Spectaclecase
(*Cumberlandia monodonta*)

Status Review:
Summary and Evaluation

U.S. Fish and Wildlife Service, Midwest Region
Minnesota-Wisconsin Ecological Services Field Office
Bloomington, Minnesota

May 19, 2025

STATUS REVIEW
Spectaclecase – *Cumberlandia monodonta*

GENERAL INFORMATION

Species: Spectaclecase (*Cumberlandia monodonta*)

Reviewers:

Lead Field Office: Minnesota-Wisconsin Field Office, Nick Utrup (612) 600-6122

Lead Regional or Headquarters Office: Region 3, Laura Ragan (612) 713-5157

Cooperating Field Office(s):

Alabama Field Office, Brittany Barker-Jones, (251) 401-8974
Arkansas Field Office, Chris Davidson, (501) 513-4481
Illinois/Iowa Field Office, Sara Schmuecker, (309) 757-5800, ext. 203
Indiana Field Office, Sarah Harrison, (812) 902-1748
Kentucky Field Office, Taylor Fagin, (502) 653-0541
Missouri Field Office, John Weber, (573) 234-2132
Ohio Field Office, Jeromy Applegate, (614) 416-8993, ext. 21
Tennessee Field Office, Anthony Ford, (931) 431-2485
Southwest Virginia Field Office, Jordan Richard, (757) 570-3697
West Virginia Field Office, Jennifer Norris, (304) 866-3858

Cooperating Regional Office(s):

Region 4, Carrie Straight, (470) 259-0089
Region 5, Sarah Furtak, (413) 326-4687

Date of listing publication: March 13, 2012

FR citation(s): 77 FR 14914

Classification: Endangered Species

Critical habitat/4(d) rule/Experimental population designation/Similarity of appearance listing: None

Methods used to complete the review: Public notice was given in the *Federal Register* (89 FR 804-806) requesting new scientific or commercial data and information that may have a bearing on the spectaclecase classification of endangered status. Pertinent data was obtained from recent reports of freshwater mussel surveys, from the prior 5-year review, from the recently completed Species Status Assessment (SSA), and from data submitted by U.S. Fish and Wildlife Service Field Offices and State and Provincial natural resource agencies within the range of the species. This 5-year review was completed by Nick Utrup, Fish and Wildlife Biologist with the Minnesota-Wisconsin Ecological Services Field Office. The focus of this 5-year review is to summarize new information regarding the status of the spectaclecase.

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine

whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology and status of the spectaclecase to inform this status review.

A team of Service biologists developed a Species Status Assessment (SSA, USFWS 2022). The SSA represents our evaluation of the best available scientific information, including the resource needs and the current and future condition of the species. We developed future scenarios of environmental and management conditions to discuss the viability of the species in the future. Independent peer reviewers and partner representatives reviewed the SSA before we used it as the scientific basis to support our status review decision-making process.

FR Notice citation announcing the species is under active review:

January 5, 2024; 89 FR 804-806

Review History

- Original Listing: April 12, 2012
    - FR notice: 77 FR 14914
    - Entity listed: Spectaclecase (*Cumberlandia monodonta*); Species
    - Classification: Endangered
- Initial 5-year Review: July 10, 2019
    - No change recommended to Endangered classification status
- Species Status Assessment: June 2022

REVIEW ANALYSIS

Recovery Criteria
Recovery Plan or Outline:

U.S. Fish and Wildlife Service (USFWS). 2024. Recovery Plan for Four Species of Freshwater Mussels: Rayed Bean (*Villosa fabalis*), Sheepnose (*Plethobasus cyphyus*), Snuffbox (*Epioblasma triquetra*), and Spectaclecase (*Cumberlandia monodonta*). Bloomington, Minnesota. 16 pp.

The Recovery Plan document is available online at http://ecos.fws.gov.

The recovery plan and related criteria were finalized in September of 2024. None of the recovery criteria have yet been met and there is no new information to indicate that the recovery criteria need to be reevaluated. Populations are evaluated based on condition (e.g., population extent, reproduction/recruitment, last known record of individuals within a population, and population size) and risk factors affecting spectaclecase (e.g., water quality, hydrological regime, landscape, connectivity, and invasive species). There are currently no populations in any of the five basins that meet the recovery criteria (e.g., populations considered high condition with moderate or low risk or moderate condition with low risk).

Updated Information Relevant to the Current Species' Status

A Species Status Assessment (SSA) was finalized for this species in June of 2022 (USFWS 2022). Here are the updates since the completion of the 2022 SSA:

1. After the SSA was finalized in 2022, we noticed a reporting error that included two populations in the Upper Mississippi River Basin in the State of Illinois. This error incorrectly indicated the presence of spectaclecase in two HUC8 watersheds, the Lower Illinois - Lake Chautauqua (07130003) and the Lower Rock River (07090005). Those populations have been removed from our analysis in this document and are not included in the current list of 38 extant populations (Table 1).

2. In the fall of 2022, a relic shell and a live spectaclecase were collected below the Pomme de Terre Dam in Missouri (Pomme De Terre River, HUC8 – 10290107; Simmons, pers. comm. 2024). These are the first observations of the species in this river and may represent a new population. More surveys are recommended to verify population abundance and condition.

3. eDNA detections and subsequent diving surveys identified seven live spectaclecase individuals at two sites in Pool 4 of the Mississippi River near Red Wing, Minnesota (Upper Mississippi River, Rush-Vermillion HUC8 07040001; Sietman et al., 2023). This is more individuals than previously collected in Pool 4 of the Upper Mississippi River and demonstrates recent recruitment in that population.

4. In the summer of 2024, the aftermath of Hurricane Helene caused catastrophic flooding in the Nolichucky River (a 5,000-year flood event). Post flooding surveys were conducted at various locations (from Bewley Shoal to Pates Hill) where live and fresh dead spectaclecase were found near the Tennessee Valley Authority (TVA) canoe launch. A total of 75 fresh dead and 6 live spectaclecase were found (Faust, pers. comm. 2024). This is an unusual number of fresh dead individuals and likely shows a more robust population of spectaclecase in this river than previously known. This also documents a significant setback to the population and habitat due to the extreme flooding. More surveys are recommended in the future.

5. In the fall of 2024, a fresh dead spectaclecase specimen was collected from the lower Holston River, a tributary to the Tennessee River near Knoxville, Tennessee (Dinkins 2024). This specimen occurred in a HUC8 watershed (06010104) that was considered extirpated in the SSA (USFWS 2022). The specimen included both valves and is cataloged in the McClung Museum. More surveys are needed to find live specimens before we can consider this population extant again.

The SSA document is available online at http://ecos.fws.gov.

Biology and Habitat:

Spectaclecase is a large mussel that reaches at least 9.25 inches (23.5 centimeters (cm)) in length (Havlik 1994, p. 19). Key characters for distinguishing spectaclecase from other mussels are its large size, elongate shape, arcuate ventral margin, dark coloration, roughened periostracum, poorly developed teeth, and white nacre (Oesch 1984, pp. 31–32). No other North American mussel species has this suite of characters.

Spectaclecase inhabits rivers and streams with slow to swift currents and is often found in quiet water near the interface of swift currents. Normal fluctuations in velocity are expected; however, extreme changes can prove to be detrimental. Significant and prolonged increase in velocity typically associated with flood conditions has the potential to dislodge and scour mussels and move the bed destroying spectaclecase and host-fish habitat (Holland-Bartels 1990, pp. 331–332; Layzer & Madison 1995, p. 335). High shear stress and areas of scour may cause instability of rock structures creating unsuitable shelter habitat for spectaclecase. Furthermore, abnormally high velocities have the potential to cause glochidia mortality due to wash out and displacement of juveniles and adults. Alternately, extreme low flow associated with drought or water withdrawal can impact reproduction, feeding, respiration, and in some cases result in dewatering/exposure and desiccation of the species (Fisher and LaVoy 1972, pp. 1473–1476).

Similar to other margaritiferids, spectaclecase are often found to be aggregated under slab boulders or bedrock shelves where they are protected from the current (Gordon and Layzer 1989, p. 19; Baird 2000, p. 6; Buchanan 1980, p. 13; Parmalee and Bogan 1998, p. 50). In fact, up to 200 individuals have been reported to be under a single large rock slab within the Tennessee River at Muscle Shoals, Alabama (Hinkley 1906, p. 17). However, it should be noted, a recent study has shown spectaclecase can be quite active; specifically, relocated individuals have moved to more suitable habitat (Dunn et al. 1999, p. 175, 177). Spectaclecase is the only known North American freshwater mussel species to use Goldeye (*Hiodon alosoides*) and Mooneye (*Hiodon tergisus*) as hosts for reproduction.

Range and Distribution:

Spectaclecase once occurred throughout much of the Mississippi River system: the uppermost Ohio River system, the Cumberland and Tennessee River systems, and some lowland tributaries in the Mississippi Delta region of Mississippi and Louisiana. This species was known from the Mississippi, Ohio, and Missouri main stems, and dozens of tributary streams. Spectaclecase was historically known from 45 streams in 15 states and 4 Service regions. These include by stream system (with tributaries) the following:

- Upper Mississippi River system (Mississippi River [St. Croix (Rush Creek), Chippewa, Rock, Salt, Illinois (Des Plaines, Kankakee Rivers), Meramec (Bourbeuse, Big Rivers), Kaskaskia Rivers; Joachim Creek])
- Lower Missouri River system (Missouri River [Platte, River Aux Vases, Osage (Sac, Marais des Cygnes Rivers), Gasconade (Osage Fork; Big Piney River) Rivers])
- Ohio River system (Ohio River [Muskingum, Kanawha, Green, Wabash Rivers]

- Cumberland River system (Cumberland River [Big South, Caney Forks; Stones, Red Rivers])
- Tennessee River system (Tennessee River [Holston, Nolichucky, Little, Little Tennessee, Clinch (Powell River), Sequatchie, Elk, Duck Rivers])
- Lower Mississippi River system (Mulberry, Ouachita Rivers).

Currently spectaclecase occupies 38 HUC8 watersheds across 5 major river basins, though it was historically found in 59 HUC8 watersheds across 6 major river basins (Table 1; Figure 1).

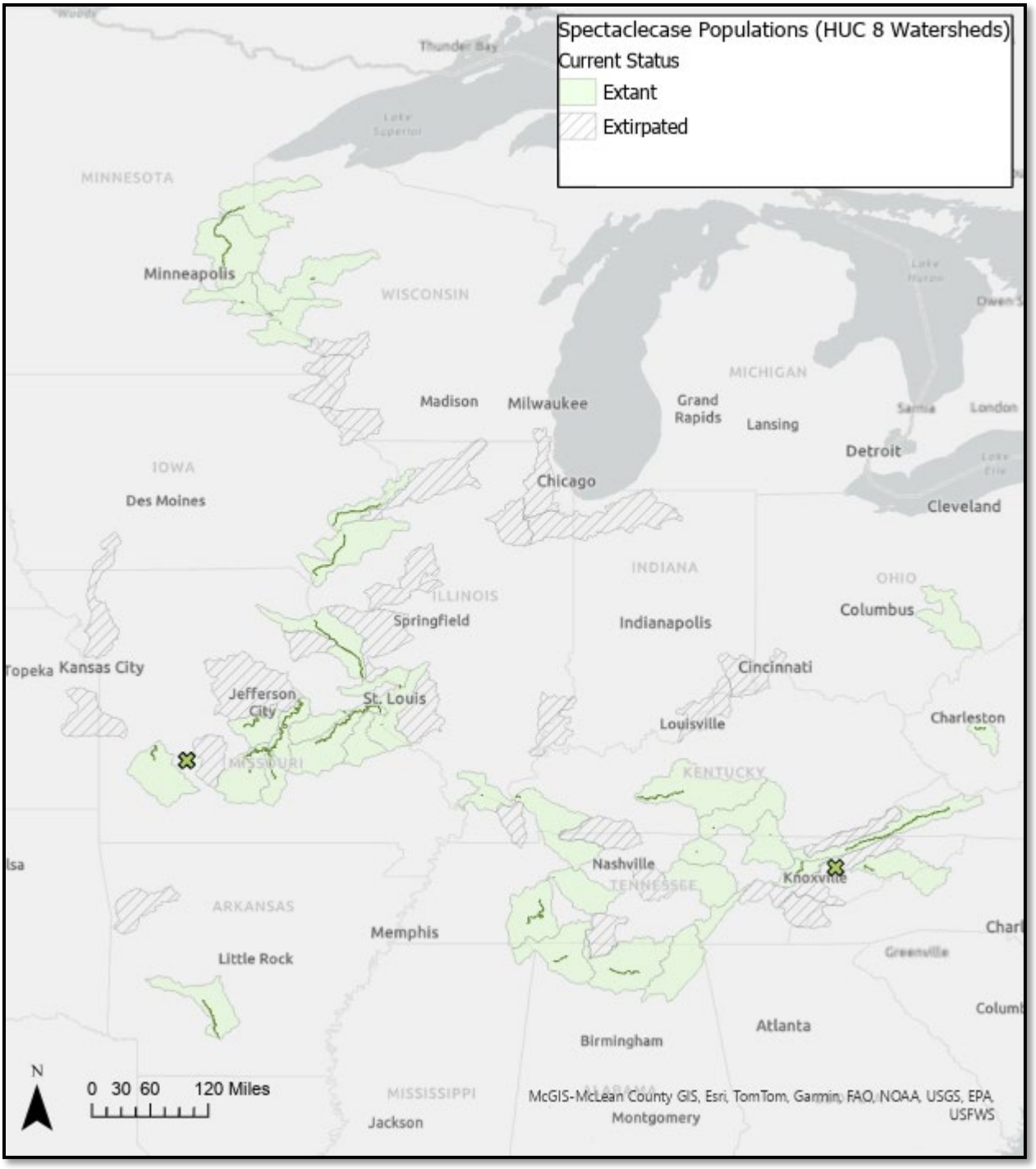

Figure 1. Spectaclecase range including extant and extirpated populations. Populations are delineated based on HUC 8 boundaries as described in the SSA (USFWS 2022). Lines show the occupied stream extent in each extant population. New records since the 2022 SSA are denoted on the map by a green X.

Table 1. Known extant spectaclecase populations. Populations are defined in the SSA (USFWS 2022) and are based on HUC8 watershed boundaries. If fewer than 10 individuals have been detected it was labeled as "low" population size, more than 10 but fewer than 100 individuals was labeled "medium", and more than 100 individuals was labeled as "high". Species status is based on condition categories defined in the SSA, FX = Functionally Extirpated (USFWS 2022). 2012 and 2017 status categories are based on the prior 5-year review in 2019 (USFWS 2019) and at the time of listing in 2012 (77 FR 14914) for the species. The 2025 status condition categories and scores (0 = lowest; 10 = highest) are based on the 2022 SSA document (USFWS 2022). Populations marked with an asterisk (*) are those that have not been considered extant but were found with live or fresh dead individuals since the writing of the 2022 SSA document. Risk Factor was calculated for each population based on methodology described in the SSA (USFWS 2022).

River Basin – HUC8 Population	HUC8 ID	Known Reproduction	Year of Last Observation	Population Size	Risk Factor	2012 Status	2017 Status	2025 Status
Ohio - Muskingum	05040004	No	1995	Low	High	Unknown	Unknown	FX (0)
Ohio - Upper Kanawha	05050006	Yes	2022	Low	High	Unknown	Unknown	Medium (5)
Ohio - Upper Green	05110001	Yes	2021	High	Moderate	Unknown	Stronghold	High (9)
Ohio - Lake Cumberland	05130103	No	1988	Low	Moderate	Unknown	Unknown	FX (0)
Ohio - Upper Cumberland	05130104	No	2008	Medium	Moderate	Unknown	Unknown	Low (3)
Ohio - Cordell Hull Reservoir	05130106	No	2008	Low	Moderate	Unknown	Unknown	Low (3)
Ohio - Caney Fork	05130108	No	1988	Low	High	Unknown	Unknown	FX (0)
Ohio - Lower Cumberland	05130205	No	2008	Low	High	Unknown	Unknown	Low (3)
Ohio - Lower Ohio	05140206	No	1994	Low	High	Declining	Weakened	FX (0)
Tennessee - Holston*	06010104	No	2024	Low	High	Unknown	Unknown	FX (0)
Tennessee - Nolichucky	06010108	No	2024	Medium	High	Unknown	Notable	Medium (5)
Tennessee - Upper Clinch	06010205	No	2021	Medium	High	Unknown	Unknown	Medium (6)
Tennessee - Lower Clinch	06010207	No	1983	Low	Moderate	Declining	Weakened	FX (0)
Tennessee - Sequatchie	06020004	No	1991	Low	High	Unknown	Unknown	FX (0)
Tennessee - Guntersville Lake	06030001	No	1998	Low	Moderate	Unknown	Unknown	FX (0)
Tennessee - Wheeler Lake	06030002	No	2018	Medium	Moderate	Unknown	Unknown	Medium (5)
Tennessee - Pickwick Lake	06030005	No	2025	Medium	Moderate	Unknown	Unknown	Medium (6)
Tennessee - Beech	06040001	No	2001	Low	High	Unknown	Unknown	Low (2)
Tennessee - Lower Duck	06040003	No	2000	Low	High	Unknown	Unknown	Low (2)

River Basin – HUC8 Population	HUC8 ID	Known Reproduction	Year of Last Observation	Population Size	Risk Factor	2012 Status	2017 Status	2025 Status
Upper Mississippi - Upper St. Croix	07030001	No	2013	Low	High	Unknown	Weakened	Low (4)
Upper Mississippi - Lower St. Croix	07030005	Yes	2020	High	High	Stable	Stronghold	High (9)
Upper Mississippi - Rush-Vermillion	07040001	Yes	2023	Low	High	Unknown	Unknown	Low (4)
Upper Mississippi - Buffalo-Whitewater	07040003	No	2011	Low	High	Declining	Unknown	Low (4)
Upper Mississippi - Lower Chippewa	07050005	No	1989	Low	High	Unknown	Unknown	FX (0)
Upper Mississippi - Copperas-Duck	07080101	Yes	2018	High	High	Unknown	Notable	Medium (8)
Upper Mississippi - Flint-Henderson	07080104	Yes	2019	Medium	High	Unknown	Notable	Medium (6)
Upper Mississippi - The Sny	07110004	No	2003	Low	High	Unknown	Unknown	Low (2)
Upper Mississippi - Peruque-Piasa	07110009	No	2008	Medium	High	Unknown	Unknown	Low (3)
Upper Mississippi - Cahokia-Joachim	07140101	No	1987	Low	High	Unknown	Unknown	FX (0)
Upper Mississippi - Meramec	07140102	No	2016	High	High	Stable	Stronghold	High (9)
Upper Mississippi - Bourbeuse	07140103	No	2014	Low	High	Stable	Unknown	Low (4)
Upper Mississippi - Big	07140104	No	2019	High	High	Unknown	Unknown	Medium (6)
Lower Mississippi - Upper Ouachita	08040102	Yes	2019	Extremely High (>20,000)	High	Declining	Stronghold	High (10)
Missouri - Sac	10290106	No	2001	Low	High	Declining	Unknown	Low (3)
Missouri - Pomme De Terre*	10290107	No	2022	Low	High	Unknown	Unknown	FX (0)
Missouri - Lower Osage	10290111	No	2016	Low	High	Unknown	Unknown	Medium (6)
Missouri - Upper Gasconade	10290201	Yes	2012	High	High	Stable	Weakened	High (9)
Missouri - Osage Fork Gasconade	10290201	No	2016	Medium	High	Unknown	Unknown	Medium (5)
Missouri - Big Piney	10290202	No	2014	High	High	Unknown	Unknown	Medium (8)
Missouri - Lower Gasconade	10290203	No	2012	High	High	Stable	Weakened	Medium (8)

Population demographics:

After the SSA was finalized in 2022, we noticed a reporting error that incorrectly included two populations in the Upper Mississippi River Basin in the State of Illinois. This error indicated the presence of spectaclecase in two HUC8 watersheds, the Lower Illinois - Lake Chautauqua (07130003) and the Lower Rock River (07090005). Those populations have been removed from our analysis in this document and are not included in the current list of 38 known extant populations (Table 1).

Based on recent sampling data, the number of known extant spectaclecase populations has declined 36% from historical numbers range wide (59 to 38). The number of populations in the Ohio, Upper Mississippi and Tennessee River Basins all declined by about 35% while the number of Missouri River populations declined by about 33% (USFWS 2022). Spectaclecase have not been observed in the Arkansas-White-Red River Basin since 1996 and is considered extirpated from that system (USFWS 2022).

Of the 38 known extant populations of spectaclecase, less than half are in medium to high condition (17; 43%; USFWS 2022). These populations are spread across the river basins unevenly. The Ohio River basin contains 9; the Tennessee River Basin contains 9, the Upper Mississippi River Basin contains 13; the Lower Mississippi River Basin contains 1; and the Missouri River Basin contains 6 extant populations (Table 1; Figure 1). The total number of extirpated populations by basin are: Ohio (5), Tennessee (5), Upper Mississippi (8), Lower Mississippi (0), Missouri (3), and Arkansas-White-Red (1) (Figure 1). Given the current status encompasses 38 populations throughout its range and all basins except one have more than one population, the species currently retains redundancy for withstanding and surviving potential catastrophic events. However, it is important to note that a high percentage (80%) of extant populations are currently at high risk from identified threats (see below). Additionally, any assumed redundancy presumes that populations within a basin are connected such that individuals can recolonize extirpated localities. Genetic evidence (Inoue et al. 2014; Inoue & Berg 2017) suggests that spectaclecase had a high degree of connectivity in its postglacial history, however, human modification of rivers has disrupted this connectivity. As a result, habitat fragmentation is likely a threat to the continued persistence of the species because there is likely reduced recolonization of some populations after extirpation events.

Overall, the species has decreased redundancy across its current range compared to its historical range due to the extirpation of 21 populations (36%). More than half of the currently extant populations of spectaclecase (22 populations) are known from a very small number of records (less than 10 individuals or considered functionally extirpated; Table 1) and are likely more susceptible to extirpation from catastrophic events.

Updates to the species range

- A relic shell and a live spectaclecase were collected in 2022 below the Pomme de Terre Dam in Missouri (Pomme De Terre River, HUC8 – 10290107; Simmons, pers. comm. 2024). These are the first observations of the species in this river and may represent a new extant population. More surveys are recommended to verify presence.

- In the summer of 2024, the aftermath of Hurricane Helene caused catastrophic flooding in the Nolichucky River (a 5,000-year flood event). Post flooding surveys were conducted at various locations (from Bewley Shoal to Pates Hill) where live and fresh dead spectaclecase were found near the TVA canoe launch. A total of 75 fresh dead and 6 live spectaclecase were found (Faust, pers. Comm., 2024). This shows a more robust population of spectaclecase in this river than previously known, but also documents a significant setback to the population and habitat due to the extreme flooding. More surveys are recommended in the future.

- In September of 2024 there was a fresh dead spectaclecase specimen collected from the lower Holston River, a tributary to the Tennessee River near Knoxville, Tennessee (Dinkins 2024). This specimen occurred in a HUC8 watershed (06010104) considered extirpated in the SSA (USFWS 2022) and in Figure 1 above. The specimen included both valves and is cataloged in the McClung Museum. More surveys should be conducted in the Holston River to find a live specimen and to verify that the species is extant in that watershed.

- eDNA detections and subsequent diving surveys identified seven live spectaclecase individuals at two sites in Pool 4 of the Mississippi River near Red Wing, Minnesota (Upper Mississippi River, Rush-Vermillion HUC8 07040001; Sietman et al., 2023). This is more individuals than previously collected in Pool 4 of the Upper Mississippi River and demonstrates recent recruitment in that population.

Genetics:

Prior to the recent loss of habitat and connectivity, spectaclecase experienced a high degree of gene flow among all populations throughout its range, except for the Ouachita population (Inoue et al. 2014, p. 288, Inoue and Berg, 2017, p. 101). Currently, spectaclecase is represented by two distinct mitochondrial lineages; one representing most of its range and the other representing the Ouachita population (Inoue et al. 2014, p. 288).

Threats Analysis (threats, conservation measures, and regulatory mechanisms):

Threats:

Spectaclecase populations are influenced by various natural factors and anthropogenic stressors occurring within their watersheds. These stressors can influence one or more of the individual and population needs. Stressors can vary by degree of impact across the range of the species. The habitat risk factors represent these stressors. Habitat risk factors influence the demographics of a population, such as survival, reproduction, recruitment, and genetic diversity. Populations with healthy demographics can offset some effects of these stressors.

In the 2022 SSA we identified contaminants, hydrological regime, landscape alteration, lack of connectivity, and invasive species as the primary risk factors influencing the resources upon which spectaclecase relies (Factor 1), either directly or indirectly (USFWS 2022). Commercial

harvest is no longer a significant threat for spectaclecase and scientific recovery permits regulate overutilization (Factor 2). We also considered direct threats to the spectaclecase, including the influence of mussel disease and the effect of catastrophic events (Factors 3 and 4). The overall risk factor for each extant population, based on methodology described in the SSA, is summarized in Table 1. An overview of risk factors influencing past, current, and future population condition is available in Appendix B of the 2022 SSA report (USFWS 2022). No new threats have been identified since the last 5-year review in 2019 or the SSA in 2022.

Conservation Measures:

eDNA to Support Conservation

Environmental DNA (eDNA) can be an essential tool to detect living specimens in rivers where traditional surveys and sampling can be difficult and/or dangerous. Several recent studies have had success in further refining this as a tool to monitor and detect spectaclecase populations (Ruiz-Ramos et al. 2024; Sansom et al. 2024; Klymus et al. 2021).

To better understand the distribution of spectaclecase within the Upper Mississippi River (UMR) from St. Paul, MN to St. Louis, MO, a passive sampling approach using eDNA to locate live individuals of the species was undertaken during 2020, 2021, 2022, and 2024. A total of four eDNA positives were detected in pools 4 (HUC8 07040001), 8 (HUC8 7060001), 16 (HUC8 07080101), and 17 (HUC8 07080101), respectively. Subsequent dive surveys near eDNA positive sites in Pool 4 resulted in the discovery of seven live spectaclecase individuals at two sites near Red Wing, MN (Sietman et at., 2023). The population shows evidence of recent recruitment with ages ranging from 3–14-year-olds. No live individuals were collected near the Pool 8 eDNA positive sites from dive surveys, but additional future dive surveys are planned. No dive surveys were conducted at the pool 16 or 17 sites. The discovery of the Pool 4 population appears important for the conservation of the species as it provides an important connection between the disjunct extant populations in the lower St. Croix River and the UMR pools 15 through 19.

Recommendations for future activities

A Recovery Implementation Strategy (RIS) is currently being developed for spectaclecase, along with several other mussel species. The RIS is a way for local partners to implement measurable recovery activities based on the recovery criteria and management actions described in the Recovery Plan.

In addition to activities as part of the RIS, we recommend assessing impacts to spectaclecase populations from extreme flooding because of Hurricane Helene in the eastern parts of the species range, most notably the Nolichucky River. Early efforts to evaluate damage from extreme flooding has demonstrated (through mortality and stranding) the presence of larger numbers of spectaclecase than were known at the time the SSA was completed in 2022, including in the Nolichucky and Holston Rivers, Tennessee (Faust, pers. Comm., 2024).

New data from the Pomme de Terre Dam in Missouri also suggests there may be a newly identified extant population of spectaclecase in the Missouri River Basin (Simmons, pers. comm. 2024). More surveys are recommended to verify presence and abundance in these locations.

Synthesis

Spectaclecase is a large mussel that had historically occurred throughout much of the Mississippi River system: the uppermost Ohio River system, the Cumberland and Tennessee River systems, and some lowland tributaries in the Mississippi Delta region of Mississippi and Louisiana. Spectaclecase is the only known North American freshwater mussel species to use Goldeye and Mooneye as hosts for reproduction.

A Species Status Assessment (SSA) was completed in 2022 to evaluate species condition and investigate natural factors and anthropogenic stressors that affect spectaclecase demographics (e.g., survival, recruitment, and abundance) and identified contaminants, hydrological regime, landscape alteration, lack of connectivity, and invasive species as the primary risk factors influencing the resources upon which spectaclecase relies, either directly or indirectly. The assessment also included direct threats, including the influence of disease and the effect of catastrophic events.

The 2022 SSA evaluated the distribution of spectaclecase in terms of watersheds occupied, delineated by major river basin (representation unit) and the HUC8 sub-basins within (population). Population status was determined as extant or extirpated based on available survey data.

The data indicate that the number of spectaclecase populations has decreased 36% from historical numbers rangewide (59 to 38). The species currently ranges across five major river basins (Ohio River, Tennessee River, Upper Mississippi River, Lower Mississippi River, and Missouri River). Given the current status encompasses 38 populations throughout its range, and all basins except one (the Lower Mississippi River) have more than one population, the species currently retains redundancy for withstanding and surviving potential catastrophic events. However, it is important to note that a high percentage (80%) of populations are currently at high risk (USFWS 2022). Overall, the species has decreased redundancy compared to its historical range due to the extirpation of 21 populations. More than half of the currently extant populations (22 populations) are known from a very small number of records (less than 10 individuals or considered functionally extirpated) and are likely more susceptible to extirpation from catastrophic events.

After reviewing the best available scientific information, we conclude that spectaclcase remains an endangered species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Act and analysis of the status of the species in our 2022 SSA (USFWS 2022) remains an accurate reflection of the species' current status.

RESULTS

U.S. FISH AND WILDLIFE SERVICE
STATUS REVIEW of SPECTACLECASE

Current Classification: Endangered

Status Recommendation resulting from Status Review:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist (Indicate reasons for delisting per 50 CFR 424.11):
____ The species is extinct
____The species does not meet the definition of an endangered or threatened species
____The listed entity does not meet the statutory definition of a species
_X_ No change needed

Lead Field Supervisor, Minnesota-Wisconsin ES Field Office, Fish and Wildlife Service

Approve ROBERT TAWES Digitally signed by ROBERT TAWES Date: 2025.05.19 08:02:10 -05'00' Date _____

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