



MINNESOTA'S UNTOLD TAIL

Rattlesnakes *in the North Star State*

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Did you know that timber rattlesnakes live in Minnesota? If this surprises you or causes a moment of trepidation, you are not alone. Public perception and concern play an outsized role in human interactions with snakes. As timid creatures, rattlesnakes avoid people in most instances, and certainly they do not seek to harm with innate malevolence. These reptiles provide an important function in Minnesota's southeastern deciduous woodlands by helping manage populations of "small mammals such as mice, shrews, moles, voles, chipmunks, squirrels and small rabbits. In addition, they occasionally eat small birds, insects, and amphibians," according to the Minnesota Department of Natural Resources (DNR). Given the role of snakes in regulating other, sometimes unwanted populations, why have Minnesotans hunted and killed tens of thousands of these reclusive creatures? Snake maltreatment in the North Star State has occurred in much the same way as in other states since colonial contact.¹

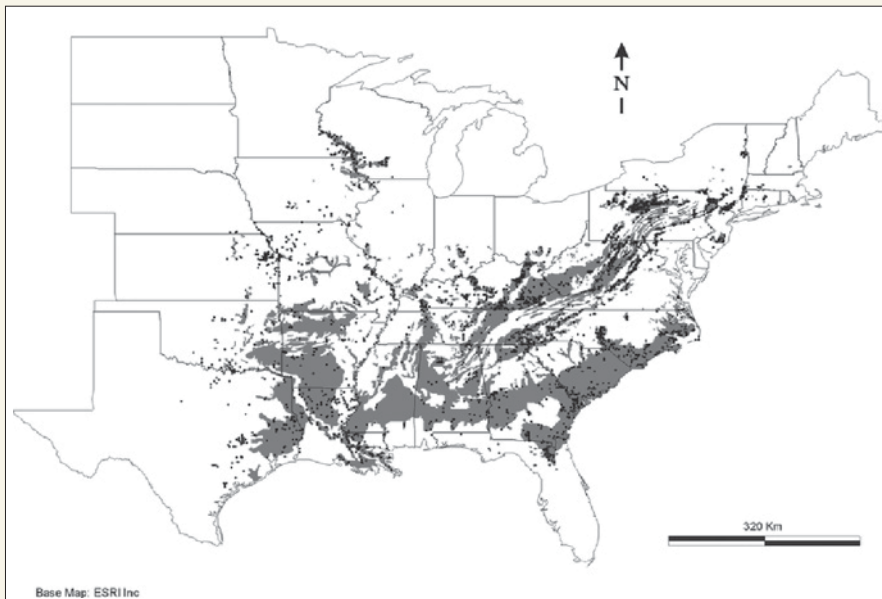
As Europeans and European Americans immigrated to Minnesota during the later 19th and early 20th centuries, they drastically altered the landscape, clearing forests, draining wetlands, converting prairies into farmland, and damming rivers. These actions decimated populations of large predators, as well as some rodents, reptiles, and birds. Some species suffered outright extinction. Rattlesnakes, in particular, were targeted for decimation.

This destruction of the flora and fauna was in sharp contrast to the lifeways and spiritual practices of the Dakota and Ho-Chunk peoples, who had lived in the area for many generations. Evidence of their very different relationship with the land and its ecosystems can be seen in the burial and effigy mounds built by their ancestors in Minnesota—including, for example, the rattlesnake effigies near Afton in Washington County and others a few miles west of Red Wing

in Goodhue County. These effigies demonstrate that, for more than a thousand years—from the Mississippian Culture, through the Woodland Culture, and up until today—the Indigenous peoples of bluff country have honored rattlesnakes as sacred beings.²

Historically, the unique geology of southeastern Minnesota enabled timber rattlesnakes to flourish. This section of North America, particularly known as bluff country or the Driftless Area, was spared from the last glacier during the Wisconsin Glacial Episode. The Minnesota DNR describes the area as "a rugged region of bluffs and valleys that is quite different from the rest of the state." A geography characterized by "dry prairies . . . at the tops of southwest-facing bluffs, with oak woodland developing downslope" provides ideal habitat for timber rattlesnakes to bask, reproduce, hunt, and hibernate.³ Although transformed by both logging and fire

ABOVE: Timber rattlesnake on rock in Houston County. The forked tongue allows the snake to smell and detect the general location of prey.



Current range of the timber rattlesnake (*Crotalus horridus*)



Driftless Area

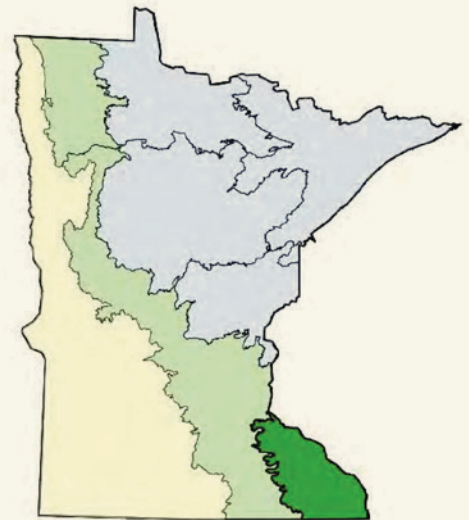
suppression over the last 165 years, the region still offers rattlesnake-friendly goat prairies.

This region of Minnesota marks the northwestern boundary of the timber rattlesnakes' range. Nationally, territory for this rattlesnake species is extensive, reaching from New England to northern Florida and from there westward into eastern Texas. Perhaps contradictorily, this vast range does not equate to robust numbers in all locations. Over the past century, the active and passive choices of humans caused a sharp decline in the distribution and population of timber rattlesnakes, particularly in New England and the Midwest. For example, the species no longer exists in Maine, Rhode Island, and the Canadian province of Ontario. A similar, though less catastrophic, decline occurred in Minnesota throughout the late 19th and 20th centuries.⁴

Today, timber rattlesnakes inhabit approximately six of Minnesota's 87 counties. Most are in Fillmore, Goodhue, and Houston; some inhabit Olmsted, Wabasha, and Winona Counties. Nearly every article in

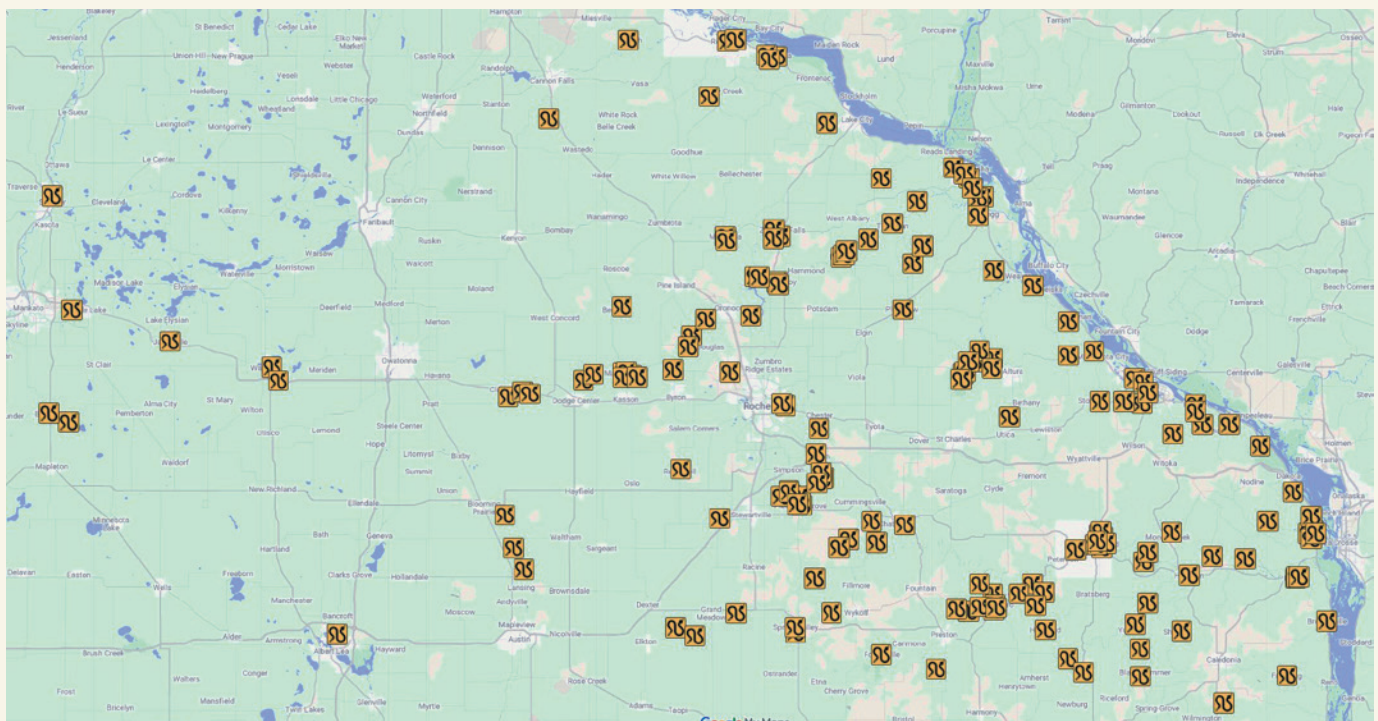
either print or electronic media regarding Minnesota's venomous reptiles notes two distinct species: timber rattlesnakes (*Crotalus horridus*) and the eastern massasauga (*Sistrurus catenatus*). Because the massasauga has not been observed in Minnesota for decades and is likely extirpated (meaning gone from a particular area rather than no longer in existence), this article focuses primarily on the long-lived timber rattlesnake, with occasional reference to the massasauga. Applying these modern zoological classifications to historical records remains problematic because of limited evidence. Nevertheless, a discussion of both species serves as a cautionary example of how human activity can both destroy and obscure our understanding of the past. Whether studying just the surviving timber or both types of rattlesnake, species decimation and habitat destruction pose significant challenges to understanding the history of these snake populations in southeastern Minnesota.⁵

A historical study of Minnesota's venomous snakes reveals three distinct phases. Collectively, these



Paleozoic Plateau Section

periods cover the block of time from the 1850s to today and include years of vilification, vindication, and restoration. Each phase reflects a prevailing attitude within the region's majority culture, moving from an early belief in the need to kill all rattlesnakes, to a period of scientific recognition that populations were rapidly declining, and finally to a modern era in which experts and landowners are collaborating to restore habitat and rebuild rattlesnake populations.



Map of killed rattlesnakes (1860–1930s), created by the author based on newspaper accounts from 1860 through the 1930s. Rattlesnake kill reports were examined and mapped to approximate locations based on the descriptions provided in local and regional newspaper articles. Snake icons generally represent incidents in which many rattlesnakes were killed, rather than individual snakes.

Vilification, 1850s–1960s

Colonial settlement proved disastrous for Minnesota's rattlesnakes. Over the next 12 decades, immigrants to the region viewed the reptiles as vile creatures to be feared, akin to Satan in the Garden of Eden. This attitude drove eradication efforts that led to steep population declines. Extirpation occurred in some counties such as Dodge and Mower, as viable hibernacula (dens located in deep crevices) across the region were left without inhabitants.

Some Minnesotans delighted in killing snakes. Illumination of this reality comes from various sources. Local newspapers circulated vivid, often sensationalized accounts that portrayed snakes as threats and celebrated their destruction. Commonplace news from the 1800s included believable accounts such as “boys killed 13 full grown rattlesnakes” or “killing 54 rattlesnakes in

20 minutes.” Overembellishments, untruths, and outright lies were also routine. People knew relatively little about snakes and even less about rattlesnakes. To illustrate this point, Owatonna's *People's Press* published a story regarding a local man's snake-killing prowess and included the following absurdity: “Mr. Hudson says the rattles contain quite an amount of poison and if soaked in water steeps out and will make an entire pail full of water poisonous. If you wet the rattles and rub them on your hand a sore will be the result which is very hard to heal.” Similar clap-trap appeared in print publications throughout the late 19th and early 20th centuries.⁶

Despite misinformed and hateful views, public sentiment began to moderate. Fear persisted and newspapers continued to report deaths, but a shift in tone emerged. The public's attraction to danger began to surface in the press, as reporters

moved beyond documenting mere destruction. Fascinating stories began appearing during the early 1890s, with accounts of people capturing, raising, and selling various snakes, including venomous rattlers. Accounts from the 1890s indicate that snake catching became a component of broader, profit-driven efforts. For example, William Oliver, a 25-year-old from Oronoco, captured eight fairly large timbers, brought them into town, “and exhibited them to a large number of interested spectators.” Aside from Oliver's ostentatious exhibition, his sale of snakes resembled the exchange of livestock.⁷

Commercializing reptiles became part of a burgeoning financial enterprise proximately located in what was then the geographic core of Minnesota's rattlesnake country. This business operated under Orson Estes, a Rochester-area man in his mid-thirties. Estes needed exotic creatures, and locals

such as Oliver and others helped keep Estes's enclosures filled. This business, known colloquially as the Minnesota Snake Farm, was formed sometime in the late 1880s and was thriving by the mid-1890s.⁸

Estes propagated nonvenomous egg-bearing snake species (rattlesnakes bear live young), bought snakes and other reptiles from far-flung parts of the United States, and purchased various creatures from southeastern Minnesotans. He sold the reptiles to businesses such as circuses, sideshows, bars, and museums. At the turn of the century, he claimed to be making \$10,000 annually, which in today's terms represents more than \$375,000. The Snake Farm was newsworthy; articles about both it and Estes appeared in newspapers throughout the state, around the nation, and as far away as New Zealand.⁹

Notably, Estes was the only person in the entire country to declare his occupation as a "dealer of serpents and birds" in the 1900 federal census. By spring 1902, he had moved his business to Minneapolis for the increased convenience and anticipated shipping of 15,000 snakes by the year's end. Estes filled a distinctive niche in an apparently lucrative, highly specialized, and somewhat dangerous line of work. Even so, changing circumstances appear to have ended Estes's involvement in the snake trade. When a census enumerator visited a decade later, Estes said he worked as a paper hanger in the housing industry. When he died in Minneapolis in February 1940, his obituary omitted any reference to his earlier notoriety.¹⁰

Various factors, no doubt, forced Estes into a drastically different career, but with an incomplete record we can only speculate: Did destabilized populations mean there were fewer snakes to purchase? Had exotic



Orson Estes and his snakes (color added by author)

pet popularity waned? Did the farm cease? Was Estes burdened with domestic responsibilities following his 1901 marriage? While exact reasons remain unclear, growing government involvement likely served to intensify change. Incentivized destruction via bounties began once the government entered the conversation.

Following successful legislative efforts to introduce bounties in neighboring Iowa and Wisconsin, Minnesota politicians tried to pass a rattlesnake bounty in 1905, only to have the effort fail. Having learned from this defeat, lawmakers approved

a similar bill in 1909. Townships in some of Minnesota's six rattlesnake counties began offering bounties for killing snakes. Claimants received compensation by presenting proof—typically a snake's rattle. Remuneration was set at 50 cents (approximately \$17.33 today). Bounties proved popular. Profit hunters killed and collected payments on tens of thousands of rattlesnakes. For example, from 1935 to 1963, snake hunters killed and collected bounties on 60,179 rattlesnakes in Houston County alone. Without question, Minnesota's rattlesnakes faced habitat loss, widespread killing,

and commercial harvesting from the late 19th century into the early 20th. Consequently, the full extent of their range during these years will likely remain unknown.¹¹

The first statewide, verifiable scientific research on Minnesota's amphibians and reptiles occurred in the early 1940s under Walter John Breckenridge at the University of Minnesota. By documenting what had gone unrecorded, Breckenridge helped lay the groundwork for future evidence-based proposals to reform wildlife laws and protections. His ascendance to become Minnesota's preeminent expert on amphibians and reptiles occurred at a unique time in history. The absence of consolidated knowledge about the state's amphibious and reptilian fauna underscores the information vacuum

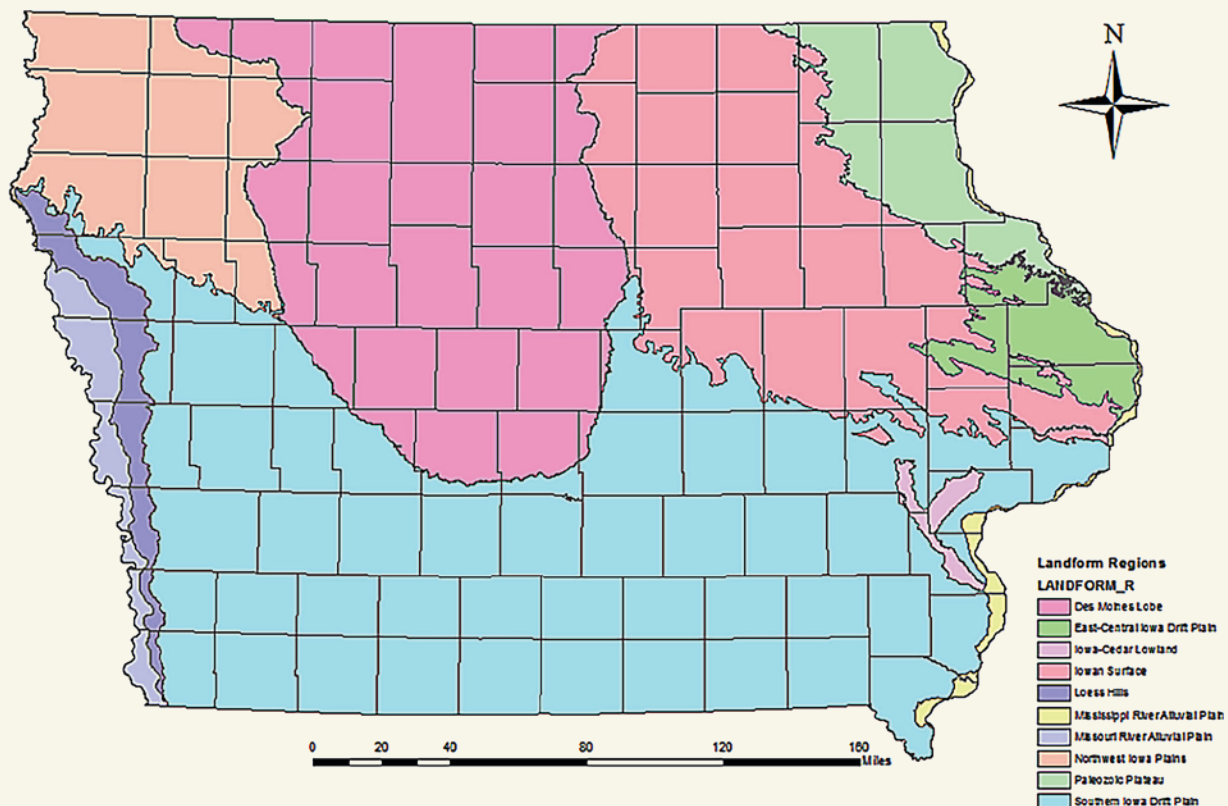
Breckenridge confronted when he began "collecting information in regard to the past and present status of the rattler in Minnesota." Engaged in slow and painstaking work, he aimed to "unravel the real facts from the masses of reports, hearsay, rumors, and cases of mistaken identity." In the end, he concluded that rattlesnake habitat was entirely restricted to the Driftless Area.¹²

Breckenridge conducted thorough investigations into the natural world, but his research began decades after the arrival of settlers, approximately 40 years after the Minnesota Snake Farm's profitable period, and three decades after the introduction of bounties. Evidence in contemporary press accounts and county histories indicate that less robust rattlesnake populations experienced extirpation

before Breckenridge began researching. Certainly not closed-minded, Breckenridge still considered reports obtained via rumors or historical accounts as somewhat apocryphal.¹³

Conversely, James Mahaffy—a biology professor at Iowa's Dordt College in the early 2000s (now Dordt University) with a background in paleobotany—reexamined existing evidence suggesting that small rattlesnake populations once inhabited various parts of southern Minnesota. These locations extended beyond today's commonly accepted rattlesnake range, which includes the rattlesnake-rich counties of Fillmore, Houston, and Winona, as well as Goodhue, Olmsted, and Wabasha.¹⁴

In lieu of the physical specimens valued by Breckenridge, Mahaffy believed that historical evidence



Landform regions of Iowa. The pertinent zones are the mint- and salmon-colored areas in northeastern Iowa that extend into Minnesota. Eastern massasaugas persist today within the salmon-colored zone, though only in fragmented populations. Mahaffy believed the species' continued presence in these environs bolstered his argument that eastern massasaugas once inhabited scattered locations across the corresponding counties just to the north.

such as newspaper accounts, county death records, and known historical snake habitat in adjacent northern Iowa counties substantiated his claims. For example, while the prevailing view holds that the massasauga existed only within a narrow corridor along the Mississippi River, Mahaffy argued that, into the late 1870s, the species also inhabited wet grassy areas in places such as Mower County and nearby regions with comparable habitat.¹⁵

More recent data from 2022 supports the possibility that massasaugas once ranged farther west than their last known occurrences in Mississippi river-bottom habitats. Newspaper databases such as the Minnesota Digital Newspaper Hub and Newspapers.com, resources unavailable at the time of Mahaffy's research, lend credence to the presence of an unidentified rattlesnake species west of bluff country. Because timber rattlesnakes in the Upper Midwest rely on specific bluff-country habitat, reports of rattlers beyond this range were almost certainly the smaller massasauga. Decades of incessant pressure on this species dating back to the 1850s culminated in population collapse across the region. The rattlesnake redoubt shrank and contracted eastward, and massasaugas, if not already gone, were most likely extirpated from the state by the 1960s.¹⁶

Vindication, 1970s–1990s

It was already too late to save the massasauga in Minnesota, but what about the fate of the timber rattler? Overlapping pressures were continuing to degrade rattlesnake numbers and habitat. *Crotalus horridus* required protection, yet without intervention, extirpation due to diminished populations and increasingly fragmented habitats awaited.

A primary obstacle to effective conservation was a lack of information. Though Breckenridge's studies had increased understanding of timber rattlesnakes, critical gaps in knowledge remained and led to flawed assumptions about useful management strategies. A search in the academic database JSTOR using the keywords "timber rattlesnake," with dates limited to 1930–49, yields only 28 results. A surge of scholarship appeared in the 1950s, due in large part to the 1956 publication of the landmark two-volume *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind*, which helped generate 48 articles or book chapters on the subject. Interest waned during the 1960s and 1970s but rebounded in the late 1980s. Articles on timber rattlesnakes surged in the 1990s, surpassing the total output from 1930 to 1989. Scholarly output has continued to grow steadily over the past three decades.¹⁷

In addition to the challenges posed by gaps in scientific research, public sentiment remained largely negative. News accounts in the early 1970s continued to document snake killings and captures in vivid terms, often featuring interviews with snake hunters. For example, Tenrad Moen, a Houston County resident, possessed extensive rattlesnake expertise and provided reporters valuable insights drawn from more than 50 years of bounty

hunting. Moen regarded it as his sport, estimating that thousands of snakes had died at the tap of his killing stick (a light stick used to whack snake heads) in the vicinity of nearly 100 denning sites across Houston and Winona Counties.¹⁸

Interestingly, against this backdrop—and perhaps influenced by the first observance of Earth Day in 1970—some newspapers began to reflect a shifting perspective. These stories highlighted individuals driven by environmental concern and scientific curiosity. These environmentalists juxtaposed financial incentives and sport hunting against a growing understanding of Minnesota's native flora and fauna species.



Rattler nemesis Tenrad Moen (color added by author)

Two men from the Rochester area, Michael Pappas and William Stark, endeavored to study rattlesnakes and change the public's perception. They began conducting studies during their spare time because "not too much [was] known about the numbers or range of rattlesnakes in southeastern Minnesota." They had several goals, from gaining a greater understanding of distribution and population to educating the public about the importance of the species within the overall ecosystem and ending the bounty system. These efforts emanated from their belief that timber rattlesnakes were rapidly declining and that the potential "loss will leave one more gap in our ecosystem."¹⁹

The much-maligned rattlesnake was about to get a further boost. In 1971, the Minnesota legislature addressed the ongoing issue of dwindling populations among many species by passing the state's Endangered and Threatened Species law, which guides assessments to determine whether a species has declined to a level that warrants protection against potential extinction. Subsequently, in 1984 the Minnesota DNR added timber and massasauga rattlesnakes to its "species of special concern" list.²⁰

The DNR's decision elicited skepticism by some in bluff country whose understanding came from personal or anecdotal observations. For example, Joseph Boehm, a New Hartford Township board member in Winona County, paid bounties on dead rattlesnakes as one of his official duties. In contrast to the DNR, Boehm said, "I sincerely believe there are more snakes now. No one is hunting them like they used to."²¹

Similarly, Daniel Twite, a noted snake hunter from Caledonia in Houston County, believed fewer rattlers were bountied because "there aren't any bounty hunters left, really. I think they all got old." In his view,

rattlesnakes still needed killing, especially in residential areas. The question of who was right or wrong about the number of snakes remained unresolved, because the information gap persisted. The evidence-based answer to these two disparate perspectives became clearer during the late 1980s and was confirmed through field studies submitted to the Minnesota DNR Nongame Wildlife Program during the 1990s.²²

The Minnesota Herpetological Society (MHS), founded in 1981, emerged as a key advocate for rattlesnake protection during the 1980s. It soon collaborated with the newly established DNR Nongame Wildlife Program (1979) on issues concerning amphibians and reptiles. Dr. Barney Oldfield, a Wabasha County veterinarian and active member of MHS, emerged as a leading advocate for ending rattlesnake bounties. As chair of MHS's Rattlesnake Bounty Committee, he lobbied state legislators and played a central role in advancing a bill to repeal the bounty system.²³

Thanks to Oldfield's efforts, legislators introduced a bipartisan bill—sponsored in the house by Bob Waltman (IR-Elgin) and in the senate by John Marty (DFL-Roseville). Oldfield testified in favor of the bill, noting that bounties were "inconsistent with sound conservation policy . . . on special concern species." He also brought other snake experts before the Environment and Natural Resources Committee in each legislative body to answer questions and share pertinent information about rattlesnake behavior.²⁴

The bill passed with broad support. House members voted 125–4, and although a bit closer in the senate, the bill advanced following a 47–19 vote. Governor Rudy Perpich signed the bill into law on May 9, 1989; it took effect on August 1 of that year. Understandably, Oldfield

expressed delight: "That's super. That's great. That's what we've been waiting for."²⁵

Bounty removal came late compared to other states; Minnesota was the last to de-incentivize killing timber rattlesnakes. Yet some, such as State Senator Charlie Berg—chair of the Environment and Natural Resources Subcommittee on Fish and Wildlife—remained unconvinced. Even after hearing from experts, he found no value in rattlesnakes. Berg, representing a west-central Minnesota district far removed from rattlesnake country, said he "wouldn't mind seeing them exterminated in the state." Nevertheless, by the late 1980s, the outlook for Minnesota's rattlesnakes had improved following advocacy efforts and the repeal of the bounty system. Still, their future remained uncertain as threats from killing and capture persisted.²⁶

The 1990s witnessed the beginning of a boom in scientific publications about timber rattlesnakes. Scholarship in academic publications increased by 321 percent, and in Minnesota the first detailed and thorough field survey of timber rattlesnakes on state-owned lands occurred during 1990–91. Principal investigator Dr. Daniel Keyler from the Division of Toxicology at Hennepin County Medical Center and co-investigator Dr. Barney Oldfield published their findings in July 1992.

The duo sought to add to the growing body of research on Minnesota's dominant rattlesnake. They also aimed to "insure the protection and preservation of the timber rattlesnake" at least on state lands. Finding only 101 rattlers during their two-year study, they posited that "Minnesota populations may be on the brink of their demise." Further, they advised that Minnesota's political leaders "would be wise to make efforts to protect this [iconic wilderness] species

and its habitat now . . . [or be faced with] nonviable remnant populations.” The researchers’ legislative goal remained elusive for the next few years.²⁷

Despite the bounty repeal, thrill seekers, profiteers, and area residents continued to capture or kill rattlesnakes. Richard Baker, a non-game biologist with the Minnesota DNR, observed that individuals still targeted snakes. Some sought to sell body parts such as rattles, while others captured them for the lucrative exotic pet trade.²⁸

Against this backdrop, formal protection measures emerged. Minnesota’s massasauga and timber rattlesnake species were reclassified from species of special concern to threatened species when the DNR’s upgraded designation took effect on July 1, 1996. Elevated protection signaled a monumental shift in conservation policy. In less than a decade, rattlesnakes had moved from being bountied via public funds to achieving protection from capture, import, transport, sale, and, in most cases, human-inflicted death.²⁹

Redressing decades of damage would take time and persistent efforts. Status as a threatened species protected living snakes from immediate human maltreatment, but their remaining bluff-side abodes and adjacent habitats continued to shrink with residential, recreational, and transportation expansion. Hospitable locations throughout bluff country, especially in the three peripheral counties of Goodhue and Wabasha in the north and Olmsted to the west, became largely bereft of any appreciable numbers of rattlesnakes. The species’ continued decline was confirmed in 1998, when Dr. Keyler along with Kimberly Fuller, an environmental biologist, conducted a second field study. They observed that “it seems apparent that the species has



Dr. Daniel Keyler wrangling a large timber rattlesnake

been extirpated or near extinction at almost all state land localities” within the above-mentioned counties. Keyler and Fuller pointed to a constellation of stressors. These included “land development, increased highways intersecting habitat, agricultural chemicals affecting . . . prey populations, and bountying [that had all] . . . collectively taken their toll.” While rattlers existed in these areas as recently as the early 1990s, the investigators speculated there were too few in the overall vicinity to sustain healthy denning populations.³⁰

Generally, the range for a group of rattlesnakes fits within a radial

distance of from 1.5 to 2.5 miles around a specific hibernaculum. Other research shows that male snakes need between 160 and 500 acres and that nongravid (nonpregnant) females need between 40 and 100 acres. Populations within these ranges should consist of “approximately 30 to 40 snakes with even age distribution, with at least four or five mature females.” Discontiguous habitats create “island” populations, and geographic segregation often reduces snake colonies to sizes too small for long-term viability. Addressing the cumulative damage, Keyler noted that overall health becomes

compromised without the ability for snakes from different denning groups to interact. Thus, “gene flow [between groups] is lost [along] with . . . genetic diversity.”³¹

Restoration, 2000s–Today

At the start of the 21st century, Fillmore, Houston, and Winona Counties remained the last stronghold of Minnesota’s timber rattlesnakes. Long-term preservation required simultaneous protection of both the species and its habitat. Human exploitation coupled with human-created hazards both intentional and unintentional brought the state’s remaining rattlesnakes to critically low levels across much of their historical range.

Though efforts in the late 20th century may have come too late to reverse existing damage, a group of experts from Minnesota and Wisconsin formed the Timber Rattlesnake Recovery Team to stem further losses and support potential restoration in targeted areas. Participants organized to produce a recovery plan for the Minnesota DNR. Following an assessment period, they issued dozens of recommendations aiming to avert the real possibility of statewide extirpation. They focused on three areas: ensuring population viability, protecting and restoring habitat, and improving public outreach.³²

Influencing public perception remained essential, particularly among landowners in key habitat areas. According to the recovery team, this was “the most challenging [goal because] . . . it is the hardest to measure.” Participants believed direct outreach offered the best way “to increase awareness and appreciation of snakes, particularly timber rattlesnakes.” They sought to “reduce human-inflicted mortality of timber

rattlesnakes as well as other snake species; engage landowners . . . in protecting and restoring habitat for snakes; [and] increase public support for reptile conservation efforts, particularly snakes.”³³

Collaboration with property owners and the public yielded notable results, such as the relocation of snakes from the backyards of bluff-country residents through the Rattlesnake Responder Program—particularly active in the Winona area. State and federal funding remain essential for managing and restoring bluff-country prairies, undertakings that require not only money but also labor, coordination, and time. Outreach, landowner engagement, and education efforts continue.

Minnesota’s rattlesnakes are a long-lived species characterized by low reproductive rates and high juvenile mortality. These reptilian icons are creatures of tradition, remaining closely tied to their birth dens, a trait that served them well for millennia. The arrival of pioneer settlers, however, followed by nearly 150 years of habitat destruction and direct persecution, pushed the species toward near extirpation across much of their historical range, which may possibly have extended from the Mankato area in the west to the southern end of the St. Croix river valley in the north. Extensive killing and capture throughout the 1800s and most of the 1900s caused their numbers to plummet and their range to contract significantly.

The 1980s marked the beginning of several notable developments. Timber and massasauga rattlesnakes became species of special concern, and this designation served as a catalyst to end the bounty system. Nonetheless, *Crotalus horridus* remained in jeopardy, and it was likely already too late for *Sistrurus catenatus*. Research in the 1990s highlighted the precar-

ious situation, noting the continued capture and killing of snakes, along with the absence of suitable populations at many den sites. Consequently, both rattlesnake species received protection with their inclusion on Minnesota’s list of threatened species. Decades of overt hostility transitioned to acceptance as experts learned more about timber rattlesnakes nationally and then in Minnesota specifically. As always, the future remains unclear, but these factors combined with growing knowledge and ongoing conservation efforts bode well for the continued survival of timber rattlesnakes in southeastern Minnesota. ▣

Notes

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17. A JSTOR database search for 1950s articles on "timber rattlesnake" versus "garter snake" or "cobra" reveals the paucity of research on timber rattlers. After the 1956 publication of *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind*, it quickly became the definitive work on rattlesnakes. To this day, its author, the self-taught herpetologist Laurence Klauber, is considered the world's leading authority on rattlesnakes. Klauber's exhaustive work, including later editions, changed the overall understanding of rattlesnakes and heralded a noticeable increase in scholarship on them in the succeeding decades. Today, Klauber's two-volume tome resides in more than a thousand academic libraries.

18. Harold Severson, "Caledonia Rattlesnake Hunter Says 'This Is My Sport,'" *Post-Bulletin* (Rochester, MN), June 22, 1972, 9.

19. Gordon Yeager, "Two Rochester Men Trying to Correct Public's Poor Image of Rattlesnakes," *Post-Bulletin* (Rochester, MN), June 28, 1972, 17. By the mid-1970s, advocacy for and knowledge about snakes gained another crucial advocate with the hiring of David Palmquist at Whitewater State Park in Winona County. Through his formal position as a park naturalist, Palmquist aimed to teach the public about rattlesnakes and advocate for their protection via newspaper interviews and park programming.

20. "Status Definitions," Minnesota DNR, <https://www.dnr.state.mn.us/rsg/definitions.html>; "Crotalus horridus: Timber Rattlesnake," Rare Species Guide, Minnesota DNR, <https://www.dnr.state.mn.us/rsg>.

21. Bill McAuliffe, "Timber Rattlers Cause 'Special Concern,'" *Star Tribune* (Minneapolis, MN), Aug. 24, 1983.

22. "Area Snake Hunter Not Bothered by Bounty Loss," *Post-Bulletin* (Rochester, MN), Mar. 31, 1989, 2B.

23. Moriarty and Hall, *Amphibians and Reptiles in Minnesota*, 7-9; "Rattlesnake Bounties Prohibited," *Post-Bulletin* (Rochester, MN), May 11, 1989, 1B.

24. "How Six Bills Became Law," Minnesota

House of Representatives, Public Information Office, 1990; Grant Moos, "Snake Bounty Falls Prey to Lawmakers," *Post-Bulletin* (Rochester, MN), Mar. 31, 1989, 3A.

25. "Rattlesnake Bounties Prohibited."

26. Moos, "Snake Bounty Falls Prey to Lawmakers."

27. Daniel E. Keyler and Barney L. Oldfield, "Timber Rattlesnake (*Crotalus horridus*) Field Survey on Southeastern Minnesota State Lands (1990-1991)" (Minnesota DNR, Nongame Wildlife Program, July 1992), 1, 8. As a precautionary measure, the field study report lists no specific locations in order to protect the state's remaining timbers from hunters, collectors, and the curious.

28. Dean Rebuffoni, "Once-Pursued Rattlesnakes Protected," *Star Tribune* (Minneapolis, MN), Aug. 17, 1996, B2.

29. Kevin Allenspach, "Rally Call of the Native Animals," *St. Cloud (MN) Times*, July 21, 1996, 8C.

30. Keyler and Fuller, "Survey of Timber Rattlesnake Peripheral Range," 11.

31. Keyler and Fuller, "Survey of Timber Rattlesnake Peripheral Range," 11; William Sandwith Brown, *Biology, Status, and Management of the Timber Rattlesnake (Crotalus horridus): A Guide for Conservation*, Herpetological Circular 22 (Society for the Study of Amphibians and Reptiles, 1993), 40; Daniel E. Keyler, "Timber Rattlesnake (*Crotalus horridus*): Biology, Conservation, and Envenomation in the Upper Mississippi River Valley (1982-2020)," *Toxicon: X* 19 (2023): 5, <https://doi.org/10.1016/j.toxcx.2023.100167>.

32. Timber Rattlesnake Recovery Team, "Timber Rattlesnake Recovery Plan."

33. Timber Rattlesnake Recovery Team, "Timber Rattlesnake Recovery Plan."

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