

Report under The Conservation of Habitats and
Species Regulations 2017 (as amended),
Regulation 9A

2019-2024

Conservation status assessment for the species:

S1095 - Sea lamprey
(*Petromyzon marinus*)

England



For further information please contact:

Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York, YO1 7PX.
<https://www.gov.uk/government/organisations/natural-england>

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY.
<https://jncc.gov.uk>

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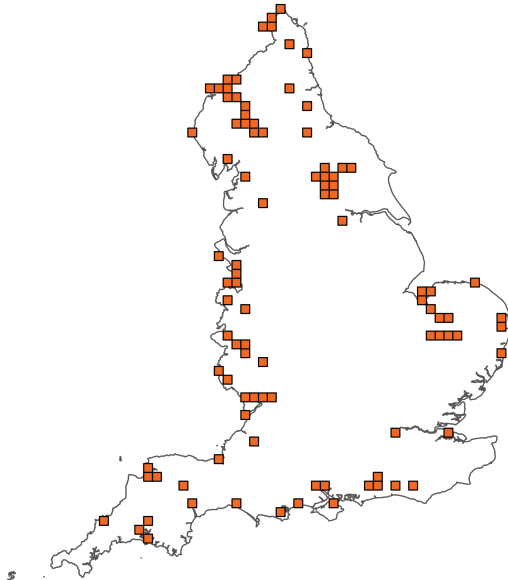
Important note - Please read

- The information in this document represents the England Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural England, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the [JNCC website](#).

Assessment Summary: Sea lamprey

Distribution Map



Range Map

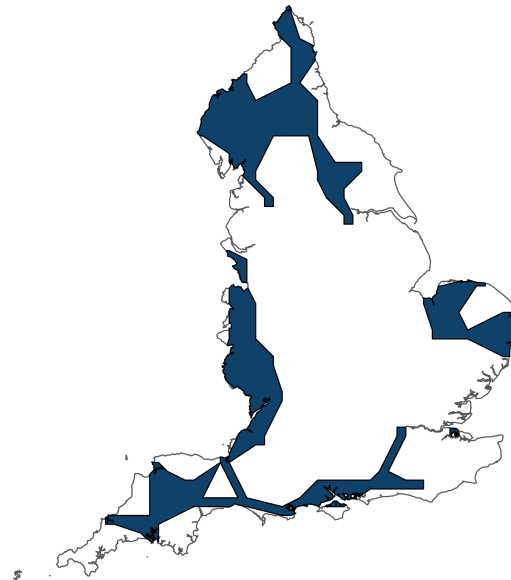


Figure 1: England distribution and range map for S1095 - Sea lamprey (*Petromyzon marinus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1095 - Sea lamprey (*Petromyzon marinus*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Favourable (FV)

Breakdown of Overall Conservation Status

Range (see section 5)	Favourable (FV)
Population (see section 6)	Favourable (FV)
Habitat for the species (see section 7)	Favourable (FV)
Future prospects (see section 10)	Favourable (FV)

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National Level

1. General information

1.1 Country	England
1.2 Species code	S1095
1.3 Species scientific name	<i>Petromyzon marinus</i>
1.4 Alternative species scientific name	
1.5 Common name	Sea lamprey
Annex(es)	II

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2000-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

2.5 Additional information

No additional information

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

3.3: Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²) 32,966.62

5.2 Short-term trend; Period 2013-2024

5.3 Short-term trend; Direction Stable

5.4 Short-term trend;
Magnitude

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range

d) Unknown

e) Type of estimate

f) Rate of decrease

5.5 Short-term trend; Method used Based mainly on extrapolation from a limited amount of data

5.6 Long-term trend; Period 2000-2024

5.7 Long-term trend; Direction Stable

5.8 Long-term trend;
Magnitude

a) Minimum

b) Maximum

c) Rate of decrease

5.9 Long-term trend; Method used	Based mainly on expert opinion with very limited data
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5.10 Favourable Reference Range (FRR)

a) Area (km²)

b) Pre-defined increment	Current range is less than 2% smaller than the FRR
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c) Unknown	No
-------------------	----

d) Method used	Expert opinion
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e) Quality of information	moderate
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5.11 Change and reason for change in surface area of range

a) Change	No
------------------	----

b) Genuine change	
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c) Improved knowledge or more accurate data	
--	--

d) Different method	
----------------------------	--

e) No information	
--------------------------	--

f) Other reason	
------------------------	--

g) Main reason	
-----------------------	--

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2000-2024
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6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells
----------------	---------------------------------

b) Minimum	
-------------------	--

c) Maximum	
-------------------	--

d) Best single value	155
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	low
6.5 Additional population size (using population unit other than reporting unit)	
a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	
6.6 Population size; Method used	Based mainly on expert opinion with very limited data
6.7 Short-term trend; Period	2013-2024
6.8 Short-term trend; Direction	Stable
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
6.10 Short-term trend; Method used	Based mainly on expert opinion with very limited data
6.11 Long-term trend; Period	2000-2024
6.12 Long-term trend; Direction	Stable
6.13 Long-term trend; Magnitude	

a) Minimum

b) Maximum

c) Confidence interval

d) Rate of decrease

6.14 Long-term trend; Method used

6.15 Favourable Reference Population (FRP)

ai) Population size

aii) Unit

b) Pre-defined increment Current population is less than 5% smaller than the FRP

c) Unknown No

d) Method used Expert opinion

e) Quality of information low

6.16 Change and reason for change in population size

a) Change No

b) Genuine change

c) Improved knowledge or more accurate data

d) Different method

e) No information

f) Other reason

g) Main reason

6.17 Additional information

No additional information

6.18 Age structure, mortality and reproduction deviation Unknown

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient? Yes

b) Is quality of occupied habitat sufficient? Yes

c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used Based mainly on expert opinion with very limited data

b) Sufficiency of quality of occupied habitat; Method used Based mainly on extrapolation from a limited amount of data

7.3 Short-term trend; Period 2013-2024

7.4 Short-term trend; Direction Stable

7.5 Short-term trend; Method used Based mainly on expert opinion with very limited data

7.6 Long-term trend; Period 2000-2024

7.7 Long-term trend; Direction Stable

7.8 Long-term trend; Method used

7.9 Additional information

Sea lamprey populations are reduced across England when compared with their natural/unimpacted reference condition. This decline is generally attributed to historical reductions in habitat quality due to poor water quality which are still on-going, and the historical introduction of physical barriers which stop sea lamprey reaching some areas of habitat which would previously have been available for spawning. However, there is still likely to be sufficient habitat, of a suitable quality, for the species to persist in the

long term. In addition there is increasing acceptance of the need for, and delivery of, multi-species fish passage solutions. This will benefit the dispersal of sea lamprey and allow the recolonisation of areas within its natural range.

Sea lamprey have complex habitat requirements as their eggs are laid in well oxygenated gravels, the ammocoetes require soft sediments and upstream migratory passage, with relatively low flow velocities and turbulence, must be maintained for adults. These factors, combined with the widespread distribution of sea lamprey within England, make a detailed assessment of habitat quality trends impossible at the present time. However, Progress has been made with reducing nutrient and organic pollution levels in many rivers across England within the short-term trend period, which may have a beneficial effect on the quality of spawning and ammocoete substrates. However, issues of siltation of spawning gravels, physical barriers to upstream migration and physical habitat degradation are still significant stressors for sea lamprey populations within England. In addition, the increased focus on run of river hydropower schemes may result in man-made barriers to upstream lamprey migration being perpetuated for the foreseeable future, however, there is an increasing awareness of the need to implement multi-species fish passage solutions suitable for lamprey.

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing and likely to be in the future	High (H)
PI01: Invasive alien species of Union concern	Ongoing and likely to be in the future	High (H)
PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	Medium (M)
PA17: Agricultural activities generating pollution to surface or ground waters (including marine)	Ongoing and likely to be in the future	High (H)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)

PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	High (H)
PL03: Old barriers or other obsolete infrastructures (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PJ03: Changes in precipitation regimes due to climate change	Ongoing and likely to be in the future	High (H)
PL06: Physical alteration of water bodies (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PD02: Hydropower (dams, weirs, run-off-the-river and respective infrastructure)	Ongoing and likely to be in the future	Medium (M)

8.2 Sources of information

See section 14 References

8.3 Additional information

No additional information

9. Conservation measures

9.1: Status of measures

a) Are measures needed?

Yes

b) Indicate the status of measures

Measures identified and taken

9.2 Main purpose of the measures taken

Restore the habitat of the species (related to 'Habitat for the species')

9.3 Location of the measures taken

Both inside and outside National Site Network

9.4 Response to measures

Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MK01: Reduce impact of mixed source pollution	High (H)
MA10: Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities	High (H)
MF02: Habitat restoration of areas impacted by residential, commercial, industrial and recreational infrastructure, operations and activities	High (H)
MK03: Restoration of habitats impacted by multi-purpose hydrological changes	High (H)
MF09: Adapt the management of water abstraction for public supply and for industrial and commercial use to reduce negative impacts on habitats and species (incl. restoration of habitats)	Medium (M)
MJ01: Implement climate change mitigation measures	High (H)

9.6 Additional information

Work has continued to reduce point and diffuse discharges to both the national site network and wider river network. Major infrastructure projects to improve sewerage, such as removal or upgrade of combined sewer overflows and improved phosphorus removal from treated sewage effluent, has been funded via the water industry's programme of strategic improvements such as AMP and PR rounds. However, further investigations are needed into the application of new best available technology for phosphorus removal and the increased availability of mains sewerage for rural populations. The England Catchment Sensitive Farming Initiative is continuing to promote a range of best agricultural practices to reduce pollution loads to priority aquatic sites. A combination of Habitats Site, SSSI and Water Framework objectives continues to drive improvements in water quality with diffuse water pollution prevention plans developed for many sites. New Countryside Stewardship payments are being developed to incentivise good agricultural practices.

A major programme of physical restoration has been implemented on the designated river network, involving the development of a long-term strategic plan for each river and its programmed implementation. These plans address key issues such as dams and weirs, floodplain reconnection, channel modifications, lack of riparian habitat, lack of riparian trees and lack of woody debris in the channel. Outside of the designated site network, river restoration schemes have focused on addressing channel modifications and the many weirs and dams on the river network in England. A further driver for river restoration has been the increased prominence of natural flood management. If properly implemented, NFM has the potential to enable widespread improvements in many previously degraded riverine habitats.

The rationale behind restoring river habitat in England is the restoration of natural riverine processes, which creates characteristic habitats and provides for individual species to an extent dependent on the natural character of the river. This rationale is also the main adaptation response for combatting climate change. Some aspects of restoring natural function are also seen as climate change mitigation measures, such as the re-establishment of natural tree cover and riparian vegetation which is being implemented as part of many river restoration schemes and agri-environment schemes. These interventions may result in moderated extremes of flow, reductions in water temperature and increased water quality.

Improvements have been achieved with limiting abstraction volumes and improving flow regimes by altering compensation flows from water company assets via AMP and PR rounds. However, further improvements are required to naturalise flows at many sites. As part of the on-going abstraction reform process, abstraction licences will become environmental permits and a greater emphasis will be given to environmental considerations. Since 2022 many previously exempt abstractions require a permit.

Detailed assessments are being made of potential risks to sea lamprey due to abstractions from existing and new water supply infrastructure. Where problems are highlighted mitigation measures such as improved screening or modified operating procedures are being implemented.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable
bi) Population	Positive - increasing $\leq 1\%$ (one percent or less) per year on average
ci) Habitat for the species	Positive - slight/moderate improvement

10.1b Future prospects of parameters

aii) Range	Good
bii) Population	Good
cii) Habitat for the species	Good

10.2 Additional information

As improvements continue to be made regarding water quality and re-establishment of natural riverine processes in England and plans are developed and implemented to improve fish passage for sea lamprey in rivers throughout England, the area of freshwater habitat suitable for lamprey spawning and ammocoete development may be expected to increase. Set in opposition to this generally positive outlook are the unknowns of climate change effects which may lead to more extreme flow variations, the potential for continued diffuse agricultural pollution resulting in inputs of nutrients and fine sediment and the possibility of increases in energy production infrastructure associated with run of river hydropower, tidal barrages, lagoons and nuclear power. It is perhaps this final threat that, if implemented, may present the most serious long-term threat to the continuation of sea lamprey populations in English coastal, estuarine and freshwater habitats.

11. Conclusions

11.1 Range	Favourable (FV)
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11.2 Population	Favourable (FV)
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11.3 Habitat for the species	Favourable (FV)
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11.4 Future prospects	Favourable (FV)
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11.5 Overall assessment of Conservation Status	Favourable (FV)
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11.6 Overall trend in Conservation Status	Stable
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11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

No additional information

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit number of map 1x1 km grid cells

b) Minimum

c) Maximum

d) Best single value 67

12.2 Type of estimate Best estimate

12.3 Population size inside the network; Method used Based mainly on expert opinion with very limited data

12.4 Short-term trend of population size within the network; Direction Stable

12.5 Short-term trend of population size within the network; Method used Based mainly on expert opinion with very limited data

12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction Stable

12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used Based mainly on expert opinion with very limited data

12.8 Additional information

No additional information

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

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Wildlife and Countryside Act 1981 (as amended)

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.4: Distribution map; Method used	Data contained within the National Biodiversity Network Database has been used to produce distribution maps for sea lamprey. These data have been collated from both routine and ad-hoc fish surveys. Both adults and transformers are captured during routine electric fishing surveys (although the techniques may be refined for lamprey specific surveys) and benthic samples, therefore, recording effort across England is relatively high. However, they may be under recorded in some habitats due to operational difficulties deploying survey gear in these areas. In addition, sea lamprey distribution is likely to be under-represented in England as lamprey ammocoetes are unlikely to be speciated due to difficulties with identification. Only <i>P. marinus</i> records have been used in the distribution map provided as they are assumed to be associated with correctly identified adult individuals.
5.3: Short-term trend; Direction	Although the distribution of sea lamprey is still below historical / pristine condition, the distribution of sea lamprey has been slowly increasing. This is largely due to improvements in water quality, which have improved lamprey habitat and allowed populations to recover and expand its distribution within its natural range.
5.7: Long-term trend; Direction	Although the distribution of sea lamprey is still below historical/ pristine condition, the distribution of river lamprey has been slowly increasing. This is largely due to improvements in water quality, which have improved lamprey habitat and allowed populations to recover and expand its distribution within its natural range. Records for sea lamprey are sporadic throughout the trend period, however, survey effort is not consistent across the species range. It is therefore impossible to accurately assess a trend direction. The species is being recorded across what is considered to be its natural range and there has been no significant increase in pressures, which

suggests that the population is at least stable. The likelihood of an improving trend seems low because many of the artificial physical barriers to upstream migration that have blocked passage to historical upstream spawning grounds are still in place. Where fish passes have been added, they are generally unsuitable for sea lamprey. However, the water quality of a number of English rivers has improved in recent years, and this may have removed chemical barriers for migrating adults and improved ammocoete survival.

6.8: Short-term trend;
Direction

Records for sea lamprey are sporadic throughout the trend period, however, survey effort is not consistent across the species range. It is therefore impossible to accurately assess a trend direction. The species is being recorded across what is considered to be its natural range and there has been no significant increase in pressures, which suggests that the population is at least stable. The likelihood of an improving trend seems low because many of the artificial physical barriers to upstream migration that have blocked passage to historical upstream spawning grounds are still in place. Where fish passes have been added, they are generally unsuitable for sea lamprey. However, the water quality of a number of English rivers has improved in recent years, and this may have removed chemical barriers for migrating adults and improved ammocoete survival

6.18: Age structure,
mortality and
reproduction

The lack of a coordinated monitoring programme which encompasses all lifestages of sea lamprey makes it impossible to accurately assess whether the population is recruiting efficiently. Due to a lack of fidelity to their natal river and the potential for covering large distances during the marine phase of their lifecycle, the mere presence of adult sea lamprey within a catchment cannot simply be assumed to equate to successful spawning and concerns over the long-term viability of sea lamprey populations have been raised due to their low abundance and irregularity of successful spawning. However, The continued presence of adult sea lamprey within river catchments would indicate

that the population has remained viable over time and is likely to be recruiting. In addition, spawning has been documented and redds observed, therefore, it may be broadly assumed that sea lamprey are recruiting in a number of English rivers such as the Ouse system and the River Eden.

10.1: Future trends and prospects of parameters

Assumes relatively widespread species, with a large natural range within England. However, the species may expect to become increasingly distributed and abundant within this range, assuming no further increases in barriers to upstream migration associated with hydropower development and unsuitable fish passage solutions.

The species may expect to become increasingly distributed and abundant within its natural range, assuming no further increases in barriers to upstream migration associated with hydropower development and unsuitable fish passage solutions.

12.8: Additional information

The situation within the SAC network broadly reflects the general situation within higher quality areas of the river resource outside of the network. As improvements continue to be made regarding water quality and re-establishment of natural riverine processes in England and plans are developed and implemented to improve fish passage for sea lamprey in rivers throughout England, the area of freshwater habitat suitable for lamprey spawning and ammocoete development may be expected to increase. The rate of improvement may be expected to be greater within the SAC network than outside of it. Set in opposition to this generally positive outlook are the unknowns of climate change effects which may lead to more extreme flow variations and the potential for continued diffuse agricultural pollution resulting in inputs of nutrients and fine sediment. However, it is less likely that future barriers to sea lamprey movement would be permitted within the SAC site series.