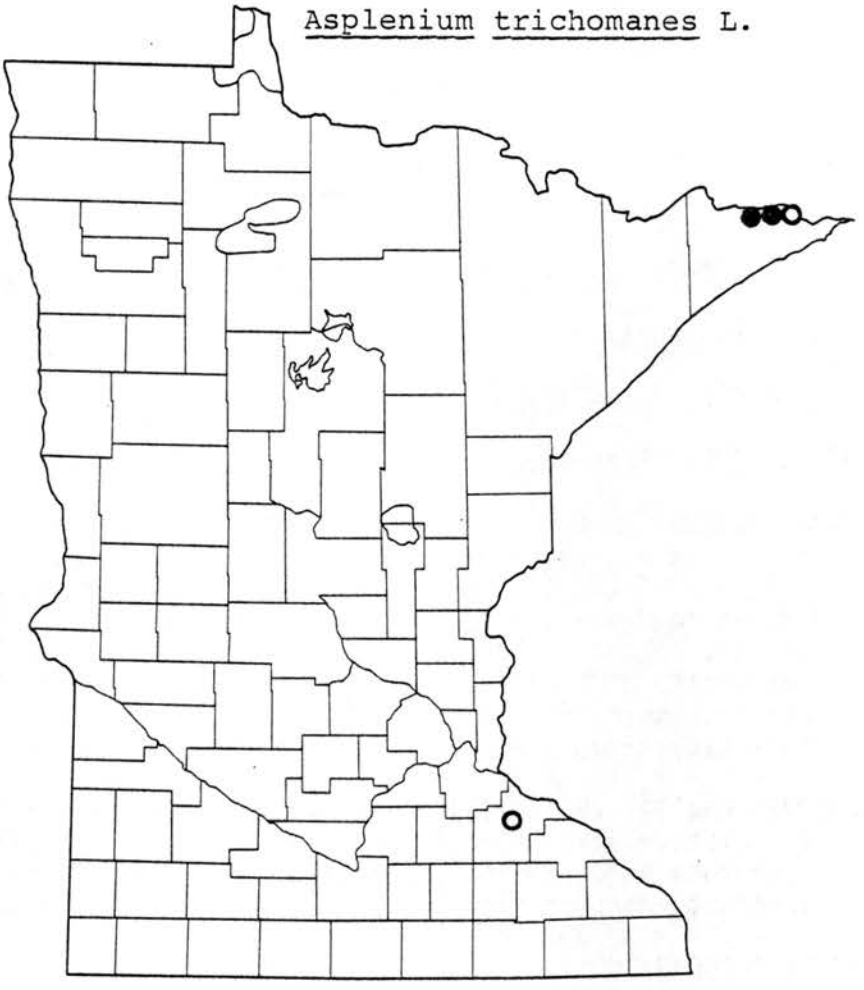
SELECTED REFERENCES:

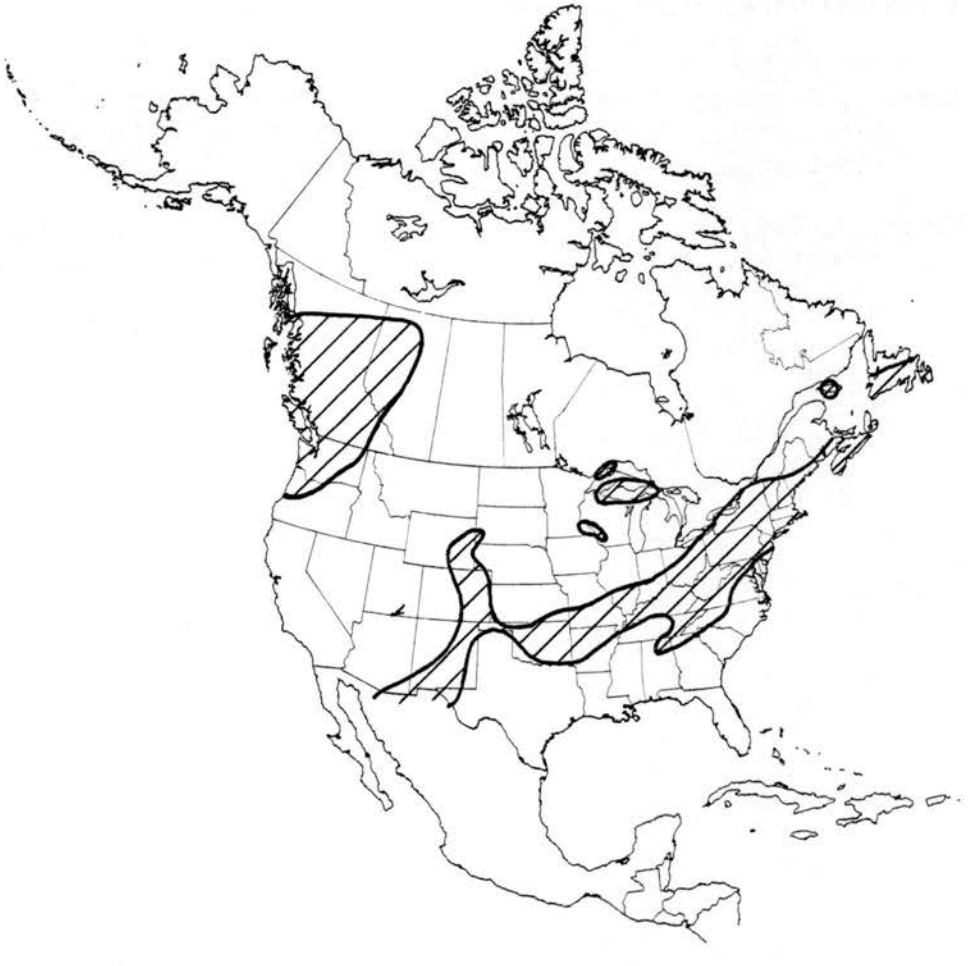
Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

Moran, R. C. 1982. The *Asplenium trichomanes* complex in the United States and adjacent Canada. Am. Fern Jour. 72(1):5-11.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Asplenium trichomanes L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Besseya bullii (Eaton) Rydb. [Wulfenia bullii (Eaton) Barnhart]

FAMILY: Scrophulariaceae

COMMON NAME: Kitten Tails

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: More than half of the historically known populations of this species in Minnesota were located in what is now the metropolitan area of Minneapolis-St. Paul and surrounding suburbs. The majority of these populations have not been verified since the 1920s and are believed to have been destroyed by the expansion of the metropolitan area. Only five of the 21 documented sites are known to survive. The last known population in Scott County was destroyed in 1981 by industrial development. This species is a midwestern endemic and is rare or threatened wherever it occurs.

PREFERRED HABITAT IN MINNESOTA: Besseya bullii prefers gravelly soil on dry prairies, bluffs and high-lime prairies. It may also occur in open woods and savannas.

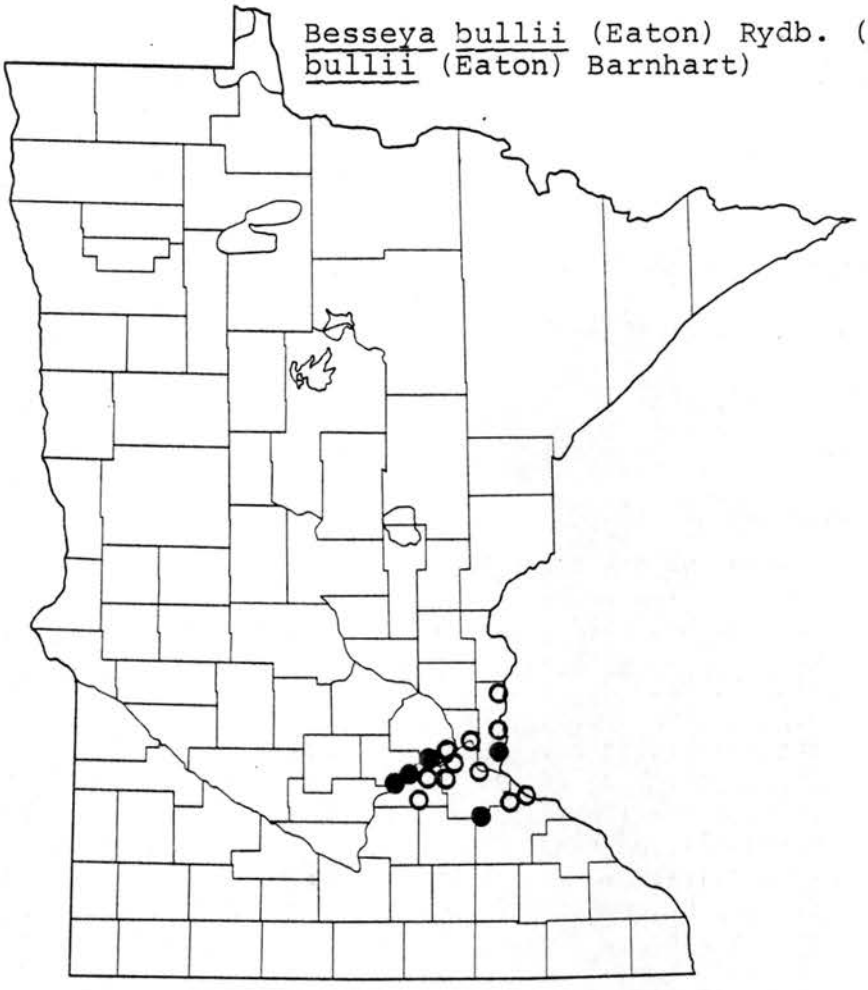
RECOMMENDATIONS: A search should be made for remnant populations which may survive in the Twin Cities area. Efforts should be directed to bluffs bordering the Mississippi, Minnesota and St. Croix Rivers.

SELECTED REFERENCES:

Mickelson, C. J. and H. H. Iltis. 1966. Preliminary reports on the flora of Wisconsin #50. Wisc. Acad. Sci. Arts an Letters 55:187-222.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Besseya bullii (Eaton) Rydb. (Wulfenia bullii (Eaton) Barnhart)





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cacalia suaveolens* L.

FAMILY: Asteraceae

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

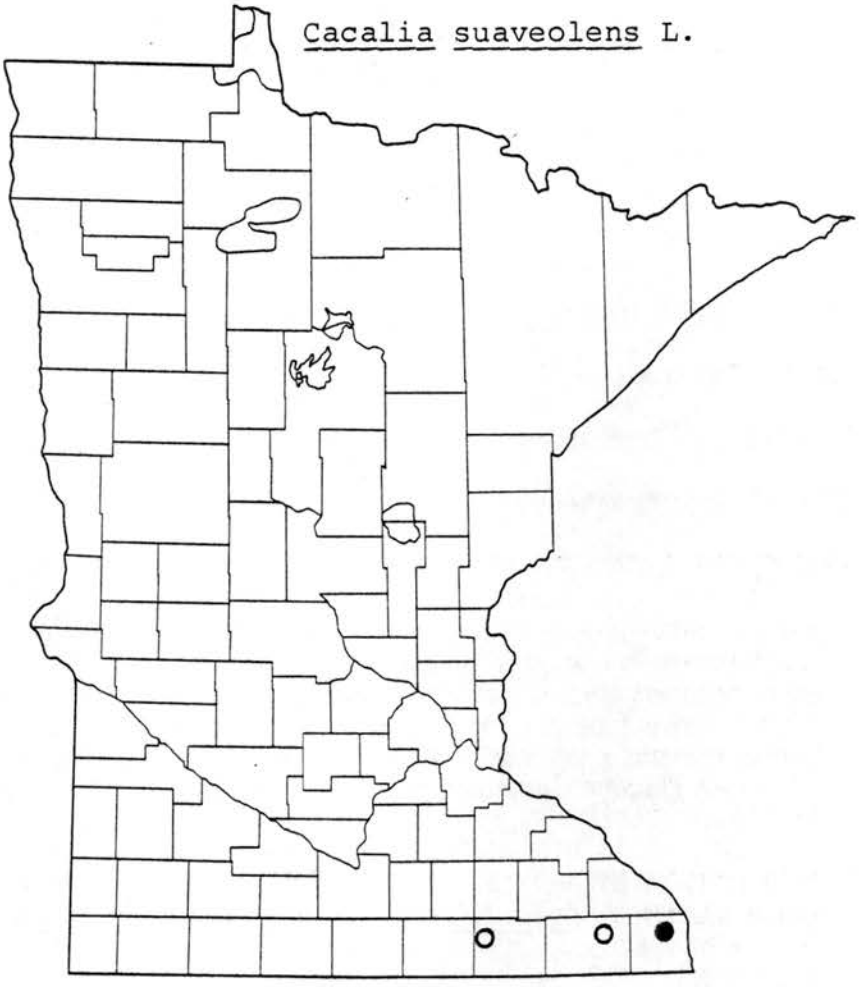
BASIS FOR MINNESOTA STATUS: This species reaches the northwestern limit of its range in Minnesota, and was probably uncommon even before human settlement. Since settlement, populations have been reduced to critically low numbers by excessive land drainage in southeastern Minnesota. Unrestricted ditching and tiling has essentially eliminated wetlands from the landscape of that region. Similar environmental degredation threatens this species throughout much of its range. The population in Mower County is known by a 1947 collection and could not be located in 1981. The Fillmore County collection is labeled "Lanesboro 1893".

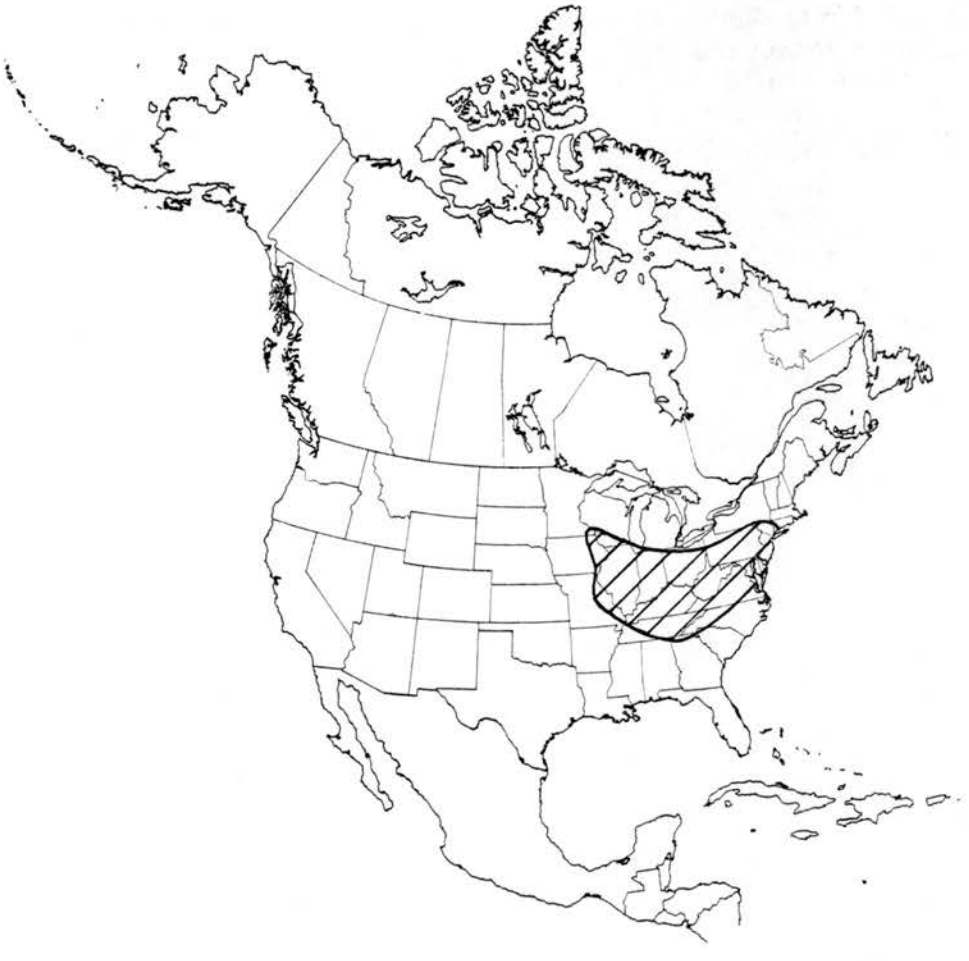
PREFERRED HABITAT IN MINNESOTA: *Cacalia suaveolens* occurs in low wet meadows along stream courses and edges of marshes. With the destruction of its native habitat, this species (where extant) may now be restricted to wet ditches.

RECOMMENDATIONS: Continued searches of undrained meadows along stream banks in Mower and Fillmore Counties may discover populations occurring in native habitats.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Cacalia suaveolens L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cacalia tuberosa Nutt. [C. plantaginea (Raf.) Shinners]

FAMILY: Asteraceae

COMMON NAME: Tuberous Indian-plantain

STATE STATUS: Threatened

FEDERAL STATUS: None

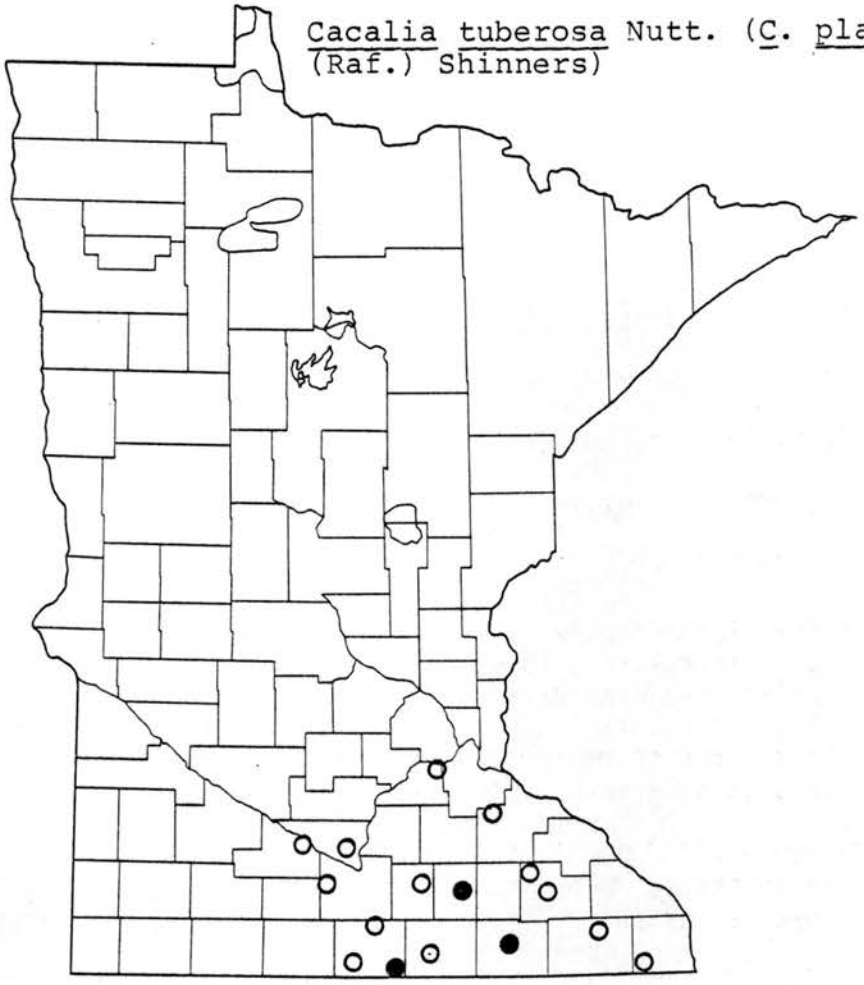
BASIS FOR MINNESOTA STATUS: Unlike the previous species, C. tuberosa was not formerly rare in Minnesota, but the nearly total destruction of its prairie habitat has reduced its populations to a few remnant colonies. All of these remnants are small and only one is currently protected. Most occur on railroad right-of-ways which are rapidly being abandoned and sold to adjacent landowners who invariably convert them to cropland.

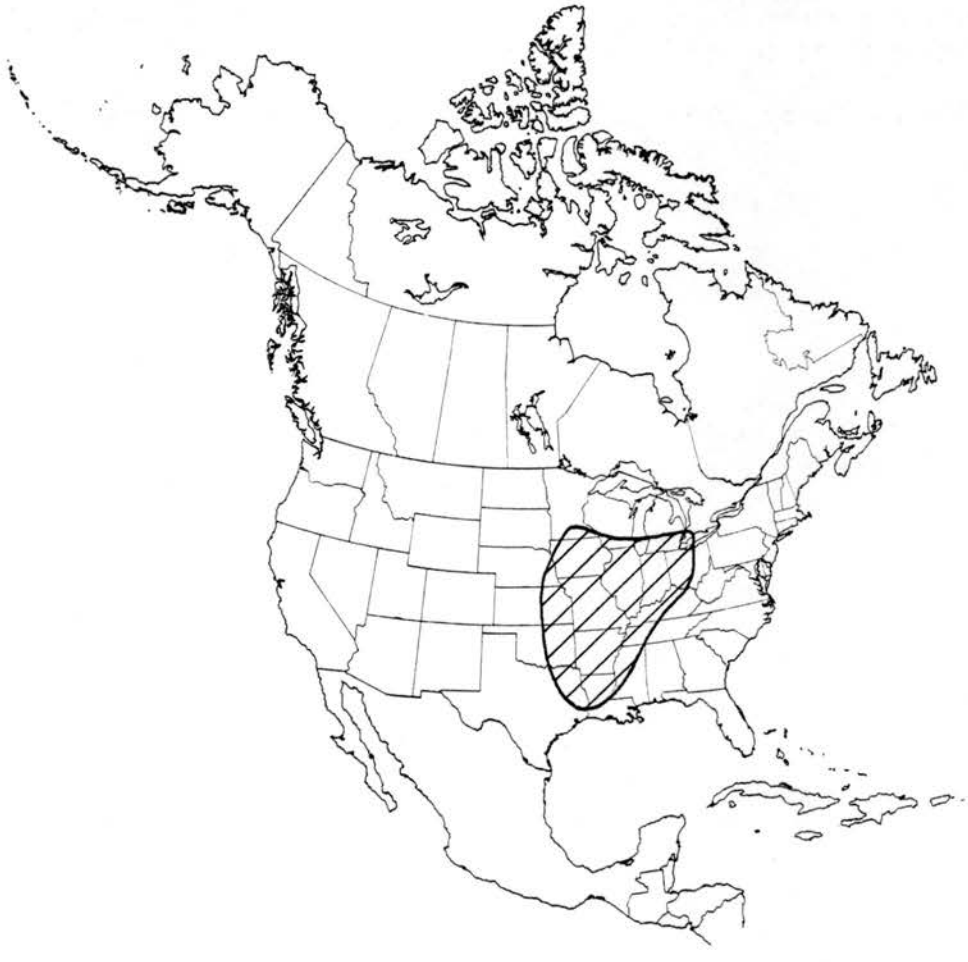
PREFERRED HABITAT IN MINNESOTA: This species is restricted to mesic prairies in southeast Minnesota. It frequently occurs with other rare prairie species such as Asclepias sullivantii and Parthenium integrifolium.

RECOMMENDATIONS: The only way to preserve this species in its native habitat in Minnesota may be to acquire remnant prairies occurring on railroad right-of-ways and manage them for the perpetuation of the native plant community.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Cacalia tuberosa Nutt. (C. plantaginea (Raf.) Shinners)





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex conjuncta* Boott.

FAMILY: Cyperaceae

COMMON NAME: Jointed Sedge

STATE STATUS: Threatened

FEDERAL STATUS: None

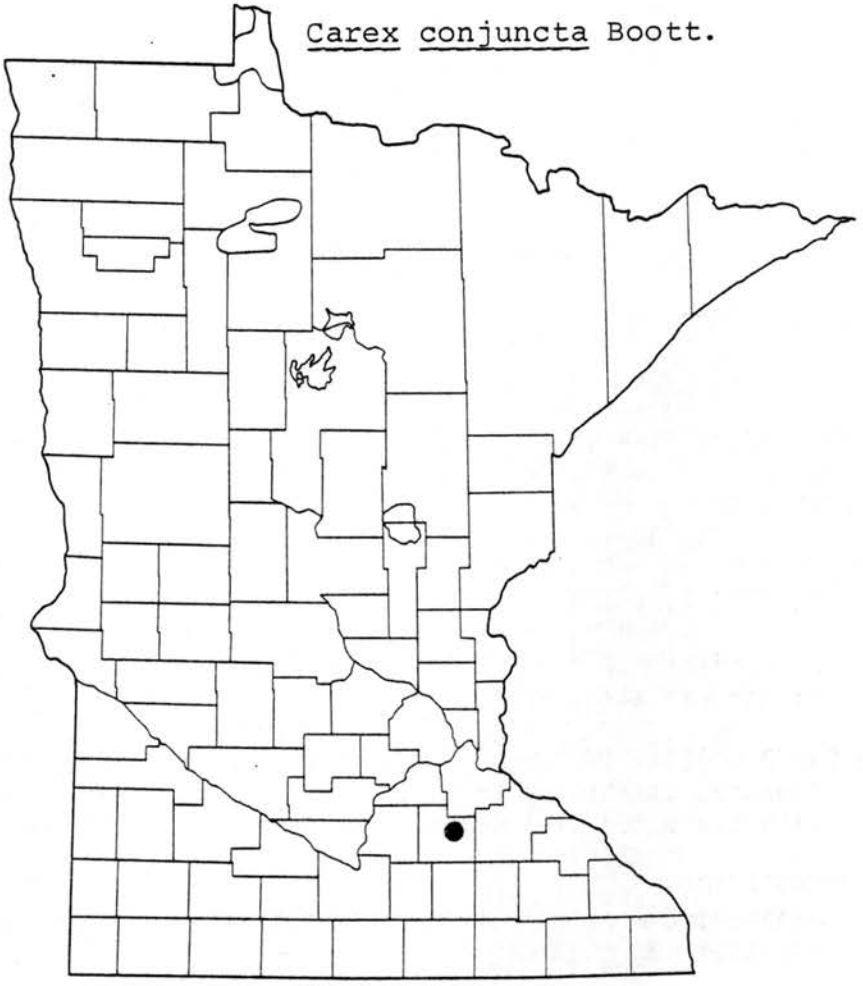
BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota in 1976 in the Rice County Wilderness Area. Subsequent searches of its preferred habitat in southeastern Minnesota have failed to locate any additional populations. The Rice County population is small but is not known to face threats from human activity.

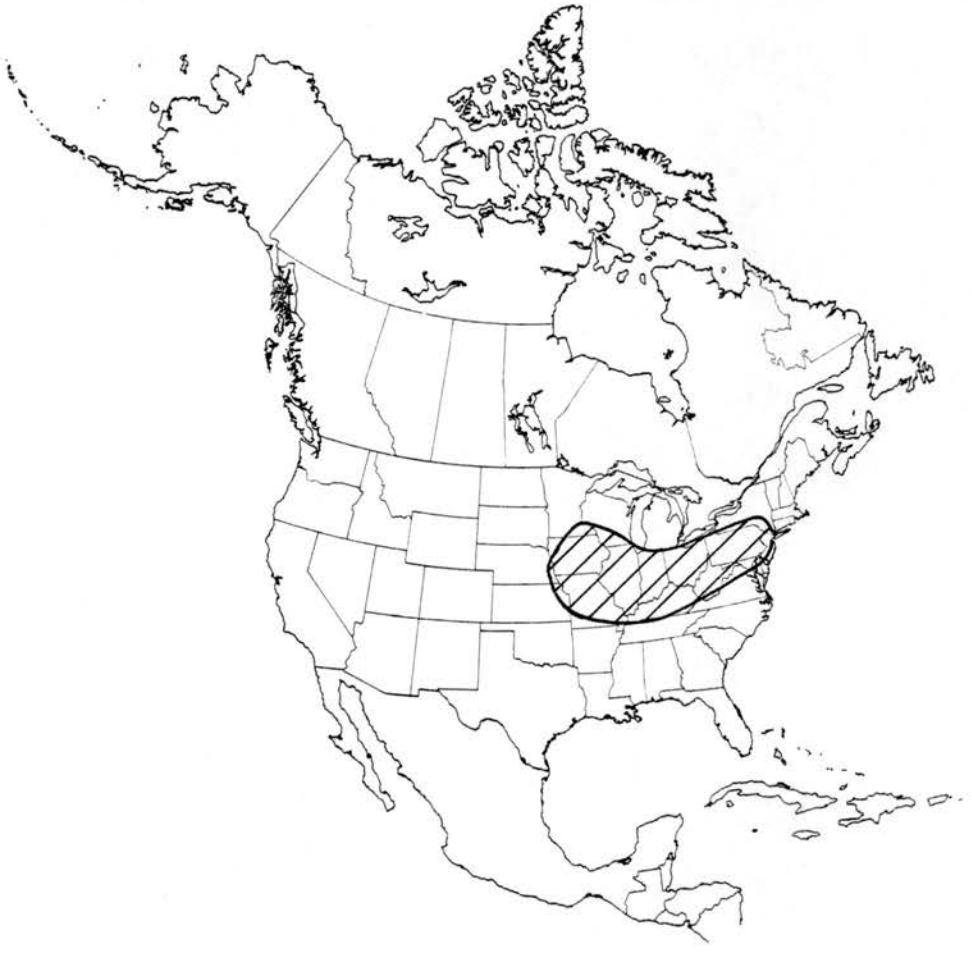
PREFERRED HABITAT IN MINNESOTA: The only known population in Minnesota inhabits an alluvial forest in the Cannon River Valley. It occurs there with two other rare sedge species, *Carex davisii* and *Carex grayi*.

RECOMMENDATIONS: This population should be protected by a cooperative management agreement between Rice County and the Minnesota Natural Heritage Register Program.

REPARED BY: Welby Smith, Botanist, Natural Heritage Program

Carex conjuncta Boott.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex davisii* Schwein. & Torr.

FAMILY: Cyperaceae

COMMON NAME: Davis' Sedge

STATE STATUS: Threatened

FEDERAL STATUS: None

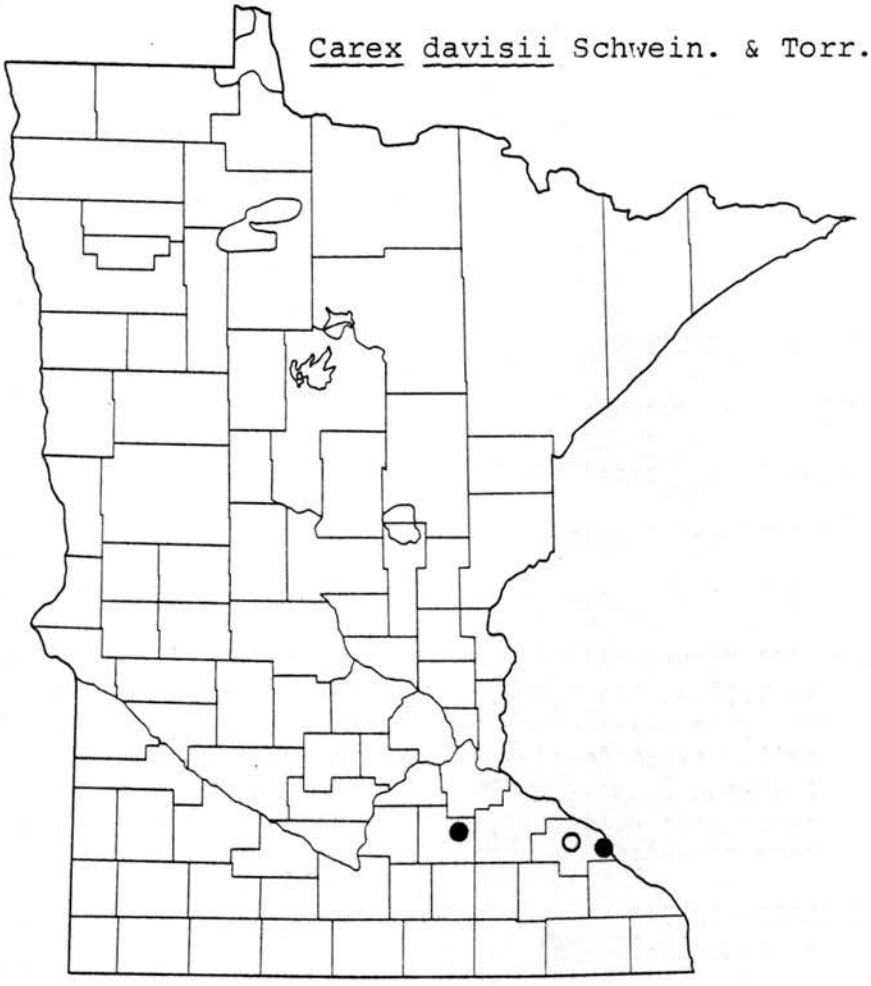
BASIS FOR MINNESOTA STATUS: This species was first discovered in Minnesota in 1918 on the Zumbro River floodplain in Wabasha County. It was not seen again until 1979 when it was found in the Cannon River Valley (Rice County). It was found again in the Weaver Bottoms (Wabahsa County) in 1982. Since the first collection site has never been relocated, we currently know of only two extant populations, both of which are quite small but presumably stable.

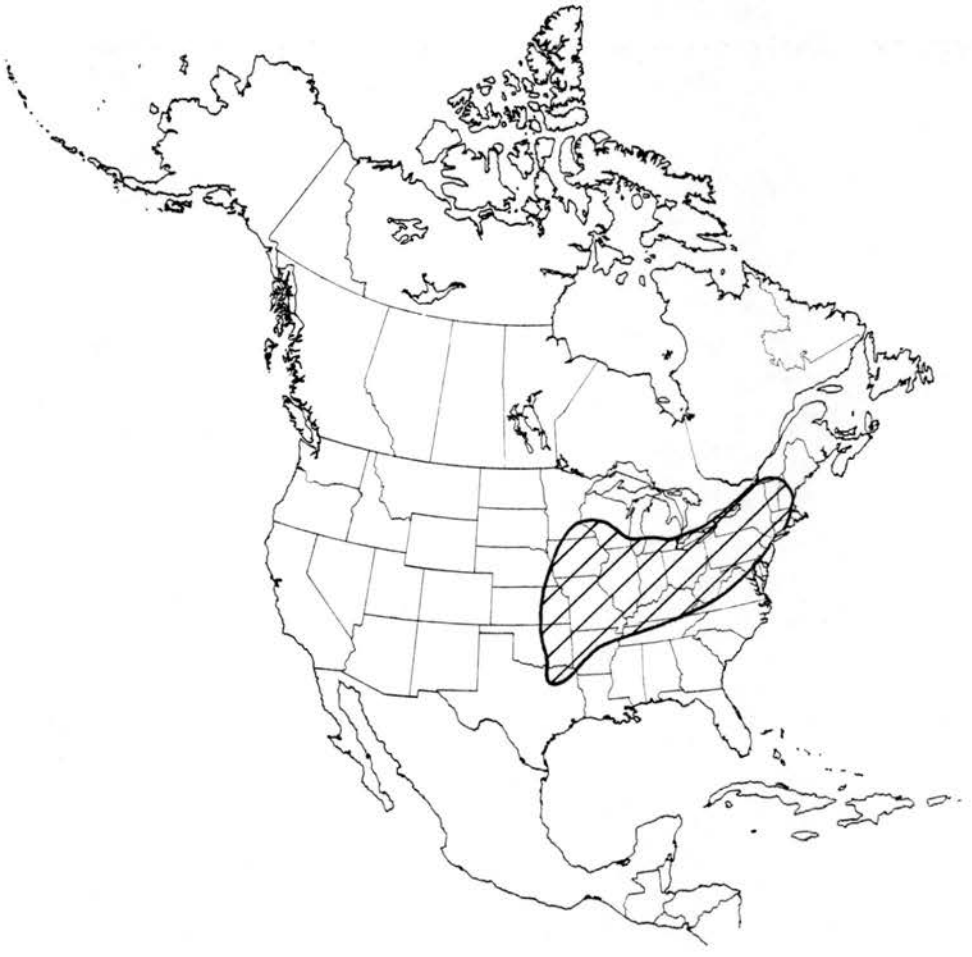
PREFERRED HABITAT IN MINNESOTA: The three Minnesota populations occur in mature alluvial forests in major stream valleys.

RECOMMENDATIONS: No recommendations can be made at this time.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Carex davisii Schwein. & Torr.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex hallii* Olney

FAMILY: Cyperaceae

COMMON NAME: Hall's Sedge

STATE STATUS: Threatened

FEDERAL STATUS: None

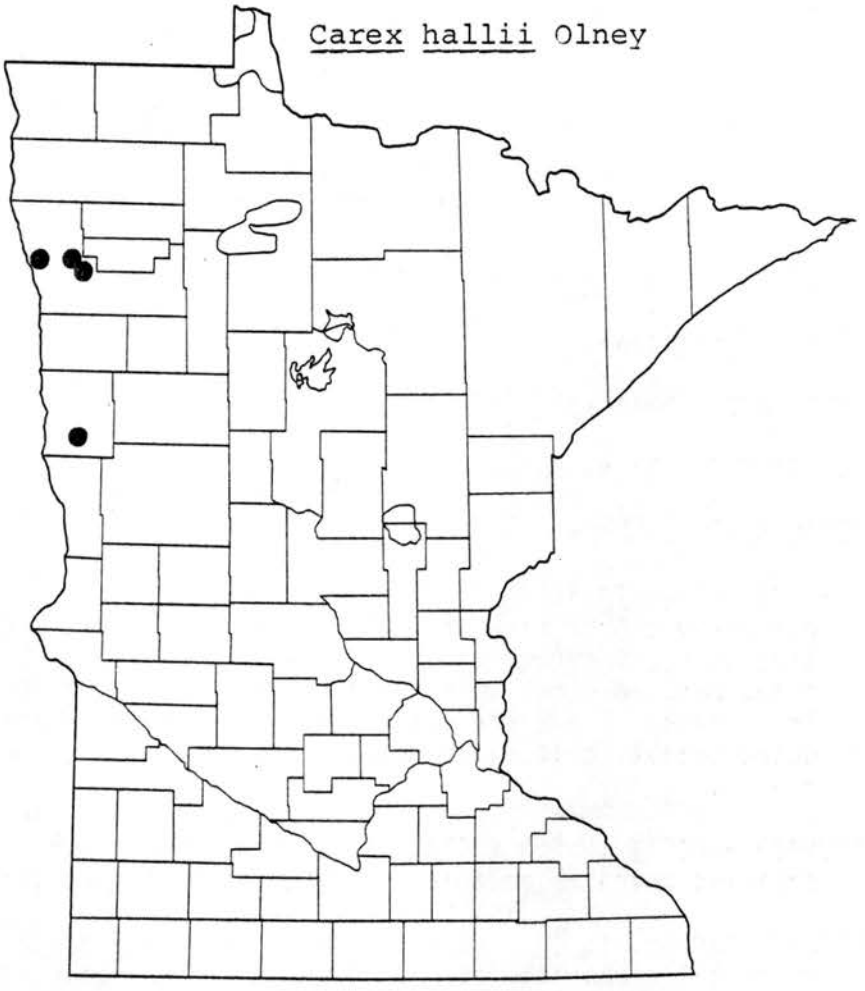
BASIS FOR MINNESOTA STATUS: This species occurs in Minnesota at the eastern periphery of its range and has been collected in the state at only four locations. Two of these four populations appear to be secure at this time, but one faces imminent destruction from agricultural development. In Minnesota, this species may now be restricted to Polk County, where native habitats are rapidly being converted to agricultural fields.

PREFERRED HABITAT IN MINNESOTA: This species occurs in wet, calcareous prairies where it may be found with another rare sedge, *Carex scirpiformis*.

RECOMMENDATIONS: It is possible that undiscovered populations occur on protected areas in Clay County, such as: Blazing Star Prairie, Bluestem Prairie and Bicentennial Prairie.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Carex hallii Olney





SPECIES STATUS SHEET

SCIENTIFIC NAME: Carex praticola Rydb.

FAMILY: Cyperaceae

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota by Butters and Abbe in 1936. They eventually located four populations along a short series of border lakes (Cook County). None of these sites have been relocated since the 1930's and their current status is unknown. The anomalous collection from Lake County is from the Lake Isabella area and is dated 1979.

PREFERRED HABITAT IN MINNESOTA: The populations in Cook County occur on north-facing cliffs adjacent to border lakes. Little is known about the Lake County population except that it reportedly occurs in sandy soil.

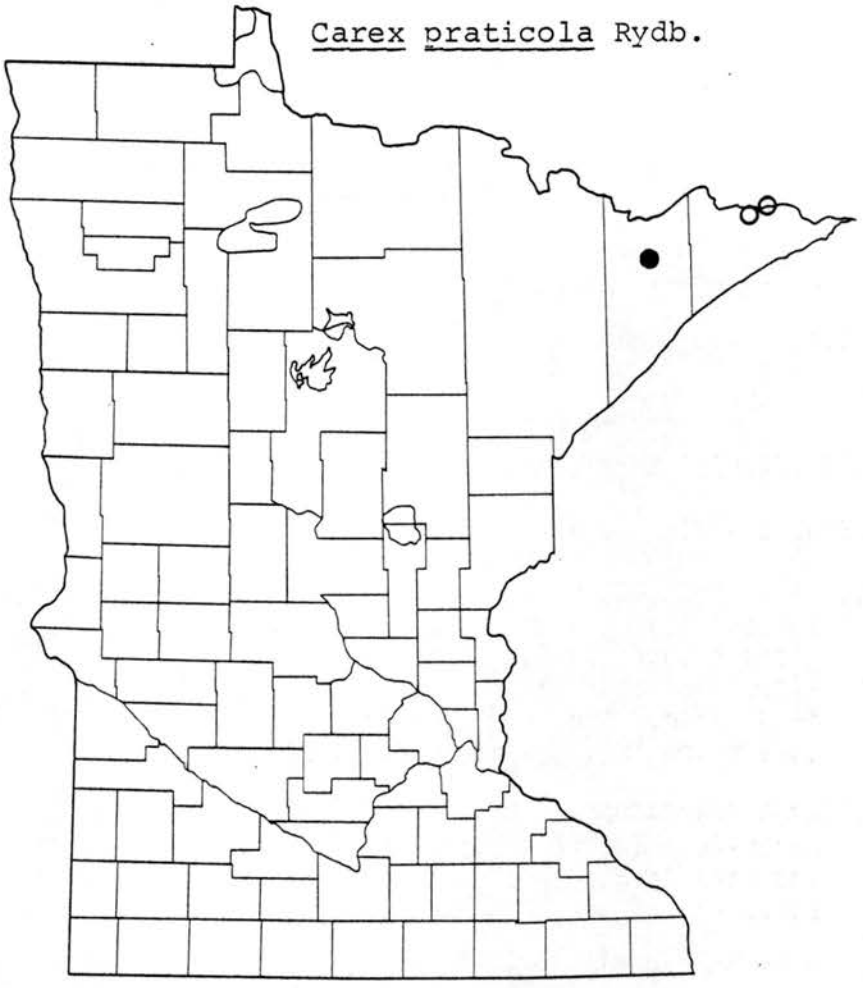
RECOMMENDATIONS: An attempt should be made to relocate the collection sites of Butters and Abbe.

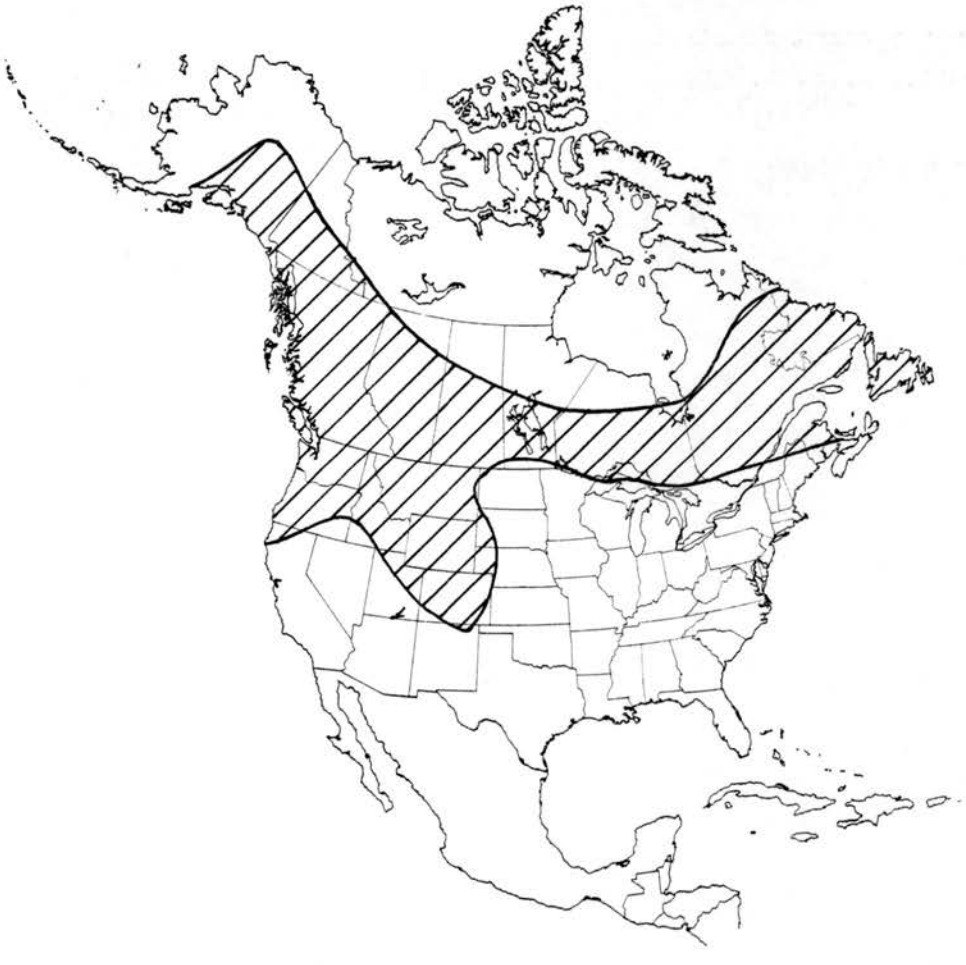
SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Carex praticola Rydb.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex sterilis* Willd.

FMAILY: Cyperaceae

COMMON NAME: Four-spiked Star Sedge

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although this species occurs over a relatively large portion of Minnesota, it is entirely restricted to small, fragile fen habitats. Fens are highly localized phenomena that are maintained by the surface discharge of cold, calcareous groundwater. Loss of this water supply would result in the destruction of the fen habitat and the dependent species. Several of the known populations of *Carex sterilis* are currently threatened by commercial and agricultural activity that may draw down the groundwater and thereby disrupt the discharge of water in the fens.

PREFERRED HABITAT IN MINNESOTA: *Carex sterilis* is an obligate fen species in Minnesota. Within fens it may become a dominant species along with *Scirpus cespitosus* and *Carex interior*. It often occurs with other rare fen species such as *Eleocharis rostellata*, *Rhynchospora capillacea* and *Scleria verticillata*.

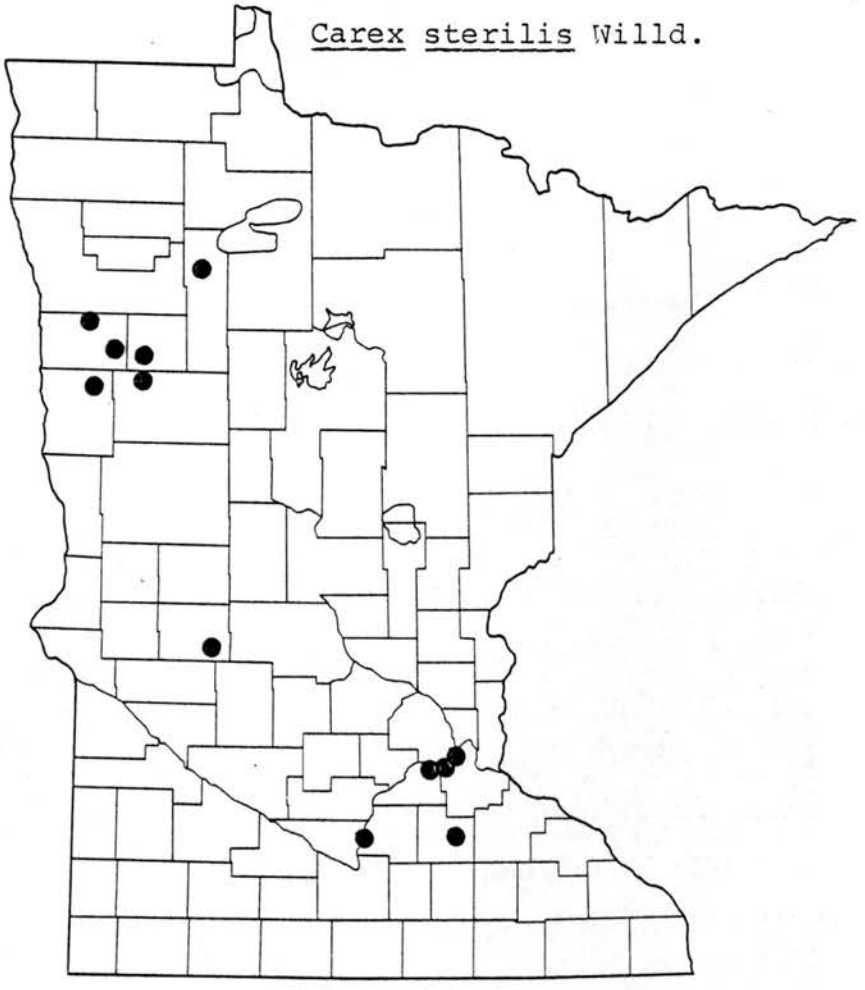
RECOMMENDATIONS: Additional information is needed on the hydrology of fens and the recovery potential of degraded fen habitats.

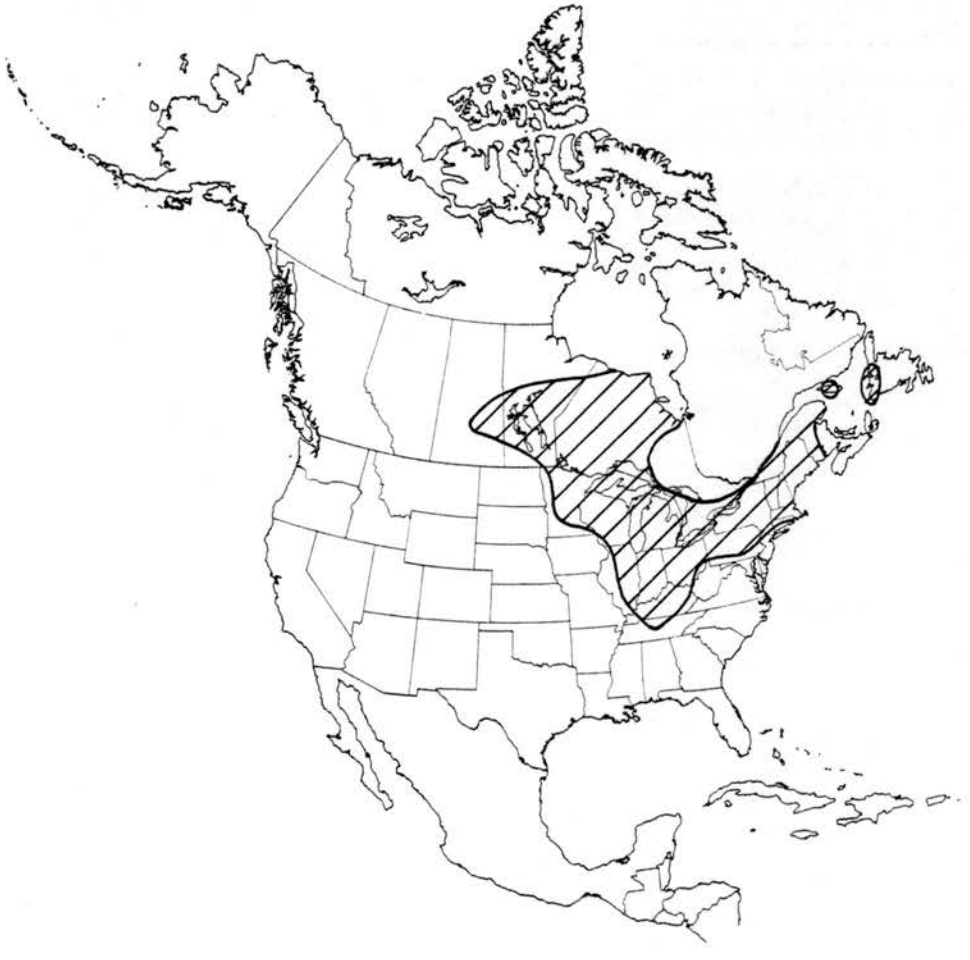
SELECTED REFERENCES:

Reznicek, A. A. and P. W. Ball. 1980. The Taxonomy of *Carex* section *stellulatae* in North America north of Mexico. Contr. Univ. Mich. Herb. 14:153-203.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Carex sterilis Willd.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Chrysosplenium iowense Rydb.

FAMILY: Saxifragaceae

COMMON NAME: a species of Golden Saxifrage

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1972; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: This species is thought to be relict of Minnesota's pleistocene flora which survived the most recent glacial advance in the "Driftless Area". It remains isolated in the Driftless Area by severe habitat requirements that cannot be met in the glaciated portions of the state. All five Minnesota populations of this species occur within seven miles of each other. Two of these populations have been degraded by cattle grazing and one consists of only a few individuals and may not be viable.

PREFERRED HABITAT IN MINNESOTA: Chrysosplenium iowense has been found only on algific talus slopes associated with dolomite formations in the Galena geological group. The term "algific" means "cold producing" and results from cold air draining from ice caves in fossil talus slopes. These slopes are periglacial features and are often quite small (i.e. a few square feet). These phenomena are very localized and are restricted to the unglaciated region in Minnesota and adjacent Iowa.

RECOMMENDATIONS: A high priority should be given to the preservation of the known algific talus slope habitats. Additional searches for undiscovered habitats should concentrate on the Root River Valley in Fillmore County.

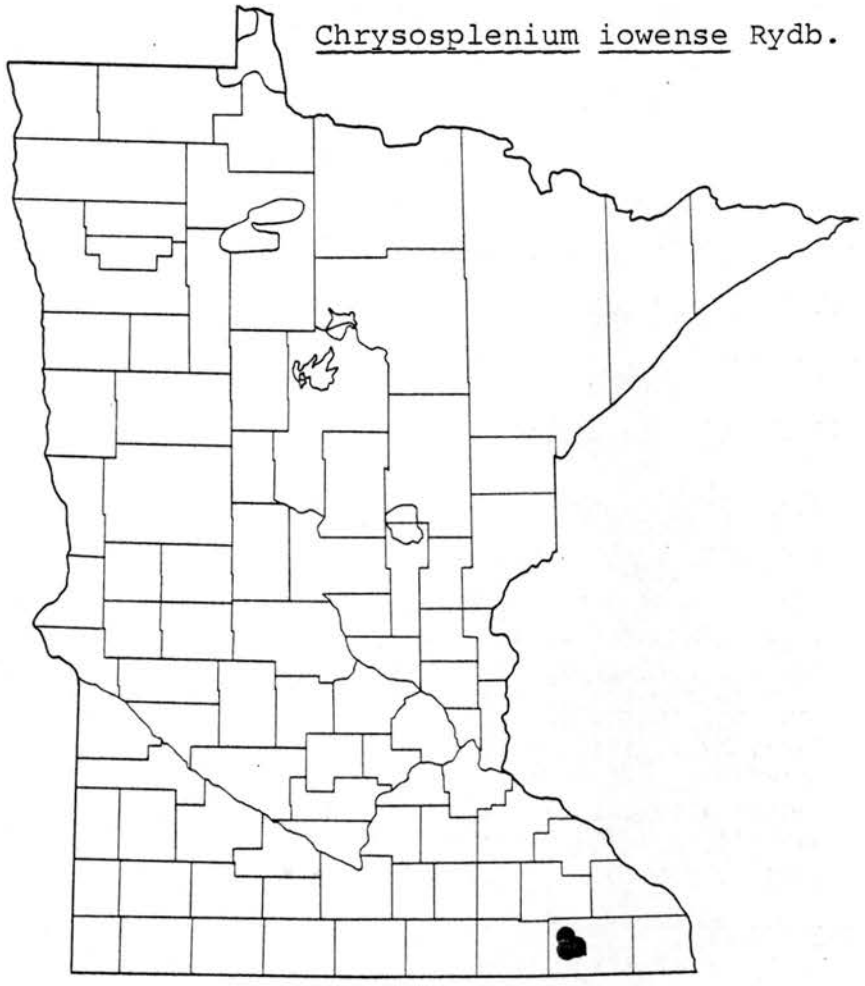
SELECTED REFERENCES:

Packer, J. G. 1963. The taxonomy of some North American species of Chrysosplenium, section Alternifolia Franchet. Can. J. Bot. 41:85-103.

Rosendahl, C.O. 1947. Studies in Chrysosplenium, with special reference to the taxonomic status and distribution of C. iownse. Rhodora 49:25-35.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Chrysosplenium iowense Rydb.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Cristatella jamesii T. & G. [Polanisia jamesii (T. G.) Iltis]

FAMILY: Capparidaceae

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota in 1978 in a sand dune area near Hastings. Much of the dune area at this site has been planted to conifers which will eventually shade out the native dune vegetation. Other portions of the site have been damaged by off-road-vehicles and sand quarrying. Subsequent searches of other sand dune habitats in south-eastern Minnesota have failed to locate any additional populations.

PREFERRED HABITAT IN MINNESOTA: This species occurs in sand dunes habitats.

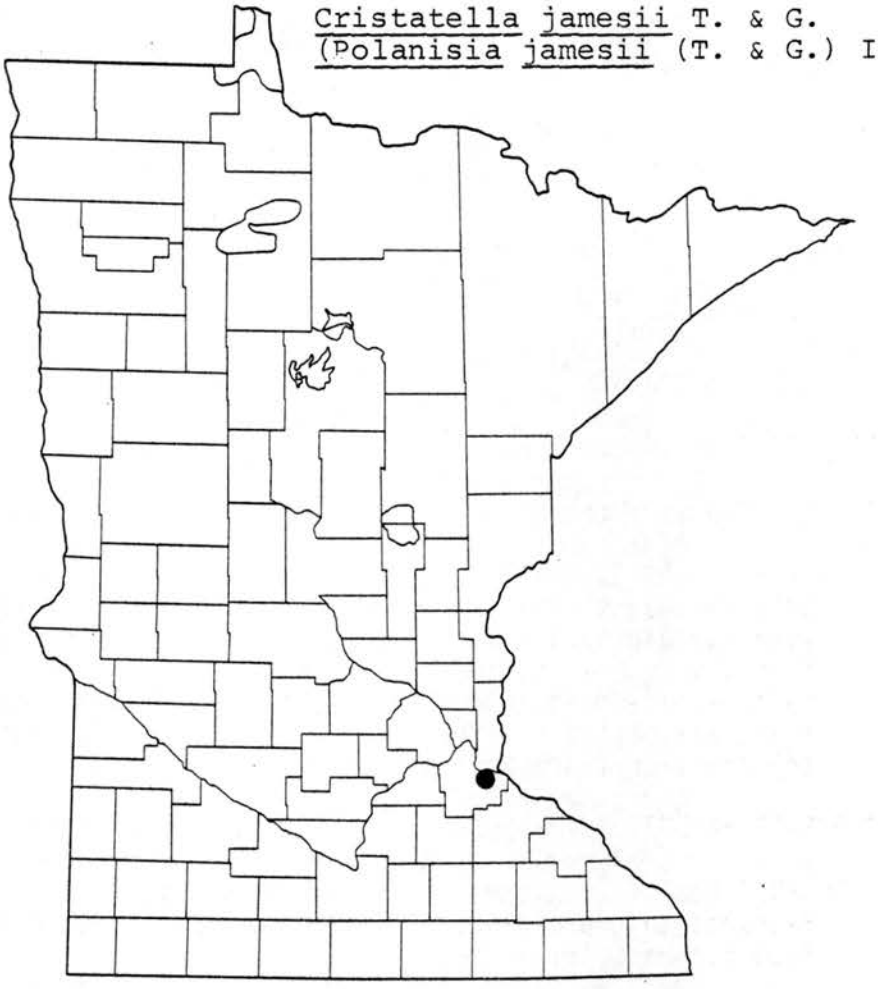
RECOMMENDATIONS: An attempt should be made to restore the natural features to the sand dune habitat near Hastings, and protect it from future degredation.

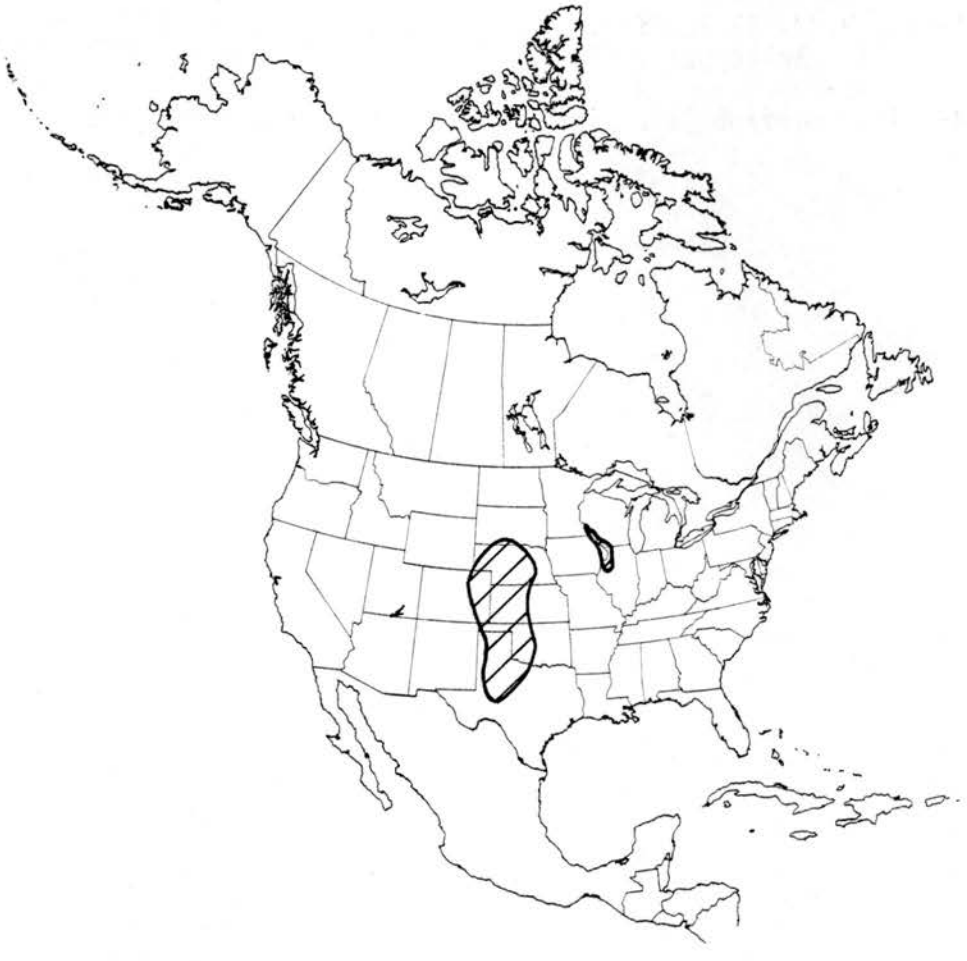
SELECTED REFERENCES:

Iltis, H. H. 1958. Studies in the Capparidaceae IV. Polanisia Raf. Brittonia 10:33-58.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Cristatella jamesii T. & G.
(Polanisia jamesii (T. & G.) Iltis)





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cypripedium arietinum* R. Br.

FAMILY; Orchidaceae

COMMON NAME: Ram's-Head Lady's-Slipper

STATE STATUS: Endangered

FEDERAL STATUS: Previously considered by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted 12-28-73; amended 1978. Federal Register 40(127):27859, 7-1-75). Not currently being considered for listing because it has proven to be more abundant than previously believed (Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: This species has always been uncommon in Minnesota, but the widespread destruction of its forest habitat by logging and mining activities has further reduced its numbers. The remaining populations face a critical threat from illicit removal by orchid fanciers. Several of the known populations have been severely depleted by this activity. The populations in Hennepin and Wright Counties have not been verified since 1911 and 1927 respectively, and are believed to have been destroyed by residential development. The often-reported population at Cedar Creek Natural History Area may have been transplanted there from another location.

PREFERRED HABITAT IN MINNESOTA: *Cypripedium arietinum* occurs in a wide range of coniferous forest habitats including bogs dominated by tamarack, black spruce or white cedar. It also occurs in upland forests of white pine or jack pine where it usually occurs in sandy soil.

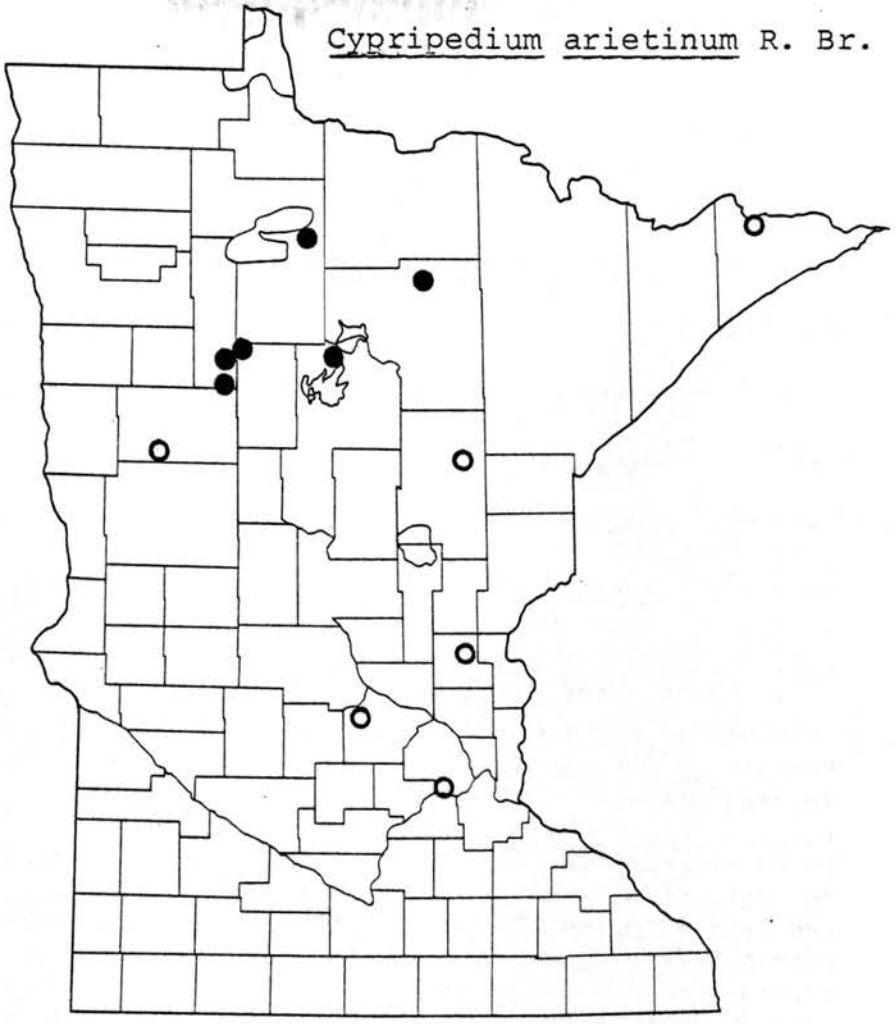
RECOMMENDATIONS: Survival of the species at several localities may depend on protecting it from orchid collectors. This may be accomplished by increasing public awareness and enforcement of current laws.

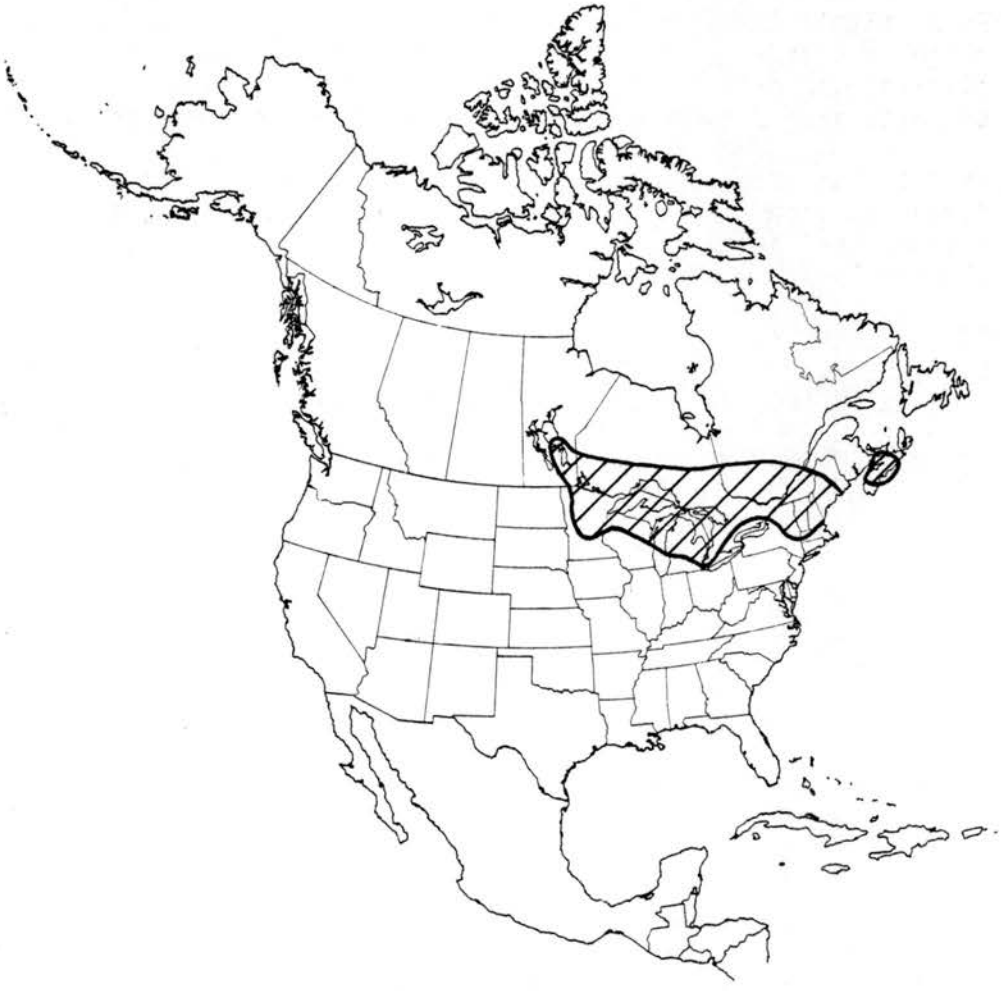
SELECTED REFERENCES:

Luer, C. A. 1975. The Native Orchids of the United States and Canada Excluding Florida. New York Botanical Garden.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Cypripedium arietinum R. Br.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Desmodium illinoense Gray

FAMILY: Fabaceae

COMMON NAME: A species of Tick-trefoil

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was first collected in Minnesota near Cannon Falls (Goodhue Co.) in 1889, then at two locations in Houston County in 1899. It was not collected again until 1975 when it was discovered in Afton State Park. The population in Winona County is in Whitewater Wildlife Management Area where it was discovered in 1982. The three 19th century collection sites have never been relocated and they may have since been destroyed.

PREFERRED HABITAT IN MINNESOTA: This species is a characteristic prairie-plant throughout its range. In Minnesota it may have once occurred in mesic prairies in the southeast, but it now appears to be confined to sandy or gravelly prairies where agriculture is less intensive.

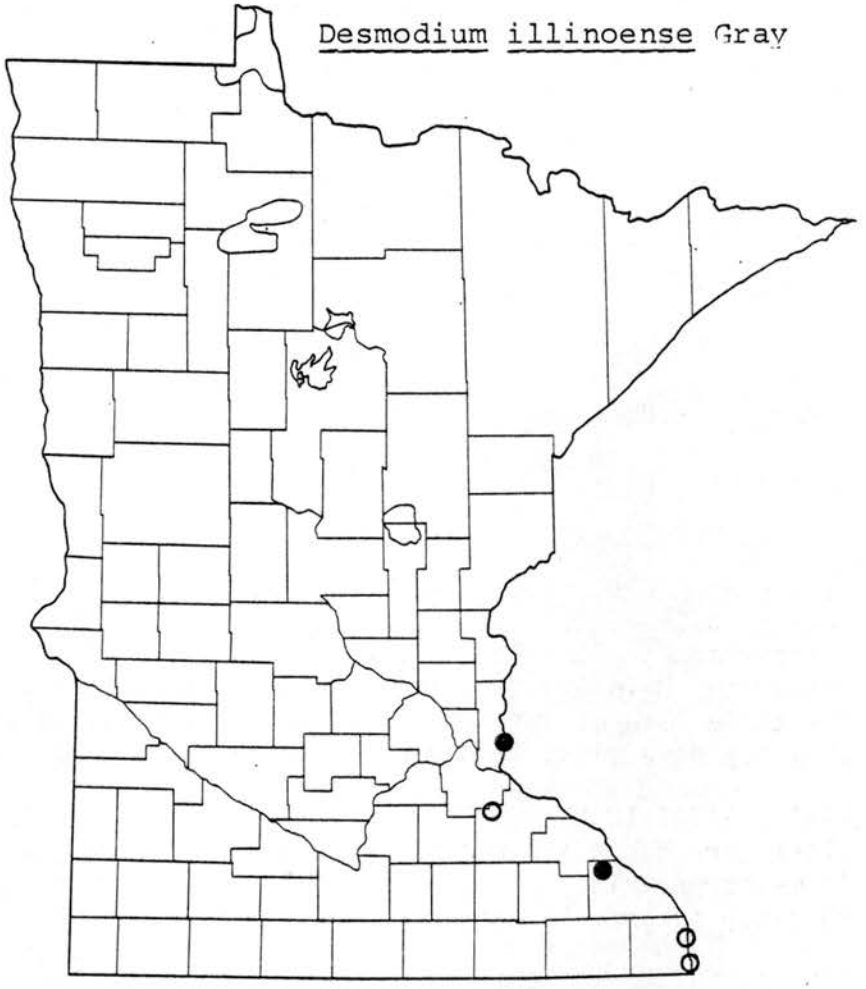
RECOMMENDATIONS: Both populations that are currently known to be extant are on public land. An effort should be made to secure their protection through registration or cooperative agreement.

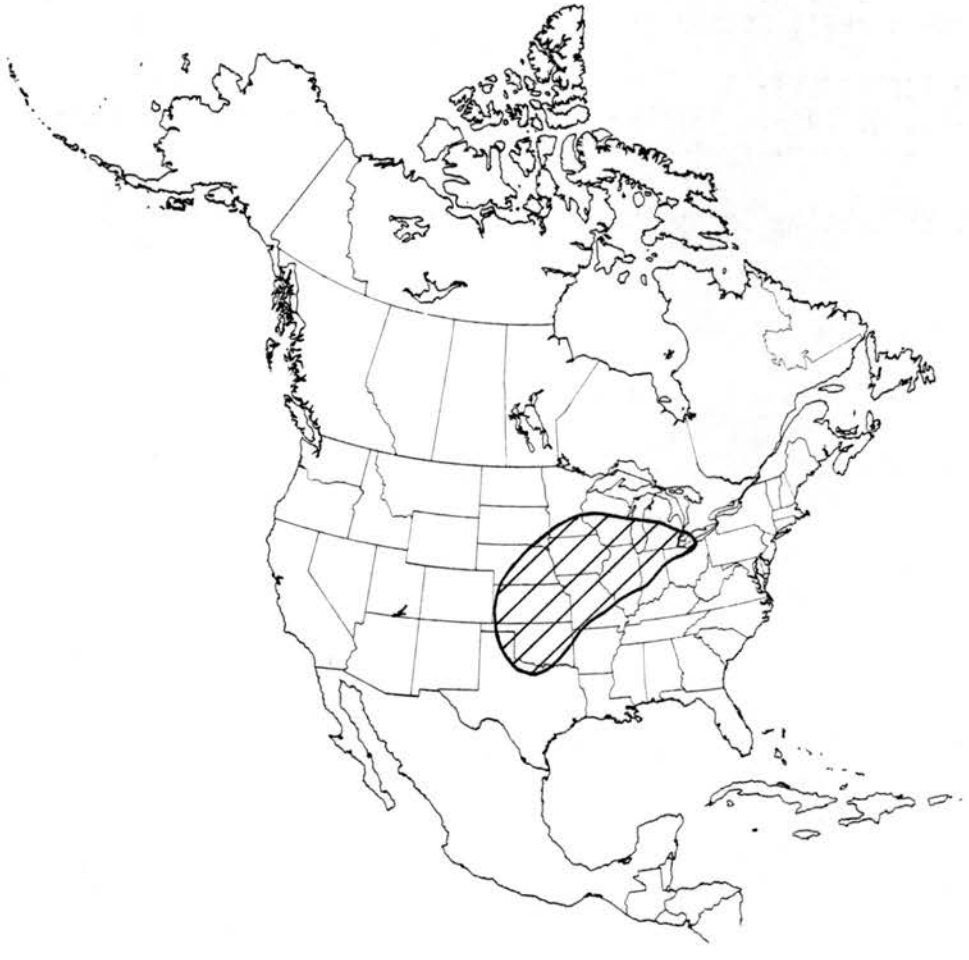
SELECTED REFERENCES:

Isely, D. 1955. The leguminosae of the north-central United States II. Hedysareae. Iowa St. Coll. J. Sci. 30:33-118.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Desmodium illinoense Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: Draba norvegica Gunn.

FAMILY: Lamiaceae

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The only population of this arctic species known in the Great Lakes Basin was discovered on Susie Island in Lake Superior (Cook County) in 1937. It was successfully relocated in 1980 and again in 1981. The population level is critically low, and appears to consist of only a few individuals. Although the site is protected from human disturbance by its remoteness, it may be threatened by the expanding gull population which uses the island for nesting.

PREFERRED HABITAT IN MINNESOTA: The plants occur in the barren crevices of the shore rocks.

RECOMMENDATIONS: Because of the tenuous existence of this population, its status should be monitored closely. The gull population should also be monitored.

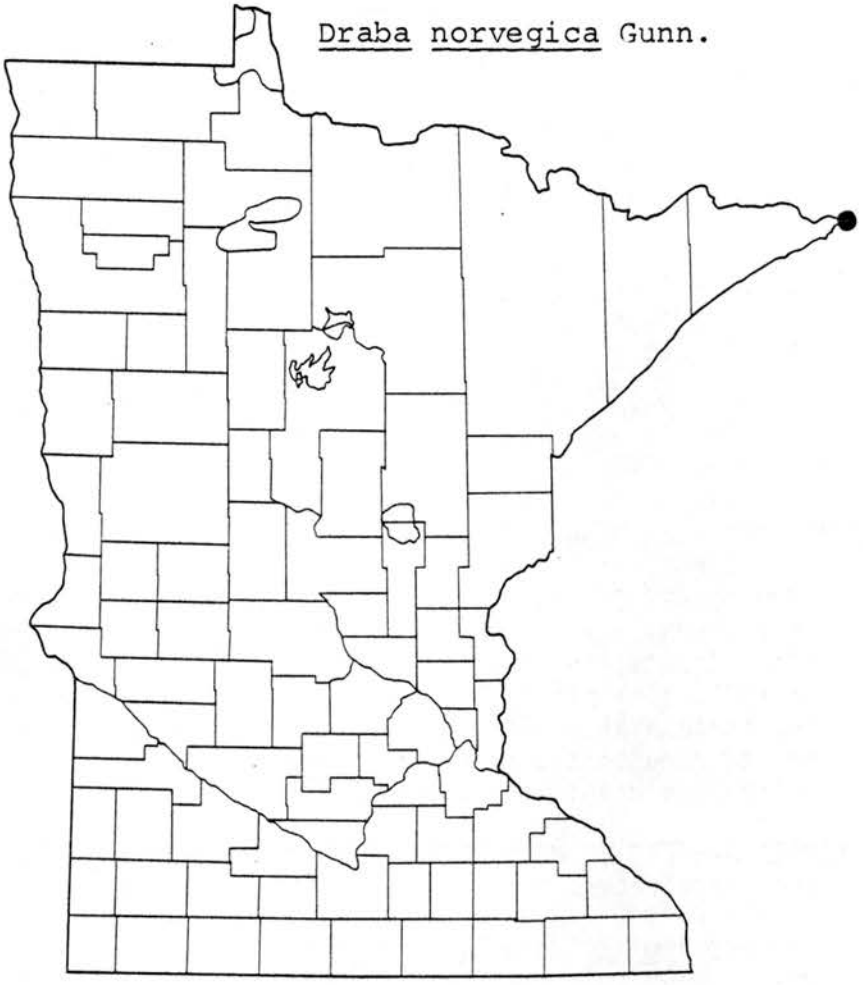
SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

Given, D. R. and J. H. Soper. 1981. The Arctic-Alpine Element of the Vascular Flora at Lake Superior. Nat. Mus. Can. Pub. in Bot. No. 10.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Draba norvegica Gunn.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Drosera anglica Huds.

FAMILY: Droseraceae

COMMON NAME: English Sundew

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The numerous collections of this species are the result of a recent and intensive botanical inventory of its habitat. The inventory revealed that this species has very restrictive habitat requirements and a narrow ecological amplitude. Populations are limited to small microhabitats within large hydrological systems. Even limited human activity could disrupt these systems and indirectly destroy remote populations of Drosera anglica. Expansion of commercial peat mining could increase the scale of destruction to a critical level.

PREFERRED HABITAT IN MINNESOTA: This species appears to be restricted to minerotrophic water tracks in patterned peatlands, where it occurs in the wettest portions of flark formations. It is often associated with Drosera linearis and Drosera intermedia.

RECOMMENDATIONS: The best undisturbed examples of larger patterned peatlands (over 2,000 acres) should be protected from peat mining.

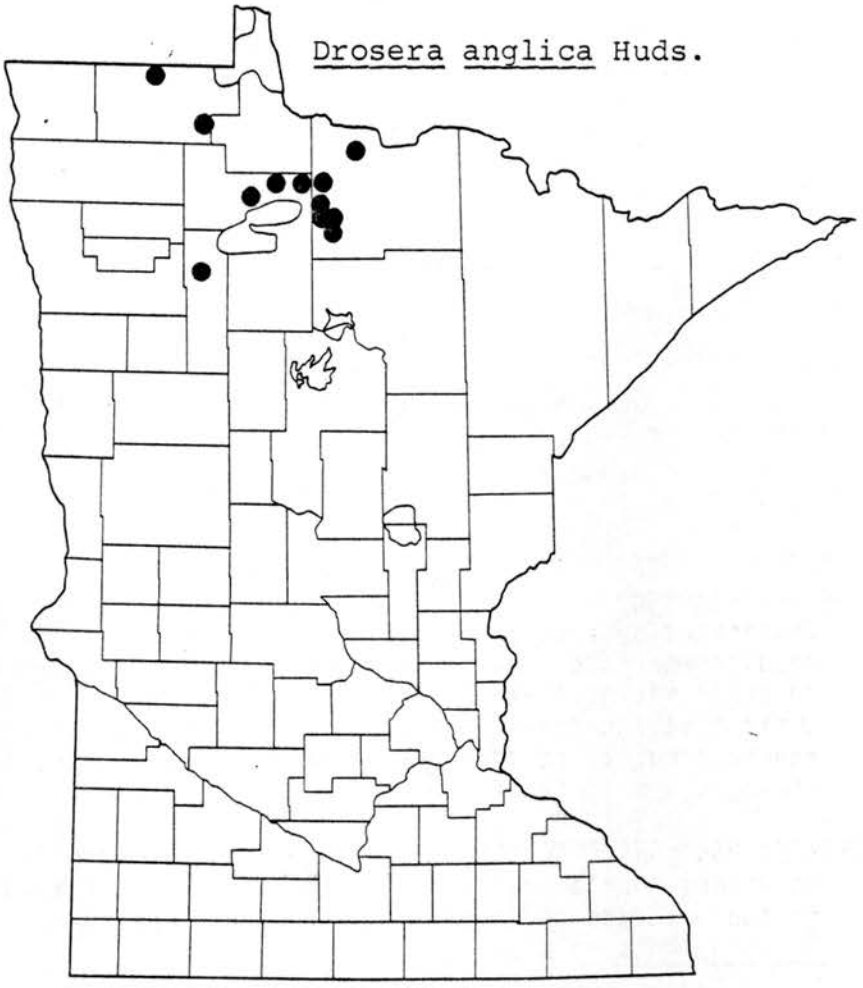
SELECTED REFERENCES:

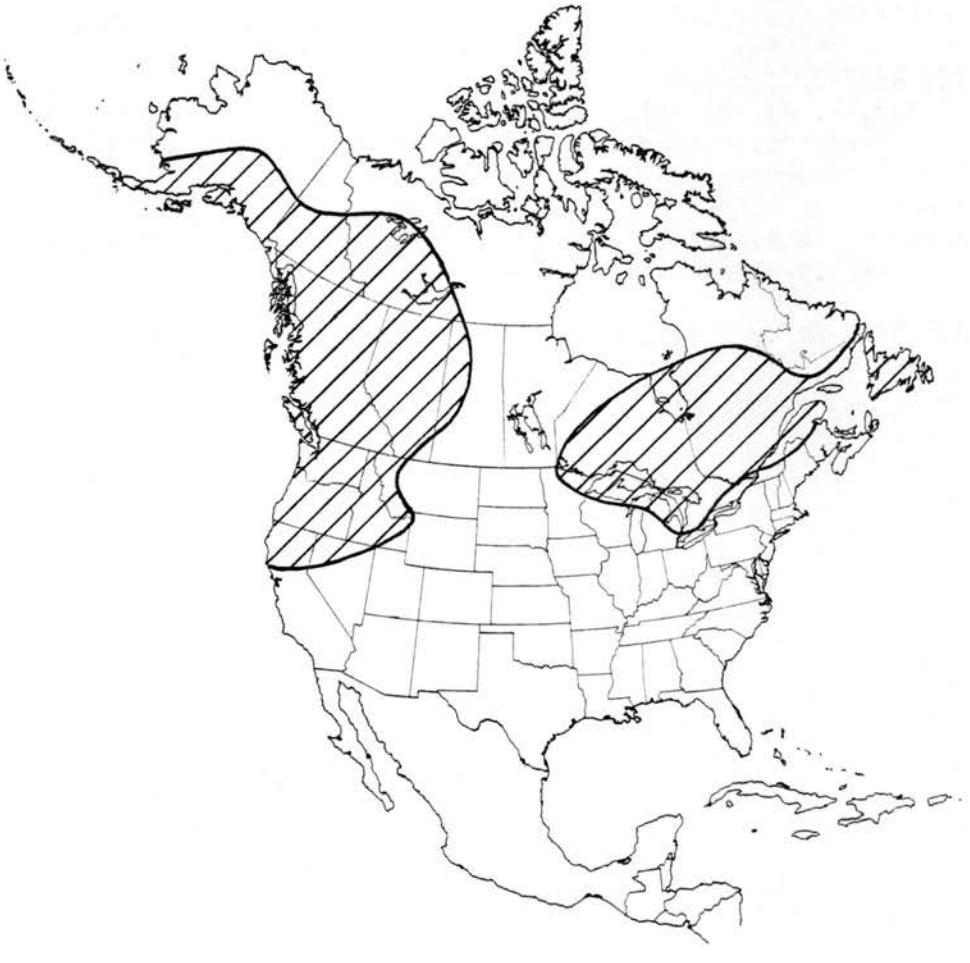
Glaser, P. H., et. al. 1981. The patterned mires of the Red Lake Peatland, northern Minnesota: vegetation, water chemistry and landforms. Jour. Ecol. 69:575-599.

Wheeler, G. A. and P. H. Glaser. 1979. Notable vascular plants of the Red Lake Peatland, northern Minnesota. Mich. Bot. 18:137-142.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Drosera anglica Huds.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Drosera linearis Goldie

FAMILY: Droseraceae

COMMON NAME: Linear-leaved Sundew

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Like the previous species, Drosera linearis is restricted by specific habitat requirements. It is extremely sensitive to disturbance of its environment and will not persist when the water level in its habitat is altered. The Hennepin County population was located somewhere near Minneapolis and was last collected in 1878. The Morrison County collection is without location and is dated 1891.

PREFERRED HABITAT IN MINNESOTA: Like the preceding species, Drosera linearis occurs in flark formations in minerotrophic water tracks in patterned peatlands. Historically, however, it also occurred in calcareous fens in Morrison and Hennepin Counties.

RECOMMENDATIONS: The best undisturbed examples of large patterned peatlands (over 2,000 acres) should be protected from peat mining.

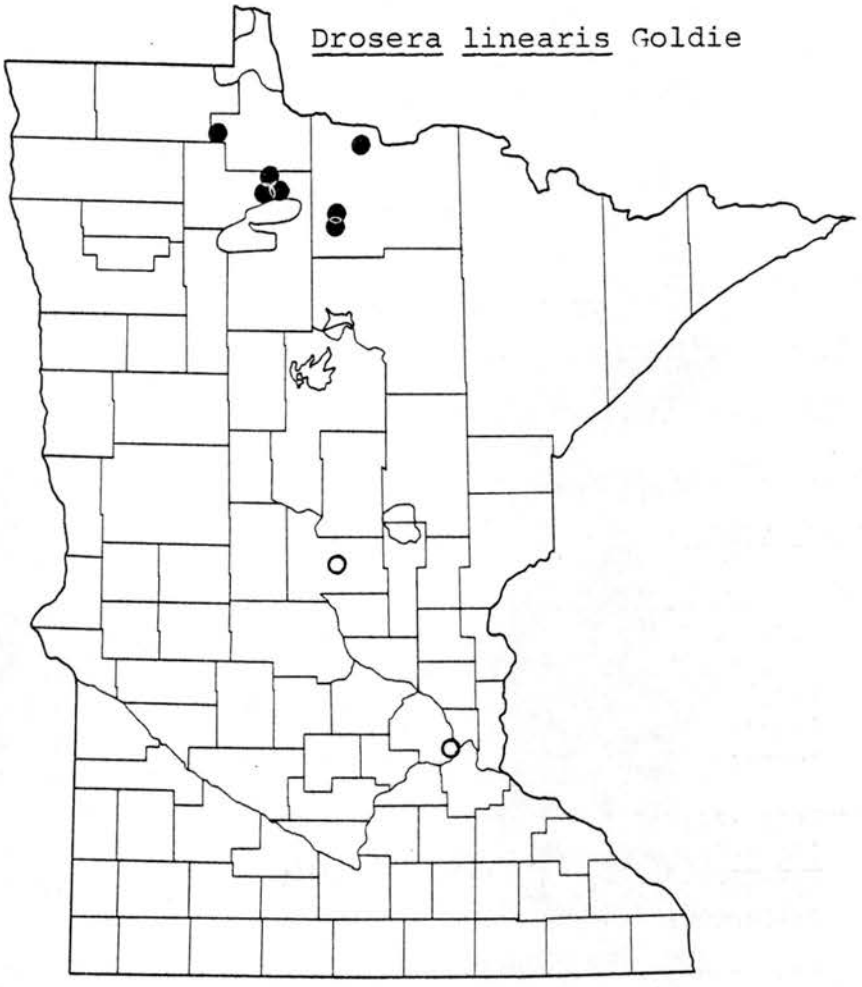
SELECTED REFERENCES:

Glaser, P. H., et. al. 1981. The patterned mired of the Red Lake Peatland, northern Minnesota: vegetation, water chemistry and landforms. Jour. Ecol. 69:575-599.

Wheeler, G. A. and P. H. Glaser. 1979. Notable vascular plants of the Red Lake Peatland, northern Minnesota. Mich. Bot. 18:137-141.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Drosera linearis Goldie





SPECIES STATUS SHEET

SCIENTIFIC NAME: Dryopteris marginalis (L.) Gray

FAMILY: Polypodiaceae

COMMON NAME: Marginal Wood Fern

STATE STATUS: Threatened

FEDERAL STATUS: None

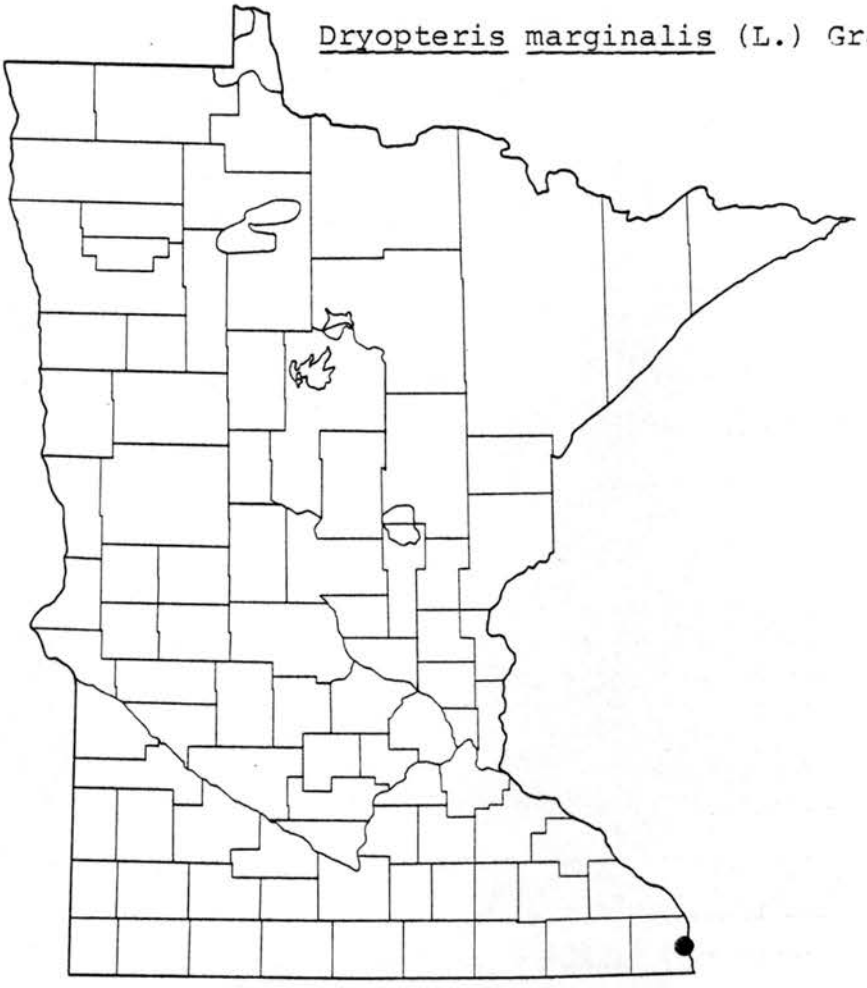
BASIS FOR MINNESOTA STATUS: Although this species was unknown in the state until 1981, it is assumed to be a native inhabitant of Minnesota which simply went undiscovered until that time. The fact that it was not found during the previous 100 years of floristic research is testimony to its true rarity. Threats to the Minnesota population have not been assessed, but it occurs in a habitat type that is frequently exploited for timber and livestock production.

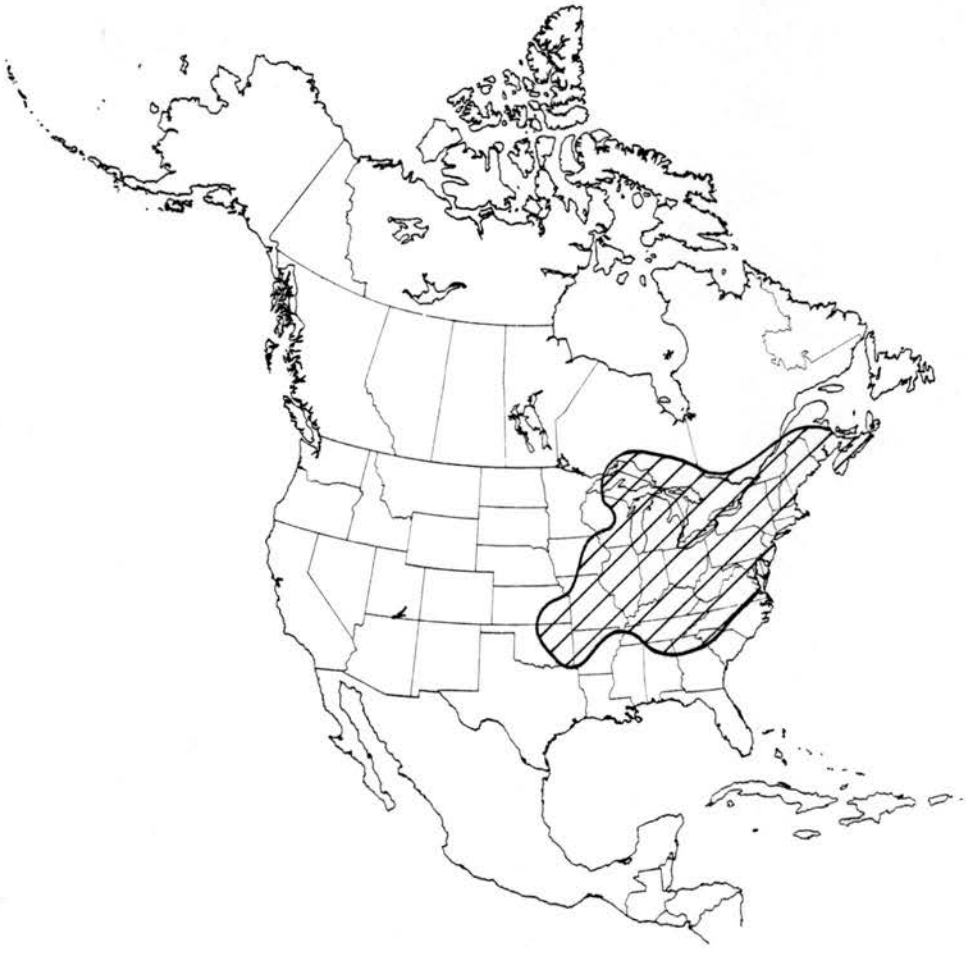
PREFERRED HABITAT IN MINNESOTA: The single Minnesota population of D. marginalis occurs on a bluff in an oak woods.

RECOMMENDATIONS: The population of D. marginalis needs to be censused, and protection options need to be explored.

PREPARED BY: Welby smith, Botanist, Natural Heritage Program

Dryopteris marginalis (L.) Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Eleocharis olivacea* Torr.

FAMILY: Cyperaceae

COMMON NAME: Olive-brown Spike-rush

STATE STATUS: Threatened

FEDERAL STATUS: None

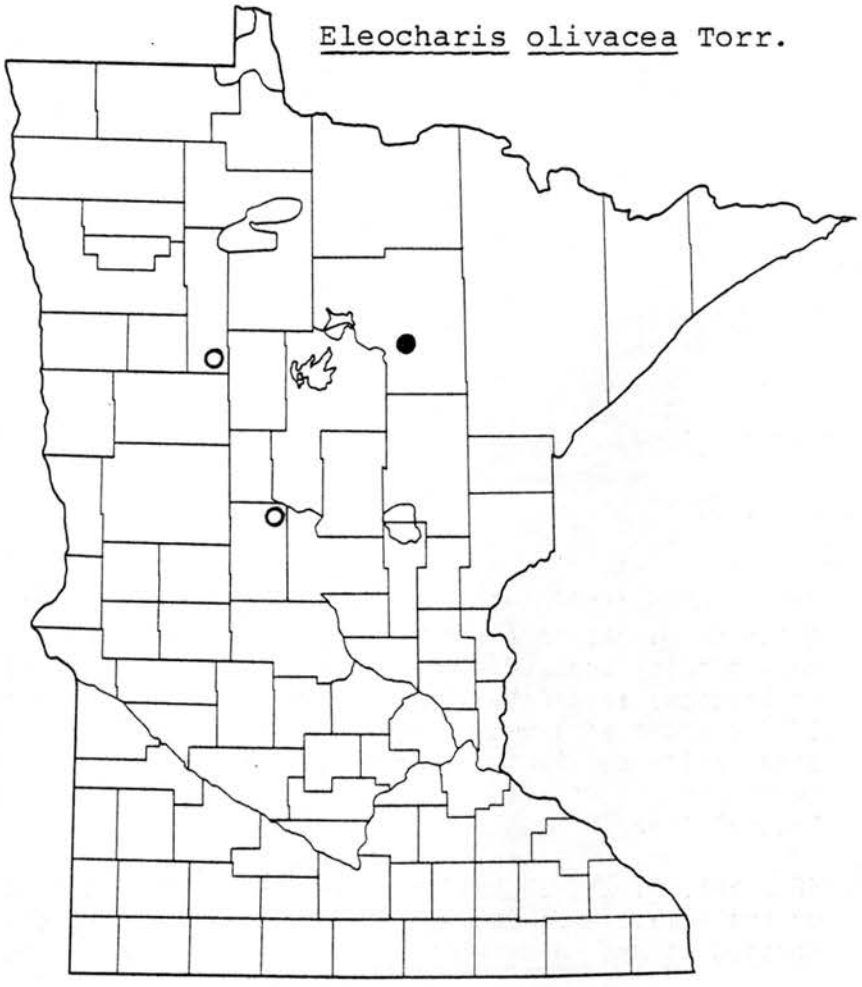
BASIS FOR MINNESOTA STATUS: This species is characteristic of the Atlantic Coastal Plain and its distribution inland is local and often disjunct. The reason for its rarity is not known, but it is absent from large areas of apparently suitable habitat. The collections from Todd and Clearwater Counties date from the 1930's and the current status of these populations is unknown. The site in Itasca County was recently transferred from federal to state ownership and will soon be designated as Botany Bog Scientific and Natural Area.

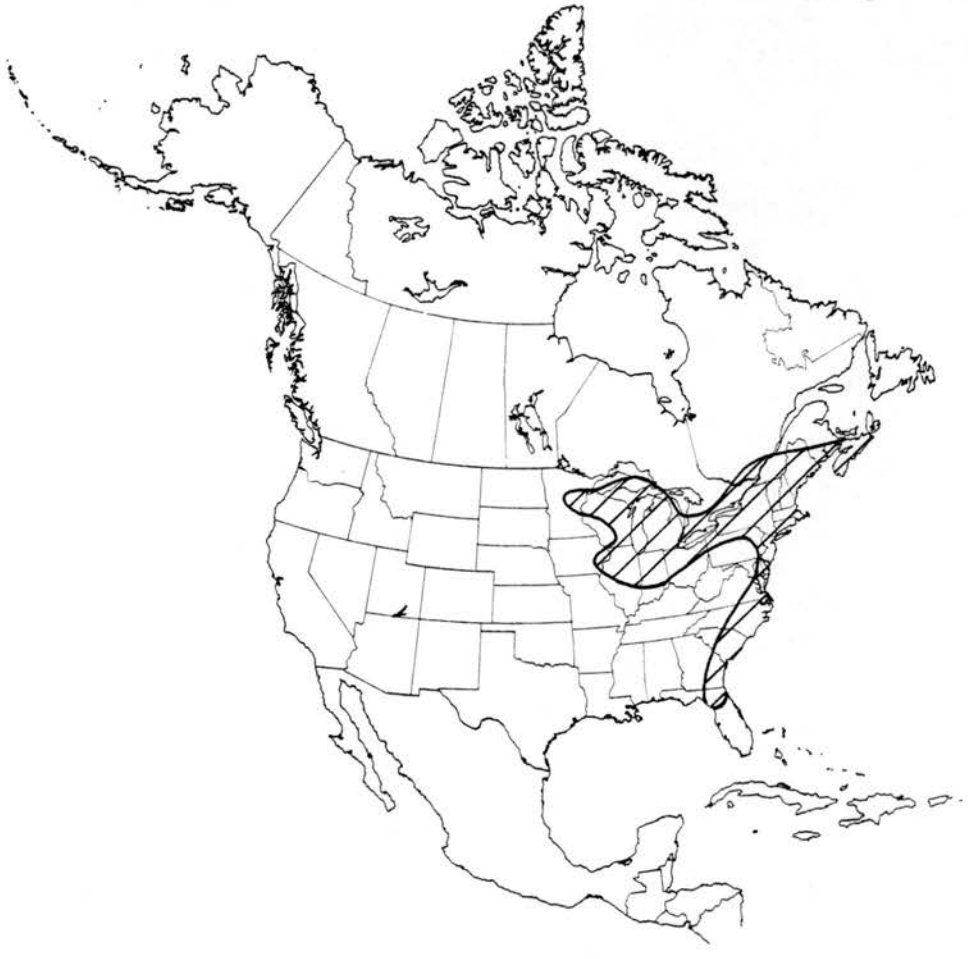
PREFERRED HABITAT IN MINNESOTA: This species occurs in bogs and on margins of bog lakes. The population at Botany Bog occurs with such rare species as *Nymphaea tetragona*, *Utricularia gibba* and *Xyris montana*.

RECOMMENDATIONS: No recommendations can be made at this time.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Eleocharis olivacea Torr.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Eleocharis rostellata* Torr.

FAMILY: Cyperaceae

COMMON NAME: Beaked Spike-rush

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Only five populations of this species are known to occur in Minnesota and two of them are quite small. This species has very specialized environmental requirements and is susceptible to changes in groundwater level. The populations in Becker and Mahnomen Counties are remnants of a much larger continuous population that was fragmented by draining and land clearing activities.

PREFERRED HABITAT IN MINNESOTA: This species is restricted to calcareous fens and fen-like peatlands in the northwest and north-central counties. It is absent from fens in the Minnesota Valley and west-central counties. It usually occurs in association with *Scirpus cespitosus* and *Carex sterilis*.

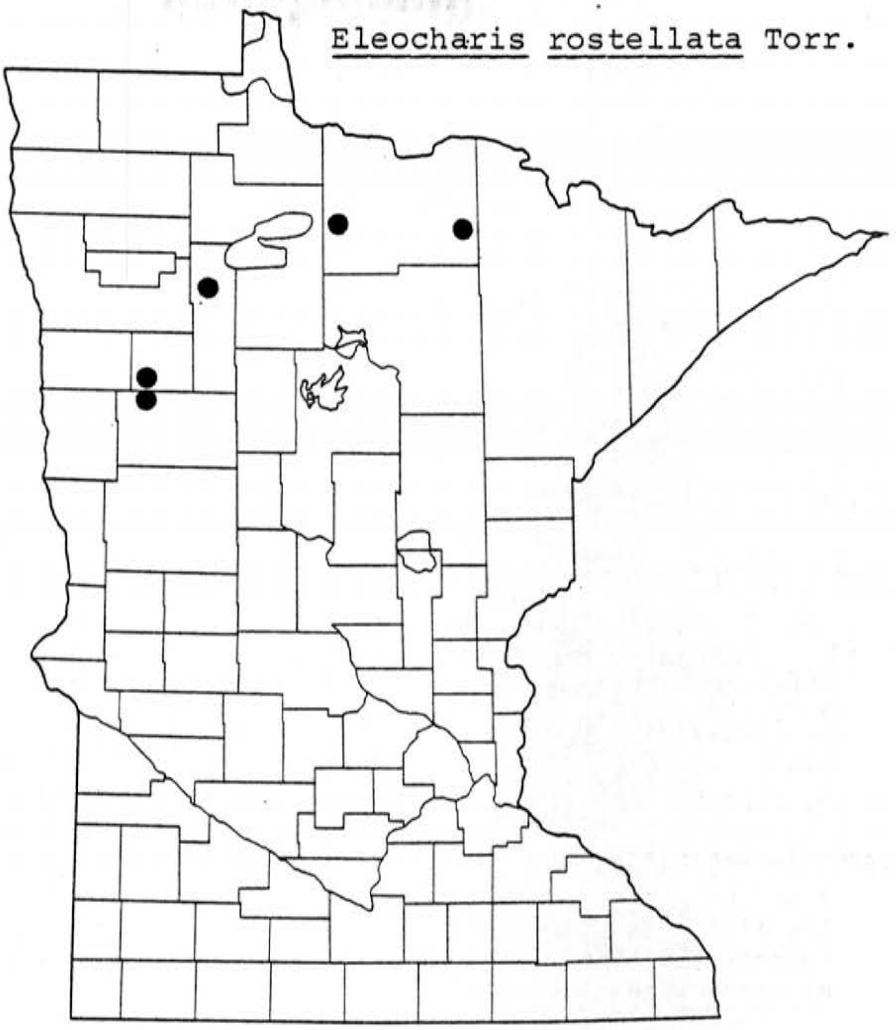
RECOMMENDATIONS: Additional information is needed on the hydrology of fens and the recovery potential of degraded fens.

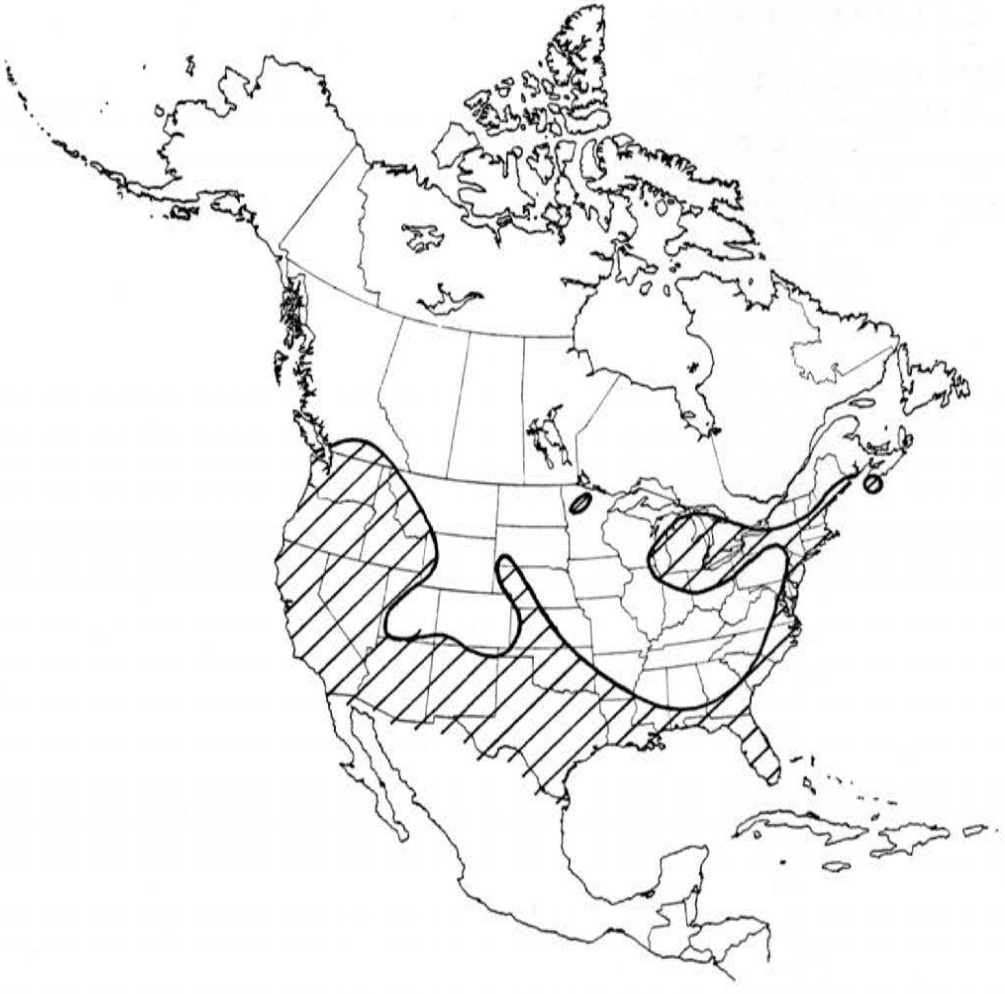
SELECTED REFERENCES:

Swenson, H. K. 1934. Monographic studies in the genus *Eleocharis*. III. Rhodora 36:377-389.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Eleocharis rostellata Torr.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Eleocharis wolfii* Gray

FAMILY: Cyperaceae

COMMON NAME: Wolf's Spikesedge

STATE STATUS: Endangered

FEDERAL STATUS: None

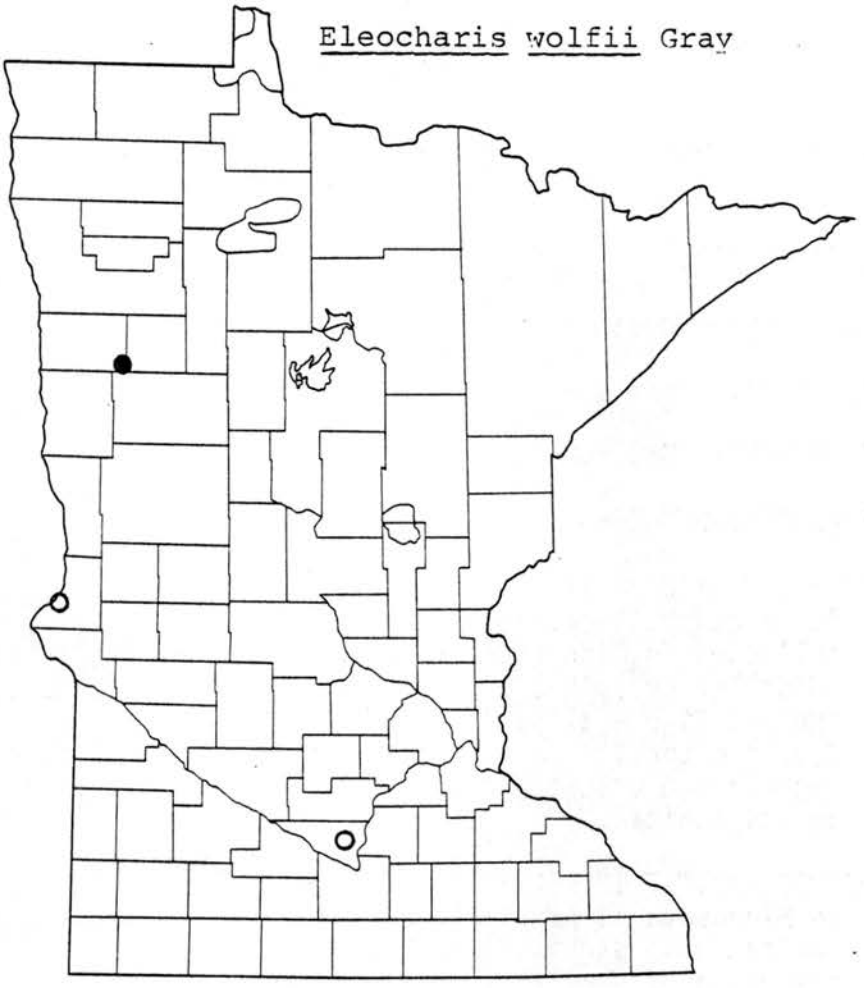
BASIS FOR MINNESOTA STATUS: Although this species is widely distributed, it is generally rare or local wherever it occurs. It was first collected in Minnesota by A. L. Ballard somewhere near Nicollet (Nicollet Co.) in 1892. It was next found near Lake Traverse in the Red River Valley in 1921 and again in Norman County in 1967. Specific threats to this species are not well known but the general degredation of wetlands in Minnesota may have a potential impact on its habitat.

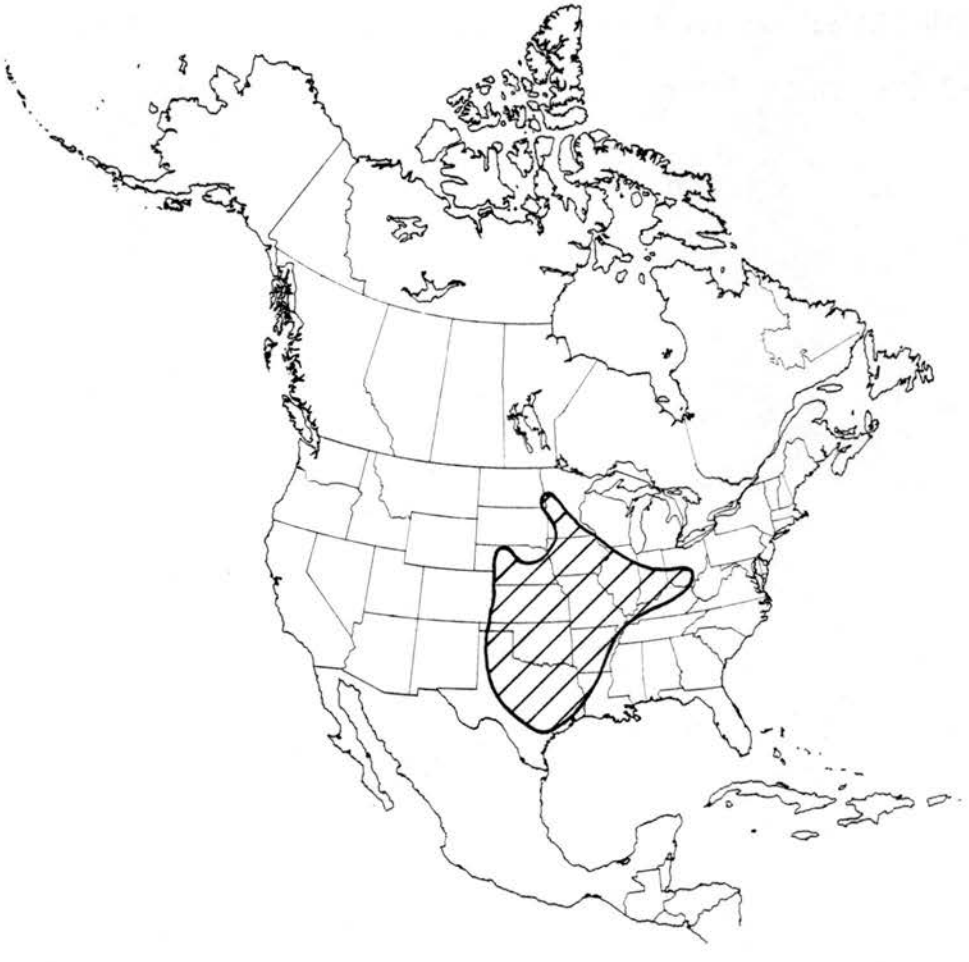
PREFERRED HABITAT IN MINNESOTA: The preferred habitat of *Eleocharis wolfii* in Minnesota is poorly known. The older collections refer to its habitat only as "moist places". The site in Norman County was described as "mud flats near stream".

RECOMMENDATIONS: No recommendations can be made at this time.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Eleocharis wolfii Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: Empetrum atropurpureum Fern. & Wieg.

FAMILY: Empetraceae

COMMON NAME: Purple Crowberry

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This boreal species is known to have occurred on several of the small rocky islands in the Susie Island chain in Lake Superior (Cook County). The populations appear to have declined since the islands were first explored in the 1930's and 1940's, and it may now be gone from some of the islands. This could be due to the rapidly expanding gull population which uses the islands for nesting. Any surviving populations are part of the small, isolated Great Lakes range that is disjunct from the main range of the species.

PREFERRED HABITAT IN MINNESOTA: This species occurs on barren shore rocks, cliff ledges and forest margins.

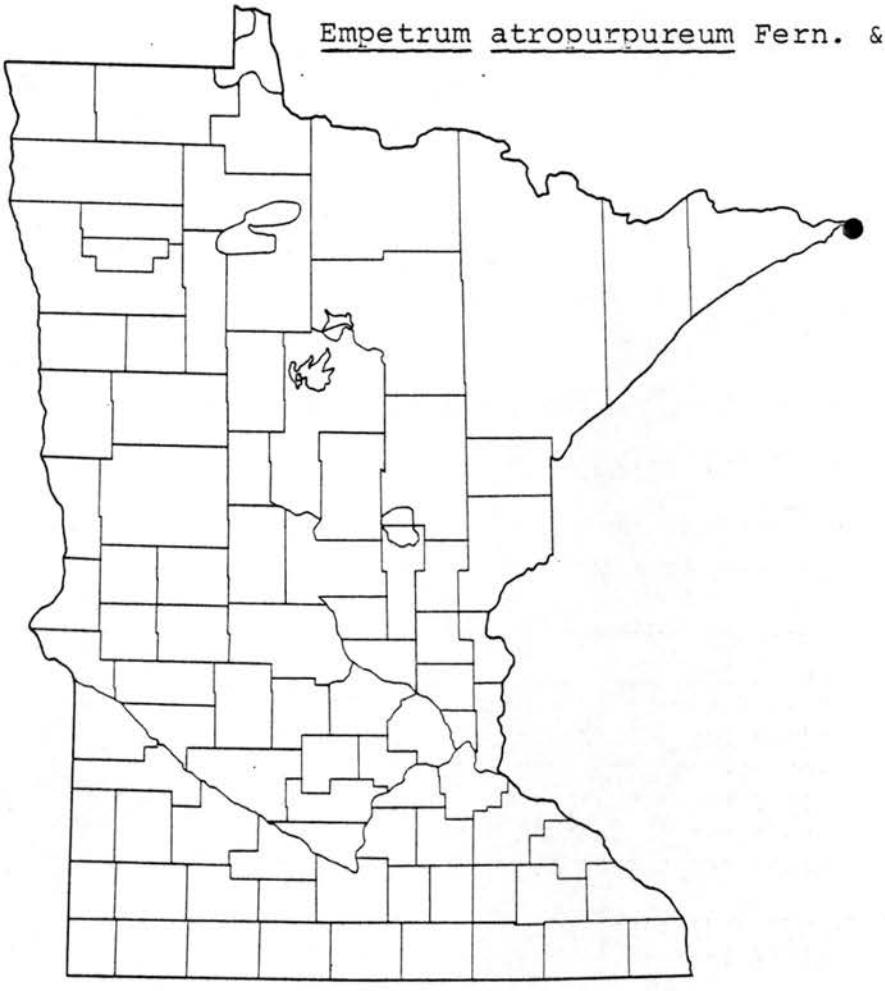
RECOMMENDATIONS: A thorough search for all the previously vouchered populations is necessary to determine the extent of any decline in populations.

SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Empetrum atropurpureum Fern. & Wieg.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Erythronium propullans* Gray

FAMILY: Liliaceae

COMMON NAME: Minnesota Trout Lily, Dwarf Dog-tooth Violet

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1972; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: This is Minnesota's only endemic plant species. It was discovered by Mrs. Mary B. Hedges near St. Mary's College in Faribault in 1870, and was described the following year by Asa Gray. It is entirely restricted to a few river valleys in Rice and Goodhue Counties where there are about 15 extant sites containing a total of only a few hundred individuals. Several colonies are known to have been destroyed by road building, farming, urban development and off-road vehicles. Several more colonies are presently threatened by the same activities.

PREFERRED HABITAT IN MINNESOTA: *Erythronium propullans* occurs on alluvial soil near the base of north-facing slopes in stream valleys.

RECOMMENDATIONS: Because of the extreme rarity of this species, it should receive the highest priority for protection. The preservation of all extant populations may be critical to the survival of the species.

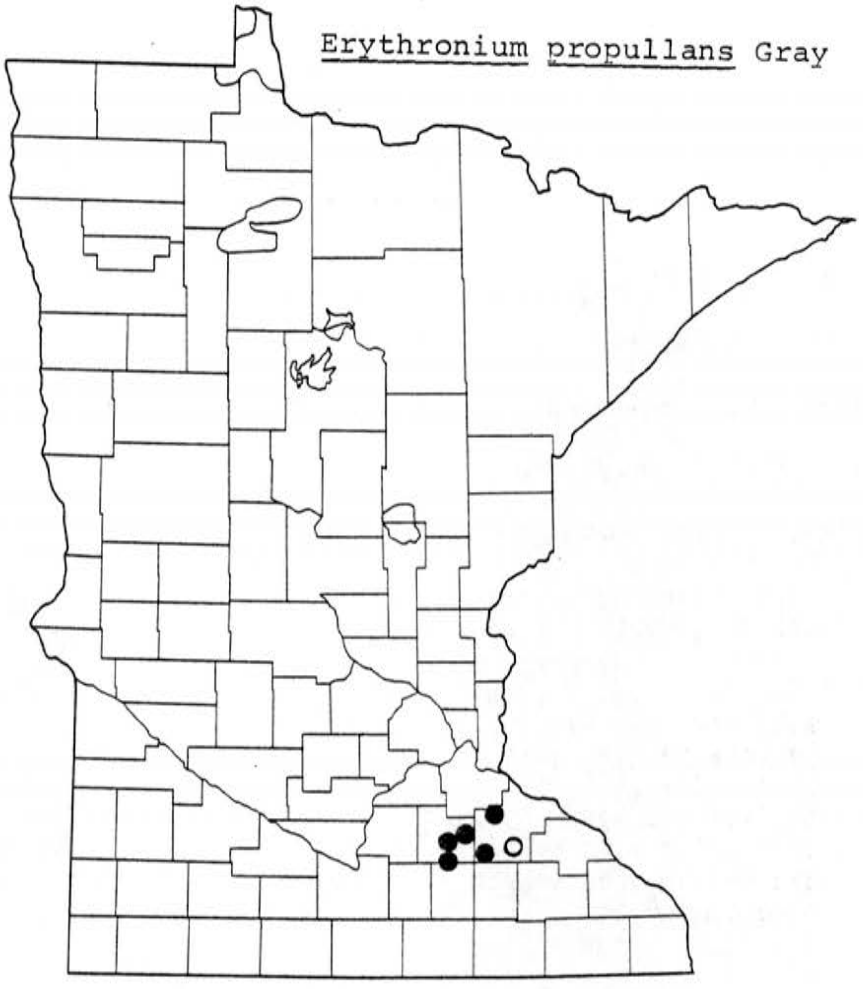
SELECTED REFERENCES:

Gray, A. 1871. A new species of *Erythronium*. Amer. Nat. 5:298-300.

Morley, T. 1978. Distribution and rarity of *Erythronium propullans*. Phytologia 40:(5) 381-389

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Erythronium propullans Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Gerardia auriculata* Michx. [*Tomanthera auriculata* (Michx.) Raf.]

FAMILY: Scrophulariaceae

COMMON NAME: Eared Gerardia

STATUS STATUS: Endangered

FEDERAL STATUS: None

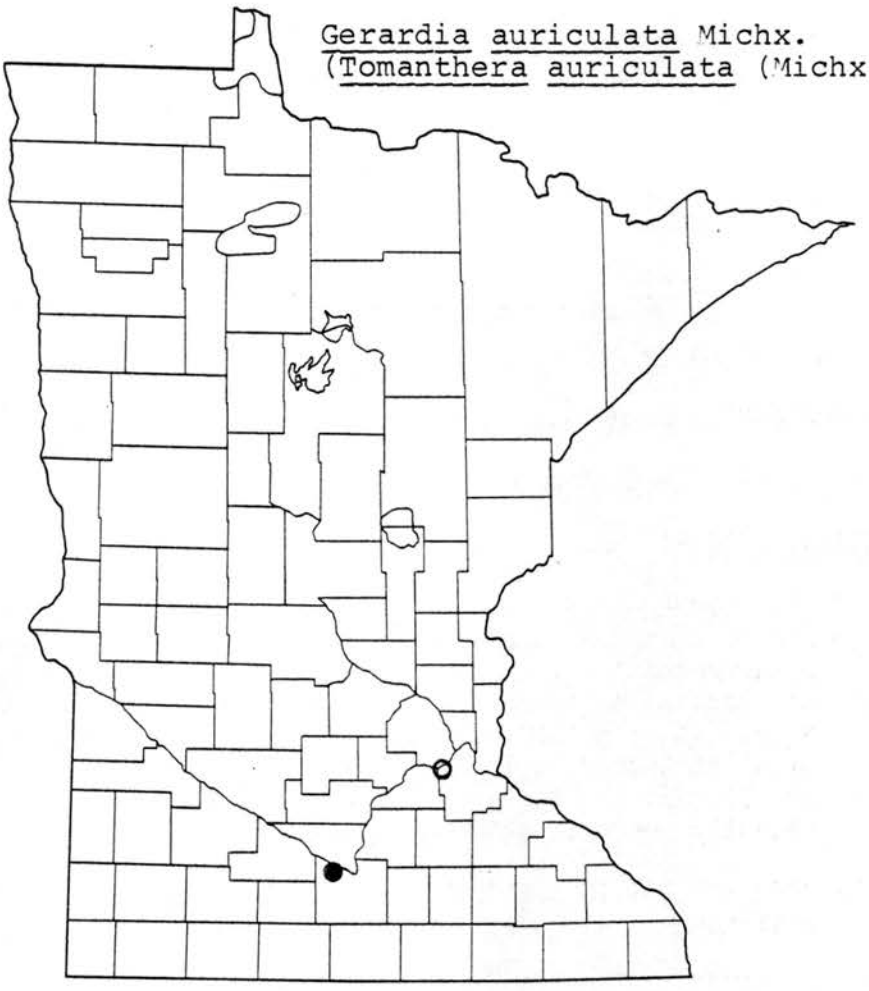
BASIS FOR MINNESOTA STATUS: This species is rare through much of the region and is either absent or believed extinct in neighboring states. All of the occurrences in Minnesota are from the lower Minnesota Valley where development pressure is very high, especially in the Twin Cities metropolitan area. It was first collected in Minnesota at an unknown location in Nicollet County in 1892. It was later collected in Dakota County in 1956 and Blue Earth County in 1960. The latter two collection sites have been recently searched without success.

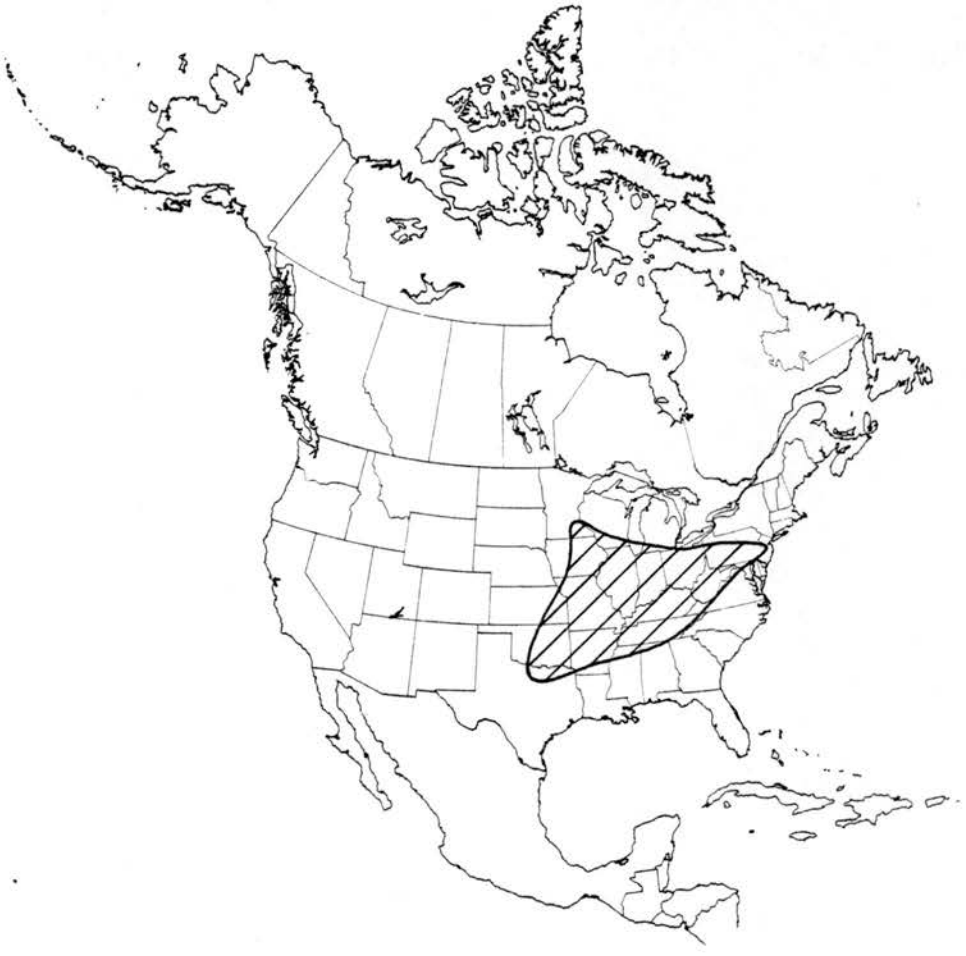
PREFERRED HABITAT IN MINNESOTA: This species occurs in wet meadows and low prairies.

RECOMMENDATIONS: Continued searches should be conducted in the lower Minnesota Valley between Burnsville and Mankato.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Gerardia auriculata Michx.
(Tomanthera auriculata (Michx.) Raf.)





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Gerardia gattingeri* Small

FAMILY: Scrophulariaceae

COMMON NAME: Round-stemmed Gerardia

STATE STATUS: Threatened

FEDERAL STATUS: None

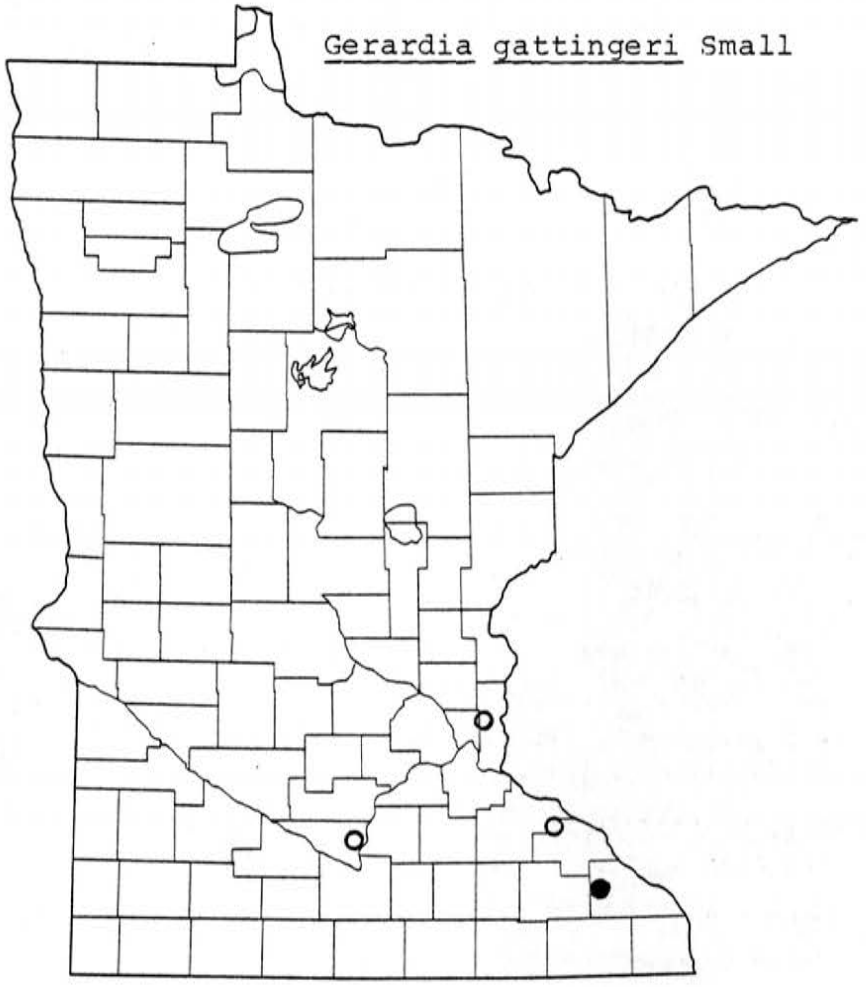
BASIS FOR MINNESOTA STATUS: Although widespread, this species is rare and local throughout the region, and appears to have suffered local extirpations in Minnesota. The collections from Nicollet, Washington and Wabasha Counties date from the 1800's and may no longer be extant. A population is believed to survive at Whitewater State Park, but its status is uncertain.

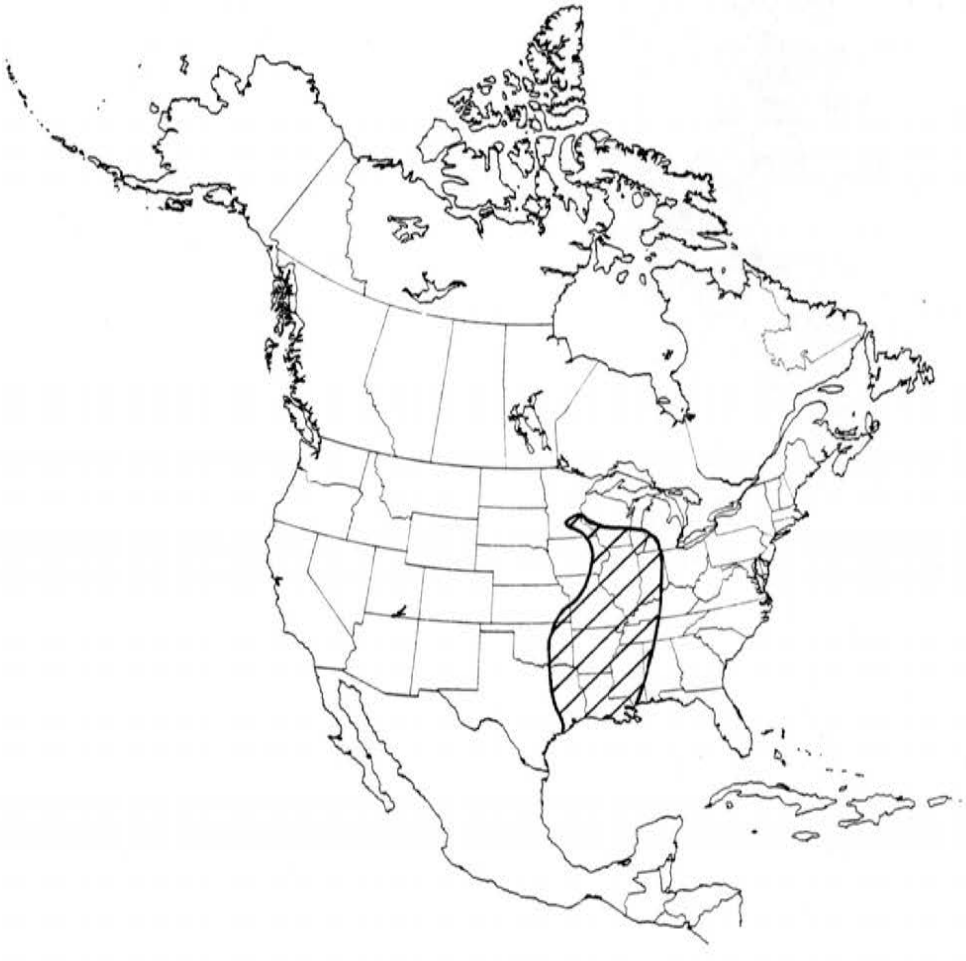
PREFERRED HABITAT IN MINNESOTA: This species occurs in meadows, hill prairies and open woods.

RECOMMENDATIONS: The population at Whitewater State Park needs to be censused and management potential assessed.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Gerardia gattingeri Small





SPECIES STATUS SHEET

SCIENTIFIC NAME: Hydrastis canadensis L.

FAMILY: Ranunculaceae

COMMON NAME: Golden Seal

STATE STATUS: Endangered

FEDERAL STATUS: Previously considered by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973; amended 1978. Federal Register 40(127):27859, July 1, 1975). Not currently being considered for listing because it has proven to be more abundant than previously believed (Fed. Register 45(242):82480, 12-15-80).

BASIS FOR MINNESOTA STATUS: This species has always been rare in Minnesota because it occurs here at the extreme periphery of its range. Recently, however, it has become critically endangered because of increasing commercial exploitation. It is currently limited to a few scattered populations, none of which are adequately protected. Other threats include land clearing and cattle grazing.

PREFERRED HABITAT: This species requires undisturbed deciduous woodlands.

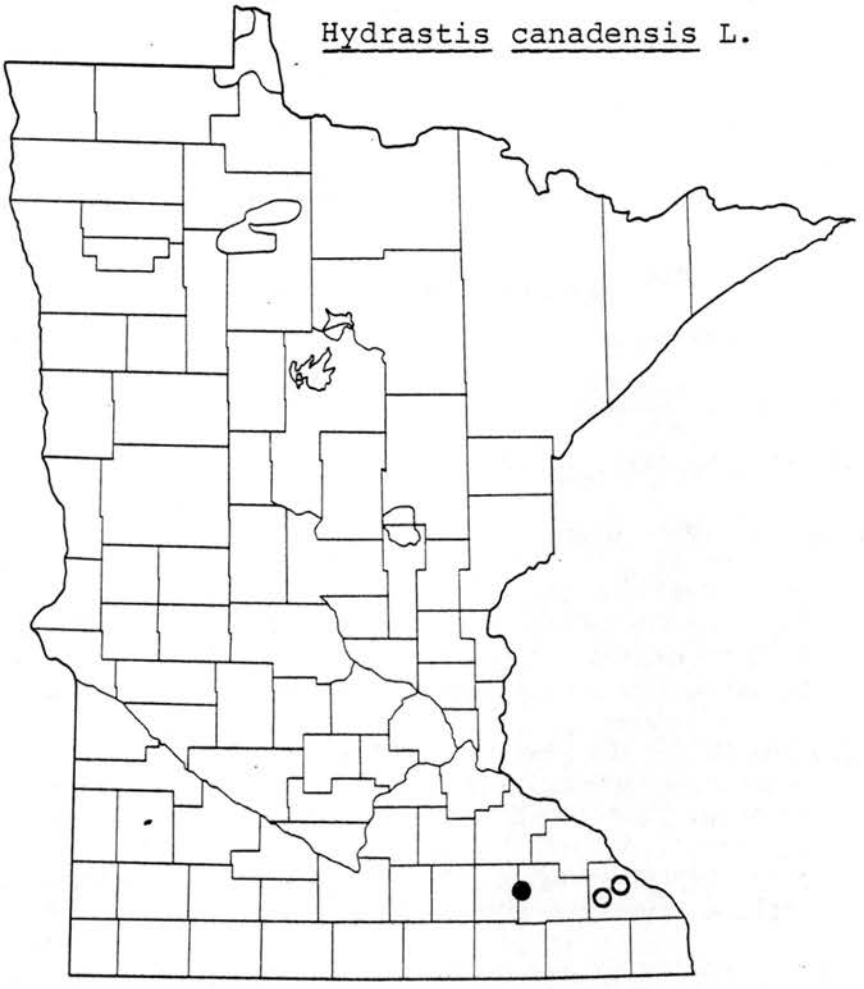
RECOMMENDATIONS: This species has nearly reached economic extinction in Minnesota. It is so rare that it is uneconomical to exploit. Before biological extinction is reached, all commercial trade in wild Minnesota Hydrastis should be prohibited.

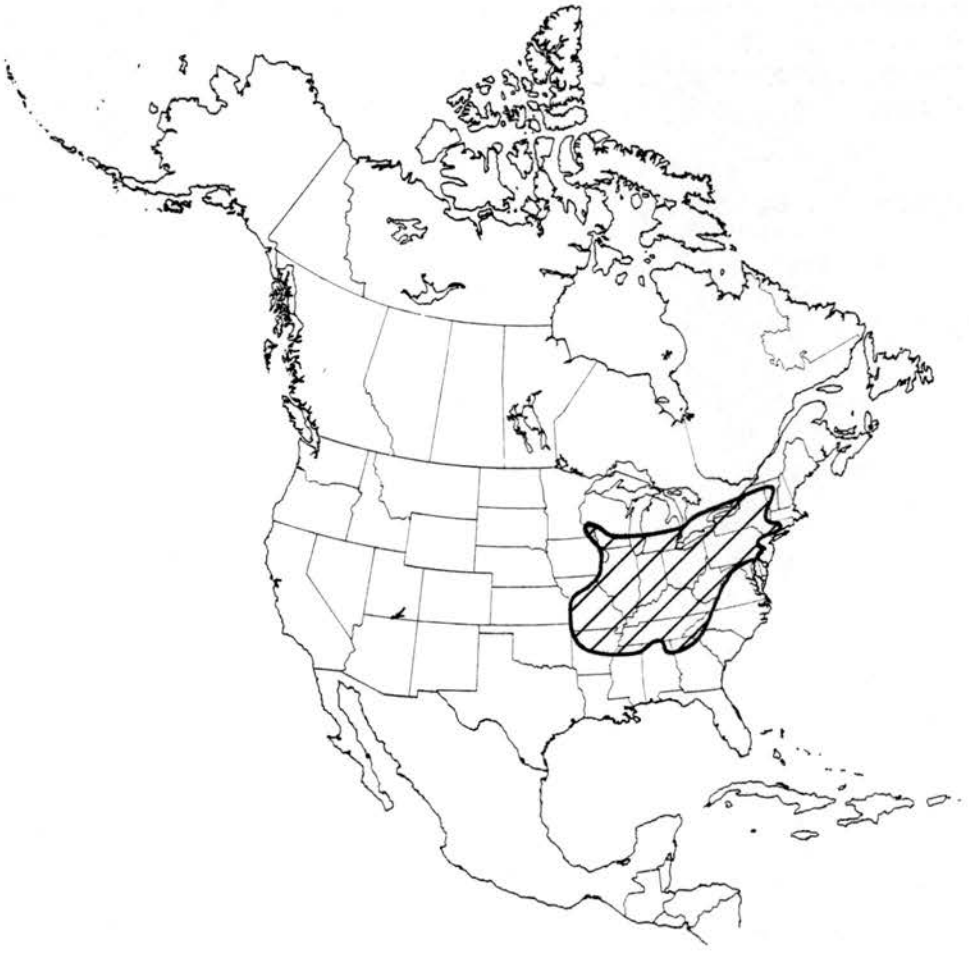
SELECTED REFERENCES:

Rosendahl, C. O. and J. W. Moore. 1947. A new variety of Sedum rosea from southeastern Minnesota and additional notes on the flora of the region. Rhodora 49:197-202.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Hydrastis canadensis L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Isoetes melanopoda* Gay & Dur.

FAMILY: Isoetaceae

COMMON NAME: a species of Quillwort

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This heterosporous fern occurs in Minnesota at the northern periphery of its range. The potential for its occurrence is further limited by its unusual habitat requirements. It appears to be rare or local over most of its range and may, in fact, be extinct in neighboring states. It is currently known to occur at two sites in Minnesota. Both populations are small and consist of only a few individuals each. One of the populations will be protected in the proposed Blue Mounds Scientific and Natural Area.

PREFERRED HABITAT IN MINNESOTA: This species has been found only in ephemeral pools that form in depressions in Sioux Quartzite outcrops. It occurs with other rare species of this habitat such as *Plantago elongata*, *Heteranthera limosa* and *Marsilea mucronata*.

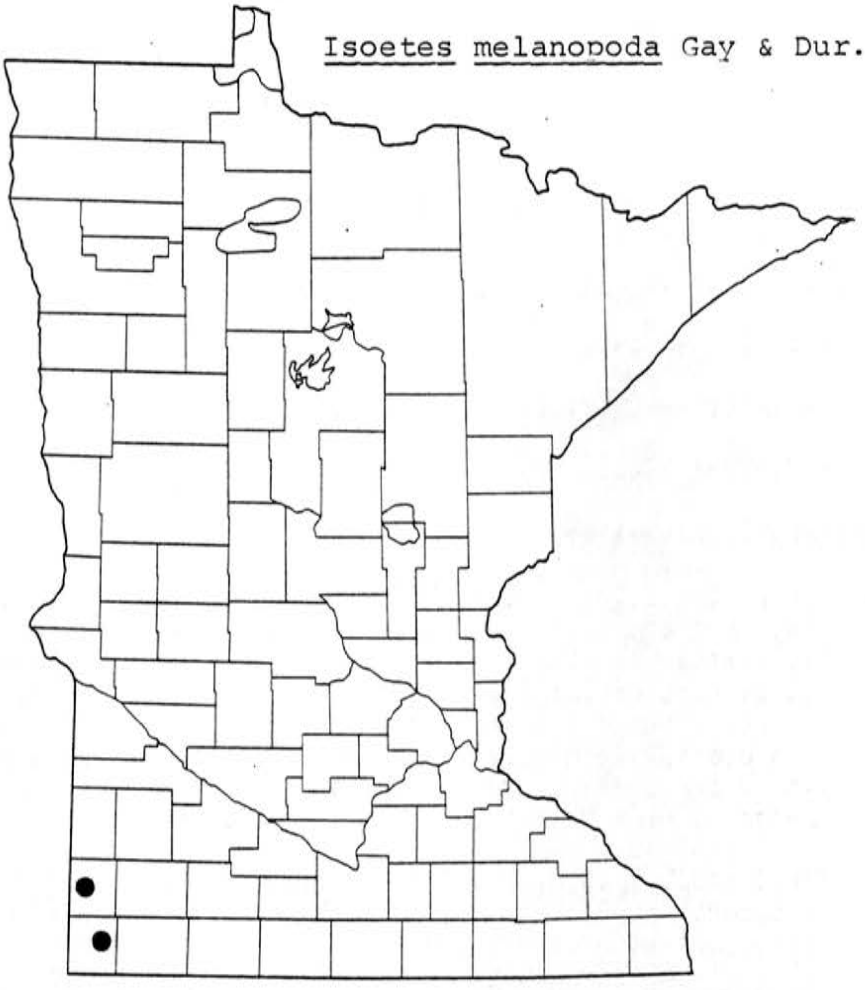
RECOMMENDATIONS: No recommendations can be made at this time.

SELECTED REFERENCES:

Moore, J. W. and R. M. Tryon. 1946. A new record for *Isoetes melanopoda*. Am. Fern Jour. 36:89-91.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Isoetes melanopoda Gay & Dur.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Jeffersonia diphylla (L.) Pers.

FAMILY: Berberidaceae

COMMON NAME: Twinleaf

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species reaches the northwestern limit of its range in Minnesota and occurs here very rarely. Of the four historical collection sites, only two could be located recently. The two remaining sites may have been destroyed by land clearing or cattle grazing. These two activities are especially destructive and have eliminated most of the potential habitat of this species.

PREFERRED HABITAT IN MINNESOTA: Jeffersonia diphylla occurs on moist, wooded talus slopes, typically north-facing.

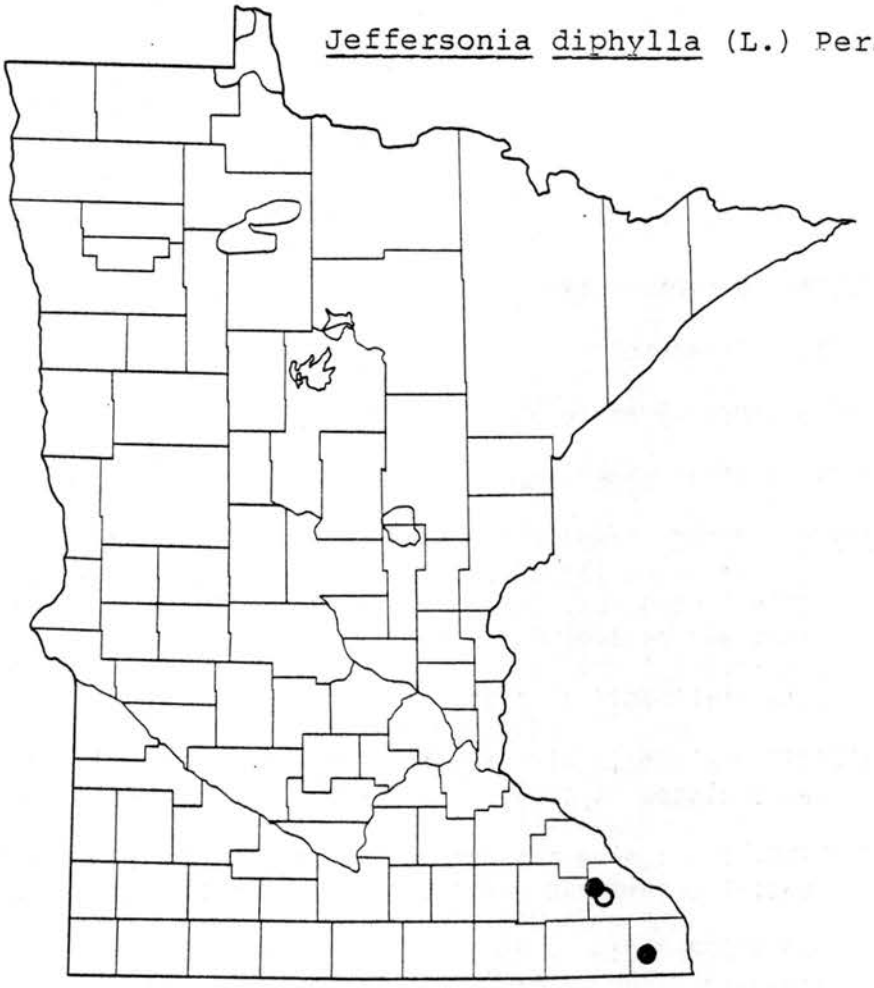
RECOMMENDATIONS: The two known populations occur in state parks and warrant special consideration in park management activities.

SELECTED REFERNCES:

Rosendahl, C. O. and J. W. Moore. 1947. A new variety of Sedum rosea from southeastern Minnesota and additional notes on the flora of the region. Rhodora 49:197-202.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Jeffersonia diphylla (L.) Pers.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lespedeza leptostachya Engelm.

FAMILY: Fabaceae

COMMON NAME: Prairie Bush Clover

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: The pre-settlement range of this species was very restricted. It has become even more restricted in recent times because of numerous local extirpations. This contraction of range has been accompanied by isolation of populations in remnant habitats. These remnants persist because they are too dry or too rocky for agriculture. Recent advances in agricultural technology, however, have made these marginal lands more economical to convert to cropland. The largest population in Minnesota occurs in a proposed state Scientific and Natural Area and is being intensively studied to determine management potential. The anomalous collection in Cass County is dated 1890 and has never been verified.

PREFERRED HABITAT IN MINNESOTA: The most recent collections are from dry prairies, gravel hills and rock outcrops. It also shows a distinct preference for north-facing slopes.

RECOMMENDATIONS: Several of the known populations in Minnesota are quite small, and their long-term viability is uncertain. Intensive monitoring of these populations may be necessary to predict population trends and recovery potential.

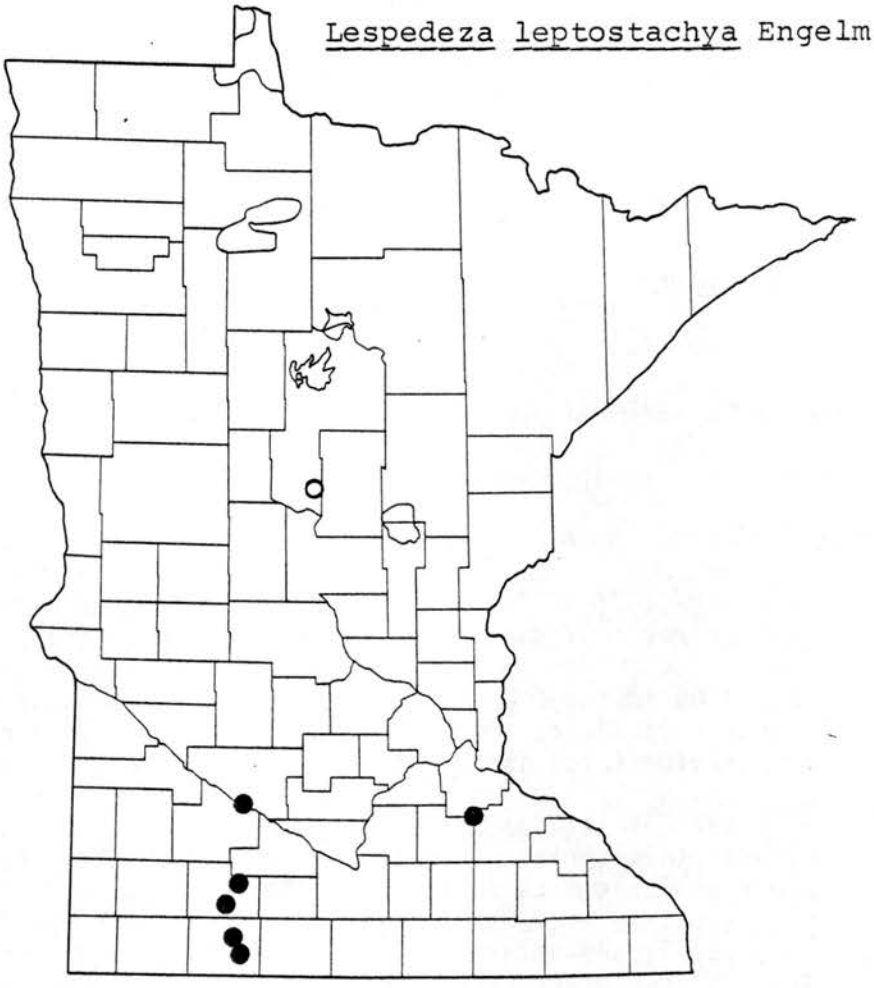
SELECTED REFERENCES:

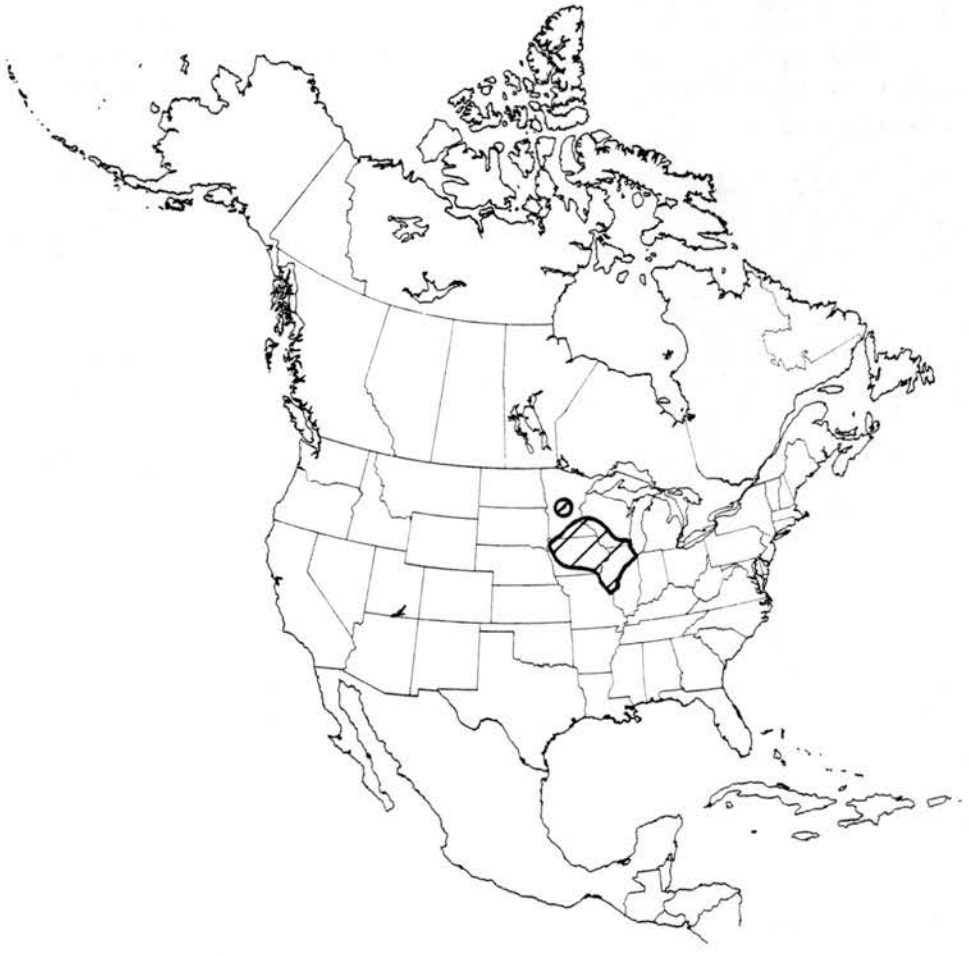
Clewell, A. F. 1966. Native North American species of Lespedeza. Rhodora 68:359-405.

Sheldon, E. P. 1890. Some extensions of plant ranges. Minn. Bot. Stud. Vol. 1:14-18.

PREPARED BY: Welby smith, Botanist, Natural Heritage Program

Lespedeza leptostachya Engelm.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lesquerella ludoviciana (Nutt.) S. Wats.

FAMILY: Brassicaceae

COMMON NAME: Bladder Pod

STATE STATUS: Endangered

FEDERAL STATUS: None

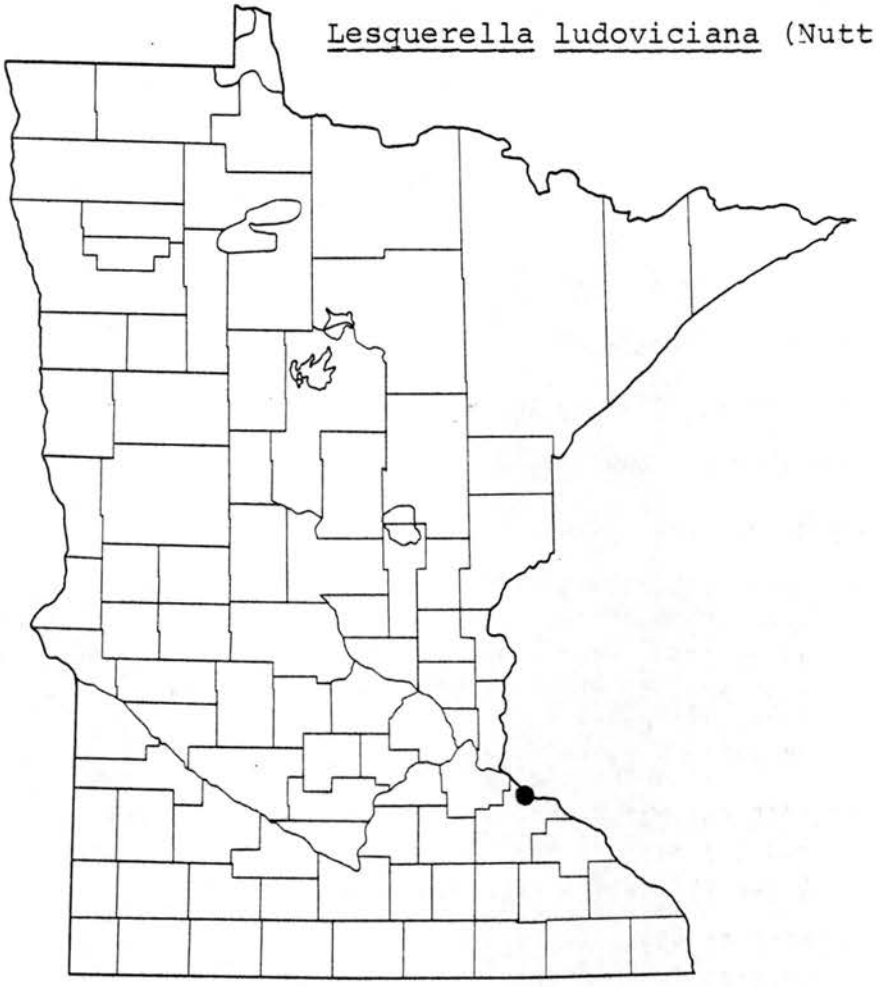
BASIS FOR MINNESOTA STATUS: In Minnesota, this species is restricted to dry prairie bluffs in the city of Red Wing, where it has been known since 1886. This site is disjunct 300 miles from the main portion of its range in the Great Plains. The continued survival of this species in Minnesota could be threatened by encroaching urban development and non-compatible recreational activities.

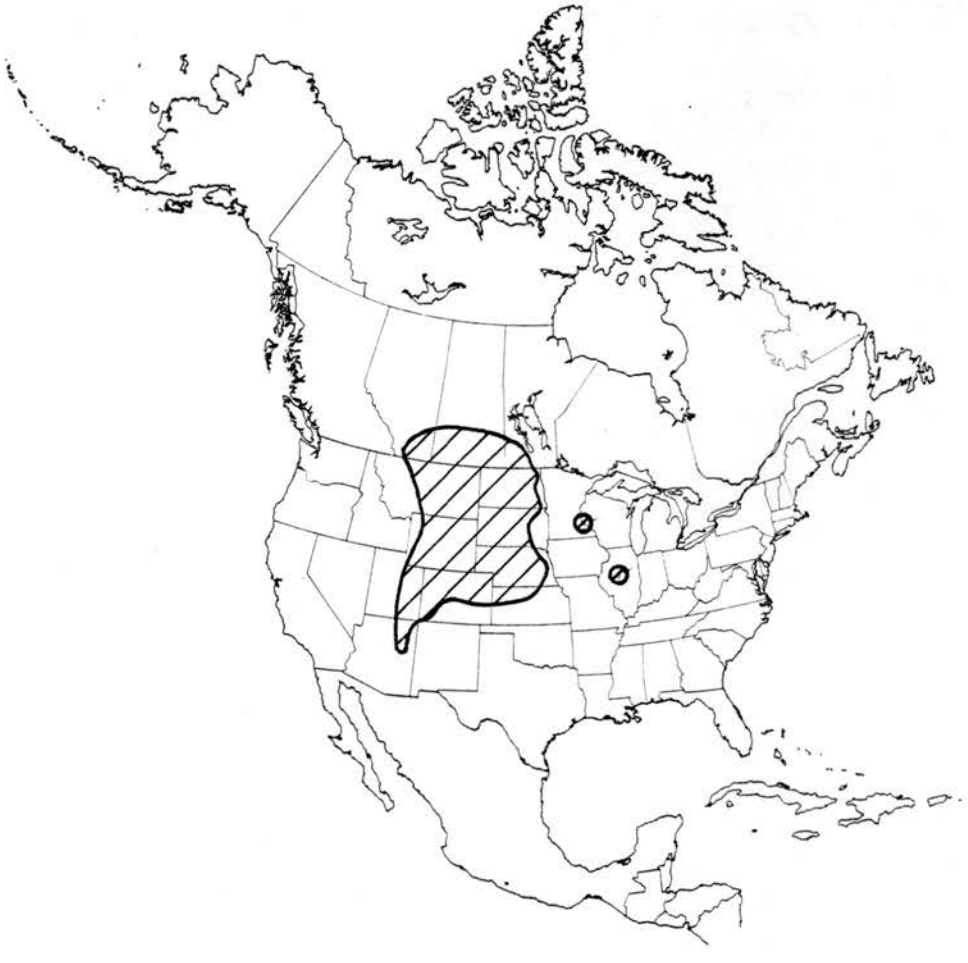
PREFERRED HABITAT IN MINNESOTA: The Minnesota plants occur in a dry prairie habitat on a series of south-facing bluffs. They appear to prefer exposed sandy soil where competition is minimal.

RECOMMENDATIONS: An effort should be made to protect the habitat of this species from urban encorachment.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Lesquerella ludoviciana (Nutt.) S. Wats.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Littorella americana Fern.

FAMILY: Plantaginaceae

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This small aquatic species is rare or local throughout its limited range. It was discovered in Minnesota at Basswood Lake (Lake Co.) in 1886. It was rediscovered at this site in 1957 after it had been found at Iron Lake and Lac La Croix (St. Louis Co.) in 1953. It was next found at Snowbank Lake and Malberg Lake (Lake Co.) in 1957. The population at Snowbank Lake was successfully relocated in 1982, but it had suffered a severe decline when most of its habitat was eliminated by the construction of retaining walls.

PREFERRED HABITAT IN MINNESOTA: Littorella americana is an aquatic species that occurs in shallow water of lake margins. In times of low water it may survive stranded on sandy beaches. It may occur with another rare aquatic species, Subularia aquatica.

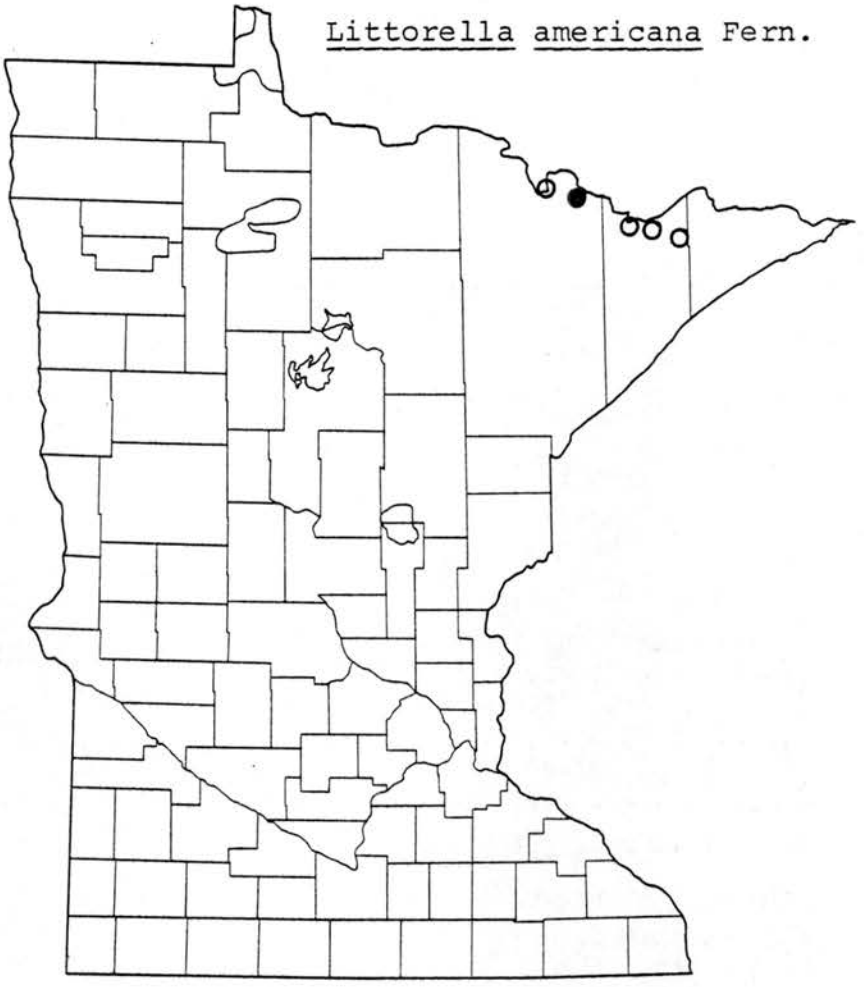
RECOMMENDATIONS: No recommendations can be made at this time.

SELECTED REFERENCES:

Lakela, O. 1958. Distribution of Littorella americana in the mid-arrowhead region of Minnesota. Rhodora 60:33-37.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Littorella americana Fern.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lycopodium porophilum Lloyd & Underwood

FAMILY: Lycopodiaceae

COMMON NAME: Fir Club-moss

STATE STATUS: Threatened

FEDERAL STATUS: None

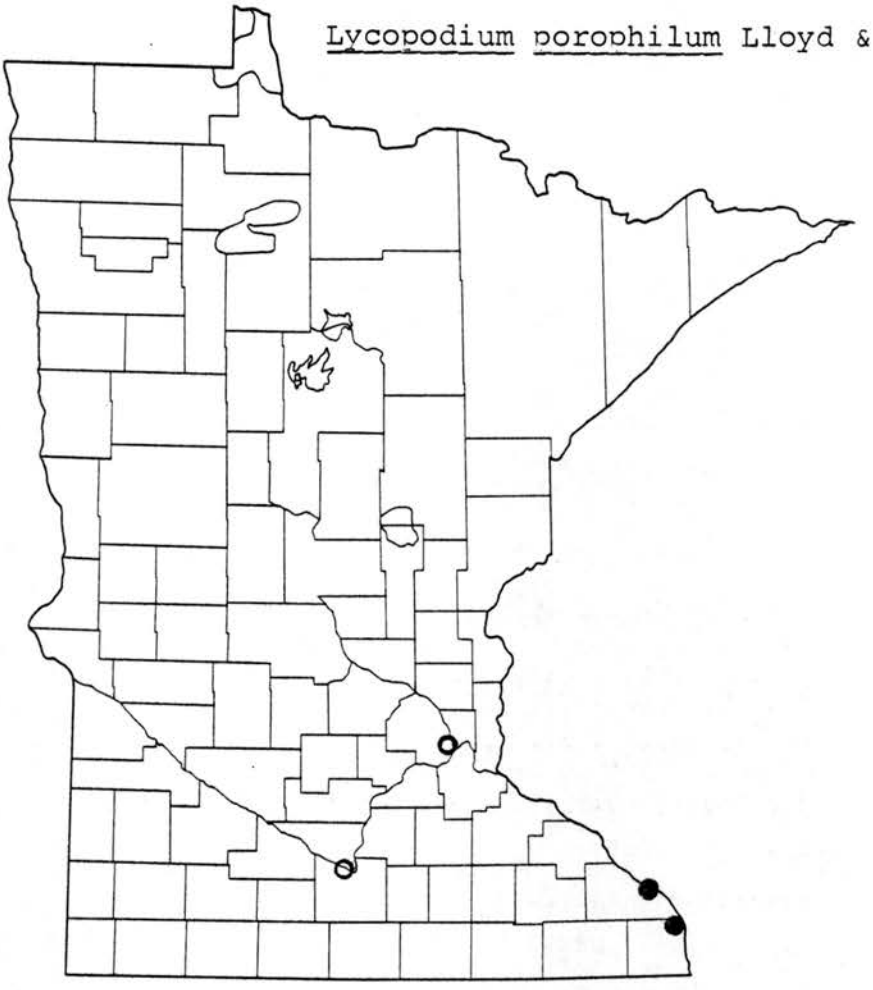
BASIS FOR MINNESOTA STATUS: This species is generally rare or uncommon in the region and is restricted to a limited habitat type. The Hennepin County site is known by a 1902 collecion from the Minneapolis area. The Blue Earth County site is known by a 1883 collection from Minneopa Falls. Both these populations may now be extinct. We currently know of only two extant populations of this species (Houston and Winona Counties), and both are small and vulnerable.

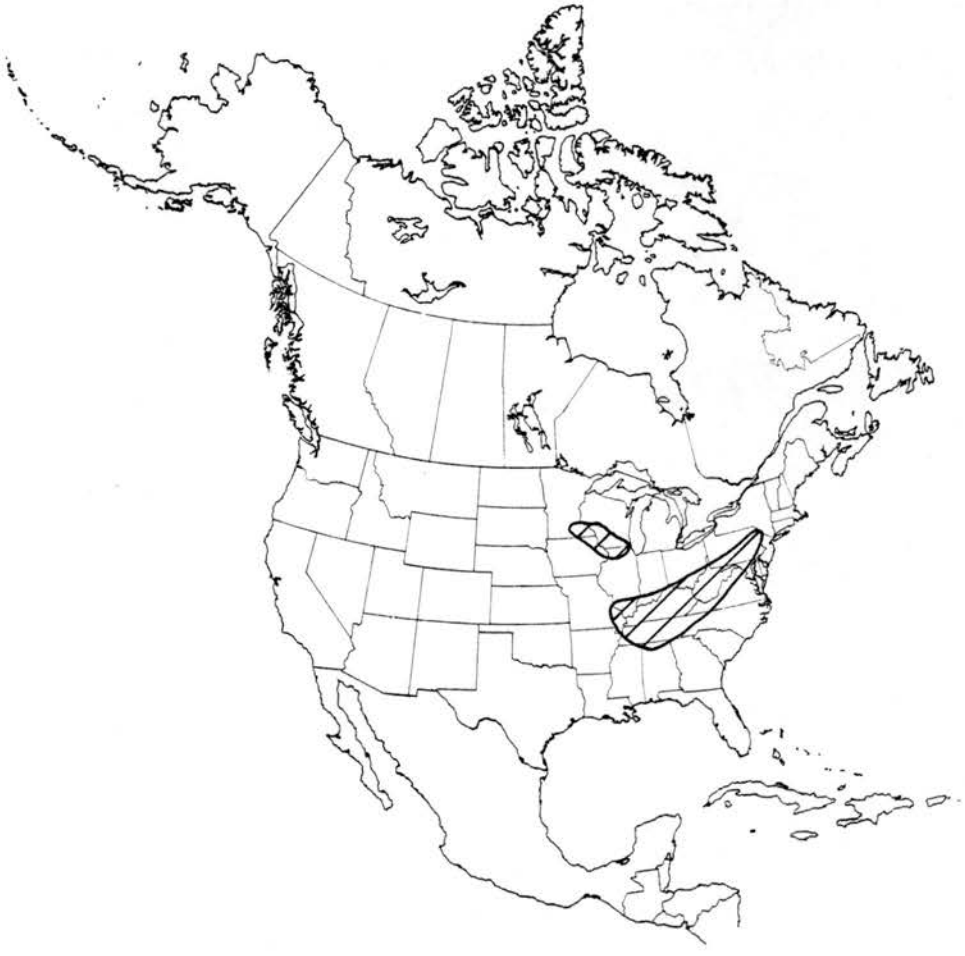
PREFERRED HABITAT IN MINNESOTA: This species appears to be restricted to sandstone ledges.

RECOMMENDATIONS: The population in Winona County occurs on public land with three other rare fern species. An effort should be made to protect the site from unnecessary disturbance.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Lycopodium porophilum Lloyd & Underwood





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Lygodesmia rostrata* Gray

FAMILY: Asteraceae

COMMON NAME: Annual Skeleton-weed

STATE STATUS: Threatened

FEDERAL STATUS: None

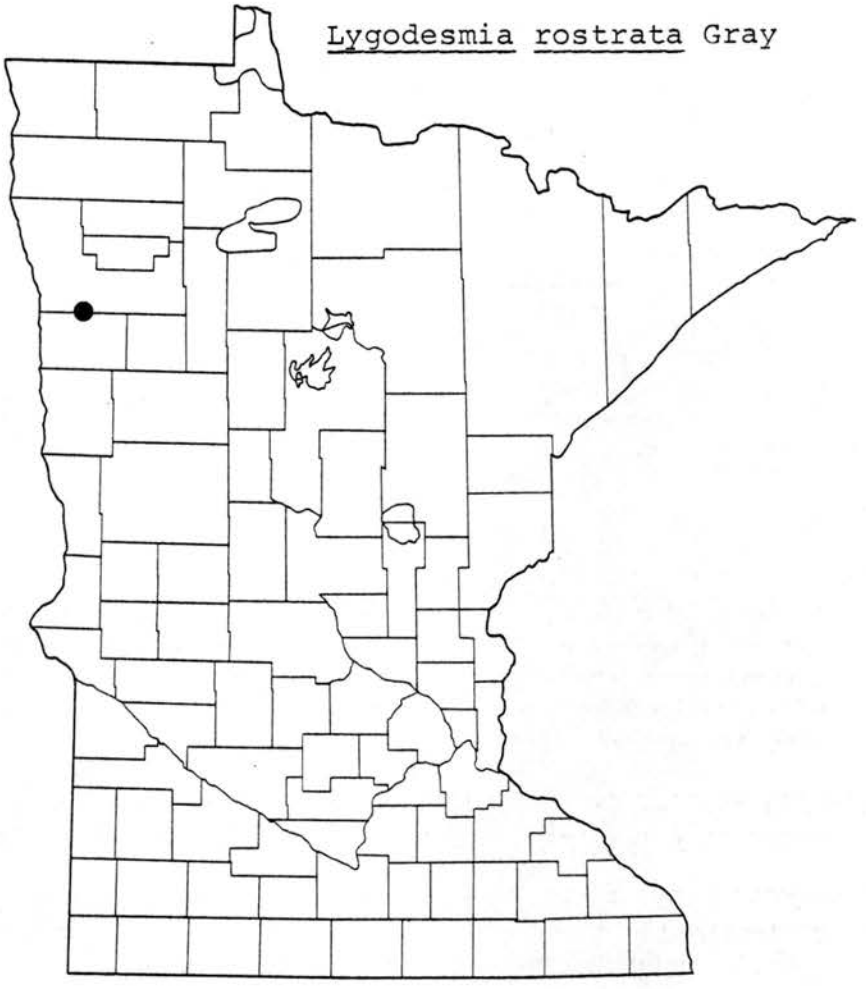
BASIS FOR MINNESOTA STATUS: The only station for this species in Minnesota is in Agassiz Dunes Scientific and Natural Area (Polk County). The population was discovered in 1974 and is small but appears to be stable. The occurrence of this species in the state is probably limited by the lack of suitable habitat and the corresponding predominance of agricultural land in western Minnesota.

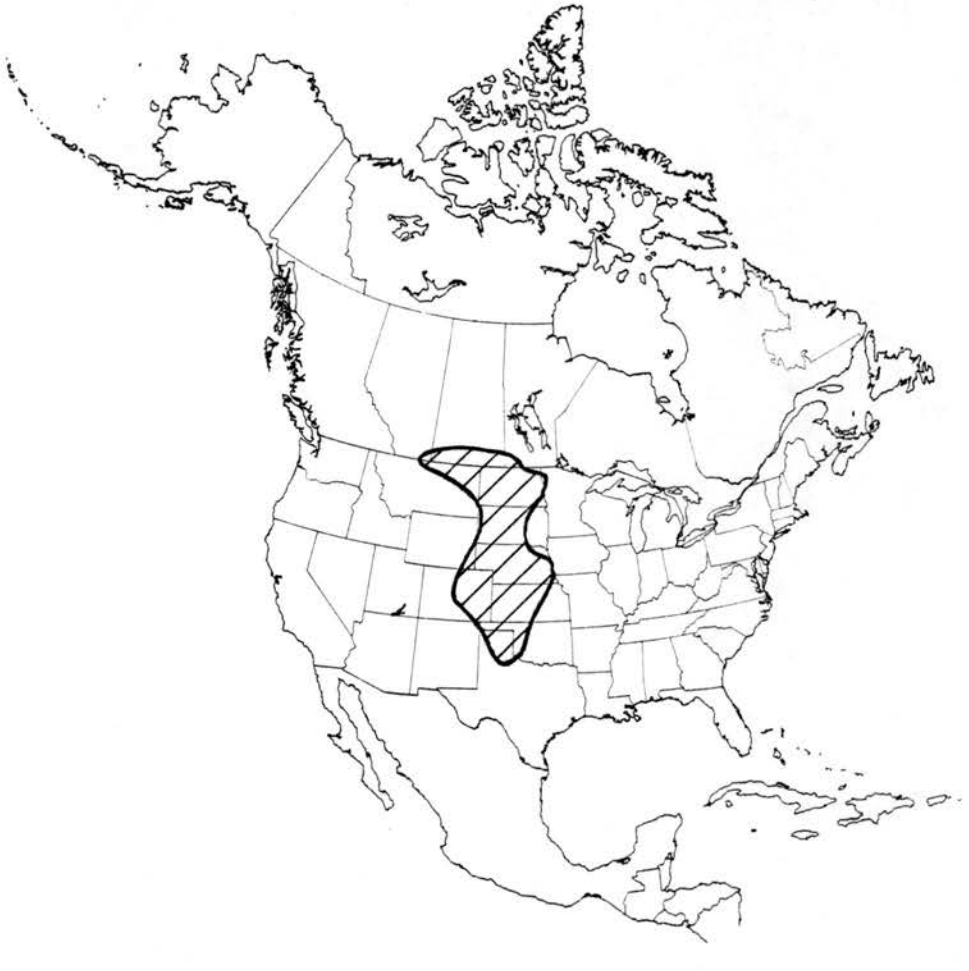
PREFERRED HABITAT IN MINNESOTA: This species occurs in sand dunes, apparently requiring the open sand in unstablized blow-outs.

RECOMMENDATIONS: Additional information is needed to determine the environmental needs and management potential of the population at Agassiz Dunes Scientific and Natural Area.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Lygodesmia rostrata Gray





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Malaxis paludosa* (L.) Sw.

FAMILY: Orchidaceae

COMMON NAME: Bog Adder's-mouth

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This diminutive orchid was not known to occur in North America until 1904 when it was discovered near New York Mills (Otter Tail County) by H. L. Lyon. Since then it has been found in Alaska and parts of Canada, but it remains a very rare species wherever it occurs. Known sites in Minnesota contain few individuals and exist in fragile habitats that could be easily destroyed by logging or ditching activities.

PREFERRED HABITAT IN MINNESOTA: This species requires cold wet bogs where it occur in mats of *Sphagnum* moss.

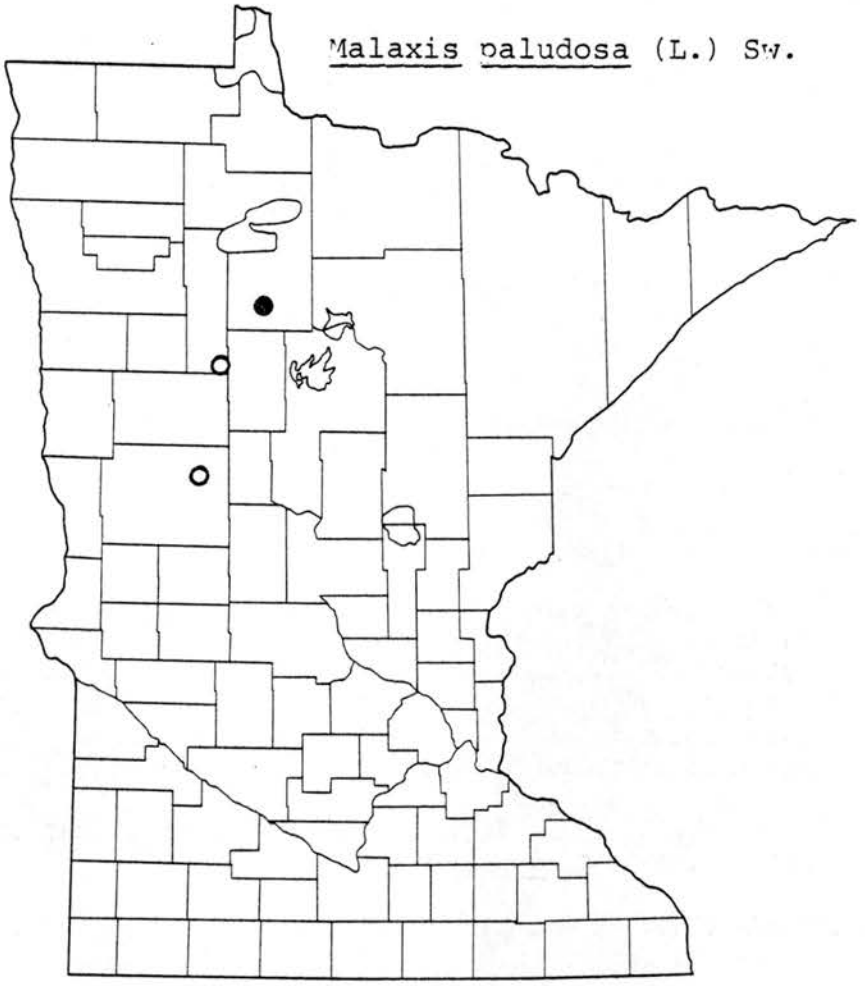
RECOMMENDATIONS: Additional survey work is needed to determine the full range and extent of this species in Minnesota.

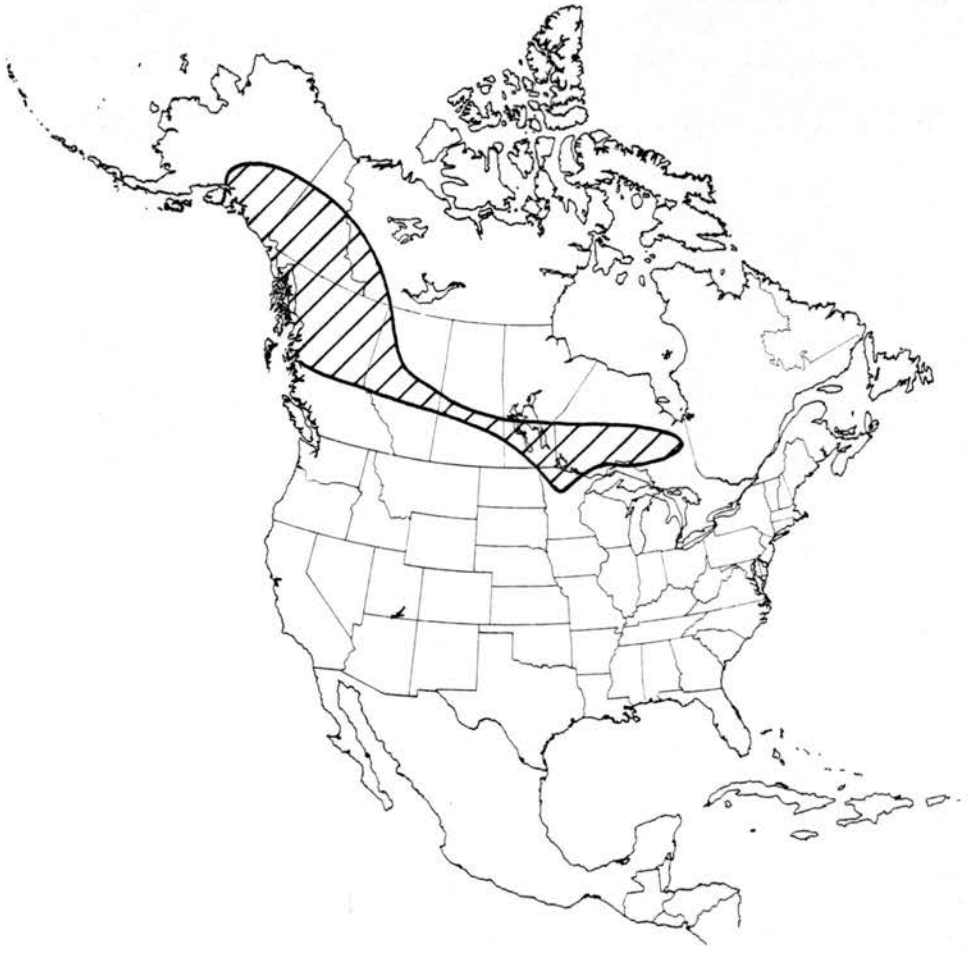
SELECTED REFERENCES:

Luer, C. A. 1975. The Native Orchids of the United States and Canada Excluding Florida. The New York Botanical Garden.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Malaxis paludosa (L.) Sw.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Mammillaria vivipara* (Nutt.) Haw. [*Coryphantha vivipara* (Nutt.) Britt. & Br.]

FAMILY: Cactaceae

COMMON NAME: Ball Cactus

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The only population of this cactus in the state was discovered in 1898 in the Minnesota Valley in Big Stone and adjacent portions of Lac Qui Parle Counties. The surviving plants are scattered infrequently among granite outcrops in a two or three square mile area. Most of this area is owned by a mining company which has recently destroyed a portion of the population while quarrying granite. The remainder of the population occurs on protected portions of adjacent public land. Even with protection it is seriously threatened by illegal removal by cactus fanciers.

PREFERRED HABITAT IN MINNESOTA: This species occurs in crevices of granite outcrops.

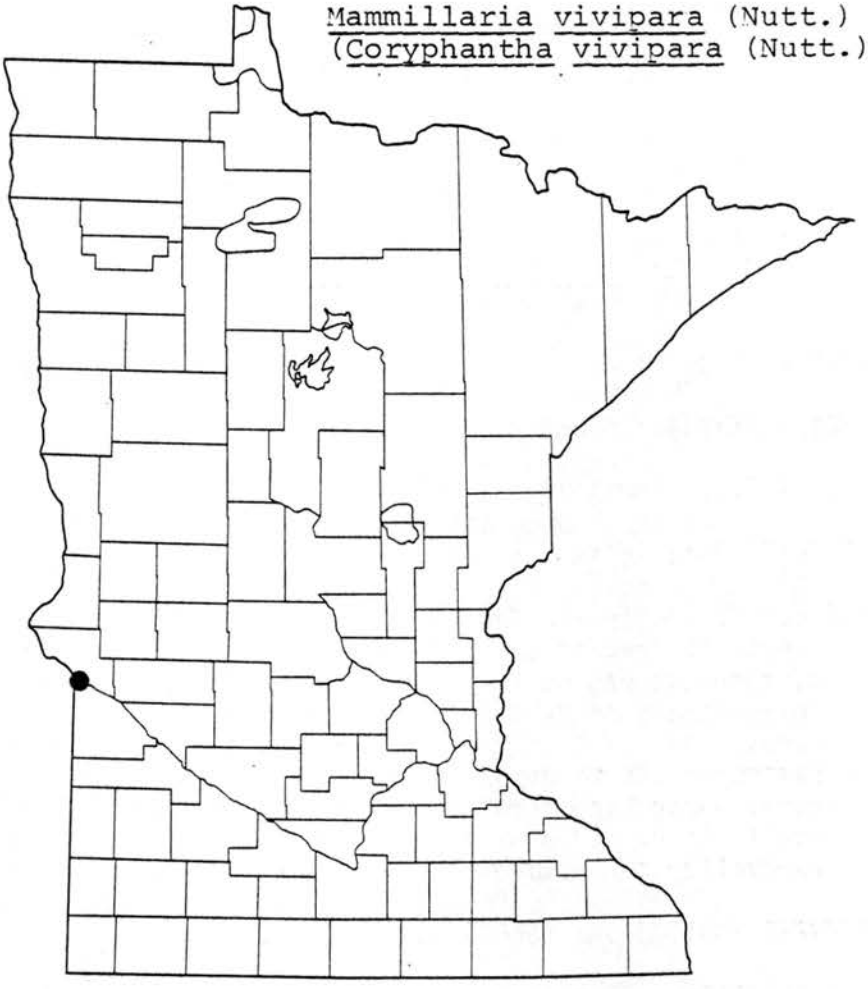
RECOMMENDATIONS: Additional efforts should be made to protect the surviving remnants of Minnesota's only population of this species.

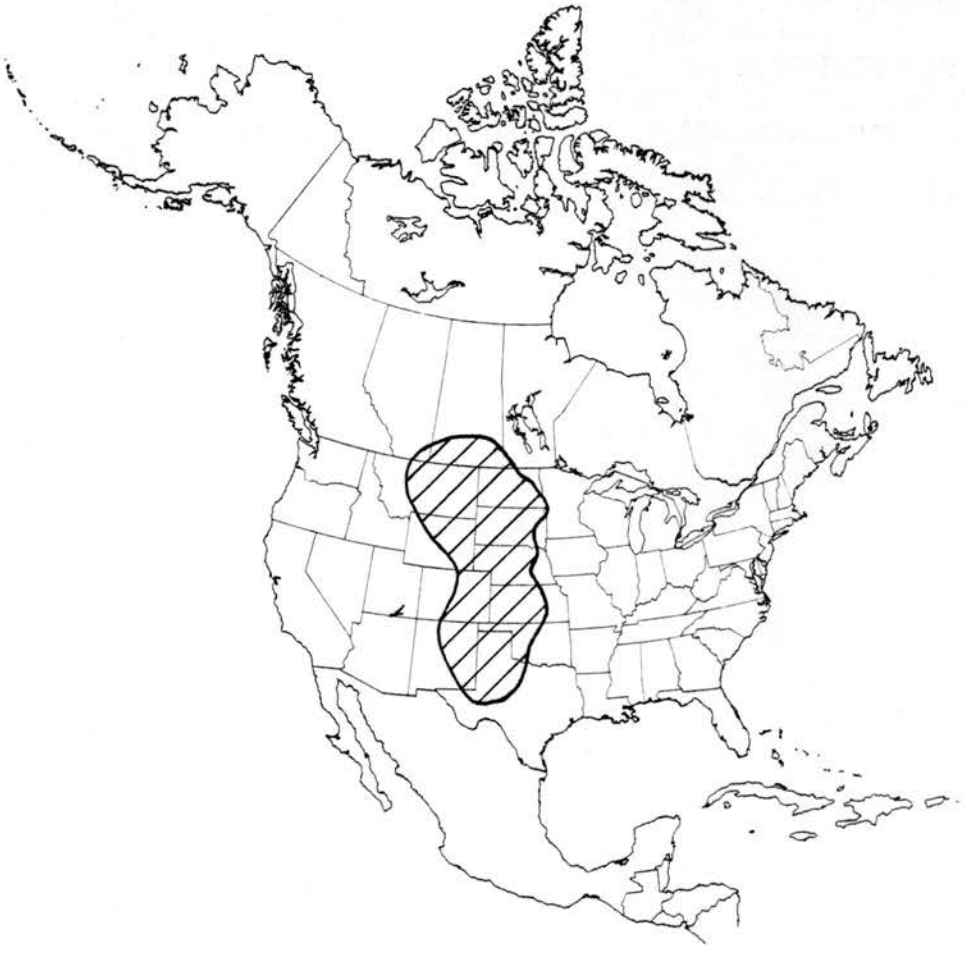
SELECTED REFERENCES:

Moyer, L. R. 1899. Extensions of plant ranges in the Upper Minnesota Valley. Minn. Bot. Stud. 1:191-192.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Mammillaria vivipara (Nutt.) Haw.
(Coryphantha vivipara (Nutt.) Britt. & Br





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Melica nitens* Nutt.

FAMILY: Poaceae

COMMON NAME: Three-flowered Melic

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This is a southern and eastern grass species that reaches the northern limit of its range in Minnesota. Within the state it is apparently restricted to the Root River Valley in Fillmore and Houston Counties where it has been reported a total of only four times. The only populations currently known to be extant occur in remnant habitats on a railroad right-of-way. This right-of-way has recently been sold by the railroad company and the future of the populations of *Melica nitens* is uncertain.

PREFERRED HABITAT IN MINNESOTA: This species occurs in dry sandy soil in open woods and prairies.

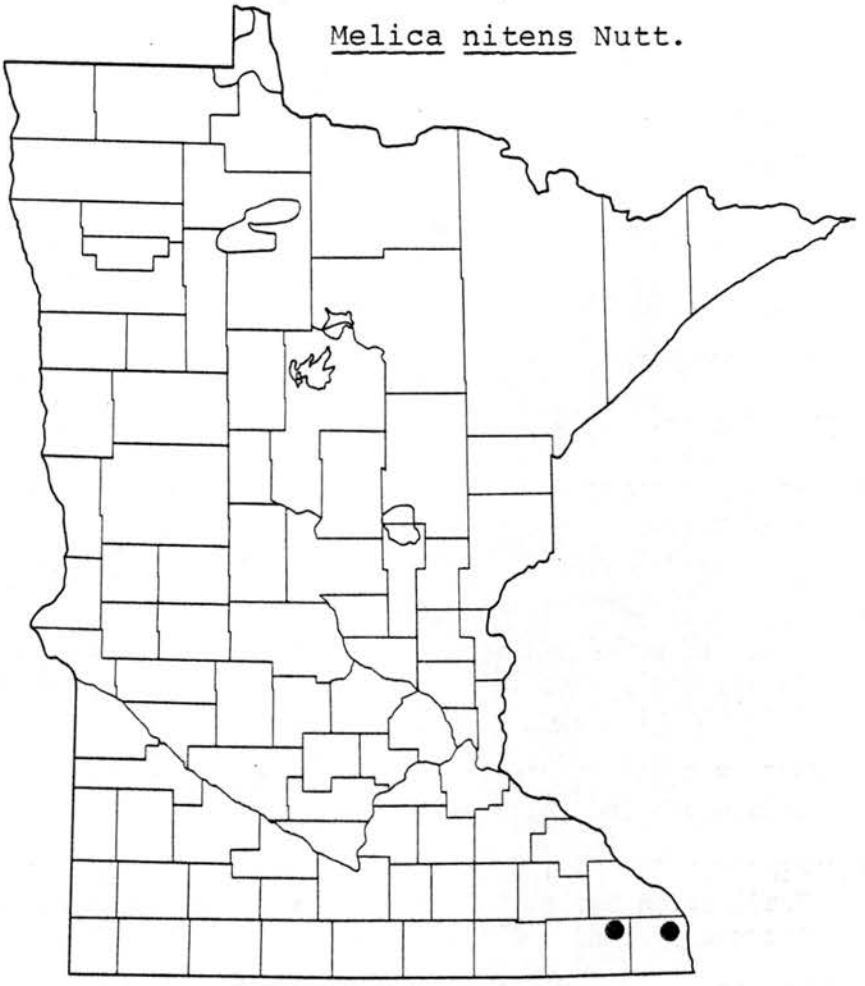
RECOMMENDATIONS: Undiscovered populations may occur along the Root River Trail or on public forest land in the Root River Valley. Future searches should concentrate in those areas.

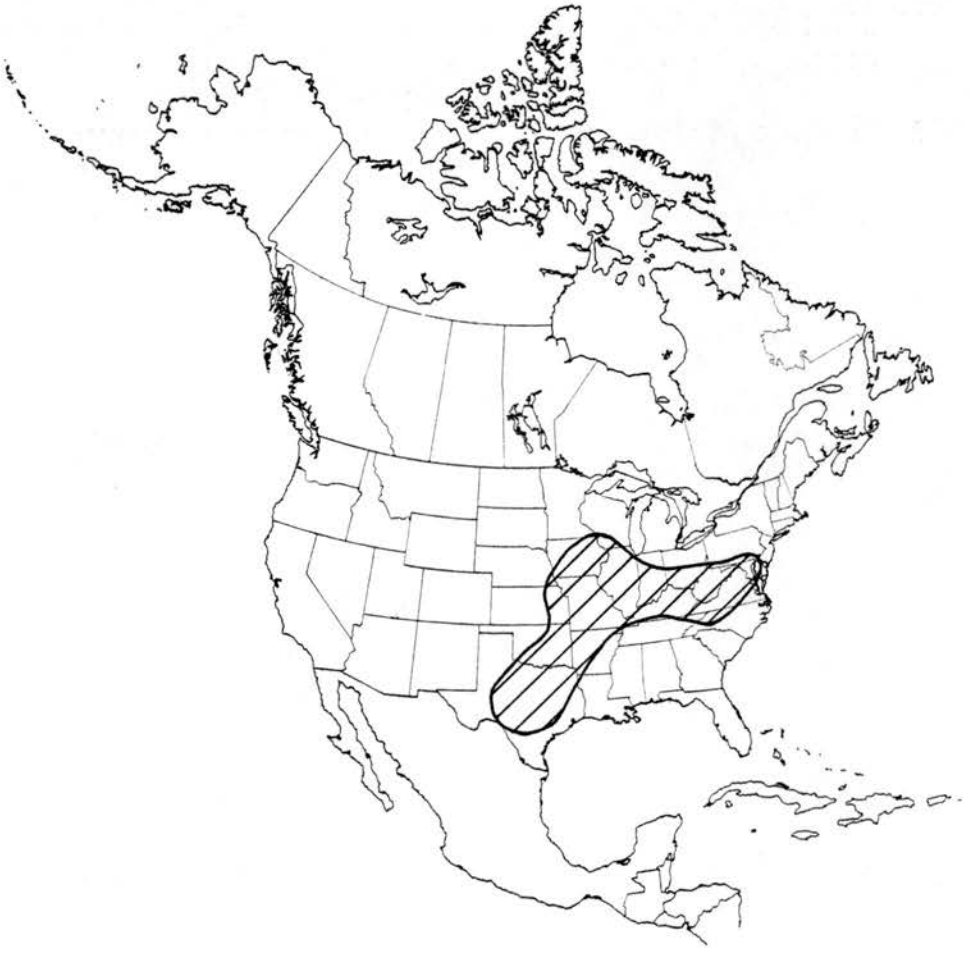
SELECTED REFERENCES:

Rosendahl, C. O. and J. W. Moore. 1947. A new variety of *Sedum rosea* from southeastern Minnesota and additional notes on the flora of the region. Rhodora 49:197-202.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Melica nitens Nutt.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Montia chamissoi (Ledeb.) Durand & Jackson

FAMILY: Portulacaceae

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species is a relict of Minnesota's pleistocene flora and is believed to have survived the most recent glacial advances in the unglaciated region of southeastern Minnesota. The population at Queen's Bluff (Winona County) is the only population known to be extant in the midwest. It is disjunct from the main range of the species in the Rocky Mountains by at least 800 miles. It was discovered in 1889 and appears to have retained its vigor in spite of a nearly disasterous storm in 1899 which left a foot of alluvium on the colony. This site has been acquired as a state Scientific and Natural Area and management will be directed towards the perpetuation of the population.

PREFERRED HABITAT IN MINNESOTA: This species occurs in seepage areas on wet sandstone ledges.

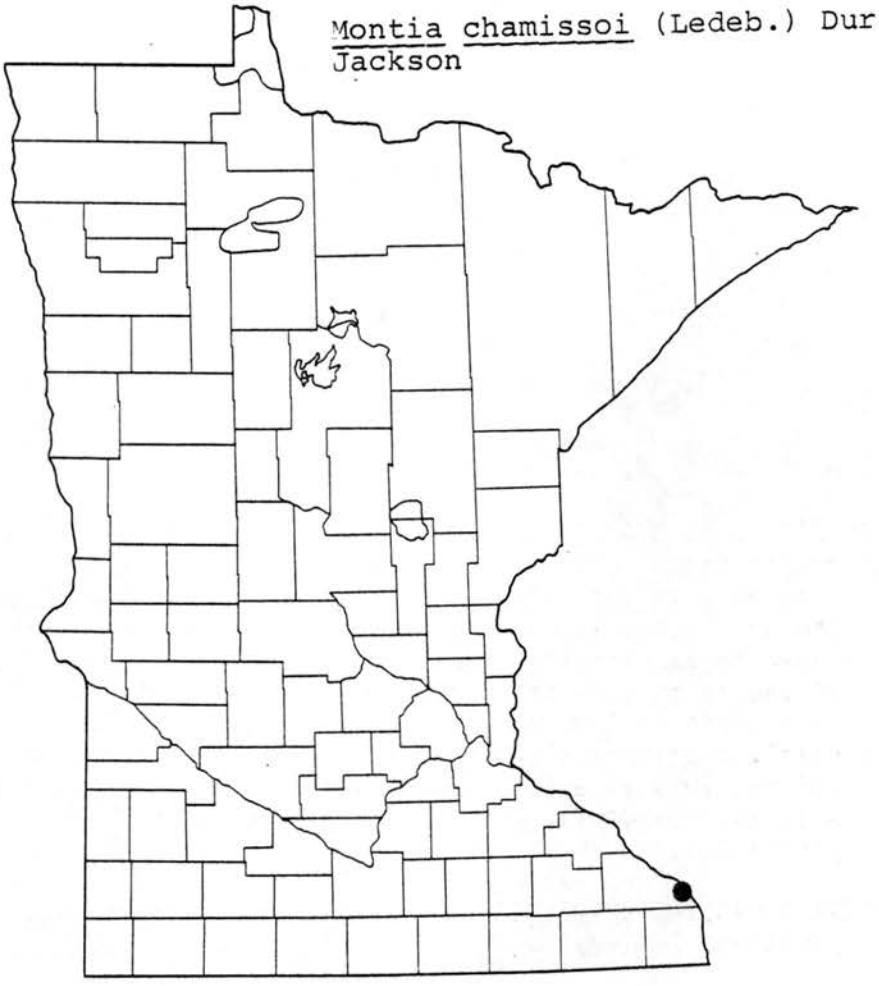
RECOMMENDATIONS: This population should be closely monitored to determine the biological nature of the population and its management needs.

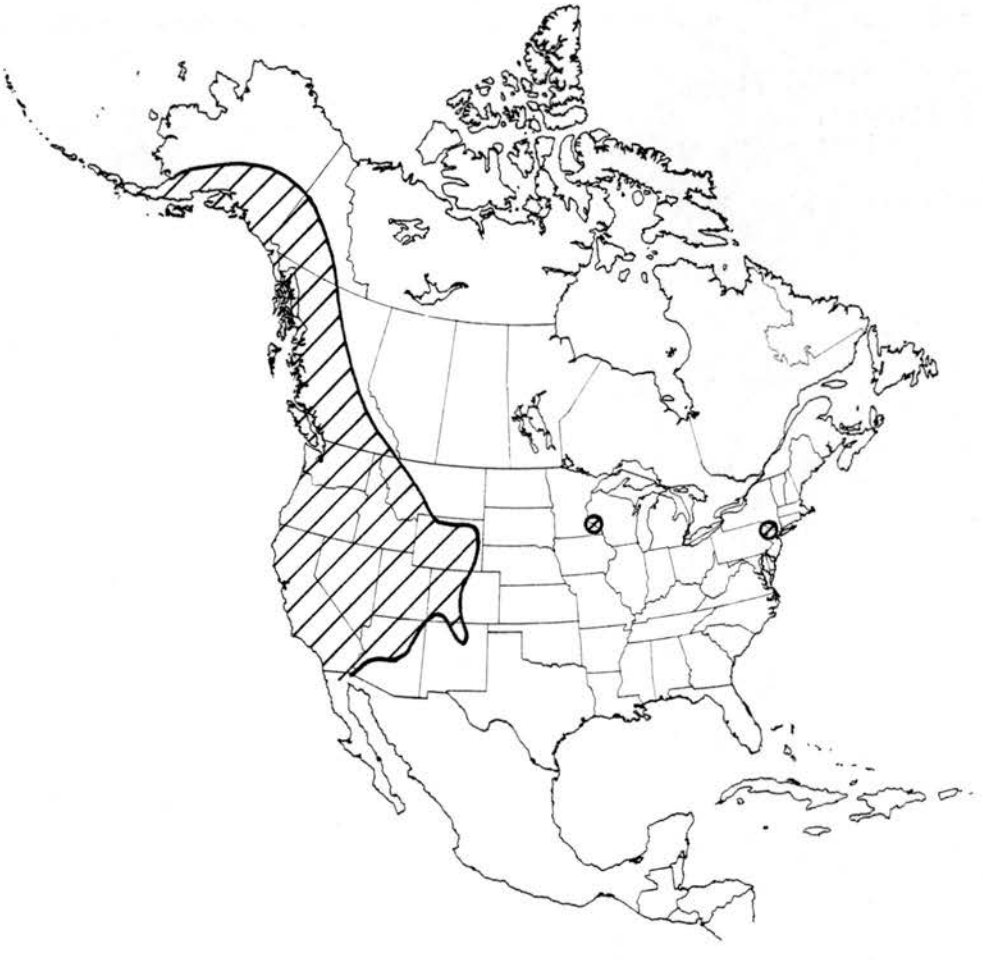
SELECTED REFERENCES:

Holzinger, J. M. 1901. The duration of Claytonia chamissoi Ledeb. Plant World 4:41-43.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Montia chamissoi (Ledeb.) Durand & Jackson





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Napaea dioica* L.

FAMILY: Malvaceae

COMMON NAME: Glade Mallow

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species belongs to a monotypic genus that is endemic to the Midwest. It survives today mostly in remnant habitats and is threatened over much of its range. There are five records from Minnesota, but only two are from this century. The only population known to be extant is currently threatened by cattle grazing.

PREFERRED HABITAT: This species may have once occurred in prairies and meadows in southeastern Minnesota, but it now seems confined to protected areas on stream banks.

RECOMMENDATIONS: The stronghold of this species in Minnesota (if one exists) may be in the Root River Valley in Fillmore and Houston Counties. Future searches for this species should concentrate in that area.

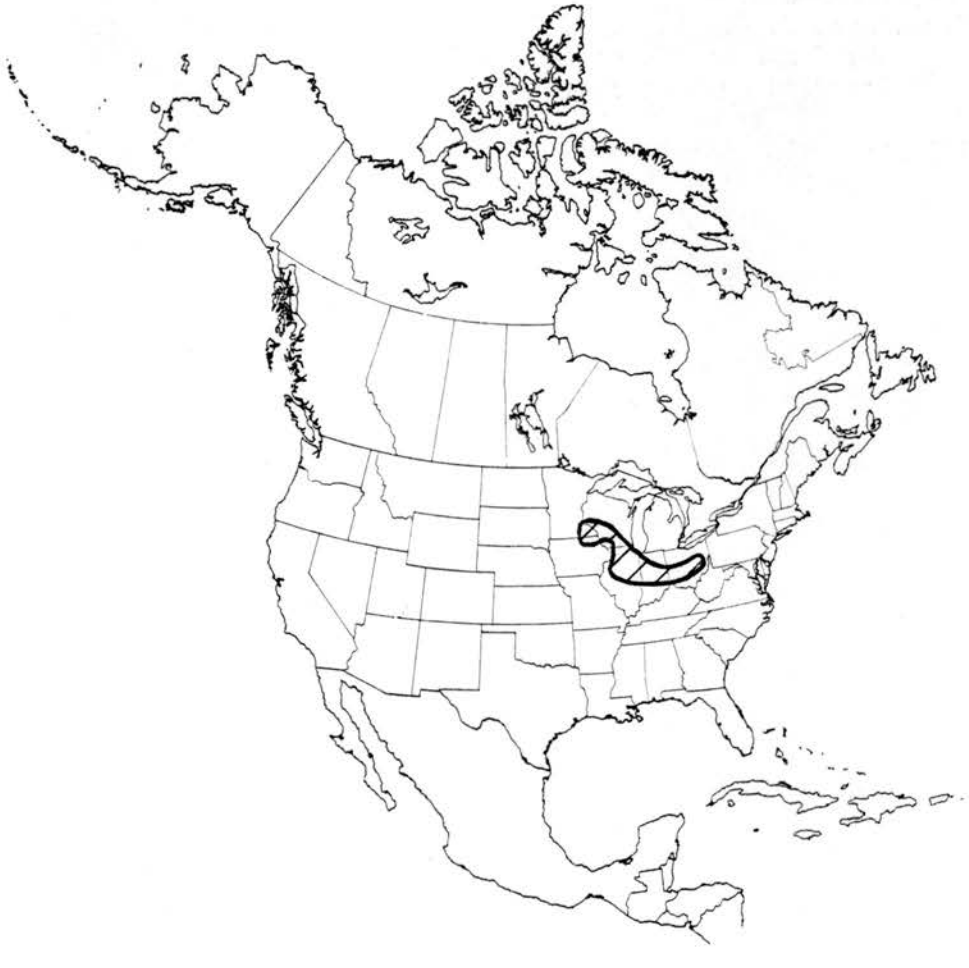
SELECTED REFERENCES:

Mickelson, C. J. and H. H. Iltis. 1966. Preliminary reports on the flora of Wisconsin No. 55. Compositae IV. Wisc. Acad. Sci. Arts and Letters 55:187-222.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Napaea dioica L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Nymphaea tetragona* Georgi

FAMILY: Nymphaeceae

COMMON NAME: Four-angled Water-lily

STATE STATUS: Threatened

FEDERAL STATUS: None

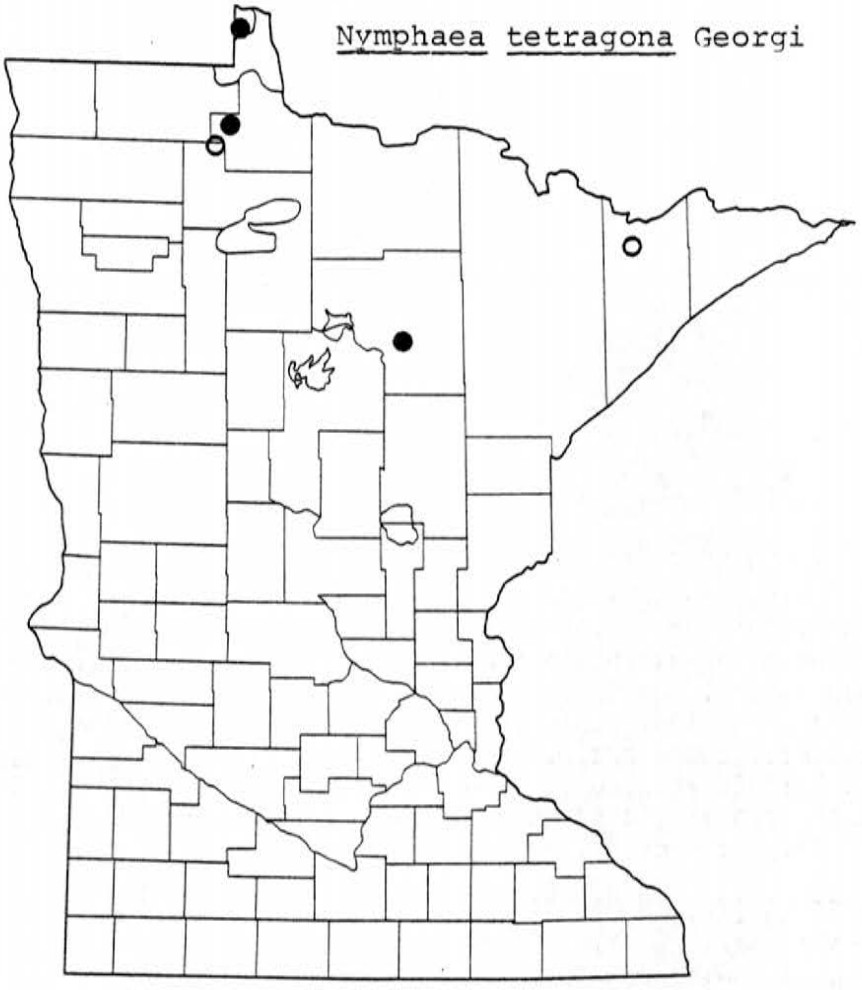
BASIS FOR MINNESOTA STATUS: This is a northern species that reaches the southern limit of its range in Minnesota, and is generally rare or local throughout its range. All of the populations currently known to be extant in Minnesota are small, and they may have difficulty persisting. The site in Itasca County was recently transferred from federal to state ownership and will soon be designated Botany Bog Scientific and Natural Area. The specimen from Lake County was collected in Bald Eagle Lake in 1914 and its current status is unknown. Activities such as peat mining and logging pose potential threats to the habitat of this species.

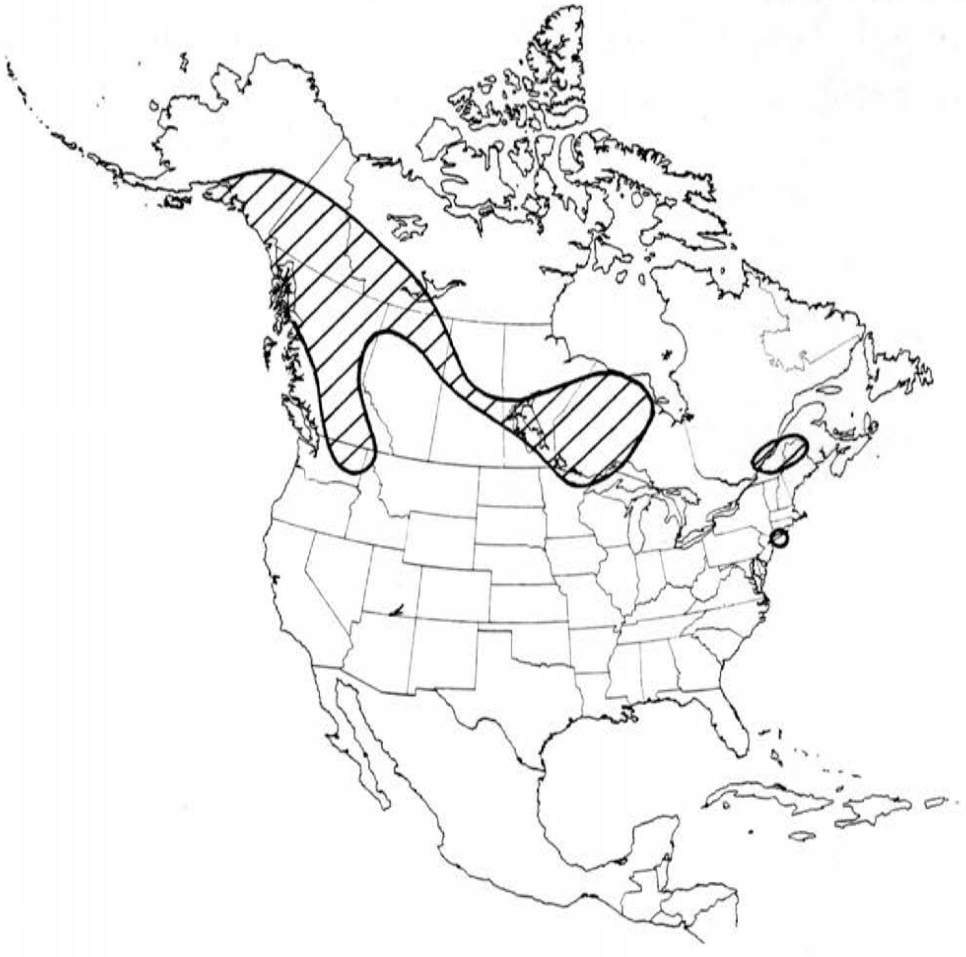
PREFERRED HABITAT IN MINNESOTA: This species occurs in shallow lakes, bogs, pools and slow moving streams. The population at Botany Bog occurs in a bog pool with an unusual assemblage of rare species that include: *Utricularia gibba*, *Xyris montana* and *Eleocharis olivacea*.

RECOMMENDATIONS: No recommendations can be made at this time.

PREPARED BY: Welby smith, Botanist, Natural Heritage Program

Nymphaea tetragona Georgi





SPECIES STATUS SHEET

SCIENTIFIC NAME: Oryzopsis hymenoides (R. & S.) Ricker

FAMILY: Poaceae

COMMON NAME: Indian Ricegrass

STATE STATUS: Endangered

FEDERAL STATUS: None

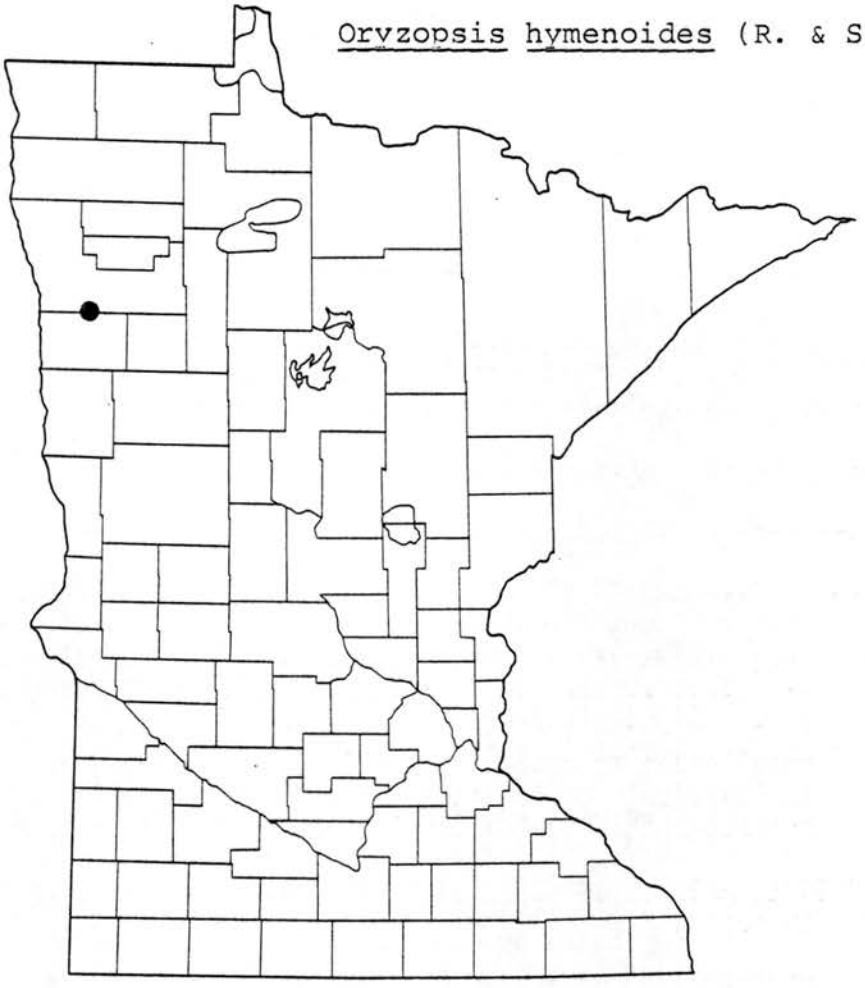
BASIS FOR MINNESOTA STATUS: The single population of this species in Minnesota is disjunct 200 miles from the eastern edge of its range in the Great Plains. It was first discovered in 1947 and has been recollected as recently as 1980. The site has been designated as Agassiz Dunes Scientific and Natural Area and is currently protected from agricultural activity and other human disturbances.

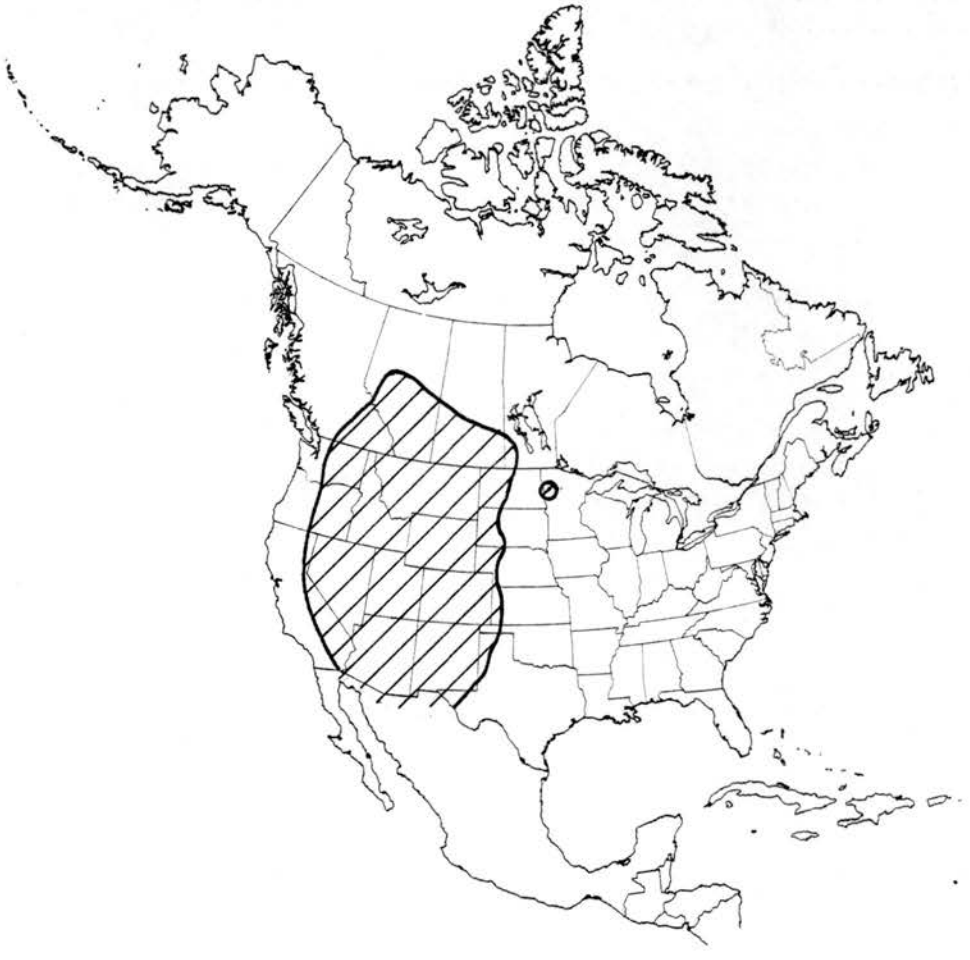
PREFERRED HABITAT IN MINNESOTA: This species occurs in active blow-outs in sand dunes.

RECOMMENDATIONS: More information is needed on the ecological relationship between this species and its required habitat. Such information would help direct management towards the perpetuation of the population.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Oryzopsis hymenoides (R. & S.) Ricker





SPECIES STATUS SHEET

SCIENTIFIC NAME: Osmorhiza chilensis H. & A.

FAMILY: Apiaceae

COMMON NAME: Chilean Sweet Cicely

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota near Hovland (Cook County) by J. C. Jones in 1870. It was not seen again until 1978 when it was relocated at the original site. It has a very limited distribution in the Great Lakes region and although an intensive search might discover additional populations in Minnesota, they would necessarily be limied to a few remnant old-growth hardwood stands in Cook County. These hardwood forests are being selectively eliminated and replaced with conifer plantations. The major portion of the forest near Hovland recently suffered this fate.

PREFERRED HABITAT IN MINNESOTA: This species occurs in northern hardwood forests dominated by sugar maple. These isolated forests occur on a narrow ridge that parallels the north shore of Lake Superior from Duluth to the Candian border.

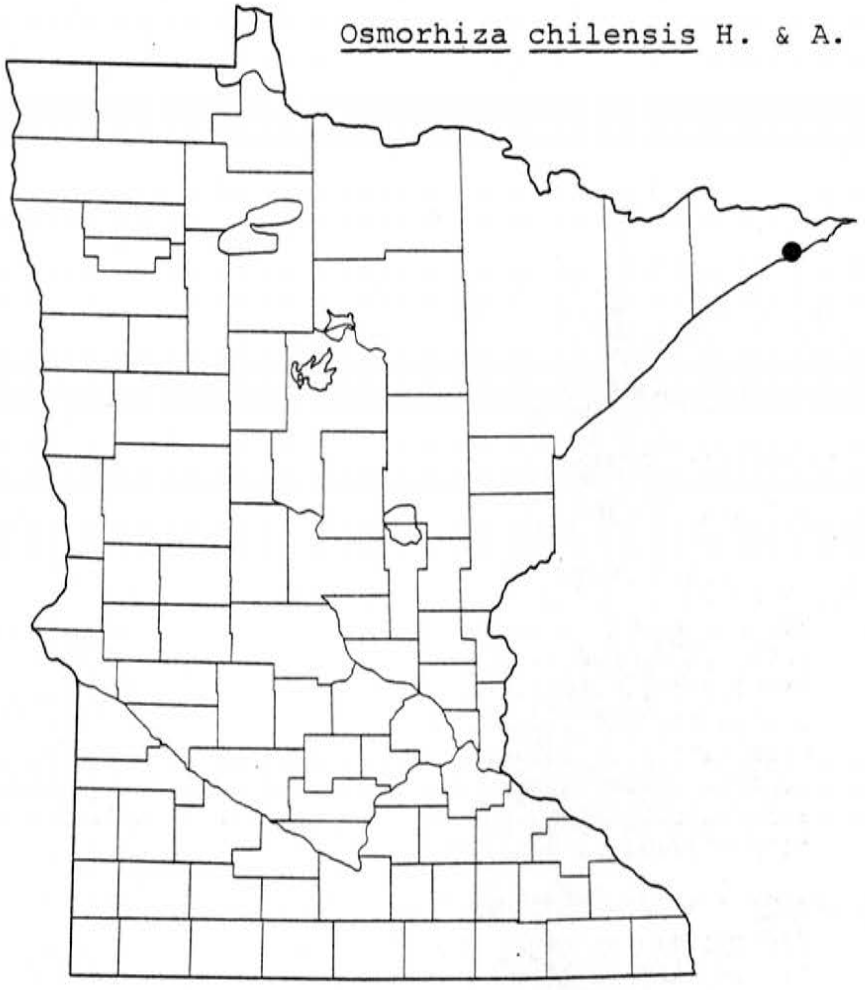
RECOMMENDATIONS: Survival of this species in Minnesota may depend on the preservation of the few remaining old-growth hardwood forests in Cook County.

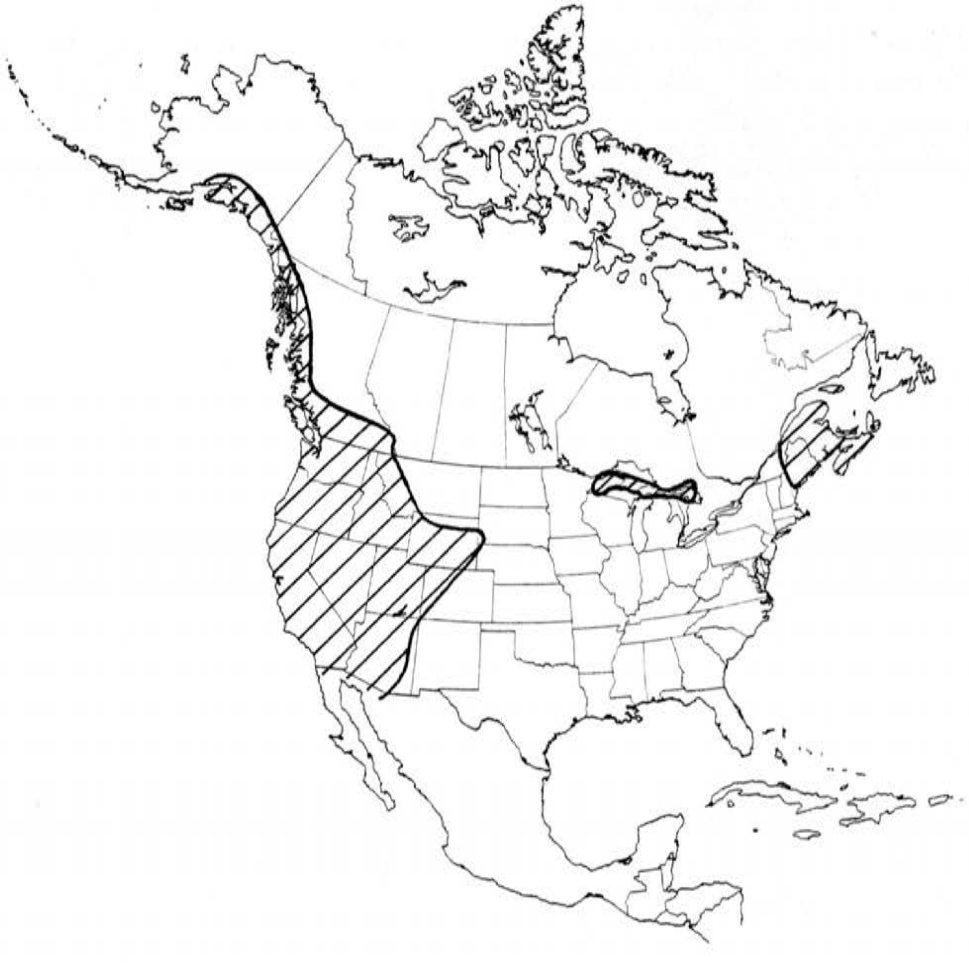
SELECTED REFERENCES:

Marquis, R. J. and E. G. Voss. 1981. Distributions of some western North American plants disjunct in the Great Lakes region. Mich. Bot. 20(2):53-82.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Osmorhiza chilensis H. & A.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Parthenium integrifolium* L.

FAMILY: Asteraceae

COMMON NAME: Wild Quinine

STATE STATUS: Endangered

FEDERAL STATUS: None

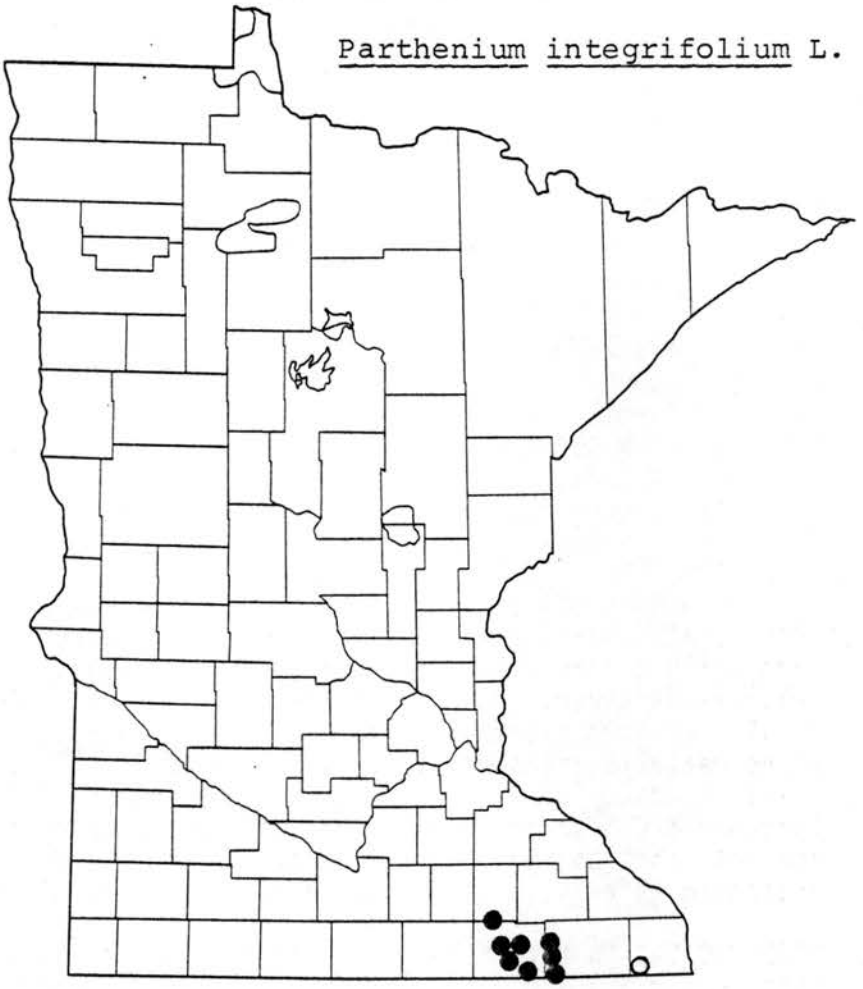
BASIS FOR MINNESOTA STATUS: Like so many of the mesic prairie species, *Parthenium* suffered a drastic decline in population when the prairies were converted to crop production. The only significant populations which survive today occur on remnant prairie strips along railroad right-of-ways. These right-of-ways are rapidly being abandoned by the railroad companies and sold to adjacent landowners who invariably incorporate the prairie into farms and convert them to agricultural uses. The only population currently protected is on Wild Indigo Scientific and Natural Area.

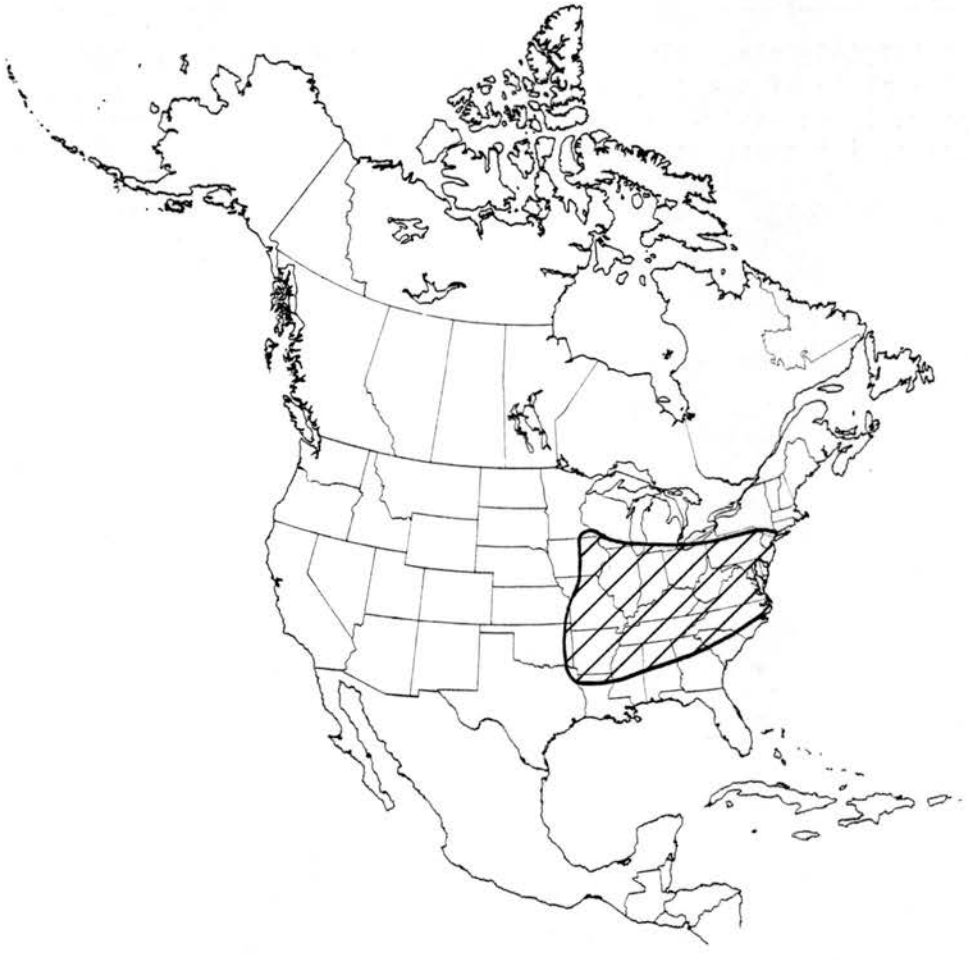
PREFERRED HABITAT IN MINNESOTA: This species occurs in tall grass prairies. Often occurring with other rare prairie species such as: *Asclepias sullivantii*, *Cacalia tuberosa* and *Valeriana edulis*.

RECOMMENDATIONS: The only way to preserve this species in its native habitat in Minnesota may be to acquire remnant prairies occurring on railroad right-of-ways and manage them for the perpetuation of the native plant community.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Parthenium integrifolium L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Pellaea atropurpurea* (L.) Link

FAMILY: Polypodiaceae

COMMON NAME: Purple Cliff-brake

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The regional populations of this fern are largely limited to the "Driftless Area". In Minnesota, it is apparently further restricted to the steep bluffs bordering the Mississippi River. The reason for its rarity is unknown, and the closely related Smooth Cliff-brake (*Pellaea glabella*) is common in essentially the same habitat.

PREFERRED HABITAT IN MINNESOTA: This species occurs on dry sandstone and dolomite ledges. It may occur with another rare fern, *Cheilanthes feei*.

RECOMMENDATIONS: No recommendations can be made at this time.

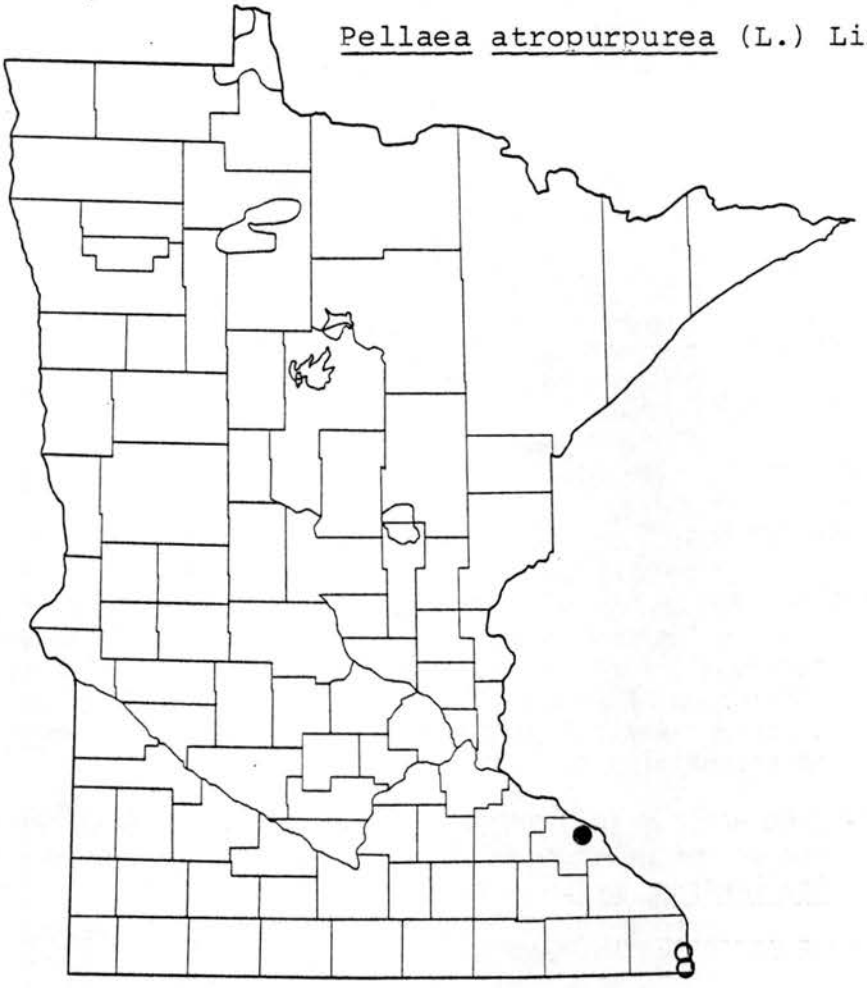
SELECTED REFERENCES:

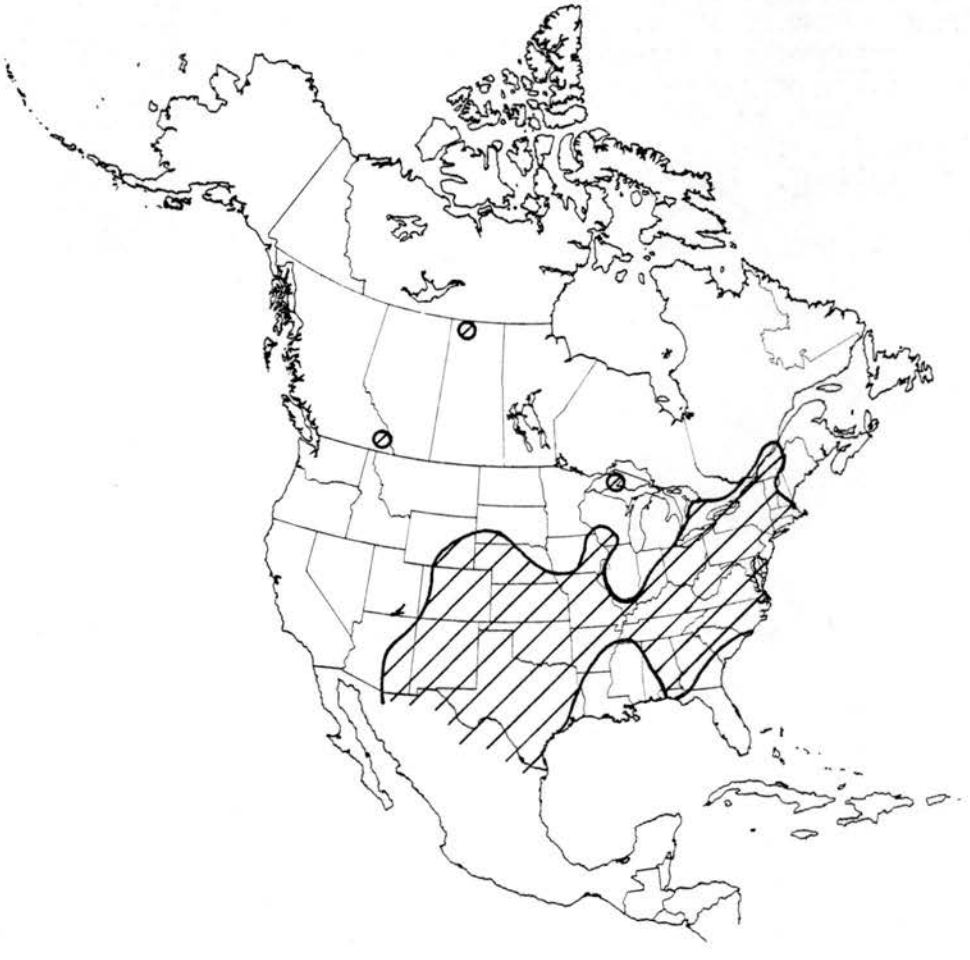
Rosendahl, C.O. and J.W. Moore. 1947. A new variety of *Sedum rosea* from southeastern Minnesota and additional notes on flora of the region. Rhodora 49:197-202.

Tryon, A.F. 1957. A revision of the fern genus *Pellaea* section *pellaea*. Ann Mo. Bot. Gard. 44(2):125-193.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Pellaea atropurpurea (L.) Link





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Plantago elongata* Pursh

FAMILY: Plantaginaceae

COMMON NAME: a species of Plantain

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This western species reaches the eastern edge of its range in Minnesota, and appears to have very specific habitat requirements. Of the three collection sites, only one is known to be extant. It contains less than 15 individuals and its existence may be tenuous even though its habitat appears to be secure. Recent searches have failed to locate plants at the other two sites.

PREFERRED HABITAT IN MINNESOTA: This species occurs in moist seepage areas on quartzite outcrops and margins of shallow depression pools. It can be expected to occur with other rare species of this habitat such as: *Isoetes melanopoda*, *Heteranthera limosa* and *Cyperus acuminatus*.

RECOMMENDATIONS: The single extant population should be monitored closely to determine its response to current management activities.

SELECTED REFERENCES:

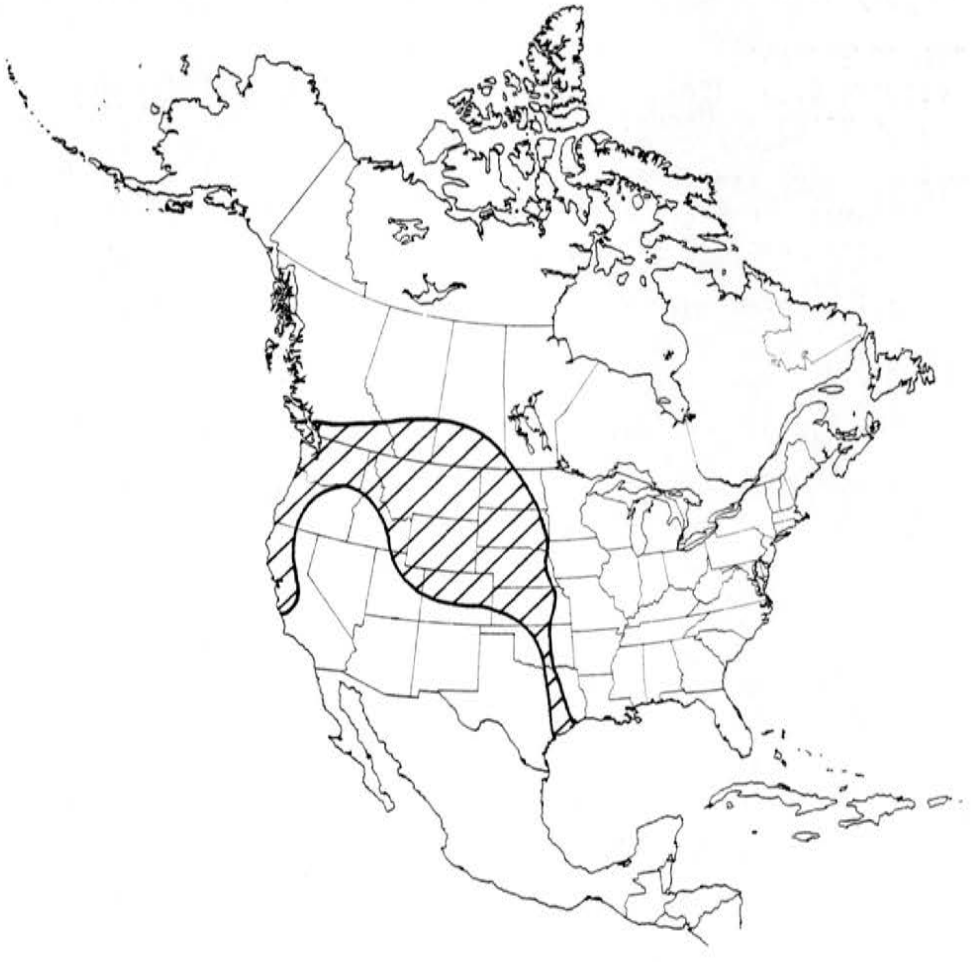
Bassett, I. J. 1966. Taxonomy of North American *Plantago* L., section micropsyllium Decne. Can. J. Bot. 44(4):467-479.

Moore, J. W. 1954. A Provisional List of the Flowering Plants, Ferns, and Fern Allies of Pipestone County, Minnesota. Department of Botany, University of Minnesota, Minneapolis.

PREPARED BY: Welby smith, Botanist, Natural Heritage Program

Plantago elongata Pursh





SPECIES STATUS SHEET

SCIENTIFIC NAME: Platanthera flava (L.) Spreng.
var. herbiola (R. Br.) Ames & Correll

FAMILY: Orchidaceae

COMMON NAME: Tubercled Rein-orchid

STATE STATUS: Endangered

FEDERAL STATUS: Previously considered by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, eancted December 28, 1973; amended 1978. Federal Register 40(127):27859, July 1, 1975). Not currently being considered for listing because it has proven to be more abundant than previously believed (Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: In spite of intensive field searches, this species has been collected only once in Minnesota since 1909. This lack of recent collections may indicate a precipitous decline in populations. This decline is likely the result of habitat loss associated with the expanding residential and commercial activities in east-central Minnesota. The single extant population was discovered in 1982 and consists of about 60 plants. It is currently threatened by herbicide application, vandalism and land conversion.

PREFERRED HABITAT IN MINNESOTA: Because of the lack of current data, it is difficult to characterize the preferred habitat of this species. It appears to prefer wet acidic habitats, probably prairies and meadows. It may also be associated with sandy substrates.

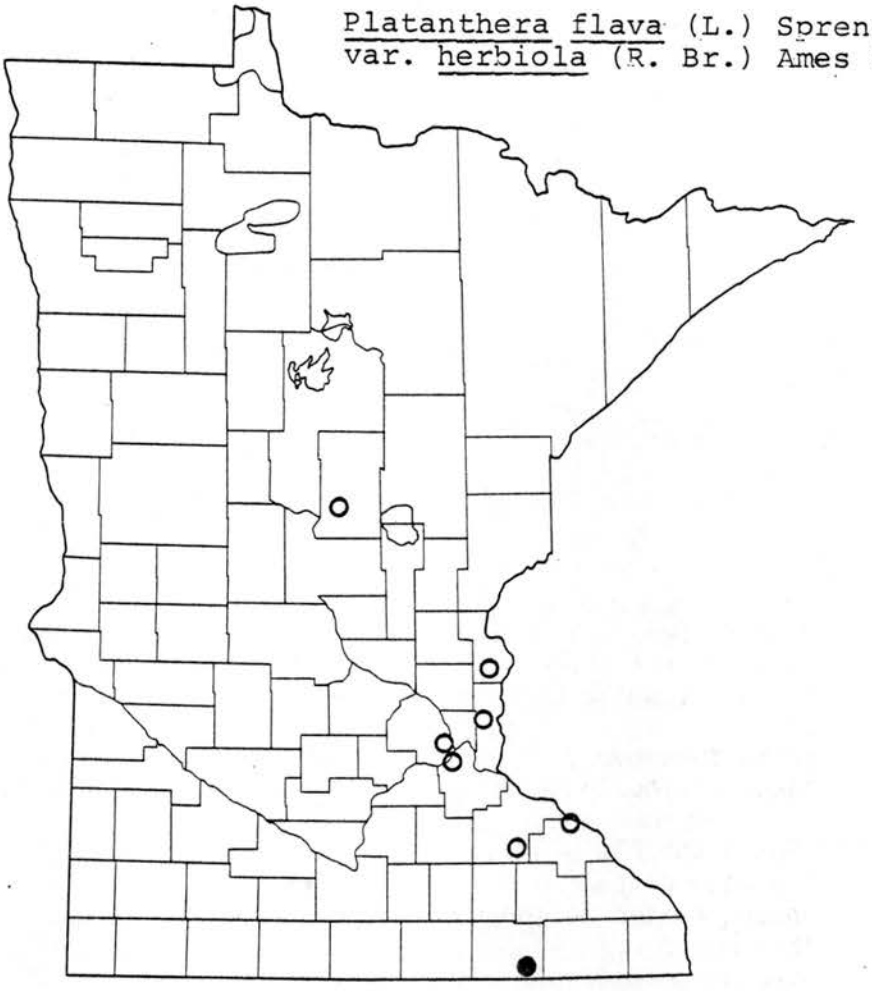
RECOMMENDATIONS: Continued field search is needed to determine the presence and extent of any surviving populations.

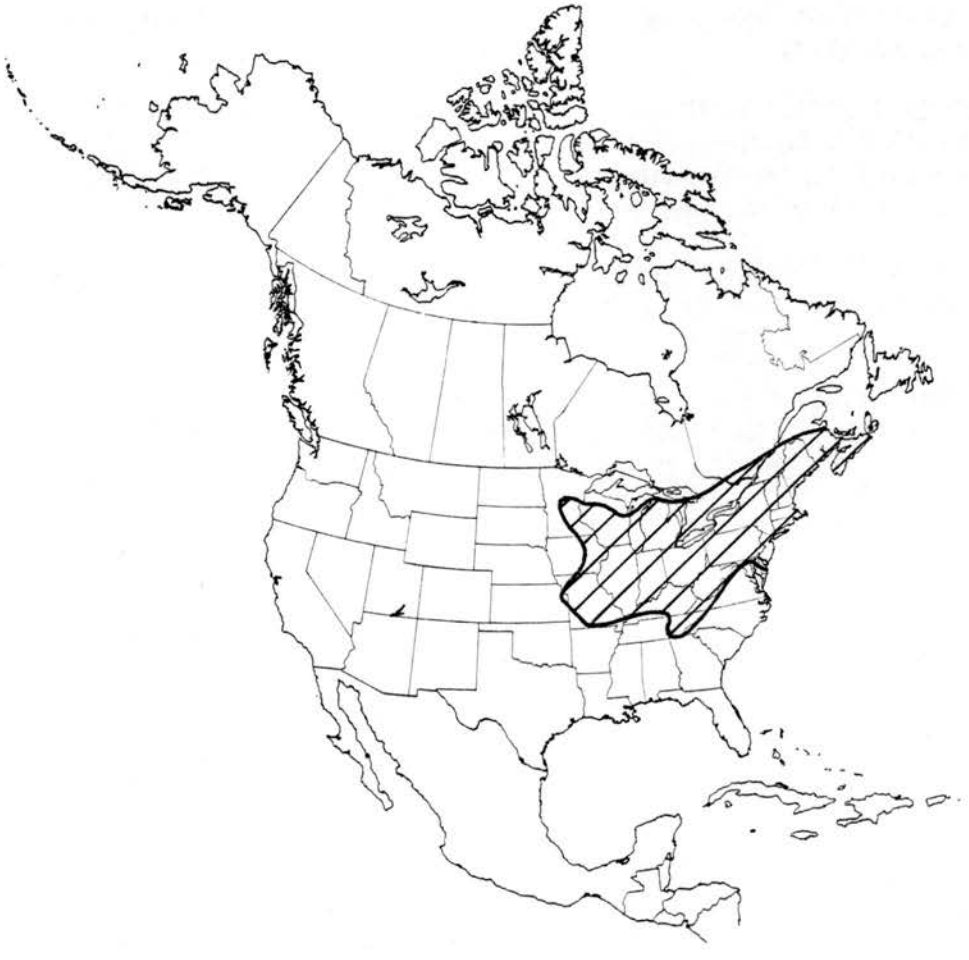
SELECTED REFERENCES:

Luer, C. A. 1975. The Native Orchids of the United States and Canada Excluding Florida. The New York Botanical Garden, New York.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Platanthera flava (L.) Spreng.
var. herbiola (R. Br.) Ames & Correll





SPECIES STATUS SHEET

SCIENTIFIC NAME: Platanthera leucophaea (Nutt.) Lindl.

FAMILY: Orchidaceae

COMMON NAME: Prairie White-fringed Orchid

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public law 93-205, enacted December 28, 1973; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: The range of this species in Minnesota has been greatly reduced in historical times. It once occurred throughout the prairie region of Minnesota, but now survives as a few isolated colonies in remnant habitats. Most of the extant sites in northwestern Minnesota survive in habitats previously unsuitable for agriculture. However, recent advances in agricultural technology and the high demand for tillable land now makes it economical to exploit these marginal lands. The conversion of these native habitats to agricultural uses is expected to proceed at a rapid rate. One of only two colonies known to be extant in southern Minnesota was severely depleted by illegal removal of plants in 1981.

PREFERRED HABITAT IN MINNESOTA: Platanthera leucophaea is quite habitat-specific in Minnesota. It requires low, wet, calcareous prairies. The species has never been collected in swamps, bogs or fens as it has been in the eastern portion of its range.

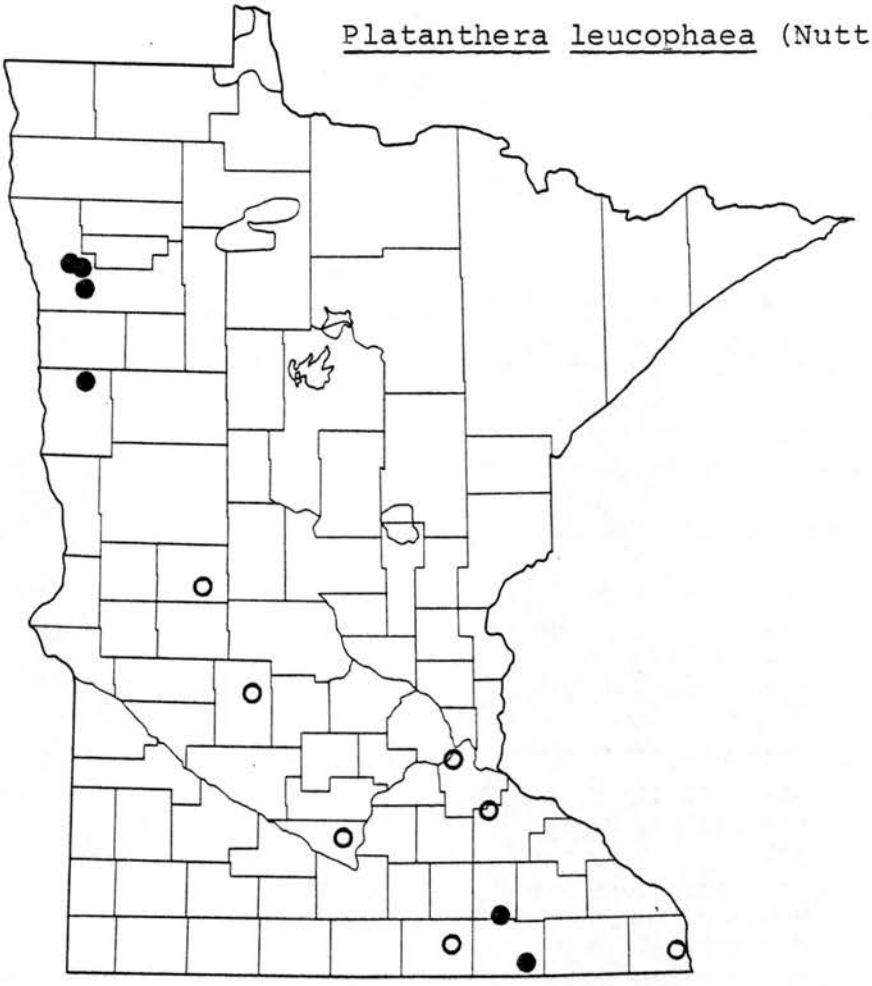
RECOMMENDATIONS: Additional information is needed on the environmental requirements of this species and management needs as they relate to pollinators and prescribed burn.

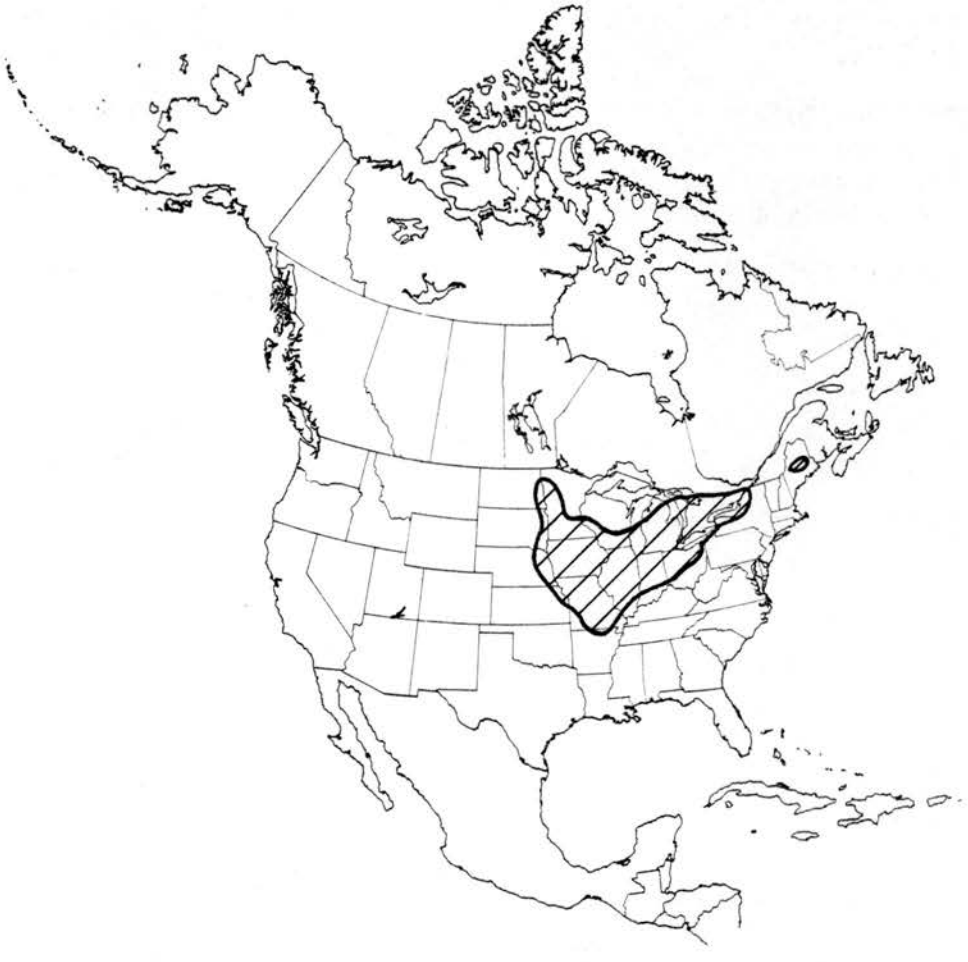
SELECTED REFERENCES:

Luer, C. A. 1975, The Native Orchids of the United States and Canada Excluding Florida. The New York Botanical Garden, New York.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Platanthera leucophaea (Nutt.) Lindl.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Poa paludigena Fern. & Wieg.

FAMILY: Poaceae

COMMON NAME: Bog Bluegrass

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973; amended 1978. Federal Register 45(242):82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: Poa paludigena was discovered in Minnesota in 1980 during the botanical inventory of Kettle River Scientific and Natural Area. The population appears to be well established, but its extent and current status have not been adequately documented. This species appears to be rare or local throughout its range and is dependent on a sensitive habitat.

PREFERRED HABITAT IN MINNESOTA: The only population known in Minnesota occurs at a springhead in a hardwood swamp.

RECOMMENDATIONS: This population should be re-located and its status assessed.

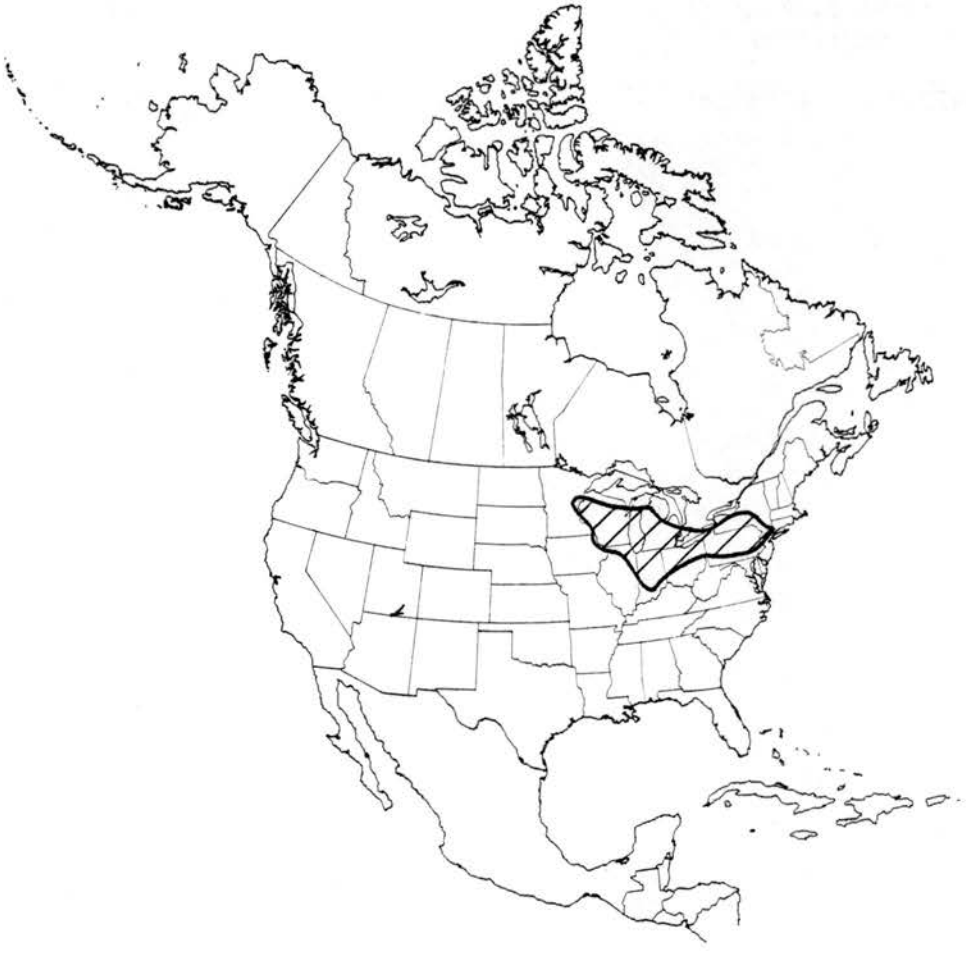
SELECTED REFERENCES:

Fernald, M. L. and K.M. Wiegand. 1918. Some new species and varieties of Poa from eastern North America. Rhodora 20:122-127.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Poa paludigena Fern. & Wieg.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Polygala cruciata* L.

FAMILY: Polygalaceae

COMMON NAME: Cross Milkwort

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species has not been collected outside Anoka County since 1905, and extant populations may now be restricted to remnant habitats there. The rapid rate of land development in Anoka County threatens all native plant community types and surviving populations of *P. cruciata* may already be dangerously few. The most recent collection is from Cedar Creek Natural History Area and is dated 1981. This species is very rare where it occurs in adjacent states.

PREFERRED HABITAT IN MINNESOTA: This species occurs in low sandy and peaty meadows where it may occur with other rare species such as *Xyris torta*, *Viola lanceolata* and *Rotala ramosior*.

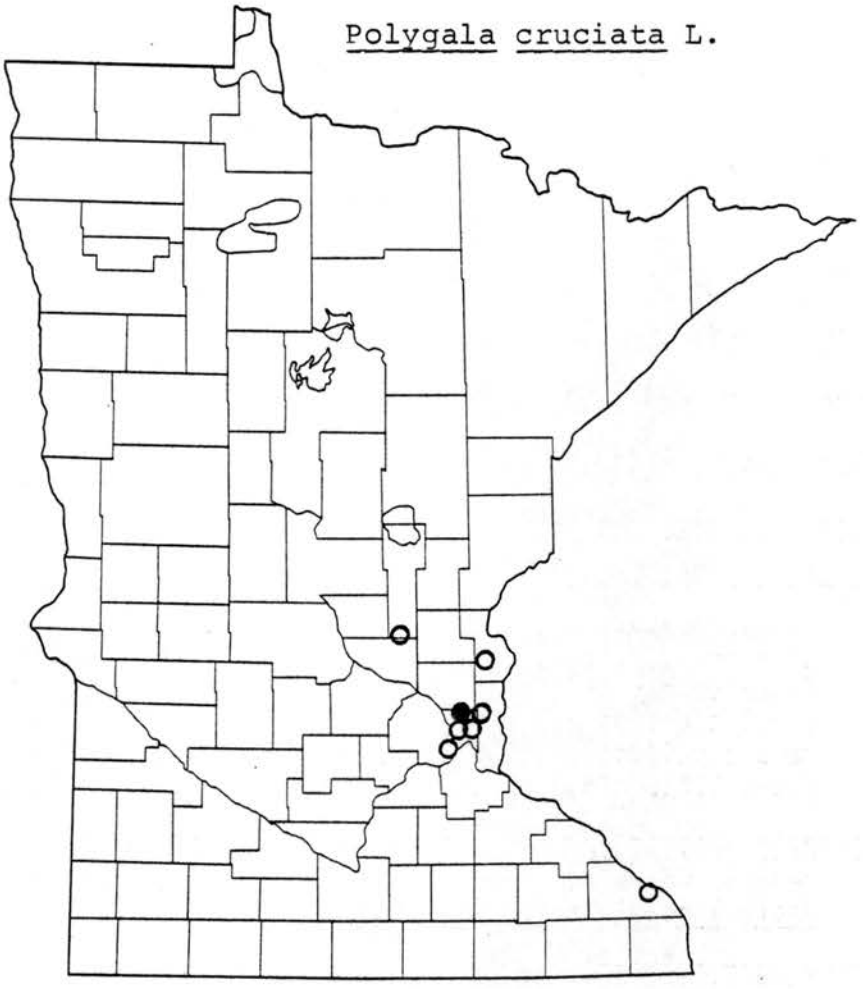
RECOMMENDATIONS: Future searches should include habitats in Carlos Avery Wildlife Management Area, Allison Savanna Scientific and Natural Area and other protected lands in Anoka County.

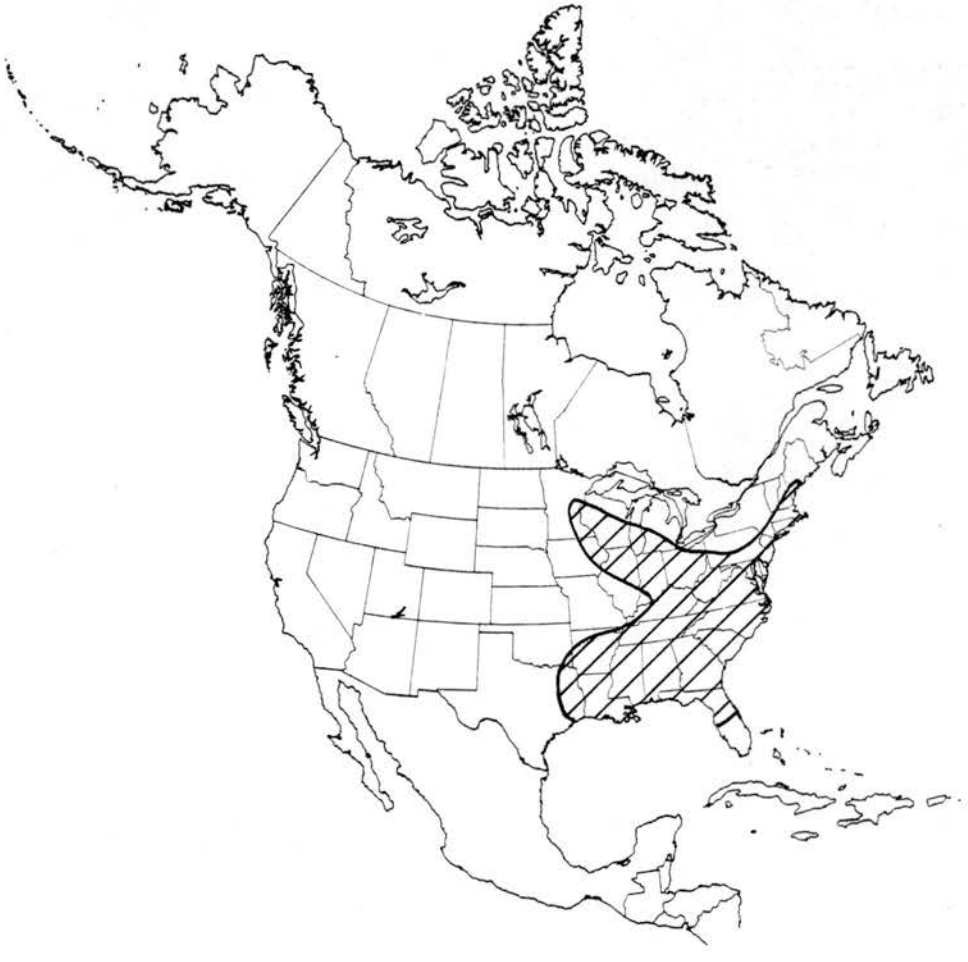
SELECTED REFERENCES:

Moore, J. W. 1973. A Catalog of the Flora of Cedar Creek Natural History Area, Anoka and Isanti Counties, Minnesota. Bell Museum of Natural History, Occasional Paper Number 12.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Polygala cruciata L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Polystichum braunii (Spenner) Fee var. purshii Fern.

FAMILY: Polypodiaceae

COMMON NAME: Braun's Holly Fern

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was discovered in Minnesota during a geological survey of Cook County in 1966. The population is quite small and consists of only a few individuals. The site is in public ownership and efforts are being made to preserve it. This species occurs in Minnesota at the periphery of its range and it appears to be rare or infrequent throughout the region. All other varieties of P. braunii are limited to Alaska and British Columbia.

PREFERRED HABITAT IN MINNESOTA: The single Minnesota population occurs on the vertical walls of a steep, narrow ravine. The typical habitat for this species in the Great Lakes Region is hardwood forests.

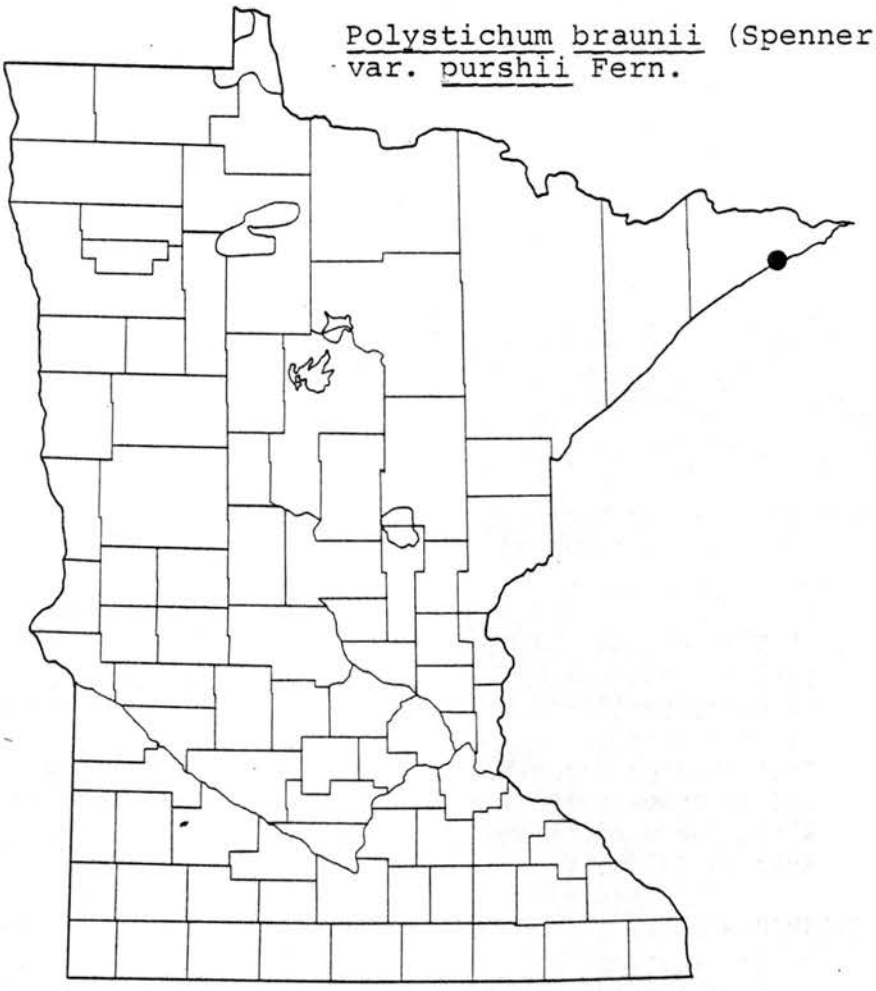
RECOMMENDATIONS: Efforts should continue to protect the site where the only Minnesota population occurs.

SELECTED REFERENCES:

Green, J. C. and D. R. Engstrom. 1975. A new locality for Braun's Holly Fern in Minnesota. Am. Fern. Jour. 65(2):61.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Polystichum braunii (Spenner)
var. purshii Fern.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Potamogeton lateralis Morong

FAMILY: Potamogetonaceae

COMMON NAME: a species of Pondweed

STATE STATUS: Endangered

FEDERAL STATUS: Currently under review by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973, amended 1978. Federal Register 45(242):82480, December 15, 1980.)

BASIS FOR MINNESOTA STATUS: This aquatic species appears to be rare or local throughout its range. It was unknown in Minnesota until 1974 when it was collected in Squaw Lake by E. O. Beal. Because Squaw Lake is in Itasca State Park the population of P. lateralis appears to be protected from direct human disturbance. Potential threats from acid rain and other forms of pollution have not been assessed.

PREFERRED HABITAT IN MINNESOTA: This is an aquatic species that prefers shallow quiet waters in lakes and ponds. The population at Squaw Lake occurs with another rare aquatic species, Utricularia gibba.

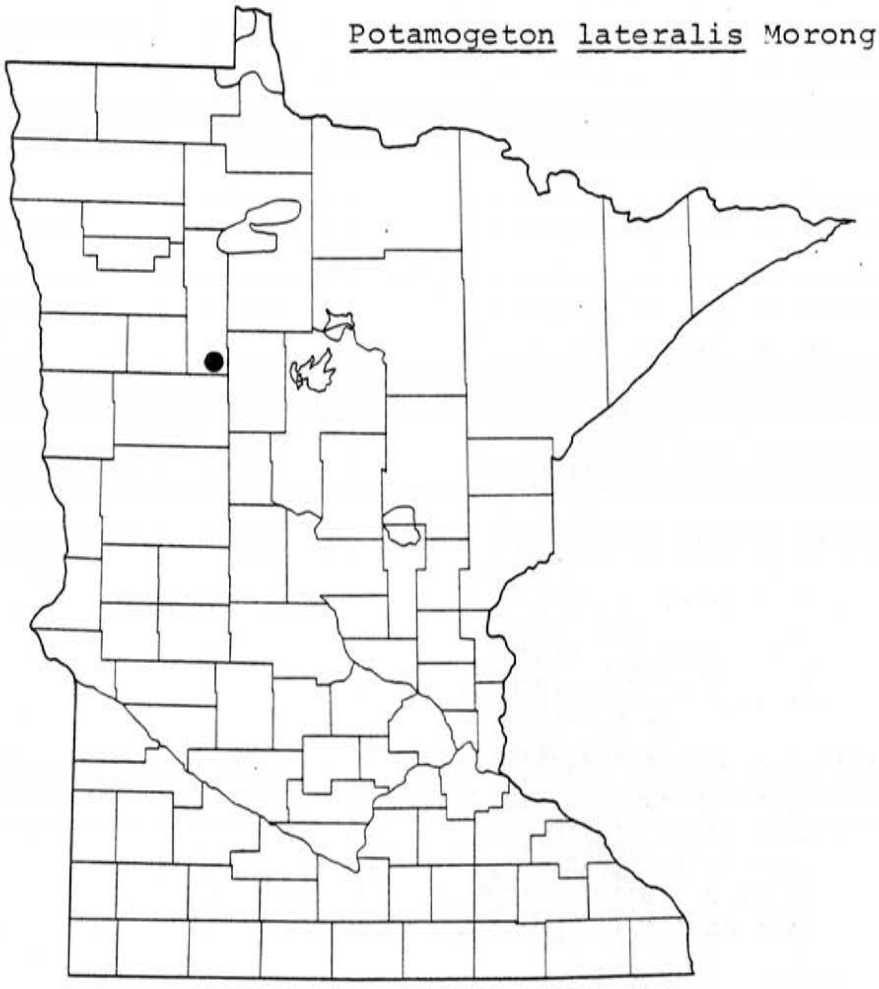
RECOMMENDATIONS: Because of the extreme rarity of this species, its population and habitat warrant special preservation efforts.

SELECTED REFERENCES:

Fernald, M. L. 1932. The linear-leaved North American species of Potamageton section Axillaries. Mem. Am. Acad. Arts. Sci. 17:1-183.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Potamogeton lateralis Morong





SPECIES STATUS SHEET

SCIENTIFIC NAME: Rhynchospora capillacea Torr.

FAMILY: Cyperaceae

COMMON NAME: Hair-like Beak-rush

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although the species occurs over a relatively large portion of Minnesota, it is entirely restricted to small, fragile fen habitats. These habitats are often only a few acres in size and are maintained by local discharge of cold, calcareous groundwater. The groundwater is critical to the survival of these habitats, and several of the sites are currently threatened with disruption or contamination of their groundwater supply. The population in Blue Earth County was destroyed by industrial development and one of the two populations in Dakota County was recently destroyed by road construction.

PREFERRED HABITAT IN MINNESOTA: R. capillacea is apparently restricted to calcareous fens where it frequently occurs with other obligate fen species such as Carex sterilis and Scleria verticillata. Within fens it prefers the margins of fen pools and marl flats where the extreme environmental conditions keep competition minimal.

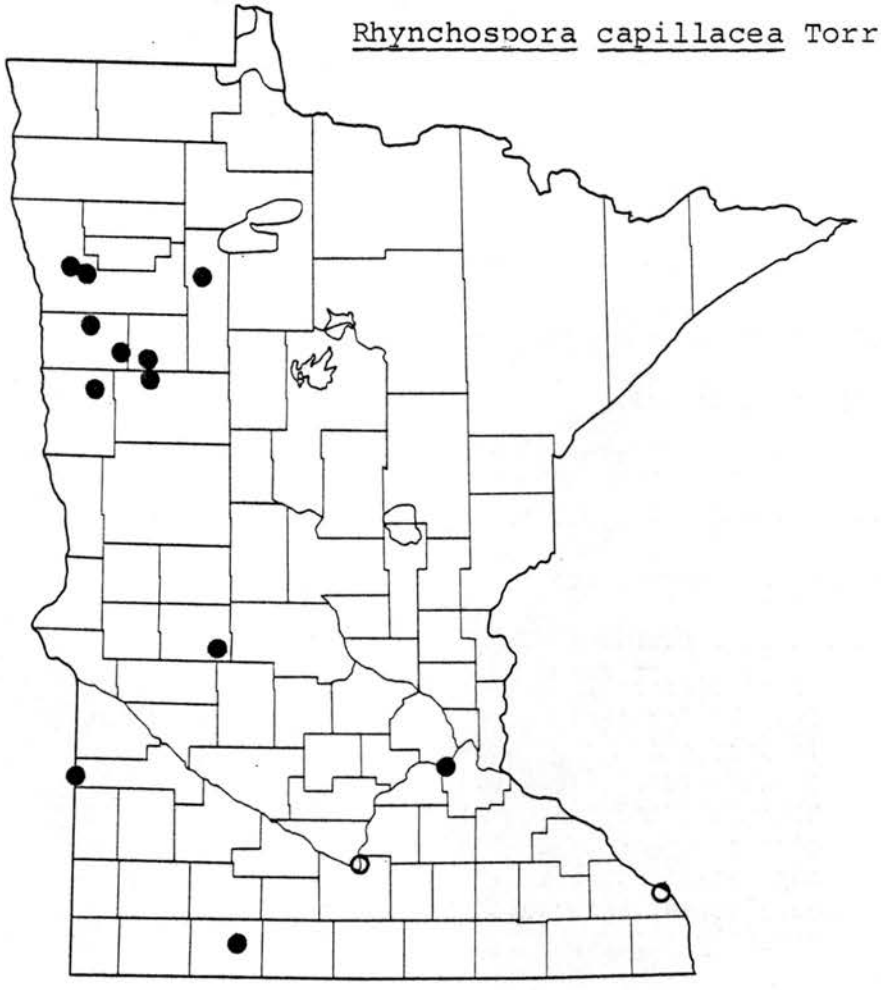
RECOMMENDATIONS: Groundwater levels should be closely monitored at critical sites.

SELECTED REFERENCES:

Gale, S. 1944. Rhynchospora, section eurhynchospora in Canada, the United States and the West Indies. Rhodora 46:89-134; 159-197; 207-249; 255-278.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Rhynchospora capillacea Torr.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Rubus chamaemorus L.

FAMILY: Rosaceae

COMMON NAME: Baked-apple-berry

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This boreal species reaches the southern limit of its range in Minnesota, and is absent from the other Great Lakes States. The population at Basswood Lake was discovered in 1954 and has been recently verified. The population at Snow Bank Lake was discovered in 1969 but has never been relocated and its current status is unknown. Previous and subsequent botanical searches in northern Minnesota have failed to locate any additional populations.

PREFERRED HABITAT IN MINNESOTA: This species occurs in sphagnum bogs dominated by black spruce.

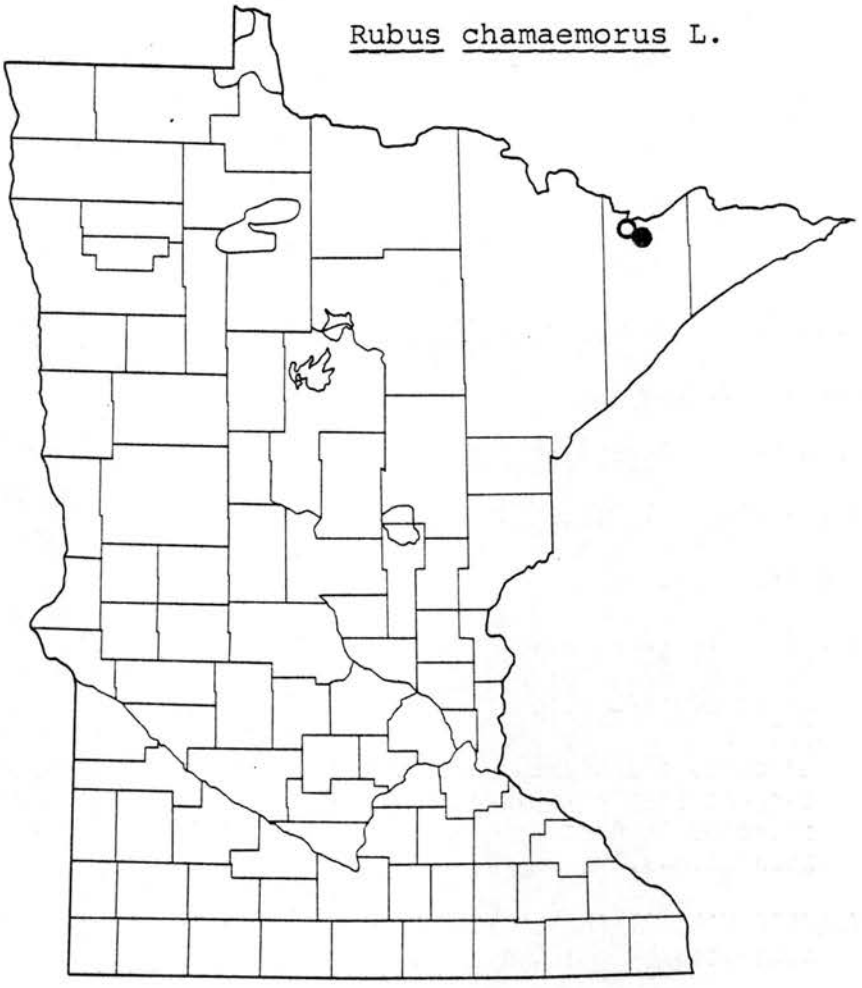
RECOMMENDATIONS: No recommendations can be made at this time.

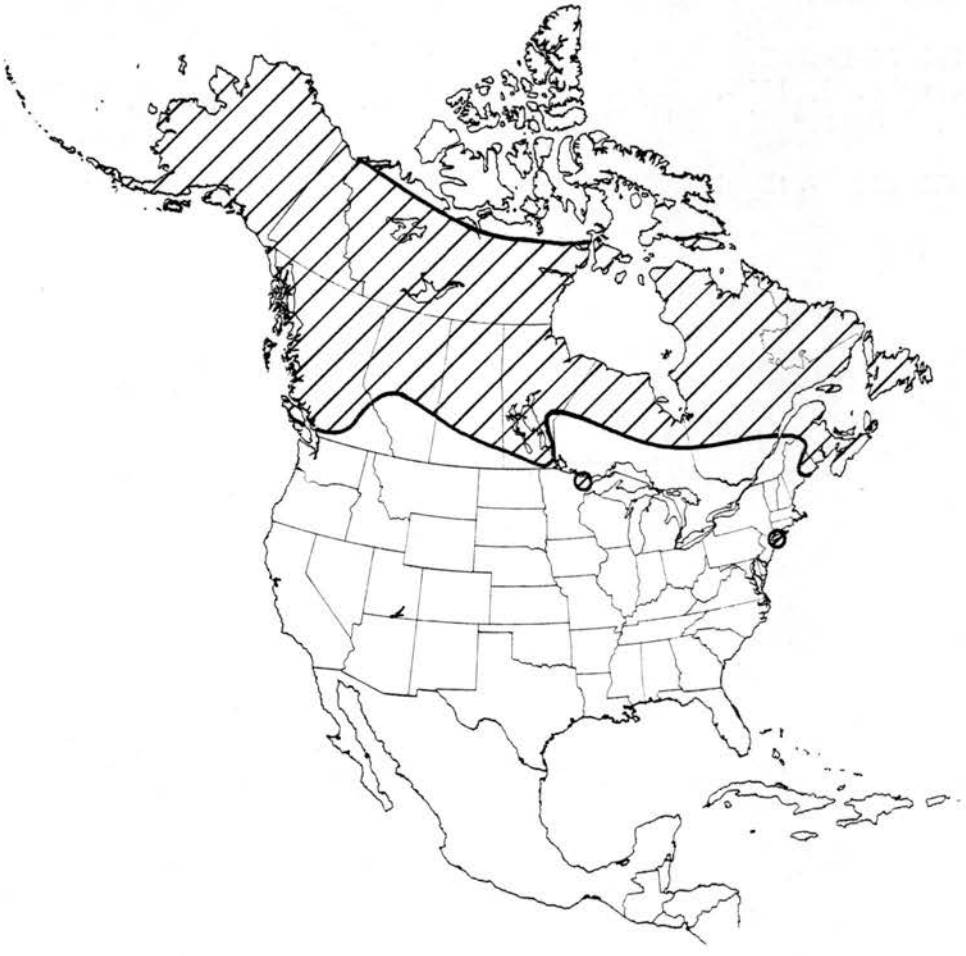
SELECTED REFERENCES:

Lakela, O. 1954. The occurrence of Rubus chamaemorus in Minnesota. Rhodora 56:272-273.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Rubus chamaemorus L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Ruellia humilis* Nutt.

FAMILY: Acanthaceae

COMMON NAME: Wild-petunia

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Only one population of this species is known to occur in Minnesota. It was discovered in 1974 in Afton State Park (Washington County). It is disjunct 200 miles from the northern edge of its range in Iowa and Wisconsin. The Minnesota population has not been adequately surveyed, and its current status is not known.

PREFERRED HABITAT IN MINNESOTA: This species occurs in dry prairies and open woods.

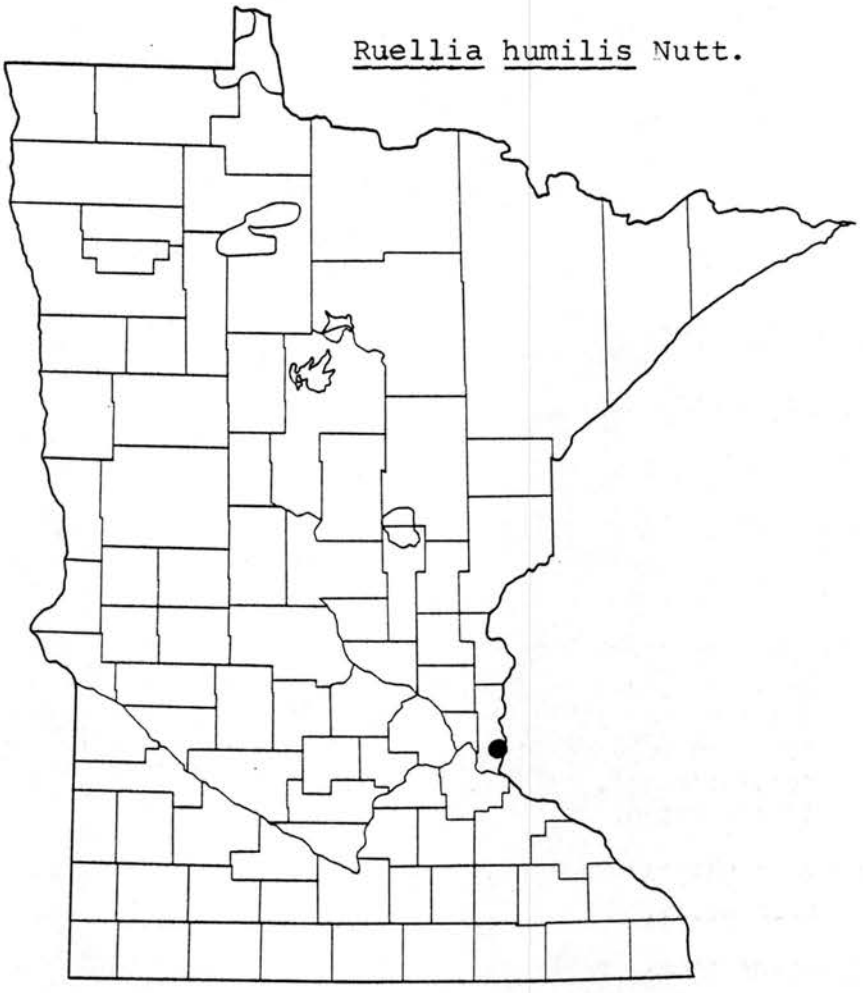
RECOMMENDATIONS: Further inventory of the population at Afton State Park is needed. Searches for undiscovered populations should be conducted on goat prairies in the Mississippi and St. Croix Valleys.

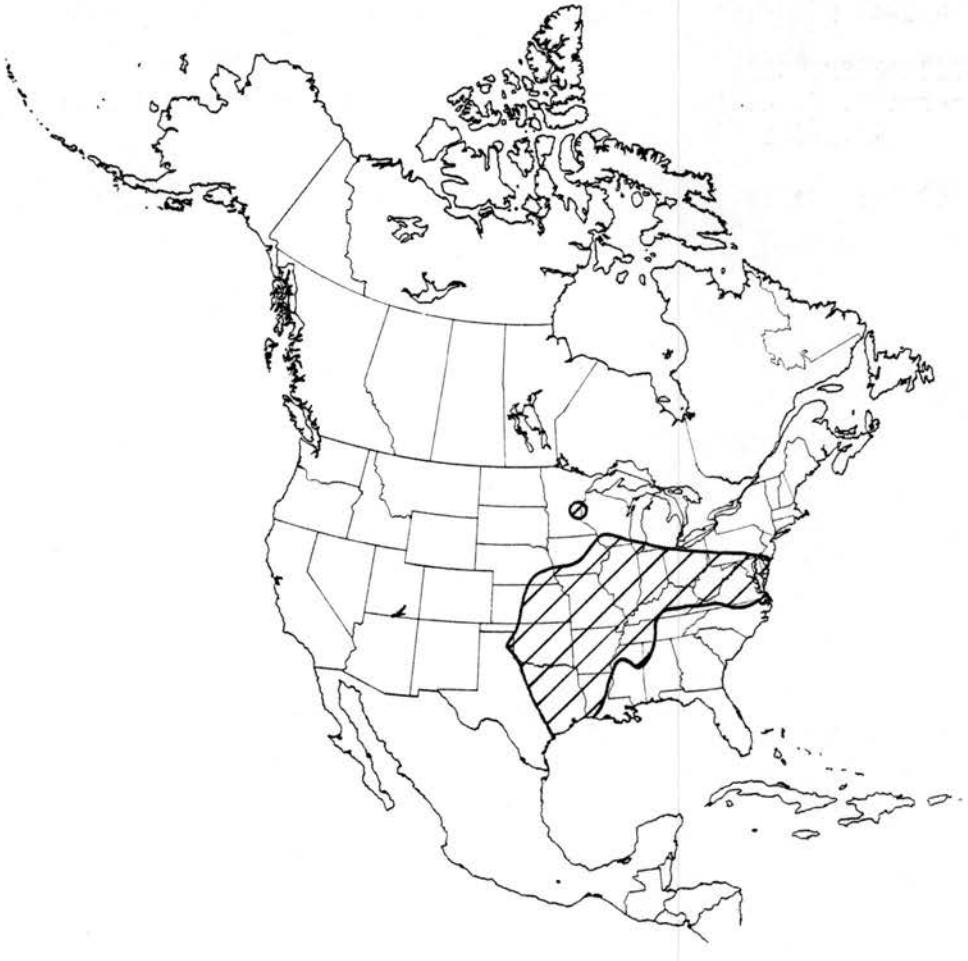
SELECTED REFERENCES:

Fernald, M. L. 1945. *Ruellia* in the eastern United States. Rhodora 47:1-38; 47-63; 69-90.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Ruellia humilis Nutt.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sagina nodosa* (L.) Fenzl ssp. *borealis* Crow

FAMILY: Caryophyllaceae

COMMON NAME: Knotty Pearlwort

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The populations of this subarctic species which occur on the north shore of Lake Superior may be separated from the main range of the species by 400 miles. The Minnesota populations are restricted to localized habitats on Pigeon Point and nearby Susie Island (Cook County). The Susie Island population was located in 1981, but the Pigeon Point population has not been located since 1940. The sites are largely protected from human disturbance by the remoteness of their habitat, but they may be threatened by an increasing population of nesting gulls.

PREFERRED HABITAT IN MINNESOTA: This species occurs in crevices of exposed shore rocks, where it may occur with other rare species such as *Tofieldia pusilla* and *Selaginella selaginoides*.

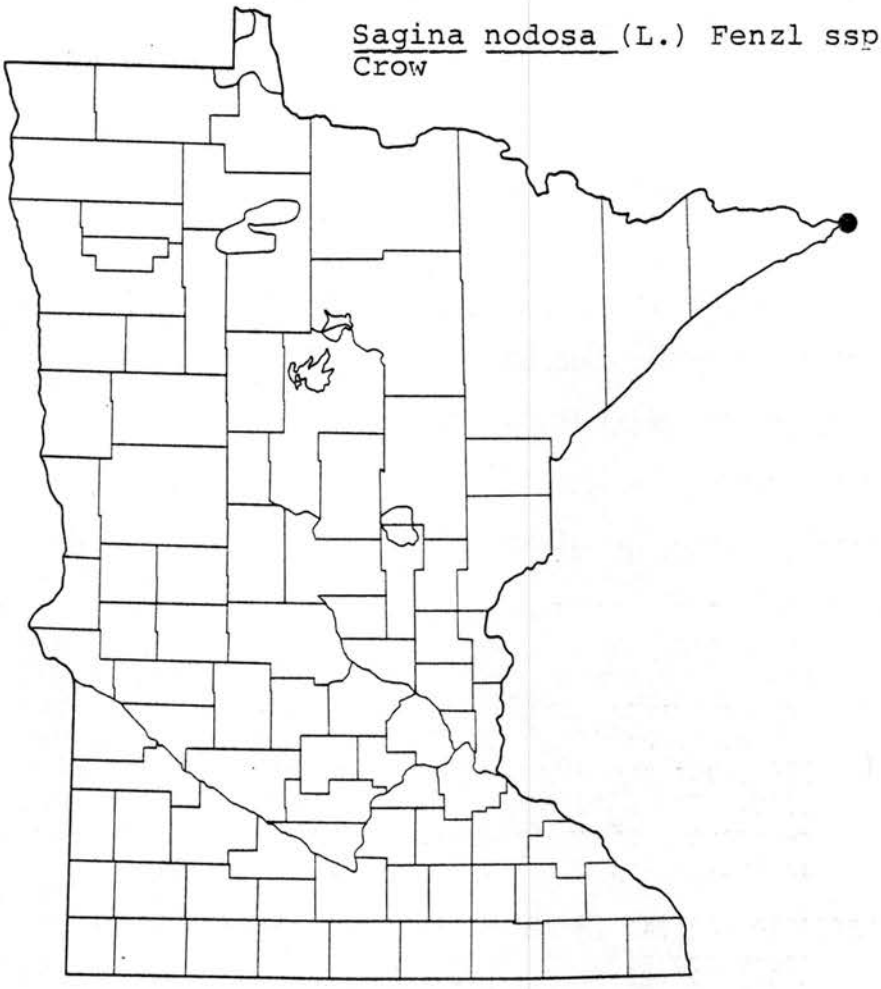
RECOMMENDATIONS: The populations of this species should be closely monitored as should the expanding gull colony wich may threaten them.

SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Sagina nodosa (L.) Fenzl ssp. borealis Crow





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Salicornia rubra* Nelson

FAMILY: Chenopodiaceae

COMMON NAME: Glasswort

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species occurs in Minnesota at the extreme eastern periphery of its range and has very restrictive habitat requirements. Populations are typically small and local, and suitable habitat has been largely eliminated by agriclutural activity. There are undocumented reports of this species from Wilkin and Polk Counties.

PREFERRED HABITAT IN MINNESOTA: Typical habitat for this species is alkaline depressions in prairies and dry creek bottoms. The population in Lac Qui Parle County occurs at Salt Lake, where it inhabits the salt encrusted silt at the margin of the water.

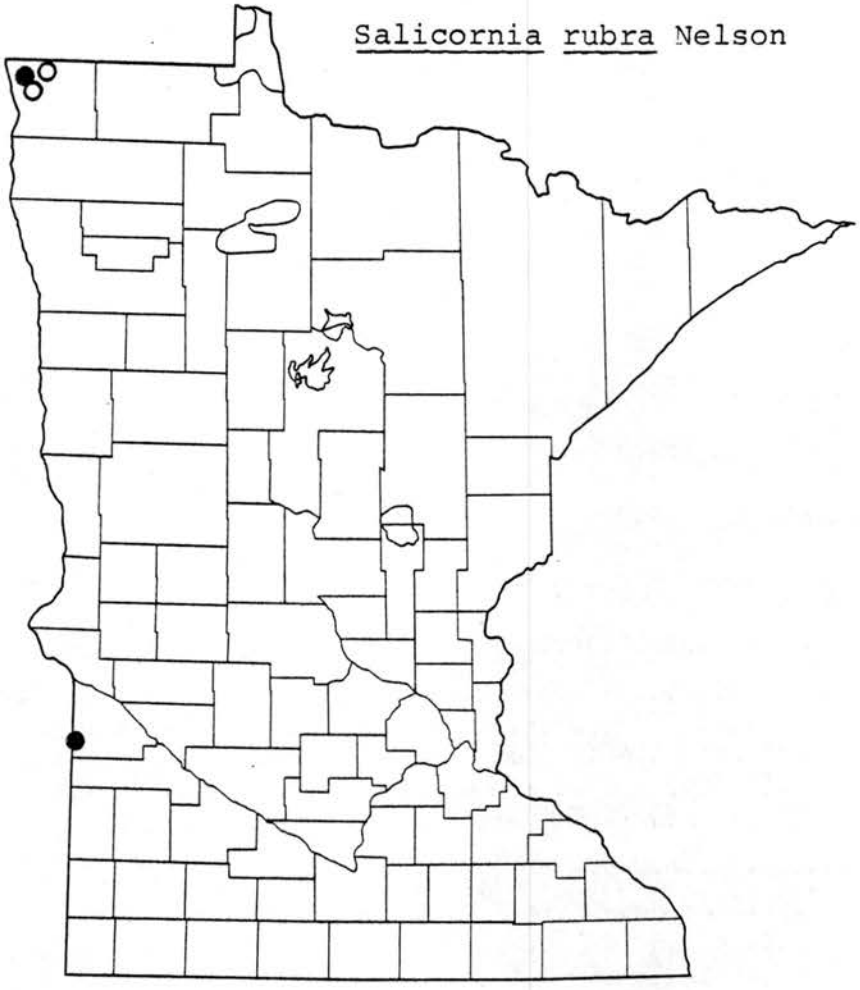
RECOMMENDATIONS: It is possible that this species will be discovered on public land in Kittson County. In that event, management of the site should consider the perpetuation of this species a priority.

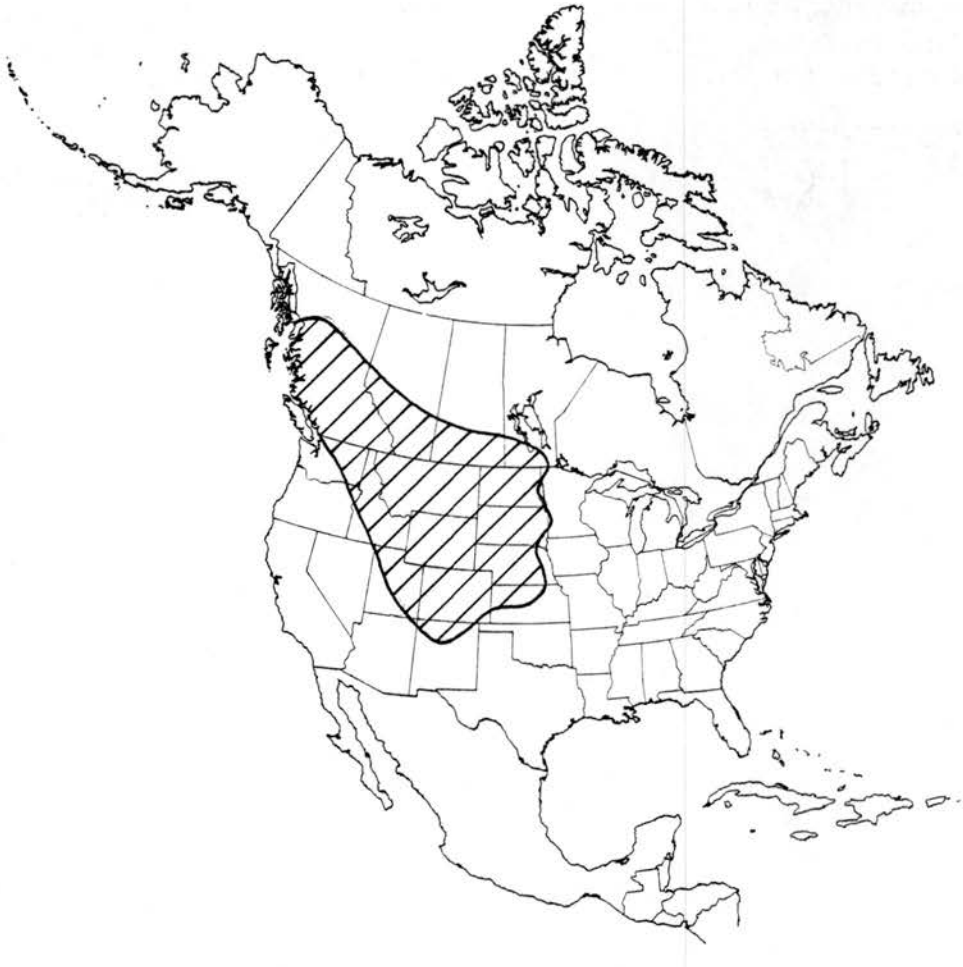
SELECTED REFERENCES:

Moore, J.W. 1966. A Provisional List of Flowering Plants, Ferns and Fern Allies of Kittson County, Minnesota. Dept. of Botany, Univ. of Minn., Minneapolis.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Salicornia rubra Nelson





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Saxifraga aizoon* Jacq. var. *neogaena* Butters

FAMILY: Saxifragaceae

COMMON NAME: a species of Saxifrage

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The Minnesota populations of this arctic-alpine species are part of the isolated Lake Superior range, which is far removed from the main range of the species. Approximately eight distinct populations are known in Minnesota. All are located along 18 miles of border lakes. Several of these populations are known to contain numerous plants, but some contain only a few plants and may have difficulty persisting.

PREFERRED HABITAT IN MINNESOTA: This species occurs on small ledges on north-facing diabase cliffs. It occurs with other rare species such as *Woodsia scopulina* and *Saxifraga cernua*.

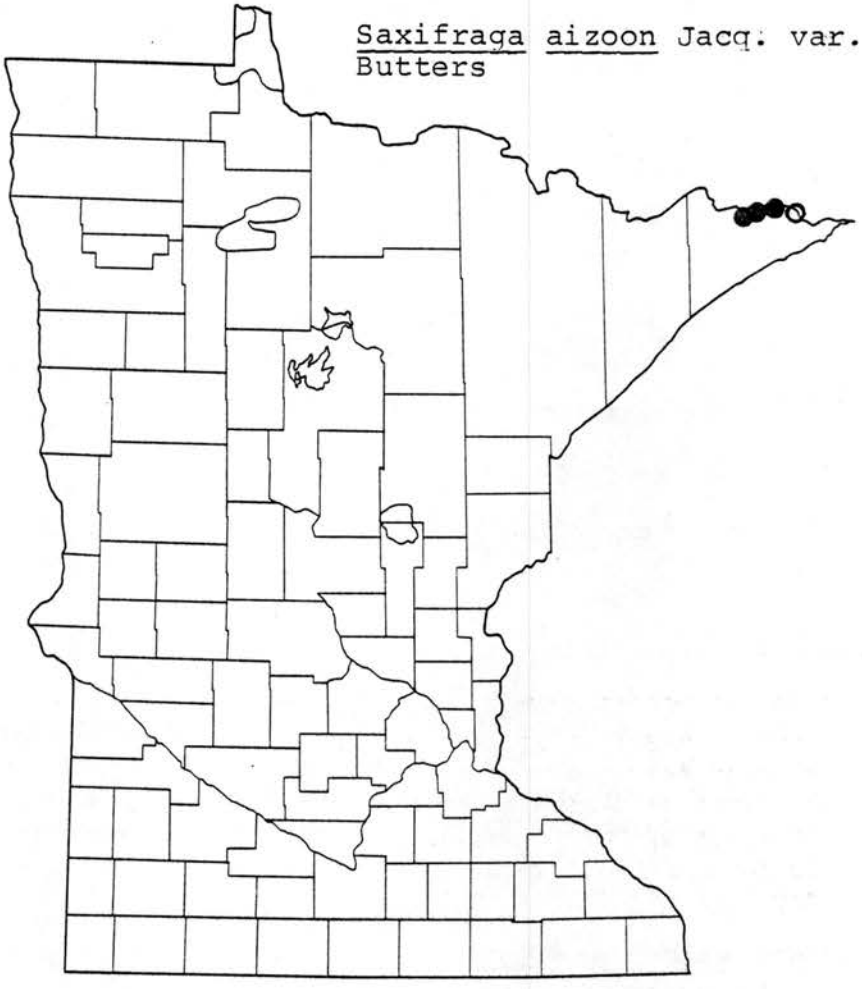
RECOMMENDATIONS: No recommendations can be made at this time.

SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Saxifraga aizoon Jacq. var. neogaena Butters





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Saxifraga cernua* L. var. *latibracteata* Fern.

FAMILY: Saxifragaceae

COMMON NAME: Nodding Saxifrage

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The only population of this arctic-alpine species in the midwest occurs at a single site in Cook County. It was discovered in 1930 and successfully relocated in 1980. The population is small and precariously located in a fragile habitat. It appears to be protected from human disturbance by its remoteness, but it may be threatened by natural forces such as erosion.

PREFERRED HABITAT IN MINNESOTA: This species occurs on small ledges on a sheer north-facing diabase cliff. It occurs with other rare species such as *Woodsia scopulina* and *Saxifraga aizoon*.

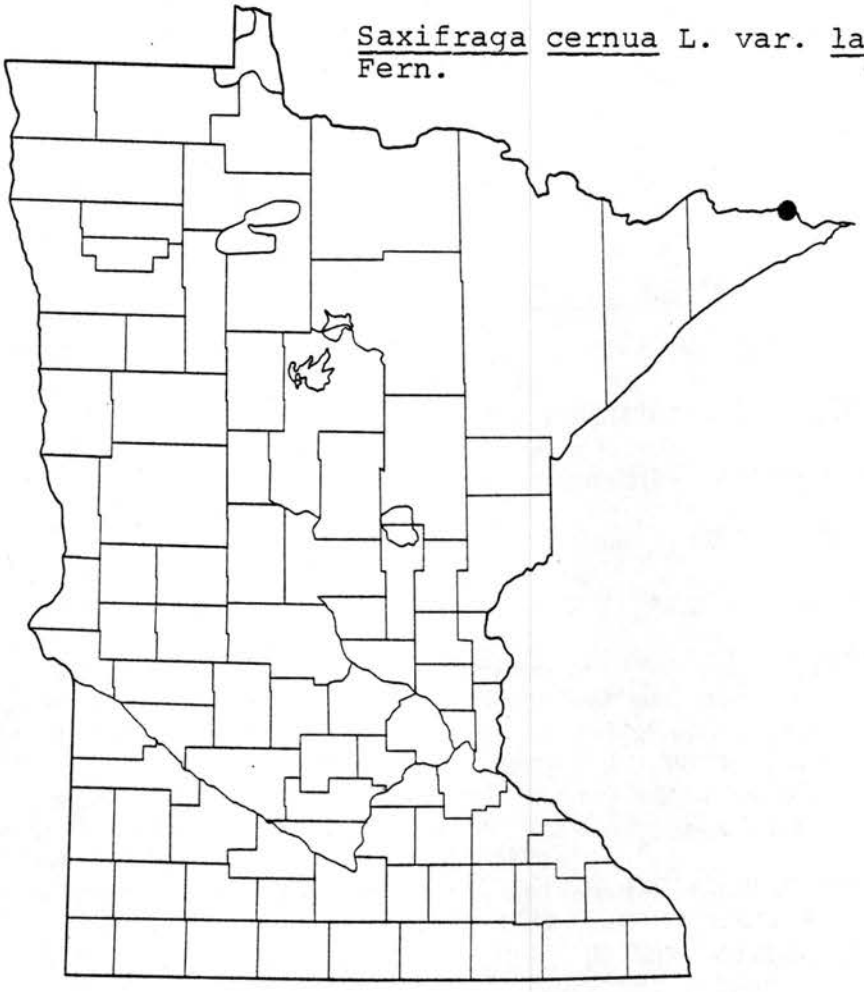
RECOMMENDATIONS: Because of the extreme rarity of this species in the midwest, its population should be closely monitored to determine potential threats.

SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Saxifraga cernua L. var. latibracteata Fern.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Scleria triglomerata Michx.

FAMILY: Cyperaceae

COMMON NAME: Tall Nut-rush

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: There are several historical records of this species occurring in the Anoka Sandplain area. Native habitats in this region, however, are under increasing development pressure and few of them remain in undisturbed condition. A large population which occurred at the Moore Lake Dunes was destroyed in 1960 by the construction of Fridley High School. The sites in Hennepin and Ramsey Counties are believed to have been destroyed by expansion of the metropolitan area. The only populations known to be extant in Minnesota occurs at Allison Savanna Scientific and Natural Area and Cedar Creek Natural History Area (Anoka County).

PREFERRED HABITAT IN MINNESOTA: This species occurs along the margins of swales in sandy prairies, savannas and dunes.

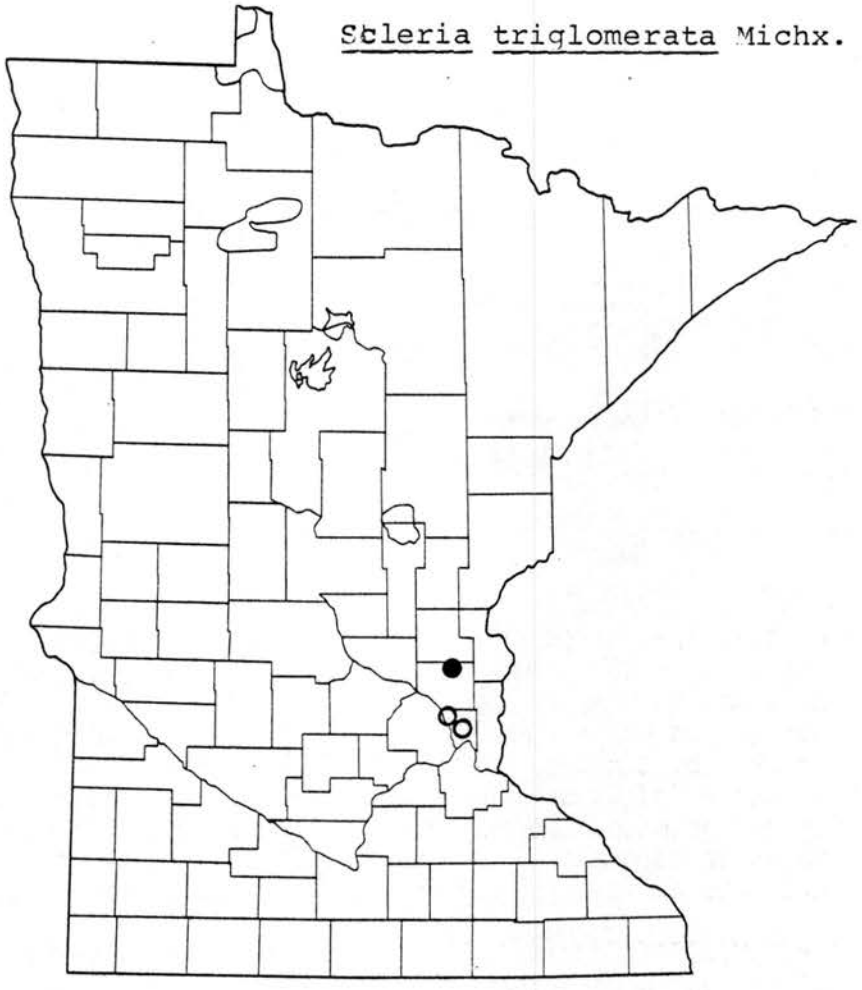
RECOMMENDATIONS: The surviving populations should be monitored to determine their response to the fire management regime currently in use.

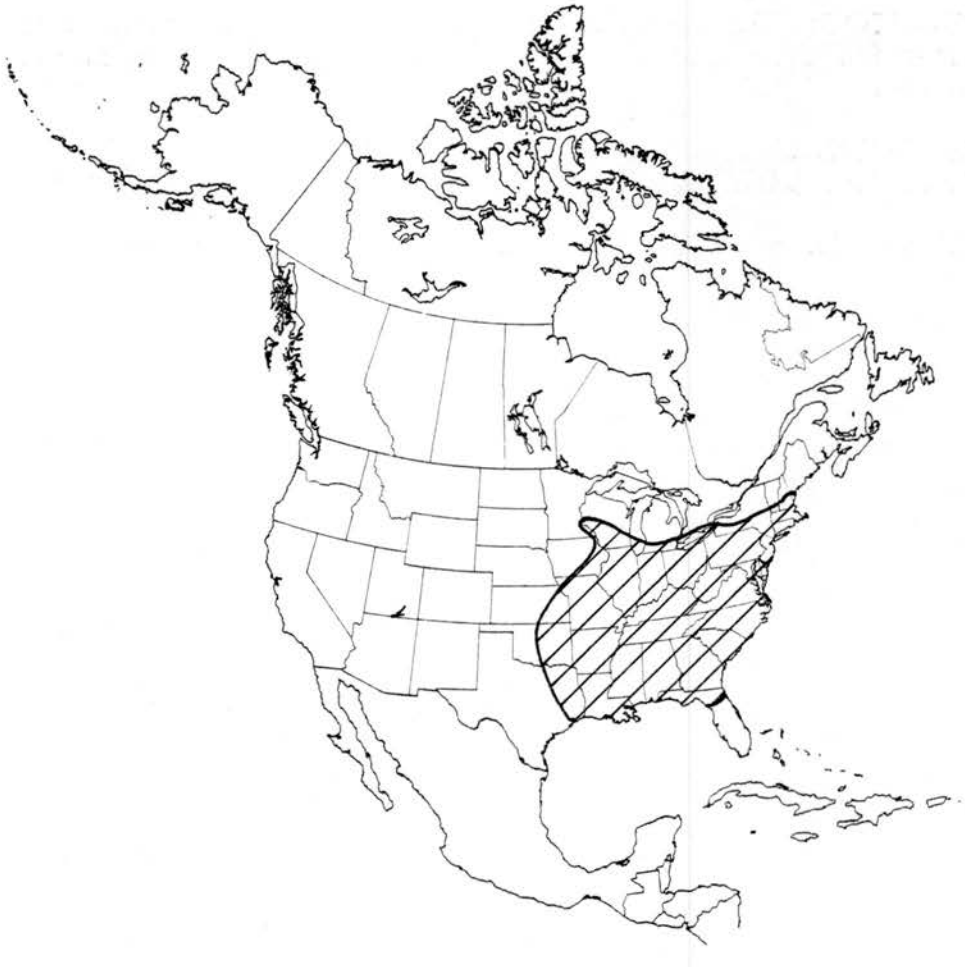
SELECTED REFERENCES:

Core, E.L. 1936. The American species of Scleria. Brittonia 2:1-105.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Scleria triglomerata Michx.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Scleria verticillata* Muhl.

FAMILY: Cyperaceae

COMMON NAME: Whorled Nut-rush

STATE STATUS: Threatened

FEDERAL STATUS: None

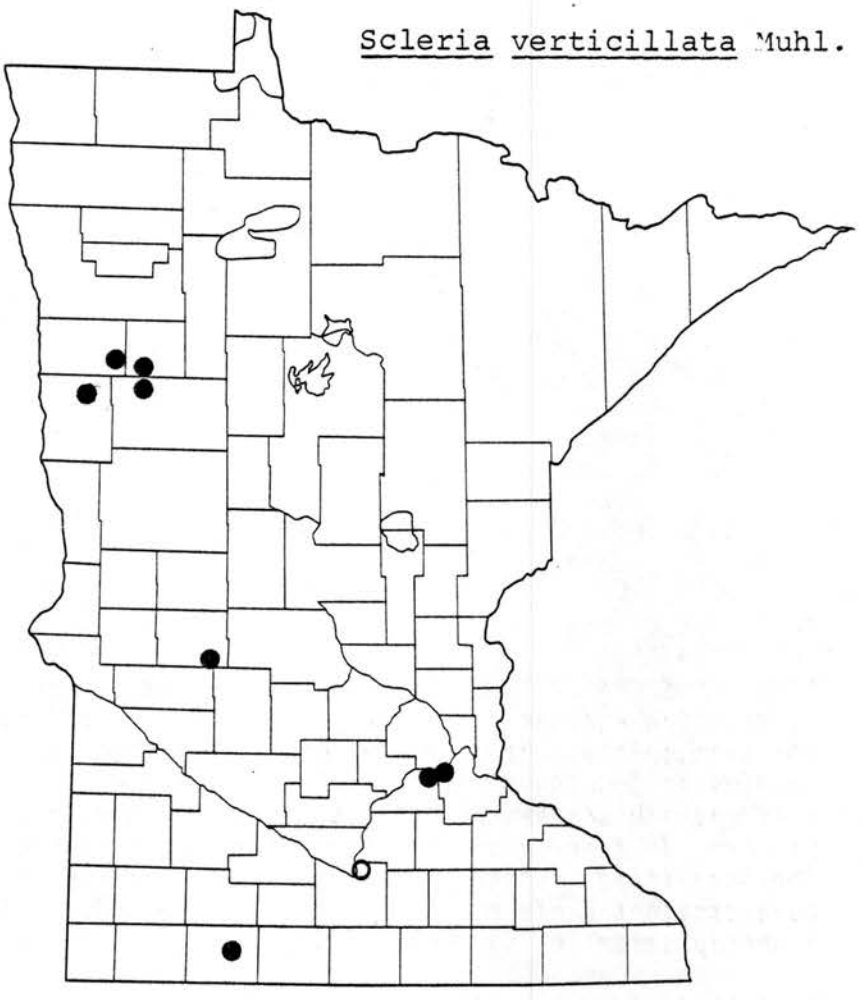
BASIS FOR MINNESOTA STATUS: This calciphile is generally rare or local throughout the region. This is largely because of unusual and restrictive habitat requirements that limit its occurrence to calcareous fens. For this reason it is extremely vulnerable to changes in groundwater level. Several of the known populations are currently threatened by commercial and agricultural activities which may draw down the groundwater and dry out the supporting habitat. The population in Blue Earth County was destroyed by industrial development and one of the two populations in Dakota County was recently destroyed by road construction.

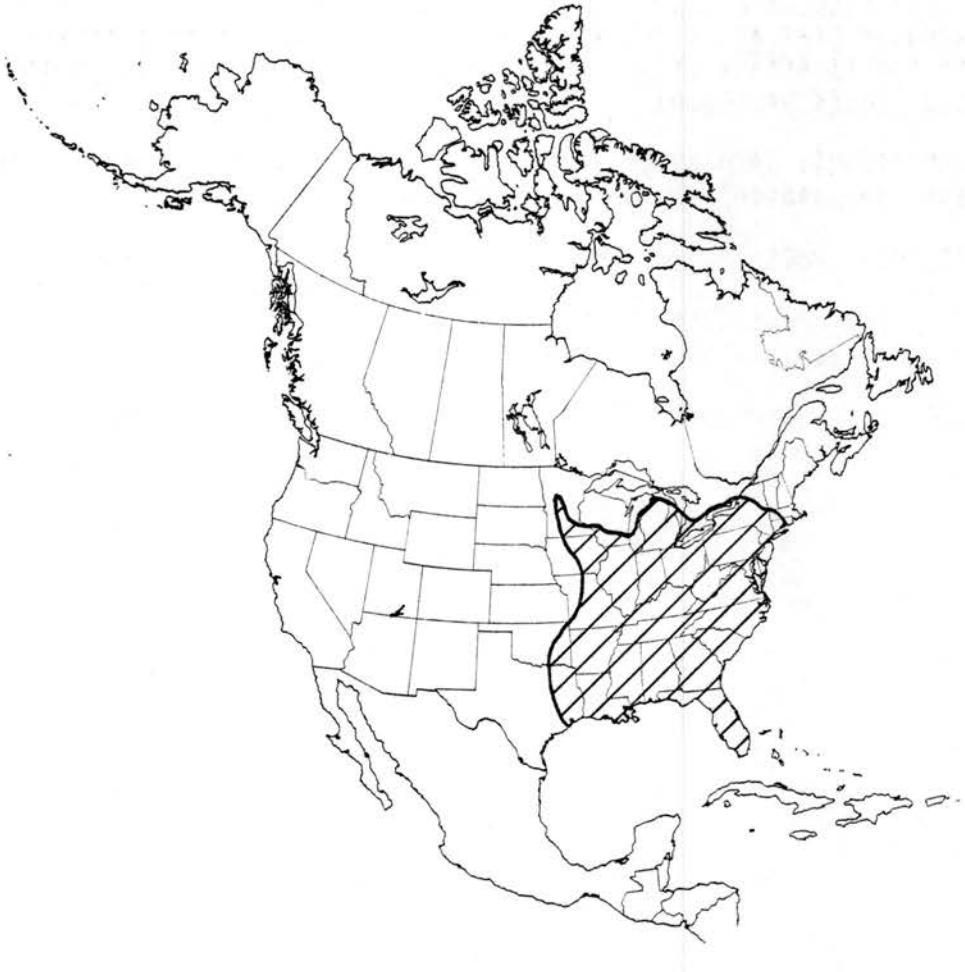
PREFERRED HABITAT IN MINNESOTA: In Minnesota, *S. verticillata* is entirely restricted to calcareous fens. Within fens it acts as a pioneer on exposed marl and along the margins of pools. It is typically found in association with other obligate fen species such as *Rhynchospora capillacea* and *Carex sterilis*.

RECOMMENDATIONS: Additional information is needed on the hydrology of fens and the recovery potential of degraded fen habitats.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Scleria verticillata Muhl.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Sedum rosea (L.) Scop. var. leedyi Rosend. & Moore

FAMILY: Crassulaceae

COMMON NAME: Roseroot

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The two main ranges of this species are the mountainous regions of western North America, and ledges and beaches on the east coast. The single midwest population occurs on a rugged cliff in Olmsted County. It is believed to represent a relict population that survived the most recent glaciation in the "Driftless Area" of southeastern Minnesota. Because of its long isolation, it has developed morphological characteristics different from other known forms and has been described as a distinct variety. It is named for John L. Leedy who discovered the population in 1936 while a graduate student at the University of Minnesota. The population occurs on private land and may be threatened by housing development and road building.

PREFERRED HABITAT IN MINNESOTA: Small crevices and ledges on a steep north-facing limestone cliff overlooking the Root River. It occurs there with a disjunct population of Draba arabisans.

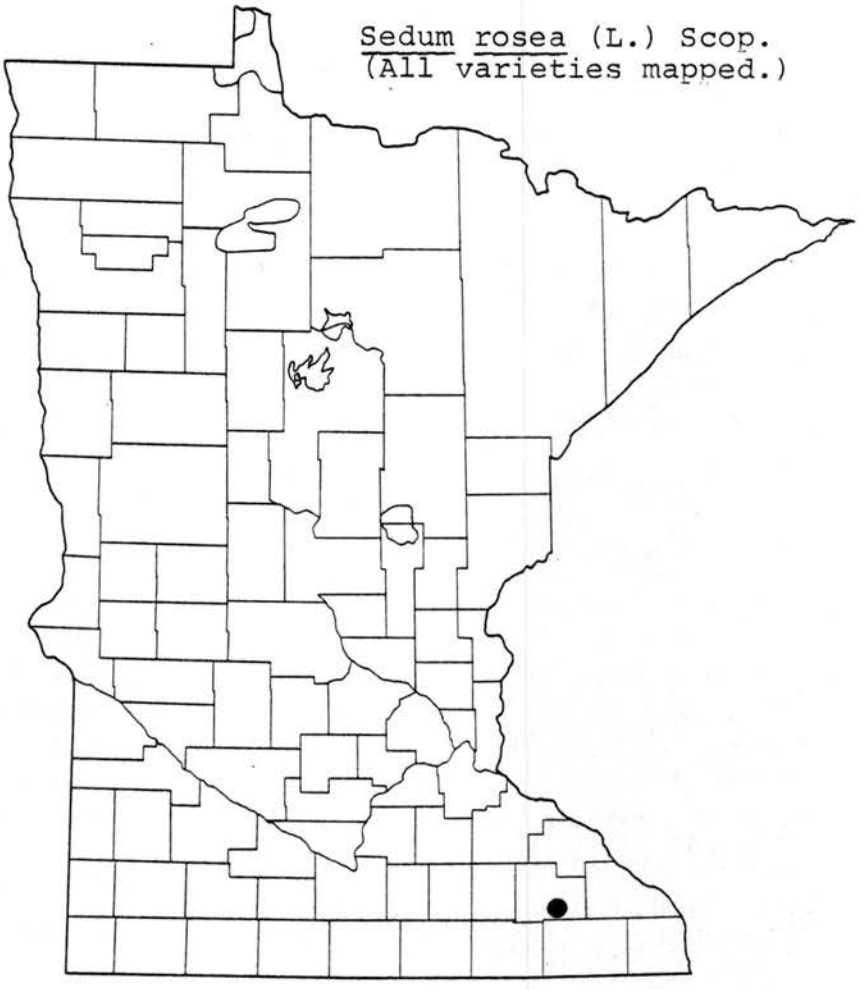
RECOMMENDATIONS: A high priority should be given to the protection of this population by whatever means available.

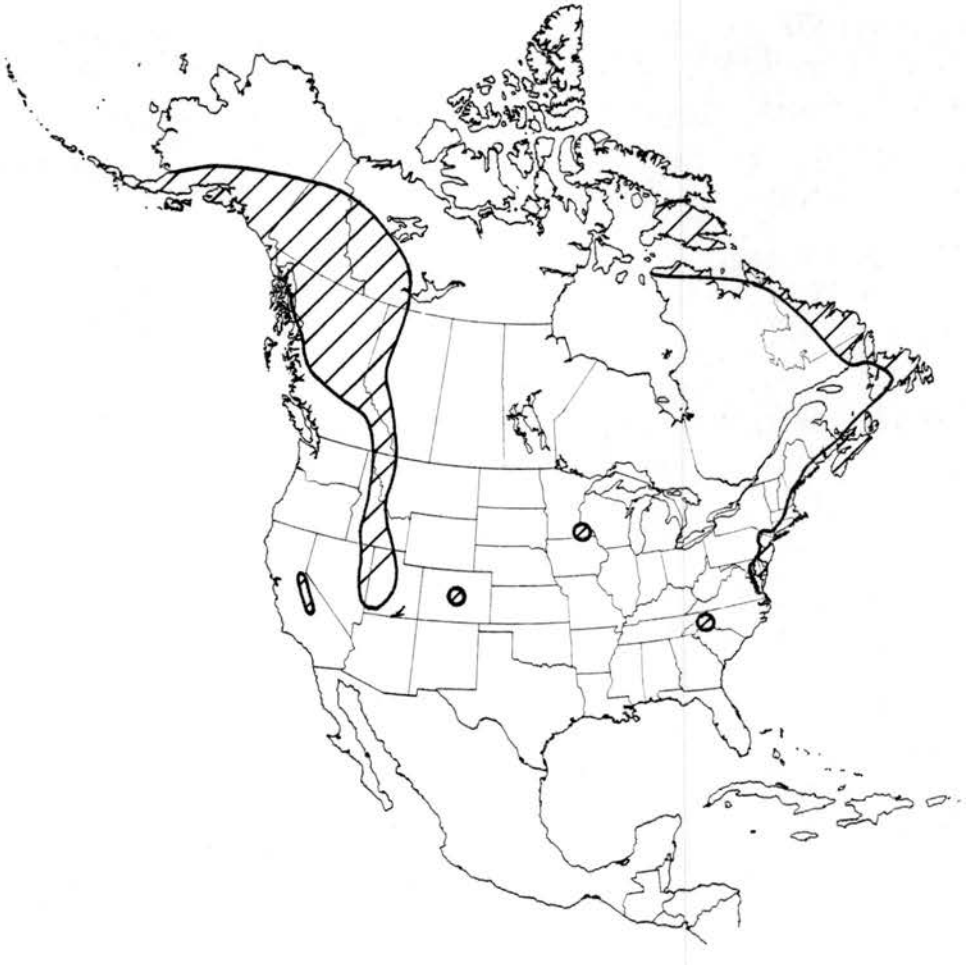
SELECTED REFERENCES:

Rosendahl, C. O. and J. W. Moore. 1947. A new variety of Sedum rosea from southeastern Minnesota and additional notes on the flora of the region. Rhodora 49:197-202.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Sedum rosea (L.) Scop.
(All varieties mapped.)





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sparganium glomeratum* Laest.

FAMILY: Sparganiaceae

COMMON NAME: Clustered Bur Reed

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The distribution of this species in the western hemisphere is apparently limited to northeastern Minnesota and Saguenay County, Ouebec. One of the collections from St. Louis County is from a small colony on Minnesota Point in Duluth. The persistance of this colony has not been verified since 1944, and it may have since been destroyed by land development.

PREFERRED HABITAT IN MINNESOTA: This species has been collected in a *Sphagnum* bog, a "floating bog", and in marshes.

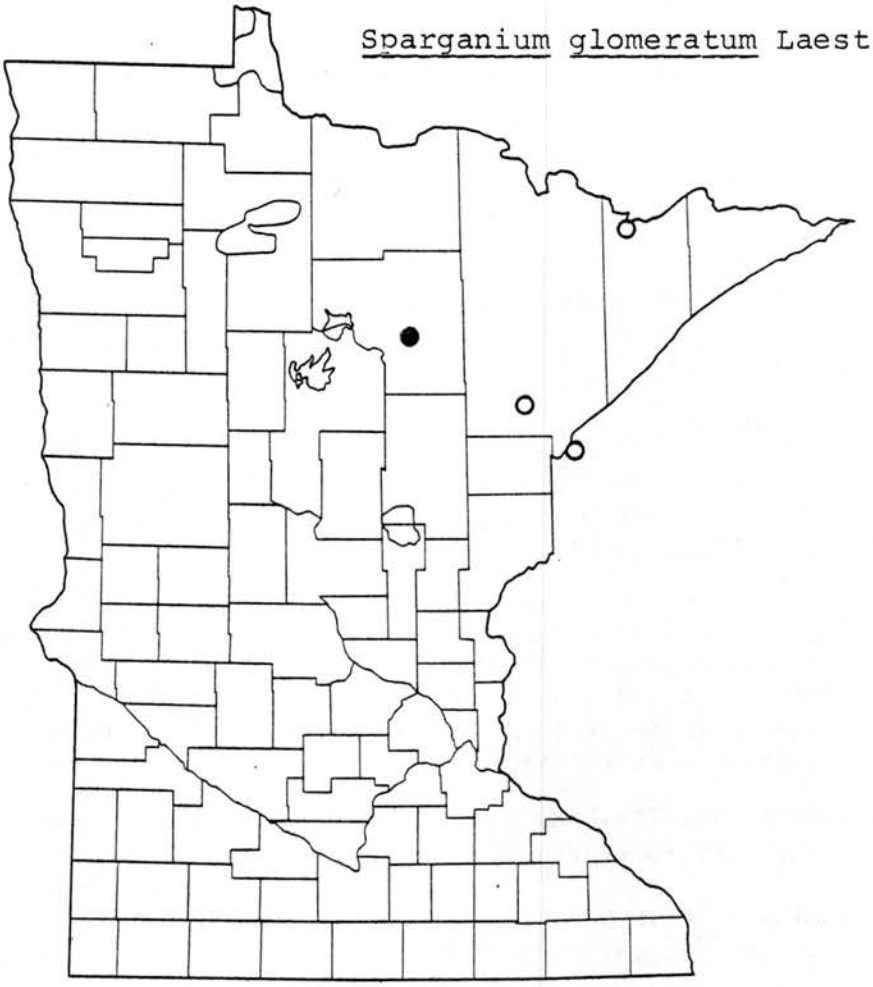
RECOMMENDATIONS: Because of the extreme rarity of this species, efforts should be made to relocate all of the vouchered populations and assess their protection needs.

SELECTED REFERENCES:

Lakela, O. 1941. *Sparganium glomeratum* in Minnesota. Rhodora 43:83-85.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Sparganium glomeratum Laest.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Subularia aquatica* L.

FAMILY: Brassicaceae

COMMON NAME: Awlwort

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although this small aquatic species has wide distribution in North America, it is uncommon or local over most of its range. It is considered to be rare, threatened or absent in states and provinces adjacent to Minnesota. It was discovered in Minnesota in Poplar Lake (Cook Co.) in 1944. During the 1950's it was found at Snow Bank Lake, Basswood Lake (Lake Co.) and Trout Lake (St. Louis Co.). The population at Snow Bank Lake was relocated in 1982. It survives as a small remnant population after most of its habitat was eliminated by the construction of retaining walls. The population in Trout Lake has also suffered a decline, and in 1982 only four plants could be located.

PREFERRED HABITAT IN MINNESOTA: *Subularia aquatica* is an aquatic species that occurs in shallow lake margins. It has also been found stranded on sandy beaches and in rock pools. It may occur with another rare aquatic species, *Littorella americana*.

RECOMMENDATIONS: No recommendations can be made at this time.

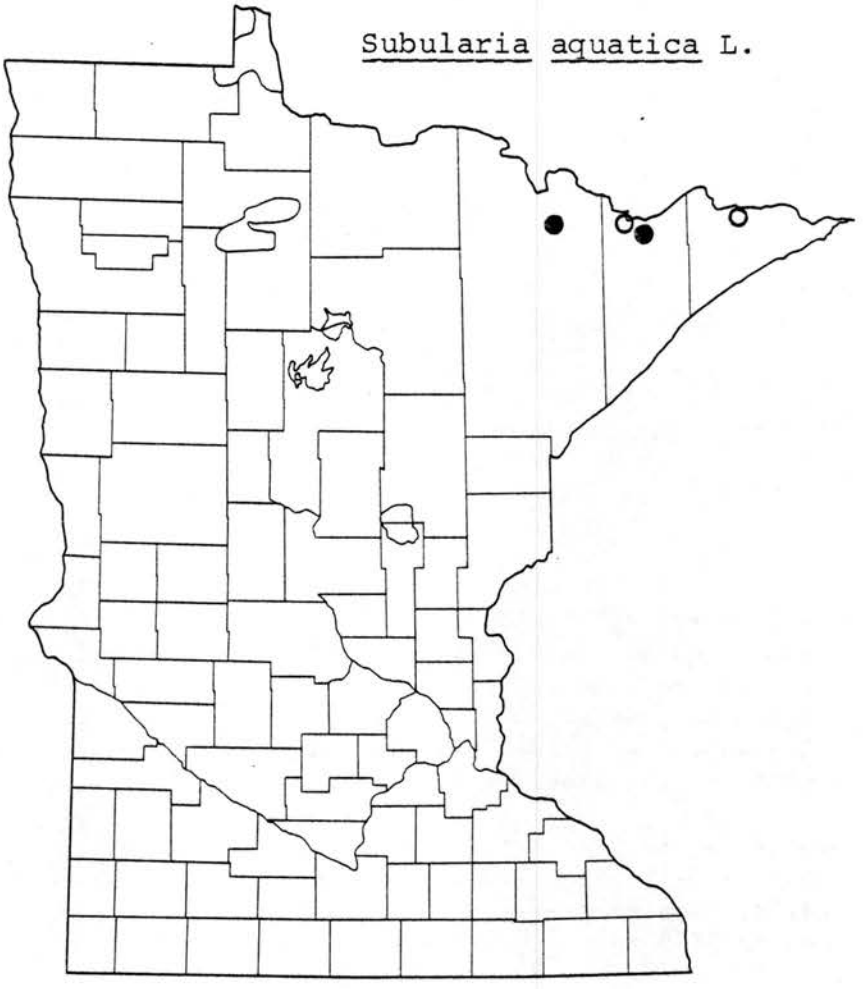
SELECTED REFERENCES:

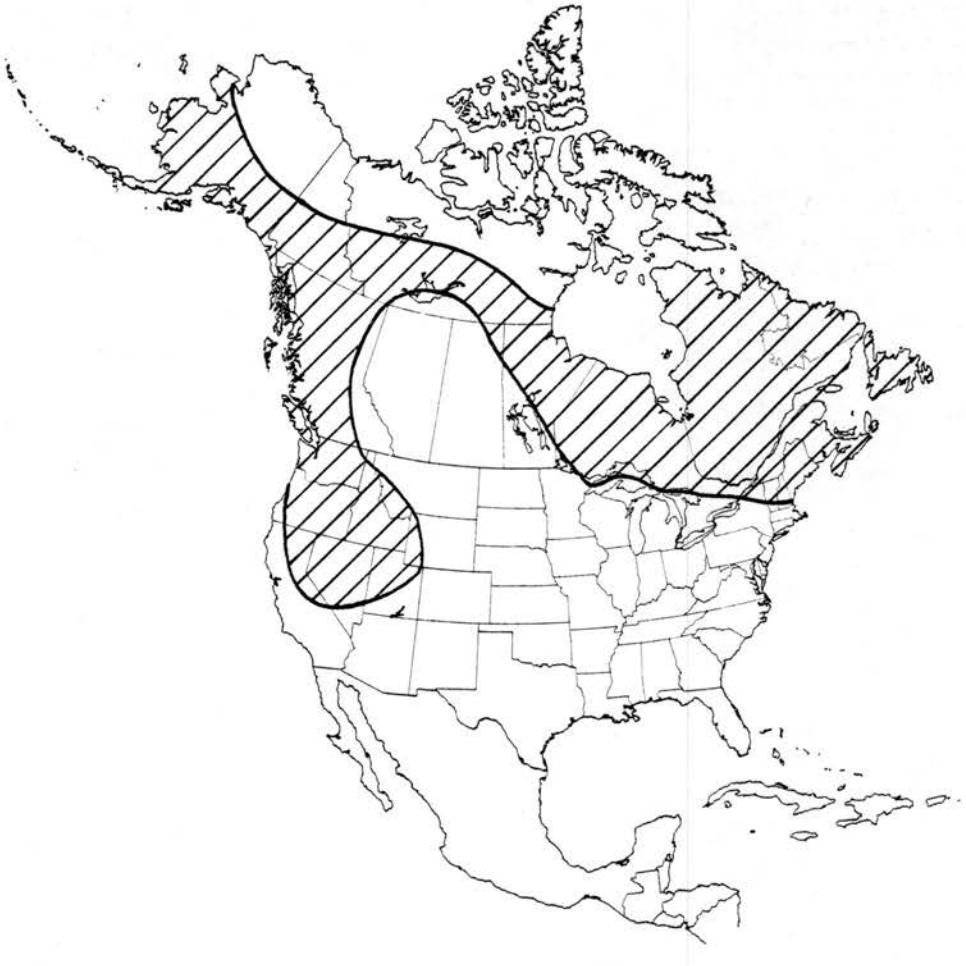
Lakela, O.L. 1965. A Flora of Northeastern Minnesota. Univ. of Mn. Press, Minneapolis.

Mulligan, G. A. & J. A. Calder. 1964. The genus *Subularia* (cruciferae). Rhodora 66:127-135.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Subularia aquatica L.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sullivantia renifolia* Rosend.

FAMILY: Saxifragaceae

COMMON NAME: Golden Saxifrage

STATE STATUS: Endangered

FEDERAL STATUS: Previously considered by the Department of Interior for listing as a threatened species under the Endangered Species Act of 1973 (Public Law 93-205, enacted December 28, 1973; amended 1978. Federal Register 40(127):27859, July 1, 1975). Not currently being considered for listing because it has proven to be more abundant than previously believed (Fed. Register 45(242)82480, December 15, 1980).

BASIS FOR MINNESOTA STATUS: The essential habitat of this species is very limited in extent. Even where conditions appear suitable, the species rarely occurs. Only three populations are currently known to be extant in Minnesota and the total number of plants is no more than 250. This pattern of small remote populations is consistent throughout the range of the species and it is considered rare or uncommon wherever it occurs. Threats from human activity appear to be minimal because of the inaccessible nature of its habitat. Potential threats do exist, however, from road building, mining and commercial development.

PREFERRED HABITAT IN MINNESOTA: This species is limited to northeast-facing cliffs of calcareous or circumneutral sedimentary rock in the "driftless area" in southeastern Minnesota. The plants require cool water seeping from porous rock, and the protection of an overhanging ledge.

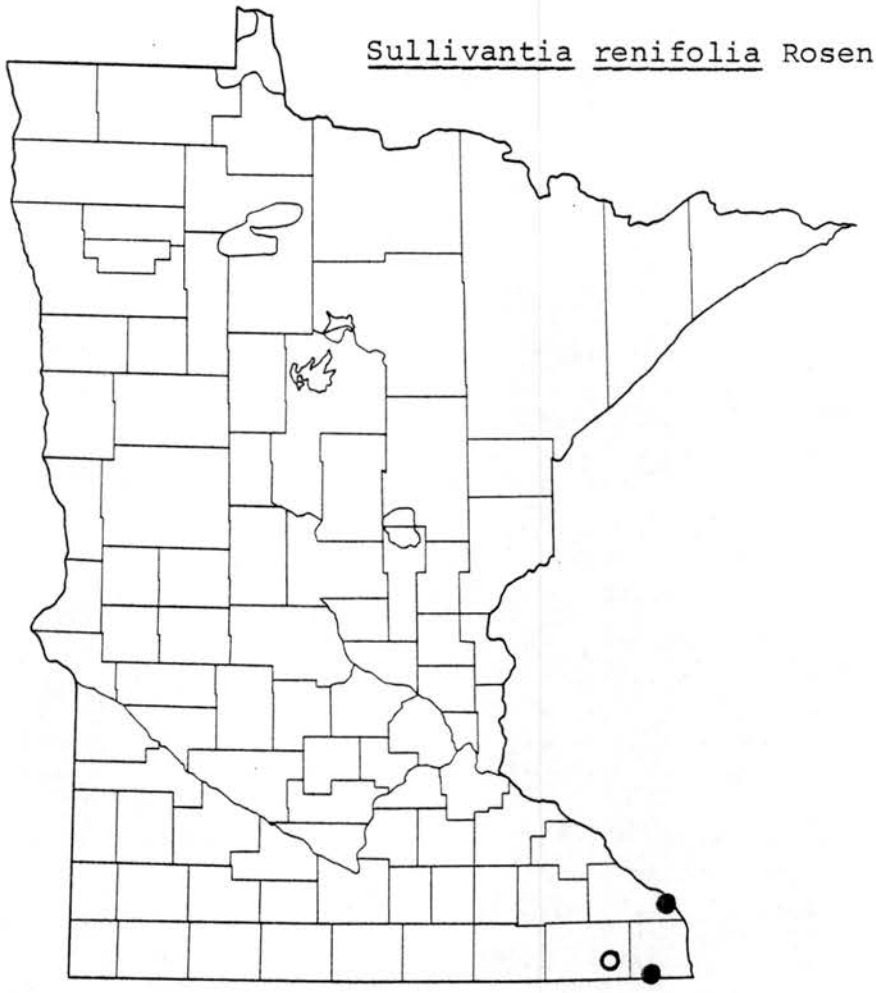
RECOMMENDATIONS: Searches for additional populations should be centered in the Root River Valley in Fillmore County.

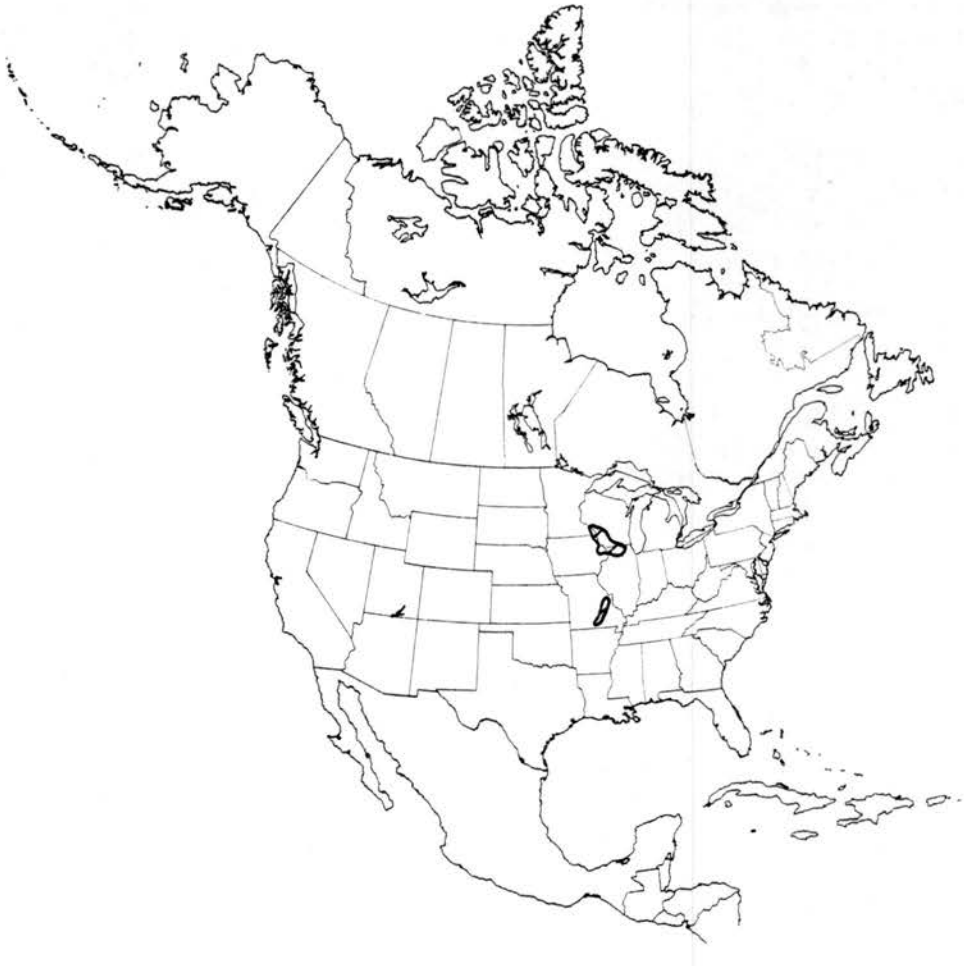
SELECTED REFERENCES:

Rosendahl, C. O. 1927. A revision of the genus *Sullivantia*. Minnesota Studies in Plant Sciences, No. 6.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Sullivantia renifolia Rosend.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Talinum rugospermum Holzinger

FAMILY: Portulacaceae

COMMON NAME: Rough-seeded Fameflower

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species is a midwestern endemic and is rare or local throughout its limited range. Its restricted pattern of occurrence may be the result of its specialized ecological requirements. It is currently known to occur at three sites in Minnesota, two of which are in public ownership. There is strong reason to believe that a population persists near Taylors Falls (Chisago County) where it was first collected by Douglas Houghton in 1832. The last report, however, was in 1894 and its current status is unknown.

PREFERRED HABITAT IN MINNESOTA: This is a species of zeric habitats, typically dunes, barrens and limestone outcrops. It frequently occurs with other rare species such as Asclepias amplexicaulis and Tephrosia virginiana.

RECOMMENDATIONS: The historical collection sites of this species on the outcrops in the St. Croix Valley should be investigated.

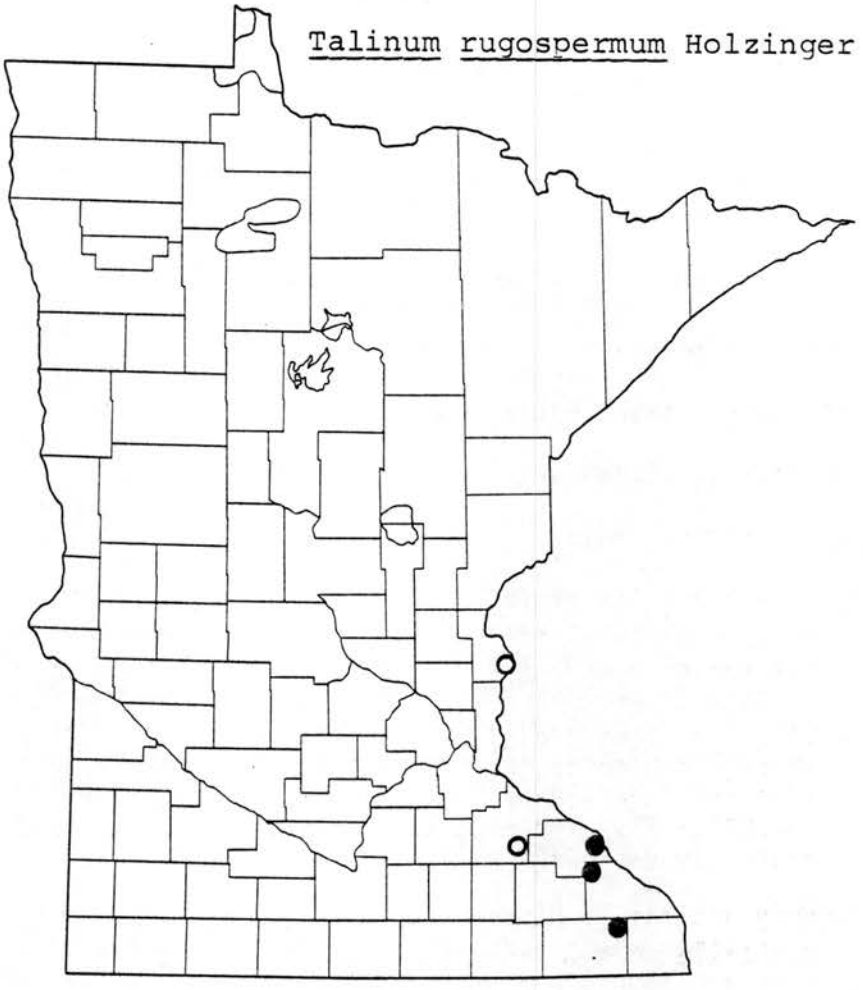
SELECTED REFERENCES:

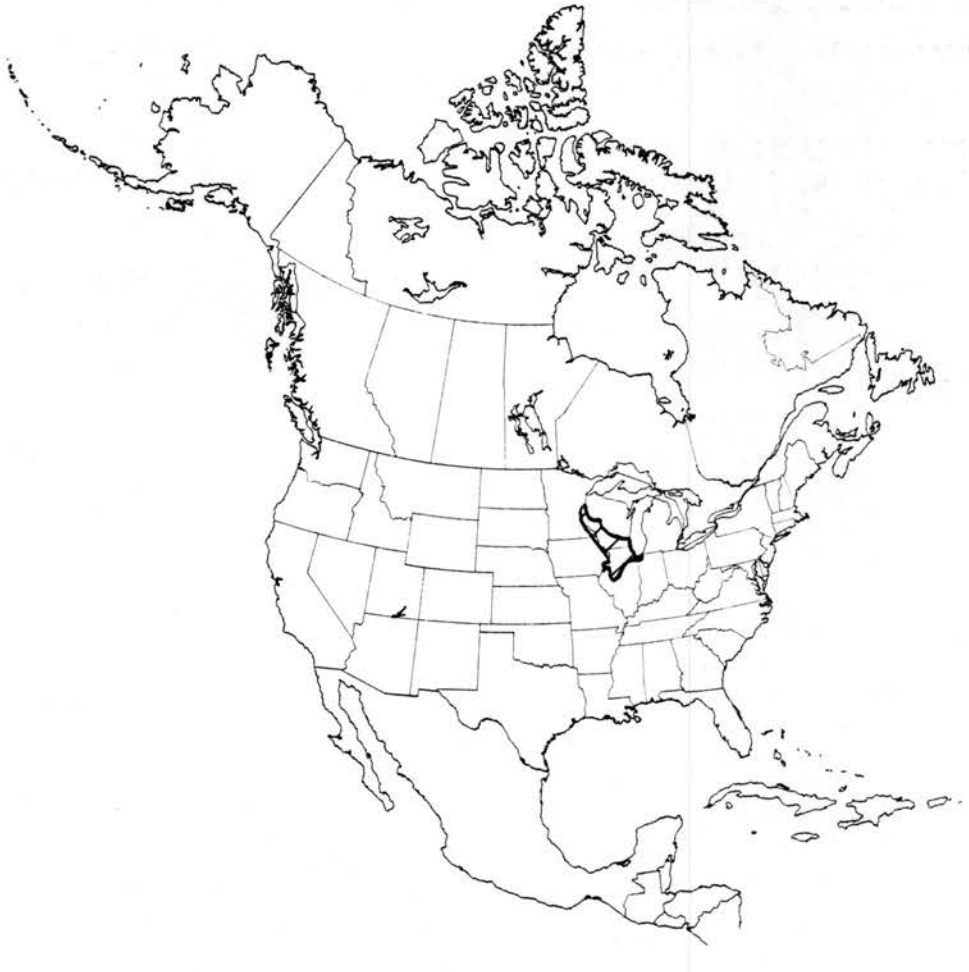
Fassett, N. C. 1928. Notes from the herbarium of the University of Wisconsin - III. Rhodora 30:205-207.

Hill, E. J. 1891. Notes on the flora of the St. Croix region. Bot. Gaz. 91:108-113.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Talinum rugospermum Holzinger





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Tofieldia pusilla* (Michx.) Pers.

FAMILY: Liliaceae

COMMON NAME: Small False Asphodel

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: The populations of this arctic species which occur on the north shore of Lake Superior and Isle Royale are isolated from the main range of the speces by 400 miles. All the Minnesota populations are small and occur in fragile habitats. The population in Lake County is known only by a collection dated 1891 and labeled "Two Harbors". The population near Grand Marais is small and may be threatened by over-collecting. The third site contains only 30 individuals and may be threatened by quarrying of Thompsonite.

PREFERRED HABITAT IN MINNESOTA: This species occurs in mats of *Scirpus cespitosus* which occur at the margins of pools on the shore rocks of Lake Superior. It may occur with other rare species such as *Selaginella selaginoides*, *Polygonum viviparum* and *Carex media*.

RECOMMENDATIONS: No recommendations can be made at this time.

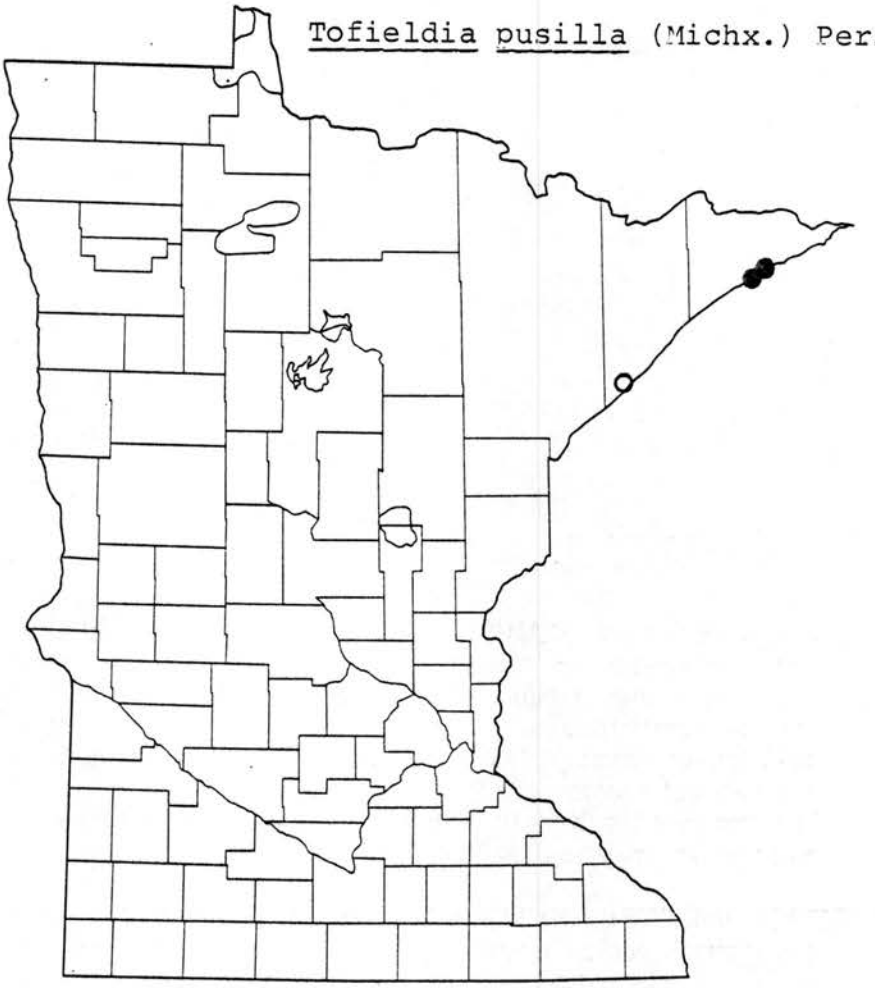
SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154; 161-201.

Given, D. R. and J. H. Soper. 1981. The Arctic-Alpine Element of the Vascular Flora at Lake Superior. Nat. Mus. Can. Pub. in Bot. #10.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Tofieldia pusilla (Michx.) Pers.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Vaccinium uliginosum* L. var. *alpinum* Bigel

FAMILY: Ericaceae

COMMON NAME: Alpine Bilberry

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Alpine bilberry is a characteristic shrub of tundra and muskeg in boreal, arctic and alpine regions. In Minnesota it is currently known from a single location where there are eight to ten individuals. There are historical collections from Long Island and Grand Portage (Cook County), but intensive searches in 1980 failed to locate any plants at those sites. In spite of this, plants may still survive in the Susie Island chain or in other protected regions on the North Shore.

PREFERRED HABITAT: This species occurs along forest margins and crevices in barren rocks on the shore of Lake Superior.

RECOMMENDATIONS: Searches should continue in the Susie Islands and Grand Portage areas for surviving populations.

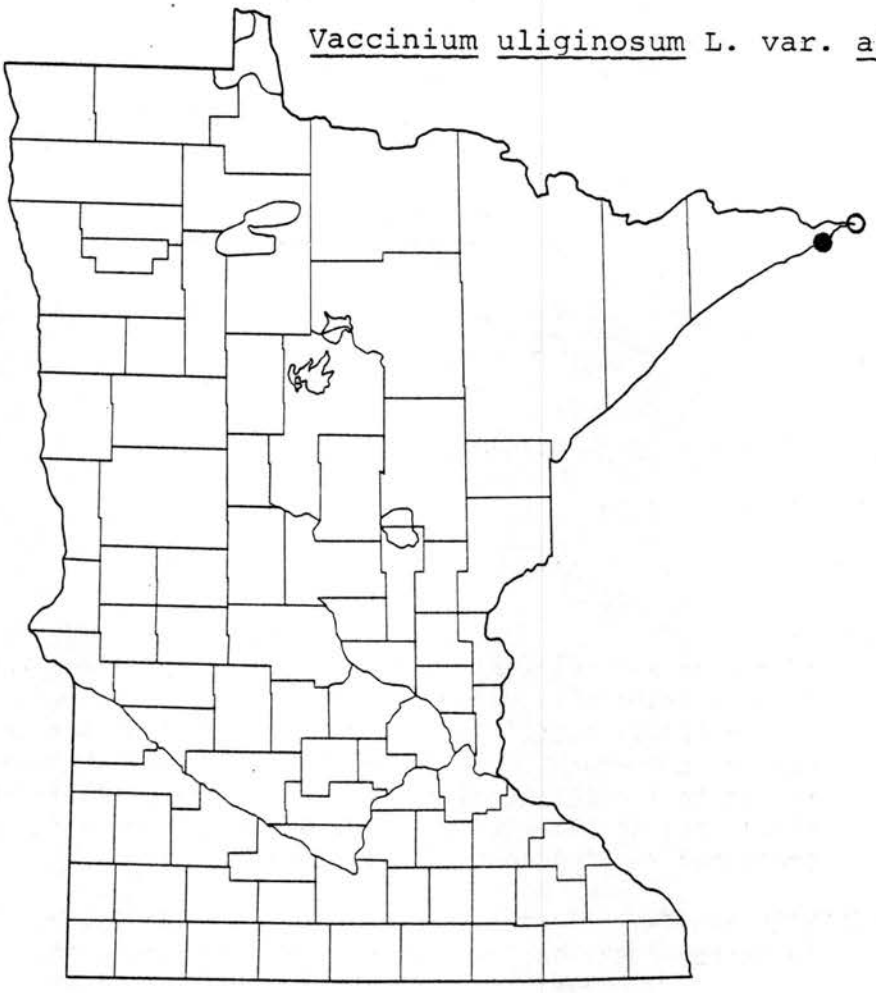
SELECTED REFERENCES:

Rosendahl, C. O. 1955. Trees and Shrubs of the Upper Midwest. Univ. of Minn. Press, Minneapolis.

Young, S. B. 1970. On the taxonomy and distribution of *Vaccinium uliginosum*. Rhodora 72:439-457.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Vaccinium uliginosum L. var. alpinum Begel





SPECIES STATUS SHEET

SCIENTIFIC NAME: Valeriana edulis Nutt. ssp ciliata (T. & G.) Meyer [Valeriana ciliata T. & G.]

FAMILY: Valerianaceae

COMMON NAME: Valerian

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although this species was not formerly rare in Minnesota, the nearly total destruction of prairie and fen habitats has reduced its populations to a few isolated colonies. Most of the recent collections are from remnant prairie strips on railroad right-of-ways. These right-of-ways are rapidly being sold by the railroad companies, and are invariably bought by adjacent landowners for conversion to crop land. Two populations occurring in calcareous fens in the Minnesota Valley have recently been destroyed by road construction and commercial development. Populations of Valerian are currently protected at Wild Indigo, Queen's Bluff and Black Dog Fen Scientific and Natural Areas. The typical subspecies occurs in western United States.

PREFERRED HABITAT IN MINNESOTA: This species occurs in three distinct habitats in Minnesota: deep soil mesic prairies, calcareous fens and limestone bluffs. It seems, however, to be most widely occurring on prairies where it may be found with other rare species such as Parthenium integrifolium, Cacalia tuberosa and Asclepias sullivantii.

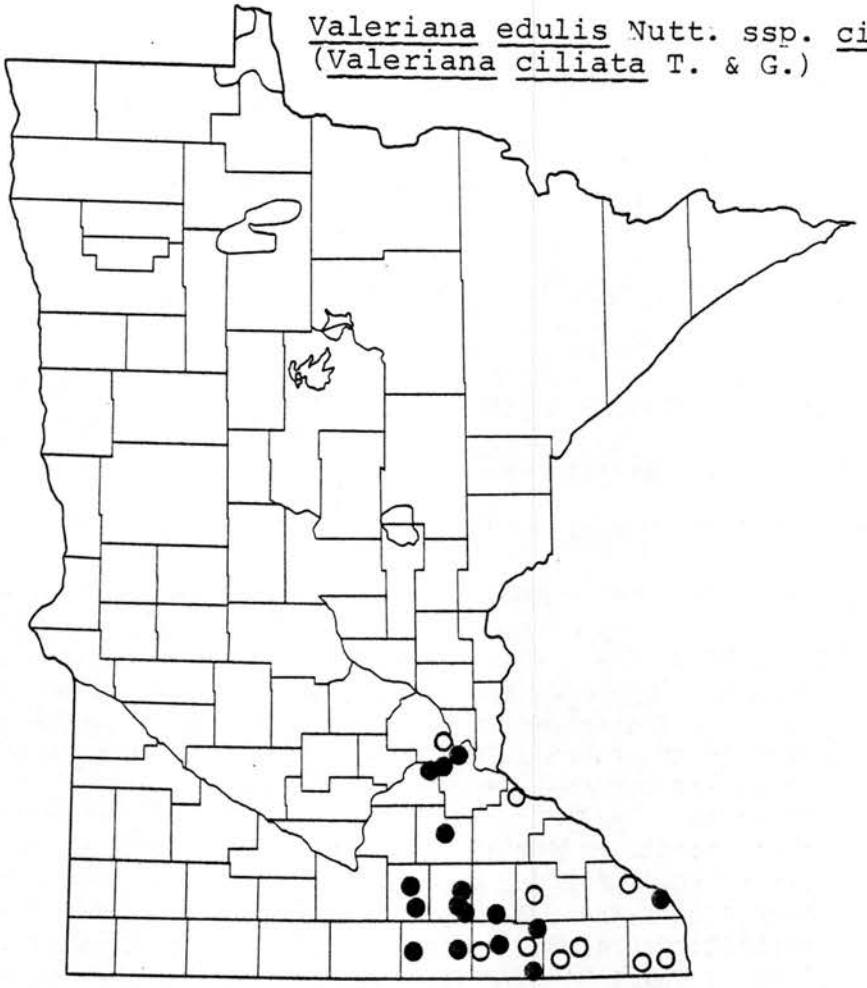
RECOMMENDATIONS: Attempts should be made to protect prairie habitats on right-of-ways from being converted to agricultural land.

SELECTED REFERENCES:

Meyer, F. G. 1951. Valeriana in North America and the West Indies (Valerianacene). Ann. Mo. Bot. Gard. 38(4):377-503.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Valeriana edulis Nutt. ssp. ciliata (T.&G.
(Valeriana ciliata T. & G.)





SPECIES STATUS SHEET

SCIENTIFIC NAME: Woodsia glabella R. Br.

FAMILY: Polypodiaceae

COMMON NAME: Smooth Woodsia

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species is known in Minnesota by collections from Pigeon Point and nearby Grand Portage (Cook County), and from an undetermined location on the Gooseberry River (Lake County). The most recent report is from Pigeon Point where one colony of 13 plants was observed in 1977. All of the Minnesota populations are part of an isolated Lake Superior range that is disjunct from the main range of the species.

PREFERRED HABITAT IN MINNESOTA: This species occurs on ledges on north-facing slate cliffs, and crevices in calcareous outcrops.

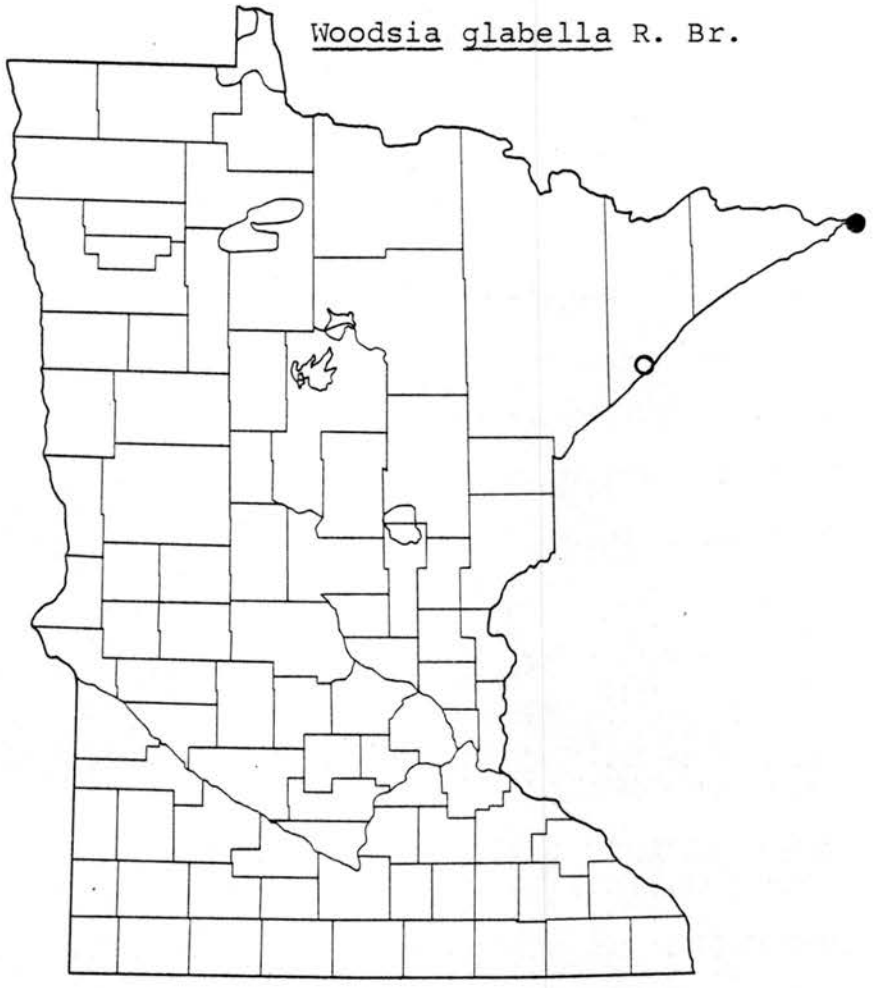
RECOMMENDATIONS: As in the case of the following species, our knowledge of Woodsia glabella would benefit greatly by renewed inventory efforts in the area of Pigeon Point.

SELECTED REFERENCES:

Butters, F. K. and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. Rhodora 55:21-55; 63-101; 116-154, 161-201.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Woodsia glabella R. Br.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Woodsia scopulina D.C. Eat.

FAMILY: Polypodiaceae

COMMON NAME: Rocky Mountain Woodsia

STATE STATUS: Threatened

FEDERAL STATUS: None

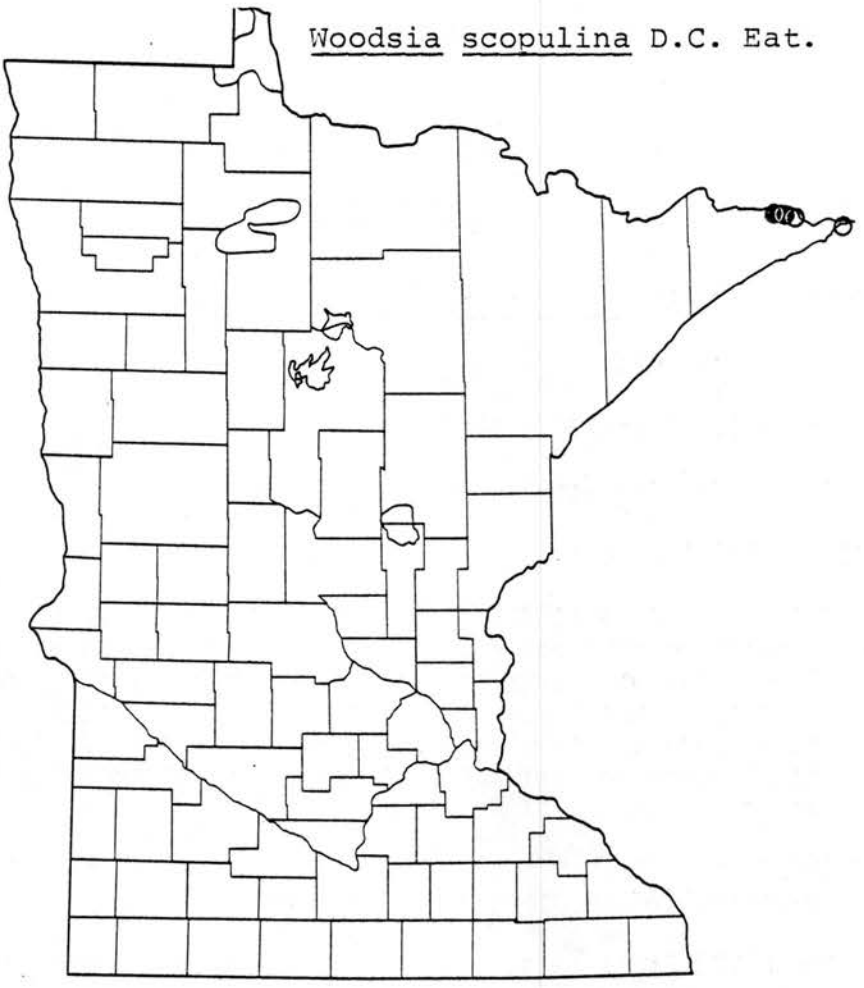
BASIS FOR MINNESOTA STATUS: The Minnesota populations of this species are limited to the region of a few border lakes and Pigeon Point (Cook County). Like the preceeding species, these populations are part of an isolated Lake Superior range that is disjunct from the main range of the species. Although these populations are apparently not subject to human disturbances, threats from natural forces are unknown.

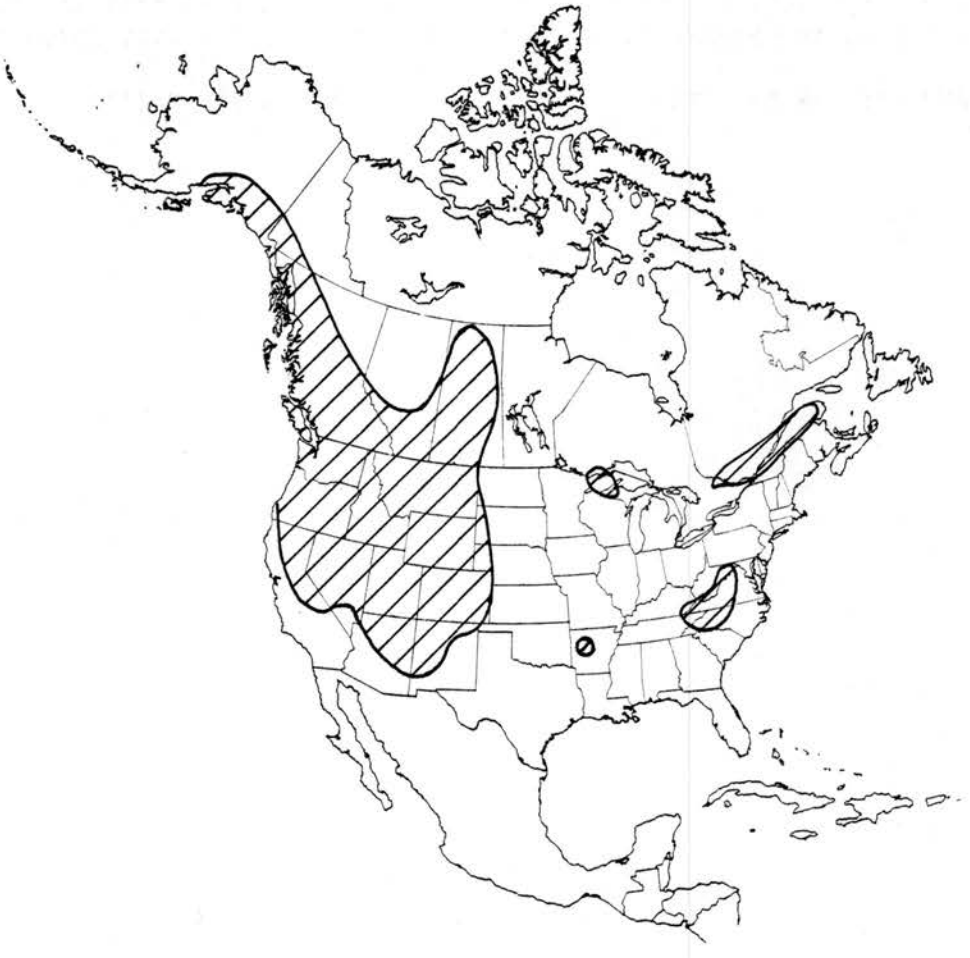
PREFERRED HABITAT IN MINNESOTA: This species occurs on ledges on north-facing cliffs of calcareous or basic rock.

RECOMMENDATIONS: A systematic botanical inventory of Pigeon Point has not been conducted since the 1930's. Such an undertaking today would serve not only to verify historical occurrences of this species, but also of several other rare peripheral and disjunct species.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Woodsia scopulina D.C. Eat.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Xyris torta* Sm.

FAMILY: Xyridaceae

COMMON NAME: Twisted Yellow-eyed Grass

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: Although there are five collections of this species from Minnesota, none have been made since 1960. There are two collections from Hennepin County dated 1889 with no recorded location. One of the three Anoka County collections was from the Moore Lake dunes which were largely destroyed in 1960 by the construction of Fridley High School. The two remaining sites were searched unsuccessfully in 1980. The major threat to this species and its habitat is the rapid land development occurring in Anoka County.

PREFERRED HABITAT IN MINNESOTA: This species occurs in low sandy meadows and swales in sand dunes. It may occur with other rare species such as *Viola lanceolata*, *Juncus marginatus* and *Scleria triglomerata*.

RECOMMENDATIONS: It is possible that undiscovered populations occur on protected public land in Anoka County, particularly Allison Savanna Scientific and Natural Area, Carlos Avery Wildlife Management Area, Cedar Creek Natural History Area and Boot Lake Scientific and Natural Area. These areas should be inventoried for populations of this species.

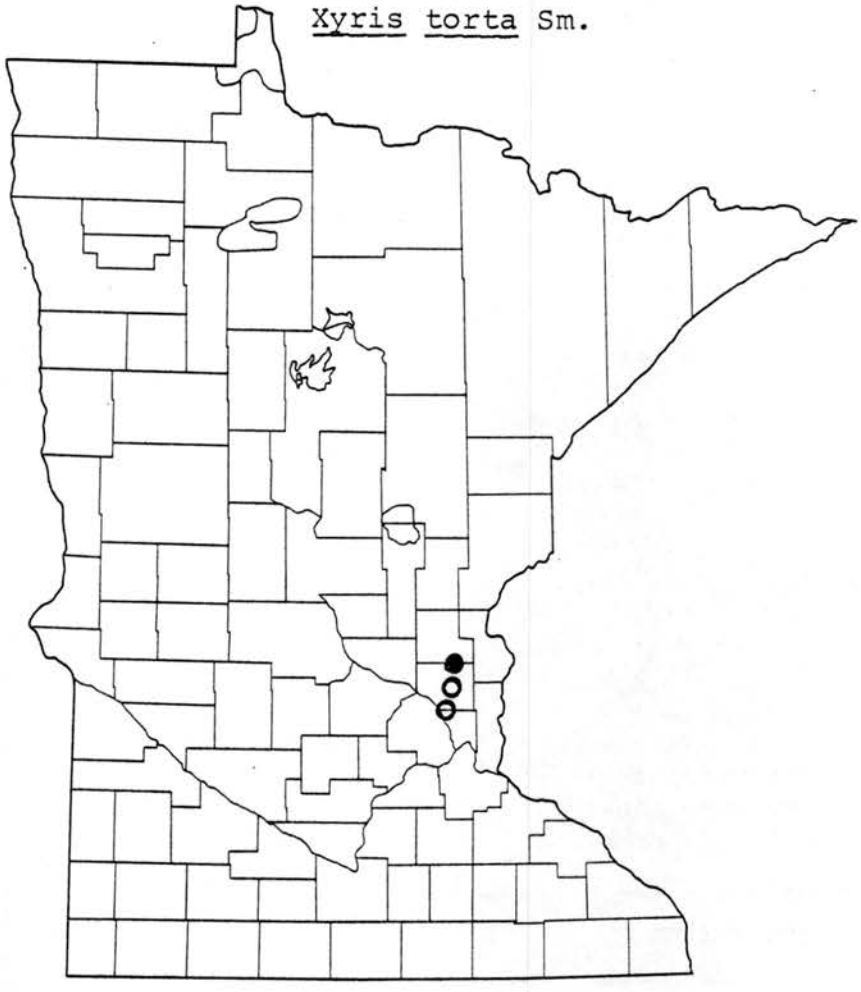
SELECTED REFERENCES:

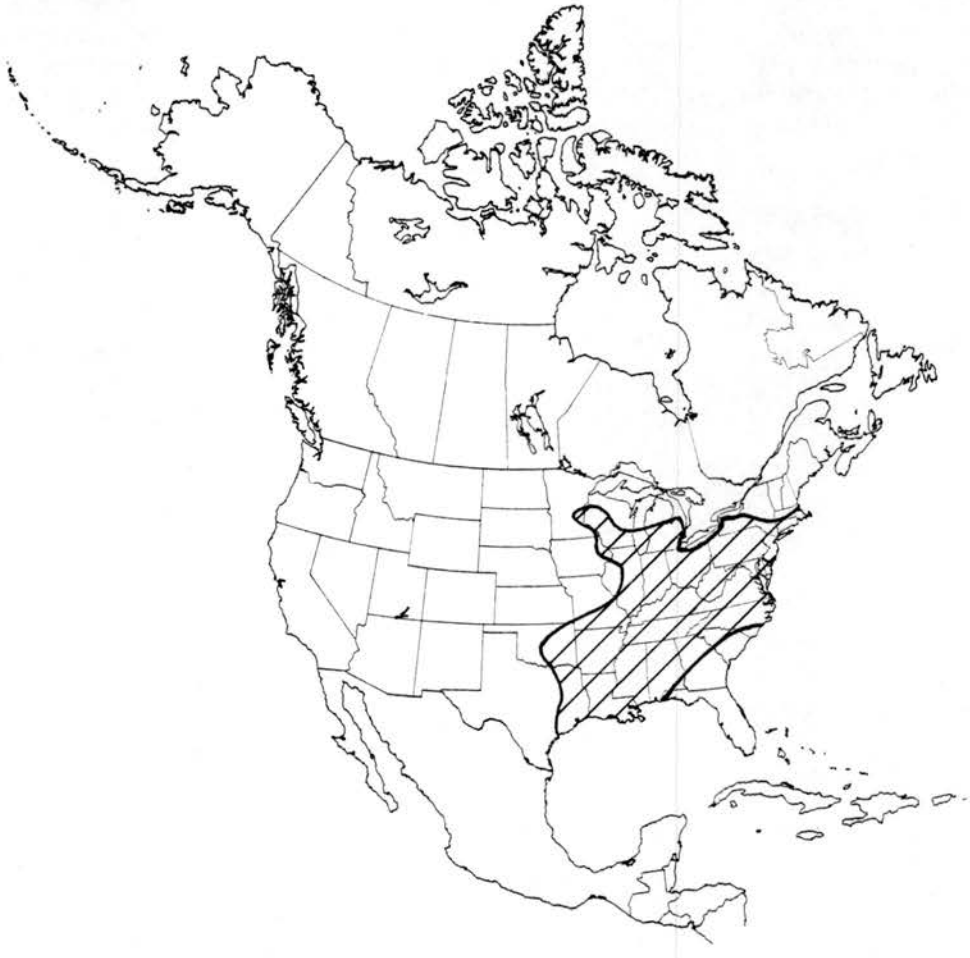
Kral, R. 1966. *Xyris* (Xyridaceae) of the continental United States and Canada. Sida 2(3):177-260.

Moore, J. W. 1973. A Catalog of the Flora of Cedar Creek Natural History Area, Anoka and Isanti Counties, Minnesota. Bell Museum of Natural History, Univ. of Minn., Minneapolis.

PREPARED BY: Welby Smith, Botanist, Natural Heritage Program

Xyris torta Sm.





Lichens and Mosses

Proposed List of Lichens Classified as
Endangered, Threatened or Special Concern
by the Plant Group Committee

ENDANGERED

Buellia nigra (Fink) Sheard (Rinodina nigra Fink)
Dermatocarpon moulinsii (Mont.) Zahlbr.
Leptogium apalachense (Tuck.) Nyl.
Lobaria scrobiculata (Scop.) DC
Parmelia stictica (Del.) Nyl.
Pseudocyphellaria crocata (L.) Vain.

THREATENED

Lobaria quercizans Michx.

SPECIAL CONCERN

Cetraria aurescens Tuck.
Cetraria oakesiana Tuck.
Cladonia pseudorangiformis Asah.
Coccocarpia cronia (Tuck.) Vain.
Parmelia stuppea Tayl.
Sticta fuliginosa (Dicks.) Ach.
Umbilicaria torrefacta (Lightf.) Schrad.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Buellia nigra (Fink) Sheard [Rinodina nigra (Fink)]

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: There are only five known collections of this species, four of them from Minnesota. The only recent collections are from Winona County (two collections from the same locality). If this area is logged the habitat may be lost and this species may be lost from the flora.

PREFERRED HABITAT IN MINNESOTA: This species grows on exposed granite or other non-calcareous rocks near hardwood forests.

RECOMMENDATIONS: A search should be made for other populations of this species in southern Minnesota and at the historic localities.

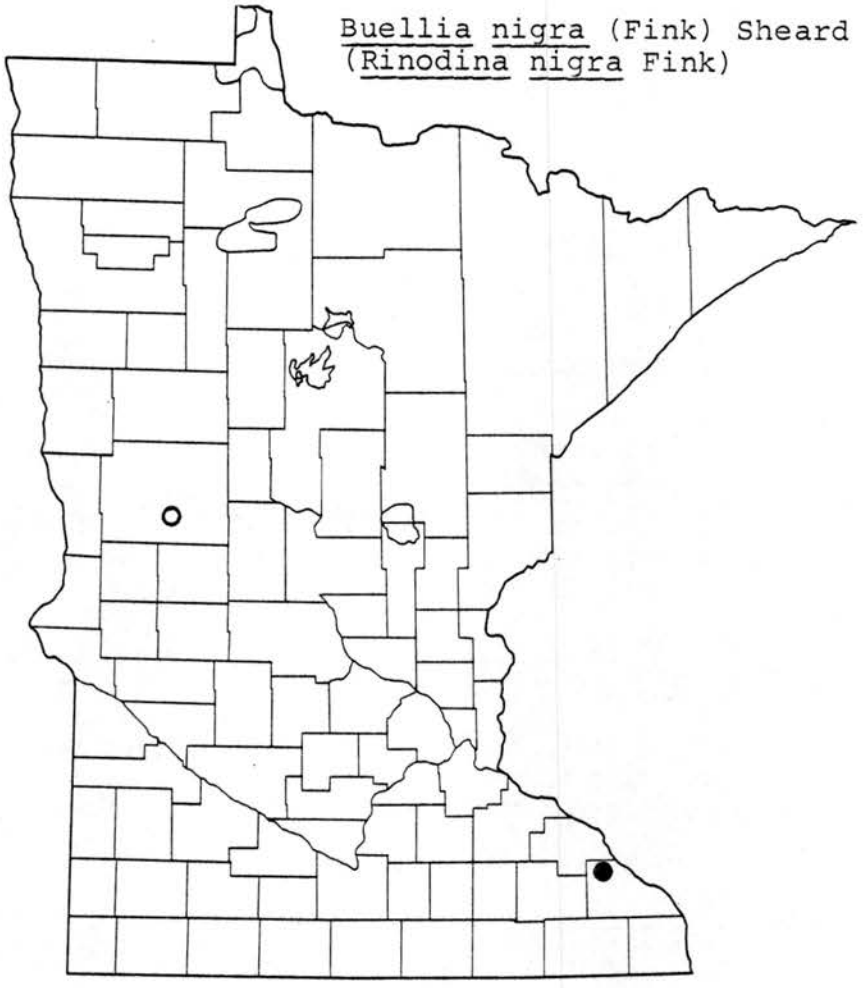
SELECTED REFERENCES:

Sheard, J. W. 1969. Four previously misinterpreted Buellia species from North America. Bryologist 72:220-224.

Fink, B. 1910. The lichens of Minnesota. Contr. Nat. Herb. 14(1):1-250.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota.

Buellia nigra (Fink) Sheard
(Rinodina nigra Fink)





SPECIES STATUS SHEET

SCIENTIFIC NAME: Dermatocarpon moulinsii (Mont.) Zahlbr.

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species has been collected only once in the state and that was in 1896. The locality was "Minneapolis area". It may have been found along the river bluffs and the population may have been eliminated by the expansion of the city.

PREFERRED HABITAT IN MINNESOTA: This species grows on calcareous rocks, probably along rivers.

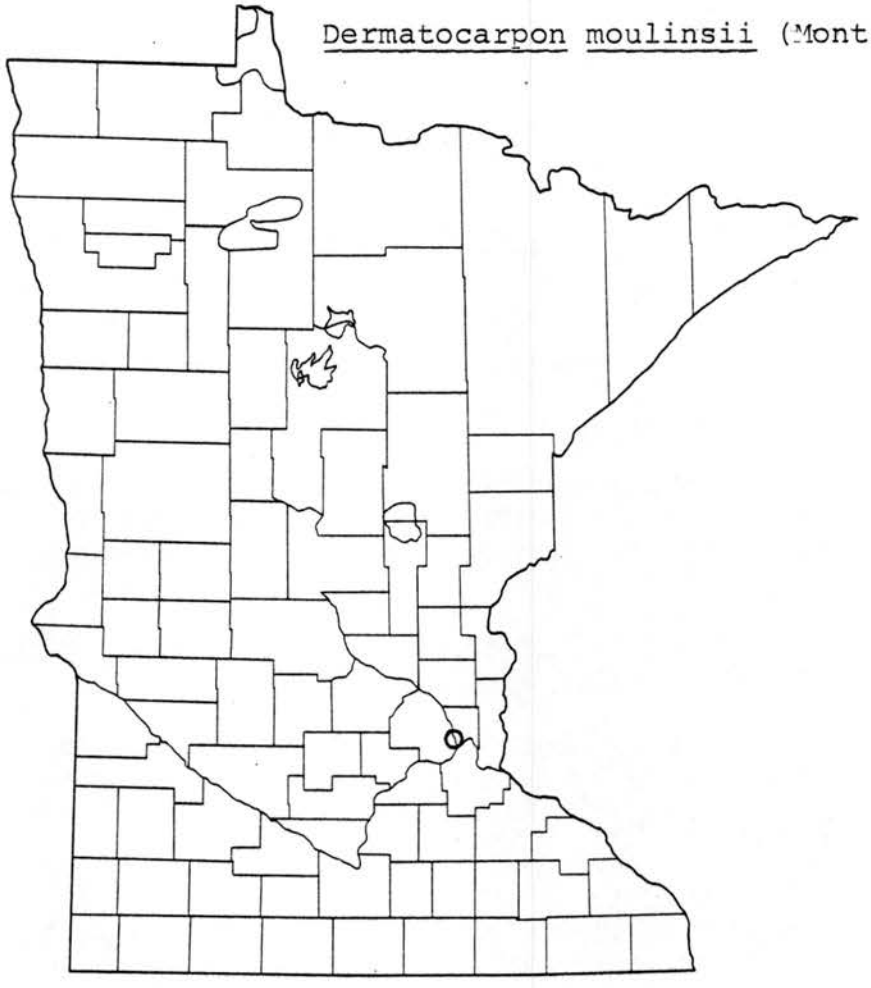
RECOMMENDATIONS: Other populations of this species may still be found along the river bluffs in the southern part of the state. A search should be made for this species in localities where it may still occur.

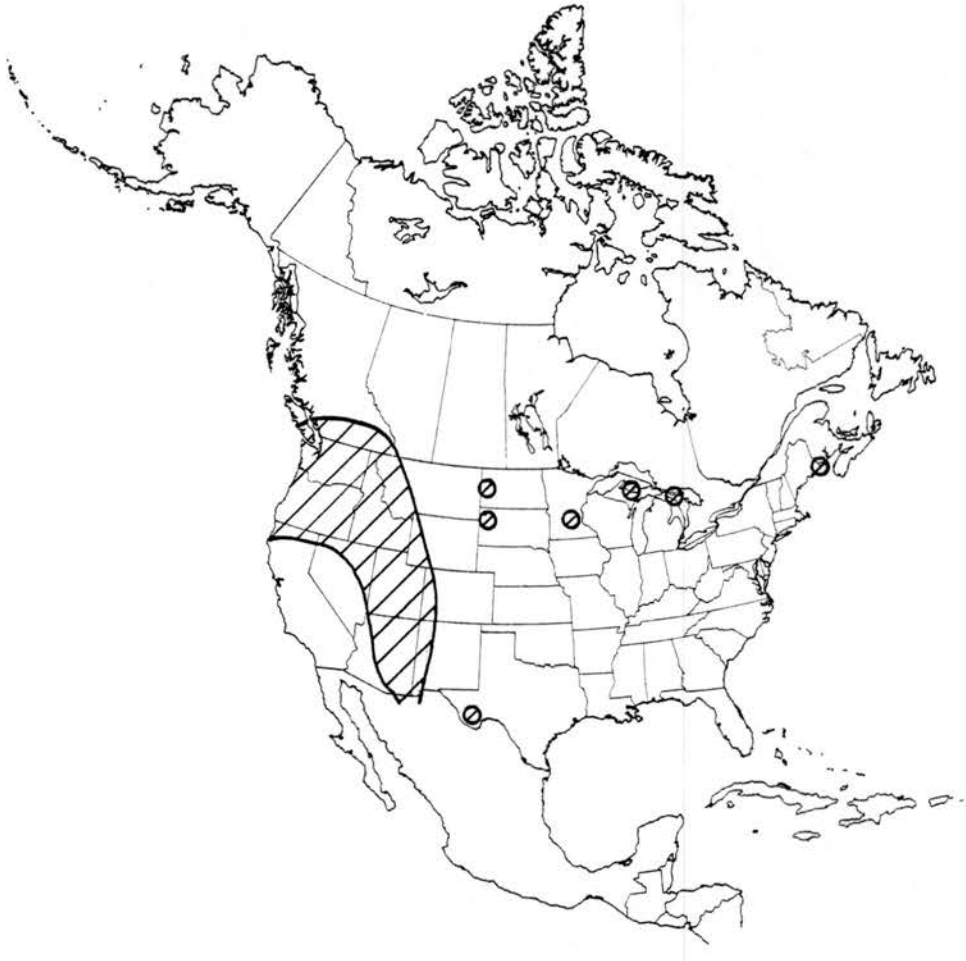
SELECTED REFERENCES:

Hale, M.E. 1979. How To Know The Lichens. W. C. Brown, Dubuque, Iowa.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Dermatocarpon moulinsii (Mont.) Zahlbr.





SPECIES STATUS SHEET

SCIENTIFIC NAME: *Leptogium apalachense* (Tuck.) Nyl.

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This plant is only known from one collections made at Mankato in 1899 and has not been found since. The expansion of the city may have eliminated the original population but it may still survive at other locations along the river.

PREFERRED HABITAT IN MINNESOTA: This species grows on calcareous rocks, probably along the rivers.

RECOMMENDATIONS: A search should be made for other populations of this species along the rivers in southern Minnesota.

SELECTED REFERENCES:

Hale, M. E. 1979. How To Know Lichens. W. C. Brown, Dubuque, Iowa.

Sierk, H. A. 1964. The genus *Leptogium* in North America North of Mexico. Bryologist 67:245-317.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Leptogium apalachense (Tuck.) Nyl.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lobaria quercizans Michx.

COMMON NAME: None

STATE STATUS: Threatened

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was formerly known from 10 localities in the northeastern part of the state but is now very rare due to logging and development. It has been collected in recent times from only four localities in St. Louis County.

PREFERRED HABITAT IN MINNESOTA: This species occurs on mature yellow birch and maples in wet localities in northern Minnesota, especially in ash bogs and cedar swamps.

RECOMMENDATIONS: Most of the old forests of Minnesota where this species grew have been cut. It still occurs in a few old ash bogs and additional localities should be looked for in the northern part of the state.

SELECTED REFERENCES:

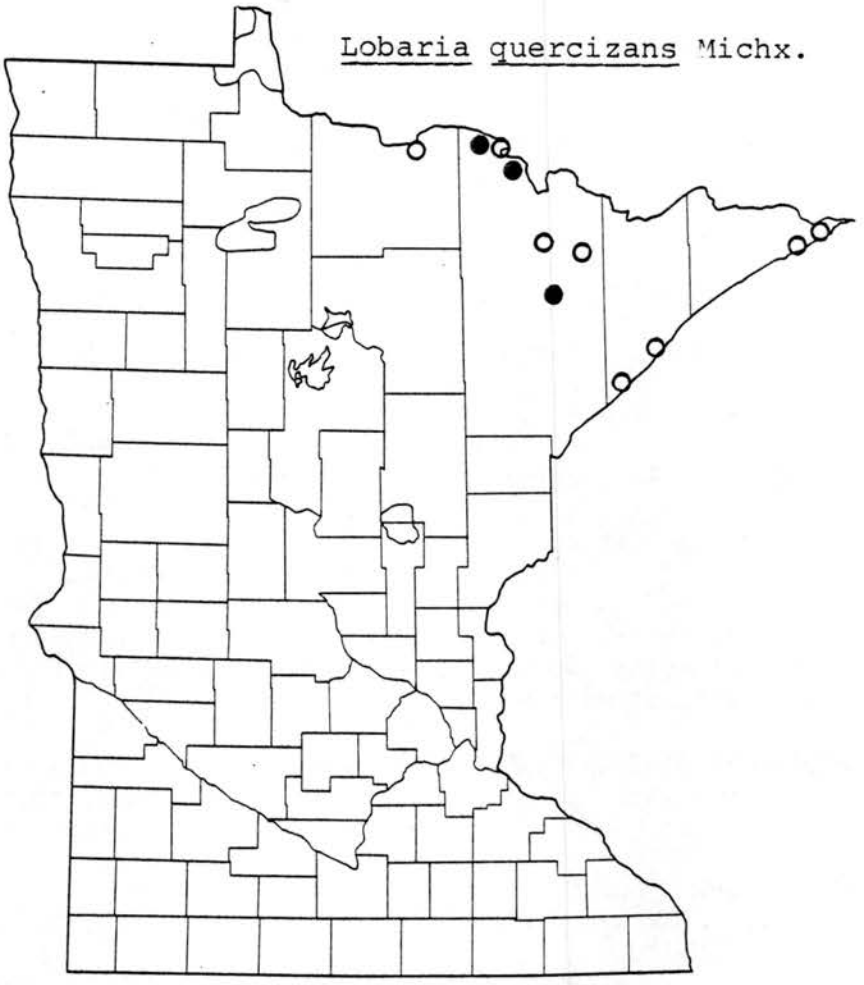
Hale, M. E. 1979. How To Know The Lichens. W. C. Brown, Dubuque, Iowa.

Fink, B. 1910. The Lichens of Minnesota. Contr. Nat. Herb. 14(1):1-250.

Jordan, W. P. The genus Lobaria in North America North of Mexico. Bryologist 76:225-251

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Lobaria quercizans Michx.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Lobaria scrobiculata (Scop.) DC.

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This plant was collected three times around 1900 in Cook County but has been found recently in only one locality. The destruction of moist mature forests in northern Minnesota has threatened this species with elimination from the state.

PREFERRED HABITAT IN MINNESOTA: This grows on moist mossy rocks in swamps and near the shore of Lake Superior in undisturbed habitats.

RECOMMENDATIONS: Further localities should be looked for along the shore in northern Minnesota.

SELECTED REFERENCES:

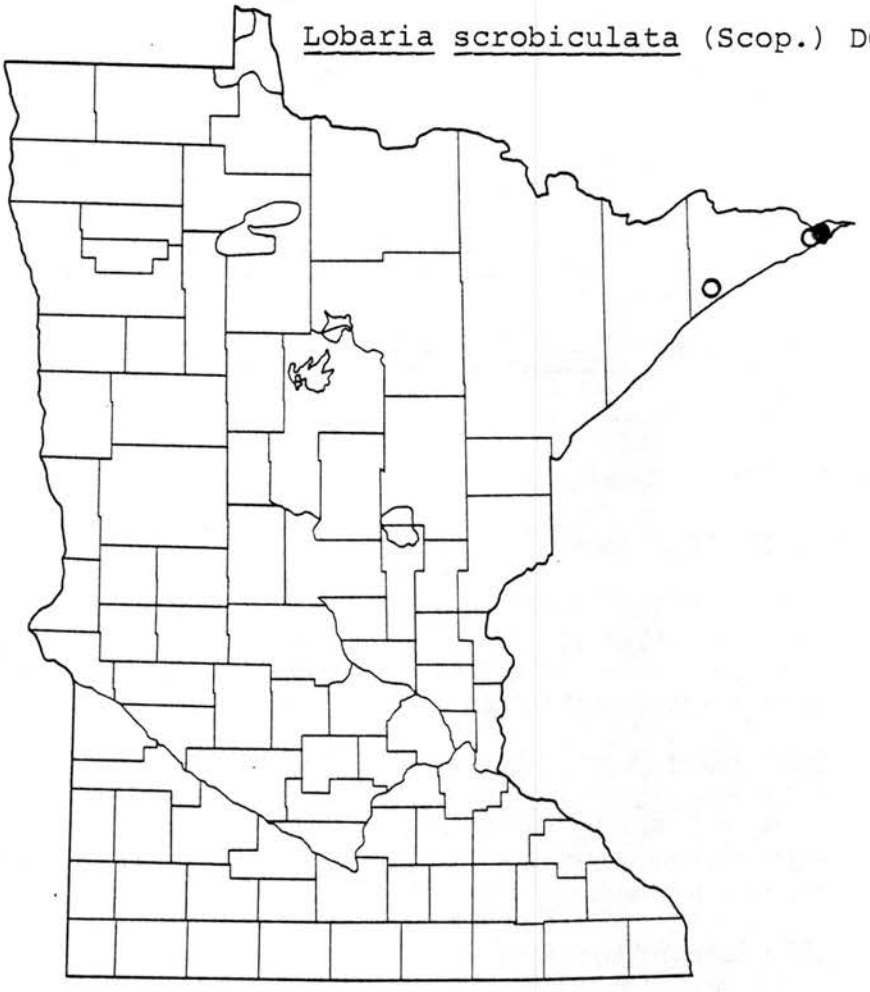
Hale, M. E. 1979. How To Know the Lichens. W. C. Brown, Dubuque, Iowa.

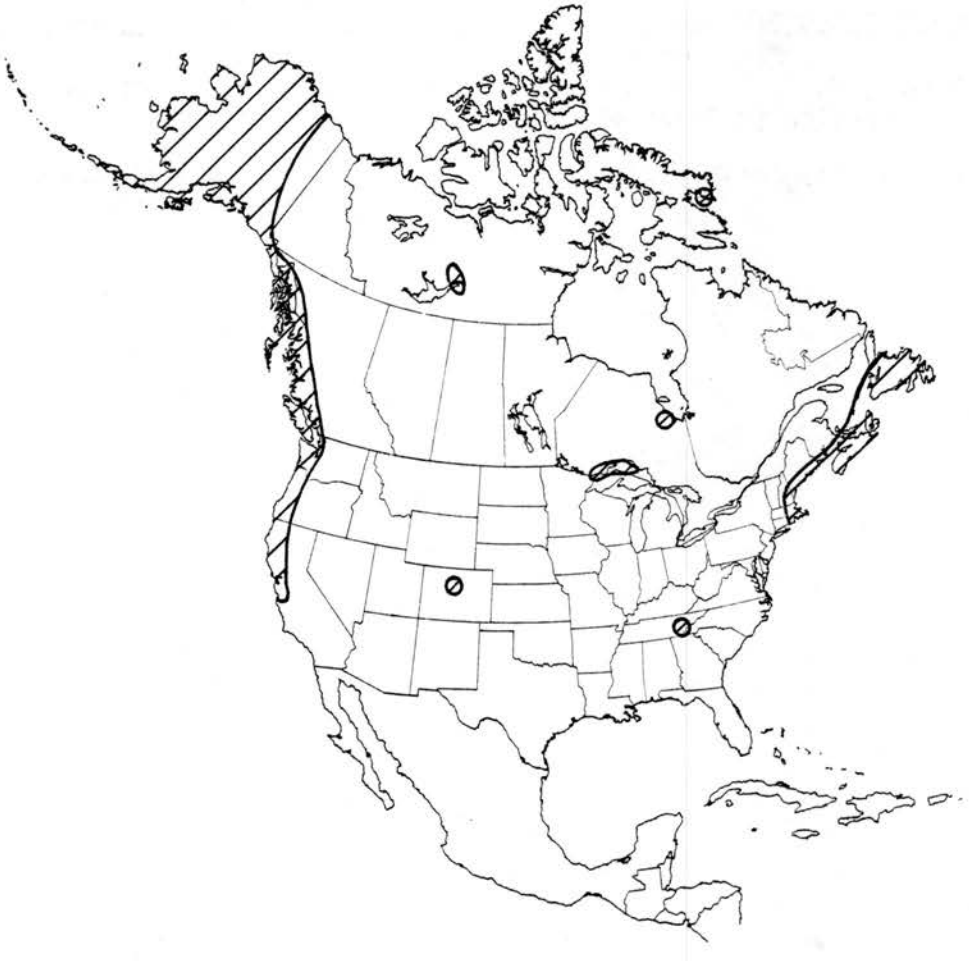
Fink, B. 1910. The Lichens of Minnesota. Contr. Nat. Herb. 14(1):1-250

Jordan, W. P. The genus Lobaria in North America north of Mexico. Bryologist 76:225-251.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Lobaria scrobiculata (Scop.) DC





SPECIES STATUS SHEET

SCIENTIFIC NAME: Parmelia stictica (Del.) Nyl.

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This plant is known from only one locality in Minnesota. It was collected on the shore of Lake Superior in Lake County in 1974. Although numerous other shoreline localities have been checked, this species has not been found. Because of cabin building along the shores the remaining localities are few where this could grow.

PREFERRED HABITAT IN MINNESOTA: This grew on rocks along the lakeshore in mixed hardwood forests.

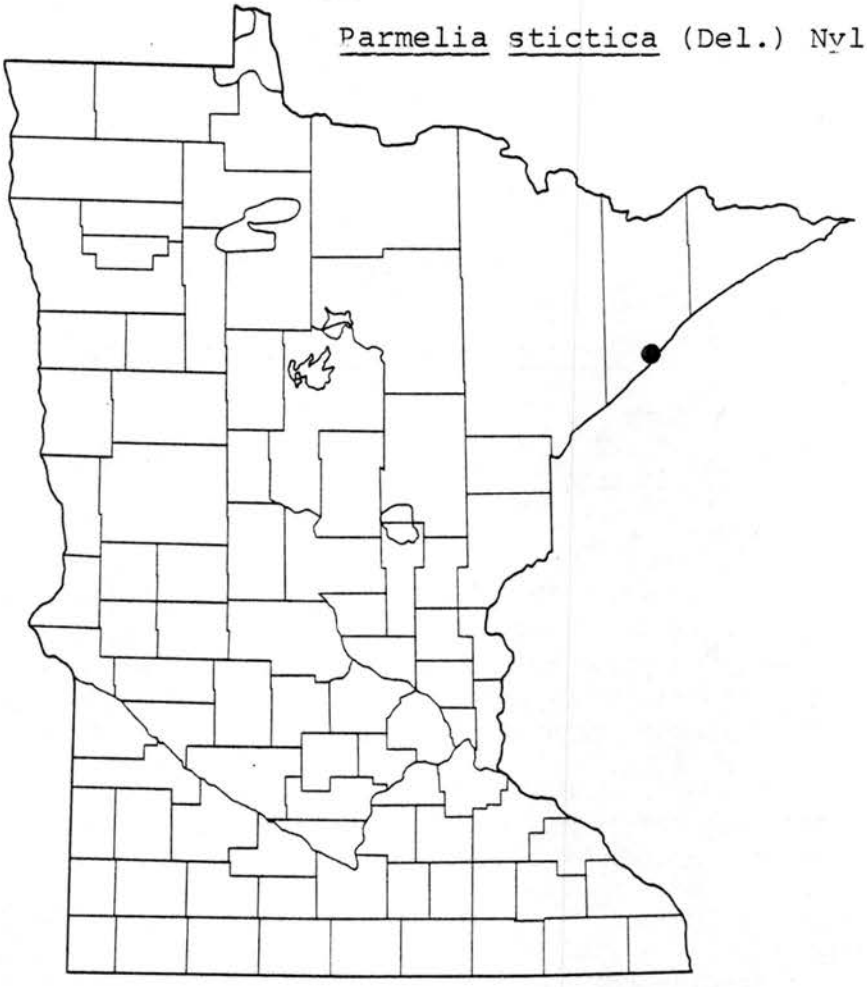
RECOMMENDATIONS: A search should be made for additional localities where this species might be found along the Lake Superior shore in Lake and Cook Counties.

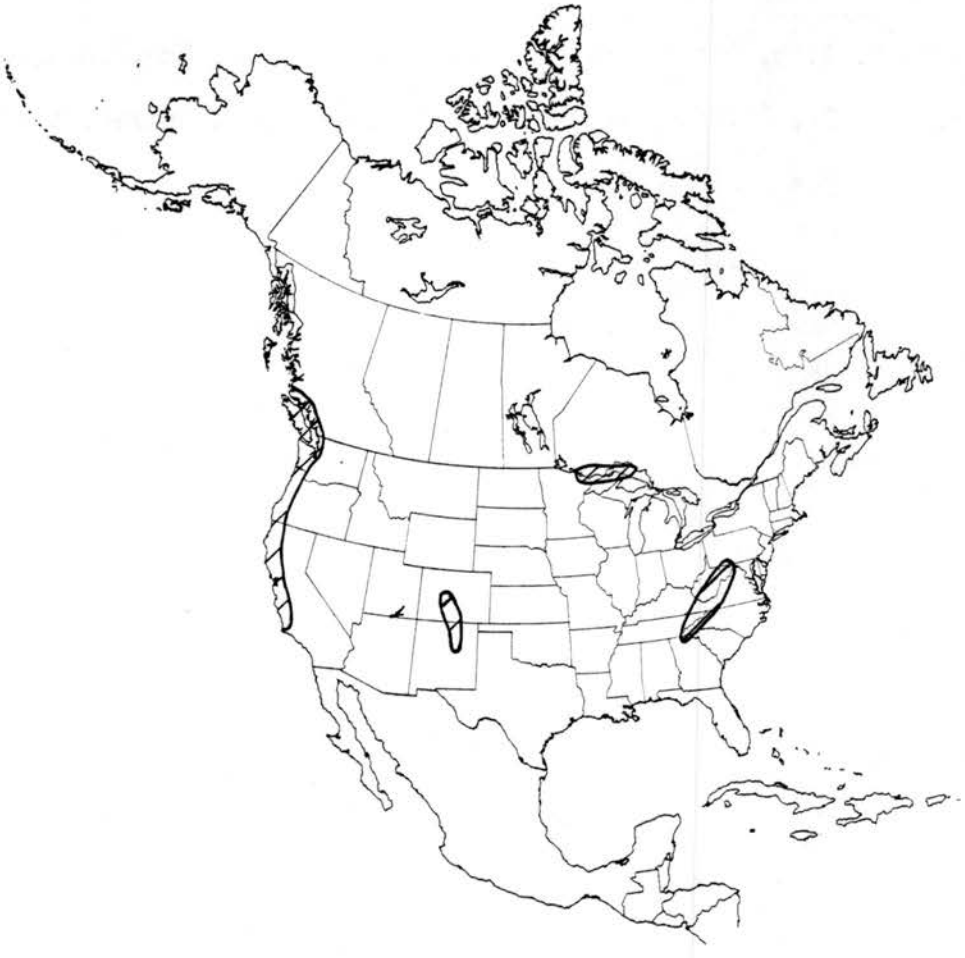
SELECTED REFERENCES:

Hale, M. E. 1979. How To Know The Lichens. W. C. Brown, Dubuque, Iowa.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Parmelia stictica (Del.) Nyl.





SPECIES STATUS SHEET

SCIENTIFIC NAME: Pseudocyphellaria crocata (L.) Vain.

COMMON NAME: None

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: This species was collected by Fink around 1900 in seven localities in the northern part of the state but has been found only once in recent times and that in St. Louis County. The elimination of mature moist forests by logging and developments has seriously reduced the occurrence of this species in the state.

PREFERRED HABITAT IN MINNESOTA: This species is found on rocks and trees in shady moist habitats in mature forests.

RECOMMENDATIONS: Additional localities should be looked for in areas of mature forests.

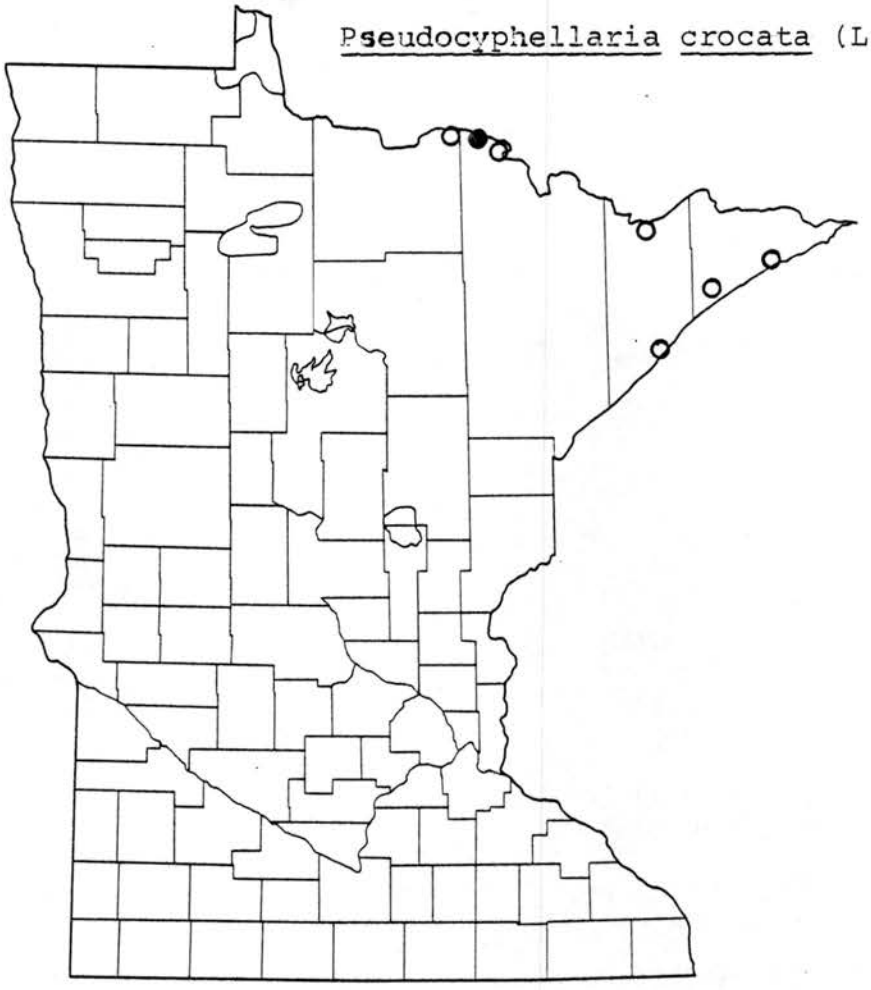
SELECTED REFERENCES:

Hale, M. E. 1979. How To Know The Lichens. W. C. Brown, Dubuque, Iowa.

Fink, B. 1910. The Lichens of Minnesota. Contr. Nat. Herb. 14(1):1-250.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Pseudocyphellaria crocata (L.) Vain.





Proposed List of Mosses Classified As
Endangered, Threatened or Special Concern
by the Plant Group Committee

ENDANGERED

Schistostegia pennata (Hedw.) Web. & Mohr

THREATENED

None

SPECIAL CONCERN

Bryoxiphium norvegicum (Brid.) Mitt.
Tomenthypnum falcifolium (Ren ex. Nich.) Tuom.

SPECIES STATUS SHEET

SCIENTIFIC NAME: Schistostegia pennata (Hedw.) Web. & Mohr

COMMON NAME: Luminous Moss

STATE STATUS: Endangered

FEDERAL STATUS: None

BASIS FOR MINNESOTA STATUS: There is only one known collection of this species and it is from Cook County made in 1975. It only occurs rarely throughout its range and has very specific habitat requirements.

PREFERRED HABITAT IN MINNESOTA: S. pennata grows inside caves or in narrow cracks in protected rock cliffs in wet habitats.

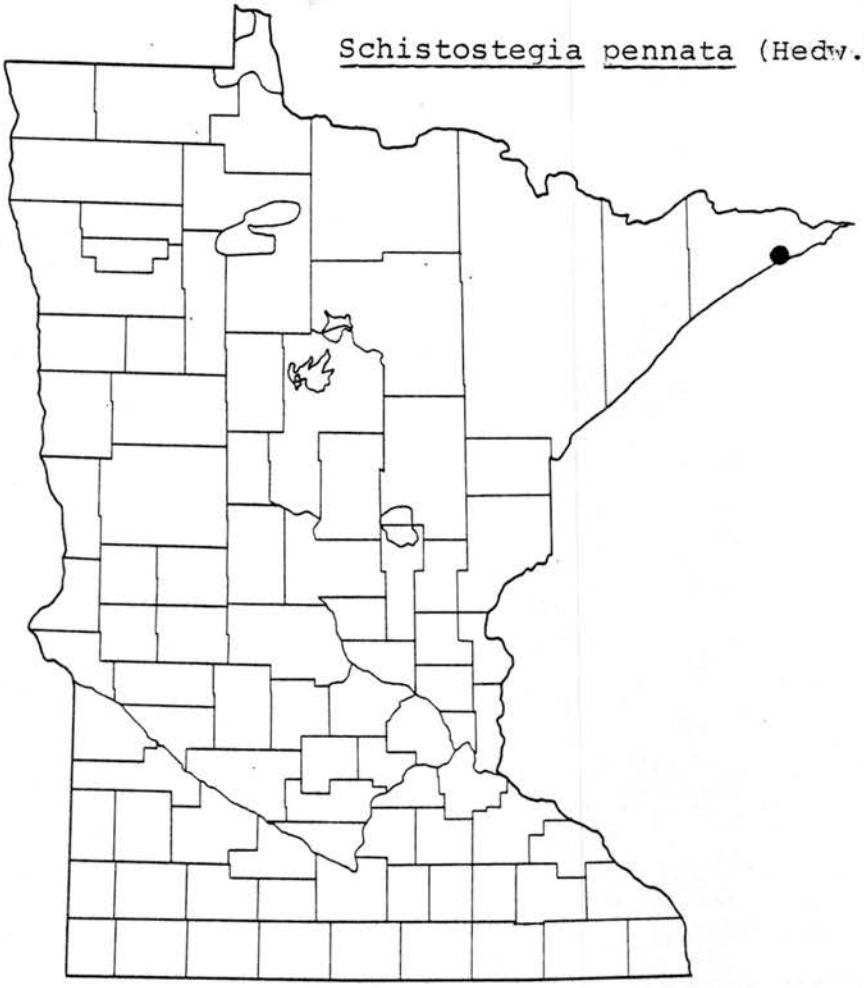
RECOMMENDATIONS: The localities where this species is found should be protected from further development and other localities with similar habitats should be checked for the presence of this rare plant.

SELECTED REFERENCES:

Crum, H. 1973. Mosses of the Great Lakes Forest. University of Michigan, Ann Arbor.

PREPARED BY: Dr. Clifford Wetmore, Botany Department, University of Minnesota

Schistostegia pennata (Hedw.) Web. & Mohr





APPENDICES

APPENDIX A

97.488 PROTECTION OF THREATENED AND ENDANGERED SPECIES.

Subdivision 1. **Prohibition.** Notwithstanding any other provision of law, the taking, import, transport, or sale of any endangered species of wild animal, plant or parts thereof, or the sale or possession with intent to sell any article made in whole or in part from the skin, hide, or any parts of any endangered species of wild animal or plant is prohibited, except as provided in subdivisions 1a and 6.

Subd. 1a. **Application.** The provisions of subdivision 1 do not apply to plants on land classified for property tax purposes as class 3 or 3b agricultural land pursuant to section 273.13, or on ditches and roadways. The provisions of subdivision 1 do not apply to noxious weeds designated pursuant to sections 18.171 to 18.315 or to weeds otherwise designated as troublesome by the department of agriculture. When control of noxious weeds is necessary, it takes priority over the protection of endangered plant species, as long as reasonable effort is taken to preserve the endangered plant species first.

The taking or killing of an endangered plant species on land adjacent to class 3 or 3b agricultural land as a result of the application of pesticides or other agricultural chemical on the class 3 or 3b land shall not be a violation of subdivision 1, as long as reasonable care is taken in the pesticide or other chemical application to avoid impact on adjacent lands.

The accidental taking of an endangered plant, where the existence of the plant is not known at the time of the taking, shall not be a violation of subdivision 1.

For the purpose of this subdivision, class 3 or 3b agricultural land does not include timber land, waste land, or any land for which the owner receives a state paid wetlands or native prairie tax credit.

Subd. 2. **Designation.** The commissioner of natural resources, not later than January 1, 1984, by adoption of rules pursuant to chapter 14, shall designate any species of wild animal or plant as:

(1) Endangered, upon a showing that such species is threatened with extinction throughout all or a significant portion of its range; or

(2) Threatened, upon a showing that such species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range; or

(3) Species of special concern, upon a showing that while a species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range which are not listed as threatened may be included in this category along with those species which were once threatened or endangered but now have increasing or protected, stable populations.

For purposes of this section, the range of the species in Minnesota shall be a factor in determining its status as endangered, threatened or of special concern. A designation by the secretary of the interior that a species is threatened or endangered shall be a prima facie showing for the purpose of this section. Until the commissioner adopts rules, those species designated as endangered by Section 4 (c) (3) of the Endangered Species Act of 1973 (PL 93-205) at the time of enactment thereof shall be considered endangered within the meaning of this section.

The commissioner shall reevaluate the designated species list every three years after it is first adopted and make appropriate changes. In particular, the review shall consider the need for further protection of species on the species of special concern list. Species may be withdrawn from designation in the same manner that species are designated pursuant to this subdivision.

Subd. 3. **Studies.** The commissioner of natural resources may conduct such investigations as he shall deem appropriate to determine the status and requirements for survival of any resident species of wild animal or plant.

Subd. 4. **Management.** Notwithstanding any other provision of law, whenever any resident species of wild animal or plant has been designated as threatened or endangered pursuant to this section, the commissioner of natural resources may undertake management programs and in connection therewith may issue orders, related to wild animals, and adopt rules as he deems necessary to bring the species to a point at which it is no longer threatened or endangered. Subject to the provisions of subdivision 6, management programs for endangered or threatened species may include, but need not be limited to, methods and procedures such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, transplantation and regulated taking.

Subd. 5. **Enforcement.** Any peace officer or conservation officer, pursuant to chapter 626, may execute a warrant to search for and seize any goods, merchandise, plant or animal taken, sold or offered for sale in violation of this section, or any thing used in connection with a violation of this section. Seized property shall be held pending judicial proceedings. Upon conviction, seized property is forfeit. Goods, merchandise, plants or animals shall be offered to a scientific or educational institution or destroyed.

Subd. 6. **General exceptions.** The commissioner may permit, on prescribed conditions, any act otherwise prohibited by subdivision 1 if:

(1) The act is for the purpose of zoological, educational or scientific study;

(2) The act enhances the propagation or survival of the affected species;

(3) The act prevents injury to persons or property; or

(4) The social and economic benefits of the act outweigh the harm caused by it.

No member of an endangered species may be destroyed pursuant to clause (3) or (4) until all alternatives, including but not limited to live trapping and transplantation, have been evaluated and rejected. The commissioner may permit, on prescribed conditions, the propagation of a species or subspecies for its preservation. A member of a threatened or endangered species may be captured or destroyed without permit by any person when necessary in an emergency to avoid an immediate and demonstrable threat to human life or property.

The commissioner shall give any approval under this subdivision for forest management, including as part of a permit, sale, or lease of land for timber harvesting.

Subd. 7. **Application.** This section shall not apply retroactively or so as to prohibit importation into this state and subsequent possession, transport and sale of wild animals or, wild plants or parts thereof legally imported into the United States or legally acquired and exported from another territory, state, possession or political subdivision of the United States.

Subd. 8. **Violations.** A violation of this section is a misdemeanor.

History: *1971 c 825 s 1; 1974 c 465 s 1; 1981 c 285 s 1; 1982 c 424 s 17,130*

Appendix B: Laws of Minnesota 1981, Chapter 285, Section 2 *

Sec. 2. TECHNICAL COMMITTEE

The commissioner shall appoint a technical committee of not more than 30 persons with knowledge and experience in botany, zoology, and other relevant disciplines to recommend criteria for determining the special concern, endangered or threatened status of species and those species appropriate for designation. For purposes of these recommendations, the commissioner shall organize appropriate working subcommittees in various species areas. In addition, the committee shall generally advise the commissioner regarding administration of this section and shall review current programs of the department and recommend appropriate changes and new programs for restoration, recovery, habitat improvement and habitat protection for designated species. The committee shall be appointed not later than July 1, 1981, and shall recommend its list of species for designation to the commissioner and the legislature not later than January 1, 1983, and shall make a written report to the commissioner and the legislature on program recommendations prior to January 1, 1984. Members of the committee shall serve without compensation but shall be reimbursed for expenses in the same manner and amount as state employees. The committee shall terminate upon the adoption of rules designating animal species and the proposal of designated plant species to the legislature under section 97.488, subdivision 2, but in no event later than January 1, 1984.

* This provision is part of the same legislation currently codified as Minnesota Statutes Section 97.488 (1982). This provision is not included in the statutory codification because it is of temporary effect, i.e., the technical committee's existence terminates upon adoption of the rule.

APPENDIX C

MEMBERS OF THE COMMISSIONER'S ENDANGERED SPECIES TECHNICAL ADVISORY COMMITTEE MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Chairman: Dr. Harrison Tordoff
DNR Liaison: Barbara Coffin

Fish Group

Dr. James C. Underhill, Chairman
Dept. of Ecology Behavioral Biology
S-4 Zoology Building
Minneapolis, Minnesota 55455

Dr. Bob Bellig
Deaprtment of Biology
Gustavus Adolphus College
St. Peter, Minnesota 56082

Dr. Hollie Collins
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Mr. Don Wood, DNR Liaison
Department of Natural Resources
Section of Fisheries
Box 12, Centennial Office Building
St. Paul, Minnesota 55155

Herp Group

Dr. Jeffrey W. Lang, Chairman
Department of Biology
Box 8238, University Station
University of North Dakota
Grand Forks, North Dakota 58202

Mr. Mike Pappas
2755 Riverside Lane
Rochester, Minnesota 55901

Mr. Daryl Karns
Bell Museum of Natural History
10 Church Street
University of Minnesota
Minneapolis, Minnesota 55455

Mr. Mike Nehl
P.O. Box 258A
Lindstrom, Minnesota

Herp Group (con't)

Mr. Doug Wells, DNR Liaison
Department of Natural Resources
1508 4th Avenue
Windom, Minnesota 56101

Mammal Group

Dr. Elmer Birney, Chairman
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Mr. Don Christian
Department of Biology
221 Life Science Building
University of Minnesota - Duluth
Duluth, Minnesota 55812

Dr. Evan B. Hazard
Department of Biology
Bemidji State University
Bemidji, Minnesota 56601

Ms. Gerda Nordquist
Bell Museum of Natural History
University of Minnesota
10 Church Street
Minneapolis, Minnesota 55455

Ms. Katie Hirsch, DNR Liaison
Department of Natural Resources
2114 Bemidji Avenue
Bemidji, Minnesota 56601

Invertebrate Group

Dr. Bruce Cutler, Chairman
1747 Eustis
St. Paul, Minnesota 55113

Mr. Robert Dana
2618 16th Avenue South
Minneapolis, Minnesota 55407

ENDANGERED SPECIES TECHNICAL ADVISORY COMMITTEE - continued

Invertebrate Group (con't)

Mr. Ron Huber
2896 Simpson Street
St. Paul, Minnesota 55113

Dr. Robert Bright
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Ms. Lee Pfannmuller, DNR Liaison
Department of Natural Resources
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

Plant Group

Dr. Tom Morley, Chairman
Department of Botany
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Gerald Ownbey
Department of Botany
220 Biological Science Center
St. Paul, Minnesota 55108

Dr. Clifford Wetmore
Department of Botany
Box 7, Centennial Office Building
220 Biological Science Center
St. Paul, Minnesota 55108

Mr. Mark Heitlinger
The Nature Conservancy
Midwest Regional Office
328 East Hennepin Avenue
Minneapolis, Minnesota 55414

Dr. Paul Munson
Department of Biology
University of Minnesota - Duluth
Duluth, Minnesota 55812

Mr. Welby Smith, DNR Liaison
Department of Natural Resources
Natural Heritage Program
Box 11, Centennial Office Building
St. Paul, Minnesota 55155

Bird Group

Ms. Janet Green, Chairwoman
10550 Old North Shore Road
Duluth, Minnesota 55804

Dr. Harrison Tordoff
Bell Museum of Natural History
University of Minnesota
10 Church Street Southeast
Minneapolis, Minnesota 55455

Mr. Kim Eckert
9735 North Shore Drive
Duluth, Minnesota 55804

Dr. Daniel Svedarsky
Rural Route #3
Crookston, Minnesota 56716

Mr. Art Hawkins
Route #1, Box 240
Hugo, Minnesota 55038

Mr. Robert Janssen
10521 South Cedar Lake Road
Minnetonka, Minnesota 55343

Ms. Lee Pfannmuller, DNR Liaison
Department of Natural Resources
Box 7, Centennial Office Building
St. Paul, Minnesota 55155

APPENDIX D

Pursuant to its mandate under laws of Minnesota 1981, Chapter 285, Section 2 (see Appendix B) the Endangered Species Technical Advisory Committee developed the following criteria to use in its assessment of wild animal and plant species of Minnesota.

Endangered:	a species threatened with extinction throughout all or a significant portion of its range.
	a species threatened with extirpation within Minnesota and dependent on a scarce, sensitive and/or exploited habitat in Minnesota and neighboring states.
Threatened:	a species likely to become endangered (based on the criteria listed for the endangered category) within the foreseeable future.
Special concern:	a species, that although not endangered or threatened, is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status.
	a species on the periphery of its range which is not listed as threatened or endangered.
	a species which was once threatened or endangered but now has increasing or protected, stable populations.
	a species whose breeding biology is affected by human activities.

Our File No. 1001

RULE REVIEW CHECKLIST

DATE RULE RECEIVED 1-16-84
DATE FOR REVIEW 1-25-84
DATE DUE 1-30-84

Adopted w/a hearing _____
Adopted w/o hearing ✓
Temporary rule _____

Approved 1-30-84 mjc Disapproved _____ Returned to Agency _____

Resubmitted _____ Due _____
Approved _____ Disapproved _____ Returned to Agency _____

Date filed w/Secretary of State _____ Revisor approved 1.17.84 disapproved _____

_____ Rule as Adopted

✓ Rule as Proposed

✓ Order Adopting 1.11.84 Date

✓ Notice of Intent to Solicit Outside Opinion SR. 6.27.83

✓ Order for rulemaking
N/A date of Hearing

N/A Certificate of Board's Authorizing Resolution

✓ Notice of rulemaking
✓ Sufficiency

✓ Affidavit of Mailing Notice or rulemaking
10.17.83 At least 30 days prior to hearing/adoption

✓ Mailing list Certificate

✓ Publication in State Register
10.31.83 At least 30/20 days prior to hearing/adoption

N/A Hearing Examiner's Report

_____ Chief Hearing Examiner's Report(s)
_____ Approving H.E.'s Report
_____ Approving agency action

_____ Agency's Findings of Fact

_____ LCRAR Report or agency Affidavit

✓ Certificate of Board's Resolution Adopting Rules

✓ Order Approving Incorporation by Reference

✓ Statement of Need and Reasonableness

N/A Petition for Adoption of a Rule

✓ Record (includes transcript or tape, exhibits, comments received by agency, requests for a hearing, and other relevant materials)

✓ Certificate of Compliance w/Rulemaking Procedures

N/A Affidavit of Mailing Notice of Submission to Attorney General

✓ Notice of Submission to the Attorney General

ATTORNEY GENERAL - DNR

PAUL E. ROHDE
Senior Assistant Revisor
Office of the Revisor of Statutes

1/12/84

STEPHEN B. MASTEN
Special Assistant Attorney General
Department of Natural Resources

296-3294

Endangered Species Rules

Enclosed pursuant to Minn. Stat. §14.08 is a copy of the above referenced rules as adopted by the Department of Natural Resources.

Note that these adopted rules are the same as the proposed rules published on October 31, 1983 at 8 S.R. 995, pages 995-1004.

SBM:mam
Enc.

SF-00006-02

STATE OF MINNESOTA

Office Memorandum

DEPARTMENT ATTORNEY GENERAL - DNR

RECEIVED
JAN 16 1984
ATTORNEY GENERAL
ADMINISTRATIVE AGENCIES

TO : JUDITH WEHRWEIN
Attorney General's Office
204 Administration Building

DATE: 1/12/84

FROM : STEPHEN B. MASTEN SBMasten
Special Assistant Attorney General
Department of Natural Resources

PHONE: 296-3294

SUBJECT: Endangered Species Rules

Enclosed for your review pursuant to Minn. Stat. §14.26 and 1 MCAR §1.203 are the following documents pertaining to the above-referenced rulemaking:

A. Rule as Adopted - 4 copies.

B. Order Adopting Rule - 2 copies.

C. Certificate of Board's Resolution Adopting Rule - NOT APPLICABLE.

D. Notice of Intent to Solicit Outside Opinion and any Written Material Received (none) - 1 copy.

E. Order for Notice of Intent to Adopt Rules without Public Hearing - 1 copy. And Order Proposing the Adoption of Rules Without Public Hearing - 1 copy.

F. Certificate of Board's Authorizing Resolution - NOT APPLICABLE.

G. Notice of Intent to Adopt Rules Without Public Hearing - 1 copy.

H. Affidavit of Mailing of Notice of Intent to Adopt Rules Without Public Hearing - 1 copy.

I. Mailing List Certificate - 1 copy.

J. Rule as Proposed (photocopy from State Register) - 1 copy.

K. Findings of Fact and Conclusions - NOT APPLICABLE.

L. Statement of Need and Reasonableness - 1 copy.

M. Petition for Adoption, Suspension, Amendment or Repeal of Rule - NOT APPLICABLE.

N. Written comments received by the Department - 1 copy.

O. Certificate of Compliance with Rulemaking Procedures - 1 copy.

P. Affidavit of Mailing Notice of Submission to Attorney General - NOT APPLICABLE.

Also enclosed is a copy of my memo transmitting this rule to the Revisor of Statutes, as required by Minn. Stat. §14.08.

SBM:mam
Encs.

[redacted]RTMENT REVISOR OF STATUTES

STATE OF MINNESOTA

Office Memorandum

TO : Barbara Coffin
Department of Natural Resources

DATE: 10-31-83

FROM : Corrine Staeheli
Rules Supervisor

PHONE: 297-2955

SUBJECT: Proposed Rules, stripped copy

Enclosed is a stripped copy of your proposed rules as published in the State Register. The copy shows the text of the rules as you proposed them with the stricken text deleted and the underscoring removed.

Please use this copy to indicate any modifications you wish to make. Our office would be happy to input the changes on our computer, and turn out copies for you to submit for final approval to our office and the Attorney General.

If your proposed rules are adopted without modification, please submit the required number of copies of this document to the Attorney General for final approval.

Your rules were published on October 31, 1983 at 8 S.R. 995, pages 995 through 1004.

CRS/kh
Enclosure
ARO 333

SF-00006-02

STATE OF MINNESOTA

DEPARTMENT ATTORNEY GENERAL

Office Memorandum

TO JOSEPH N. ALEXANDER, COMMISSIONER, DNR
Attn: STEPHEN B. MASTEN

DATE: January 30, 1984

FROM MARTY J. CASSERLY
Special Assistant
Attorney General

MJC

PHONE: 296-4692

SUBJECT: In the Matter of the Proposed Adoption of of Rules of the Department of Natural Resources Designating species of Wild Animals and Plants as Endangered, Threatened or of Special Concern

Enclosed herewith are the rules you have submitted for approval. These rules have been approved by this office and filed with the Secretary of State. Please note that they have not been filed with the State Register. This must be done promptly by your agency.

Upon receipt and before transmittal to your agency, however, it is important that you recheck these rules as to:

1. Affixation of stamps of the Attorney General and Secretary of State;

2. Coverage by these stamps of all rules submitted; and

3. Inclusion of all pages to the rules in the approved set.

If you have any questions in this regard, please contact me.

Encs.

cc: Ms. Kathy Burek
Mr. Duane Harves

MJC/ap

AG copy

Department of Natural Resources
Fish and Wildlife Division

Adopted Rules Designating Species of Wild Animals and Plants As Endangered, Threatened or of Special Concern

Rules as Adopted

6 MCAR S 1.5600 Wild animals and plants designated as endangered, threatened, or of special concern; authority.

Pursuant to Minnesota Statutes, section 97.488, the species of wild animals and plants listed in 6 MCAR SS 1.5601 to 1.5603 are designated as endangered, threatened, or of special concern, as indicated in those parts.

6 MCAR S 1.5601 Animal species.

A. Mammals. The scientific names and the common names in A. are according to the Revised Checklist of North American Mammals North of Mexico, J. K. Jones, et al., 1982. The following species of mammals are designated as:

1. Endangered: none.
2. Threatened: *Canis lupus*, gray wolf.
3. Of special concern:
   a. *Cervus elaphus*, American elk;
   b. *Cryptotis parva*, least shrew;
   c. *Felis concolor*, mountain lion;
   d. *Gulo gulo*, wolverine;
   e. *Martes americana*, marten;
   f. *Microtus chrotorrhinus*, rock vole;
   g. *Microtus ochrogaster*, prairie vole;
   h. *Microtus pinetorum*, woodland vole;
   i. *Myotis keenii*, Keens' myotis;
   j. *Odocoileus hemionus*, mule deer;
   k. *Phenacomys intermedius*, heather vole;
   l. *Pipistrellus subflavus*, eastern pipistrelle;
   m. *Rangifer tarandus*, caribou;
   n. *Spilogale putorius*, spotted skunk;

o. *Synaptomys borealis*, northern bog lemming;

p. *Thomomys talpoides*, northern pocket gopher.

B. Birds. The scientific names and the common names in B. are according to the American Ornithologists Union Checklist, 1983. The following species of birds are designated as:

1. Endangered:

a. *Ammodramus bairdii*, Baird's sparrow;

b. *Anthus spragueii*, Sprague's pipit;

c. *Athene cunicularia*, burrowing owl;

d. *Calcarius ornatus*, chestnut-collared longspur;

e. *Charadrius melodus*, piping plover;

f. *Falco peregrinus*, peregrine falcon.

2. Threatened:

a. *Haliaeetus leucocephalus*, bald eagle;

b. *Lanius ludovicianus*, loggerhead shrike.

3. Of special concern:

a. *Ammodramus henslowii*, Henslow's sparrow;

b. *Ammospiza caudacutus*, sharp-tailed sparrow;

c. *Asio flammeus*, short-eared owl;

d. *Bartramia longicauda*, upland sandpiper;

e. *Botaurus lentiginosus*, American bittern;

f. *Buteo lineatus*, red-shouldered hawk;

g. *Coturnicops noveboracensis*, yellow rail;

h. *Gallinula chloropus*, common moorhen;

i. *Grus canadensis*, sandhill crane;

j. *Limosa fedoa*, marbled godwit;

k. *Pandion haliaetus*, osprey;

l. *Pelecanus erythrorhynchos*, American white pelican;

m. *Phalaropus tricolor*, Wilson's phalarope;

n. *Podiceps auritus*, horned grebe;

o. *Rallus elegans*, king rail;

p. *Seiurus motacilla*, Louisiana waterthrush;

q. *Sterna forsteri*, Forster's tern;

r. *Sterna hirundo*, common tern;

s. *Tympanuchus cupido*, greater prairie-chicken.

C. Amphibians and reptiles. The scientific names and the

common names in C. are according to Standard Common and Current Scientific Names for North American Amphibians and Reptiles, second edition, J.T. Collins, et al., 1982. The following species of amphibians and reptiles are designated as:

1. Endangered: *Eumeces fasciatus*, five-lined skink.

2. Threatened:

a. *Clemmys insculpta*, wood turtle;

b. *Emydoidea blandingi*, Blanding's turtle.

3. Of special concern:

a. *Chelydra serpentina*, snapping turtle;

b. *Coluber constrictor*, racer (blue racer);

c. *Crotalus horridus*, timber rattlesnake;

d. *Elaphe obsoleta*, rat snake (black rat snake);

e. *Elaphe vulpina*, fox snake;

f. *Heterodon nasicus*, western hognose snake;

g. *Heterodon platyrhinos*, eastern hognose snake;

h. *Lampropeltis triangulum*, milk snake;

i. *Pituophis melanoleucus*, gopher snake (bull snake);

j. *Sistrurus catenatus*, massasauga;

k. *Tropidoclonion lineatum*, lined snake;

l. *Acris crepitans*, northern cricket frog (Blanchard's cricket frog);

m. *Rana catesbeiana*, bullfrog;

n. *Rana palustris*, pickerel frog.

D. Fish. The scientific names and the common names in D. are according to A list of Common and Scientific Names of Fishes from the United States and Canada, third edition, American Fisheries Society, 1979. The following species of fish are designated as:

1. Endangered: none.

2. Threatened: none.

3. Of special concern:

a. *Acipenser fulvescens* (Rafinesque), lake sturgeon;

b. *Ammocrypta asprella* (Jordan), crystal darter;

c. *Cycleptus elongatus* (Le Sueur), blue sucker;

d. *Etheostoma chlorosomum* (Hay), bluntnose darter;

e. *Fundulus sciadicus* (Cope), plains topminnow;

f. *Hybopsis x-punctata* (Hubbs and Crowe), gravel chub;

g. *Ictalurus furcatus* (Le Sueur), blue catfish;

h. *Lampetra appendix* (DeKay), American brook lamprey;

i. *Morone mississippiensis* (Jordan and Evermann), yellow bass;

j. *Moxostoma duquesnei* (Le Sueur), black redhorse;

k. *Notropis amnis* (Hubbs and Greene), pallid shiner;

l. *Notropis emilae* (Hay), pugnose minnow;

m. *Notropis topeka* (Gilbert), topeka shiner;

n. *Noturus exilis* (Nelson), slender madtom;

o. *Polyodon spathula* (Walbaum), paddlefish;

p. *Scaphirhynchus platorynchus* (Rafinesque), shovelnose sturgeon.

E. Butterflies. The scientific names in E. are according to A Catalogue/Checklist of the Butterflies of America North of Mexico, L.D. Miller and S.M. Brown, 1981. The following species of butterflies are designated as:

1. Endangered:

a. *Hesperia assiniboia* (Lyman), assiniboia skipper;

b. *Hesperia uncas* W.H. Edwards, uncas skipper;

c. *Oeneis uhleri varuna*, (W.H. Edwards) Uhler's arctic.

2. Threatened:

a. *Hesperia dacotae* (Skinner), Dakota skipper;

b. *Hesperia ottoe* W.H. Edwards, ottoe skipper;

c. *Lycaeides samuelis* Nabokov, Karner blue.

3. Of special concern:

a. *Clossiana freija* (Thunberg), freija fritillary;

b. *Clossiana frigga saga* (Staudinger), frigga fritillary;

c. *Epidemia dorcas dorcas* (W. Kirby), dorcas copper;

d. *Epidemia epixanthe michiganensis* (Rawson), bog copper;

e. *Erebia disa mancinus* Doubleday & Hewitson, disa alpine;

f. *Erebia discoidalis discoidalis* (W. Kirby),

red-disked alpine;

g. *Oarisma poweshiek* (Parker), poweshiek skipper;

h. *Oeneis jutta ascerta* Masters & Sorensen, jutta arctic;

i. *Proclossiana eunomia dawsoni* (Barnes & McDunnough), bog fritillary.

F. Freshwater mollusks. The scientific names in F. are according to Freshwater Mollusca of Wisconsin Part II: Pelecypoda, F.C. Collins, 1982. The following species of freshwater mollusks are designated as:

1. Endangered:

a. *Lampsilis higginsi* (Lea), Higgins' eye;

b. *Proptera (Potamilus) capax* (Green), fat pocketbook.

2. Threatened: none.

3. Of special concern:

a. *Elliptio crassidens* (Lamarck), elephant ear;

b. *Fusconaia ebena* (Lea), ebony shell.

6 MCAR S 1.5602 Vascular plants.

The scientific names in A., B., and C. are according to Gray's Manual of Botany, eighth edition, M.L. Fernald, 1950, and include family designation.

A. Endangered. The following species are designated as endangered:

1. *Asclepias stenophylla* Gray, Asclepiadaceae;

2. *Besseya bullii* (Eaton) Rydb., Scrophulariaceae;

3. *Cacalia suaveolens* L., Asteraceae;

4. *Chrysosplenium iowense* Rydb., Saxifragaceae;

5. *Cristatella jamesii* T. & G., Capparidaceae;

6. *Cypripedium arietinum* R. Br., Orchidaceae;

7. *Draba norvegica* Gunn., Brassicaceae;

8. *Eleocharis wolfii* Gray, Cyperaceae;

9. *Empetrum atropurpureum* Fern. & Wieg., Empetraceae;

10. *Erythronium propullans* Gray, Liliaceae;

11. *Gerardia auriculata* Michx., Scrophulariaceae;

12. *Hydrastis canadensis* L., Ranunculaceae;

13. *Isoetes melanopoda* Gay & Dur., Isoetaceae;

14. *Lespedeza leptostachya* Engelm., Fabaceae;

15. *Lesquerella ludoviciana* (Nutt.) S. Wats., Brassicaceae;

16. *Littorella americana* Fern., Plantaginaceae;

17. *Malaxis paludosa* (L.) Sw., Orchidaceae;

18. *Montia chamissoi* (Ledeb.) Durand & Jackson, Portulacaceae;

19. *Napaea dioica* L., Malvaceae;

20. *Oryzopsis hymenoides* (R. & S.) Ricker, Poaceae;

21. *Osmorhiza chilensis* H. & A., Apiaceae;

22. *Parthenium integrifolium* L., Asteraceae;

23. *Platanthera flava* (L.) Lindl. var. *herbiola* (R. Br.) Ames & Correll, Orchidaceae;

24. *Platanthera leucophaea* (Nutt.) Lindl., Orchidaceae;

25. *Poa paludigena* Fern. & Wieg., Poaceae;

26. *Polygala cruciata* L., Polygalaceae;

27. *Polystichum braunii* (Spenner) Fee var. *purshii* Fern., Polypodiaceae;

28. *Potamogeton lateralis* Morong, Potamogetonaceae;

29. *Ruellia humilis* Nutt., Acanthaceae;

30. *Sagina nodosa* (L.) fenzl ssp. *borealis* Crow, Caryophyllaceae;

31. *Saxifraga cernua* L. var. *latibracteata* Fern., Saxifragaceae;

32. *Scleria triglomerata* Michx., Cyperaceae;

33. *Sedum rosea* (L.) Scop. var. *leedyi* Rosend. & Moore, Crassulaceae;

34. *Subularia aquatica* L., Brassicaceae;

35. *Sparganium glomeratum* Laest., Sparganiaceae;

36. *Sullivantia renifolia* Rosend., Saxifragaceae;

37. *Talinum rugospermum* Holzinger, Portulaceaceae; and

38. *Tofieldia pusilla* (Mich.) Pers., Liliaceae.

B. Threatened. The following species are designated as threatened:

1. *Allium cernuum* Roth, Liliaceae;

2. *Ammophila breviligulata* Fern., Poaceae;

3. *Androsace septentrionalis* L. var. *pulverulenta* (Rydb.) Knuth, Primulaceae;

4. *Arabis holboellii* Hornem. var. *retrofracta* (Graham) Rydb., Brassicaceae;

5. *Arenaria macrophylla* Hook., Caryophyllaceae;

6. *Arnica chionopappa* Fern., Asteraceae;

7. *Asclepias hirtella* (Pennell) Woodson, Asclepiadaceae;

8. *Asclepias sullivantii* Englem., Asclepiadaceae;

9. *Asplenium trichomanes* L., Polypodiaceae;

10. *Cacalia tuberosa* Nutt., Asteraceae;

11. *Carex conjuncta* Boott, Cyperaceae;

12. *Carex davisii* Schwein. & Torr., Cyperaceae;

13. *Carex hallii* Olney, Cyperaceae;

14. *Carex praticola* Rydb., Cyperaceae;

15. *Carex sterilis* Willd, Cyperaceae;

16. *Desmodium illinoense* Gray, Fabaceae;

17. *Drosera anglica* Huds., Droseraceae;

18. *Drosera linearis* Goldie, Droseraceae;

19. *Dryopteris marginalis* (L.) Gray, Polypodiaceae;

20. *Eleocharis olivaceae* Torr., Cyperaceae;

21. *Eleocharis rostellata* Torr., Cyperaceae;

22. *Gerardia gattingeri* Sm., Scrophulariaceae;

23. *Jeffersonia diphylla* (L.) Pers., Berberidaceae;

24. *Lycopodium porophilum* Lloyd & Underwood, Lycopodiaceae;

25. *Lygodesmia rostrata* Gray, Asteraceae;

26. *Mamillaria vivipara* (Nutt.) Haw., Cactaceae;

27. *Melica nitens* Nutt., Poaceae;

28. *Nymphaea tetragona* Georgi, Nymphaeceae;

29. *Pellaea atropurpurea* (L.) Link, Polypodiaceae;

30. *Plantago elongata* Pursh, Plantaginaceae;

31. *Rhynchospora capillacea* Torr., Cyperaceae;

32. *Rubus chamaemorus* L., Rosaceae;

33. *Salicornia rubra* Nelson, Chenopodiaceae;

34. *Saxifraga aizoon* Jacq. var. *neogaea* Butters,

Saxifragaceae;

35. *Scleria verticillata* Muhl., Cyperaceae;

36. *Vaccinium uliginosum* L. var. *alpinum* Bigel, Ericaceae;

37. *Valeriana edulis* Nutt. ssp. *ciliata* (T. & G.) Meyer, Valerianaceae;

38. *Woodsia glabella* R. Br., Polypodiaceae;

39. *Woodsia scopulina* D.C. Eat., Polypodiacea; and

40. *Xyris torta* Sm., Xyridaceae.

C. Special concern. The following species are designated as of special concern:

1. *Adoxa moschatellina* L., Adoxaceae;

2. *Agrostis geminata* Trin., Poaceae;

3. *Allium schoenoprasum* L. var. *sibiricum* (L.) Hartm., Liliaceae;

4. *Antennaria aprica* Greene, Asteraceae;

5. *Arenaria dawsonensis* Britt., Caryophyllaceae;

6. *Arethusa bulbosa* L., Orchidaceae;

7. *Aristida longiseta* Steud., Poaceae;

8. *Aristida tuberculosa* Nutt., Poaceae;

9. *Asclepias amplexicaulis* Sm., Asclepiadaceae;

10. *Astragalus flexuosus* Dougl., Fabaceae;

11. *Astragalus missouriensis* Nutt., Fabaceae;

12. *Astragalus neglectus* (T. & G.) Sheld., Fabaceae;

13. *Athyrium pycnocarpon* (Spreng.) Tides, Polypodiaceaea;

14. *Bacopa rotundifolia* (Michx.) Wettst., Scrophulariaceae;

15. *Baptisia leucophaea* Nutt., Fabaceae;

16. *Botrychium lunaria* (L.) Sw., Ophioglossaceae;

17. *Botrychium mormo* Wagner, Ophioglossaceae;

18. *Buchloe dactyloides* (Nutt.) Engelm., Poaceae;

19. *Carex annectens* Bickn., Cyperaceae;

20. *Carex exilis* Dew., Cyperaceae;

21. *Carex laxiculmis* Schwein., Cyperaceae;

22. *Carex obtusata* Lilj., Cyperaceae;

23. *Carex scirpiformis* Mack., Cyperaceae;

24. *Carex woodii* Dew., Cyperaceae;

25. *Cephalanthus occidentalis* L., Rubiaceae;

26. *Chamaerhodos nuttallii* Pick., Rosaceae;

27. *Cirsium hillii* (Canby) Fern., Asteraceae;

28. *Cladium mariscoides* (Muhl.) Torr., Cyperaceae;

29. *Claytonia caroliniana* Michx., Portulacaceae;

30. *Cyperus acuminatus* Torr. & Hook., Cyperaceae;

31. *Cypripedium candidum* Muhl., Orchidaceae;

32. *Decodon verticillatus* (L.) Ell., Lythraceae;

33. *Deschampsia flexuosa* (L.) Trin., Poaceae;

34. *Desmanthus illinoense* (Michx.) MacM, Fabaceae;

35. *Dicentra canadensis* (Goldie) Walp., Fumariaceae;

36. *Dodecatheon meadia* L., Primulaceae;

37. *Draba arabisans* Michx., Brassicaceae;

38. *Dryopteris goldiana* (Hook.) Gray, Polypodiaceae;

39. *Echinochloa walteri* (Pursh.) Nash, Poaceae;

40. *Eleocharis pauciflora* (Lightf.) Link var. fernaldii Svenson, Cyperaceae;

41. *Eryngium yuccifolium* Michx., Apiaceae;

42. *Euphrasia hudsoniana* Fern. & Wieg., Scrophulariaceae;

43. *Floerkea proserpinacoides* Willd., Limnanthaceae;

44. *Gentiana affinis* Griseb., Gentianaceae;

45. *Gentianella amarella* (L.) Borner ssp. *acuta* (Michx.) Gillett, Gentianaceae;

46. *Geocaulon lividum* (Richards.) Fern., Santalaceae;

47. *Glaux maritima* L., Primulaceae;

48. *Hamamelis virginiana* L., Hamamelidaceae;

49. *Haplopappus spinulosus* (Pursh) DC., Asteraceae;

50. *Helianthus nuttallii* T. & G. ssp. *rydbergii* (Br.) Long, Asteraceae;

51. *Hydrocotyle americana* L., Apiaceae;

52. *Juncus stygius* L. var. *americanus* Buchenau, Juncaceae;

53. *Leersia lenticularis* Michx., Poaceae;

54. *Limosella aquatica* L., Scrophulariaceae;

55. *Myosurus minimus* L., Ranunculaceae;

56. *Oenothera rhombipetala* Nutt., Onagraceae;

57. *Opuntia humifusa* Raf., Cactaceae;

58. *Orobanche fasciculata* Nutt., Orobanchaceae;

59. *Orobanche ludoviciana* Nutt., Orobanchaceae;

60. *Orobanche uniflora* L., Orobanchaceae;

61. *Panax quinquefolium* L., Apiaceae;

62. *Paronychia fastigiata* Fern., Caryophyllaceae;

63. *Pinguicula vuglaris* L., Lentibulariaceae;

64. *Platanthera clavellata* (Michx.) Luer, Orchidaceae;

65. *Poa wolfii* Scribn., Poaceae;

66. *Polygonum arifolium* L., Polygonaceae;

67. *Polygonum viviparum* L., Polygonaceae;

68. *Polystichum acrostichoides* (Michx.) Schott., Polypodoaceae;

69. *Potamogeton vaseyi* Robbins, Potamogetonaceae;

70. *Ranunculus lapponicus* L., Ranunculaceae;

71. *Rhynchospora fusca* (L.) Ait. f., Cyperaceae;

72. *Rudbeckia triloba* L., Asteraceae;

73. *Sanicula canadensis* L., Apiaceae;

74. *Sanicula trifoliata* Bickn., Apiaceae;

75. *Schedonnardus paniculatus* (Nutt.) Trel., Poaceae;

76. *Scutellaria ovata* Hill var. *versicolor* (Nutt.) Fern., Lamiaceae;

77. *Solidago mollis* Bartl., Asteraceae;

78. *Solidago sciaphila* Steele, Asteraceae;

79. *Spartina gracilis* Trin., Poaceae;

80. *Stellaria longipes* Goldie, Caryophyllaceae;

81. *Symphoricarpos orbiculatus* Moench, Caprifoliaceae;

82. *Tephrosia virginiana* (L.) Pers., Fabaceae;

83. *Thelypteris hexagonoptera* (Michx.) Weatherby, Fabaceae;

84. *Tofieldia glutinosa* (Michx.) Pers., Liliaceae;

85. *Tradescantia ohiensis* Raf., Commelinaceae;

86. *Triglochin palustris* L., Juncaginaceae;

87. *Trillium nivale* Riddell, Liliaceae;

88. *Triplasis purpurea* (Walt.) Champm., Poaceae;

89. *Tsuga canadensis* (L.) Carr., Pinaceae;

90. *Utricularia gibba* L., Lentibulariaceae;

91. *Verbena simplex* Lehm., Verbenaceae;

92. *Viola lanceolata* L., Violaceae;

93. *Viola novae-angliae* House, Violaceae;

94. *Viola nuttallii* Pursh, Violaceae;

95. *Waldesteinia fragarioides* (Michx.) Tratt., Rosaceae; and

96. *Xyris montana* Ries., Xyridaceae.

6 MCAR S 1.5603 Lichens; mosses.

A. Lichens. The scientific names in A. are according to A Fourth Checklist of the Lichens of the Continental United States and Canada, M.E. Hale and W.L. Culberson, 1970. The following species of lichens are designated as:

1. Endangered:

a. *Buellia nigra* (Fink) Sheard/[Rinodina nigra Fink];

b. *Dermatocarpon moulinsii* (Mont.) Zahlbr.;

c. *Leptogium apalachense* (Tuck.) Nyl.;

d. *Lobaria scrobiculata* (Scop.) DC;

e. *Parmelia stictica* (Del.) Nyl.;

f. *Pseudocyphellaria crocata* (L.) Vain.

2. Threatened: *Lobaria quercizans* Michx.

3. Of special concern:

a. *Cetraria aurescens* Tuck.;

b. *Cetraria oakesiana* Tuck.;

c. *Cladonia pseudorangiformis* Asah.;

d. *Coccocarpia cronia* (Tuck.) Vain.;

e. *Parmelia stuppea* Tayl.;

f. *Sticta fuliginosa* (Dicks.) Ach.;

g. *Umbilicaria torrefacta* (Lightf.) Schrad.

B. Mosses. The scientific names in B. are according to A New List of Mosses of North America North of Mexico, H.A. Crum, et al., 1973. The following species of mosses are designated as:

1. Endangered: *Schistostegia pennata* (Hedw.) Web. & Mohr.

2. Threatenened: none.

3. Of special concern:

a. *Bryoxiphium norvegicum* (Brid.) Mitt.;

1 b. *Tomenthypnum falcifolium* (Ren ex. Nich.) Tuom.

APPROVED AS TO FORM AND LEGALITY

January 30 1984

HUBERT H. HUMPHREY, III
ATTORNEY GENERAL

BY Martha J Cassedy
SPECIAL ASSISTANT ATTORNEY GENERAL

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
JAN 30 1984

Joan Anderson Growe
Secretary of State

3:30 P.M.

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

In the Matter of the Proposed Adoption of Rules of the Department of Natural Resources Designating Species of Wild Animals and Plants as Endangered, Threatened or of Special Concern.

ORDER ADOPTING RULES

Notice of intent to adopt the above-entitled proposed rules without a public hearing was published in the State Register on Monday, October 31, 1983. Notice was sent by United States mail to all persons on the list maintained by the Department pursuant to Minn. Stat. §14.14 on October 17, 1983.

No requests for hearing were received during the subsequent comment period which expired November 30, 1983.

Having reviewed and considered all comments made, and having determined the need for and reasonableness of the proposed rules,

NOW THEREFORE IT IS ORDERED

that the proposed rules are adopted as rules pursuant to authority vested in me by Minn. Stat. §97.488.

Dated: January 11, 1984.

JOSEPH N. ALEXANDER, COMMISSIONER
Department of Natural Resources

Department of Natural Resources
Fish and Wildlife Division

Notice of Intent to Solicit Outside Opinion in the Matter of the Proposed Adoption of Rules Designating Species of Wild Animals and Plants as Endangered, Threatened or of Special Concern

Minnesota Statutes section 97.488 provides that the Department of Natural Resources shall adopt rules designating species of wild animals and plants as endangered, threatened or of special concern. With the aid of a technical advisory committee, also provided for by statute, the DNR has compiled the required lists. Before proposing the adoption of these lists as a rule, the DNR seeks further information and opinion from outside the agency concerning the status of any wild animal or plant species.

You may submit information or comments, orally or in writing, concerning the subject matter of the proposed rules to:

Barbara Coffin
Division of Fish and Wildlife
Department of Natural Resources
Box 6 Centennial Office Building
St. Paul, MN 55155
(612) 296-4284

The Department will accept information and comment through August 15, 1983. Written material will become part of the record of the rules proceedings.

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

- - - - -

In the Matter of the Proposed Adoption of Rules of the Department of Natural Resources Designating Species of Wild Animals and Plants as Endangered, Threatened or of Special Concern.

ORDER PROPOSING THE ADOPTION OF RULES WITHOUT PUBLIC HEARING

- - - - -

WHEREAS, Minnesota Statutes Section 97.488 (1982) requires the Commissioner of Natural Resources to adopt rules designating species of wild animals and plants as endangered, threatened or of special concern; and

WHEREAS, such rules have been prepared in proposed form; and

WHEREAS, it has been determined that the proposed rules are non-controversial in nature;

NOW, THEREFORE, pursuant to authority vested in me by law, I, Joseph N. Alexander, Commissioner of Natural Resources, hereby accept the proposed rules and order commencement of the process of adoption of the proposed rules without public hearing.

Dated at Saint Paul, Minnesota, this 14 day of Oct, 1983.

JOSEPH N. ALEXANDER, COMMISSIONER
DEPARTMENT OF NATURAL RESOURCES

Department of Natural Resources

Fish and Wildlife Division

Proposed Rules Designating
Species of Wild Animals and Plants
As Endangered, Threatened or of Special Concern

Notice of Intent to Adopt Rules
Without a Public Hearing

NOTICE IS HEREBY GIVEN That the Department of Natural Resources proposes to adopt the above entitled rules without a public hearing. The Department of Natural Resources has determined that the proposed adoption of these rules will be noncontroversial in nature and has elected to follow the procedures set forth in Minnesota Statutes Sections 14.21 - 14.28 (1982).

Minnesota Statutes Section 97.488 provides that the Department of Natural Resources shall adopt rules designating species of wild animals and plants as endangered, threatened or of special concern. With the aid of a technical advisory committee, also provided for by statute, the DNR has compiled the required lists. Additionally, a statement of need and reasonableness that describes the need for and reasonableness of the listing of each species in the proposed rules has been prepared and is available for inspection by the public during regular hours, at the address below.

Persons interested shall have 30 days, specifically until November 30, 1983, to submit comments on the proposed

rules. The proposed rules may be modified if the modifications are supported by the data and views submitted to the agency and do not result in a substantial change in the proposed language.

Upon adoption of the final rule without a public hearing, the proposed rule, this notice, the statement of need and reasonableness, all written comments received, and the final rule as adopted will be delivered to the Attorney General for review as to form and legality, including the issue of substantial change. Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of the final rule as proposed for adoption, should submit a written request to the below address.

Unless seven or more persons submit written requests for a public hearing on the proposed rules within the 30-day comment period, a public hearing will not be held. In the event a public hearing is required, the agency will proceed according to the provisions of Minnesota Statutes Sections 14.13 - 14.20 (1982). Persons requesting a public hearing should identify the particular objection, the suggested modifications to the proposed rules, and the reasons or data relied on to support the suggested modifications.

Please be advised that Minn. Stat. chapter 10A requires each lobbyist to register with the State Ethical Practices Board within five days after he or she commences lobbying. Minn. Stat. § 10A.01, subdivision 11 defines a lobbyist as any individual: (a) engaged for pay or other consideration, or authorized by another individual or association to spend

money, who spends more than five hours in any month or more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials; or (b) who spends more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative administrative action by communicating or urging others to communicate with public officials. The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, St. Paul, Minnesota 55155, telephone (612) 296-5615.

Persons who wish to submit comments or a written request for a public hearing, or who wish to receive a copy of the final rule or to be informed when the rule is submitted to the Attorney General, should submit such comments or requests to:

Barbara Coffin
Division of Fish and Wildlife
Department of Natural Resources
Box 6 Centennial Office Building
St. Paul, MN 55155
Telephone: (612) 296-9782

The proposed rule follows this notice.

October 14, 1983.

Joseph N. Alexander, Commissioner
Department of Natural Resources

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

In the Matter of the
Proposed Adoption of Rules
of the Department of Natural
Resources Designating Species
of Wild Animals and Plants as
Endangered, Threatened or
Special Concern.

AFFIDAVIT OF MAILING

STATE OF MINNESOTA)
) SS.
COUNTY OF RAMSEY)

I, Lee Pfannmuller, hereby certify that on the 17th day of October, 1983, at the City of St. Paul, County of Ramsey, State of Minnesota, I served the attached Notice of Intent to Adopt Rules without a Public Hearing upon all addressees on the attached list by causing copies of said notice, properly enveloped and addressed and with postage prepaid, to be deposited in the United States Mail. In addition, I served said Notice on the same date upon all additional addressees on the attached list so entitled by causing copies of said notice, properly enveloped and addressed and with postage prepaid to be deposited in the United States Mail, or in the State of Minnesota inter-office mail system where appropriate.

Lee Pfannmuller
Lee Pfannmuller

Subscribed and sworn to
before me this 27 day of October, 1983.

Kim R. Hennings
Notary Public

KIM R. HENNINGS
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
My Comm. Expires Apr. 15, 1989

Ford Motor Company
Automotive Assembly Division
17000 Oakwood Blvd.
Allen Park, Mich. 48121

Mr. John A. Knapp
Hessian, McKasy & Soderberg
1500 Midwest Plaza Bldg.
Minneapolis, MN 55402

Peter S. Popovich
Peterson, Popovich, Knutson & Flynn
314 Minnesota Bldg.
St. Paul, MN 55101

Gordon Forbes
Minn. Railroads Association
303 Hanover Bldg.
480 Cedar St.
St. Paul, MN 55101

Kent E. Eklund
Dept. of Economic Development
480 Cedar St.
St. Paul, MN 55101

Sam Ruhle
Office of Adminis. Hearings
400 Summit Bank Building
310 South Fourth Avenue
Minneapolis, MN 55415

Robert S. Burk
4344 IDS Center
Minneapolis, MN 55402

Marylee Fithian, Exec. Director
Oden & Associates
905 Park Ave. So.
Mpls., MN 55404

Jean Dawson, Editor
The Minnesota Government Report
3-12, Press Room
State Capitol Bldg.
INTEROFFICE

T. J. Manthey
Pickands Mather & Co.
1100 Superior Ave. NE
Cleveland, Ohio 44114

Craig Waldron

Region Nine Dev. Commission
410 So. 5th St., P.O. Box 3367

Jones, Haugh & Smith Inc.
515 So. Washington
Albert Lea, MN 56007

Robert A. Silvagni, Env. Eng.
U of M-Physical Plant Dept.
200 Shops Building
319 15th Ave. SE
Minneapolis, MN 55455

William G. Haddeland
Minn. Petroleum Council
300 Northern Federal Bldg.
St. Paul, MN 55102

Robert Bollant
City of Winona
City Hall
4th & Lafayette St.
Winona, MN 55987

Richard C. Buske
Dept. of Economic Development
480 Cedar St.
St. Paul, MN 55101

Bruce T. Rowe, Administrator
Community Health Services Board
325 Lake Ave. So., Suite 604
Duluth, MN 55802

Mr. Reynold S. Rahko, Mgr.
Projects Coordinating Division
United Power Association
Elk River, MN 55330

George C. Mastor
General Counsel
MN Gas Company, Legal Division
701 2nd Avenue South
Mpls., MN 55402

G. V. Welk, Manager
Regulatory Compliance & Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Philip D. Brick
Pickands Mather & Co.
Suite 811-200 W Superior St.
Duluth, MN 55802

Environmental Law Society
William Mitchell College of Law
875 Summit Ave.
St. Paul, MN 55105

Bonnie M. Spencer
Federal-State Reports, Inc.
5203 Leesburg Pike, #1201
Baileys Crossroads
Falls Church, VA 22041

Gertrude M. James
Anoka Co. Community Health & Social Services Dept.
Courthouse, 4th Floor
Anoka, MN 55303

Executive Director
Association of Minn. Counties
555 Park St., Suite 300
St. Paul, MN 55103

Wayne H. Olson, Esq.
Olson, Gunn & Seran, Ltd.
315 Peavey Bldg.
730 Second Ave. So.
Mpls., MN 55402

Charles Schaffer
Dept. of Economic Development
480 Cedar St.
St. Paul, MN 55101

Marylee Fithian
Director
Development Disabilities Pla
200 Capitol Square Bldg.
INTEROFFICE

G. Robert Johnson
4344 IDS Center
Minneapolis, MN 55402

Frank Mixa
Executive Director
Lake Mtka. Conservation Dist
402 E. Lake St.
Wayzata, MN 55391

General Mills, Inc.
Attn: J. W. Haun
P. O. Box 1113
Minneapolis, MN 55440

Bob Franklin, City Editor
Minneapolis Tribune
425 Portland Ave.
Minneapolis, MN 55488

Dr. Rollin Dennistoun, Dep. C
MN Dept. of Agriculture
90 W. Plato
St. Paul, MN 55107
INTEROFFICE

17 University Ave.
t. Paul, MN 55155

2850 Metro Drive
Bloomington, MN 55420

Minneapolis, MN 55408

rofessor Robert Synder
48 Classroom-Office Bldg.
niversity of Minnesota
t. Paul, MN 55108

Conrad M. Fredin
811 First Nat'l. Bank Bldg.
Duluth, MN 55802

Maryann S. Marino, Ph. D.
Koppers Company, Inc.
1201 Koppers Bldg.
Pittsburgh, PA 15219

ric W. Ingvaldson
00 Galaxy Building
30 Second Ave. South
inneapolis, MN 55401

John H. Herman
Suite 930
Ten South Fifth St.
Mpls., MN 55401

R. J. Barto
Midland Glass Company, Inc.
P.O. Box 69
Shakopee, MN 55379

homas M. Polt
cCarthy Bldg.
yota, MN 55934

Anoka Co. Community Health &
Social Services Dept.
c/o Robert M. Hutchison
Courthouse-4th Floor
Anoka, MN 55303

Phillips Legislative Service
459 Rice Street
St. Paul, MN 55103

resident
nterstate Power Co.
000 Main St.
ubuque, IA 52001

Donald B. Crassweller
1000 Alworth Bldg.
Duluth, MN 55802

J. D. Giallombardo
Buildings & Environmental
Burlington Northern, Inc.
176 E. 5th St., Room 1280
St. Paul, MN 55101

arriet Lykken
600 Emerson Ave. So.
pls., MN 55409

Richard Kramer
1471 Barclay
St. Paul, MN 55106

W. J. Licke, General Counsel
Blandin Paper Co.
115 1st St. SW
Grand Rapids, MN 55744

enneth Peterson, Exec. Director
PIRG
412 University Ave. SE
pls., MN 55414

James Miller, Sr. Attorney
MPIRG
2412 University Ave. SE
Mpls., MN 55414

Associated Builders & Contra
Suite 109
6300 Walker St.
Mpls., MN 55416

nn Mongoven
11½ Minnesota
emidji, MN 56601

Steve Chadwick
2904 W. 3rd St.
Duluth, MN 55806

Barbara Johnson
1636 Taylor Ave.
St. Paul, MN 55104

en Kadlec
62 Holly Ave.
t. Paul, MN 55104

Badger Safe Energy Alliance
Box 68
Durand, Wis. 54736

Public Interest Advocacy Cli
Hamline University Law Schoo
St. Paul, MN 55104

elson French
715 E. 26th St.
pls., MN 55406

Steve O'Neil
475 Huff St.
Winona, MN 55987

Rodney Watkins
105 University Rd.
Cloquet, MN 55720

Loni Kemp
The Minnesota Project
618 E. 22nd St.
Mpls., MN 55404

350 Metro Drive
Suite 800
Mpls., MN 55420

Brad Hoffman
6301 Shingle Creek Parkway
Brooklyn Center, MN 55430

Bruce Barker
Minnesota Woodlands
Boise Cascade Corporation
International Falls,MN 56649

Frundt, Frundt & Johnson
117 West 5th Street
Blue Earth, MN 56013

Joseph G. Beaton Jr. LTD
1503 Washington Av. S.
Mpls., MN 55454

Andrea Hughes-Whaley
803 Lake Blvd. North
North St. Paul, MN 55109

Bob Buckler
Minn. Forest Industries
908 Pioneer Bldg
St. Paul, MN 55101

Franklin J. Svoboda, CWB
BRW
2829 University Avenue SE
Mpls., MN 55414

ADDITIONAL ADDRESSEES (STATE PERSONN

REGIONAL ADMINISTRATORS . . . . . .

Department of Natural Resources
Regional Administrator (I)
Merlyn Wesloh
Route 5, Box 41A
Bemidji, Minnesota 56601

Department of Natural Resources
Regional Administrator (II)
John Chell
Box 388, Highway 2
Grand Rapids, Minnesota 55744

Department of Natural Resources
Regional Administrator (III)
Roger Lorenz
1102 Willow Street
Brainerd, Minnesota 56401

Department of Natural Resources
Regional Administrator (IV)
Maynard Nelson
Box 756, Highway 15 South
New Ulm, Minnesota 56073

Department of Natural Resources
Regional Administrator (VI)
Karen Loechler
1299 Warner Road
St. Paul, Minnesota 55106

COMMISSIONER'S OFFICE . . . . . .

Department of Natural Resources
Commissioner
Joseph Alexander
Box 37, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Deputy Commissioner
Steve Thorne
Box 50, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Assistant Commissioner for Administration
Gene Gere
Box 23, Centennial Office Building
St. Paul, Minnesota 55155

Commissioner's office (continued)

Department of Natural Resources
Assistant Commissioner for Planning
Vonny Hagen
Box 10, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Special Assistant to Commissioner for Trails and Waterways
Don Carlson
Box 52, Centennial Office Building
St. Paul, Minnesota 55155

SUPPORT STAFF . . . . . .

Department of Natural Resources
Deputy Attorney General
C. Paul Faraci
Box 38, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Acting Executive Director, Minnesota Environmental Education Board
Ray Quinn
Box 5, Centennial Office Building
St. Paul, Minnesota 55155

BUREAU ADMINISTRATORS . . . . . .

Department of Natural Resources
Administrator, Land Bureau
Rod Sando
Box 31, Centennial Office Building
St. Paul, Minnesota 55155

DIVISION DIRECTORS . . . . . .

Department of Natural Resources
Director, Division of Forestry
Raymond Hitchcock
Box 44, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Director, Division of Minerals
Elwood F. Rafn
Box 45, Centennial Office Building
St. Paul, Minnesota 55155

Division Directors (continued)

Department of Natural Resources
Director, Division of Parks and Recreation
Don D. Davison
Box 39, Centennial Office Building
St. Paul, Minnesota 55155

Department of Natural Resources
Director, Division of Enforcement
Fred Hammer
Box 47, Centennial Office Building
St. Paul, Minnesota 55155

PERT TECHNICAL REPRESENTATIVES . . . . . .

Department of Natural Resources
Environmental Planner, Office of Planning
Tom Balcom
Box 10, Centennial Office Building
St. Paul, Minnesota 55155

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

In the Matter of the
Proposed Adoption of Rules
of the Department of
Natural Resources Designating
Species of Wild Animals and
Plants as Endangered, Threatened
or of Special Concern.

CERTIFICATE

STATE OF MINNESOTA)
) SS.
COUNTY OF RAMSEY)

I, ANDY BREWER, hereby certify that the attached list of persons, associations and other interested groups who have requested, pursuant to Minn. Stat. Sec. 14.14, that their names be placed on file with and maintained by the Minnesota Department of Natural Resources for the purpose of receiving notice of the proposed adoption of rules is accurate and complete as of 2:00 p.m., this 14th day of October, 1983.

Andy Brewer
Andy Brewer

Subscribed and sworn to before me
this 14th day of October 1983.

Darlene C. Williams
Notary Public

Department of Natural Resources
Fish and Wildlife Division

Proposed Rules Designating Species of Wild Animals and Plants As Endangered, Threatened or of Special Concern

Notice of Intent to Adopt Rules without a Public Hearing

Notice is hereby given that the Department of Natural Resources proposes to adopt the above entitled rules without a public hearing. The Department of Natural Resources has determined that the proposed adoption of these rules will be noncontroversial in nature and has elected to follow the procedures set forth in Minnesota Statutes sections 14.21-14.28 (1982).

Minnesota Statutes section 97.488 provides that the Department of Natural Resources shall adopt rules designating species of wild animals and plants as endangered, threatened or of special concern. With the aid of a technical advisory committee, also provided for by statute, the DNR has compiled the required lists. Additionally, a statement of need and reasonableness that describes the need for and reasonableness of the listing of each species in the proposed rules has been prepared and is available for inspection by the public during regular hours, at the address below.

Persons interested shall have 30 days, specifically until November 30, 1983, to submit comments on the proposed rules. The proposed rules may be modified if the modifications are supported by the data and views submitted to the agency and do not result in a substantial change in the proposed language.

Upon adoption of the final rule without a public hearing, the proposed rule, this notice, the statement of need and reasonableness, all written comments received, and the final rule as adopted will be delivered to the Attorney General for review as to form and legality, including the issue of substantial change. Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of the final rule as proposed for adoption, should submit a written request to the below address.

Unless seven or more persons submit written requests for a public hearing on the proposed rules within the 30-day comment period, a public hearing will not be held. In the event a public hearing is required, the agency will proceed according to the provisions of Minnesota Statutes sections 14.13-14.20 (1982). Persons requesting a public hearing should identify the particular objection, the suggested modifications to the proposed rules, and the reasons or data relied on to support the suggested modifications.

Please be advised that Minn. Stat. chapter 10A requires each lobbyist to register with the State Ethical Practices Board within five days after he or she commences lobbying. Minn. Stat. § 10A.01, subdivision 11 defines a lobbyist as any individual: (a) engaged for pay or other consideration, or authorized by another individual or association to spend money, who spends more than five hours in any month or more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials; or (b) who spends more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative administrative action by communicating or urging others to communicate with public officials. The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, St. Paul, Minnesota 55155, telephone (612) 296-5615.

Persons who wish to submit comments or a written request for a public hearing, or who wish to receive a copy of the final rule or to be informed when the rule is submitted to the Attorney General, should submit such comments or requests to:

Barbara Coffin
Division of Fish and Wildlife
Department of Natural Resources
Box 6 Centennial Office Building
St. Paul, MN 55155
Telephone: (612) 296-9782

The proposed rules follows this notice.

October 14, 1983

Joseph N. Alexander, Commissioner
Department of Natural Resources

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

Rules as Proposed (all new material)

6 MCAR § 1.5600 Wild animals and plants designated as endangered, threatened, or of special concern; authority.

Pursuant to Minnesota Statutes, section 97.488, the species of wild animals and plants listed in 6 MCAR §§ 1.5601 to 1.5603 are designated as endangered, threatened, or of special concern, as indicated in those parts.

6 MCAR § 1.5601 Animal species.

A. Mammals. The scientific names and the common names in A. are according to the Revised Checklist of North American Mammals North of Mexico, J. K. Jones, et al., 1982. The following species of mammals are designated as:

1. Endangered: **none.**
2. Threatened: *Canis lupus, gray wolf.*
3. Of special concern:
   a. *Cervus elaphus*, American elk;
   b. *Cryptotis parva*, least shrew;
   c. *Felis concolor*, mountain lion;
   d. *Gulo gulo*, wolverine;
   e. *Martes americana*, marten;
   f. *Microtus chrotorrhinus*, rock vole;
   g. *Microtus ochrogaster*, prairie vole;
   h. *Microtus pinetorum*, woodland vole;
   i. *Myotis keenii*, Keens' myotis;
   j. *Odocoileus hemionus*, mule deer;
   k. *Phenacomys intermedius*, heather vole;
   l. *Pipistrellus subflavus*, eastern pipistrelle;
   m. *Rangifer tarandus*, caribou;
   n. *Spilogale putorius*, spotted skunk;
   o. *Synaptomys borealis*, northern bog lemming;
   p. *Thomomys talpoides*, northern pocket gopher.

B. Birds. The scientific names and the common names in B. are according to the American Ornithologists Union Checklist, 1983. The following species of birds are designated as:

1. Endangered:
   a. *Ammodramus bairdii*, Baird's sparrow;
   b. *Anthus spragueii*, Sprague's pipit;
   c. *Athene cunicularia*, burrowing owl;
   d. *Calcarius ornatus*, chestnut-collared longspur;
   e. *Charadrius melodus*, piping plover;
   f. *Falco peregrinus*, peregrine falcon.
2. Threatened:
   a. *Haliaeetus leucocephalus*, bald eagle;
   b. *Lanius ludovicianus*, loggerhead shrike.
3. Of special concern:
   a. *Ammodramus henslowii*, Henslow's sparrow;
   b. *Ammospiza caudacutus*, sharp-tailed sparrow;
   c. *Asio flammeus*, short-eared owl;
   d. *Bartramia longicauda*, upland sandpiper;

e. *Botaurus lentiginosus*, American bittern;

f. *Buteo lineatus*, red-shouldered hawk;

g. *Coturnicops noveboracensis*, yellow rail;

h. *Gallinula chloropus*, common moorhen;

i. *Grus canadensis*, sandhill crane;

j. *Limosa fedoa*, marbled godwit;

k. *Pandion haliaetus*, osprey;

l. *Pelecanus erythrorhynchos*, American white pelican;

m. *Phalaropus tricolor*, Wilson's phalarope;

n. *Podiceps auritus*, horned grebe;

o. *Rallus elegans*, king rail;

p. *Seiurus motacilla*, Louisiana waterthrush;

q. *Sterna forsteri*, Forster's tern;

r. *Sterna hirundo*, common tern;

s. *Tympanuchus cupido*, greater prairie-chicken.

C. Amphibians and reptiles. The scientific names and the common names in C. are according to *Standard Common and Current Scientific Names for North American Amphibians and Reptiles*, second edition, J.T. Collins, et al., 1982. The following species of amphibians and reptiles are designated as:

1. Endangered: *Eumeces fasciatus*, five-lined skink.

2. Threatened:

   a. *Clemmys insculpta*, wood turtle;

   b. *Emydoidea blandingi*, Blanding's turle.

3. Of special concern:

   a. *Chelydra serpentina*, snapping turtle;

   b. *Coluber constrictor*, racer (blue racer);

   c. *Crotalus horridus*, timber rattlesnake;

   d. *Elaphe obsoleta*, rat snake (black rat snake);

   e. *Elaphe vulpina*, fox snake;

   f. *Heterodon nasicus*, western hognose snake;

   g. *Heterodon platyrhinos*, eastern hognose snake;

   h. *Lampropeltis triangulum*, milk snake;

   i. *Pituophis melanoleucus*, gopher snake (bull snake);

   j. *Sistrurus catenatus*, massasauga;

   k. *Tropidoclonion lineatum*, lined snake;

   l. *Acris crepitans*, northern cricket frog (Blanchard's cricket frog);

   m. *Rana catesbeiana*, bullfrog;

   n. *Rana palustris*, pickerel frog.

D. Fish. The scientific names and the common names in D. are according to A list of Common and Scientific Names of Fishes

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from the United States and Canada, third edition. American Fisheries Society, 1979. The following species of fish are designated as:

1. Endangered: none.
2. Threatened: none.
3. Of special concern:
   a. *Acipenser fulvescens* (Rafinesque), lake sturgeon;
   b. *Ammocrypta asprella* (Jordan), crystal darter;
   c. *Cycleptus elongatus* (Le Sueur), blue sucker;
   d. *Etheostoma chlorosomum* (Hay), bluntnose darter;
   e. *Fundulus sciadicus* (Cope), plains topminnow;
   f. *Hybopsis x-punctata* (Hubbs and Crowe), gravel chub;
   g. *Ictalurus furcatus* (Le Sueur), blue catfish;
   h. *Lampetra appendix* (DeKay), American brook lamprey;
   i. *Morone mississippiensis* (Jordan and Evermann), yellow bass;
   j. *Moxostoma duquesnei* (Le Sueur), black redhorse;
   k. *Notropis amnis* (Hubbs and Greene), pallid shiner;
   l. *Notropis emilae* (Hay), pugnose minnow;
   m. *Notropis topeka* (Gilbert), topeka shiner;
   n. *Noturus exilis* (Nelson), slender madtom;
   o. *Polyodon spathula* (Walbaum), paddlefish;
   p. *Scaphirhynchus platorynchus* (Rafinesque), shovelnose sturgeon.

E. Butterflies. The scientific names in E. are according to A Catalogue/Checklist of the Butterflies of America North of Mexico, L.D. Miller and S.M. Brown, 1981. The following species of butterflies are designated as:

1. Endangered:
   a. *Hesperia assiniboia* (Lyman), assiniboia skipper;
   b. *Hesperia uncas* W.H. Edwards, uncas skipper;
   c. *Oeneis uhleri varuna*, (W.H. Edwards) Uhler's arctic.
2. Threatened:
   a. *Hesperia dacotae* (Skinner), Dakota skipper;
   b. *Hesperia ottoe* W.H. Edwards, ottoe skipper;
   c. *Lycaeides samuelis* Nabokov, Karner blue.
3. Of special concern:
   a. *Clossiana freija* (Thunberg), freija fritillary;
   b. *Clossiana frigga saga* (Staudinger), frigga fritillary;
   c. *Epidemia dorcas dorcas* (W. Kirby), dorcas copper;
   d. *Epidemia epixanthe michiganensis* (Rawson), bog copper;
   e. *Erebia disa mancinus* Doubleday & Hewitson, disa alpine;
   f. *Erebia discoidalis discoidalis* (W. Kirby), red-disked alpine;
   g. *Oarisma poweshiek* (Parker), poweshiek skipper;
   h. *Oeneis jutta ascerta* Masters & Sorensen, jutta arctic;
   i. *Proclossiana eunomia dawsoni* (Barnes & McDunnough), bog fritillary.

F. Freshwaster mollusks. The scientific names in F. are according to Freshwater Mollusca of Wisconsin Part II: Pelecypoda, F.C. Collins, 1982. The following species of freshwater mollusks are designated as:

1. Endangered:
   a. *Lampsilis higginsi* (Lea), Higgins' eye;
   b. *Proptera (Potamilus) capax* (Green), fat pocketbook.
2. Threatened: none.
3. Of special concern:
   a. *Elliptio crassidens* (Lamarck), elephant ear;
   b. *Fusconaia ebena* (Lea), ebony shell.

6 MCAR § 1.5602 Vascular plants.

The scientific names in A., B., and C. are according to Gray's Manual of Botany, eighth edition, M.L. Fernald, 1950, and include family designation.

A. Endangered. The following species are designated as endangered:

1. *Asclepias stenophylla* Gray, Asclepiadaceae;
2. *Besseya bullii* (Eaton) Rydb., Scrophulariaceae;
3. *Cacalia suaveolens* L., Asteraceae;
4. *Chrysosplenium iowense* Rydb., Saxifragaceae;
5. *Cristatella jamesii* T. & G., Capparidaceae;
6. *Cypripedium arietinum* R. Br., Orchidaceae;
7. *Draba norvegica* Gunn., Brassicaceae;
8. *Eleocharis wolfii* Gray, Cyperaceae;
9. *Empetrum atropurpureum* Fern. & Wieg., Empetraceae;
10. *Erythronium propullans* Gray, Liliaceae;
11. *Gerardia auriculata* Michx., Scrophulariaceae;
12. *Hydrastis canadensis* L., Ranunculaceae;
13. *Isoetes melanopoda* Gay & Dur., Isoetaceae;
14. *Lespedeza leptostachya* Engelm., Fabaceae;
15. *Lesquerella ludoviciana* (Nutt.) S. Wats., Brassicaceae;
16. *Littorella americana* Fern., Plantaginaceae;
17. *Malaxis paludosa* (L.) Sw., Orchidaceae;
18. *Montia chamissoi* (Ledeb.) Durand & Jackson, Portulacaceae;
19. *Napaea dioica* L., Malvaceae;
20. *Oryzopsis hymenoides* (R. & S.) Ricker, Poaceae;
21. *Osmorhiza chilensis* H. & A., Apiaceae;
22. *Parthenium integrifolium* L., Asteraceae;
23. *Platanthera flava* (L.) Lindl. var. *herbiola* (R. Br.) Ames & Correll, Orchidaceae;
24. *Platanthera leucophaea* (Nutt.) Lindl., Orchidaceae;
25. *Poa paludigena* Fern. & Wieg., Poaceae;
26. *Polygala cruciata* L., Polygalaceae;
27. *Polystichum braunii* (Spenner) Fee var. *purshii* Fern., Polypodiaceae;

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28. *Potamogeton lateralis* Morong, Potamogetonaceae;
29. *Ruellia humilis* Nutt., Acanthaceae;
30. *Sagina nodosa* (L.) fenzl ssp. *borealis* Crow, Caryophyllaceae;
31. *Saxifraga cernua* L. var. *latibracteata* Fern., Saxifragaceae;
32. *Scleria triglomerata* Michx., Cyperaceae;
33. *Sedum rosea* (L.) Scop. var. *leedyi* Rosend. & Moore, Crassulaceae;
34. *Subularia aquatica* L., Brassicaceae;
35. *Sparganium glomeratum* Laest., Sparganiaceae;
36. *Sullivantia renifolia* Rosend., Saxifragaceae;
37. *Talinum rugospermum* Holzinger, Portulaceaceae; and
38. *Tofieldia pusilla* (Mich.) Pers., Liliaceae.

B. Threatened. The following species are designated as threatened:

1. *Allium cernuum* Roth, Liliaceae;
2. *Ammophila breviligulata* Fern., Poaceae;
3. *Androsace septentrionalis* L. var. *pulverulenta* (Rydb.) Knuth, Primulaceae;
4. *Arabis holboellii* Hornem. var. *retrofracta* (Graham) Rydb., Brassicaceae;
5. *Arenaria macrophylla* Hook., Caryophyllaceae;
6. *Arnica chionopappa* Fern., Asteraceae;
7. *Asclepias hirtella* (Pennell) Woodson, Asclepiadaceae;
8. *Asclepias sullivantii* Englem., Asclepiadaceae;
9. *Asplenium trichomanes* L., Polypodiaceae;
10. *Cacalia tuberosa* Nutt., Asteraceae;
11. *Carex conjuncta* Boott, Cyperaceae;
12. *Carex davisii* Schwein. & Torr., Cyperaceae;
13. *Carex hallii* Olney, Cyperaceae;
14. *Carex praticola* Rydb., Cyperaceae;
15. *Carex sterilis* Willd, Cyperaceae;
16. *Desmodium illinoense* Gray, Fabaceae;
17. *Drosera anglica* Huds., Droseraceae;
18. *Drosera linearis* Goldie, Droseraceae;
19. *Dryopteris marginalis* (L.) Gray, Polypodiaceae;
20. *Eleocharis olivaceae* Torr., Cyperaceae;
21. *Eleocharis rostellata* Torr., Cyperaceae;
22. *Gerardia gattingeri* Sm., Scrophulariaceae;
23. *Jeffersonia diphylla* (L.) Pers., Berberidaceae;
24. *Lycopodium porophilum* Lloyd & Underwood, Lycopodiaceae;
25. *Lygodesmia rostrata* Gray, Asteraceae;
26. *Mamillaria vivipara* (Nutt.) Haw., Cactaceae;
27. *Melica nitens* Nutt., Poaceae;
28. *Nymphaea tetragona* Georgi, Nymphaeceae;
29. *Pellaea atropurpurea* (L.) Link, Polypodiaceae;
30. *Plantago elongata* Pursh, Plantaginaceae;

31. *Rhynchospora capillacea* Torr., Cyperaceae;
32. *Rubus chamaemorus* L., Rosaceae;
33. *Salicornia rubra* Nelson, Chenopodiaceae;
34. *Saxifraga aizoon* Jacq. var. *neogaea* Butters, Saxifragaceae;
35. *Scleria verticillata* Muhl., Cyperaceae;
36. *Vaccinium uliginosum* L. var. *alpinum* Bigel, Ericaceae;
37. *Valeriana edulis* Nutt. ssp. *ciliata* (T. & G.) Meyer, Valerianaceae;
38. *Woodsia glabella* R. Br., Polypodiaceae;
39. *Woodsia scopulina* D.C. Eat., Polypodiacea; and
40. *Xyris torta* Sm., Xyridaceae.

C. Special concern. The following species are designated as of special concern:

1. *Adoxa moschatellina* L., Adoxaceae;
2. *Agrostis geminata* Trin., Poaceae;
3. *Allium schoenoprasum* L. var. *sibiricum* (L.) Hartm., Liliaceae;
4. *Antennaria aprica* Greene, Asteraceae;
5. *Arenaria dawsonensis* Britt., Caryophyllaceae;
6. *Arethusa bulbosa* L., Orchidaceae;
7. *Aristida longiseta* Steud., Poaceae;
8. *Aristida tuberculosa* Nutt., Poaceae;
9. *Asclepias amplexicaulis* Sm., Asclepiadaceae;
10. *Astragalus flexuosus* Dougl., Fabaceae;
11. *Astragalus missouriensis* Nutt., Fabaceae;
12. *Astragalus neglectus* (T. & G.) Sheld., Fabaceae;
13. *Athyrium pycnocarpon* (Spreng.) Tides, Polypodiaceaea;
14. *Bacopa rotundifolia* (Michx.) Wettst., Scrophulariaceae;
15. *Baptisia leucophaea* Nutt., Fabaceae;
16. *Botrychium lunaria* (L.) Sw., Ophioglossaceae;
17. *Botrychium mormo* Wagner, Ophioglossaceae;
18. *Buchloe dactyloides* (Nutt.) Engelm., Poaceae;
19. *Carex annectens* Bickn., Cyperaceae;
20. *Carex exilis* Dew., Cyperaceae;
21. *Carex laxiculmis* Schwein., Cyperaceae;
22. *Carex obtusata* Lilj., Cyperaceae;
23. *Carex scirpiformis* Mack., Cyperaceae;
24. *Carex woodii* Dew., Cyperaceae;
25. *Cephalanthus occidentalis* L., Rubiaceae;
26. *Chamaerhodos nuttallii* Pick., Rosaceae;

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27. *Cirsium hillii* (Canby) Fern., Asteraceae;
28. *Cladium mariscoides* (Muhl.) Torr., Cyperaceae;
29. *Claytonia caroliniana* Michx., Portulacaceae;
30. *Cyperus acuminatus* Torr. & Hook., Cyperaceae;
31. *Cypripedium candidum* Muhl., Orchidaceae;
32. *Decodon verticillatus* (L.) Ell., Lythraceae;
33. *Deschampsia flexuosa* (L.) Trin., Poaceae;
34. *Desmanthus illinoense* (Michx.) MacM, Fabaceae;
35. *Dicentra canadensis* (Goldie) Walp., Fumariaceae;
36. *Dodecatheon meadia* L., Primulaceae;
37. *Draba arabisans* Michx., Brassicaceae;
38. *Dryopteris goldiana* (Hook.) Gray, Polypodiaceae;
39. *Echinochloa walteri* (Pursh.) Nash, Poaceae;
40. *Eleocharis pauciflora* (Lightf.) Link var. fernaldii Svenson, Cyperaceae;
41. *Eryngium yuccifolium* Michx., Apiaceae;
42. *Euphrasia hudsoniana* Fern. & Wieg., Scrophulariaceae;
43. *Floerkea proserpinacoides* Willd., Limnanthaceae;
44. *Gentiana affinis* Griseb., Gentianaceae;
45. *Gentianella amarella* (L.) Borner ssp. *acuta* (Michx.) Gillett, Gentianaceae;
46. *Geocaulon lividum* (Richards.) Fern., Santalaceae;
47. *Glaux maritima* L., Primulaceae;
48. *Hamamelis virginiana* L., Hamamelidaceae;
49. *Haplopappus spinulosus* (Pursh) DC., Asteraceae;
50. *Helianthus nuttallii* T. & G. ssp. *rydbergii* (Br.) Long, Asteraceae;
51. *Hydrocotyle americana* L., Apiaceae;
52. *Juncus stygius* L. var. *americanus* Buchenau, Juncaceae;
53. *Leersia lenticularis* Michx., Poaceae;
54. *Limosella aquatica* L., Scrophulariaceae;
55. *Myosurus minimus* L., Ranunculaceae;
56. *Oenothera rhombipetala* Nutt., Onagraceae;
57. *Opuntia humifusa* Raf., Cactaceae;
58. *Orobanche fasciculata* Nutt., Orobanchaceae;
59. *Orobanche ludoviciana* Nutt., Orobanchaceae;
60. *Orobanche uniflora* L., Orobanchaceae;
61. *Panax quinquefolium* L., Apiaceae;
62. *Paronychia fastigiata* Fern., Caryophyllaceae;
63. *Pinguicula vuglaris* L., Lentibulariaceae;
64. *Platanthera clavellata* (Michx.) Luer, Orchidaceae;
65. *Poa wolfii* Scribn., Poaceae;
66. *Polygonum arifolium* L., Polygonaceae;
67. *Polygonum viviparum* L., Polygonaceae;
68. *Polystichum acrostichoides* (Michx.) Schott., Polypodiaceae;

69. *Potamogeton vaseyi* Robbins, Potamogetonaceae;
70. *Ranunculus lapponicus* L., Ranunculaceae;
71. *Rhynchospora fusca* (L.) Ait. f., Cyperaceae;
72. *Rudbeckia triloba* L., Asteraceae;
73. *Sanicula canadensis* L., Apiaceae;
74. *Sanicula trifoliata* Bickn., Apiaceae;
75. *Schedonnardus paniculatus* (Nutt.) Trel., Poaceae;
76. *Scutellaria ovata* Hill var. *versicolor* (Nutt.) Fern., Lamiaceae;
77. *Solidago mollis* Bartl., Asteraceae;
78. *Solidago sciaphila* Steele, Asteraceae;
79. *Spartina gracilis* Trin., Poaceae;
80. *Stellaria longipes* Goldie, Caryophyllaceae;
81. *Symphoricarpos orbiculatus* Moench, Caprifoliaceae;
82. *Tephrosia virginiana* (L.) Pers., Fabaceae;
83. *Thelypteris hexagonoptera* (Michx.) Weatherby, Fabaceae;
84. *Tofieldia glutinosa* (Michx.) Pers., Liliaceae;
85. *Tradescantia ohiensis* Raf., Commelinaceae;
86. *Triglochin palustris* L., Juncaginaceae;
87. *Trillium nivale* Riddell, Liliaceae;
88. *Triplasis purpurea* (Walt.) Champm., Poaceae;
89. *Tsuga canadensis* (L.) Carr., Pinaceae;
90. *Utricularia gibba* L., Lentibulariaceae;
91. *Verbena simplex* Lehm., Verbenaceae;
92. *Viola lanceolata* L., Violaceae;
93. *Viola novae-angliae* House, Violaceae;
94. *Viola nuttallii* Pursh, Violaceae;
95. *Waldesteinia fragarioides* (Michx.) Tratt., Rosaceae; and
96. *Xyris montana* Ries., Xyridaceae.

6 MCAR § 1.5603 Lichens; mosses.

A. Lichens. The scientific names in A. are according to A Fourth Checklist of the Lichens of the Continental United States and Canada, M.E. Hale and W.L. Culberson, 1970. The following species of lichens are designated as:

1. Endangered:
   a. *Buellia nigra* (Fink) Sheard/[Rinodina nigra Fink];
   b. *Dermatocarpon moulinsii* (Mont.) Zahlbr.;
   c. *Leptogium apalachense* (Tuck.) Nyl.;
   d. *Lobaria scrobiculata* (Scop.) DC;
   e. *Parmelia stictica* (Del.) Nyl.;
   f. *Pseudocyphellaria crocata* (L.) Vain.

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

2. Threatened: *Lobaria quercizans* Michx.
3. Of special concern:
   a. *Cetraria aurescens* Tuck.;
   b. *Cetraria oakesiana* Tuck.;
   c. *Cladonia pseudorangiformis* Asah.;
   d. *Coccocarpia cronia* (Tuck.) Vain.;
   e. *Parmelia stuppea* Tayl.;
   f. *Sticta fuliginosa* (Dicks.) Ach.;
   g. *Umbilicaria torrefacta* (Lightf.) Schrad.

B. Mosses. The scientific names in B. are according to A New List of Mosses of North America North of Mexico, H.A. Crum, et al., 1973. The following species of mosses are designated as:

1. Endangered: *Schistostegia pennata* (Hedw.) Web. & Mohr.
2. Threatened: none.
3. Of special concern:
   a. *Bryoxiphium norvegicum* (Brid.) Mitt.;
   b. *Tomenthypnum falcifolium* (Ren ex. nich.) Tuom.

Waste Management Board

Proposed Adoption of Amendments to Rules Governing the Solid Waste Processing Facilities Demonstration Program

Notice of Intent to Adopt Rules without a Public Hearing

Notice is hereby given that the State Waste Management Board proposes to adopt the above-entitled rules without a public hearing. The Waste Management Board has determined that the proposed adoption of these rules will be noncontroversial in nature and has elected to follow the procedures set forth in Minnesota Statutes sections 14.21 to 14.28 (1982).

Persons interested in these rules shall have 30 days to submit comments on the proposed rules. The proposed rules may be modified if the modifications are supported by the data and views submitted to the agency and do not result in a substantial change in the proposed language.

Unless seven or more persons submit written requests for a public hearing on the proposed rules within the 30-day comment period, a public hearing will not be held. In the event a public hearing is required, the agency will proceed according to the provisions of Minnesota Statutes sections 14.13 to 14.20 (1982).

Persons who wish to submit comments or a written request for a public hearing should submit such comments or request to:

Waste Management Board
Attn: Ed Welsch
123 Thorson Building
7323-58th Avenue North
Crystal, Minnesota 55428
(612) 536-0816

Authority for the adoption of these rules is contained in Minnesota Statutes section 115A.49. Additionally, a statement of need and reasonableness that describes the need for and reasonableness of each provision of the proposed rules and identifies the data and information relied upon to support the proposed rules has been prepared and is available from the Waste Management Board, Attn: Ed Welsch, 123 Thorson Building, 7323-58th Avenue North, Crystal, Minnesota, upon request.

Upon adoption of the final rules without a public hearing, the proposed rules, this notice, the statement of need and reasonableness, all written comments received, and the final rules as adopted will be delivered to the Attorney General for review as to form and legality, including the issue of substantial change.

Persons who wish to be advised of the submission of this material to the Attorney General, or who wish to receive a copy of

November 22, 1983

Barbara Coffin
Division of Fish and Wildlife
Dept. of Natural Resources
Box 6, Centennial Office Bldg.
St. Paul, MN 55155

Dear Ms. Coffin:

I request that my following comments be added to the public record and be re-evaluated when the present endangered and threatened species list is revised.

I am a graduate of the natural resources program at the Brainerd Area Vocational Technical Institute where I received an academic background in fisheries and currently a senior majoring in biology at Bemidji State University. I am also a member of the North American Native Fishes Association, the Desert Fishes Council, and the Southeastern Fishes Council.

I have been collecting several species of nongame fish for about the last ten years. I use these specimens as subjects for my slide collection of fishes primarily native to Minnesota. I have collected what I consider an impressive list of species from this state and have been looking for many of these special concern species long before they were proposed for the present designation. With the exception of two species all my attempts have been unsuccessful and I have realized how rare these fishes really are.

I have studied the proposed fish list and individual species status sheets prepared by the Fish Committee. I have also acquired the finished lists of our four bordering states and examined their justifications to designate species to varying degrees of protection. I find the Minnesota list presently proposed too conservative, feel it does not provide adequate protection for many species designated and has omitted others that should at least receive the special concern status. I believe the peripheral range criteria used in determining the special concern status will prevent many species from receiving the appropriate designation of endangered or threatened and cause their extirpation from Minnesota. I also must question the Fish Committee's decision to exclude from consideration all fishes native to Lake Superior, yet they acknowledged that several species of the genus Coregonus (whitefish) may be extirpated, endangered or threatened. I feel this action makes this list incomplete and implies a lack of committment to maintaining the present number of species to Minnesota.

I recommend the following changes and additions be made to the presently proposed list:

Threatened

Slender Madtom (Noturus exilis)
Crystal Darter (Ammocrypta asprella)
Plains Topminnow (Fundulus sciadicus)

Special Concern

Pirate Perch (Aphrododerus sayanus)
Redside Dace (Clinostomus elongatus)
Czark Minnow (Dionda nubila)
Pugnose Shiner (Notropis anogenus)
Red Shiner (Notropis lutrensis)
Gilt Darter (Percina evides)

I consider the slender madtom, crystal darter and plains topminnow examples of species vulnerable to the peripheral range criteria that I mentioned earlier. DNR records show the slender madtom has not been collected in this state for thirty years, the crystal darter has only been found in a very small section of the Zumbro river, the plains topminnow has been found only in the Rock river and one tributary stream. I have been unable to collect any of these species from previously recorded sites and found it very difficult to locate habitats that appeared even marginally suitable for the slender madtom and plains topminnow due to siltation by local landuses. The slender madtom and crystal darter are endangered in Wisconsin. The plains topminnow is threatened in South Dakota. I feel all three should be re-evaluated for a higher protective status in Minnesota.

The pirate perch reaches the northern limits of its range in southeastern Minnesota where it has been found in the backwaters and sloughs of the Mississippi River. This habitat is vulnerable to siltation and the dumping of dredge spoils. It is considered uncommon to rare in Wisconsin where it has been placed on the state's watch list. Its status in Iowa is undetermined, but the habitat of the species suffers greatly from channelization.

The redside dace is listed as probably extirpated in Iowa and on the watch list in Wisconsin. In Minnesota it is restricted to small tributary and headwater streams of the Cannon, Root, and Zumbro rivers. This species is noted for being very sensitive to habitat degredation such as insecticides from agricultural runoff that has caused serious fish kills in the past.

The czark minnow is threatened in Wisconsin where its habitats are vulnerable to turbidity and siltation caused by heavy agricultural use. In Minnesota it is restricted to the headwaters of the Cedar and Zumbro rivers. I have found the same habitat degradation in Minnesota where I have only collected two specimens from a marginal site on Otter creek in Mower County.

The pugnose shiner is threatened in Iowa. Fishes of the Minnesota Region, (Phillips, Schmid and Underhill), remarked that it is one of our rarest shiners and rarely more than two or three specimens are collected, even with intensive sampling.

The red shiner is only found in the Missouri river drainage of extreme southwestern Minnesota. This very limited distribution should qualify it for the special concern status. I have collected it from the Rock river, in Rock and Pipestone counties, but found their habitats occuring very infrequently or severely degraded by siltation from local land uses primarily grazing by livestock.

The gilt darter is listed as probably extirpated in Iowa and threatened in Wisconsin. I have collected from previously recorded sites on the Upper St. Croix, but have only found them in the Sunrise river where their immediate habitat appears protected by the St. Croix Wild River State Park.

I would like to make one final recommendation. I feel there is a long overdue need to initiate some type of nongame fish program. Current and constantly updated information on the distribution and status of all species is mandatory if they are to be designated to the appropriate status classification and managed correctly. I am aware that work of this kind is being conducted for plants and animals by the Minnesota Natural Heritage Program. Perhaps this system could be adapted or modified to begin a similar data base for nongame fish.

I intend to continue my collection efforts as time permits and will notify fisheries personnel of any designated species I may find, I will also submit a copy of my collection records on a regular basis upon request.

Sincerely,

Konrad Schmidt

Konrad Schmidt
1508 Fairmount Ave.
St. Paul, MN 55105

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

In the Matter of the Proposed Adoption of Rules of the Department of Natural Resources Designating Species of Wild Animals and Plants as Endangered, Threatened or of Special Concern.

STATEMENT OF COMPLIANCE WITH RULEMAKING PROCEDURES

I have examined the above-entitled proposed rules and all related documents. I am familiar with the rulemaking procedures set forth in the Administrative Procedure Act and related rules. The Department of Natural Resources has fully complied with all laws and rules pertaining to rulemaking.

Dated: January 11, 1984.

SBMasten

STEPHEN B. MASTEN
Special Assistant Attorney General
Department of Natural Resources