



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R3–ES–2024–0144; FXES1111090FEDR–267–FF09E21000]

RIN 1018–BH73

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Rayed Bean, Sheepnose, Snuffbox, and Spectaclecase Mussels

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are designating critical habitat for the rayed bean (*Villosa fabalis*), sheepnose (*Plethobasus cyphus*), snuffbox (*Epioblasma triquetra*), and spectaclecase (*Cumberlandia monodonta*), all species of freshwater mussel, under the Endangered Species Act of 1973, as amended (Act).

Specifically, we designate approximately 599 river miles (rmi) (964 river kilometers (rkm)) in 15 units as critical habitat for rayed bean; approximately 801 rmi (1,289 rkm) in 11 units as critical habitat for sheepnose; approximately 2,425 rmi (3,902 rkm) in 38 units as critical habitat for snuffbox; and approximately 1,140 rmi (1,835 rkm) in 12 units as critical habitat for spectaclecase. Portions of these designations overlap among the four species; in total, approximately 3,814 unique rmi (6,138 rkm) of critical habitat within 76 units across 17 States (Alabama, Arkansas, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin) fall within the boundaries of the critical habitat designations.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the internet at <https://www.regulations.gov>. Comments and materials we received are available for public inspection at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144.

Availability of supporting materials: Supporting materials we used in preparing this rule, such as the species status assessment reports and recovery plan, are available at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144, or at the Service’s website on each individual species’ page (rayed bean:

<https://www.fws.gov/species/rayed-bean-villosa-fabalis>; sheepnose:

<https://www.fws.gov/species/sheepnose-plethobasus-cyphus>; snuffbox:

<https://www.fws.gov/species/snuffbox-epioblasma-triquetra>; spectaclecase:

<https://www.fws.gov/species/spectaclecase-cumberlandia-monodonta>). The coordinates

or plot points or both from which the critical habitat maps are generated are included in

the decision file for this critical habitat designation and are available

at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144.

FOR FURTHER INFORMATION CONTACT: Rayed bean and snuffbox: Erin Knoll, Field Supervisor, U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office; telephone 614–416–8993; erin_knoll@fws.gov; sheepnose: Kraig McPeck, Field Supervisor, U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services Field Office; telephone 309–757–5800; kraig_mcpeek@fws.gov; spectaclecase: Rob Tawes, Field Supervisor, U.S. Fish and Wildlife Service, Minnesota-Wisconsin Ecological Services Field Office; telephone 612–240–6343; robert_tawes@fws.gov. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act (16 U.S.C. 1531 et seq.), when we determine that any species is an endangered or threatened species, we are required to designate critical habitat to the maximum extent prudent and determinable. We are finalizing a designation of critical habitat for four species of freshwater mussels. Designation of critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 et seq.).

What this document does. This rule will designate critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels; these four freshwater mussel species have been listed as endangered species under the Act since 2012 (See 77 FR 8632, February 14, 2012, and 77 FR 14914, March 13, 2012).

The basis for our action. Under section 4(a)(3) of the Act, if we determine a species is an endangered or threatened species, the Secretary of the Interior (Secretary) must designate critical habitat to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

Previous Federal Actions

Please refer to the December 13, 2024, proposed critical habitat rule (89 FR 101100) for a detailed description of previous Federal actions concerning the rayed bean, sheepnose, snuffbox, and spectaclecase mussels.

Peer Review

A species status assessment (SSA) team prepared an SSA report for each of the four mussel species. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA reports represent a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review in listing and recovery actions under the Act (<https://www.fws.gov/sites/default/files/documents/peer-review-policy-directors-memo-2016-08-22.pdf>), we solicited independent scientific review of the information contained in the SSA reports for the rayed bean (Service 2022a, entire), sheepnose (Service 2022b, entire), snuffbox (Service 2022c, entire), and spectaclecase (Service 2022d, entire). As discussed in the proposed rule, we sent the SSA reports to 10 independent peer reviewers and received 9 responses. The peer reviews can be found at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144. In preparing the proposed rule, we incorporated the results of these reviews, as appropriate, into the SSA report, which was the foundation for the proposed rule and this final rule. A summary of the peer review comments and our responses can be found in the December 13, 2024, proposed rule (89 FR 101100).

Summary of Changes From the Proposed Rule

After considering the comments we received during the public comment period for our December 13, 2024, proposed rule to designate critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels (89 FR 101100) and relevant information that became available since the proposed rule published, we made changes to this final critical habitat rule. No changes were required for our economic analysis after considering public comments; however, we updated the screening memo to reflect relevant changes necessary for addressing recent Executive Orders as well as the updated unit descriptions, described below. These minor updates did not result in any changes to the overall findings of the screening memo; thus, we consider the July 3, 2025, economic analysis as final (Industrial Economics, Incorporated (IEc) 2025, entire). We made many small, nonsubstantive changes throughout this document that do not affect the designations (e.g., making minor edits for clarity throughout the rule, updating references to enacted and rescinded Executive Orders and Department of the Interior Secretary's Orders). Below is a summary of changes made in this final rule.

(1) We made minor edits to the *Summary of Essential Physical or Biological Features* to clarify which physical or biological features are essential to the conservation of each species in an effort to resolve confusion expressed during the public comment period. Specifically, we added explicit statements about which substrate types are considered suitable habitat for each species using information that was presented in table 1 of the **Physical or Biological Features Essential to the Conservation of the Species** section of the proposed critical habitat rule (89 FR 101100 at 101105; December 13, 2024).

(2) In an effort to resolve confusion expressed during the public comment period, we made minor edits to the **Criteria Used to Identify Critical Habitat** section to clarify the methodology used to identify areas as critical habitat for each species. During the

public comment period, multiple commenters were confused about the application of “risk” terminology in the **Criteria Used to Identify Critical Habitat** compared to the “risk” evaluation described in the SSA report. In the proposed rule, the term “risk” was used in a general sense of the term to describe what was meant by a “high-condition” or “moderate-condition” population, in plain language, rather than indicate identified risks acting on a population as described in the SSA report. This unintentional conflation of terms resulted in some confusion around how we delineated critical habitat units. As such, in this final rule, we removed the term “risk” from our methodology to reduce confusion and better convey our approach for defining areas as critical habitat.

(3) We extended the critical habitat designation for rayed bean (RABE) 9: Allegheny River to include additional areas upstream of the proposed designation in areas that are considered to be occupied by the species and that contain the physical or biological features based on information we received during the comment period. Specifically, we extended the critical habitat designation in the Allegheny River upstream from its confluence with Oswayo Creek near Portville (Cattaraugus County, New York) to the Allegheny River’s confluence with Sartwell Creek near Burtville (McKean County, Pennsylvania). We also extended the critical habitat designation in Oswayo Creek upstream from the New York/Pennsylvania State Line in Allegany County, New York, and McKean County, Pennsylvania, upstream to Oswayo Creek’s confluence with Honeoye Creek in Potter County, Pennsylvania. Finally, we added Honeoye Creek from its confluence with Oswayo Creek upstream to the New York/Pennsylvania State Line in Allegany County, New York, and Potter County, Pennsylvania. In total, these revisions to RABE 9 result in an increase of approximately 49 river miles (rmi) (79 river kilometers (rkm)) of critical habitat from the areas we proposed.

(4) We extended the critical habitat designation for RABE 10: Middle Allegheny River to include additional stream segments upstream and downstream of the proposed

designation in areas that are considered to be occupied by the species and that contain the physical or biological features, based on information we received during the comment period. Specifically, we added Oil Creek from the Oil Creek State Park Ice Control Dam in Venango County, Pennsylvania, downstream to Oil Creek's confluences with the Allegheny River in Oil City (Venango County, Pennsylvania). Additionally, we extended critical habitat downstream in the Allegheny River from its previous terminus at Lock and Dam Number 5 in Armstrong County, Pennsylvania, downstream to the Allegheny River's mouth at the Kiskiminetas River in Armstrong County, Pennsylvania. These revisions to RABE 10 result in an increase of approximately 8 rmi (13 rkm) of critical habitat from the areas we proposed.

(5) We updated the unit description for RABE 15: Tippecanoe River within the preamble and the regulatory text and updated the map within the regulatory text. Specifically, we divided RABE 15: Tippecanoe River into two subunits within a larger unit instead of describing it all as a single unit; however, the overall designation did not change. As written in the proposed rule, the critical habitat designation excluded Lakes Shafer and Freeman and the stretch of the Tippecanoe River between the two lakes, which resulted in two disjunct portions of critical habitat on the Tippecanoe River—now referred to as subunits. Although the unit description did not include the two lakes and the stretch of the Tippecanoe River as critical habitat (i.e., this area was excluded by text), this segment was inadvertently included within the regulatory maps of the proposed rule (89 FR 101100 at 101148–101149). We updated the map in this final rule to show only the subunits as critical habitat within RABE 15: Tippecanoe River.

(6) We updated the unit description for snuffbox (SNBO) 2: Embarrass River within the preamble and the regulatory text by dividing the unit into two subunits instead of describing it all as a single unit; however, the overall designation did not change. As written in the proposed rule, the unit description was not clear that there was a break

within the critical habitat unit that corresponds to Caroline Pond 247 in Shawano County, Wisconsin. As such, we updated the unit description so that subunit SNBO 2a contains the South Fork Embarrass River portion of the unit and subunit SNBO 2b contains the Embarrass River and North Fork Embarrass River portions of the unit. We updated the unit map within the regulatory text to show the subunit designations.

(7) We updated the unit description for SNBO 9: French Creek within the preamble and the regulatory text and updated the unit map within the regulatory text. Specifically, we divided SNBO 9: French Creek into two subunits within a larger unit instead of describing it all as a single unit; however, the overall designation did not change. As written in the proposed rule, the unit description was not clear that there was a break in the area designated as critical habitat within the mainstem of the French Creek that corresponds with areas that are not considered to be occupied by the species and that do not contain the physical or biological features essential to the conservation of the species as a result of impounded habitat for Union City Lake. As such, we updated the unit description within this final rule to describe two subunits. SNBO 9 subunit A contains the areas designated as critical habitat upstream of Union City Lake, and SNBO 9 subunit B contains the areas downstream of the Union City Dam that creates Union City Lake. With regard to the unit map, despite the West Branch French Creek being included in the proposed unit descriptions, this segment was inadvertently omitted from the map within the proposed rule's regulatory text (89 FR 101100 at 101169; December 13, 2024). We updated the unit map to show the area designated as critical habitat within the West Branch French Creek.

(8) We updated the critical habitat designation for SNBO 13: Little Kanawha River by removing a portion of the Little Kanawha River from its confluence with the Hughes River downstream to the Little Kanawha River's confluence with the Ohio River in Parkersburg (Wood County, West Virginia). Based on information we received during

the comment period, this stretch of the Little Kanawha River is not considered to be either historically or currently occupied habitat for the snuffbox as it does not contain the physical or biological features essential to the conservation of the species and is heavily impacted by siltation. Thus, this area does not meet our definition of critical habitat. The updated SNBO 13 designation now terminates at the confluence of the Little Kanawha River and the Hughes River near Greencastle (Wirt County, West Virginia), but it still includes the Hughes River portion of the designation. This revision to SNBO 13 results in a decrease of approximately 18 rmi (29 rkm) from the areas we proposed.

(9) We updated the critical habitat designation for SNBO 14: Kanawha River by removing the upstream portion of the Elk River between Sutton Dam in Braxton and Webster Counties, West Virginia, and the Pisgah Ridge Road/Elk Street crossing near the town of Clay (Clay County, West Virginia). Based on information we received in the comment period, this portion of the Elk River is not considered to be historically or currently occupied by the species. Despite apparent suitability and the lack of significant movement barriers, the lack of known records within this stretch of river indicates that some unknown environmental factors are limiting the ability of this river segment to support the species. As such, this area does not meet our definition of critical habitat for snuffbox. The updated SNBO 14 now begins at the Pisgah Ridge Road/Elk Street crossing near Clay (Clay County, West Virginia), and extends downstream in the area we proposed. This revision to SNBO 14: Kanawha River results in a decrease of approximately 49 rmi (79 rkm) from the areas we proposed.

(10) We extended the critical habitat designation for SNBO 16: Little Darby Creek further downstream in occupied areas where the physical or biological features are present, based on information we received during the comment period. The proposed unit stopped at the U.S. Highway 40 Bridge crossing near the village of West Jefferson (Madison County, Ohio); however, the unit now extends downstream to the Little Darby

Creek's confluence with the Big Darby Creek (Franklin County, Ohio). This revision to SNBO 16: Little Darby Creek results in an increase of approximately 7 rmi (11 rkm) from the areas we proposed.

(11) We extended the critical habitat designation for SNBO 17: Big Darby Creek further downstream in occupied areas where the physical or biological features are present, based on information we received during the comment period. The proposed unit stopped at the State Highway 665 Bridge west of the unincorporated community of Darbydale (Franklin County, Ohio); however, it now extends downstream to the Big Darby Creek's confluence with the Scioto River near the city of Circleville (Pickaway County, Ohio). This revision of SNBO 17: Big Darby Creek results in an increase of approximately 31 rmi (50 rkm) from the areas we proposed.

(12) We updated the unit description for SNBO 27: Tippecanoe River within the preamble and the regulatory text and updated the map within the regulatory text. Specifically, we divided SNBO 27: Tippecanoe River into two subunits within a larger unit instead of describing it all as a single unit; however, the overall designation did not change. As written in the proposed rule, the critical habitat designation excluded Lakes Shafer and Freeman and the stretch of the Tippecanoe River between the two lakes, which resulted in two disjunct portions of critical habitat on the Tippecanoe River—now referred to as subunits. Although the unit description did not include the two lakes and the stretch of the Tippecanoe River as critical habitat (i.e., this area was excluded by text), this segment was inadvertently included within the regulatory maps of the proposed rule (89 FR 101100 at 101184–101185). We updated the map in this final rule to show only the subunits as critical habitat within SNBO 27: Tippecanoe River.

(13) We made minor updates to all unit descriptions to reflect changes in the status (i.e., proposed or final) of critical habitat designations to reflect the best scientific data available at the time of publication for this final rule.

(14) We updated the spectaclecase (SPCA) 9: Clinch River Unit to resolve a mapping error that overestimated the actual river mileage of the designation. This update resulted in an approximately 3 river mile (5 river kilometer) decrease in the total critical habitat for that unit and the overall total designation for spectaclecase. Given the overlap of this unit with the other designations, the total amount of unique river miles in the designation across the four species remains unchanged.

(15) We updated each species' critical habitat unit description summary tables (table 2 through table 5, below) to include a summary of approximate river mileage by land ownership type (i.e., Federal, State, Local). Within the proposed rules, these tables only reported river mileages by Public and Private land ownership types.

Summary of Comments and Recommendations

In the proposed rule published on December 13, 2024 (89 FR 101100), we requested that all interested parties submit written comments on the proposal by February 11, 2025. We also contacted appropriate Federal and State agencies, Tribal entities, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in USA Today on December 20, 2024. We did not receive any requests for a public hearing. All substantive information received during the comment period has either been incorporated directly into this final rule or is addressed below.

Federal Agency Comments

(1) *Comment:* One Federal Agency requested that we exclude critical habitat under section 4(b)(2) of the Act. Specifically, they requested that portions of Unit SPCA 2 (in the Mississippi River) that are “not suitable habitat” for the spectaclecase mussel be excluded from the critical habitat designation; the agency commented that excluding areas of “not suitable habitat” would reduce the burden placed on project proponents in evaluating areas which are known to not provide any additional protection for the species.

Our response: The Act requires the Service to designate critical habitat for listed species to the maximum extent prudent and determinable and does not restrict such designation to particular land ownership. Rather, areas that meet the definition of critical habitat, as determined on the basis of the best scientific data available, are proposed for designation. However, section 4(b)(2) of the Act further provides that the Secretary, in designating critical habitat and making revisions, shall take into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat. According to our Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (81 FR 7226; February 11, 2016), we consider six elements when considering whether or not to exclude an area from critical habitat: (1) partnerships and conservation plans; (2) conservation plans permitted under section 10 of the Act; (3) national security and homeland security impacts; (4) Tribal lands; (5) Federal lands; and (6) economic impacts. The Secretary may then choose to exercise their discretion to exclude any area from critical habitat if they determine that the benefit of exclusion outweighs the benefits of specifying such areas as part of the critical habitat, unless that exclusion would result in the extinction of the species. Under the Services' Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (81 FR 7226; February 11, 2016), a proponent of such an exclusion must provide a reasoned rationale for such exclusion, including measures undertaken to conserve species and habitat on the land at issue (such that the benefit of inclusion is reduced).

Regarding the request for the Secretary to use their discretion to exclude areas of “not suitable habitat” of Unit SPCA 2 in the Mississippi River from the critical habitat designation for spectaclegoose this unit is occupied by the species and contains the physical or biological features essential to the conservation of the species. Moreover, habitat for and evidence of the species has been found within the navigation channel and

throughout the large pools within the unit. The commenter did not provide any information to support their request to remove areas because they are “not suitable habitat.” These areas are occupied by the species and any discretionary Federal action would need to comply with the provisions of section 7(a)(2) as required under the Act. Accordingly, we did not exclude areas within Unit SPCA 2 from the critical habitat designation.

Comments from States

(2) *Comment:* For sheepsnose, the West Virginia Division of Natural Resources and multiple public commenters requested additional critical habitat across the species’ range. They provided information in support of adding entire units, extending critical habitat upstream or downstream of proposed units, or both. Specifically, we received a request from the West Virginia Division of Natural Resources to consider adding critical habitat within the Ohio River along the border of West Virginia and Ohio within populations identified in the SSA report (i.e., Raccoon-Symmes, Upper Ohio-Shade, Little Muskingum-Middle Island) and the Kanawha River in West Virginia from Kanawha Falls downstream to the Town of Deepwater. Additionally, we received requests from public commenters to consider adding critical habitat within the Ohio River along the border of Illinois, Indiana, Kentucky, Ohio, and West Virginia within populations identified in the SSA report (i.e., Lower Ohio, Lower Ohio-Little Pigeon, Silver-Little Kentucky, Ohio Brush-Whiteoak, Little Scioto-Tygarts, Raccoon-Symmes, Upper Ohio-Shade, Little Muskingum-Middle Island); and the Mississippi River from its confluence with the Chippewa River downstream through Pool 5. As part of these requests, commenters noted a lack of sampling effort in these larger waterbodies (e.g., the Ohio River) and the importance of maintaining connectivity of mussels and their fish hosts between disjunct tributaries through the mainstems of these larger, navigable waterbodies.

Our response: Critical habitat is one of the many tools that supports the continued conservation of imperiled species by guiding cooperation within the Federal government. While the intent of designating critical habitat is to identify specific areas that are indispensable to the conservation of a species, it is important to note that the lack of critical habitat does not preclude coordination and implementation of recovery actions. Our decisions on whether or not to adjust critical habitat, summarized below, are supported by the best available science to identify areas that contain the physical or biological features essential to the conservation of the species, as outlined in our methodology. Additionally, we recognize that the implementation of multiple tools across additional populations, as outlined in the recovery plan for these four species, will be crucial to achieve species' recovery. We assessed all literature and data provided during the public comment period. In most instances, these data were redundant with information that was considered as part of the SSA report (Service 2022b, entire), the recovery plan for these four species of freshwater mussels (Service 2024, entire), or both, which formed the basis of our critical habitat designation. Several comments, however, pertained to decisions associated with the cumulative population size and reproduction and recruitment metrics outlined in Appendix C of the sheepsnose's SSA report (Service 2022b, pp. C-1–C-4) and a few of these comments provided new data that we incorporated into our considerations for this final rule.

We identified critical habitat for sheepsnose based on the physical or biological features essential to the conservation of sheepsnose and considering the data provided for and population conditions estimated within the sheepsnose SSA (Service 2022b, entire), the four mussel recovery plan (Service 2024, entire), and the public comment period for the proposed rule (89 FR 101100; December 13, 2024). All population conditions were estimated in accordance with the best scientific data available, and expert opinions were integrated under certain conditions, as discussed in Appendix C of the SSA report

(Service 2022b, pp. C-1–C-4). Condition category assignments were otherwise data-driven for a comparative approach across populations, resulting in instances where text descriptions capturing expert opinions within the SSA report may not exactly align with the assessed Current Demographic Condition category or subcategories for a given population.

After assessing all additional data received during the public comment period in conjunction with the data used to develop the proposed designation of critical habitat (89 FR 101100; December 13, 2024), we determined that in all instances—except for one—the data were duplicative of information that we already considered or did not result in a change in the current demographic condition of the population. As such, these data do not result in changes that meet our criteria for considering portions of the Ohio River (Lower Ohio, Lower Ohio-Little Pigeon, Silver-Little Kentucky, Ohio Brush-Whiteoak, Little Scioto-Tygarts, Upper Ohio-Shade, Little Muskingum-Middle Island), upper Mississippi River from its confluence with the Chippewa River downstream through Pool 5 (Buffalo-Whitewater), or the Kanawha River in West Virginia from Kanawha Falls downstream to the Town of Deepwater (Upper Kanawha) as critical habitat for the sheepsnose.

For the Raccoon-Symmes population, however, we received data that resulted in the current demographic condition for this population changing from “low” to “moderate” due to the updated information documenting the collection of a juvenile individual in 2020. Although the demographic condition of this population improved, we have determined that this population does not meet our criteria to consider the Raccoon-Symmes portion of the Ohio River as critical habitat for sheepsnose. While the “moderate” demographic condition of this population warrants that we consider this population on a case-by-case basis under the second criteria of our methodology—outlined in the *Methodology Used for Selection of Critical Habitat Units* section, below—the lack of connectivity of this population to other areas of high or moderate demographic condition

or overlap with other areas of existing critical habitat precludes its inclusion as critical habitat.

We agree with commenters that portions of the Ohio River—and other large rivers—remain largely under-sampled, and we recognize that systemic survey efforts range-wide are generally lacking, both of which result in unknowns associated with the current status of many populations. In development of the SSA and recovery plan for these four mussel species, we relied on data provided by State natural resource agencies and Service field offices to inform the metrics used to assess the current demographic conditions of each population. Additionally, we requested that State agency partners provide a technical review of the defined current demographic condition and population description, presented in both the SSA report and the recovery plan, for the respective populations occurring within their areas of management to ensure that available data reflected observed conditions.

Finally, while we agree that mainstem reaches are important for allowing movement of host fish and genes between populations in disjunct tributaries to maintain demographic and genetic health (i.e., genetic variability and adaptive capacity) of populations, these mainstem areas do not meet our criteria for designation of critical habitat. We included mainstem reaches (e.g., the Lower Tennessee River) where appropriate, regardless of navigability status, where they met the definition of critical habitat. In the case of the Ohio River and the upper Mississippi River units that were requested for addition, available data did not support the classification of these areas as having comparatively large populations with evidence of sizeable levels of regularly occurring reproduction over time with high recovery potential. These areas do not overlap with existing critical habitat or occupied areas for other listed species, and these areas do not contain unique habitats that would contribute meaningfully to adaptive capacity of the species. While these areas are important for the sheepsnose, they do not

meet our criteria for inclusion as critical habitat within this final designation. Although they may be important for the recovery of sheepsnose (along with other areas of suitable habitat), they do not meet the definition of critical habitat.

The occupied areas that meet the definition of critical habitat for sheepsnose contain the physical or biological features essential to the conservation of the species and meet the **Criteria Used to Identify Critical Habitat**, described below. This subset of areas is also supported by the sheepsnose's recovery plan, which identifies areas that support the healthiest remaining populations, have high recovery potential, and support genetically distinct populations that are important for the conservation and recovery of sheepsnose.

Public Comments

(3) Comment: For rayed bean, some commenters requested that we expand areas of critical habitat within Little Darby Creek and Big Darby Creek in Ohio, stating that despite the lack of recent rayed bean records, the presence of other mussel species within these waterbodies suggests that inclusion of these areas should be considered.

Our response: As described in our response to comment (2), above, we used the rayed bean SSA report (Service 2022a, entire) and the recovery plan for these four species of freshwater mussels (Service 2024, entire), and we based the critical habitat designations on the best scientific information available. We assessed all data provided during the public comment period. Although the commenters provided information that documented the presence of the rayed bean within these river segments, the records provided were from the historical period (i.e., prior to the year 2000), and thus the areas requested for addition are not considered to be occupied at the time of listing.

Although these areas may be important for the rayed bean (in addition to other areas of potentially suitable habitat), the occupied areas that meet the definition of critical habitat for rayed bean contain the physical or biological features essential to the

conservation of the species and meet the **Criteria Used to Identify Critical Habitat**, described below. This subset of occupied areas supports the rayed bean's recovery plan, which identifies areas that support the healthiest remaining populations, have high recovery potential, and support genetically distinct populations that are important for the conservation and recovery of species. We are not designating any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat, and we have determined that occupied areas are sufficient to conserve the rayed bean. As such, we are not expanding areas of critical habitat within Little Darby and Big Darby Creeks because they do not meet our criteria for inclusion as critical habitat.

(4) Comment: For snuffbox, multiple public commenters requested additions or expansions of the critical habitat designation across the species' range. Specifically, we received requests for adding critical habitat within the Mississippi River below Lock and Dam 1 and expanding critical habitat within the Middle Fork Kentucky River and Red Bird River in Kentucky.

Our response: As described in our response to comment (2), above, we used the snuffbox SSA report (Service 2022c, entire) and the recovery plan for these four species of freshwater mussels (Service 2024, entire). We assessed all data provided during the public comment period. Although these data provided some additional records in the Middle Kentucky River and the Red Bird River, these observations were either redundant with the records considered as part of the SSA report, recovery plan, or were historical observations for the species. In the instance of the upper Mississippi River, while we agree that the snuffbox is present within this segment, its demographic condition is considered to be "low" with a "high" risk based on the SSA report (Service 2022c, pp. 28–30), and the provided information did not change that categorization. Although these areas may be important for the snuffbox (in addition to other areas of potentially suitable

habitat), the occupied areas that meet the definition of critical habitat for snuffbox contain the physical or biological features essential to the conservation of the species and meet the **Criteria Used to Identify Critical Habitat**, described below. This subset of occupied areas supports the snuffbox's recovery plan, which identifies areas that support the healthiest remaining populations, have high recovery potential, and support genetically distinct populations that are important for the conservation and recovery of species.

We are not designating any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat, and we have determined that occupied areas are sufficient to conserve the snuffbox. Within the species' recovery plan, we outline that recovery can be achieved by protecting and maintaining or enhancing existing occupied areas, with no need to create or establish new habitat areas or populations for snuffbox. As such, we determined that the areas that are suggested for inclusion as critical habitat are not known to be occupied by the species or do not meet our criteria for inclusion as critical habitat and thus were not identified as such.

(5) Comment: Multiple commenters requested that the Service consider unoccupied areas of critical habitat for each species, suggesting that the proposed critical habitat designation was not sufficient to protect the species.

Our response: We did not propose to designate any areas outside of the geographical area currently occupied by the species because we did not find any unoccupied areas to be essential for the conservation of the species. Based upon the recently completed recovery plan for the species, we have determined that the designation of critical habitat within the areas currently designated across the physiographic representation of each species' range will be sufficient to conserve the species. Efforts to improve the resiliency of populations in currently occupied streams, as

discussed in the recovery plan, should increase viability to the point that protections of the Act are no longer necessary.

(6) Comment: Multiple commenters suggested that the Service consider including additional areas as critical habitat that are adjacent to the proposed designation as these areas could impact the proposed critical habitat. Multiple commenters requested that we include additional areas upstream of proposed critical habitat. Specifically, one public commenter requested that critical habitat boundaries should be expanded to include riparian buffers, rather than limiting the designation of critical habitat to bank-full heights. In all instances, the commenters stated that alterations to riparian areas, headwater areas, or both could result in decreased suitability of designated critical habitat as a result of water quality or sedimentation impacts.

Our response: Critical habitat includes areas that contain the physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. We have identified those physical or biological features as adequate flows or suitable hydrological flow regimes, suitable substrates and connected instream habitats, adequate water and sediment quality, and the presence and abundance of suitable host fish (physical or biological features are described in more detail in the *Summary of Essential Physical or Biological Features* section, below). Although adjacent terrestrial areas may be important to maintaining the species' habitats, terrestrial areas would not themselves contain those aquatic features. Therefore, we are not including the terrestrial areas in the critical habitat designations.

We acknowledge that degradation to upstream reaches or riparian areas may affect downstream or within-stream areas of aquatic critical habitat. Actions with a federal nexus that may affect designated critical habitat would be considered through the Act's section 7 consultation processes. However, we also note and describe in the economic screening analysis that all areas designated as critical habitat for these four

species of mussels are occupied; thus, section 7 consultation by Federal action agencies is already required for any activities that may affect the mussels regardless of critical habitat designation.

In recognition of the additional requirement in the Section 7 consultation associated with consideration of critical habitat, the costs of this additional layer of compliance due to the presence of critical habitat is quantified in the economic screening analysis. Because section 7 consultations would occur for projects with a Federal nexus that are planned within the critical habitat area anyway given that they are all occupied, there are already measures that would be implemented to avoid jeopardy to the species. Those measures that avoid jeopardy due to habitat impacts to the species are also likely to avoid adverse modification to critical habitat, minimizing any impact from the consultations on critical habitat. Indeed, we anticipate little to no additional section 7 consultations due solely to the designation of critical habitat and no new measures resulting from consultation on the critical habitat. Nevertheless, in our screening analysis for these mussels, we acknowledge the increased complexity of Section 7 consultations that consider critical habitat in addition to the species presence and quantify that administrative burden.

(7) Comment: One commenter suggested that the Service include in the economic analysis consideration of the economic benefits of protecting critical habitat for the four mussel species, including ecosystem services, the protection of clean water, the reduced cost of water treatment for drinking water supplies, as well as public health and recreational benefits.

Our response: The primary intended benefit of critical habitat is to support the conservation of endangered and threatened species, such as the rayed bean, sheepnose, snuffbox, and spectaclecase mussels. In order to quantify and monetize direct benefits of the designation, information would be needed to determine (1) the incremental change in

the probability of conservation of these four species that is expected to result from the critical habitat designation, and (2) the public's willingness to pay for such beneficial changes. Because of the uncertainties associated with monetary quantification of these benefits and uncertainty in additional efforts to conserve any of these four species, we were not able to estimate the economic benefits of ecosystem services, such as clean water via mussel-based biofiltration treatment, or of broad benefits of ecosystem services that flow from the critical habitat areas to human populations.

(8) Comment: One public commenter requested that we exclude critical habitat under section 4(b)(2) of the Act. Specifically, they requested that the Service consider excluding all agricultural and cultivated lands within the state of Tennessee from the proposed designation of critical habitat for sheepnose, snuffbox, and spectaclecase mussels. They stated that agriculture is the number one contributor to Tennessee's economy—accounting for 7.8 percent of the State's economic activity—and suggested that taking land out of production for use as critical habitat will reduce farmers' available resources to grow products, thus increasing the economic burden.

Our response: We are only designating aquatic areas as critical habitat up to the ordinary high water mark; no areas used for agriculture or cultivation are included in the critical habitat designations. Furthermore, private activities without a federal nexus are not subject to additional restrictions due to critical habitat. Routine private land uses, like farming, ranching, timber harvest, and construction, carried out on private land without federal involvement are unaffected by critical habitat designations. Most agricultural activities do not have a Federal nexus, and there are no large-scale Federal irrigation projects in the range of these species. In those limited cases where agricultural activities have had a Federal nexus and have triggered consultation under section 7, there have been no formal consultations (i.e., all consultations have concluded with a "may affect but are not likely to adversely affect" determination). Thus, we do not anticipate any

agricultural areas being taken out of production or otherwise restricted due to this designation.

(9) Comment: Multiple commenters expressed concerns that these critical habitat designations would impose restrictions on private lands, or public lands, and result in loss of access to or ability to use areas designated as critical habitat. One commenter expressed specific concerns that such restrictions would take areas that are currently agricultural and cultivated lands out of production and would result in decreased agricultural productivity.

Our response: Under the Act, the only regulatory effect of a critical habitat designation is that Federal agencies must ensure their actions are not likely to destroy or adversely modify critical habitat under section 7 of the Act. The Act does not authorize the Service to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership. Critical habitat designation also does not establish specific land management standards or prescriptions, although Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Most projects that impact critical habitat do not destroy or adversely modify it. In those limited cases where the proposed action would destroy or adversely modify the critical habitat, the Service is required to identify reasonable and prudent alternatives to the proposed action that would avoid destruction and adverse modification. Reasonable and prudent alternatives must be economically and technologically feasible and implemented in a manner consistent with the intended purposes of the action.

The designation of critical habitat does not prevent access to any land, whether private, tribal, State or Federal. Critical habitat receives protection only under section 7 of

the Act and only directs Federal agencies to ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Lastly, the areas designated as critical habitat only include aquatic habitat up to the ordinary high water mark; adjacent, terrestrial riparian areas (i.e., those areas used for agriculture or cultivation) are not included as part of the critical habitat designations. Therefore, these final designations of critical habitat will not remove agricultural and cultivated lands from production and will not result in loss of access to areas of private or public lands.

(10) Comment: One commenter provided information that supports the effectiveness of forestry best management practices (BMPs) on reducing sedimentation and erosion and protecting aquatic biota. The commenter recommended that we include this information in the final rule.

Our response: We identified the use of BMPs to reduce sedimentation, erosion, and bank destruction as one of the management activities that could ameliorate those threats to the physical or biological features in **Special Management Considerations or Protection** in the proposed rule (see 89 FR 101100 at 101106, December 13, 2024) and in the same discussions (below) in this final rule.

I. Critical Habitat

Background

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, we designate a species' critical habitat concurrently with listing the species. Critical habitat is defined in section 3(5)(A) of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' lifecycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3(3) of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that each Federal action agency ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of designated critical habitat. The designation of critical habitat

does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Rather, designation requires that, where a landowner requests Federal agency funding or authorization for an action that may affect an area designated as critical habitat, the Federal agency consult with the Service under section 7(a)(2) of the Act. If the action may affect the listed species itself (such as for occupied critical habitat), the Federal action agency would have already been required to consult with the Service even absent the designation because of the requirement to ensure that the action is not likely to jeopardize the continued existence of the listed species. Even if the Service were to conclude after consultation that the proposed activity is likely to result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat. By definition (50 CFR 402.02), reasonable and prudent alternatives are not allowed to make projects infeasible (see response to comment 9).

Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4(b)(2) of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information compiled in the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

A critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under

section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best scientific data available at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of those planning efforts calls for a different outcome.

Physical or Biological Features Essential to the Conservation of the Species

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define “physical or biological features essential to the conservation of the species” as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains

necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or absence of a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

General Mussel Biology

Freshwater mussels, including the rayed bean, sheepsnose, snuffbox, and spectaclecase mussels, have a complex life history that involves parasitic larvae, called glochidia, which are wholly reliant on host fish(es). As adult freshwater mussels are generally sessile, suspension-feeders that spend their entire lives partially or completely buried within the substrate (Call 1900, p. 459; Watters 1994, p. 105; West et al. 2000, p. 251), dispersal occurs solely through the behavior of their host fish(es). Mussels are broadcast spawners; males release sperm into the water column, which is taken in by the female. Fertilized eggs develop into microscopic larvae called glochidia within special gill chambers on the female mussel and remain with the female until they are mature and ready for release as glochidia, to attach to their host fish(es) (Haag 2012, pp. 37–42).

Glochidia will perish if they fail to attach to a suitable species of host fish, attach to a fish that has developed immunity from prior infestations, or attach to the wrong location on a host fish (Neeves 1991, p. 254; Bogan 1993, p. 599). Successful glochidia encyst (enclose in a cyst-like structure) on the host's tissue, draw nutrients from the host's tissue, and develop into juvenile mussels (Arey 1932, pp. 214–215). After a period of time when the glochidia transform into juveniles, they will excyst (drop off) from the fish and drop to the substrate on the bottom of the stream. Juveniles that drop in unsuitable substrates perish because their immobility prevents them from relocating to more favorable habitat. Juveniles burrow into interstitial substrates and grow to larger sizes that are less susceptible to predation and displacement from high-flow events (Yeager et al. 1994, p. 220). Adult mussels remain within the same general location where they excysted from their host fish as juveniles.

Habitat Conditions, Suitable Substrates, and Flow Conditions

All life stages of the rayed bean, sheepsnose, snuffbox, and spectaclecase mussels require flowing water for survival. In general, all four species occur within small- to medium-sized creeks, to larger rivers, with rayed bean and snuffbox occasionally occurring along wave-washed shores of lakes (Call 1900, p. 459; Ortman 1919, p. 68; Stansbery 1967, entire; Buchanan 1980, p. 13; Neeves 1991, pp. 280–281; Cummings and Mayer 1992, pp. 50, 142, 162; Watters 1994, p. 105; Oesch 1995, p. 121; Parmalee and Bogan, 1998; pp. 50, 77, 108, 177, 244; Baird 2000, p. 5–6; West et al. 2000, pp. 251, 253; Badra 2002, pers. comm.; Butler 2002, p. 6; Williams et al. 2008, p. 498; Jones et al. 2019, p. 205). Within these areas, rayed bean typically occur in or near shoal or riffle (short, shallow length of stream where the stream flows more rapidly) areas and in the shallow wave-washed areas of glacial lakes over gravel and sand substrates (West et al. 2000, p. 253). Sheepsnose typically occur in shallow shoal habitats with moderate to swift currents—ranging from riffles of a few inches in depth to runs that exceed 20 feet

(6 meters) in larger rivers—over mixtures of coarse sand, gravel, and clay (Ortman 1919, p. 68; Cummings and Mayer 1992, p. 50; Oesch 1995, p. 121; Parmalee and Bogan 1998, pp. 77, 177; Jones et al. 2019, p. 205). Snuffbox typically occur in swift currents of riffles and shoals in rivers and streams and the wave-washed shores of lakes over gravel and sand with occasional cobble and boulders (Cummings and Mayer 1992, p. 162; Parmalee and Bogan 1998, p. 108). Spectaclecase typically occur in rivers and streams with slow to swift currents—often in quiet water near the interface of swift currents—over substrates that range from mud and sand to gravel, cobble, and boulders within relatively shallow riffles and shoals (Stansbery 1967, pp. 29–30; Buchanan 1980, p. 13; Parmalee and Bogan 1998, p. 50; Baird 2000, pp. 5–6).

Appropriate flow is critical for delivering oxygen and nutrients for respiration and filtration (i.e., survival and growth), essential for reproduction to allow glochidia to move to their host and encyst, as well as removing silt and other fine sediments from within rock structures and crevices, which prevents mussel suffocation and degradation of mussel and host-fish shelter habitats. Normal fluctuations in flow velocity are expected; however, extreme changes can be detrimental. Significant or prolonged increases in velocity, typically associated with flood conditions, have the potential to dislodge and scour mussels and move the bed, destroying habitat for the mussels and their host fishes (Holland-Bartels 1990, pp. 331–332; Layzer and Madison 1995, p. 135). Further, abnormally high velocities have the potential to cause glochidia mortality due to wash out and displacement of juveniles and adults. Alternatively, extreme low flows, typically associated with drought or water withdrawals, can impact reproduction, feeding, respiration, and in some cases, result in exposure and desiccation of the species (Fisher and LaVoy 1972, pp. 1473–1476; Stegman 2020, entire). Although some individuals are found in areas that experience seasonal low flows, areas that experience periodic drying or intermittent flow generally cannot support mussel assemblages.

Appropriate water quality is critical to the survival, reproduction, and persistence of all life stages of freshwater mussels. Point and non-point source contaminants can result in water quality and habitat degradation. Contaminants alter the chemical, physical, and biological characteristics of a stream, resulting in lethal and sub-lethal effects to mussels and their fish hosts. Although specific data for these parameters with respect to these four species are not directly available, mussels in general are similar in terms of sensitivity to certain thresholds, depending on the life stage exposed. In general, mussels need water temperatures below 86 degrees Fahrenheit (30 degrees Celsius), dissolved oxygen concentrations greater than 5 milligrams per liter (Pandolfo 2010, entire), and water quality concentrations below acute toxicity levels to mussels for contaminants such as total ammonia, nitrogen, copper, chloride, and sulfate (see Appendix B, Service 2022a, b, c, d).

Habitat Connectivity

A mussel population includes more than one mussel bed; it is the collection of mussel beds within a stream reach between which infested host fish may travel, allowing for ebbs and flows in mussel bed density and abundance through time throughout the population's occupied reach. Therefore, sufficiently resilient populations of all four species must occupy connected stream reaches long enough so that stochastic events that affect individual mussel beds do not eliminate the entire population. Connectivity is characterized by suitable water quality, lack of barriers to dispersal (e.g., perched culverts, hydropower dams that lack passage for host fishes, water control structures), and presence of suitable shelter habitat and forage base for host fish(es). Repopulation, through dispersal via infected host fish from other mussel beds within a given stream reach, can allow the population and individual beds within that population to recover from these stochastic events. Long stream reaches are more likely to support sufficiently

resilient populations into the future than shorter stream reaches; thus, long reaches of connected stream habitat are essential to support all life stages of all four species.

Presence of Host Fish Species

All four species are obligate parasites that rely on specific host-fish for developing into juvenile mussels and dispersal. Glochidia must come into contact with specific host fish to ensure survival; without the proper host fish, glochidia will perish and fail to transform into juvenile mussels. Each mussel species relies on a different suite of host fish(es).

Rayed bean depend on darter and sculpin species as host fish; however, the exact suite of host fish species is unknown (Parmalee and Bogan, 1998, p. 245; West et al. 2000, p. 254). The only published studies identify the Tippecanoe darter (*Etheostoma tippecanoe*) and spotted darter (*E. maculatum*) as host fish (White et al. 1996, p. 191; Gibson et al. 2011, p. 7); however, these species are not (and were not) found throughout the species' current or historical range. Other host fishes are thought to include the greenside darter (*E. blenniodes*), rainbow darter (*E. caeruleum*), mottled sculpin (*Cottus bairdi*), and largemouth bass (*Micropterus salmoides*) (Woolnough 2002, p. 51). Based on closely related species that occur in the same areas and habitats, additional hosts may include species in the subgenus *Nothonotus* of *Etheostoma*, sculpins (*Cottus* spp.), and fantail darter (*E. flabellare*) (Jones 2002, pers. comm.).

Sheepnose depend on mimic shiner (*Notropis volucellus*) and sauger (*Sander canadensis*) as host fish; of these, only mimic shiner has been observed to be naturally infested and successfully facilitate transformation of juveniles in the lab and is most likely the primary host species. However, lab studies suggest that sheepnose may be able to use a wider variety of fish species including fathead minnow (*Pimephales promelas*), creek chub (*Semotilus atromaculatus*), central stoneroller (*Campostoma anomalum*),

brook stickleback (*Culaea inconstans*), and golden shiner (*Notemigonus cryoleucas*)

(Watters et al. 2005, pp. 11–12; Bradley 2021, pers. comm.).

Snuffbox mussels rely on darter and sculpin species as fish hosts, using log perch (*Percina caprodes*) as their primary host species. Female snuffbox lure host fish with an inflated mantle (i.e., lure) and close their shell around the head of the fish long enough to expel their glochidia and allow for their attachment to the gills of the fish, before releasing the fish (Schwalb et al. 2011, p. 224). Given this life history strategy, they rely on clear water that allows their lures to be visible by potential fish hosts. Other potential host species from lab studies include the blackside darter (*P. maculata*), rainbow darter, Iowa darter (*E. exile*), blackspotted topminnow (*Fundulus olivaceus*), mottled sculpin, banded sculpin (*C. carolinae*), Ozark sculpin (*C. hypselurus*), largemouth bass, and brook stickleback (Sherman 1994, p. 17, Yeager and Saylor 1995, p. 3; Hillegass and Hove 1997, p. 25; Barnhart et al. 1998, p. 34; Hove et al. 2000, p. 30; Sherman Mulcrone 2004, pp. 100–103).

Spectaclecase depend on mooneye (*Hiodon tergisus*) and goldeye (*Hiodon alosoides*) as host fishes (Sietman et al. 2017, p. 18). Natural infestations of spectaclecase have been observed on bigeye chub (*Hybopsis amblops*) and pealip redhorse (*Moxostoma pisolabrum*); however, they are not confirmed host fish species because juvenile mussels have not been observed transforming from these species in lab studies (Baird 2000, p. 24).

Summary of Essential Physical or Biological Features

We derive the specific physical or biological features essential to the conservation of the rayed bean, sheepnose, snuffbox, and spectaclecase from studies of the species' habitat, ecology, and life history as described above. Additional information can be found in the SSA report for each species (Service 2022a, pp. 3–10; Service 2022b, pp. 4–13; Service 2022c, pp. 3–11; Service 2022d, pp. 4–11; all SSA reports are available on

<https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144) and on the Service’s website at the respective species’ profile pages (see *Availability of supporting materials* under **ADDRESSES**, above). The primary habitat features that support resiliency of the four mussel species include flow regime, habitat connectivity, water and sediment quality, and the presence of host fish species. The link between these habitat features and the needs of each life stage of the four mussel species is summarized in table 1, below.

TABLE 1—HABITAT REQUIREMENTS FOR EACH LIFE STAGE OF THE FOUR MUSSEL SPECIES

Life stage	Supporting habitat or biological features	Reference
Fertilized eggs	<ul style="list-style-type: none"> • Suitable water quality • Sexually mature males in proximity to sexually mature females • Suitable spawning water temperatures • Suitable flow conditions 	Ortman 1919, p. 66; Fuller 1974, pp. 240–241; Berg et al. 2008, p. 397; Haag 2012, pp. 38–39.
Glochidia	<ul style="list-style-type: none"> • Suitable water quality (clear water for visual attraction of host) • Availability of host fish for attachment <ul style="list-style-type: none"> ○ Rayed bean: darter and sculpin species ○ Sheepnose: mimic shiner (<i>Notropis volucellus</i>) and sauger (<i>Sander canadensis</i>) ○ Snuffbox: logperch (<i>Percina caprodes</i>) and darter and sculpin species ○ Spectaclecase: mooneye (<i>Hiodon tergisus</i>) and goldeye (<i>H. alosoides</i>) • Suitable water temperature • Suitable flow conditions to ensure glochidia encounter host 	Fuller 1974, pp. 240–241; Strayer 2008, p. 65; Guenther et al. 2009, p. 20; Haag 2012, pp. 41–42; Wolf et al. 2012, p. 7; Hove et al. 2015, pp. 4, 6–8, 12–13.
Juveniles	<ul style="list-style-type: none"> • Suitable water quality (appropriate interstitial chemistry, low salinity, low ammonia, low copper and other contaminants, high dissolved oxygen) • Suitable water temperature • Suitable flow conditions • Host fish dispersal 	Ortman 1919, p. 68; Fuller 1974, pp. 220–221, 238–246; Cummings and Mayer 1992, p. 50; Dimock and Wright 1993, pp. 188–190; Yeager et al. 1994, p. 221; Sparks and Strayer 1998, p. 132; Augspurger et al. 2003, p. 2,574; Augspurger et al. 2007, p. 2,025; Schwalb et al.

	<ul style="list-style-type: none"> • Food availability: smaller algae, detritus, bacteria, organic matter, pedal feeding for first several months • Suitable substrate conditions: <ul style="list-style-type: none"> ○ Rayed bean and snuffbox: stable sand and gravel ○ Sheepnose: firm/stable; coarse sand and gravel; cobble; may include mud ○ Spectaclecase: firm/stable; coarse sand, gravel, and rock free from excessive silt; may include large slabs/boulders 	2011, entire; Strayer and Malcom 2012, pp. 1,787–1,788; Watters et al. 2009, p. 221.
Adults	<ul style="list-style-type: none"> • Suitable water quality (appropriate interstitial chemistry, low salinity, low ammonia, low copper and other contaminants, high dissolved oxygen) • Suitable water temperature • Suitable flow conditions • Food availability: algae, detritus, bacteria, dissolved organic matter, microscopic animals • Suitable substrate conditions: <ul style="list-style-type: none"> ○ Rayed bean and snuffbox: stable sand and gravel ○ Sheepnose: firm/stable; coarse sand and gravel; cobble; may include mud ○ Spectaclecase: firm/stable; coarse sand, gravel, and rock free from excessive silt; may include large slabs/boulders 	Ortmann 1919, p. 68; Fuller 1974, pp. 221, 240–246; Cummings and Mayer 1992, p. 50; Yeager et al. 1994, p. 221; Parmalee and Bogan 1998, p. 177; Nichols and Garling 2000, p. 881; Chen et al. 2001, pp. 213–214; Spooner and Vaughn 2008, p. 308; Watters et al. 2009, p. 221.

We have determined that the following physical or biological features are essential to the conservation of the rayed bean, sheepnose, snuffbox, and spectaclecase:

(i) Adequate flows, or a hydrological flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species are found and to maintain stream connectivity.

(ii) Suitable substrates and connected instream habitats, characterized by geomorphologically stable stream channels and banks (i.e., channels that maintain lateral

dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) that support the four mussel species and their respective host fishes. For rayed bean and snuffbox, suitable substrates are stable gravel and sand with moderate flow and aquatic vegetation in and adjacent to riffles and shoals. For sheepnose, suitable substrates are firm or stable coarse sand, gravel, or rock free from excessive silt. For spectaclecase, these substrates are firm or stable substrates of coarse sand and gravel, are free from excessive silt, and typically include large rock, slabs, or boulders.

(iii) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including appropriate levels of dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86 degrees Fahrenheit (°F) (30 degrees Celsius (°C))). Additionally, concentrations of contaminants, including (but not limited to) ammonia, nitrate, copper, and chloride, are below acute toxicity levels for mussels.

(iv) The presence and abundance of host fishes necessary for recruitment of the species. For the rayed bean, these are darter and sculpin species; for the sheepnose, these are mimic shiner (*Notropis volucellus*) and sauger (*Sander canadensis*); for the snuffbox, these are logperch (*Percina caprodes*) and darter and sculpin species; and for the spectaclecase, these are mooneye (*Hiodon tergisus*) and goldeye (*H. alosoides*).

Special Management Considerations or Protection

When designating critical habitat, we assess whether there are specific areas within the geographical area occupied by the species at the time of listing containing physical or biological features which (1) are essential to the conservation of the species, and (2) may require special management considerations or protection.

The features essential to the conservation of the rayed bean, sheepnose, snuffbox, and spectaclecase may require special management considerations or protection to reduce

the following threats: (1) construction or operation of reservoirs; (2) urbanization of the landscape, including (but not limited to) land conversion to impervious surfaces for urban and commercial use, infrastructure (pipelines, roads, bridges, utilities), and wastewater treatment; (3) significant alteration of water quality and nutrient pollution from a variety of activities, such as mining and agricultural activities; (4) land-use activities that remove large areas of forested wetlands and riparian systems; (5) culvert, dam, and pipe installation that creates barriers to movement for the mussels or their host fish; and (6) other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

Management activities that could ameliorate these threats include, but are not limited to, implementation of best management practices (for silvicultural and agricultural land uses) designed to reduce sedimentation, erosion, and bank destruction; implementation of habitat restoration projects; protection of riparian corridors and woody vegetation; and modification of dam operations or dam removal or both to more closely match natural flow regimes; improved stormwater management; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. We are not designating any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of

critical habitat, and we have determined that occupied areas are sufficient to conserve these four species. Within the recovery plans for all four species, we outline that recovery can be achieved by protecting and maintaining or enhancing existing occupied areas, with no need to create or establish new habitat areas or populations for all four species. Thus, the designation includes only the occupied rivers and streams within the species' ranges that contain the physical or biological features essential to the conservation of the species and that provide the best conditions for the maintenance and expansion of existing populations.

Methodology Used for Selection of Critical Habitat Units

First, we identified those areas within the geographical areas occupied by the species at the time of listing that contain the essential physical or biological features and determined which of these features may require special management considerations or protection. Across all species, we included the areas where the high-condition populations—defined in the SSA report as populations with stable to increasing demography and known evidence of recent recruitment thus indicating a high estimated probability of persistence—occur because these are the areas that contain the features that currently meet the four species' needs for maintaining viability. The presence of the essential physical or biological features in these areas result in populations that have recruitment, varied age class structures, and high-density populations that are important to conservation and recovery actions, as they may serve to bolster other diminished or extirpated populations.

Second, we examined the overall contribution of moderate-condition populations—defined in the SSA report as populations with stable to slightly decreasing demography with limited evidence of recruitment, thus indicating a moderate probability of persistence—to viability of the species, as well as the level of threats acting on those populations. We then considered adjacency and connectivity of these moderate-condition

populations to the high-condition and other moderate-condition populations and included moderate-condition areas on a case-by-case basis. We did not include populations that have potentially low likelihood of recovery due to limited abundances, currently have high levels of threats acting on the species and its habitat, or lack of connectivity to other high- or moderate-condition populations. We did not include areas that do not contain the essential physical or biological features.

Third, we evaluated spatial redundancy and representation across each of the four species' ranges to identify any remaining, consistently observable populations in a major river basin that may contain unique diversity or habitat or both. If we identified such populations, we included them in this final critical habitat designation. For instance, the lower Mississippi River Basin is comprised of a single population of sheepsnose within the Big Sunflower River of Bolivar and Sunflower Counties, Mississippi; this population is in low condition. However, this population exists at the southern edge of the species' range and may have unique genetic diversity that is not present elsewhere within the species' range, and this unit contains one or more of the essential physical or biological features. Thus, we include this stream segment in the sheepsnose's final critical habitat designation to enhance the likelihood of maintaining genetic diversity.

Finally, we evaluated the overlap of the four species' occurrences, as well as their overlap with other listed aquatic species and designated critical habitat, where existing conservation and monitoring efforts may be ongoing. In areas with a high degree of overlap or existing conservation efforts, we included areas of critical habitat within the overlapping areas. These areas were considered in formulating this final critical habitat designation because they contain the physical or biological features that are essential to the conservation of the species and that may require special management considerations. These areas may promote conservation and recovery through maintaining the ecological community and existing genetic diversity for the species.

For all critical habitat units, we define the upstream and downstream boundaries around areas that were occupied by the species at the time of listing and that contain the physical or biological features essential to the conservation of the species using easily recognizable features (e.g., confluence of two named streams, impoundments).

Sources of data for these final critical habitat designations include multiple databases maintained by universities, information from State agencies throughout the species' ranges, and numerous survey reports on threats throughout the species' ranges (as cited in Service 2022a, entire; Service 2022b, entire; Service 2022c, entire; Service 2022d, entire; all reports are available on <https://www.regulations.gov> at Docket No. FWS-R3-ES-2024-0144). We also reviewed available information that pertains to the habitat requirements for these species. Sources of information on habitat requirements include studies conducted at occupied sites and published in peer-reviewed articles, agency reports, and data collected during monitoring efforts (as cited in Service 2022a, entire; Service 2022b, entire; Service 2022c, entire; Service 2022d, entire; all reports are available on <https://www.regulations.gov> at Docket No. FWS-R3-ES-2024-0144). River segments were defined using the National Hydrography Dataset Plus High Resolution (NHDPlus HR) dataset maintained by the U.S. Geological Survey (Moore et al. 2019, entire).

In summary, for areas within the geographical area occupied by the species at the time of listing, we delineated critical habitat unit boundaries using the following criteria:

- (1) We identified river and stream reaches with observations from 2000 to present for rayed bean, sheepnose, and snuffbox, as well as river and stream reaches with observations from 1970 to present for spectaclecase, and considered these areas to be currently occupied. For spectaclecase, we determined that it is reasonable to find these areas occupied over a longer timeframe due to its longer lifespan (50 or more years on average), compared to the other mussel species (less than 30 years on average). For all

species, the available State heritage databases and information, as well as increased survey efforts and detections of the species since 2012 in previously unknown areas of suitable habitat, support the likelihood of the species' continued presence in known occupied areas since the time of listing in 2012.

(2) We delineated specific habitat areas based on Natural Heritage Element Occurrences, published reports, and unpublished survey data provided by States and other partners. These areas provide habitat for the four mussel species, despite fluctuations in local conditions. The areas within the proposed units represent continuous river and stream reaches of relatively free-flowing habitat patches capable of sustaining fish hosts and allowing for transport of glochidia, which are essential for reproduction and dispersal of these species.

(a) *Rayed bean*: We are designating critical habitat for the rayed bean in the Black River, Pine River, Belle River, River Raisin, Clinton River, Fish Creek, Swan Creek, Blanchard River, Allegheny River, Olean Creek, Oil Creek, Oswayo Creek, French Creek, LeBoeuf Creek, Muddy Creek, Cussewago Creek, Little Darby Creek, Big Darby Creek, Great Miami River, and Tippecanoe River (see **Final Critical Habitat Designation**, below). All of these rivers and streams were known to be occupied at the time of listing except River Raisin, Oil Creek, Oswayo Creek, and Little Darby Creek. Although the rayed bean was not known from River Raisin (detected in 2015), Oil Creek (detected in 2015), Oswayo Creek (detected in 2015), and Little Darby Creek (detected in 2023) at the time of listing, all of the rivers and streams are either tributaries to or occur within a watershed where the rayed bean was known to occur at the time of listing, except for River Raisin. Eight adult rayed bean were detected in the River Raisin in 2015, representing an occurrence in an entirely new watershed that was not known to be occupied at the time of listing. Given that the species is able to live in excess of 20 years, juvenile and adult mussels are immobile, adults mature around age 4 or 5, and the

detections were of reproducing adults of unknown ages, it is reasonable to assume that these watersheds were also occupied at the time of listing in 2012 and had not been detected due to lack of survey effort. Thus, we consider all units to have been occupied at the time of listing and appropriate for designation as occupied critical habitat.

Furthermore, given that the mussel beds within River Raisin, Oil Creek, Oswayo Creek, and Little Darby Creek are considered currently occupied and fall within the currently extant range for the species (i.e., wherever found), we would consult on any activities that are occurring or that will occur within these areas of the species' range.

(b) *Sheepnose*: We are designating critical habitat for the sheepnose in the Chippewa River, Kankakee River, Meramec and Bourbeuse Rivers, Allegheny River, Green River, Tippecanoe River, Walthonding River, Tennessee River, Clinch River, Powell River, and Big Sunflower River (see **Final Critical Habitat Designation**, below). All of these rivers and streams were known to be occupied at the time of listing.

(c) *Snuffbox*: We are designating critical habitat for the snuffbox in the Wolf River, Embarrass River, Little Wolf River, Grand River (Michigan), Flat River, Clinton River, Huron River, Grand River (Ohio), West Branch Grand River (Ohio), Allegheny River, French Creek, LeBoeuf Creek, Cussewago Creek, Woodcock Creek, Muddy Creek, Conneaut Outlet, West Fork River, Shenango River, Little Shenango River, Middle Island Creek, Meathouse Fork, McElroy Creek, Little Kanawha River, Leading Creek, Hughes River, North Fork Hughes River, South Fork Hughes River, Kanawha River, Elk River (West Virginia), Olentangy River, Little Darby Creek, Big Darby Creek, Stillwater River, Tygarts Creek, Kinniconick Creek, Licking River, Slate Creek, Middle Fork Kentucky River, Red Bird River, Red River, Green River, Salamonie River, Tippecanoe River, Embarras River, Rolling Fork Salt River, Clinch River, Powell River, Paint Rock River, Elk River (Tennessee), Duck River, St. Croix River, Meramec River, Bourbeuse River, St. Francis River, and Spring River (see **Final Critical Habitat**

Designation, below). All of these rivers and streams were known to be occupied at the time of listing except for Cussewago Creek, West Fork River, Meathouse Fork, South Fork Hughes River, Leading Creek, and Kanawha River. Although the snuffbox was not reported from or detected in Cussewago Creek (detected in 2011; reported post-listing), West Fork River (detected in 2020), Meathouse Fork (detected in 2001; reported in 2016), South Fork Hughes River (detected in 2001; reported in 2016), Leading Creek (detected in 2017), and Kanawha River (detected in 2017) prior to the snuffbox's listing in 2012, all of the rivers and streams are either tributaries to or occur within the watershed where the snuffbox was known to occur at the time of listing. In Cussewago Creek, a fresh dead adult was detected in 2011, but this observation was not reported to the Service until after the species was listed. In West Fork River, three live adults were found in 2020. In the Meathouse Fork and South Fork Hughes River, live snuffbox were detected in 2001, but the data were not reported to the Service until 2016. Follow up surveys in the South Fork Hughes River in 2017 found live individuals dispersed across 24 miles (39 kilometers) of river. In Leading Creek, although the species was presumed extirpated from this reach at the time of listing, one live individual was detected in 2017. Finally, in the Kanawha River, although the species was thought to be extirpated from this reach at the time of listing, one live individual was detected in 2017. Regarding the Cussewago Creek, Meathouse Fork, and South Fork Hughes River, snuffbox was extant in these areas at the time of listing in 2012; however, these data were not provided to the Service until after the species was listed. Regarding all rivers—including the West Fork River, Leading Creek, and Kanawha River—given that all mussel beds occur within areas that are connected to known occupied areas, the species is known to live in excess of 20 years, juvenile and adult mussels are immobile, adults mature around age 5, and many of these detections were of reproducing adults, it is reasonable to assume that these areas were occupied at the time the species was listed in 2012. As such, we consider all units to

be occupied at the time of listing and appropriate for designation as occupied critical habitat. Furthermore, given that the mussel beds within Cussewago Creek, West Fork River, Meathouse Fork, South Fork Hughes River, Leading Creek, and Kanawha River are considered to be currently occupied and fall within the currently extant range for the species (i.e., wherever found), we would consult on any activities that are occurring or that will occur within these areas of the species' range.

(d) *Spectaclecase*: We are designating critical habitat for the spectaclecase in the St. Croix River, Mississippi River, Meramec River, Big River, Gasconade River, Big Piney River, Ouachita River, Tennessee River, Clinch River, Nolichucky River, Green River, and Kanawha River (see **Final Critical Habitat Designation**, below). All of these rivers and streams were known to be occupied at the time of listing.

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for the rayed bean, sheepnose, snuffbox, and spectaclecase. Critical habitat for these mussels includes only stream channels up to bankfull height, where the stream base flow is contained within the channel. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands (and not affecting the designated critical habitat) will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action will affect the physical or biological features in the adjacent critical habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144.

Final Critical Habitat Designation

We are designating approximately 599 river miles (rmi) (964 river kilometers (rkm)) in 15 units as critical habitat for rayed bean; approximately 801 rmi (1,289 rkm) in 11 units as critical habitat for sheepsnose; approximately 2,425 rmi (3,902 rkm) in 38 units as critical habitat for snuffbox; and approximately 1,140 rmi (1,835 rkm) in 12 units as critical habitat for spectaclecase. In total, we are designating approximately 3,814 unique rmi (6,138 rkm) of critical habitat within 76 units across 17 States; many units overlap entirely or within some portion of the designated units for the mussel species that are the subject of this final rule. All units are considered to be occupied by the species—which are already listed as endangered species under the Act. No unoccupied units are being designated for any of the four species. All critical habitat units consist of the streambed up to the ordinary high-water mark, as defined at 33 CFR 328.3(c)(4) in the regulations that implement the Clean Water Act (33 U.S.C. 1251 et seq.). Streambed ownership varies by State and by navigability of the stream. In general, the streambed up to the ordinary high-water mark is public waters of the State; however, there are instances where the streambed is owned by the adjacent landowners. When describing land ownership, below, we use adjacent landownership as a proxy for streambed ownership that is consistent across the ranges of these species. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for all four species.

The 15 areas we designate as critical habitat for the rayed bean are: (1) Black River, (2) Pine River, (3) Belle River, (4) River Raisin, (5) Clinton River, (6) Fish Creek, (7) Swan Creek, (8) Blanchard River, (9) Allegheny River, (10) Middle Allegheny River, (11) French Creek, (12) Little Darby Creek, (13) Big Darby Creek, (14) Great Miami River, and (15) Tippecanoe River. Table 2 shows the critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each unit, and provides the approximate area of each unit. We use the four-letter species code for rayed bean (RABE) to name its critical habitat units. All units are considered occupied at the time of listing.

TABLE 2—CRITICAL HABITAT UNITS FOR RAYED BEAN
 [Length estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit or Subunit Name	Adjacent Land Ownership Type	Size of Unit in River Miles (River Kilometers)
RABE 1: Black River	State	7 (11)
	Private	25 (40)
	Total	32 (51)
RABE 2: Pine River	Private	3 (5)
	Total	3 (5)
RABE 3: Belle River	Private	8 (13)
	Total	8 (13)
RABE 4: River Raisin	Local	0.3 (0.5)
	Private	8 (13)
	Total	8 (13)
RABE 5: Clinton River	Local	1 (2)
	Private	7 (11)
	Total	8 (13)
RABE 6: Fish Creek	State	1 (2)
	Private	30 (48)
	Total	31 (50)
RABE 7: Swan Creek	Private	4 (7)
	Total	4 (7)
RABE 8: Blanchard River	Local	1 (2)
	Private	27 (43)
	Total	28 (45)
RABE 9: Allegheny River	State	12 (19)
	Shared: State & Local*	0.1 (0.2)
	Local	2 (3)
	Private	68 (109)
	Total	82 (131)

RABE 10: Middle Allegheny River	Federal Shared: Federal & State* State Local Private Total	23 (37) 3 (5) 13 (21) 4 (6) 133 (209) 176 (283)
RABE 11: French Creek	Federal State Local Private Total	13 (21) 3 (5) 1 (2) 83 (134) 100 (161)
RABE 12: Little Darby Creek	State Private Total	4 (7) 17 (28) 21 (35)
RABE 13: Big Darby Creek	State Local Private Total	1 (2) 13 (21) 24 (39) 38 (61)
RABE 14: Great Miami River	Private Total	11 (18) 11 (18)
RABE 15a: Tippecanoe River	Local Private Total	1 (2) 27 (43) 28 (45)
RABE 15b: Tippecanoe River	State Private Total	2 (3) 17 (27) 19 (31)
Total by Ownership Type	Federal Shared: Federal & State* State Shared: State & Local* Local Private Total	36 (58) 3 (5) 43 (69) 0.1 (0.2) 24 (39) 493 (793) 599 (964)

* Shared ownership corresponds to stream segments with different public ownership on opposite sides of the river.

Note: Lengths may not sum due to rounding.

The 11 areas we designate as critical habitat for the sheepnose are: (1) Lower Chippewa River, (2) Kankakee River, (3) Meramec and Bourbeuse Rivers, (4) Middle Allegheny-Tionesta, (5) Upper Green River, (6) Tippecanoe River, (7) Walhonding River, (8) Lower Tennessee River, (9) Upper Clinch River, (10) Powell River, and (11) Big Sunflower River. Table 3 shows the critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each unit, and provides the

approximate area of each unit. We use the four-letter species code for sheepnose (SHNO)

to name its critical habitat units. All units are considered occupied at the time of listing.

TABLE 3—CRITICAL HABITAT UNITS FOR SHEEPSNOSE
[Length estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit Name	Adjacent Land Ownership Type(s)	Size of Unit in River Miles (River Kilometers)
SHNO 1: Lower Chippewa River	Federal	5 (8)
	Shared: Federal & State*	1 (2)
	State	29 (47)
	Local	1 (2)
	Private	21 (34)
	Total	57 (92)
SHNO 2: Kankakee River	State	18 (29)
	Local	10 (16)
	Private	23 (37)
	Total	51 (82)
SHNO 3: Meramec and Bourbeuse Rivers	State	18 (29)
	Local	18 (29)
	Private	117 (188)
	Total	153 (246)
SHNO 4: Middle Allegheny-Tionesta	State	0.04 (0.06)
	Private	28 (45)
	Total	28 (45)
SHNO 5: Upper Green River	Federal	27 (43)
	State	7 (11)
	Local	1 (2)
	Private	122 (196)
	Total	157 (253)
SHNO 6: Tippecanoe River	State	9 (14)
	Private	75 (121)
	Total	84 (135)
SHNO 7: Walhonding River	State	0.5 (0.8)
	Local	1 (2)
	Private	22 (35)
	Total	24 (38)
SHNO 8: Lower Tennessee River	Local	0.4 (0.6)
	Private	22 (35)
	Total	23 (36)
SHNO 9: Upper Clinch River	Federal	0.3 (0.5)
	State	6 (10)
	Private	100 (161)
	Total	106 (171)
SHNO 10: Powell River	State	0.3 (0.5)
	Private	62 (100)
	Total	63 (101)
SHNO 11: Big Sunflower River	Federal	0.5 (0.8)
	State	2 (3)
	Private	53 (86)
	Total	56 (90)
Total by Land Ownership Type	Federal	33 (53)
	Shared: Federal & State*	1 (2)
	State	89 (143)
	Local	31 (50)
	Private	647 (1,041)
	Total	801 (1,289)

* Shared ownership corresponds to stream segments with different public ownership on opposite sides of the river.

Note: Lengths may not sum due to rounding.

The 38 areas we designate as critical habitat for the snuffbox are: (1) Wolf River, (2) Embarrass River, (3) Little Wolf River, (4) Grand River (Michigan), (5) Clinton River, (6) Huron River, (7) Grand River (Ohio), (8) Allegheny River, (9) French Creek, (10) West Fork River, (11) Shenango River, (12) Middle Island Creek, (13) Little Kanawha River, (14) Kanawha River, (15) Olentangy River, (16) Little Darby Creek, (17) Big Darby Creek, (18) Stillwater River, (19) Tygarts Creek, (20) Kinniconick Creek, (21) Licking River, (22) Middle Fork Kentucky River, (23) Red Bird River, (24) Red River, (25) Green River, (26) Salamonie River, (27) Tippecanoe River, (28) Embarras River, (29) Rolling Fork Salt River, (30) Clinch River, (31) Powell River, (32) Paint Rock River, (33) Elk River, (34) Duck River, (35) St. Croix River, (36) Meramec River, (37) St. Francis River, and (38) Spring River. Table 4 shows the critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each unit, and provides the approximate area of each unit. We use the four-letter species code for snuffbox (SNBO) to name its critical habitat units. All units are considered occupied at the time of listing.

TABLE 4—CRITICAL HABITAT UNITS FOR SNUFFBOX MUSSEL
[Length estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit or Subunit Name	Adjacent Land Ownership Type(s)	Size of Unit in River Miles (River Kilometers)
SNBO 1: Wolf River	Federal	0.2 (0.3)
	State	0.7 (1)
	Local	0.4 (0.7)
	Private	7 (11)
	Total	8 (13)
SNBO 2a: Embarrass River	Private	11 (18)
	Total	11 (18)
SNBO 2b: Embarrass River	Private	7 (11)
	Total	7 (11)

SNBO 3: Little Wolf River	Private Total	12 (19) 12 (19)
SNBO 4: Grand River (Michigan)	State Local Private Total	9 (14) 5 (8) 27 (43) 41 (65)
SNBO 5: Clinton River	Local Private Total	0.9 (1) 7 (12) 8 (13)
SNBO 6: Huron River	State Local Private Total	7 (11) 2 (3) 7 (12) 16 (26)
SNBO 7: Grand River (Ohio)	Local Private Total	8 (12) 16 (25) 23 (37)
SNBO 8: Allegheny River	State Local Private Total	6 (10) 0.2 (0.3) 29 (46) 35 (57)
SNBO 9a: French Creek	State Private Total	0.7 (1) 18 (29) 19 (30)
SNBO 9b: French Creek	Federal State Local Private Total	13 (21) 14 (23) 3 (4) 81 (131) 111 (179)
SNBO 10: West Fork River	Private Total	22 (35) 22 (35)
SNBO 11: Shenango River	State Local Private Total	0.7 (1) 0.5 (0.8) 26 (42) 28 (44)
SNBO 12: Middle Island Creek	State Local Private Total	0.1 (0.2) 2 (3) 85 (137) 87 (140)
SNBO 13: Little Kanawha River	Federal State Local Private Total	0.5 (0.7) 17 (27) 0.1 (0.2) 183 (294) 200 (322)
SNBO 14: Kanawha River	State Local Private Total	2 (3) 2 (3) 54 (87) 58 (93)
SNBO 15: Olentangy River	State Private Total	0.3 (0.4) 30 (48) 30 (48)

SNBO 16: Little Darby Creek	State Local Private Total	4 (6) 0.004 (0.006) 24 (39) 28 (45)
SNBO 17: Big Darby Creek	State Local Private Total	0.6 (0.9) 20 (32) 49 (78) 69 (111)
SNBO 18: Stillwater River	Local Private Total	0.6 (1) 11 (18) 12 (19)
SNBO 19: Tygarts Creek	State Private Total	1 (2) 88 (141) 89 (143)
SNBO 20: Kinniconick Creek	Private Total	52 (84) 52 (84)
SNBO 21: Licking River	State Local Private Total	15 (24) 3 (5) 221 (355) 239 (385)
SNBO 22: Middle Fork Kentucky River	Private Total	13 (21) 13 (21)
SNBO 23: Red Bird River	Federal Private Total	3 (5) 57 (92) 60 (97)
SNBO 24: Red River	Federal Shared: Federal & State* State Private Total	17 (28) 0.8 (1) 0.5 (0.8) 12 (19) 31 (49)
SNBO 25: Green River	Federal State Local Private Total	27 (43) 7 (11) 2 (4) 121 (195) 157 (253)
SNBO 26: Salamonie River	Federal Private Total	9 (15) 3 (5) 12 (19)
SNBO 27a: Tippecanoe River	Local Private Total	1 (2) 27 (43) 28 (45)
SNBO 27b: Tippecanoe River	State Private Total	2 (3) 17 (27) 19 (31)
SNBO 28: Embarras River	State Local Private Total	5 (8) 3 (5) 63 (101) 71 (114)
SNBO 29: Rolling Fork Salt River	Private Total	95 (153) 95 (153)

SNBO 30: Clinch River	Federal State Local Private Total	0.3 (0.5) 9 (15) 0.4 (0.6) 160 (257) 170 (273)
SNBO 31: Powell River	State Private Total	0.3 (0.5) 66 (106) 66 (106)
SNBO 32: Paint Rock River	Shared: Federal & State* State Private Total	0.3 (0.5) 49 (80) 3 (6) 53 (85)
SNBO 33: Elk River	Private Total	27 (43) 27 (43)
SNBO 34: Duck River	State Local Private Total	27 (43) 0.4 (0.6) 20 (32) 47 (76)
SNBO 35: St. Croix River	Federal Shared: Federal & State* State Local Private Total	19 (31) 4 (6) 8 (13) 0.1 (0.2) 22 (35) 53 (85)
SNBO 36: Meramec River	State Shared: State & Local* Local Private Total	23 (37) 0.05 (0.09) 4 (6) 200 (321) 227 (365)
SNBO 37: St. Francis River	Federal State Private Total	0.05 (0.08) 5 (8) 53 (85) 58 (93)
SNBO 38: Spring River	State Private Total	1 (2) 32 (51) 33 (53)
Total by Ownership Type	Federal Shared: Federal & State* State Shared: State & Local* Local Private Total	89 (143) 5 (8) 221 (356) 0.05 (0.08) 54 (87) 2,056 (3,309) 2,425 (3,902)

* Shared ownership corresponds to stream segments with different public ownership on opposite sides of the river.

Note: Lengths may not sum due to rounding.

The 12 areas we designate as critical habitat for the spectaclecase are: (1) St. Croix River, (2) Mississippi River, (3) Meramec River, (4) Big River, (5) Gasconade River, (6) Big Piney River, (7) Ouachita River, (8) Tennessee River, (9) Clinch River, (10) Nolichucky River, (11) Green River, and (12) Kanawha River. Table 5, below, shows the critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each unit, and provides the approximate area of each unit. We use the four-letter species code for spectaclecase (SPCA) to name its critical habitat units. All units are considered occupied at the time of listing.

TABLE 5—CRITICAL HABITAT UNITS FOR SPECTACLECASE
[Length estimates reflect all land within critical habitat unit boundaries.]

Critical Habitat Unit or Subunit Name	Adjacent Land Ownership Types	Size of Unit in River Miles (River Kilometers)
SPCA 1: Saint Croix	Federal	19 (31)
	Shared: Federal & State*	3 (5)
	State	9 (14)
	Local	1 (2)
	Private	21 (34)
	Total	53 (86)
SPCA 2: Mississippi River	Federal	28 (45)
	Shared: Federal & State*	6 (10)
	Shared: Federal & Local*	0.4 (0.6)
	State	5 (8)
	Shared: State & Local*	0.2 (0.3)
	Local	11 (18)
	Private	82 (132)
Total	132 (212)	
SPCA 3: Meramec River	State	29 (47)
	Shared: State & Local*	0.5 (0.8)
	Local	17 (27)
	Private	110 (177)
Total	156 (251)	
SPCA 4: Big River	Local	1 (2)
	Private	10 (16)
	Total	11 (18)
SPCA 5: Gasconade River	Federal	9 (14)
	State	3 (5)
	Private	211 (340)
	Total	223 (359)
SPCA 6a: Big Piney River	Federal	17 (27)
	Shared: Federal & State*	0.5 (0.8)
	State	0.5 (0.8)
	Private	16 (26)
	Total	34 (55)
SPCA 6b: Big Piney River	Federal	14 (23)
	Private	5 (8)
	Total	19 (31)

SPCA 7: Ouachita River	Local Private Total	1 (2) 82 (132) 83 (134)
SPCA 8: Tennessee River	Federal Shared: Federal & State* State Shared: State & Local* Local Private Total	0.3 (0.5) 20 (32) 112 (180) 2 (3) 0.5 (0.8) 7 (11) 142 (229)
SPCA 9: Clinch River	State Private Total	9 (15) 148 (238) 157 (253)
SPCA 10: Nolichucky River	State Private Total	2 (4) 35 (56) 37 (60)
SPCA 11: Green River	Federal State Private Total	26 (42) 5 (8) 46 (74) 77 (124)
SPCA 12: Kanawha River	Local Private Total	0.4 (0.6) 15 (24) 16 (25)
Total by Ownership Type	Federal Shared: Federal & State* Shared: Federal & Local* State Shared: State & Local* Local Private Total	114 (183) 31 (50) 0.4 (0.6) 174 (280) 3 (5) 31 (50) 787 (1,267) 1,140 (1,835)

* Shared ownership corresponds to stream segments with different public ownership on opposite sides of the river.

Note: Lengths may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat, for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels below.

I. Rayed Bean

All 15 units for rayed bean are considered occupied by the species at the time of listing and contain all of the physical or biological features essential to the species' conservation.

RABE 1: Black River

RABE 1 consists of approximately 32 rmi (51 rkm) of the Black River and Mill Creek in St. Clair County, Michigan. The Black River portion of the unit includes 8 rmi (13 rkm) in St. Clair County, Michigan, from the State Highway 136 Bridge (Beard Road Bridge) in Clyde Township downstream to the Wadhams Road Bridge in Kimball Township. This unit also includes 24 rmi (38 rkm) of Mill Creek in St. Clair County, Michigan, from its confluence with Thompson Drain northwest of Brockway Township downstream to its confluence with Black River at Ruby in Clyde Township, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 21.5 percent (7 rmi (11 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 78.5 percent (25 rmi (40 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Michigan Department of Natural Resources. The unit partially overlaps with proposed critical habitat for the proposed endangered salamander mussel (*Simpsonaias ambigua*) (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to the amount of impervious surface and urbanization; and the presence of invasive species.

RABE 2: Pine River

RABE 2 consists of approximately 3 rmi (5 rkm) of the Pine River in St. Clair County, Michigan. This unit extends from the confluence of the Pine River and Rattle Run downstream to Newman Road in St. Clair Township (St. Clair County, Michigan). The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to the amount of impervious surface and urbanization; and the presence of invasive species.

RABE 3: Belle River

RABE 3 consists of approximately 8 rmi (13 rkm) of the Belle River in St. Clair County, Michigan. This unit extends from the Westrick Road Bridge downstream to the King Road Bridge in China Township, in St. Clair County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to the amount of impervious surface and urbanization; and the presence of invasive species.

RABE 4: River Raisin

RABE 4 consists of approximately 8 rmi (13 rkm) of the River Raisin in Lenawee County, Michigan. This unit extends from the Crockett Highway Bridge in Palmyra Township downstream to the U.S. Route 223 Bridge (West Adrian Street) in the village of Blissfield, in Lenawee County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 3.2 percent (0.3 rmi (0.5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 96.8 percent (8 rmi (13 rkm)) are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of

water quality due to contaminants; habitat degradation and loss due to the amount of impervious surface and urbanization; and the presence of invasive species.

RABE 5: Clinton River

RABE 5 consists of approximately 8 rmi (13 rkm) of the Clinton River in Oakland County, Michigan. This unit extends from downstream of the fish hatchery at Waterford Township downstream to Cass Lake east of the unincorporated community of Four Towns, in Oakland County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 11.0 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 89.0 percent (7 rmi (11 rkm)) are in private ownership. The unit fully overlaps with designated critical habitat for the federally endangered snuffbox mussel and partially overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminant; habitat degradation and loss due to the amount of impervious surface, urbanization, and the lack of canopy cover and vegetative cover in the riparian buffer; reduced connectivity due to barriers; and the presence of invasive species.

RABE 6: Fish Creek

RABE 6 consists of approximately 31 rmi (50 rkm) of Fish Creek in Steuben and DeKalb Counties, Indiana, and Williams County, Ohio. This unit extends from the Ohio Turnpike Interstate 80/Interstate 90 Bridge in Steuben County, Indiana, downstream to the confluence of Fish Creek with St. Joseph River north of the village of Edgerton in Williams County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

Approximately 3.3 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 96.7 percent (30 rmi (48 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources. The unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (*Quadrula cylindrica cylindrica*) (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and fully overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; impacts to the hydrological regime; habitat degradation and loss due to sedimentation and stream channelization; and the presence of invasive species.

RABE 7: Swan Creek

RABE 7 consists of approximately 4 rmi (7 rkm) of Swan Creek in Lucas County, Ohio. This unit extends from the Monclova Road Bridge in the city of Maumee downstream to the Ohio Turnpike Interstate 80/Interstate 90 Bridge in the city of Maumee, in Lucas County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; impacts to the hydrological regime; habitat degradation and loss due to the amount of impervious surface and urbanization; and the presence of invasive species.

RABE 8: Blanchard River

RABE 8 consists of 28 rmi (45 rkm) of the Blanchard River in Hardin and Hancock Counties, Ohio. This unit extends from the County Road 183 Bridge in Jackson Township (Hardin County, Ohio) downstream to the State Route 568 Bridge (Carey Road Bridge) in the city of Findlay (Hancock County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 4.3 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 95.7 percent (27 rmi (43 rkm)) are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to sedimentation and stream channelization; and the presence of invasive species.

RABE 9: Allegheny River

RABE 9 consists of approximately 82 rmi (131 rkm) of the Allegheny River, Honeoye Creek, Olean Creek, Oil Creek, and Oswayo Creek in Allegany and Cattaraugus Counties, New York, and McKean and Potter Counties, Pennsylvania. The Allegheny River portion of this unit includes approximately 47 rmi (76 rkm) of the Allegheny River from its confluence with Sartwell Creek near the unincorporated community of Burtville in McKean County, Pennsylvania, downstream to the Interstate 86 Bridge in the village of Allegany, in Cattaraugus County, New York. The Olean Creek portion of this unit includes approximately 8 rmi (14 rkm) of Olean Creek from its confluence with Oil Creek in the town of Hinsdale downstream to the confluence with Allegheny River in the city of Olean, in Cattaraugus County, New York. The Oil Creek portion of this unit includes approximately 7 rmi (11 rkm) of Oil Creek from the Interstate 86 Bridge near the Cattaraugus County/Allegany County line in New York downstream to its confluence

with Olean Creek in the town of Hinsdale, in Cattaraugus County, New York. The Oswayo Creek portion of this unit includes approximately 12 rmi (19 rkm) of Oswayo Creek its confluence with Honeoye Creek in Potter County, Pennsylvania, downstream to its confluence with Allegheny River just west of the village of Portville in Cattaraugus County, New York). The Honeoye Creek portion of this unit includes approximately 7 rmi (11 rkm) of Honeoye Creek from the New York/Pennsylvania State Line in Allegany County, New York, and Potter County, Pennsylvania, downstream to its confluence with Oswayo Creek. The unit includes the river channel up to the ordinary high-water mark.

Approximately 17.2 percent (14 rmi (22 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 82.8 percent (68 rmi (109 rkm)) are in private ownership. Adjacent State lands are owned or managed by the New York State Office of Parks, Recreation and Historic Preservation and the Pennsylvania Game Commission.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and resource extraction; reduced connectivity due to barriers; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; and the presence of invasive species.

RABE 10: Middle Allegheny River

RABE 10 consists of 176 rmi (283 rkm) of the Allegheny River and Oil Creek in Armstrong, Butler, Clarion, Forest, Venango, Warren, and Westmoreland Counties, Pennsylvania. The Allegheny River portion of this unit extends approximately 171 rmi (275 rkm) from the Kinzua Dam in Warren County, Pennsylvania, downstream to the mouth of the Kiskiminetas River in Armstrong and Westmoreland Counties, Pennsylvania. The Oil Creek portion of this unit includes approximately 5 rmi (8 rkm) from the Oil Creek State Park Ice Control Dam in Venango County, Pennsylvania,

downstream to Oil Creek's confluence with the Allegheny River in Oil City, Venango County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

Approximately 24.4 percent (43 rmi (74 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 75.6 percent (133 rmi (209 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Forest Service and the Service. Adjacent State lands are owned or managed by the Pennsylvania Bureau of Forestry and the Pennsylvania Game Commission. The unit partially overlaps with designated critical habitat for the federally threatened longsolid (*Fusconaia subrotunda*) (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally endangered sheepnose, and the federally endangered snuffbox, and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; and the presence of invasive species.

RABE 11: French Creek

RABE 11 consists of 100 rmi (161 rkm) of French Creek, LeBoeuf Creek, Muddy Creek, and Cussewago Creek in Crawford, Erie, Mercer, and Venango Counties, Pennsylvania. The French Creek portion of this unit includes 77 rmi (124 rkm) of French Creek from the Union City Reservoir Dam northeast of Union City (Erie County, Pennsylvania) downstream to its confluence with the Allegheny River near the city of Franklin (Venango County, Pennsylvania). The LeBoeuf Creek portion of this unit

includes 3 rmi (5 rkm) of LeBoeuf Creek from the State Highway 97 Bridge in Waterford Township downstream to its confluence with French Creek in LeBoeuf Township, in Erie County, Pennsylvania. The Muddy Creek portion of this unit includes 14 rmi (23 rkm) of Muddy Creek from Pennsylvania Highway 77 near the unincorporated community of Little Cooley downstream to its confluence with French Creek east of the borough of Cambridge Springs, in Crawford County, Pennsylvania. The Cussewago Creek portion of this unit includes 6 rmi (10 rkm) of Cussewago Creek from the Rogers Ferry Road Bridge in Hayfield Township downstream to its confluence with French Creek in the city of Meadville, in Crawford County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

Approximately 17.3 percent (17 rmi (27 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 82.7 percent (83 rmi (134 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Service. Adjacent State lands are owned or managed by the Pennsylvania Game Commission. The unit partially overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally endangered sheepnose, and the federally endangered snuffbox mussel, and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and resource extraction; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; the presence of invasive species; and the loss of riparian buffer zones.

RABE 12: Little Darby Creek

RABE 12 consists of 21 rmi (35 rkm) of Little Darby Creek in Madison and Union Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near the unincorporated community of Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near the village of West Jefferson (Madison County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 19.6 percent (4 rmi (7 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 80.4 percent (17 rmi (28 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources. The unit fully overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and the federally endangered snuffbox mussel.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; and the presence of invasive species.

RABE 13: Big Darby Creek

RABE 13 consists of 38 rmi (61 rkm) of Big Darby Creek in Franklin, Madison, and Union Counties, Ohio. This unit extends from the Highway 36 Bridge in the village of Milford Center (Union County, Ohio) downstream to the State Route 665 Bridge (London Groveport Road) by the unincorporated community of Darbydale (Franklin County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 36.8 percent (14 rmi (22 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 63.2 percent (24 rmi (39 rkm)) are in private ownership. Big Darby Creek is a State Scenic River, and adjacent State lands are owned or managed by the Ohio Department of Natural

Resources. The unit fully overlaps with designated critical habitat for the federally endangered snuffbox mussel.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; reduced connectivity due to a barrier; and the presence of invasive species.

RABE 14: Great Miami River

RABE 14 consists of approximately 11 rmi (18 rkm) of the Great Miami River in Logan and Shelby Counties, Ohio. This unit extends from the dam at Riverside Park in village of Quincy (Logan County, Ohio) downstream to the Route 47 Bridge (Riverside Drive) in city of Sidney (Shelby County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; reduced connectivity due to barriers; and the presence of invasive species.

RABE 15: Tippecanoe River

RABE 15 consists of 47 rmi (76 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. This unit is composed of two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

Subunit RABE 15a includes 28 rmi (45 rkm) of the Tippecanoe River from the State Highway 14 Bridge near the town of Winamac (Pulaski County, Indiana) downstream to the Lowes Bridge Road crossing in White County, Indiana.

Subunit RABE 15b includes 19 rmi (31 rkm) of the Tippecanoe River from the Oakdale Dam in Carroll County, Indiana, downstream to the confluence of the Tippecanoe River with the Wabash River northeast of the town of Battle Ground (Tippecanoe County, Indiana).

Approximately 6.6 percent (3 rmi (5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 93.4 percent (44 rmi (71 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Indiana Department of Natural Resources. Both subunits partially overlap with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), the federally endangered sheepsnose, , and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023), and fully overlap with designated critical habitat for the federally endangered snuffbox mussel.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; reduced connectivity due to barriers; and the presence of invasive species.

II. Sheepsnose

All 11 units for sheepsnose are considered occupied by the species at the time of listing and contain all of the physical or biological features essential to the species' conservation.

SHNO 1: Lower Chippewa River

SHNO 1 consists of 57 rmi (92 rkm) of the lower Chippewa River in Buffalo, Dunn, Eau Claire, and Pepin Counties, Wisconsin. This unit extends from the confluence of the lower Chippewa River with the Eau Clair River (Eau Claire County, Wisconsin), downstream to its confluence with the Mississippi River (Buffalo/Pepin Counties, Wisconsin). The unit includes the river channel up to the ordinary high-water mark.

Approximately 63.0 percent (36 rmi (58 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 37.0 percent (21 rmi (34 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Service as part of the Upper Mississippi River National Wildlife Refuge, and adjacent State lands are owned or managed by the Wisconsin Department of Natural Resources. This unit partially overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, and reduced connectivity due to barriers.

SHNO 2: Kankakee River

SHNO 2 consists of 51 rmi (82 rkm) of the Kankakee River in Grundy, Kankakee, and Will Counties, Illinois. This unit extends from the confluence of the Kankakee River with West Creek (Kankakee County, Illinois) downstream to its confluence with the Illinois River (Grundy County, Illinois). The unit includes the river channel up to the ordinary high-water mark.

Approximately 54.9 percent (28 rmi (45 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State, and local) ownership, and 45.1 percent (23 rmi (37 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Illinois Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and sedimentation, and in-stream gravel mining.

SHNO 3: Meramec and Bourbeuse Rivers

SHNO 3 consists of 153 rmi (246 rkm) of the Meramec and Bourbeuse Rivers in Franklin, Jefferson, and Saint Louis Counties, Missouri. This unit consists of 90 rmi (145 rkm) of the Meramec River from its confluence with Rye Creek (Franklin County, Missouri) downstream to its confluence with Mississippi River (Jefferson County, Missouri). SHNO 3 also includes 63 rmi (101 rkm) of the Bourbeuse River from its confluence with Little Creek downstream to its confluence with the Meramec River, in Franklin County, Missouri. The unit includes the river channel up to the ordinary high-water mark.

Approximately 23.7 percent (36 rmi (58 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 76.3 percent (117 rmi (188 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Missouri Department of Conservation and Missouri Department of Natural Resources. This unit partially overlaps with designated critical habitat for the federally endangered snuffbox, and the federally endangered spectaclecase.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of

invasive species; loss of riparian zones; and habitat degradation and loss due to urbanization.

SHNO 4: Middle Allegheny-Tionesta

SHNO 4 consists of 28 rmi (45 rkm)) of the Allegheny River in Forest and Venango Counties, Pennsylvania. This unit extends from the confluence of the Allegheny River with Tionesta Creek (Forest County, Pennsylvania) downstream to its confluence with French Creek (Venango County, Pennsylvania). The unit includes the river channel up to the ordinary high-water mark.

Approximately 0.14 percent (0.04 rmi (0.06 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 99.86 percent (28 rmi (45 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Pennsylvania Fish and Boat Commission. The unit fully overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023) and the federally endangered rayed bean, and partially overlaps with the designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and resource extraction; reduced connectivity due to barriers; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; and the presence of invasive species.

SHNO 5: Upper Green

SHNO 5 consists of 157 rmi (253 rkm) of the Green River in Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky. This unit extends from the confluence of the Green River with the Barren River (Taylor County, Kentucky)

downstream to the Green River Dam (Butler County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 22.5 percent (35 rmi (56 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 77.5 percent (122 rmi (196 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Army Corps of Engineers and the National Park Service, and adjacent State lands are owned or managed by the Kentucky Department of Agriculture and the Kentucky Division of Water—Wild Rivers Program. The unit partially overlaps with designated critical habitat for the federally endangered diamond darter (*Crystallaria cincotta*) (see 50 CFR 17.95(e) and 78 FR 52364, August 22, 2013), the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and the federally endangered spectaclecase, and the proposed critical habitat for the proposed endangered Kentucky creekshell (see 50 CFR 17.95(f) and 89 FR 76196, September 17, 2024), and fully overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023) and the federally endangered snuffbox.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments and associated cold water discharges; siltation and pollution due to improper timbering, sedimentation, and stream channelization; resource extraction; water withdrawals; and development.

SHNO 6: Tippecanoe River

SHNO 6 consists of 84 rmi (135 rkm) of the Tippecanoe River in Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana. This unit extends from the confluence of the Tippecanoe River with Outlet Creek (Marshall County, Indiana)

downstream to Lake Freeman (White County, Indiana). The unit includes the river channel up to the ordinary high-water mark.

Approximately 10.35 percent (9 rmi (14 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 89.65 percent (75 rmi (121 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Indiana Department of Natural Resources. The unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally endangered rayed bean, the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), and the federally endangered snuffbox mussel, and fully overlaps with the proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization, sedimentation, and stream channelization; reduced connectivity due to barriers; and the presence of invasive species.

SHNO 7: Walhonding River

SHNO 7 consists of 24 rmi (38 rkm) of the Walhonding River in Coshocton County, Ohio. This unit extends from the confluence of the Kokosing River and the Mohican River at the unincorporated community of Walhonding downstream to the confluence of the Walhonding River with the Tuscarawas River, in Coshocton County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

Approximately 4.9 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 95.1 percent (22 rmi (36 rkm)) are in private ownership. Adjacent State lands are owned or managed primarily by the Ohio Department of Natural Resources. The unit partially overlaps with

designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, sedimentation, and stream channelization.

SHNO 8: Lower Tennessee River

SHNO 8 consists of 23 rmi (36 rkm) of the Tennessee River in Livingston, Marshall, and McCracken Counties, Kentucky. This unit extends from the Kentucky Dam (Marshall/Livingston Counties, Kentucky) downstream to the confluence of the lower Tennessee River with the Ohio River (McCracken County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 1.8 percent (0.4 rmi (0.6 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 98.2 percent (22 rmi (35 rkm)) are in private ownership. The unit fully overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to in-stream gravel mining; degradation and loss of habitat due to dredging; reduced connectivity due to barriers; and the presence of invasive species.

SHNO 9: Upper Clinch River

SHNO 9 consists of 106 rmi (171 rkm) of the Clinch River in Russell, Scott, and Wise Counties, Virginia, and Hancock County, Tennessee. This unit extends from the confluence of the upper Clinch River with Thompson Creek (Russell County, Virginia) downstream to its confluence with Big Creek (Hancock County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 6.1 percent (6 rmi (10 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 93.9 percent (100 rmi (161 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Forest Service, and adjacent State lands are owned or managed by the Tennessee Wildlife Resources Agency or the Virginia Department of Conservation and Recreation. The unit fully overlaps with designated critical habitat for the federally endangered Cumberlandian combshell (*Epioblasma brevidens*), the federally endangered oyster mussel (*Epioblasma capsaeformis*), the federally endangered purple bean (*Villosa perpurpurea*), and the federally endangered rough rabbitsfoot (*Quadrula cylindrica strigillata*) (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004); the federally endangered fluted kidneyshell, and the federally endangered slabside pearlymussel (see 50 CFR 17.95(f) and 78 FR 59956, September 26, 2013); the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); the federally threatened slender chub (*Erimystax cahni*) (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); the federally endangered snuffbox; and the federally endangered spectaclecase; and partially overlaps with the designated critical habitat for the federally threatened yellowfin madtom (*Noturus flavipinnis*) (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977), and the proposed critical habitat for the federally threatened sickle darter (*Percina williamsi*) (88 FR 4128; January 24, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from downstream impoundment, mining discharges, siltation, contaminants, resource extraction, and water withdrawals; urbanization; and the presence of invasive species.

SHNO 10: Powell River

SHNO 10 consists of 63 rmi (101 rkm) of the Powell River in Lee County, Virginia, and Claiborne and Hancock County, Tennessee. This unit extends from the confluence of the Powell River with the Little Yellow Branch (Lee County, Virginia) downstream to Highway 25E (Dixie Highway E) (Claiborne County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 0.5 percent (0.3 rmi (0.5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 99.5 percent (62 rmi (100 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Tennessee Department of Environment and Conservation or the Virginia Department of Conservation and Recreation. This unit fully overlaps with designated critical habitat for the federally endangered Cumberlandian combshell, federally endangered oyster mussel, federally endangered purple bean, and federally endangered rough rabbitsfoot (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004); the federally endangered fluted kidneyshell, and the federally endangered slabside pearl mussel (see 50 CFR 17.95(f) and 78 FR 59956, September 26, 2013); the federally threatened slender chub and federally threatened yellowfin madtom (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); and the federally endangered snuffbox.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, urbanization, resource extraction, sedimentation, stream channelization; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SHNO 11: Big Sunflower River

SHNO 11 consists of 56 rmi (90 rkm) of the Big Sunflower River in Bolivar and Sunflower Counties, Mississippi. This unit begins where Merigold-Drew Road crosses

the Big Sunflower River (Bolivar County, Mississippi) and extends downstream to the confluence of the Big Sunflower River with the Quiver River (Sunflower County, Mississippi). The unit includes the river channel up to the ordinary high-water mark.

Approximately 4.1 percent (2 rmi (4 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 95.9 percent (54 rmi (86 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the NRCS. Adjacent State lands are owned or managed by the Mississippi Secretary of State and Mississippi Forestry Commission. The unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and sedimentation; degradation and loss of habitat due to dredging and stream channelization; and changes to the hydrological regime.

III. Snuffbox

All 38 units for snuffbox are considered occupied by the species at the time of listing and contain all of the physical or biological features essential to the species' conservation.

SNBO 1: Wolf River

SNBO 1 consists of 8 rmi (13 rkm) of the Wolf River in Shawano County, Wisconsin. This unit extends from the Shawano Dam downstream to the County Road CCC Bridge near the town of Waukechon, in Shawano County, Wisconsin. The unit includes the river channel up to the ordinary high-water mark.

Approximately 17.0 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 83.0

percent (7 rmi (11 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the Bureau of Land Management. Adjacent State lands are owned or managed by the Wisconsin Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization; reduced connectivity due to barriers; impacts to the hydrological regime; and the presence of invasive species.

SNBO 2: Embarrass River

SNBO 2 consists of 18 rmi (29 rkm) of the Embarrass River, South Branch Embarrass River, and North Branch Embarrass River in Shawano County, Wisconsin. This unit is composed of two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

Subunit SNBO 2a includes approximately 11 rmi (18 rkm) of the South Branch Embarrass River in Shawano County, Wisconsin, from Spaulding Street (County Road M) in Tigerton downstream to its confluence with Embarrass River in the town of Grant.

Subunit SNBO 2b includes approximately 7 rmi (11 rkm) of the Embarrass River and the North Fork Embarrass River in Shawano County, Wisconsin. The Embarrass River includes approximately 5 rmi (8 rkm) of the Embarrass River and extends from the Caroline Dam in the town of Grant downstream to its confluence with North Branch Embarrass River, in Shawano County, Wisconsin. The North Branch Embarrass River portion of this unit includes approximately 2 rmi (3 rkm) of North Branch Embarrass from the dam in the unincorporated community of Leopoldis downstream to its confluence with Embarrass River, in Shawano County, Wisconsin.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization; reduced connectivity due to barriers; impacts to the hydrological regime; and the presence of invasive species.

SNBO 3: Little Wolf River

SNBO 3 consists of 12 rmi (19 rkm) of the Little Wolf River in Waupaca County, Wisconsin. This unit extends from the Manawa Mill Pond Dam in the city of Manawa downstream to the Highway X Bridge in the town of Mukwa, in Waupaca County, Wisconsin. The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization; reduced connectivity due to barriers; impacts to the hydrological regime; and the presence of invasive species.

SNBO 4: Grand River (Michigan)

SNBO 4 consists of 41 rmi (65 rkm) of the Grand River and the Flat River in Ionia and Kent Counties, Michigan. The Grand River portion of this unit includes 40 rmi (64 rkm) of the Grand River and extends from the Webber Dam upstream of the village of Lyons (Ionia County, Michigan) downstream to its confluence with Thornapple River in the unincorporated community of Ada (Kent County, Michigan). The Flat River portion of this unit includes 0.5 rmi (0.8 rkm) of the Flat River from West State Highway 21 in the city of Lowell downstream to its confluence with Grand River in the city of

Lowell, in Kent County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 33.5 percent (14 rmi (22 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 66.5 percent (27 rmi (43 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Michigan Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization; reduced connectivity due to barriers; and the presence of invasive species.

SNBO 5: Clinton River

SNBO 5 consists of 8 rmi (13 rkm) of the Clinton River in Oakland County, Michigan. This unit extends from downstream of the fish hatchery at Waterford Township downstream to Cass Lake east of the unincorporated community of Four Towns, in Oakland County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 11.0 percent (0.9 rmi (1 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 89.0 percent (7 rmi (12 rkm)) are in private ownership. The unit fully overlaps with designated critical habitat for the federally endangered rayed bean and partially overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to the amount of impervious surface, urbanization, and the lack of canopy cover and vegetative cover in

the riparian buffer; reduced connectivity due to barriers; and the presence of invasive species.

SNBO 6: Huron River

SNBO 6 consists of 16 rmi (26 rkm) of the Huron River in Livingston County, Michigan. This unit extends from Strawberry Lake downstream to the Kent Lake Dam, in Livingston County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

Approximately 55.5 percent (9 rmi (14 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 44.5 percent (7 rmi (12 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Michigan Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; and the presence of invasive species.

SNBO 7: Grand River (Ohio)

SNBO 7 consists of 23 rmi (37 rkm) of the Grand River in Ashtabula and Lake Counties, Ohio. This unit extends from the Harpersfield Dam in the unincorporated community of Harpersfield (Ashtabula County, Ohio) downstream to the Norfolk and Western Railroad Trestle (Lake County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 33.1 percent (8 rmi (12 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 66.9 percent (16 rmi (25 rkm)) are in private ownership. This unit fully overlaps with designated critical habitat for the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments, domestic and industrial pollution due to human development, resource extraction, water withdrawals, and wastewater treatment plants; and the presence of invasive species.

SNBO 8: Allegheny River

SNBO 8 consists of 35 rmi (57 rkm) of the Allegheny River in Venango County, Pennsylvania. This unit extends from the Allegheny River's confluence with French Creek near city of Franklin downstream to Interstate 80 near the borough of Emlenton, in Venango County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

Approximately 18.6 percent (6 rmi (11 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 81.4 percent (29 rmi (46 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Pennsylvania Bureau of Forestry and the Pennsylvania Fish and Boat Commission. The unit fully overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and the federally endangered rayed bean, and partially overlaps with the critical habitat designation for the federally endangered sheepsnose.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, sedimentation, stream channelization, and resource extraction; reduced connectivity due to barriers (e.g., locks and dams); channelization; and the presence of invasive species.

SNBO 9: French Creek

SNBO 9 consists of 130 rmi (209 rkm) of French Creek, West Branch French Creek, LeBoeuf Creek, Cussewago Creek, Woodcock Creek, Muddy Creek, and Conneaut Outlet in Erie, Crawford, Lebanon, Mercer, and Venango Counties, Pennsylvania. SNBO 9 includes two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

Subunit SNBO 9a includes 19 rmi (30 rkm) of the West Branch French Creek portion in Erie County, Pennsylvania from the Aston Road Bridge in Greenfield Township just west of the New York/Pennsylvania State line downstream to its confluence with French Creek in Wattsburg.

Subunit SNBO 9b includes 111 rmi (179 rkm) of the French Creek, LeBoeuf Creek, Cussewago Creek, Woodcock Creek, Muddy Creek, and Conneaut Outlet in Erie, Crawford, Mercer, and Venango Counties, Pennsylvania. The French Creek portion of this unit includes 75 rmi (121 rkm) from the Union City Reservoir Dam northeast of Union City (Erie County, Pennsylvania) downstream to its confluence with Allegheny River near the city of Franklin (Venango County, Pennsylvania). The LeBoeuf Creek portion of this unit includes 3 rmi (5 rkm) in Erie County, Pennsylvania, from U.S. Highway 19 downstream to its confluence with French Creek in Le Boeuf Township. The Cussewago Creek portion of this unit includes 1 rmi (2 rkm) in Crawford County, Pennsylvania, from Dunham Road in the borough of Fredericksburg downstream to its confluence with French Creek in the city of Meadville. The Woodcock Creek portion of this unit includes 4 rmi (6 rkm) from the Woodcock Dam downstream to its confluence with French Creek in the borough of Saegertown, in Crawford County, Pennsylvania. The Muddy Creek portion of this unit includes 14 rmi (22 rkm) from Pennsylvania Highway 77 near unincorporated community of Little Cooley downstream to its confluence with French Creek east of the borough of Cambridge Springs, in Crawford

County, Pennsylvania. The Conneaut Outlet portion of this unit includes 14 rmi (23 rkm) from Conneaut Lake downstream to its confluence with French Creek in Fairfield Township, in Crawford County, Pennsylvania.

Approximately 23.8 percent (31 rmi (50 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 76.2 percent (99 rmi (160 km)) are in private ownership. Adjacent Federal lands are owned or managed by the Service. Adjacent State lands are owned or managed by the Pennsylvania Fish and Boat Commission and the Pennsylvania Game Commission. Both subunits partially overlap with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally endangered rayed bean, and the federally endangered sheepnose, and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from sedimentation, stream channelization, and resource extraction.

SNBO 10: West Fork River

SNBO 10 consists of 22 rmi (35 rkm) of the West Fork River in Lewis and Harrison Counties, West Virginia. This unit extends from the Broad Run Road Bridge (County Road 8) in Lewis County, West Virginia, downstream to the Trolley Car Lane Bridge in the city of Clarksburg (Harrison County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from contaminants, sedimentation, and resource extraction, and reduced connectivity due to barriers.

SNBO 11: Shenango River

SNBO 11 consists of 28 rmi (44 rkm) of the Shenango River and the Little Shenango River in Crawford and Mercer Counties, Pennsylvania. The Shenango River portion of the unit includes 24 rmi (39 rkm) from Dam Road at the Pymatuning Reservoir Dam outlet in Crawford County, Pennsylvania, downstream to the point of inundation by Shenango River Lake near Big Bend (Mercer County, Pennsylvania). The Little Shenango River portion of this unit includes 4 rmi (6 rkm) from the County Road 4017 Bridge (Werner Road Bridge) downstream to the confluence with Shenango River in the borough of Greenville, in Mercer County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

Approximately 4.4 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 95.6 percent (27 rmi (42 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Pennsylvania Bureau of State Parks. The unit partially overlaps with designated critical habitat for the federally threatened longsolid and the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023); and the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from contaminants and resource extraction, and reduced connectivity due to barriers.

SNBO 12: Middle Island Creek

SNBO 12 consists of 87 rmi (140 rkm) of Middle Island Creek, Meathouse Fork, and McElroy Creek in Doddridge, Tyler, and Pleasants Counties, West Virginia. The Middle Island Creek portion of this unit includes approximately 76 rmi (122 rkm) from the beginning of Middle Island Creek (i.e., where Meathouse Fork and Beaver Creek join forming Middle Island Creek) south of the unincorporated community of Smithburg in Doddridge County, West Virginia, downstream to the confluence with the Ohio River at the city of St. Mary's (Pleasants County, West Virginia). The Meathouse Fork portion of this unit includes approximately 7 rmi (11 rkm) from the State Highway 18 Bridge southeast of the unincorporated community of Blandville downstream to where Beaver Creek and Meathouse Creek join to form Middle Island Creek, in Doddridge County, West Virginia. The McElroy Creek portion of this unit includes approximately 5 rmi (8 rkm) from the Whitetail Lane Bridge to its confluence with Middle Island Creek in the unincorporated community of Alma, in Tyler County, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

Approximately 2.6 percent (2 rmi (3 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State, and local) ownership, and 97.4 percent (85 rmi (137 rkm)) are in private ownership. Adjacent State lands are owned or managed by the West Virginia Division of Natural Resources. The unit partially overlaps designated critical habitat for the federally threatened longsolid and the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023); and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from contaminants and resource extraction, and the presence of invasive species.

SNBO 13: Little Kanawha River

SNBO 13 consists of 200 rmi (322 rkm) of the Little Kanawha River, Leading Creek, Hughes River, North Fork Hughes River, and South Fork Hughes River in Braxton, Calhoun, Gilmer, Ritchie, and Wirt Counties, West Virginia. The Little Kanawha River portion of this unit includes approximately 109 rmi (175 rkm) from Burnsville Dam (which is in neighboring Braxton County) downstream to the confluence with the Hughes River in Wirt County, West Virginia. The Leading Creek portion of this unit includes approximately 12 rmi (20 rkm) from the Ellis Run Road Bridge southwest of the unincorporated community of Troy downstream to the confluence with the Little Kanawha River northwest of the town of Glenville, in Gilmer County, West Virginia. The Hughes River portion of this unit includes approximately 7 rmi (11 rkm) from the convergence of the North and South Forks Hughes River in Freeport downstream to the confluence of the Little Kanawha River in the unincorporated community of Greencastle, in Wirt County, West Virginia. The North Fork Hughes River portion of this unit includes approximately 28 rmi (45 rkm) from the North Bend Dam near the town of Harrisville (Ritchie County, West Virginia) downstream to the convergence with the South Fork Hughes River in the unincorporated community of Freeport (Wirt County, West Virginia). The South Fork Hughes River portion of this unit includes approximately 44 rmi (71 rkm) from the State Route 74 Bridge in Ritchie County, West Virginia, downstream to the convergence with the North Fork Hughes River in the unincorporated community of Freeport (Wirt County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

Approximately 8.6 percent (17 rmi (28 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 91.4 percent (183 rmi (294 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Army Corps of Engineers. Adjacent State lands are owned or

managed by the West Virginia Division of Natural Resources. The unit partially overlaps with designated critical habitat for the federally threatened longsolid and the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments, siltation, and pollution due to improper timbering practices, resource extraction, water withdrawals, development, and wastewater treatment plants; and the presence of invasive species.

SNBO 14: Kanawha River

SNBO 14 consists of 58 rmi (93 rkm) of the Kanawha River and the Elk River in Clay and Kanawha Counties, West Virginia. The Kanawha River portion of this unit includes 5 rmi (8 rkm) from its confluence with the Elk River in the city of Charleston downstream to the westbound crossing of Interstate 64 in western Charleston, in Kanawha County, West Virginia. The Elk River portion of this unit includes 53 rmi (85 rkm) from the Pisgah Ridge Road/Elk Street crossing in Clay County, West Virginia, downstream to its confluence with the Kanawha River in the city of Charleston (Kanawha County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

Approximately 4.5 percent (4 rmi (6 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 92.2 percent (54 mi (87 km)) are in private ownership. Adjacent State lands are owned or managed by the West Virginia Department of Natural Resources. The unit partially overlaps designated critical habitat for the federally endangered diamond darter (see 50 CFR 17.95(e) and 78

FR 52364, August 22, 2013), and for the federally threatened longsolid and federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: the degradation of habitat and water quality from impoundments, siltation, and pollution due to improper timbering practices, resource extraction, water withdrawals, development, and wastewater treatment plants; and the presence of invasive species.

SNBO 15: Olentangy River

SNBO 15 consists of 30 rmi (48 rkm) of the Olentangy River in Marion County, Ohio. This unit extends from the Crawford-Marion Line Road Bridge at the Crawford and Marion County line downstream to the Delaware Dam impoundment (Marion/Delaware County Line, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 0.9 percent (0.3 rmi (0.5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 99.1 percent (30 rmi (48 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, and habitat degradation and loss due to urbanization, sedimentation, and stream channelization.

SNBO 16: Little Darby Creek

SNBO 16 consists of 28 rmi (45 rkm) of Little Darby Creek in Franklin, Madison, and Union Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near the unincorporated community of Chuckery (Union County, Ohio) downstream to its

confluence with Big Darby Creek (Franklin County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 15.0 percent (4 rmi (6 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 85.0 percent (24 rmi (39 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources. The unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and the federally endangered rayed bean.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, and habitat degradation and loss due to urbanization, sedimentation, and stream channelization.

SNBO 17: Big Darby Creek

SNBO 17 consists of 69 rmi (111 rkm) of Big Darby Creek in Franklin, Madison, Pickaway, and Union Counties, Ohio. This unit extends from the U.S. Highway 36 Bridge in the village of Milford Center (Union County, Ohio) downstream to its confluence with the Scioto River near the city of Circleville (Pickaway County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 29.5 percent (20 rmi (32 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 70.5 percent (49 rmi (79 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources. This unit partially overlaps with critical habitat for the federally endangered rayed bean.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of

water quality due to contaminants, and habitat degradation and loss due to urbanization, sedimentation, and stream channelization.

SNBO 18: Stillwater River

SNBO 18 consists of 12 rmi (19 rkm) of the Stillwater River in Miami and Montgomery Counties, Ohio. This unit extends from the Fenner Road Bridge (County Road 37) in Miami County, Ohio, downstream to the Old Springfield Road Bridge in Union City (Montgomery County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.5 percent (0.6 rmi (1 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 94.5 percent (11 rmi (18 rkm)) are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; habitat degradation and loss due to urbanization; reduced connectivity due to barriers; and the presence of invasive species.

SNBO 19: Tygarts Creek

SNBO 19 consists of 89 rmi (143 rkm) of Tygarts Creek in Carter and Greenup Counties, Kentucky. This unit extends from the confluence of Flat Fork just north of U.S Highway 60 in Carter County, Kentucky, downstream to the confluence with the Ohio River in South Shore (Greenup County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 1.4 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 98.6 percent (88 rmi (141 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Kentucky Department of Parks.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; and the presence of invasive species.

SNBO 20: Kinniconick Creek

SNBO 20 consists of 52 rmi (84 rkm) of Kinniconick Creek in Lewis County, Kentucky. This unit extends from the headwaters of Kinniconick Creek southwest of the unincorporated community of Petersville downstream to its confluence with the Ohio River at the unincorporated community of Rexton, in Lewis County, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

All the riparian lands adjacent to, but not included in, this unit are in private ownership. The unit fully overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; impacts to the hydrological regime; and habitat degradation and loss due to urbanization, sedimentation, stream channelization, and the lack of canopy cover and vegetative cover in the riparian buffer.

SNBO 21: Licking River

SNBO 21 consists of 239 rmi (385 rkm) of the Licking River and Slate Creek in Bath, Bracken, Campbell, Fleming, Harrison, Kenton, Menifee, Montgomery, Nicholas, Pendleton, Robertson, and Rowan Counties, Kentucky. The Licking River portion of this unit includes 179 rmi (288 rkm) from the Cave Run Dam in Bath/Rowan Counties, Kentucky, downstream to the confluence with the Ohio River in the city of Covington (Kenton County, Kentucky). The Slate Creek portion of this unit includes 60 rmi (97

rkm) from the U.S. Route 460 Bridge in Menifee County, Kentucky, downstream to the confluence with Licking River in Bath County, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

Approximately 7.5 percent (18 rmi (29 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 92.5 percent (221 rmi (356 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Kentucky State Nature Preserves Commission, Kentucky Department of Fish and Wildlife Resources, and the Kentucky Department of Parks. The unit partially overlaps with designated critical habitat for the federally threatened longsolid and the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments and associated cold water discharges, siltation, and pollution due to improper timbering practices, resource extraction, water withdrawals, development, and wastewater treatment plants; and the presence of invasive species.

SNBO 22: Middle Fork Kentucky River

SNBO 22 consists of 13 rmi (21 rkm) of the Middle Fork Kentucky River in Leslie County, Kentucky. This unit extends from the dam south of the city of Hyden downstream to County Road 1475, in Leslie County, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from sedimentation and resource extraction.

SNBO 23: Red Bird River

SNBO 23 consists of 60 rmi (97 rkm) of the Red Bird River and South Fork Kentucky River in Clay, Lee, and Owsley Counties, Kentucky. The Red Bird River portion of this unit extends from the East Hal Rogers Parkway downstream to its confluence with the South Fork Kentucky River near the unincorporated community of Oneida, in Clay County, Kentucky. The South Fork Kentucky River portion of this unit extends from its confluence with the Red Bird River (Clay County, Kentucky) downstream to its confluence with the North Fork Kentucky River in the city of Beattyville (Lee County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.0 percent (3 rmi (5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal) ownership, and 95.0 percent (57 rmi (92 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Forest Service.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; the presence of invasive species; and impacts to the hydrological regime.

SNBO 24: Red River

SNBO 24 consists of 31 rmi (49 rkm) of the Red River in Wolfe, Menifee, and Powell Counties, Kentucky. This unit extends from the Red River's confluence with Stillwater Creek (Wolfe County, Kentucky) downstream to the Bert T. Combs Mountain

Parkway Bridge (Powell County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 60.5 percent (19 rmi (30 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 39.5 percent (12 rmi (19 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Forest Service. Adjacent State lands are owned or managed by the Kentucky Division of Water.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and urbanization; the presence of invasive species; and reduced connectivity due to barriers.

SNBO 25: Green River

SNBO 25 consists of 157 rmi (253 rkm) of the Green River in Butler, Warren, Edmonson, Green, Hart, and Taylor Counties, Kentucky. This unit extends from the Green River Lake Dam south of the city of Campbellsville (Taylor County, Kentucky) downstream to the confluence with the Barren River at the city of Woodbury (Warren/Butler Counties, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 22.7 percent (36 rmi (58 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 77.3 percent (121 rmi (195 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the National Park Service. Adjacent State lands are owned or managed by the Kentucky Department of Agriculture. This unit fully with designated critical habitat for the federally endangered sheepsnose and the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), and partially overlaps with designated critical habitat for the federally endangered diamond darter (see 50 CFR 17.95(e) and 78

FR 52364, August 22, 2013), the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and the federally endangered spectaclecase, and the proposed critical habitat for the proposed endangered Kentucky creekshell (see 50 CFR 17.95(f) and 89 FR 76196, September 17, 2024).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments and associated cold water discharges, siltation and pollution due to improper timbering, sedimentation, stream channelization, resource extraction, water withdrawals, and development.

SNBO 26: Salamonie River

SNBO 26 consists of 12 rmi (19 rkm) of the Salamonie River in Huntington County, Indiana. The unit extends from the low-head dam by the intersection of County Road W 700 S and S. Belleville Road in Jefferson Township downstream to Salamonie Lake east of the town of Mount Etna, in Huntington County, Indiana. The unit includes the river channel up to the ordinary high-water mark.

Approximately 76.1 percent (9 rmi (14 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal) ownership, and 23.9 percent (3 rmi (5 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Army Corps of Engineers.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and urbanization; the presence of invasive species; and changes to the hydrological regime.

SNBO 27: Tippecanoe River

SNBO 27 consists of 47 rmi (76 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. This unit is composed of two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

Subunit SNBO 27a includes 28 rmi (45 rkm) of the Tippecanoe River from the State Highway 14 Bridge near the town of Winamac (Pulaski County, Indiana) downstream to the Lowes Bridge Road crossing in White County, Indiana.

Subunit SNBO 27b includes 19 rmi (31 rkm) of the Tippecanoe River from the Oakdale Dam in Carroll County, Indiana, downstream to the confluence of the Tippecanoe River with the Wabash River northeast of the town of Battle Ground (Tippecanoe County, Indiana).

Approximately 6.6 percent (3 rmi (5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 93.4 percent (44 rmi (71 rkm)) are in private ownership. Adjacent State land is owned or managed by the Indiana Department of Natural Resources. Both subunits partially overlap with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), and the federally endangered sheepnose, and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023), and fully overlaps with designated critical habitat for the federally endangered rayed bean.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and urbanization; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 28: Embarras River

SNBO 28 consists of 71 rmi (114 rkm) of the Embarras River in Coles, Douglas, and Cumberland Counties, Illinois. The unit extends from the East County Road 1550 North Bridge on the border of Crittenden Township and Camargo Township (Douglas County, Illinois) downstream to the County Road 1200 North Bridge in Cottonwood Township (Cumberland County, Illinois). The unit includes the river channel up to the ordinary high-water mark.

Approximately 11.5 percent (8 rmi (13 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 88.5 percent (63 rmi (101 rkm)) are in private ownership. Adjacent State land is owned or managed by the Illinois Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and urbanization; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 29: Rolling Fork Salt River

SNBO 29 consists of 95 rmi (153 rkm) of the Rolling Fork Salt River in Marion, LaRue, Hardin, Nelson, and Bullitt Counties, Kentucky. This unit extends from the confluence with North Rolling Fork near State Highway 337 (Marion County, Kentucky) downstream to the Interstate 65 Bridge southwest of the city of Lebanon Junction (Bullitt County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership. The unit partially overlaps with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants and urbanization; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 30: Clinch River

SNBO 30 consists of 170 rmi (273 rkm) of the Clinch River in Russell, Scott, Tazewell, and Wise Counties, Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee. This unit extends from State Highway 637 west of the unincorporated community of Pounding Mill in Tazewell County, Virginia, to just downstream of Grissom Island, in Claiborne County, Tennessee. The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.9 percent (10 rmi (16 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 94.1 percent (160 rmi (257 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Forest Service. Adjacent State land is owned or managed by the Tennessee Wildlife Resources Agency and Virginia Department of Conservation and Recreation. This unit fully overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), and partially overlaps with designated critical habitat for the federally endangered purple bean, the federally endangered oyster mussel, the federally endangered rough rabbitsfoot, and federally endangered Cumberlandian combshell (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004); the federally endangered fluted kidneyshell (*Ptychobranthus subtentus*) and the federally endangered slabside pearlymussel (*Pleuonaia dolabelloides*) (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013); and the federally threatened slender chub and the federally threatened yellowfin madtom (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); the federally endangered sheepnose; and

the federally endangered spectaclecase. The unit also overlaps in part or in full with proposed critical habitat for the federally threatened sickle darter (88 FR 4128; January 24, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from downstream impoundment, mining discharges, siltation, contaminants, resource extraction, water withdrawals, and urbanization; and the presence of invasive species.

SNBO 31: Powell River

SNBO 31 consists of 66 rmi (106 rkm) of the Powell River in Lee County, Virginia, and Hancock and Claiborne Counties, Tennessee. This unit extends from the Flanary Bridge Road Bridge (State Highway 758) in Lee County, Virginia, downstream to U.S. 25E Bridge in Claiborne County, Tennessee. The unit includes the river channel up to the ordinary high-water mark.

Approximately 0.5 percent (0.3 rmi (0.5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 99.5 percent (66 rmi (106 rkm)) are in private ownership. Adjacent State land is owned or managed by the Tennessee Department of Environment and Conservation. This unit fully overlaps with designated critical habitat for the federally endangered Cumberlandian combshell, the federally endangered oyster mussel, the federally endangered purple bean, and the federally endangered rough rabbitsfoot (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004); the federally endangered fluted kidneyshell and the federally endangered slabside pearlymussel (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013); the federally threatened yellowfin madtom and the federally threatened slender chub (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); and the federally endangered sheepnose mussel.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, urbanization, resource extraction, sedimentation, stream channelization, and coal mining and mine runoff; reduced connectivity due to barriers; presence of invasive species; and changes to the hydrological regime.

SNBO 32: Paint Rock River

SNBO 32 consists of 53 rmi (85 rkm) of the Paint Rock River in Jackson, Madison, and Marshall Counties, Alabama. The unit extends from the convergence of Estill Fork and Hurricane Creek north of the town of Skyline (Jackson County, Alabama) downstream to U.S. Highway 431 south of the city of New Hope (Madison and Marshall Counties, Alabama). The unit includes the river channel up to the ordinary high-water mark.

Approximately 93.5 percent (50 rmi (80 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 6.5 percent (3 rmi (5 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the Service. Adjacent State land is owned or managed by the Alabama Department of Conservation and Natural Resources. This unit fully overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023), and the federally endangered slabside pearlymussel (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013), and partially overlaps with the designated critical habitat for federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: channelization; degradation of water quality due to contaminants, urbanization, sedimentation, and

stream channelization; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 33: Elk River

SNBO 33 consists of 27 rmi (43 rkm) of the Elk River in Lincoln and Giles Counties, Tennessee. This unit extends from Harms Mill Dam (Lincoln County, Tennessee) downstream to the Interstate 65 Bridge in the city of Elkton (Giles County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

All of the riparian lands adjacent to, but not included in, this unit are in private ownership. This unit fully overlaps with designated critical habitat for the federally endangered fluted kidneyshell and the federally endangered slabside pearlymussel (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants, urbanization, sedimentation, stream channelization, and instream gravel mining; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 34: Duck River

SNBO 34 consists of 47 rmi (76 rkm) of the Duck River in Marshall and Maury Counties, Tennessee. This unit extends from the Lillard's Mill Dam (Marshall County, Tennessee) downstream to the First Street Bridge in the city of Columbia (Maury County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 57.4 percent (27 rmi (44 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 42.6 percent (20 rmi (32 rkm)) are in private ownership. Adjacent State land is owned or managed by the Tennessee Wildlife Resources Agency. This unit fully overlaps with designated critical habitat for the federally endangered Cumberlandian combshell and federally

threatened oyster mussel (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004), the federally endangered fluted kidneyshell and the federally endangered slabside pearl mussel (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013), and the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and partially overlaps with the designated critical habitat for the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794; March 9, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; and changes to the hydrological regime.

SNBO 35: St. Croix River

SNBO 35 consists of 53 rmi (85 rkm) of the St. Croix River in Polk, St. Croix, and Pierce Counties, Wisconsin, and Chisago and Washington Counties, Minnesota. This unit extends from the base of the dam at the city of St. Croix Falls (Polk County, Wisconsin) and the city of Taylors Falls (Chisago County, Minnesota) downstream to the confluences with the Mississippi River at the city Prescott (Pierce County, Wisconsin) and Point Douglas Park (Washington County, Minnesota). The unit includes the river channel up to the ordinary high-water mark.

Approximately 58.3 percent (31 rmi (50 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 41.7 percent (22 rmi (35 rkm)) are in private ownership. Federal land is owned or managed by the National Park Service. State land is owned or managed by the Minnesota Department of Natural Resources. This unit fully overlaps with designated critical habitat for the federally endangered spectaclecase and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; and habitat degradation and loss due to urbanization, sedimentation, stream channelization, and the lack of canopy cover in the riparian buffer.

SNBO 36: Meramec River

SNBO 36 consists of 227 rmi (365 rkm) of the Meramec River and the Bourbeuse River in Saint Louis, Jefferson, Phelps, Gasconade, and Franklin Counties, Missouri. The Meramec River portion of this unit includes 92 rmi (148 rkm) and extends from the State Route 185 Bridge in Meramec Township (Franklin County, Missouri) downstream to the State Highway 141 Bridge in the city of Valley Park (Saint Louis County, Missouri). The Bourbeuse River portion of this unit includes 135 rmi (217 rkm) and extends from the County Road B Bridge in Dawson Township (Phelps County, Missouri) downstream to the confluence with the Meramec River (Franklin County, Missouri). The unit includes the river channel up to the ordinary high-water mark. This unit partially overlaps with critical habitat for the federally endangered sheepnose, and the federally endangered spectaclecase.

Approximately 12.0 percent (27 rmi (44 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State and local) ownership, and 88.0 percent (200 rmi (322 rkm)) are in private ownership. Adjacent State land is owned or managed by the Missouri Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; loss of riparian zones; and habitat degradation and loss due to urbanization.

SNBO 37: St. Francis River

SNBO 37 consists of 58 rmi (93 rkm) of the St. Francis River in Madison and Wayne Counties, Missouri. This unit extends from the confluence with Twelvemile Creek west of the unincorporated community of Saco (Madison County, Missouri) downstream to where inundation begins at Lake Wappepello (Wayne County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

Approximately 8.4 percent (5 rmi (8 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 91.6 percent (53 rmi (85 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Forest Service. Adjacent State land is owned or managed by the Missouri Department of Conservation and Missouri Department of Natural Resources. This unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), the federally threatened Big Creek crayfish and the federally threatened St. Francis River crayfish (88 FR 25512, April 27, 2023), and the federally threatened western fanshell (88 FR 41724; June 27, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; and habitat degradation and loss due to urbanization.

SNBO 38: Spring River

SNBO 38 consists of 33 rmi (53 rkm) of the Spring River in Sharp, Lawrence, and Randolph Counties, Arkansas. This unit extends from the confluence with Ott Creek southeast of the city of Hardy (Sharp County, Arkansas) downstream to the confluence with the Black River east of the city of Black Rock (Lawrence and Randolph Counties, Arkansas). The unit includes the river channel up to the ordinary high-water mark.

Approximately 3.7 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 96.3 percent (32 rmi (51 rkm)) are in private ownership. Adjacent State land is owned or managed by the Arkansas Game and Fish Commission. This unit fully overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and partially overlaps with designated critical habitat for the federally threatened western fanshell (88 FR 41724; June 27, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of water quality due to contaminants; reduced connectivity due to barriers; the presence of invasive species; and habitat degradation and loss due to urbanization.

IV. Spectaclecase

All 12 units for spectaclecase are considered occupied by the species at the time of listing and contain all of the physical or biological features essential to the species' conservation.

SPCA 1: St. Croix River

SPCA 1 is on the border between the States of Minnesota and Wisconsin and consists of 53 rmi (86 rkm) of the St. Croix River in Chisago and Washington Counties, Minnesota, and Polk, St. Croix, and Pierce Counties, Wisconsin. This unit extends from the downstream side of St. Croix Falls dam at the city of St. Croix Falls (Polk County, Wisconsin) downstream to the confluence with the Mississippi River at the city of Prescott (Pierce County, Wisconsin). The unit includes the river channel up to the ordinary high-water mark.

Approximately 60.8 percent (32 rmi (52 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 39.2

percent (21 rmi (34 rkm)) are in private ownership. Adjacent Federal lands in this unit are owned or managed by the National Park Service. Adjacent State land is owned or managed by the Minnesota Department of Natural Resources and the Wisconsin Department of Natural Resources. The unit fully overlaps with designated critical habitat for the federally endangered snuffbox and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023).

The features essential to the conservation of this may require special management considerations or protections to reduce the following threats: the presence of invasive species, impacts to the hydrological regime, and habitat degradation and loss due to sedimentation, stream channelization, or changes in the riparian buffer.

SPCA 2: Mississippi River

SPCA 2 is on the border between the States of Iowa and Illinois and consists of 132 rmi (212 rkm) of the Mississippi River in Scott, Muscatine, Louisa, Des Moines, and Lee Counties, Iowa, and Rock Island, Mercer, Henderson, and Hancock Counties, Illinois. The unit extends from the downstream side of Lock and Dam 14 at the village of Hampton (Rock Island County, Illinois) downstream to Lock and Dam 19 at the city of Keokuk (Lee County, Iowa). The unit occurs within Mississippi River Pools 15, 16, 17, 18, and 19, and the unit includes the river channel up to the ordinary high-water mark.

Approximately 37.8 percent (50 rmi (80 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 62.2 percent (82 rmi (132 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Service, U.S. Army Corps of Engineers, and Bureau of Land Management. Adjacent State land is owned or managed by the Illinois Department of Natural Resources and the Iowa Department of Natural Resources.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to

hydrology from sedimentation, erosion, and turbidity, and from channel maintenance dredging; degradation of water quality due to anthropogenic threats (e.g., pollution, contamination, and disturbance); water impoundment, habitat fragmentation, and reduced connectivity due to lock and dam systems; and the presence of invasive species, especially zebra mussel (*Dreissena polymorpha*).

SPCA 3: Meramec River

SPCA 3 consists of 156 rmi (251 rkm) of the Meramec River in Jefferson, Saint Louis, Franklin, Crawford, and Washington Counties, Missouri. The unit extends from the downstream side of the Highway 19 bridge near the unincorporated community of Wildwoods (Crawford County, Missouri) downstream to the confluence of the Meramec River with the Mississippi River near the city of Kimmswick (Jefferson County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

Approximately 29.6 percent (46 rmi (74 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State, local) ownership, and 70.4 percent (110 rmi (177 rkm)) are in private ownership. Adjacent State land is owned or managed by Missouri Department of Natural Resources. The unit partially overlaps with critical habitat for the federally endangered sheepnose and the federally endangered snuffbox.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to hydrology and water quality from anthropogenic sources including in-stream gravel mining, municipal or industrial pollutants and runoff, and sedimentation; loss of riparian vegetation within the watershed, and further development and conversion of bottomlands; habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams); and the presence of invasive species, especially zebra mussel.

SPCA 4: Big River

SPCA 4 consists of 11 rmi (18 rkm) of the Big River in Jefferson County, Missouri. The unit extends from the downstream side of the Highway W bridge near Rockford Park downstream to the confluence of the Big River with the Meramec River near Twin River Park, in Jefferson County, Missouri. The unit includes the river channel up to the ordinary high-water mark.

Approximately 8.7 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 91.3 percent (10 rmi (16 rkm)) are in private ownership. The unit partially overlaps with critical habitat for the federally endangered sheepnose and the federally endangered snuffbox.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to hydrology and water quality from anthropogenic sources, including in-stream gravel mining, municipal or industrial pollutants and runoff, and sedimentation; loss of riparian vegetation within the watershed, and further development and conversion of bottomlands; habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams); and the presence of invasive species, especially zebra mussel.

SPCA 5: Gasconade River

SPCA 5 consists of 223 rmi (359 rkm) of the Gasconade River in Gasconade, Osage, Maries, Phelps, Pulaski, and Laclede Counties, Missouri. The unit extends from the downstream side of the Highway AD bridge near the unincorporated community of Clark Ford (Laclede County, Missouri) downstream to the confluence of the Gasconade River with the Missouri River at the city of Gasconade (Gasconade County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.4 percent (12 rmi (19 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 94.6 percent

(211 rmi (340 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Forest Service. Adjacent State land is owned or managed by the Missouri Department of Conservation.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to hydrology and water quality from anthropogenic sources, municipal or industrial pollutants and runoff, and sedimentation; loss of riparian vegetation within the watershed and further development and conversion of bottomlands; and habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams).

SPCA 6: Big Piney River

SPCA 6 consists of 53 rmi (86 rkm) of the Big Piney River in Pulaski, Phelps, and Texas Counties, Missouri. SPCA 6 includes two subunits. Subunit SPCA 6a extends approximately 34 rmi (55 rkm) from the downstream side of Boiling Springs Road, at Boiling Springs Access (Texas County, Missouri), downstream to the upstream end of Fort Leonard Wood Military Training Facility (Pulaski County, Missouri). Subunit 6b extends approximately 19 rmi (31 rkm) from the downstream end of Fort Leonard Wood Military Training Facility (Pulaski County, Missouri) to the confluence with the Gasconade River, near the unincorporated community of Hooker (Pulaski County, Missouri). Each subunit includes the river channel up to the ordinary high-water mark.

Approximately 62.3 percent (33 rmi (54 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 37.7 percent (20 rmi (32 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Forest Service. Adjacent State land is owned or managed by the Missouri Department of Conservation.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to

hydrology and water quality from anthropogenic sources, municipal or industrial pollutants, and runoff, and from sedimentation; loss of riparian vegetation within the watershed and further development and conversion of bottomlands; and habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams).

SPCA 7: Ouachita River

SPCA 7 consists of 83 rmi (134 rkm) of the Ouachita River in Hot Springs, Clark, Dallas, and Ouachita Counties, Arkansas. This unit extends from the downstream side of Highway 67 bridge at the town of Donaldson (Hot Springs County, Arkansas) downstream to the Highway 79N bridge at the city of Camden (Ouachita County, Arkansas). The unit includes the river channel up to the ordinary high-water mark.

Approximately 1.2 percent (1 rmi (2 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 98.8 percent (82 rmi (132 rkm)) are in private ownership. The unit partially overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and the federally threatened “Ouachita” fanshell (*Cyprogenia cf. aberti*) (see 50 CFR 17.95(f) and 88 FR 41724, June 27, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to hydrology and water quality from anthropogenic sources, municipal or industrial pollutants, and runoff, and from sedimentation; loss of riparian vegetation within the watershed and further development and conversion of bottomlands; and habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams).

SPCA 8: Tennessee River

SPCA 8 consists of 142 rmi (229 rkm) of the Tennessee River in Marshall, Madison, Morgan, Lawrence, Lauderdale, Limestone, and Colbert Counties, Alabama; Tishomingo County, Mississippi; and Hardin County, Tennessee. The unit extends from

the downstream side of Guntersville Dam at the city of Guntersville (Marshall County, Alabama) downstream to Pickwick Landing Dam at the unincorporated community of Counce (Hardin County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 95.1 percent (135 rmi (218 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 4.9 percent (7 rmi (11 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Tennessee Valley Authority or National Park Service. Adjacent State land is owned or managed by the Alabama Department of Conservation and Natural Resources or the Tennessee Department of Environment and Conservation.

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to hydrology and water quality from anthropogenic sources, municipal or industrial pollutants, and runoff, and from sedimentation; loss of riparian vegetation within the watershed and further development and conversion of bottomlands; habitat loss from bank degradation or destruction, erosion, and in-water structures (e.g., bridges and dams); and the presence of invasive species, especially zebra mussel.

SPCA 9: Clinch River

SPCA 9 consists of 157 rmi (253 rkm) of the Clinch River in Russell, Wise, and Scott Counties, Virginia, and Hancock, Claiborne, and Grainger Counties, Tennessee. SPCA 9 is located on the downstream side of the bridge at Kents Ridge Road at the unincorporated community of Swords Creek (Russell County, Virginia) and extends downstream to the Highway 25E bridge near the town of Tazewell (Claiborne County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.7 percent (9 rmi (15 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 94.3 percent (148 rmi (238

rkm)) are in private ownership. Adjacent State land is owned or managed by the Tennessee Wildlife Resources Agency or Virginia Department of Conservation and Recreation. This unit fully overlaps with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), and partially overlaps with designated critical habitat for the federally endangered Cumberlandian combshell, the federally endangered oyster mussel, the federally endangered purple bean, and the federally endangered rough rabbitsfoot (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004); the federally endangered fluted kidneyshell and the federally endangered slabside pearlymussel (*Pleuironaia dolabelloides*) (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013); the federally threatened slender chub and the federally threatened yellowfin madtom (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); the federally endangered sheepnose, and the federally endangered snuffbox; and proposed critical habitat for the federally threatened sickle darter (88 FR 4128; January 24, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from downstream impoundment, mining discharges, siltation, contaminants, resource extraction, water withdrawals, and urbanization; reduced connectivity due to barriers; and impacts from nonnative species.

SPCA 10: Nolichucky River

SPCA 10 consists of 37 rmi (60 rkm) of the Nolichucky River in Greene, Cocke, Hamblen, and Jefferson Counties, Tennessee. The unit extends from the downstream side of the bridge at Highway 321 near the unincorporated community of St. James (Greene County, Tennessee) downstream to the confluence with the French Broad River near the unincorporated community of Leadvale (Cocke County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 6.7 percent (2 rmi (4 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (State) ownership, and 93.3 percent (35 rmi (56 rkm)) are in private ownership. Adjacent State land is owned or managed by the Tennessee Wildlife Resources Agency. The unit partially overlaps with designated critical habitat for the federally endangered Cumberlandian combshell and the federally endangered oyster mussel (see 50 CFR 17.95(f) and 69 FR 53136, August 31, 2004), and the federally endangered fluted kidneyshell and the federally endangered slabside pearl mussel (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to water quality from sedimentation, stream channelization, resource extraction, power generation, and legacy pollutants; changes in hydrology, in-stream modifications from transportation projects, utility corridor development, and unrestricted cattle access and grazing; loss of riparian vegetation within the watershed and further development and conversion of bottomlands; reduced connectivity due to barriers; and impacts from nonnative species.

SPCA 11: Green River

SPCA 11 consists of 77 rmi (124 rkm) of the Green River in Hart, Edmonson, Warren, and Butler Counties, Kentucky. The unit extends from the downstream side of the bridge at Highway 31W at the city of Munfordville (Hart County, Kentucky) downstream to the confluence with the Barren River near the city of Woodbury (Warren County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 40.2 percent (31 rmi (50 rkm)) of the riparian lands adjacent to, but not included in, SPCA 11 are in public (Federal and State) ownership, and 59.8 percent (46 rmi (74 rkm)) are in private ownership. Adjacent Federal land is owned or

managed by the National Park Service. Adjacent State land is owned or managed by the Kentucky Division of Water—Wild River Program. This unit fully overlaps with designated critical habitat for the federally threatened longsolid and the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023), and the federally endangered sheepnose, the federally endangered snuffbox, and the proposed critical habitat for the proposed endangered Kentucky creekshell (see 50 CFR 17.95(f) and 89 FR 76196, September 17, 2024). Additionally, the unit partially overlaps with designated critical habitat for the federally endangered diamond darter (see 50 CFR 17.95(e) and 78 FR 52364, August 22, 2013) and the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: degradation of habitat and water quality from impoundments and associated cold water discharges, siltation and pollution due to improper timbering, sedimentation, stream channelization, resource extraction, water withdrawals, and development and conversion of bottomlands.

SPCA 12: Kanawha River

SPCA 12 consists of 16 rmi (25 rkm) of the Kanawha River within Kanawha County, West Virginia. This unit extends from the downstream side of the Lock and Dam located at the unincorporated community of London downstream to the Lock and Dam at the city of Marmet, in Kanawha County, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

Approximately 2.5 percent (0.4 rmi (0.6 rkm)) of the riparian lands adjacent to, but not included in, SPCA 12 are in public (local) ownership, and 97.5 percent (15 rmi (24 rkm)) are in private ownership. This unit partially overlaps designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9,

2023) and partially overlaps with the federally threatened round hickorynut (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023).

The features essential to the conservation of this species may require special management considerations or protection to reduce the following threats: changes to water quality from sedimentation, stream channelization, and resource extraction, power generation, and legacy pollutants; changes in hydrology, flow and discharge impacts from dams, in-stream modifications from transportation projects, and utility corridor development; and loss of riparian vegetation within the watershed, bank stabilization and armoring, and further development and conversion of bottomlands.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species (50 CFR 402.02).

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species, destroy or adversely modify critical

habitat, or both, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during formal consultation that:

- (1) Can be implemented in a manner consistent with the intended purpose of the action,
- (2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,
- (3) Are economically and technologically feasible, and
- (4) Would, in the Service Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinstate consultation. Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) if a new species is listed or critical habitat designated that may be affected by the identified action. As provided in 50 CFR 402.16, the requirement to reinstate consultations for new species

listings or critical habitat designation does not apply to certain agency actions (e.g., land management plans issued by the Bureau of Land Management in certain circumstances).

Destruction or Adverse Modification of Critical Habitat

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires that our proposed or final regulations include, to the maximum extent practicable, a brief description and evaluation of those activities (whether public or private) which, in the opinion of the Secretary, if undertaken may adversely modify critical habitat, or may be affected by such designation. Activities that may be affected by designation of critical habitat for the rayed bean, sheepnose, snuffbox, or spectaclecase include those that may affect the physical or biological features of these species' critical habitats (see **Physical or Biological Features Essential to the Conservation of the Species**, above).

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- (2) A statement of goals and priorities;
- (3) A detailed description of management actions to be implemented to provide for these ecological needs; and
- (4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the critical habitat designation for all four species to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. The following areas are DoD lands with completed, Service-approved INRMPs within the critical habitat designation for spectaclegoose.

Approved INRMPs

U.S. Army Maneuver Support Center of Excellence and Fort Leonard Wood (SPCA 6: Big Piney River), 10 rmi (16 rkm)

The U.S. Army Maneuver Support Center of Excellence and Fort Leonard Wood (hereafter, Fort Leonard Wood) is an installation under DoD jurisdiction within Pulaski County, Missouri, near the towns of Waynesville and St. Robert. The installation encompasses approximately 61,641 acres (24,945 hectares) of land within the Ozark Plateau region. The Big Piney River runs along its eastern boundary, and Roubidoux Creek runs along its western boundary. Much of the land surrounding Fort Leonard Wood is in public ownership as part of the Mark Twain National Forest.

The current INRMP provides specific protections for 47 special status fauna species, including the spectaclecase. Conservation actions to benefit the spectaclecase pertain to improvements to water quality, especially decreasing sedimentation and improving stream stabilization. Specifically, best management practices geared toward improving water quality include controlling or eliminating runoff and erosion that could affect surface waters; ensuring nonpoint source pollution abatement is considered within construction, installation operations, and land management plans and activities; ensuring that approved best management practices are implemented and maintained; using site-specific water testing for natural resources programs and erosion control projects; and using water-related inventory data to make decisions regarding land use, restoration options, and fish and wildlife habitat management options. Additionally, vehicles are restricted from driving in waters containing spectaclecase habitat or areas that would disturb water quality or increase turbidity upstream of habitat areas. The INRMP also includes recommendations for an aquatic organism bypass channel as part of restoration or replacement of the Big Piney River water intake weir, as these measures would improve connectivity of habitats upstream of the weir with larger source populations downstream. Aspects of these measures are being implemented at both the local site level (i.e., those related to direct disturbance of spectaclecase habitat) and across the entire installation (i.e., those related to water quality improvements in general).

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified areas are subject to the Fort Leonard Wood INRMP and that conservation efforts identified in the INRMP will provide a benefit to the spectaclecase. Therefore, the river miles that occur within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 10 rmi (16 rkm) of habitat in this final critical habitat designation because of this exemption.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if the benefits of exclusion outweigh those of inclusion, so long as exclusion will not result in extinction of the species concerned. Exclusion decisions are governed by the regulations at 50 CFR 424.19 and the Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act (hereafter, the “2016 Policy”; 81 FR 7226, February 11, 2016), both of which were developed jointly with the National Marine Fisheries Service (NMFS). We also refer to a 2008 Department of the Interior Solicitor’s opinion entitled, “The Secretary’s Authority to Exclude Areas from a Critical Habitat Designation under Section 4(b)(2) of the Endangered Species Act” (M-37016). In this final rule, we are not excluding any areas from critical habitat.

Exclusions based on Economic Impacts

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memo and

screening analysis which, together with our narrative and interpretation of effects, we consider to be our economic analysis of the critical habitat designation and related factors (IEc 2024, entire). The analysis, dated September 13, 2024, was made available for public review from December 13, 2024, through February 11, 2025 (89 FR 101100), and we made minor updates to the screening analysis on July 3, 2025 (IEc 2025, entire), to reflect relevant Executive Orders that were issued after the proposed rule published (89 FR 101100, December 13, 2024). The economic analysis addressed the probable impacts of critical habitat designation for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels is summarized below and available in the screening analysis for the rayed bean, sheepnose, snuffbox, and spectaclecase mussels (IEc 2025, entire), available at <https://www.regulations.gov>.

The full description of the finding from the economic analysis is outlined in the proposed rule (89 FR 101100; December 13, 2024). Although we adjusted some areas as critical habitat for the rayed bean and snuffbox mussels, the changes resulted in a reduction of approximately 160 unique rmi (258 rkm) of critical habitat to the overall designation, and all of these changes occurred within areas that are considered to be occupied by the species. This minor change in the overall designation, combined with the fact that the number of anticipated consultations was based on the number of consultations for each of the species across their ranges, does not result in any changes to the estimated incremental costs associated with this critical habitat designation. The estimated incremental costs of the total proposed critical habitat designation for rayed

bean, sheepnose, snuffbox, and spectaclecase mussels was found to be less than \$630,000 per year. Therefore, the annual administrative costs is unlikely to reach \$100 million in any single year.

As discussed above, we considered the economic impacts of the critical habitat designation, and the Secretary is not exercising their discretion to exclude any areas from this designation of critical habitat for the rayed bean, sheepnose, snuffbox, or spectaclecase mussels based on economic impacts.

Exclusions Based on Impacts on National Security and Homeland Security

In preparing this rule, we have determined that, other than the areas exempted under section 4(a)(3)(B)(i) of the Act based upon the existence of an approved INRMP (see **Exemptions**, above), the areas within the final designation of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase are not owned or managed by DoD or Department of Homeland Security. Therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the public comment period for the proposed designation regarding impacts of the designation on national security or homeland security that would support excluding any specific areas from the final critical habitat designation under the authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security discussed above. To identify other relevant impacts that may affect the exclusion analysis, we consider a number of factors, including whether there are approved and permitted conservation agreements or plans covering the species in the area—such as safe harbor agreements (SHAs), candidate conservation agreements with assurances (CCAAs) or “conservation benefit agreements” or “conservation agreements” (CBAs) (CBAs are a new type of

agreement replacing SHAs and CCAAs in use after April 2024 (89 FR 26070; April 12, 2024)) or HCPs—or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at whether Tribal conservation plans or partnerships, Tribal resources, or government-to-government relationships of the United States with Tribal entities may be affected by the designation. We also consider any State, local, social, or other impacts that might occur because of the designation.

We are not excluding any areas from critical habitat. In preparing this final rule, we have determined that there are currently no permitted plans or other management plans for the rayed bean, snuffbox, and spectaclecase mussels, and the designation does not include any Tribal lands or trust resources. Although there are permitted conservation plans for sheepnose and we identified the Columbia Pipeline Group Multi-Species HCP as potentially impacting the critical habitat for sheepnose within SHNO 11 (Big Sunflower River) at the proposed rule stage (89 FR 101100 at 101131; December 13, 2024), closer inspection of the Columbia Pipeline Group Multi-Species HCP revealed that its coverage area on the Big Sunflower River does not overlap with the areas designated as critical habitat for sheepnose. As such, we did not consider this potential exclusion further.

Therefore, across all four species, we anticipate no impact on Tribal lands, partnerships, or permitted plans from this final critical habitat designation. We did not receive any additional information during the public comment period for the proposed rule regarding other relevant impacts to support excluding any specific areas from the final critical habitat designation under the authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy. Accordingly, the Secretary is not exercising their discretion to exclude any areas from this designation based on other relevant impacts.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order (E.O.) 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules as defined by that E.O.

E.O. 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the Nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. E.O. 13653 directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. We have developed this rule in a manner consistent with these requirements. OIRA has determined that this rule is significant under section 3(f) of E.O. 12866.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; title II of Pub. L. 104–121, March 29, 1996), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Under the RFA, as amended, as understood in light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, only Federal action agencies will be directly regulated by these designations. The RFA does not require evaluation of the potential impacts to entities not directly regulated.

Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, we certify that these critical habitat designations will not have a significant economic impact on a substantial number of small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the proposed rule (89 FR 101100; December 13, 2024) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare statements of energy effects “to the extent permitted by law” when undertaking actions identified as significant energy actions (66 FR 28355; May 22, 2001). E.O. 13211 defines a “significant energy action” as, among other things, an action that (i) meets the definition of a “significant regulatory action” under E.O. 12866; and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy. In our economic analysis, we did not find that these critical habitat designations would significantly affect energy supplies, distribution, or use. Facilities that provide energy supply, distribution, or use (e.g., dams, pipelines) occur within some of the units of the critical habitat designations and may potentially be affected. We determined that consultations, technical assistance, and requests for species lists may be necessary in some instances. However, all four species have been listed under the Act since 2012, all critical habitat units are considered to be occupied by the species, and, as a result, we are not expecting an

increase in the number of consultations into the future across the designation of all four species. Thus, in our economic analysis, we did not find that these critical habitat designations would significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no statement of energy effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.), we make the following finding:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or Tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that

“would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions are not likely to destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) This rule will not significantly or uniquely affect small governments because it will affect such governments only to the extent that any programs having Federal funds, permits, or other authorized activities must ensure that their actions will not adversely affect the critical habitat. Therefore, a small government agency plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not

affect land ownership or establish any closures or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that these designations of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase do not pose significant takings implications for lands within or affected by the designations.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of these critical habitat designations with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, this final rule does not have substantial direct effects either on the States, or on the relationship between the Federal Government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designations may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary for the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State

and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with E.O. 12988 (Civil Justice Reform), the Office of the Solicitor has determined that this rule will not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this rule identifies the physical or biological features essential to the conservation of the species. The areas of designated critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

Regulations adopted pursuant to section 4(a) of the Act are exempt from the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) and do not require an environmental analysis under NEPA. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations. In a line of cases starting with *Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), the courts have upheld this position.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951, May 4, 1994), E.O. 13175 (Consultation and Coordination with Indian Tribal Governments), the President's memorandum of November 30, 2022 (Uniform Standards for Tribal Consultation; 87 FR 74479, December 5, 2022), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes and Alaska Native Corporations (ANCs) on a government-to-government basis. In accordance with Secretary's Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We contacted 33 Tribal entities that own or manage lands or have known cultural interests within the ranges of the four mussel species, and we requested information related to Tribal management of these four species and updated information about these species and their habitats. No Tribes responded to our information request for developing the proposed

critical habitat; however, the Seneca Nation of Indians–Allegany Territory provided comments on and support for the proposed critical habitat rule (89 FR 101100; December 13, 2024). We will continue to work with relevant Tribal entities, including the Seneca Nation of Indians, on recovery efforts for the rayed bean, sheepnose, snuffbox, and spectaclecase. We have determined that no Tribal lands fall within the boundaries of the final critical habitat for these species, so no Tribal lands would be affected by these designations.

References Cited

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Illinois-Iowa (sheepnose), Minnesota-Wisconsin (spectaclecase), or Ohio (rayed bean and snuffbox) Ecological Services Field Offices (see **FOR FURTHER INFORMATION CONTACT**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.11(h), amend the List of Endangered and Threatened Wildlife by revising the entries for “Mussel, rayed bean”, “Sheepnose”, “Snuffbox (mussel)”, and “Spectaclecase” under CLAMS to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *				
CLAMS				
* * * * *				
Mussel, rayed bean	<i>Villosa fabalis</i>	Wherever found	E	77 FR 8632, 2/14/2012; 50 CFR 17.95(f). ^{CH}
* * * * *				
Sheepnose	<i>Plethobasus cyphus</i>	Wherever found	E	77 FR 14914, 3/13/2012; 50 CFR 17.95(f). ^{CH}
* * * * *				
Snuffbox (mussel)	<i>Epioblasma triquetra</i>	Wherever found	E	77 FR 8632, 2/14/2012; 50 CFR 17.95(f). ^{CH}
Spectaclecase	<i>Cumberlandia monodonta</i>	Wherever found	E	77 FR 14914, 3/13/2012; 50 CFR 17.95(f). ^{CH}
* * * * *				

3. In § 17.95, amend paragraph (f) by:

a. Adding an entry for “Rayed Bean Mussel (*Villosa fabalis*)” following the entry for “Carolina Heelsplitter (*Lasmigona decorata*)”; and

b. Adding entries for “Sheepnose (*Plethobasus cyphus*)”, “Snuffbox Mussel (*Epioblasma triquetra*)”, and “Spectaclecase (*Cumberlandia monodonta*)” following the entry for “Texas Pimpleback (*Cyclonaias petrina*).”

The additions read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(f) *Clams and Snails.*

* * * * *

Rayed Bean Mussel (*Villosa fabalis*)

(1) Critical habitat units are depicted for Carroll, DeKalb, Pulaski, Steuben, Tippecanoe, and White Counties, Indiana; Lenawee, Oakland, and St. Clair Counties,

Michigan; Allegany and Cattaraugus Counties, New York; Franklin, Hancock, Hardin, Logan, Lucas, Madison, Shelby, Union, and Williams Counties, Ohio; and Armstrong, Butler, Clarion, Crawford, Erie, Forest, McKean, Mercer, Potter, Venango, Warren, and Westmoreland Counties, Pennsylvania, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the rayed bean mussel consist of the following components within waters and streambeds up to the ordinary high-water mark:

(i) Adequate flows, or a hydrological flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain stream connectivity.

(ii) Suitable substrates and connected instream habitats, characterized by geomorphologically stable stream channels and banks (i.e., channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) that support the rayed bean mussel and its host fishes. For the rayed bean mussel, suitable substrates are stable gravel and sand with moderate flow and aquatic vegetation in and adjacent to riffles and shoals.

(iii) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including appropriate levels of dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86 °F (30 °C)). Additionally, concentrations of contaminants, including (but not limited to) ammonia, nitrate, copper, and chloride, are below acute toxicity levels for mussels.

(iv) The presence and abundance of host fishes necessary for the recruitment of the rayed bean mussel (darter and sculpin species).

(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas and existing in-water pilings, docks,

and sea walls) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

(4) Data layers defining map units were created using the 1984 World Geographic System ellipsoid or the 1983 North American datum, and the associated geographic coordinate system. The National Hydrography Dataset Plus High Resolution was used to create the critical habitat units. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144 and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (5)

Index Map: Rayed Bean Critical Habitat Units



(6) RABE 1: Black River; St. Clair County, Michigan.

(i) RABE 1 consists of 32 river miles (rmi) (51 river kilometers (rkm)) of the Black River and Mill Creek in St. Clair County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

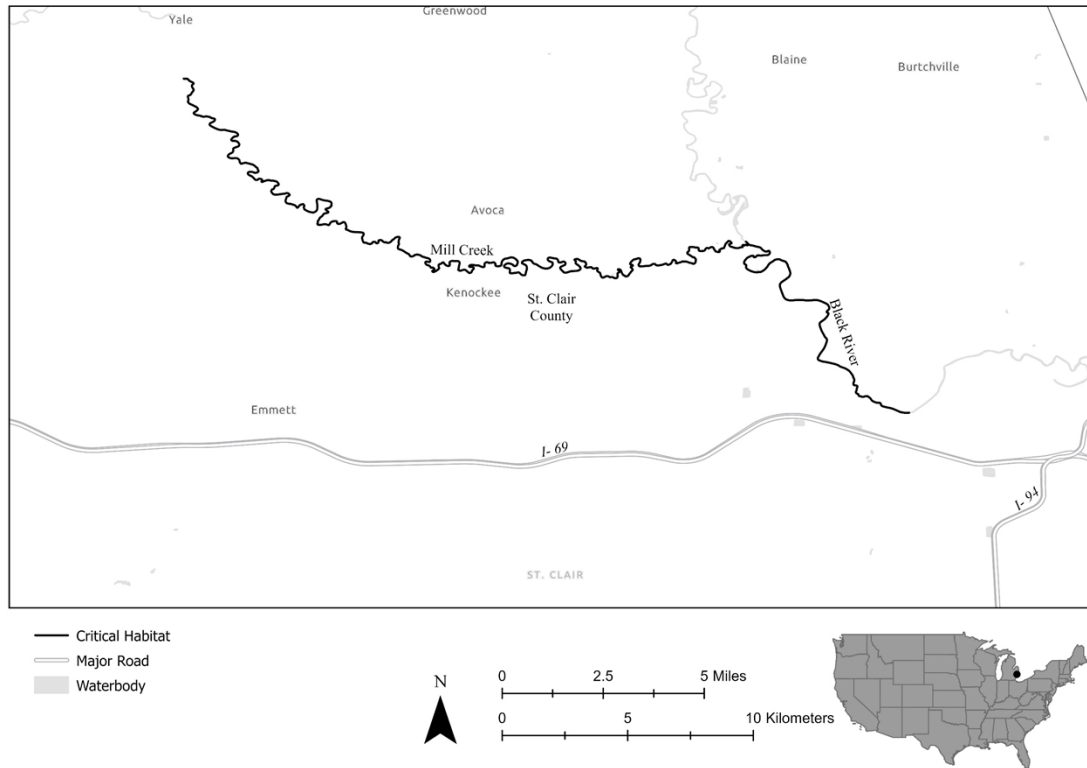
(A) The Black River portion of the unit includes 8 rmi (13 rkm) in St. Clair County, Michigan, from the State Highway 136 Bridge (Beard Road Bridge) in Clyde Township downstream to the Wadhams Road Bridge in Kimball Township.

(B) The Mill Creek portion of the unit includes 24 rmi (38 rkm) in St. Clair County, Michigan, from the confluence with Thompson Drain northwest of Brockway Township downstream to the confluence with Black River at Ruby in Clyde Township, Michigan.

(ii) Map of RABE 1 follows:

Figure 2 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (6)(ii)

Critical Habitat for Rayed Bean
RABE 1 Black River; St. Clair County, Michigan



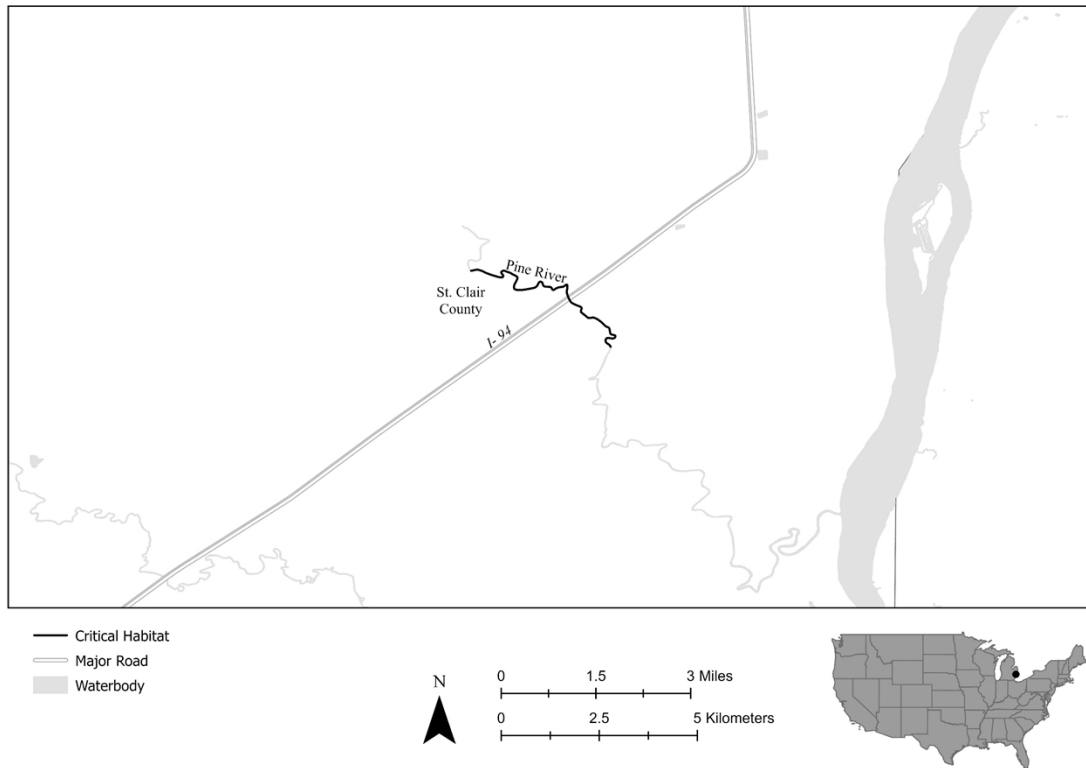
(7) RABE 2: Pine River; St. Clair County, Michigan.

(i) RABE 2 consists of 3 rmi (5 rkm) of the Pine River in St. Clair County, Michigan. This unit extends from the confluence of the Pine River and Rattle Run downstream to Newman Road in St. Clair Township, in St. Clair County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 2 follows:

Figure 3 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (7)(ii)

Critical Habitat for Rayed Bean
RABE 2 Pine River; St. Clair County, Michigan



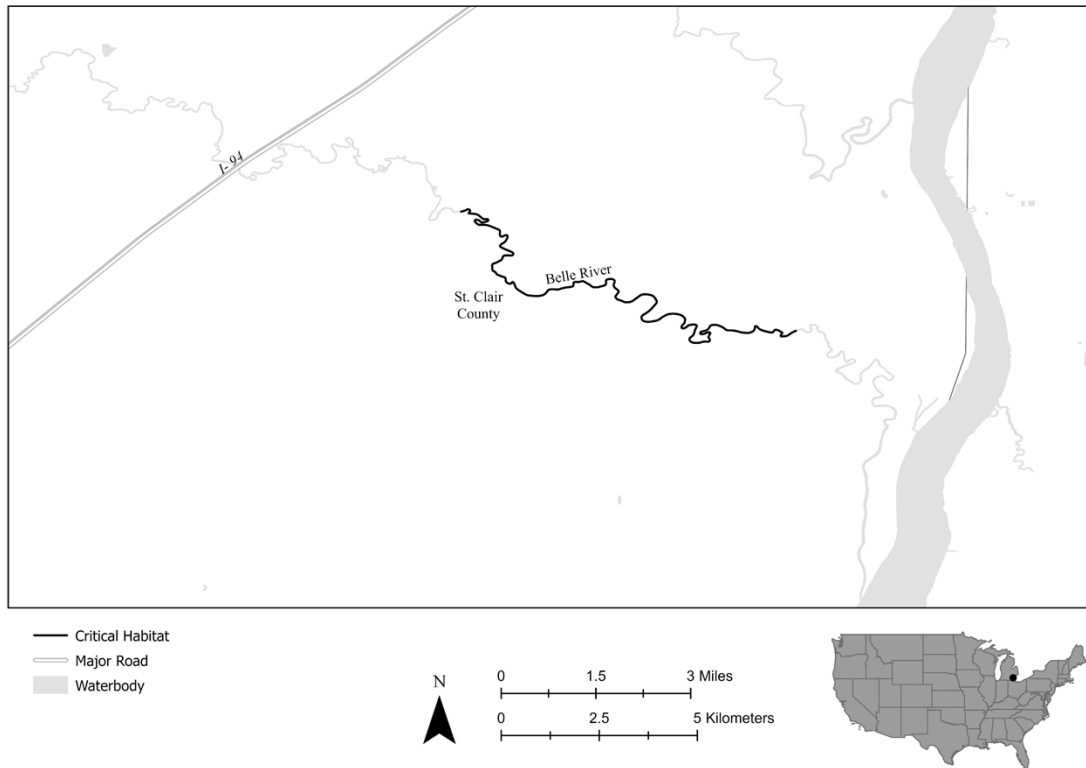
(8) RABE 3: Belle River; St. Clair County, Michigan.

(i) RABE 3 consists of 8 rmi (13 rkm) of the Belle River in St. Clair County, Michigan. This unit extends from the Westrick Road Bridge downstream to the King Road Bridge in China Township, in St. Clair County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 3 follows:

Figure 4 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (8)(ii)

Critical Habitat for Rayed Bean
RABE 3 Belle River; St. Clair County, Michigan



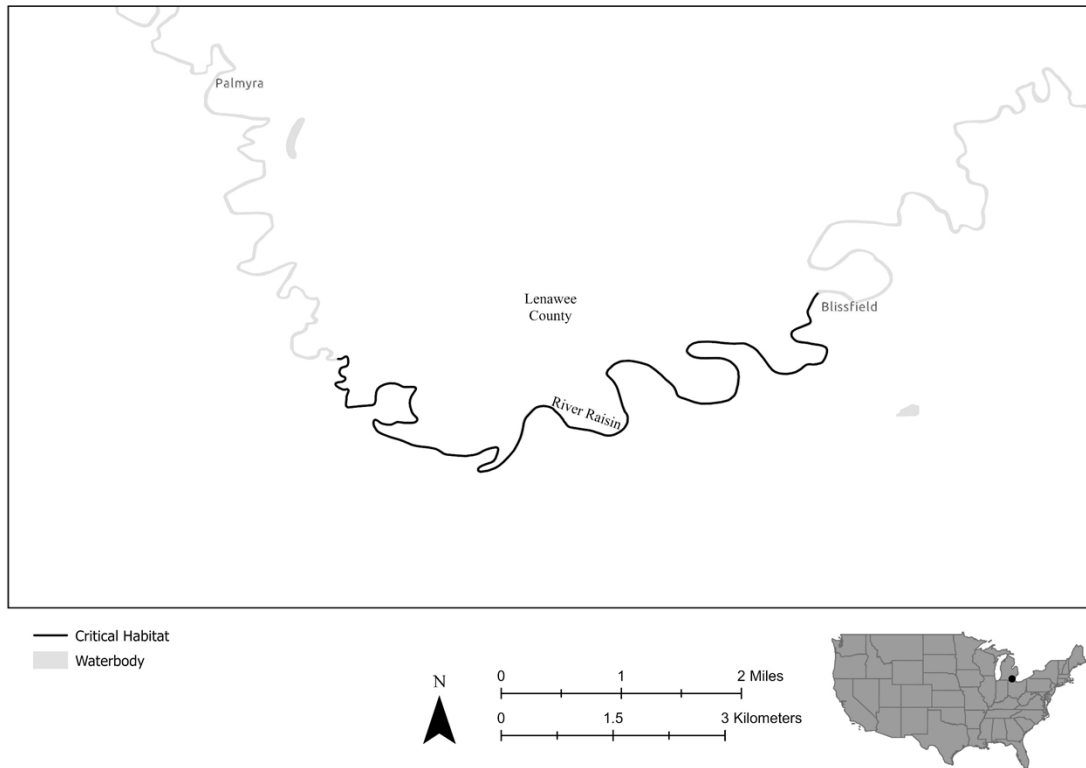
(9) RABE 4: River Raisin; Lenawee County, Michigan.

(i) RABE 4 consists of 8 rmi (13 rkm) of the River Raisin in Lenawee County, Michigan. This unit extends from the Crockett Highway Bridge in Palmyra Township downstream to the U.S. Route 223 Bridge (West Adrian Street) in the village of Blissfield, in Lenawee County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 4 follows:

Figure 5 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (9)(ii)

Critical Habitat for Rayed Bean
RABE 4 River Raisin; Lenawee County, Michigan



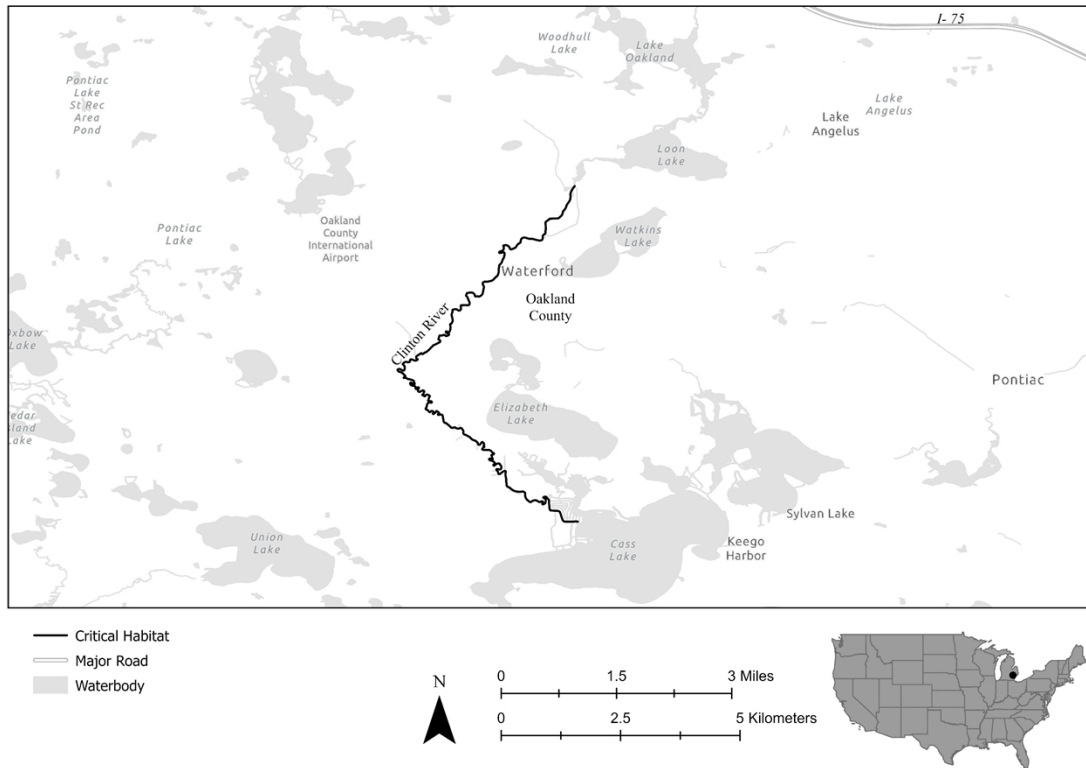
(10) RABE 5: Clinton River; Oakland County, Michigan.

(i) RABE 5 consists of 8 rmi (13 rkm) of the Clinton River in Oakland County, Michigan. This unit extends from downstream of the fish hatchery at Waterford Township downstream to Cass Lake east of the unincorporated community of Four Towns, in Oakland County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 5 follows:

Figure 6 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (10)(ii)

Critical Habitat for Rayed Bean
RABE 5 Clinton River; Oakland County, Michigan



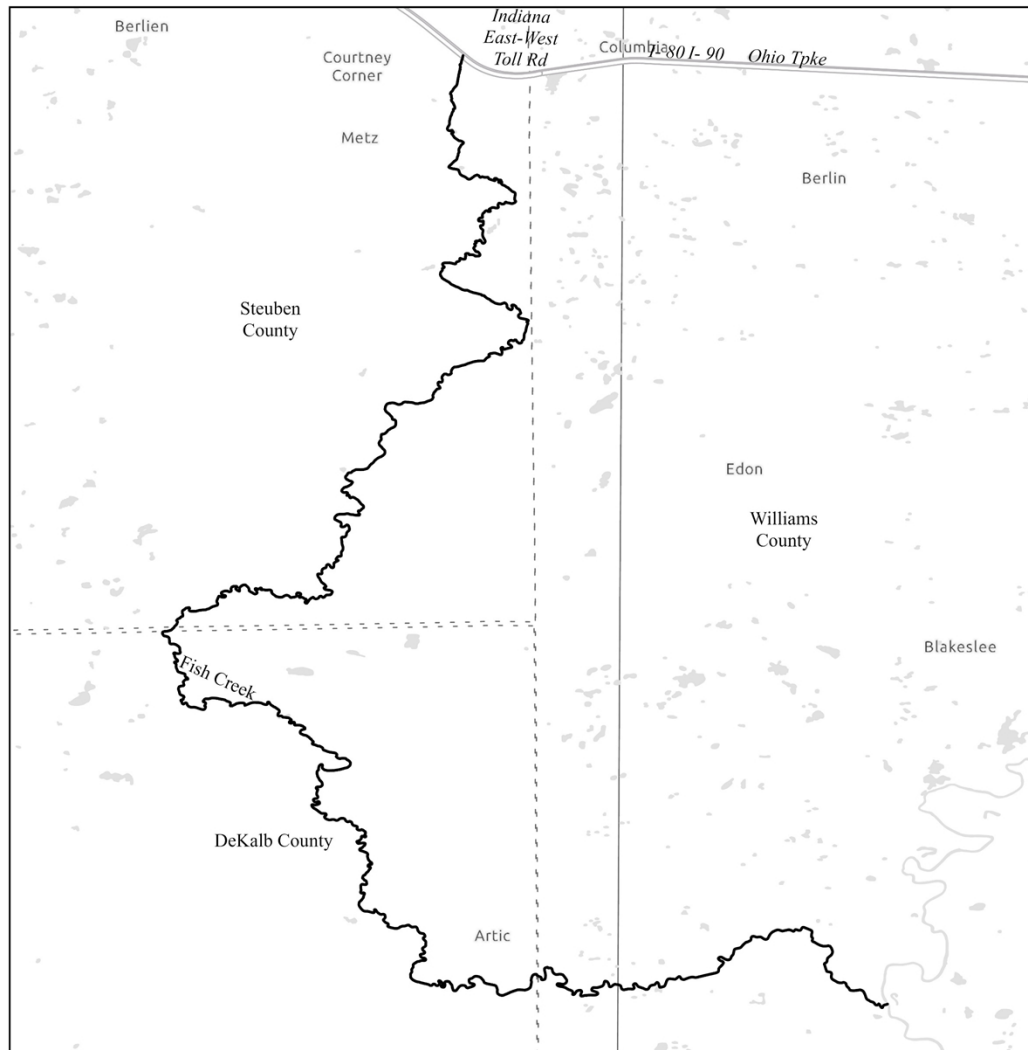
(11) RABE 6: Fish Creek; Steuben and DeKalb Counties, Indiana, and Williams County, Ohio.

(i) RABE 6 consists of 31 rmi (50 rkm) of Fish Creek in Steuben and DeKalb Counties, Indiana, and Williams County, Ohio. This unit extends from the Ohio Turnpike Interstate 80/Interstate 90 Bridge in Steuben County, Indiana, downstream to the confluence of Fish Creek with St. Joseph River north of the village of Edgerton in Williams County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

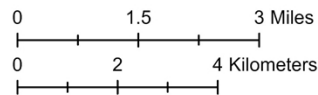
(ii) Map of RABE 6 follows:

Figure 7 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (11)(ii)

Critical Habitat for Rayed Bean
 RABE 6 Fish Creek; Steuben and DeKalb Counties, Indiana and Williams
 County, Ohio



- Critical Habitat
- Waterbody
- - - County Boundary
- Major Road
- State Boundary

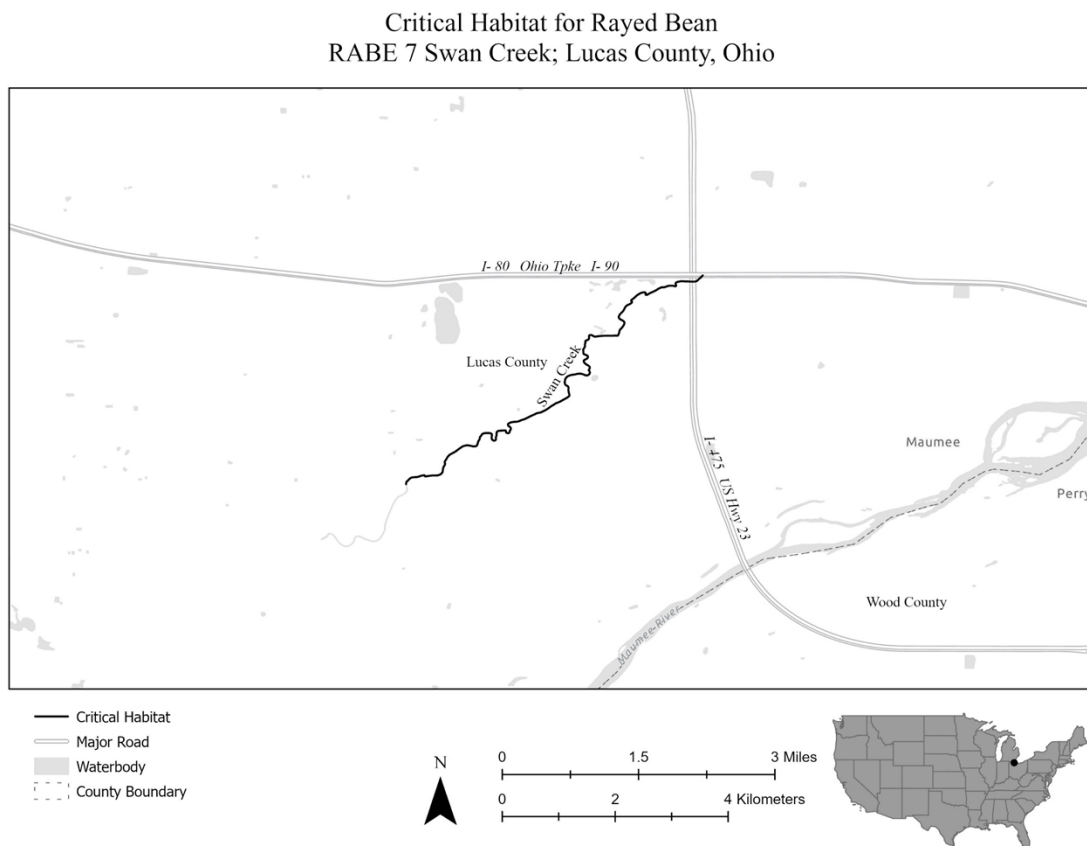


(12) RABE 7: Swan Creek; Lucas County, Ohio.

(i) RABE 7 consists of 4 rmi (7 rkm) of Swan Creek in Lucas County, Ohio. This unit extends from the Monclova Road Bridge in city of Maumee downstream to the Ohio Turnpike Interstate 80/Interstate 90 Bridge in city of Maumee, in Lucas County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 7 follows:

Figure 8 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (12)(ii)



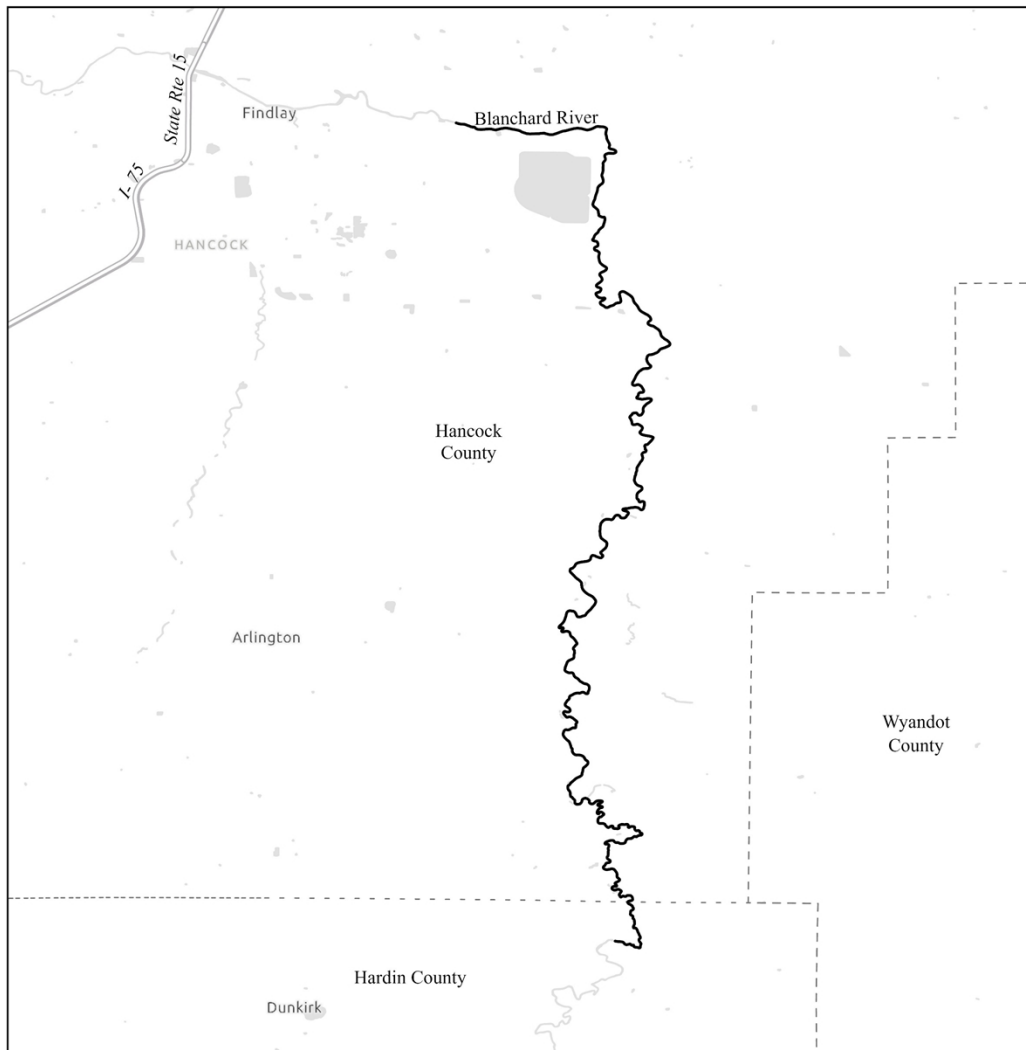
(13) RABE 8: Blanchard River; Hardin and Hancock Counties, Ohio.

(i) RABE 8 consists of 28 rmi (45 rkm) of the Blanchard River in Hardin and Hancock Counties, Ohio. This unit extends from the County Road 183 Bridge in Jackson Township (Hardin County, Ohio) downstream to the State Route 568 Bridge (Carey Road Bridge) in city of Findlay (Hancock County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

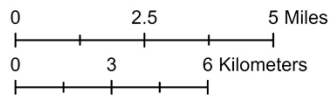
(ii) Map of RABE 8 follows:

Figure 9 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (13)(ii)

Critical Habitat for Rayed Bean
RABE 8 Blanchard River; Hardin and Hancock Counties, Ohio



- Critical Habitat
- Waterbody
- - - County Boundary
- Major Road



(14) RABE 9: Allegheny River; Allegany and Cattaraugus Counties, New York, and McKean and Potter Counties, Pennsylvania.

(i) RABE 9 consists of 82 rmi (131 rkm) of the Allegheny River, Honeoye Creek, Olean Creek, Oil Creek, and Oswayo Creek in Allegany and Cattaraugus Counties, New

York, and McKean and Potter Counties, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

(A) The Allegheny River portion of this unit includes approximately 47 rmi (76 rkm) of the Allegheny River from its confluence with Sartwell Creek near the unincorporated community of Burtville in McKean County, Pennsylvania downstream to the Interstate 86 Bridge in the village of Allegany, in Cattaraugus County, New York.

(B) The Olean Creek portion of this unit includes 8 rmi (14 rkm) in Cattaraugus County, New York, from the confluence with Oil Creek in the town of Hinsdale downstream to the confluence with Allegheny River in the city of Olean.

(C) The Oil Creek portion of this unit includes 7 rmi (11 rkm) from the Interstate 86 Bridge near the Cattaraugus County/Allegany County line in New York downstream to the confluence with Olean Creek in the town of Hinsdale, in Cattaraugus County, New York.

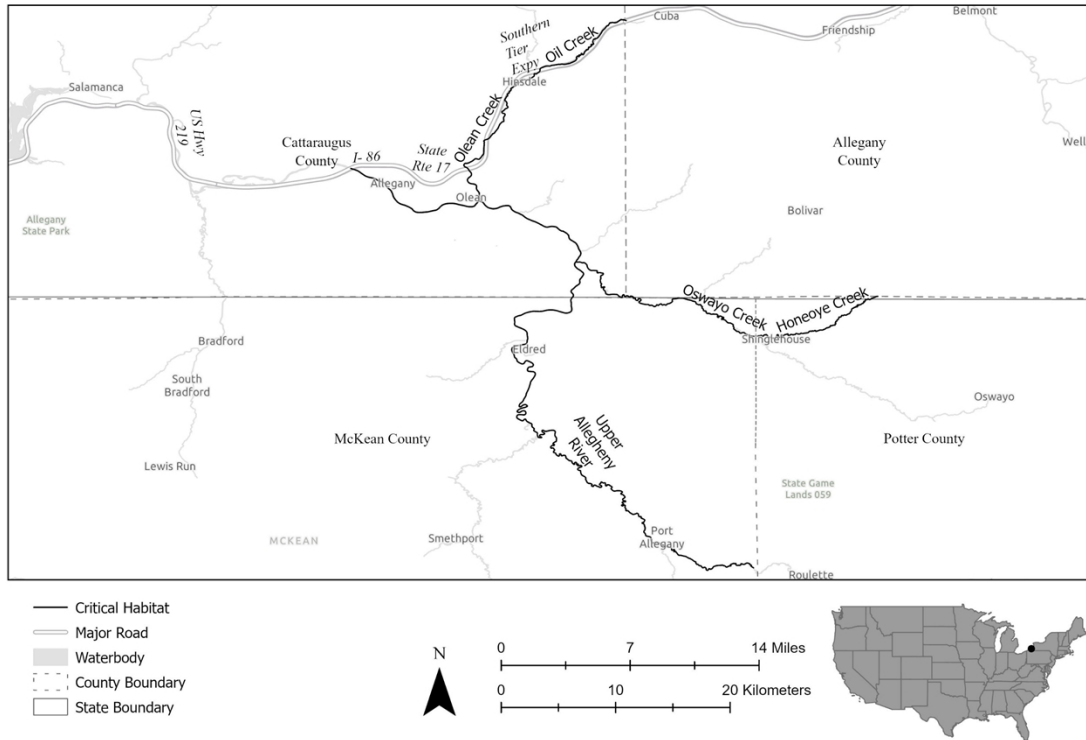
(D) The Oswayo Creek portion of this unit includes 12 rmi (19 rkm) from its confluence with the Honeoye Creek in Potter County, Pennsylvania downstream to its confluence with Allegheny River just west of the village of Portville in Cattaraugus County, New York.

(E) The Honeoye Creek portion of this unit includes 7 rmi (11 rkm) of Honeoye Creek from the New York/Pennsylvania State Line in Allegany County, New York and Potter County, Pennsylvania, downstream to its confluence with Oswayo Creek in Potter County, Pennsylvania.

(ii) Map of RABE 9 follows:

Figure 10 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (14)(ii)

Critical Habitat for Rayed Bean
 RABE 9 Allegheny River; Allegany and Cattaraugus Counties, New York and McKean and Potter
 Counties, Pennsylvania



(15) RABE 10: Middle Allegheny River; Armstrong, Butler, Clarion, Forest, Venango, Warren, and Westmoreland Counties, Pennsylvania.

(i) RABE 10 consists of 176 rmi (283 rkm) of the Allegheny River and Oil Creek in Armstrong, Butler, Clarion, Forest, Venango, and Warren Counties, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

(A) The Allegheny River portion of this unit extends approximately 171 rmi (275 rkm) from the Kinzua Dam in Warren County, Pennsylvania, downstream to the mouth of the Kiskiminetas River in Armstrong and Westmoreland Counties, Pennsylvania.

(B) The Oil Creek portion of this unit includes approximately 5 rmi (8 rkm) from the Oil Creek State Park Ice Control Dam in Venango County, Pennsylvania downstream to Oil Creek’s confluence with the Allegheny River in Oil City in Venango County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

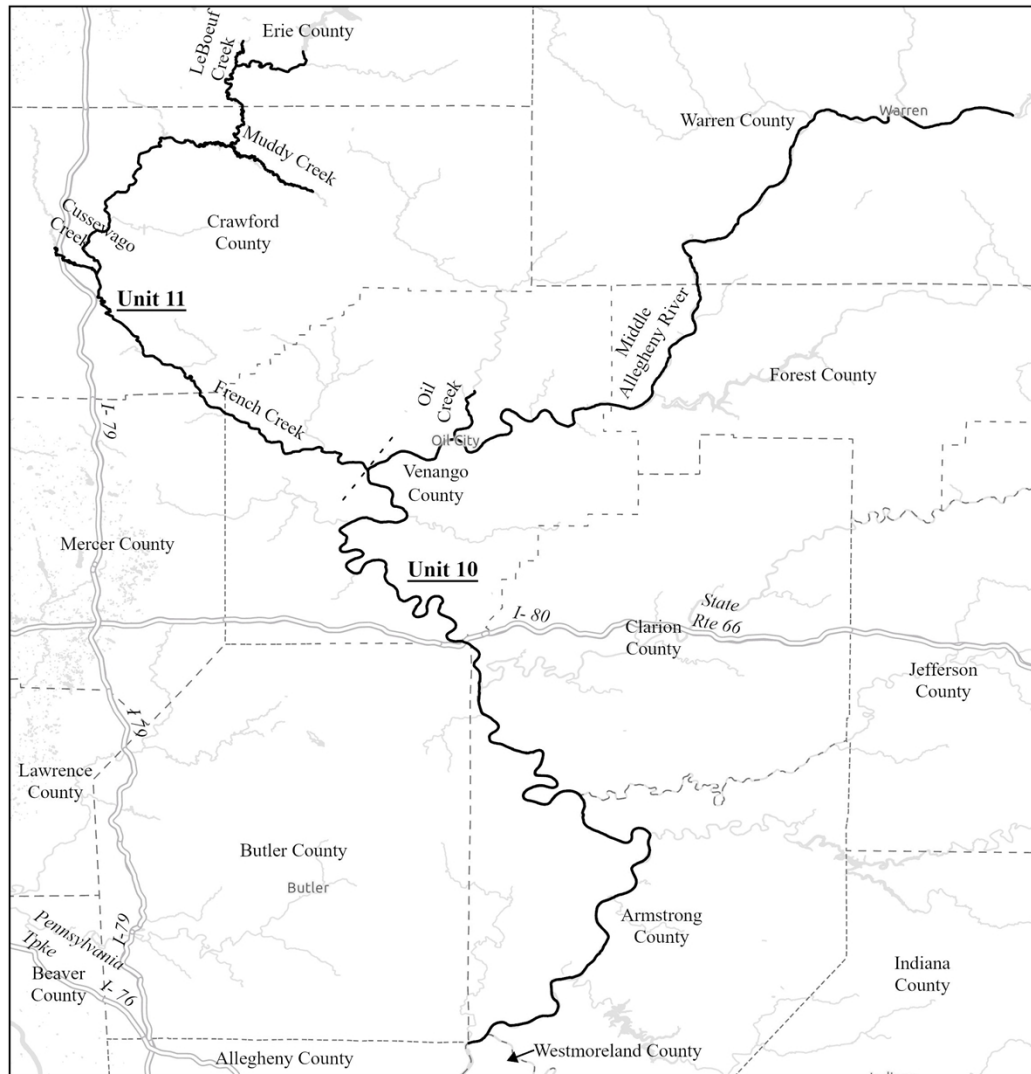
(ii) Map of RABE 10 follows:

Figure 11 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (15)(ii)

Critical Habitat for Rayed Bean

RABE 10 Middle Allegheny River; Armstrong, Butler, Clarion, Forest, Venango, Warren, and Westmoreland Counties, Pennsylvania

RABE 11 French Creek; Crawford, Erie, Mercer, and Venango Counties, Pennsylvania



(16) RABE 11: French Creek; Crawford, Erie, Mercer, and Venango Counties, Pennsylvania.

(i) RABE 11 consists of 100 rmi (161 rkm) of French Creek, LeBoeuf Creek, Muddy Creek, and Cussewago Creek in Crawford, Erie, Mercer, and Venango Counties, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

(A) The French Creek portion of this unit includes 77 rmi (124 rkm) from the Union City Reservoir Dam northeast of Union City (Erie County, Pennsylvania) downstream to the confluence with Allegheny River near the city of Franklin (Venango County, Pennsylvania).

(B) The LeBoeuf Creek portion of this unit includes 3 rmi (5 rkm) in Erie County, Pennsylvania, from the State Highway 97 Bridge in Waterford Township downstream to the confluence with French Creek in LeBoeuf Township.

(C) The Muddy Creek portion of this unit includes 14 rmi (23 rkm) in Crawford County, Pennsylvania, from Pennsylvania Highway 77 near the unincorporated community of Little Cooley downstream to the confluence with French Creek east of the borough of Cambridge Springs, in Crawford County, Pennsylvania.

(D) The Cussewago Creek portion of this unit includes 6 rmi (10 rkm) in Crawford County, Pennsylvania, from the Rogers Ferry Road Bridge in Hayfield Township downstream to the confluence with French Creek in the city of Meadville, in Crawford County, Pennsylvania.

(ii) Map of RABE 11 is provided at paragraph (15)(ii) of this entry.

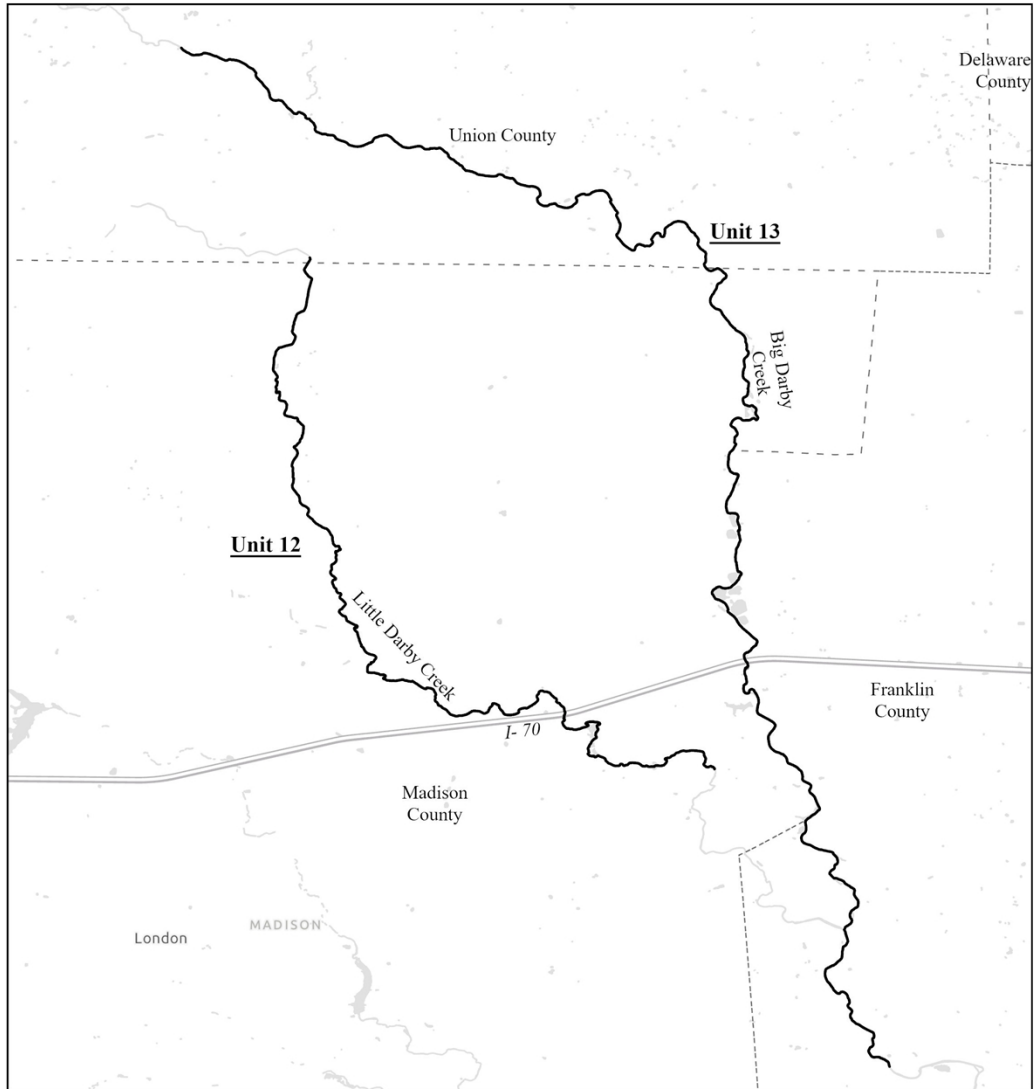
(17) RABE 12: Little Darby Creek; Madison and Union Counties, Ohio.

(i) RABE 12 consists of 21 rmi (35 rkm) of Little Darby Creek in Madison and Union Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near the unincorporated community of Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near the village of West Jefferson (Madison County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

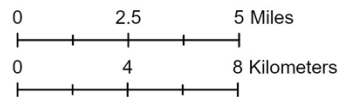
(ii) Map of RABE 12 follows:

Figure 12 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (17)(ii)

Critical Habitat for Rayed Bean
RABE 12 Little Darby Creek; Madison and Union Counties, Ohio
RABE 13 Big Darby Creek; Franklin, Madison, and Union Counties, Ohio



- Critical Habitat
- Waterbody
- - - County Boundary
- == Major Road



(18) RABE 13: Big Darby Creek; Franklin, Madison, and Union Counties, Ohio.

(i) RABE 13 consists of 38 rmi (60 rkm) of Big Darby Creek in Franklin, Madison, and Union Counties, Ohio. This unit extends from the Highway 36 Bridge in the village of Milford Center (Union County, Ohio) downstream to the State Route 665 Bridge (London Groveport Road) by the unincorporated community of Darbydale (Franklin County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 13 is provided at paragraph (17)(ii) of this entry.

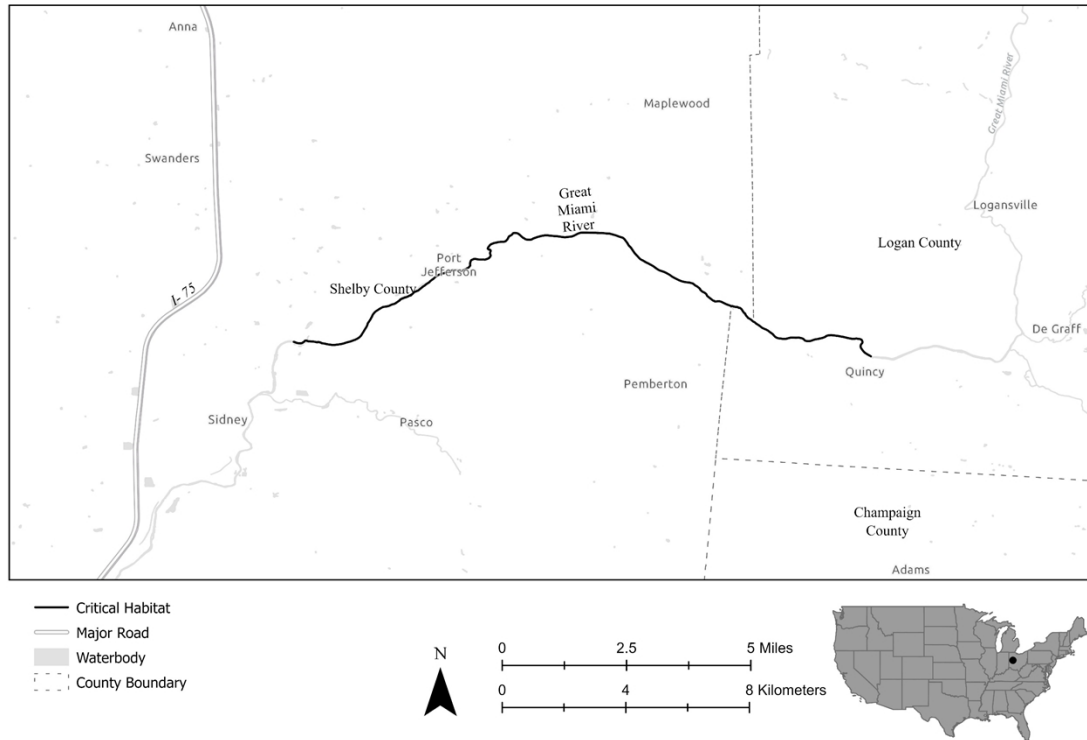
(19) RABE 14: Great Miami River; Logan and Shelby Counties, Ohio.

(i) RABE 14 consists of approximately 11 rmi (18 rkm) of the Great Miami River in Logan and Shelby Counties, Ohio. This unit extends from the dam at Riverside Park in the village of Quincy (Logan County, Ohio) downstream to the Route 47 Bridge (Riverside Drive) in the city of Sidney (Shelby County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 14 follows:

Figure 13 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (19)(ii)

Critical Habitat for Rayed Bean
RABE 14 Great Miami River; Logan and Shelby Counties, Ohio



(20) RABE 15: Tippecanoe River; Carroll, Pulaski, Tippecanoe, and White Counties, Indiana.

(i) RABE 15 consists of 47 rmi (76 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. This unit is composed of two subunits and each subunit includes the river channel up to the ordinary high-water mark.

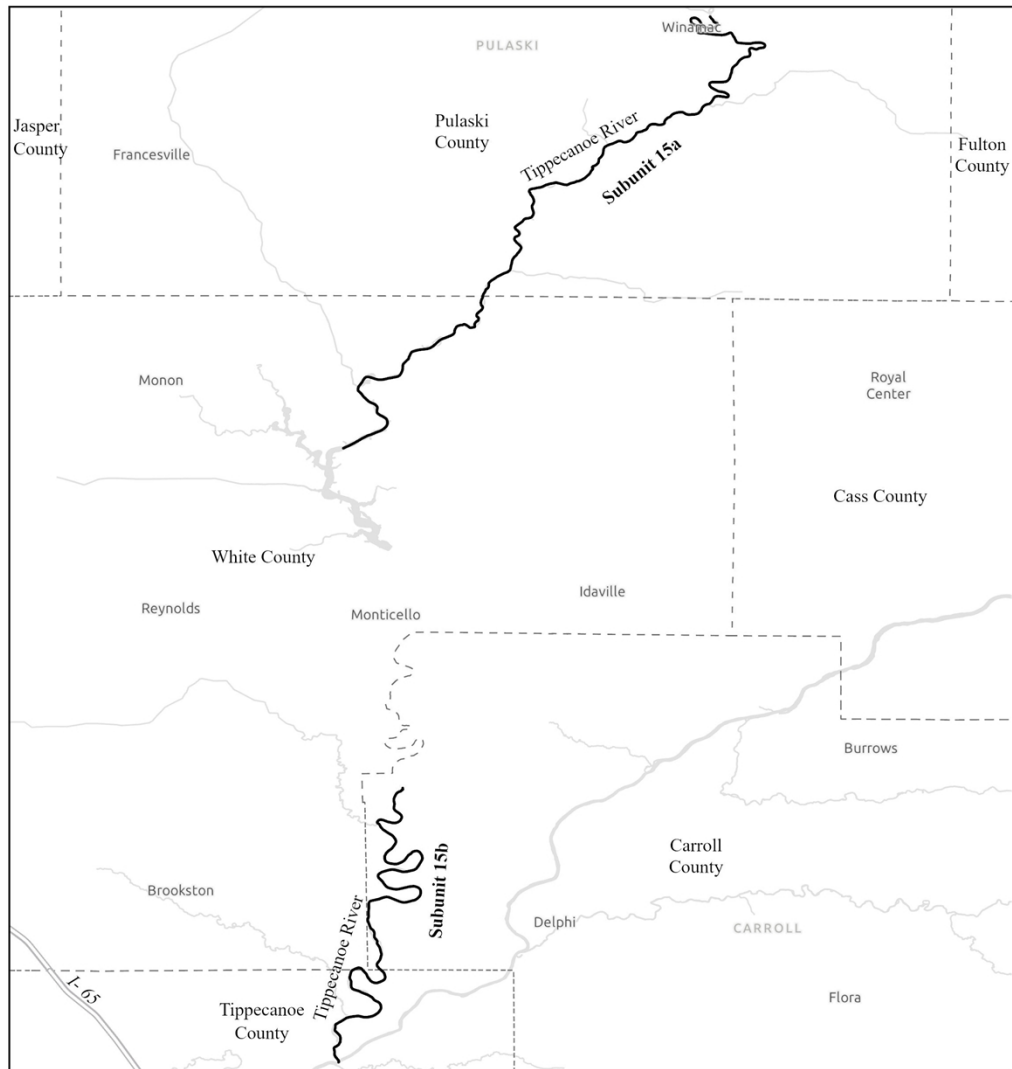
(A) Subunit RABE 15a includes 28 rmi (45 rkm) of the Tippecanoe River from the State Highway 14 Bridge near the town of Winamac (Pulaski County, Indiana) downstream to the Lowes Bridge Road crossing in White County, Indiana.

(B) Subunit RABE 15b includes 19 rmi (31 rkm) of the Tippecanoe River from the Oakdale Dam in Carroll County, Indiana, downstream to the confluence of the Tippecanoe River with the Wabash River northeast of the town of Battle Ground (Tippecanoe County, Indiana)

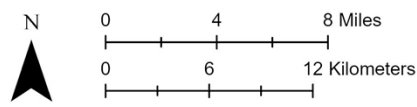
(ii) Map of RABE 15 follows:

Figure 14 to Rayed Bean Mussel (*Villosa fabalis*) paragraph (20)(ii)

Critical Habitat for Rayed Bean
 RABE 15a Tippecanoe River; Pulaski and White Counties, Indiana
 RABE 15b Tippecanoe River; Carroll and Tippecanoe Counties, Indiana



- Critical Habitat
- Waterbody
- - - County Boundary
- Major Road



* * * * *

Sheepnose (*Plethobasus cyphus*)

(1) Critical habitat units are depicted for Grundy, Kankakee, and Will Counties, Illinois; Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana; Butler, Edmonson, Green, Hart, Livingston, Marshall, McCracken, Taylor, and Warren Counties, Kentucky; Bolivar and Sunflower Counties, Mississippi; Franklin, Jefferson, and Saint

Louis Counties, Missouri; Coshocton County, Ohio; Forest and Venango Counties, Pennsylvania; Claiborne and Hancock Counties, Tennessee; Lee, Russell, Scott, and Wise Counties, Virginia; and Buffalo, Dunn, Eau Claire, and Pepin Counties, Wisconsin, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the sheepsnose consist of the following components within waters and streambeds up to the ordinary high-water mark:

(i) Adequate flows, or a hydrological flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain stream connectivity.

(ii) Suitable substrates and connected instream habitats, characterized by geomorphologically stable stream channels and banks (i.e., channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) that support the sheepsnose and its host fishes. For sheepsnose, suitable substrates are firm or stable coarse sand, gravel, or rock free from excessive silt.

(iii) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including appropriate levels of dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86 °F (30 °C)). Additionally, concentrations of contaminants, including (but not limited to) ammonia, nitrate, copper, and chloride, are below acute toxicity levels for mussels.

(iv) The presence and abundance of host fishes necessary for recruitment of sheepsnose (mimic shiner (*Notropis volucellus*) and sauger (*Sander canadensis*)).

(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas and existing in-water pilings, docks, and sea walls) and the land on which they are located existing within the legal boundaries

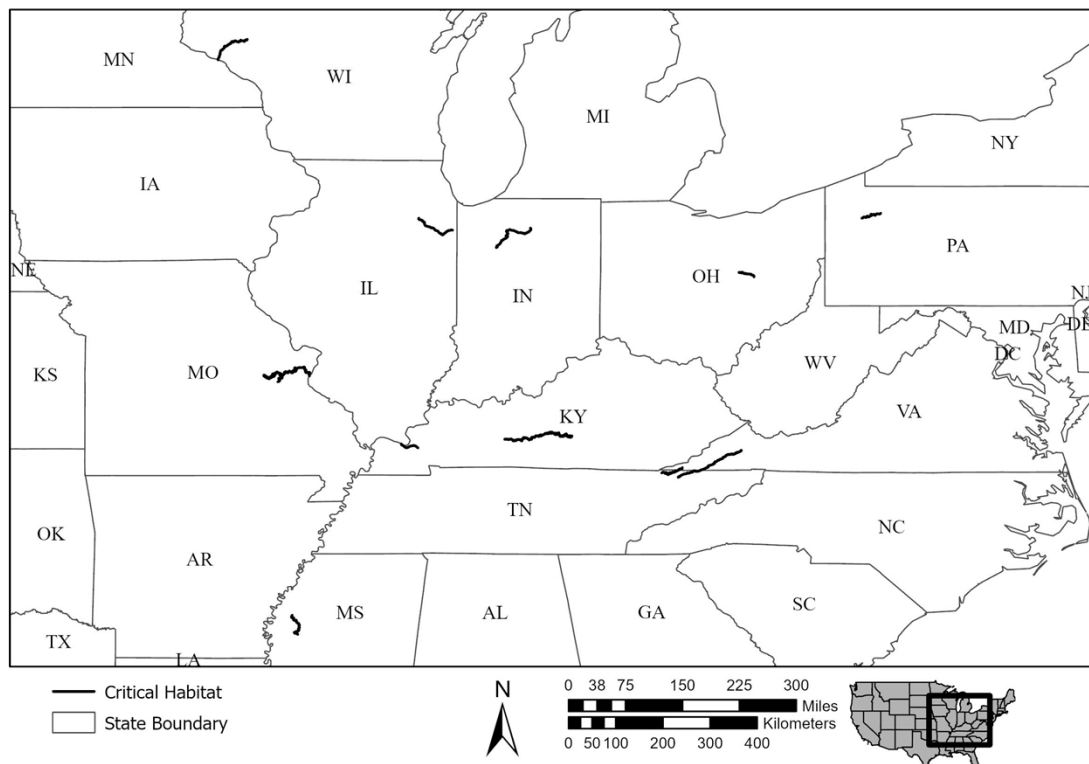
on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

(4) Data layers defining map units were created using the 1984 World Geographic System ellipsoid or the 1983 North American datum, and the associated geographic coordinate system. The National Hydrography Dataset Plus High Resolution was used to create the critical habitat units. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at <https://www.regulations.gov> at Docket No. FWS-R3-ES-2024-0144 and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Sheepnose (*Plethobasus cyphus*) paragraph (5)

Index Map: Sheepnose Critical Habitat Units



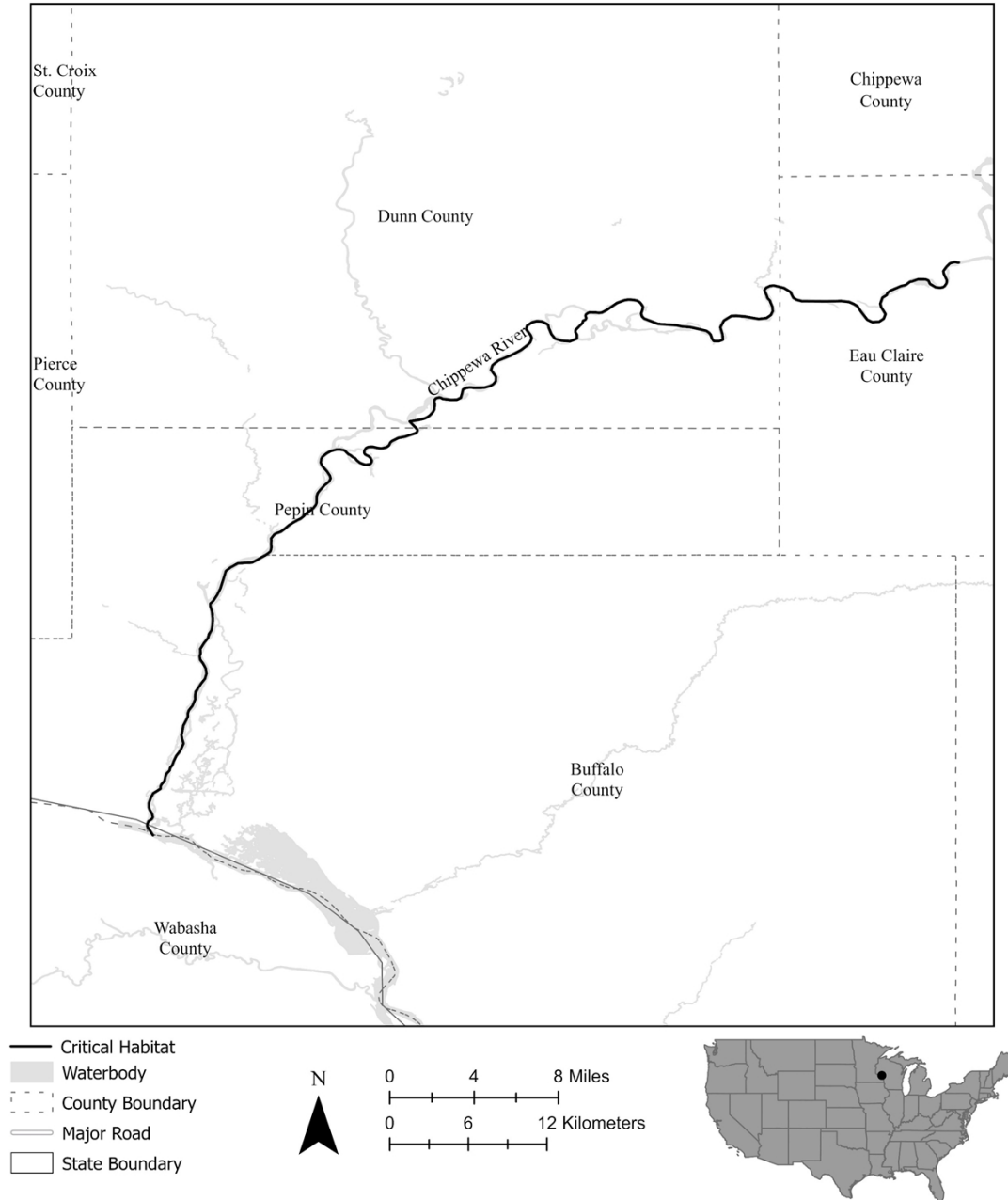
(6) SHNO 1: Lower Chippewa River; Buffalo, Dunn, Eau Claire, and Pepin, Counties, Wisconsin.

(i) SHNO 1 consists of 57 river miles (rmi) (92 river kilometers (rkm)) of the lower Chippewa River in Buffalo, Dunn, Eau Claire, and Pepin Counties, Wisconsin. This unit extends from the confluence of the lower Chippewa River with the Eau Claire River (Eau Claire County, Wisconsin) downstream to its confluence with the Mississippi River (Buffalo/Pepin Counties, Wisconsin). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 1 follows:

Figure 2 to Sheepnose (*Plethobasus cyphus*) paragraph (6)(ii)

Critical Habitat for Sheepnose
SHNO 1 Lower Chippewa River; Buffalo, Dunn, Eau Claire, and Pepin,
Counties, Wisconsin



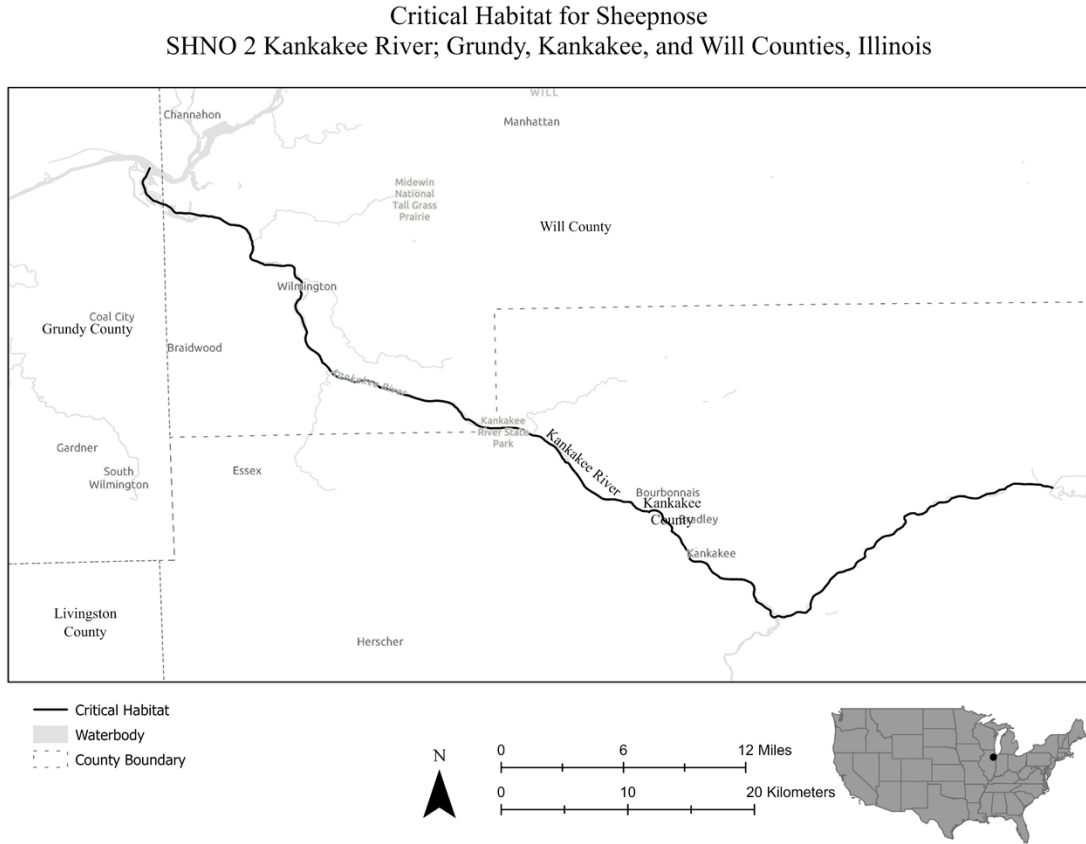
(7) SHNO 2: Kankakee River; Grundy, Kankakee, and Will Counties, Illinois.

(i) SHNO 2 consists of 51 rmi (82 rkm) of the Kankakee River in Grundy, Kankakee, and Will Counties, Illinois. This unit extends from the confluence of the Kankakee River with West Creek (Kankakee County, Illinois) downstream to its

confluence with the Illinois River (Grundy County, Illinois). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 2 follows:

Figure 3 to Sheepnose (*Plethobasus cyphus*) paragraph (7)(ii)



(8) SHNO 3: Meramec and Bourbeuse Rivers; Franklin, Jefferson, Phelps, and Saint Louis Counties, Missouri.

(i) SHNO 3 consists of 153 rmi (246 rkm) of the Meramec and Bourbeuse Rivers in Franklin, Jefferson, and Saint Louis Counties, Missouri. The unit includes the river channel up to the ordinary high-water mark.

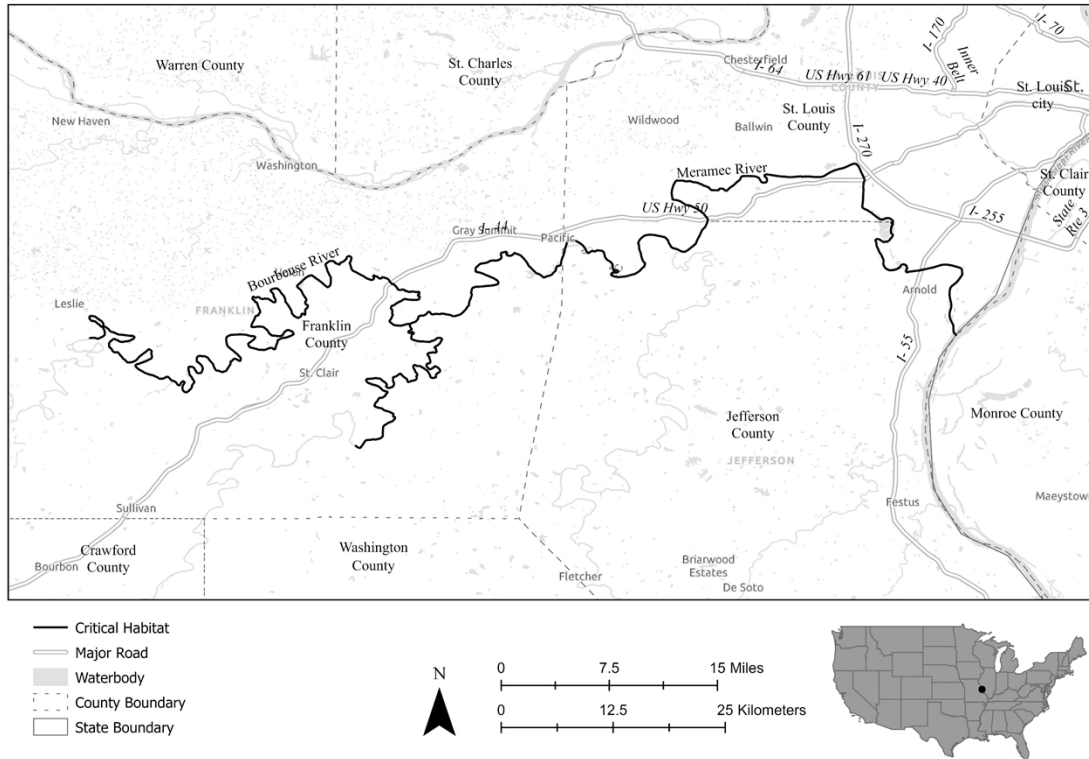
(A) This unit contains 90 rmi (145 rkm) of the Meramec River from its confluence with Rye Creek (Franklin County, Missouri) downstream to its confluence with the Mississippi River (Jefferson County, Missouri).

(B) This unit contains 63 rmi (101 rkm) of the Bourbeuse River from its confluence with Little Creek downstream to its confluence with the Meramec River, in Franklin County, Missouri.

(ii) Map of SHNO 3 follows:

Figure 4 to Sheepnose (*Plethobasus cyphus*) paragraph (8)(ii)

Critical Habitat for Sheepnose
SHNO 3 Meramec and Bourbeuse Rivers; Franklin, Jefferson, and St. Louis Counties, Missouri



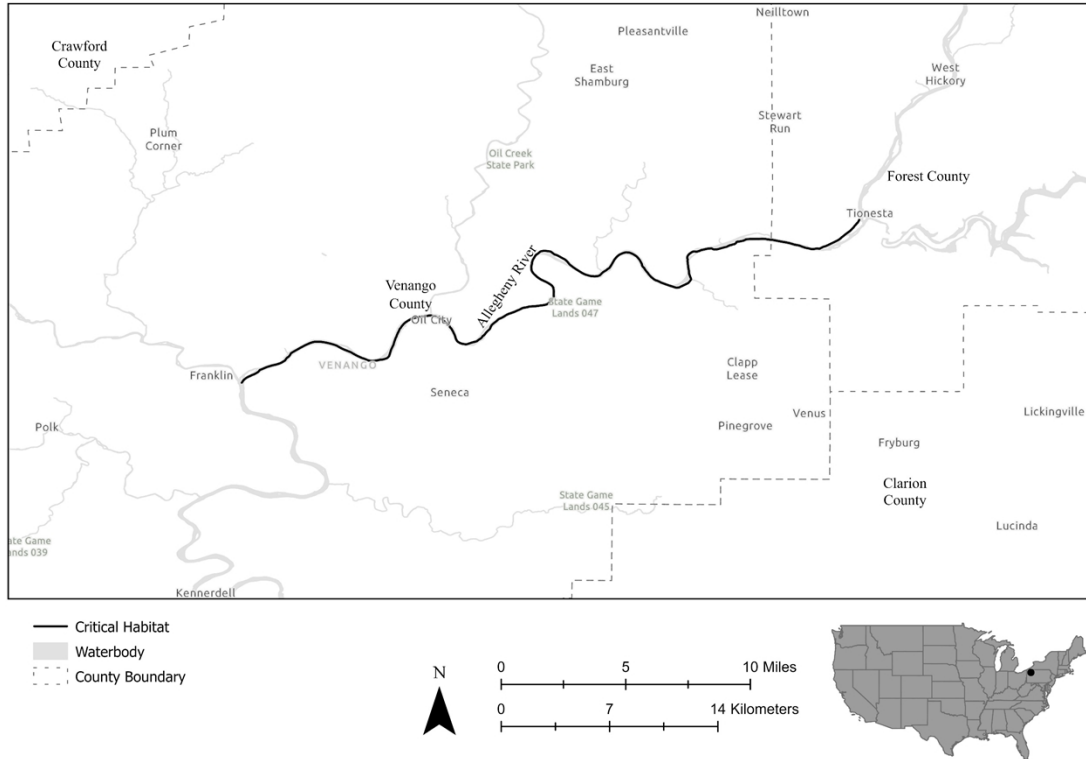
(9) SHNO 4: Middle Allegheny-Tionesta; Forest and Venango Counties, Pennsylvania.

(i) SHNO 4 consists of 28 rmi (45 rkm) of the Allegheny River in Forest and Venango Counties, Pennsylvania. This unit extends from the confluence of the Allegheny River with Tionesta Creek (Forest County, Pennsylvania) downstream to its confluence with French Creek (Venango County, Pennsylvania). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 4 follows:

Figure 5 to Sheepnose (*Plethobasus cyphus*) paragraph (9)(ii)

Critical Habitat for Sheepnose
SHNO 4 Middle Allegheny-Tionesta; Forest and Venango Counties, Pennsylvania



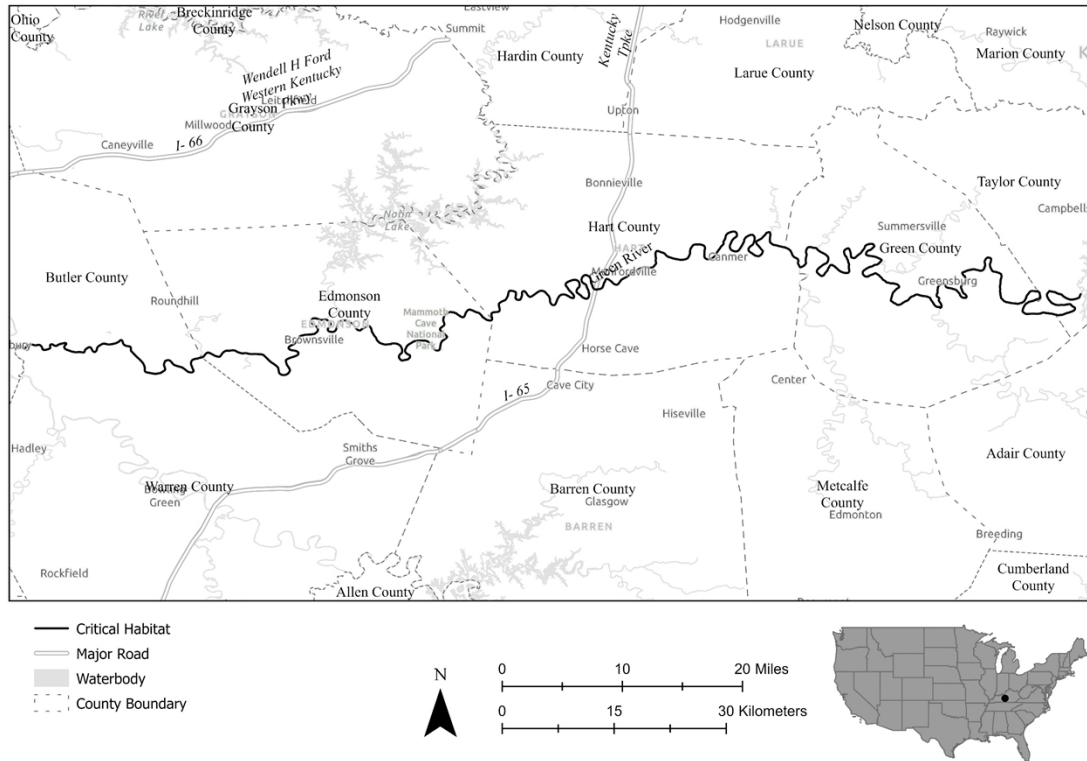
(10) SHNO 5: Upper Green; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky.

(i) SHNO 5 consists of 157 rmi (253 rkm) of the Green River in Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky. This unit extends from the confluence of the Green River with the Barren River (Taylor County, Kentucky) downstream to the Green River Dam (Butler County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 5 follows:

Figure 6 to Sheepnose (*Plethobasus cyphus*) paragraph (10)(ii)

Critical Habitat for Sheepnose
SHNO 5 Upper Green; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky



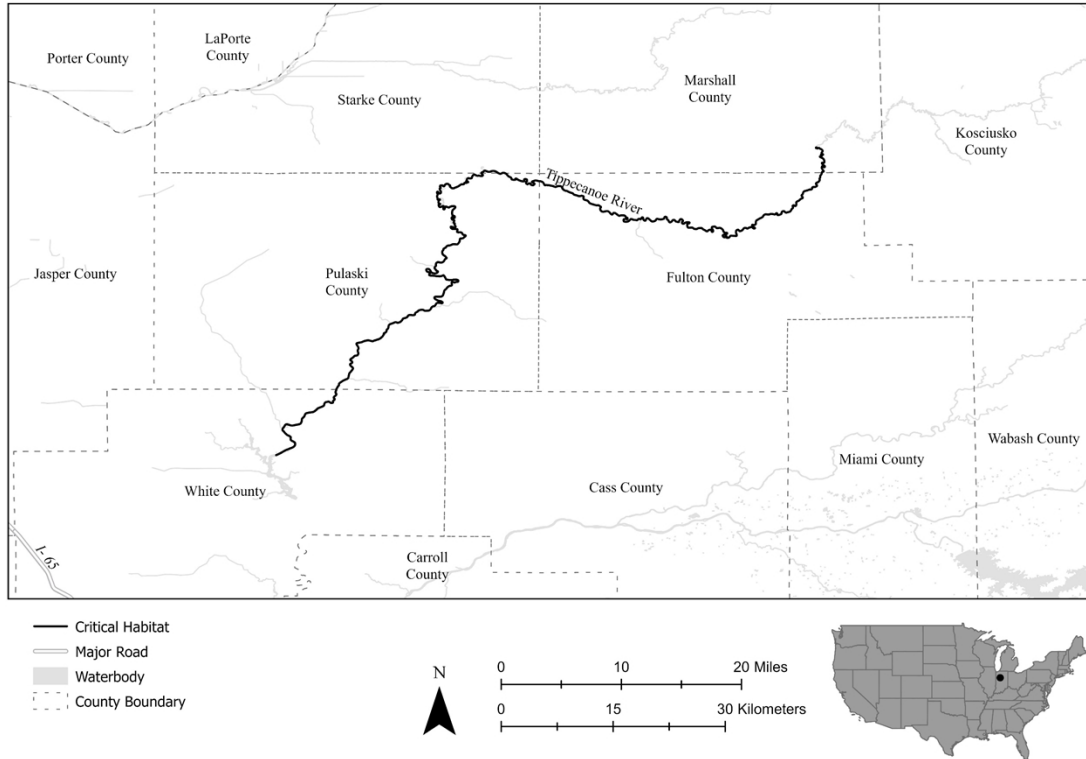
(11) SHNO 6: Tippecanoe River; Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana.

(i) SHNO 6 consists of 84 rmi (135 rkm) of the Tippecanoe River in Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana. This unit extends from the confluence of the Tippecanoe River with Outlet Creek (Marshall County, Indiana) downstream to Lake Freeman (White County, Indiana). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 6 follows:

Figure 7 to Sheepnose (*Plethobasus cyphus*) paragraph (11)(ii)

Critical Habitat for Sheepnose
SHNO 6 Tippecanoe River; Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana



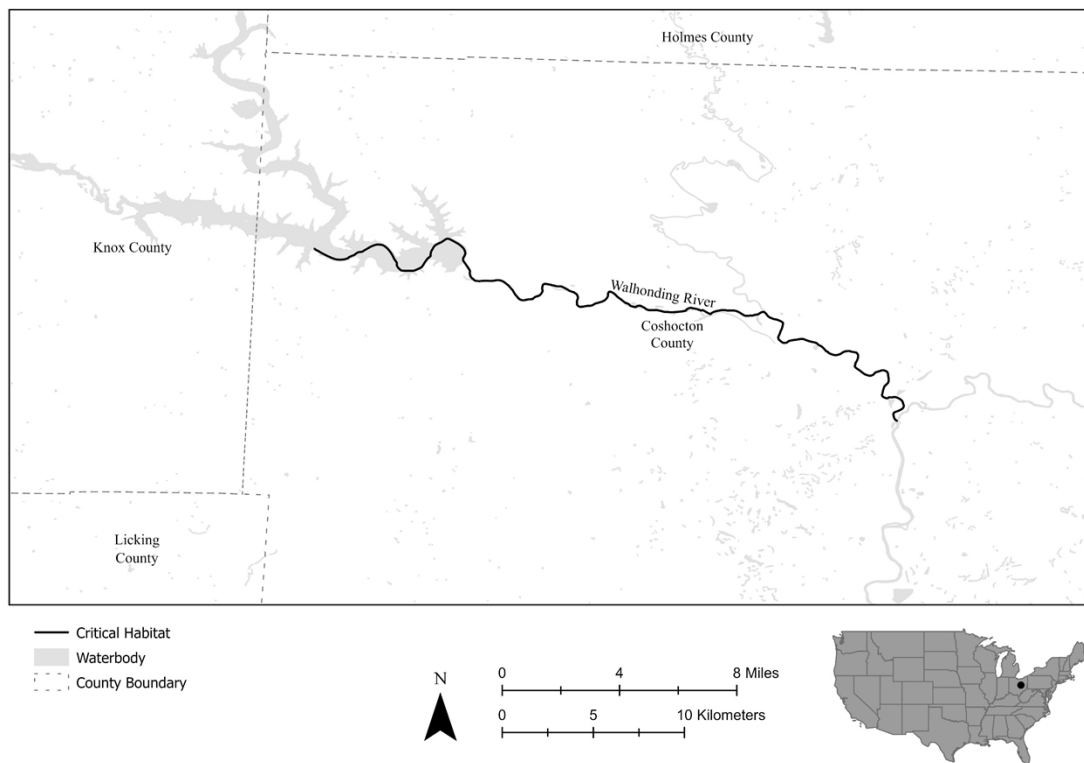
(12) SHNO 7: Walhonding River; Coshocton County, Ohio.

(i) SHNO 7 consists of 24 rmi (38 rkm) of the Walhonding River in Coshocton County, Ohio. This unit extends from the confluence of the Kokosing River and the Mohican River at the unincorporated community of Walhonding downstream to the confluence with the Tuscarawas River, in Coshocton County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 7 follows:

Figure 8 to Sheepnose (*Plethobasus cyphus*) paragraph (12)(ii)

Critical Habitat for Sheepnose
SHNO 7 Walhonding River; Coshocton County, Ohio



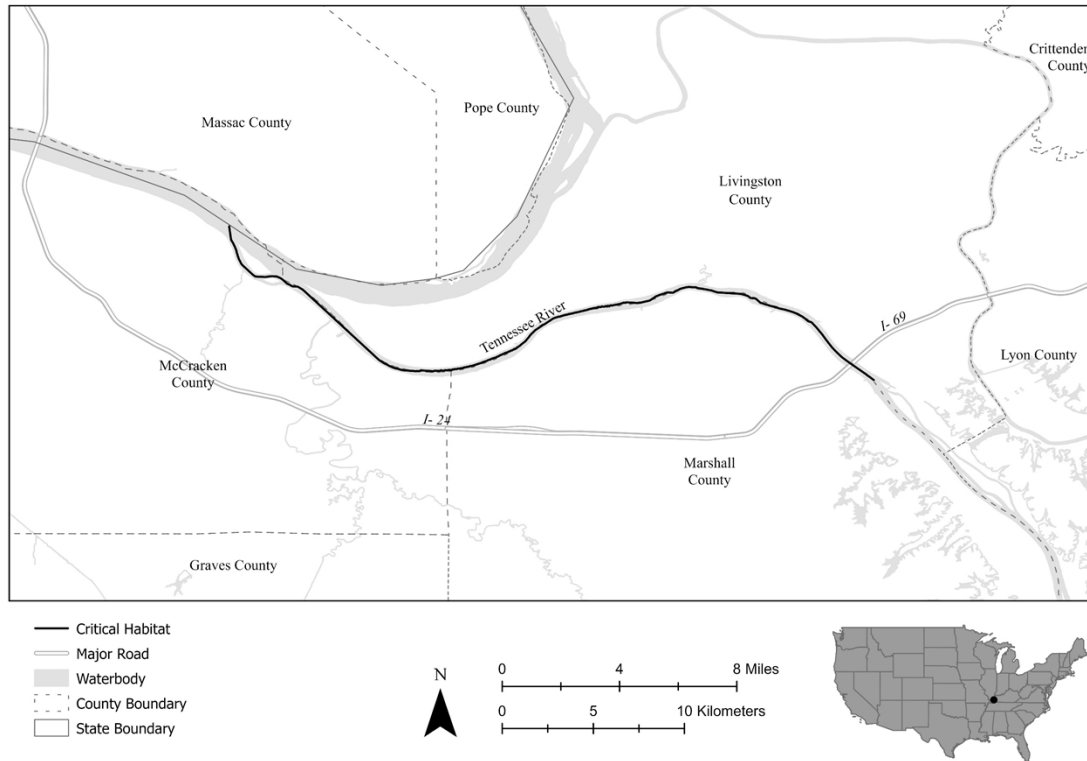
(13) SHNO 8: Lower Tennessee River; Livingston, Marshall, and McCracken Counties, Kentucky.

(i) SHNO 8 consists of 23 rmi (36 rkm) of the Tennessee River in Livingston, Marshall, and McCracken Counties, Kentucky. This unit extends from the Kentucky Dam (Marshall/Livingston Counties, Kentucky) downstream to the confluence of the lower Tennessee River with the Ohio River (McCracken County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 8 follows:

Figure 9 to Sheepnose (*Plethobasus cyphus*) paragraph (13)(ii)

Critical Habitat for Sheepnose
SHNO 8 Lower Tennessee River; Livingston, Marshall and McCracken Counties, Kentucky



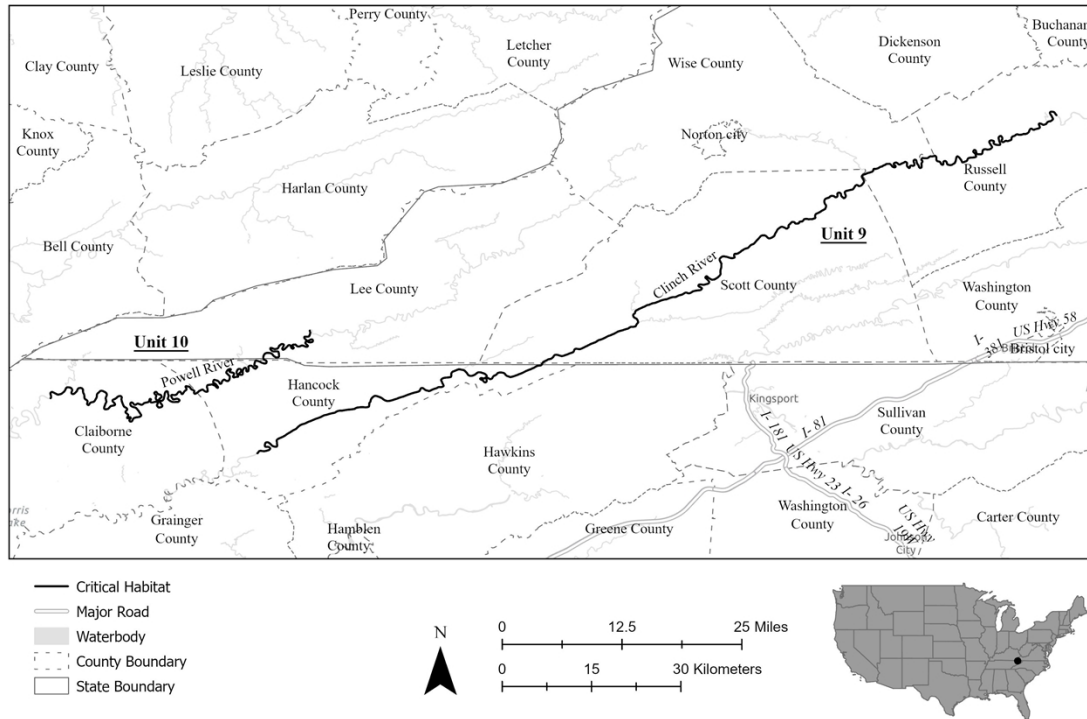
(14) SHNO 9: Upper Clinch River; Russell, Scott, and Wise Counties, Virginia, and Hancock County, Tennessee.

(i) SHNO 9 consists of 106 rmi (171 rkm) of the Clinch River in Russell, Scott, and Wise Counties, Virginia, and Hancock County, Tennessee. This unit extends from the confluence of the upper Clinch River with Thompson Creek (Russell County, Virginia) downstream to its confluence with Big Creek (Hancock County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 9 follows:

Figure 10 to Sheepnose (*Plethobasus cyphus*) paragraph (14)(ii)

Critical Habitat for Sheepnose
SHNO 9 Upper Clinch River; Russell, Scott, and Wise Counties, Virginia and Hancock County,
Tennessee
SHNO 10 Powell River; Lee County, Virginia and Claiborne and Hancock Counties, Tennessee



(15) SHNO 10: Powell River; Lee County, Virginia, and Claiborne and Hancock Counties, Tennessee.

(i) SHNO 10 consists of 63 rmi (101 rkm) of the Powell River in Lee County, Virginia, and Claiborne and Hancock County, Tennessee. This unit extends from the confluence of the Powell River with Little Yellow Branch (Lee County, Virginia) downstream to Highway 25E (Dixie Highway E) (Claiborne County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 10 is provided at paragraph (14)(ii) of this entry.

(16) SHNO 11: Big Sunflower River; Bolivar and Sunflower Counties, Mississippi.

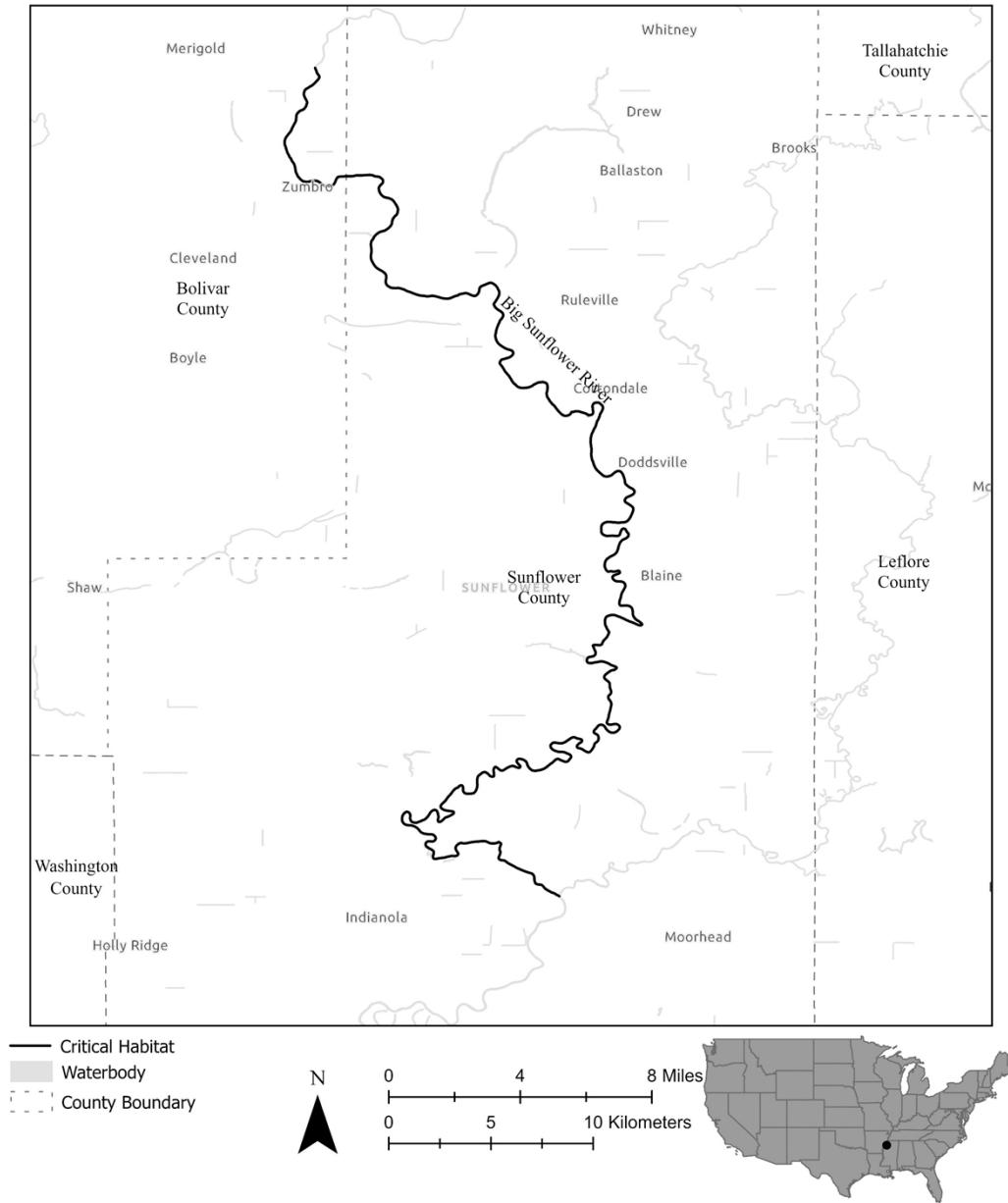
(i) SHNO 11 consists of 56 rmi (90 rkm) of the Big Sunflower River in Bolivar and Sunflower Counties, Mississippi. This unit begins where Merigold-Drew Road crosses the Big Sunflower River (Bolivar County, Mississippi) and extends downstream

to the confluence of the Big Sunflower River with the Quiver River (Sunflower County, Mississippi). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SHNO 11 follows:

Figure 11 to Sheepnose (*Plethobasus cyphus*) paragraph (16)(ii)

Critical Habitat for Sheepnose
SHNO 11 Big Sunflower River; Bolivar and Sunflower Counties, Mississippi



Snuffbox Mussel (*Epioblasma triquetra*)

(1) Critical habitat units for the snuffbox mussel are depicted on the maps in this entry for Jackson, Madison, and Marshall Counties, Alabama; Lawrence, Randolph, and Sharp Counties, Arkansas; Coles, Cumberland, and Douglas Counties, Illinois; Carroll, Huntington, Pulaski, Tippecanoe, and White Counties, Indiana; Bath, Bracken, Bullitt, Butler, Campbell, Carter, Clay, Edmonson, Fleming, Green, Greenup, Hardin, Harrison, Hart, Kenton, LaRue, Lee, Leslie, Lewis, Marion, Menifee, Montgomery, Nelson, Nicholas, Owsley, Pendleton, Powell, Robertson, Rowan, Taylor, Warren, and Wolfe Counties, Kentucky; Ionia, Kent, Livingston, and Oakland Counties, Michigan; Chisago and Washington Counties, Minnesota; Franklin, Gasconade, Jefferson, Madison, Phelps, Saint Louis, and Wayne Counties, Missouri; Ashtabula, Franklin, Lake, Madison, Marion, Miami, Montgomery, Pickaway, and Union Counties, Ohio; Crawford, Erie, Mercer, and Venango Counties, Pennsylvania; Claiborne, Giles, Grainger, Hancock, Lincoln, Marshall, and Maury Counties, Tennessee; Lee, Russell, Scott, Tazewell, and Wise Counties, Virginia; Braxton, Calhoun, Clay, Doddridge, Gilmer, Harrison, Kanawha, Lewis, Pleasants, Ritchie, Tyler, and Wirt Counties, West Virginia; and Pierce, Polk, Shawano, St. Croix, and Waupaca Counties, Wisconsin.

(2) Within these areas, the physical or biological features essential to the conservation of the snuffbox mussel consist of the following components within waters and streambeds up to the ordinary high-water mark:

(i) Adequate flows, or a hydrological flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain stream connectivity.

(ii) Suitable substrates and connected instream habitats, characterized by geomorphologically stable stream channels and banks (i.e., channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) that support the snuffbox mussel and its host fishes. For the

snuffbox mussel, suitable substrates are stable gravel and sand with moderate flow and aquatic vegetation in and adjacent to riffles and shoals.

(iii) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including appropriate levels of dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86 °F (30 °C)). Additionally, concentrations of contaminants, including (but not limited to) ammonia, nitrate, copper, and chloride, are below acute toxicity levels for mussels.

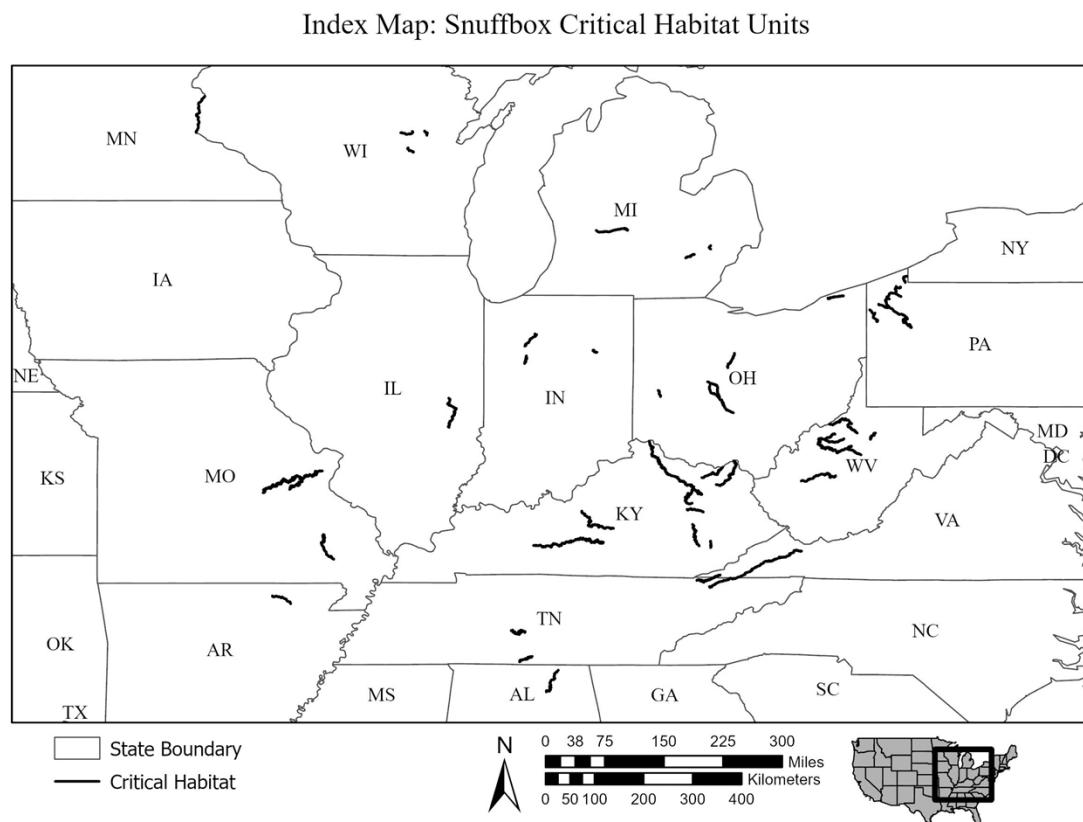
(iv) The presence and abundance of host fishes necessary for recruitment of the snuffbox mussel (logperch (*Percina caprodes*) and darter and sculpin species).

(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas and existing in-water pilings, docks, and sea walls) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

(4) Data layers defining map units were created using the 1984 World Geographic System ellipsoid or the 1983 North American datum, and the associated geographic coordinate system. The National Hydrography Dataset Plus High Resolution was used to create the critical habitat units. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144 and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (5)



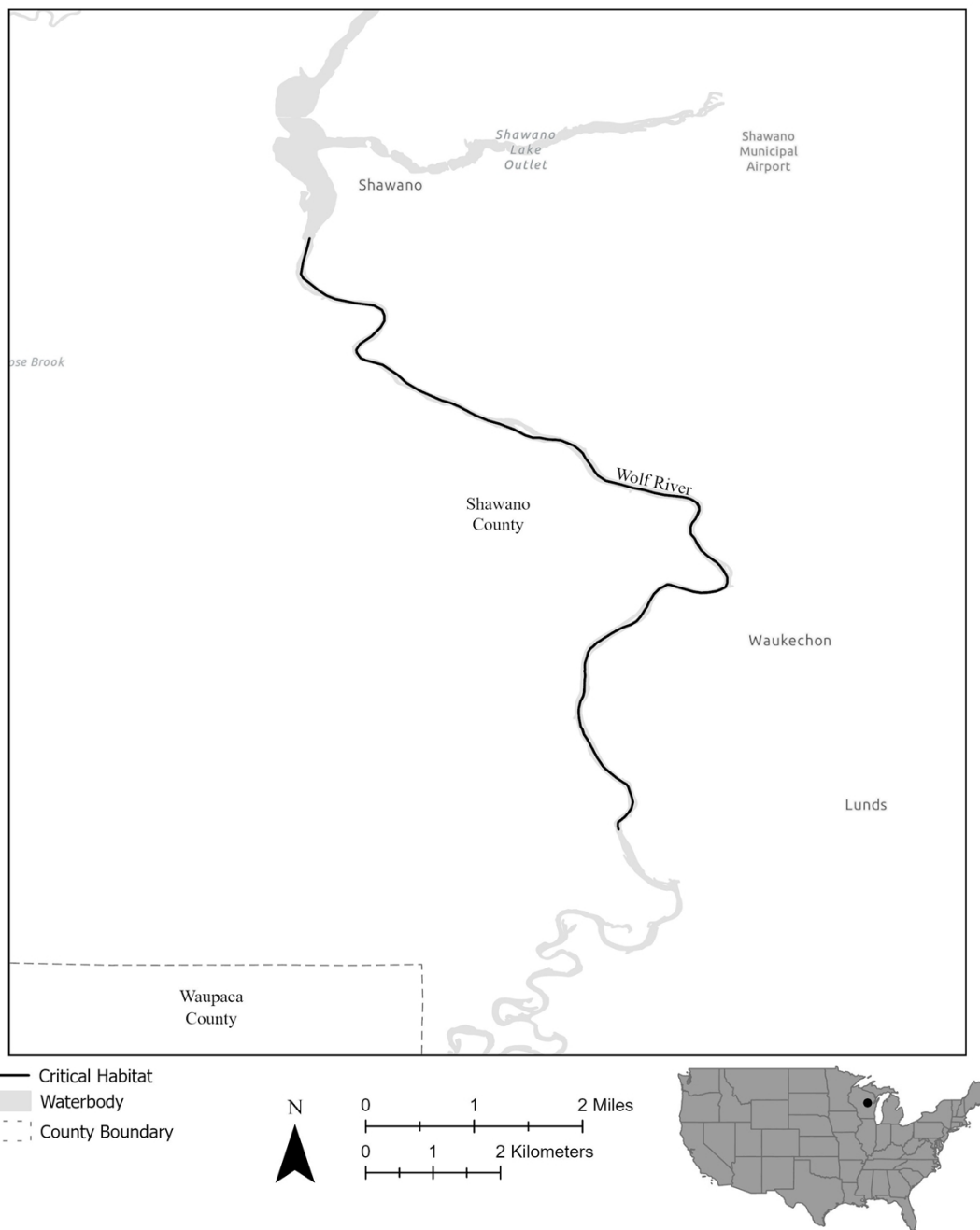
(6) SNBO 1: Wolf River; Shawano County, Wisconsin.

(i) SNBO 1 consists of 8 river miles (rmi) (13 river kilometers (rkm)) of the Wolf River in Shawano County, Wisconsin. This unit extends from the Shawano Dam downstream to the County Road CCC Bridge near the town of Waukechon, in Shawano County, Wisconsin. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 1 follows:

Figure 2 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (6)(ii)

Critical Habitat for Snuffbox
SNBO 1 Wolf River; Shawano County, Wisconsin



(7) SNBO 2: Embarrass River; Shawano County, Wisconsin.

(i) SNBO 2 consists of 18 rmi (29 rkm) of the Embarrass River, South Branch Embarrass River, and North Branch Embarrass River in Shawano County, Wisconsin. This unit is composed of two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

(A) Subunit 2a includes approximately 12 rmi (19 rkm) the South Branch Embarrass River in Shawano County, Wisconsin, from Spaulding Street (County Road M) in Tigerton downstream to its confluence with Embarrass River in the town of Grant.

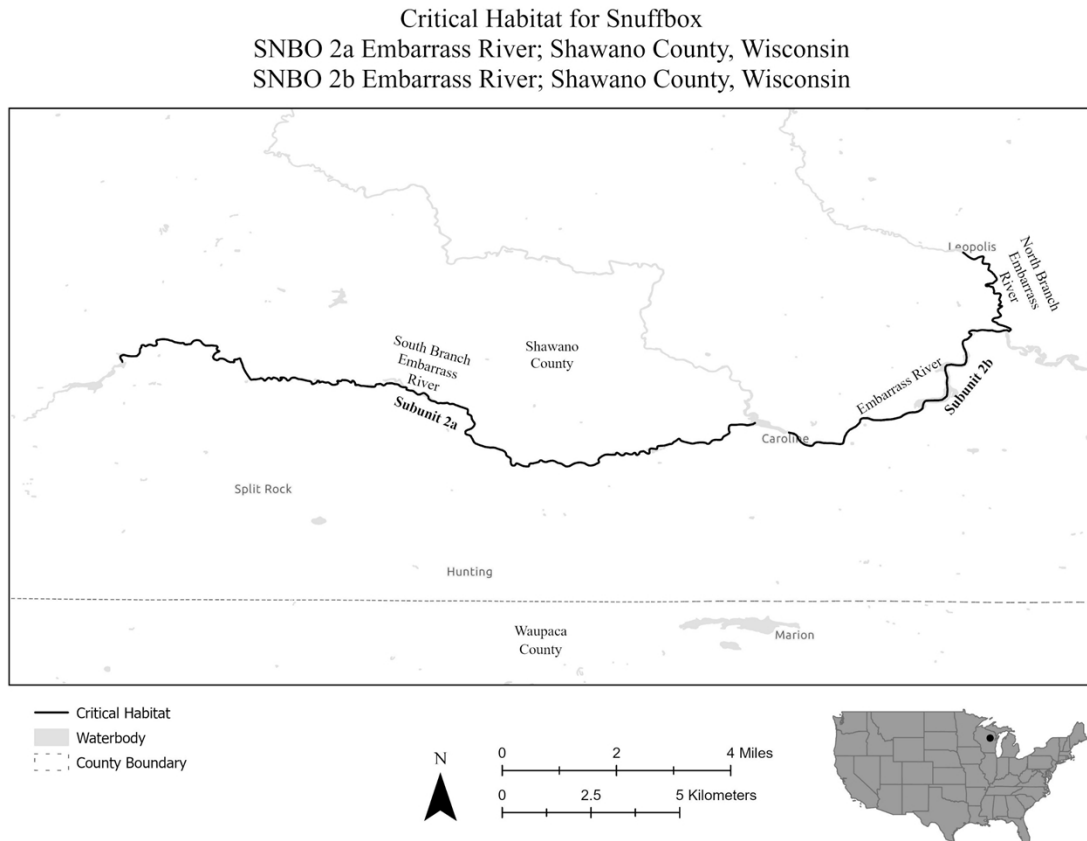
(B) Subunit 2b includes approximately 7 rmi (10 rkm) of the Embarrass River and the North Fork Embarrass River in Shawano County, Wisconsin.

(1) The Embarrass River portion of this unit includes 5 rmi (7 rkm) from the Caroline Dam in the town of Grant downstream to its confluence with North Branch Embarrass River.

(2) The North Branch Embarrass River portion of this unit includes 2 rmi (3 rkm) in Shawano County, Wisconsin, from the dam in the unincorporated community of Leopoldis downstream to its confluence with the Embarrass River.

(ii) Map of SNBO 2 follows:

Figure 3 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (7)(ii)

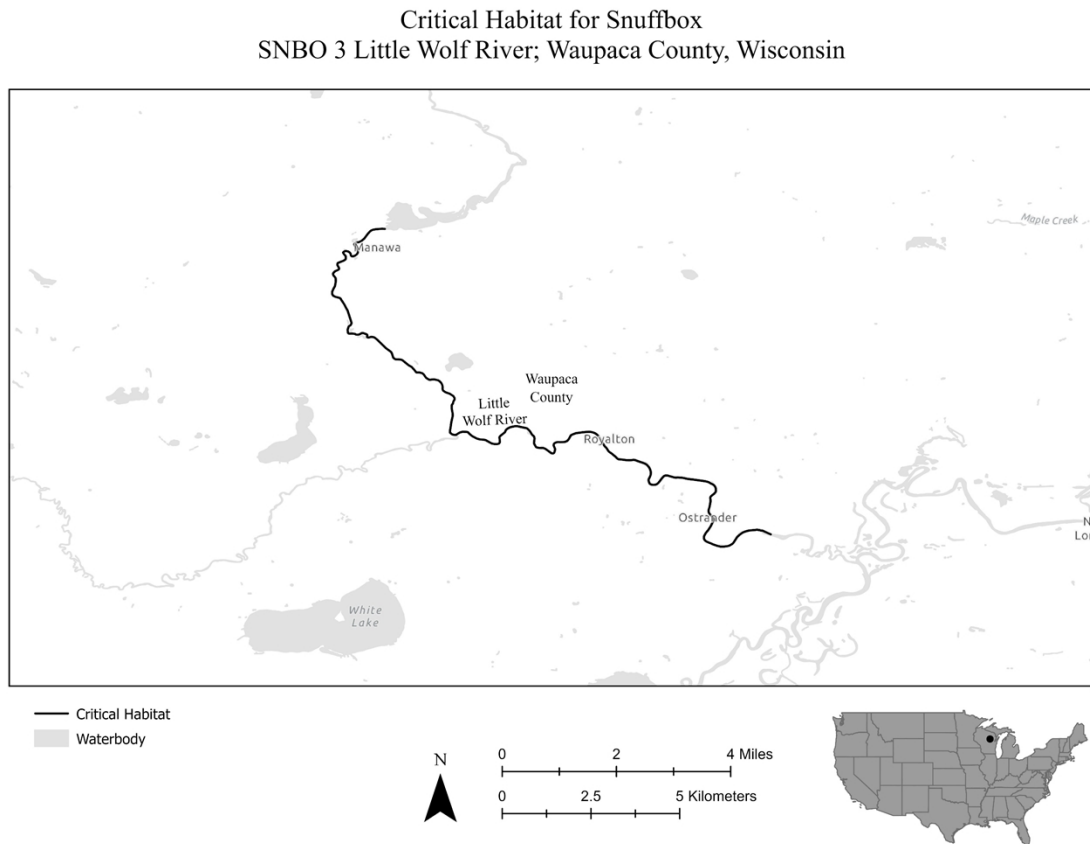


(8) SNBO 3: Little Wolf River; Waupaca County, Wisconsin.

(i) SNBO 3 consists of 12 rmi (19 rkm) of the Little Wolf River in Waupaca County, Wisconsin. This unit extends from the Manawa Mill Pond Dam in the city of Manawa downstream to the Highway X Bridge in the town of Mukwa, in Waupaca County, Wisconsin. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 3 follows:

Figure 4 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (8)(ii)



(9) SNBO 4: Grand River (Michigan); Ionia and Kent Counties, Michigan.

(i) SNBO 4 consists of 41 rmi (65 rkm) of the Grand River and the Flat River in Ionia and Kent Counties, Michigan. The unit includes the river channel up to the ordinary high-water mark.

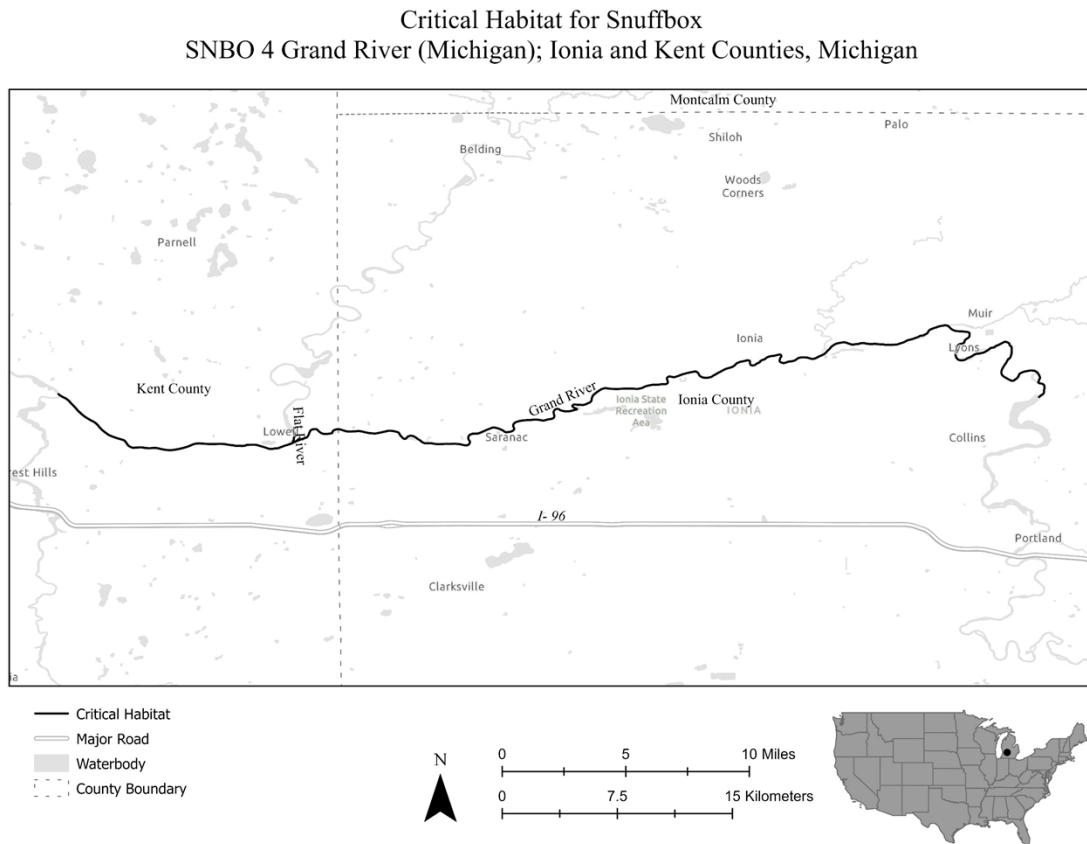
(A) The Grand River portion of this unit includes 40 rmi (64 rkm) and extends from the Webber Dam upstream of the village of Lyons (Ionia County, Michigan)

downstream to its confluence with the Thornapple River in the unincorporated community of Ada (Kent County, Michigan).

(B) The Flat River portion of this unit includes 0.5 rmi (0.8 rkm) in Kent County, Michigan, from West State Highway 21 in the city of Lowell downstream to its confluence with the Grand River in the city of Lowell.

(ii) Map of SNBO 4 follows:

Figure 5 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (9)(ii)

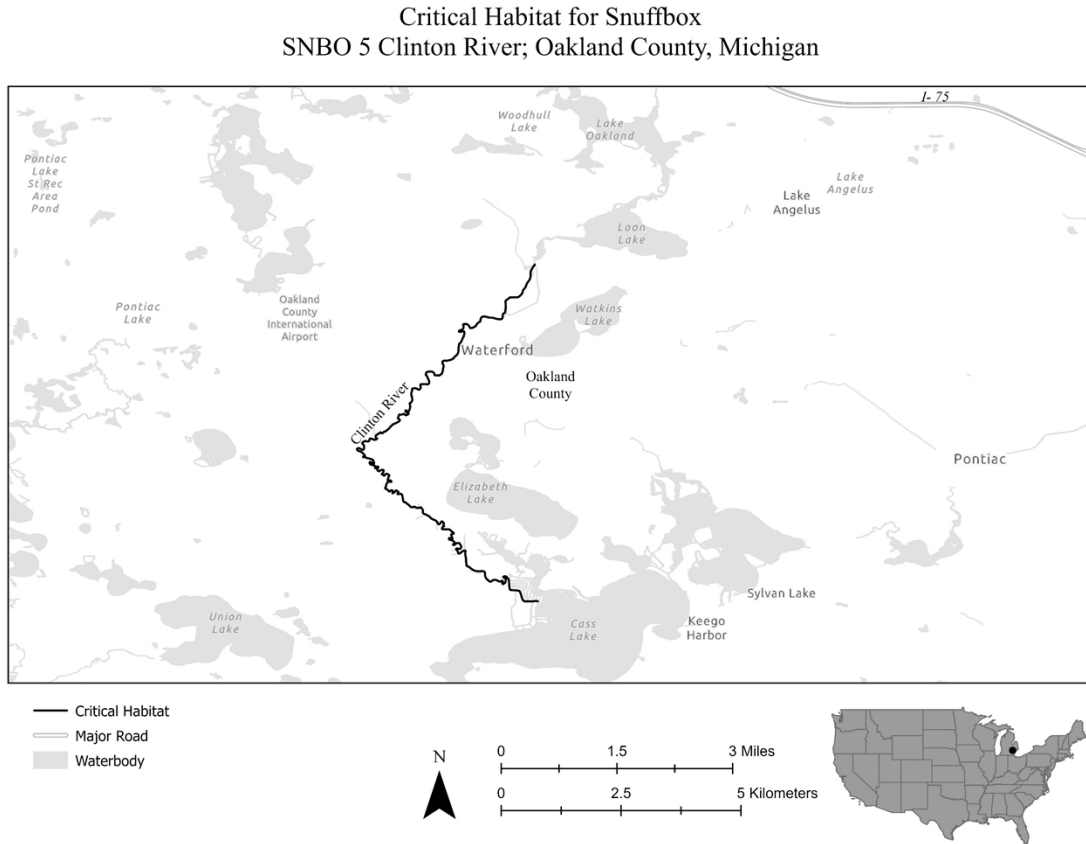


(10) SNBO 5: Clinton River; Oakland County, Michigan.

(i) SNBO 5 consists of 8 rmi (13 rkm) of the Clinton River in Oakland County, Michigan. This unit extends from downstream of the fish hatchery at Waterford Township downstream to Cass Lake east of the unincorporated community of Four Towns, in Oakland County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 5 follows:

Figure 6 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (10)(ii)



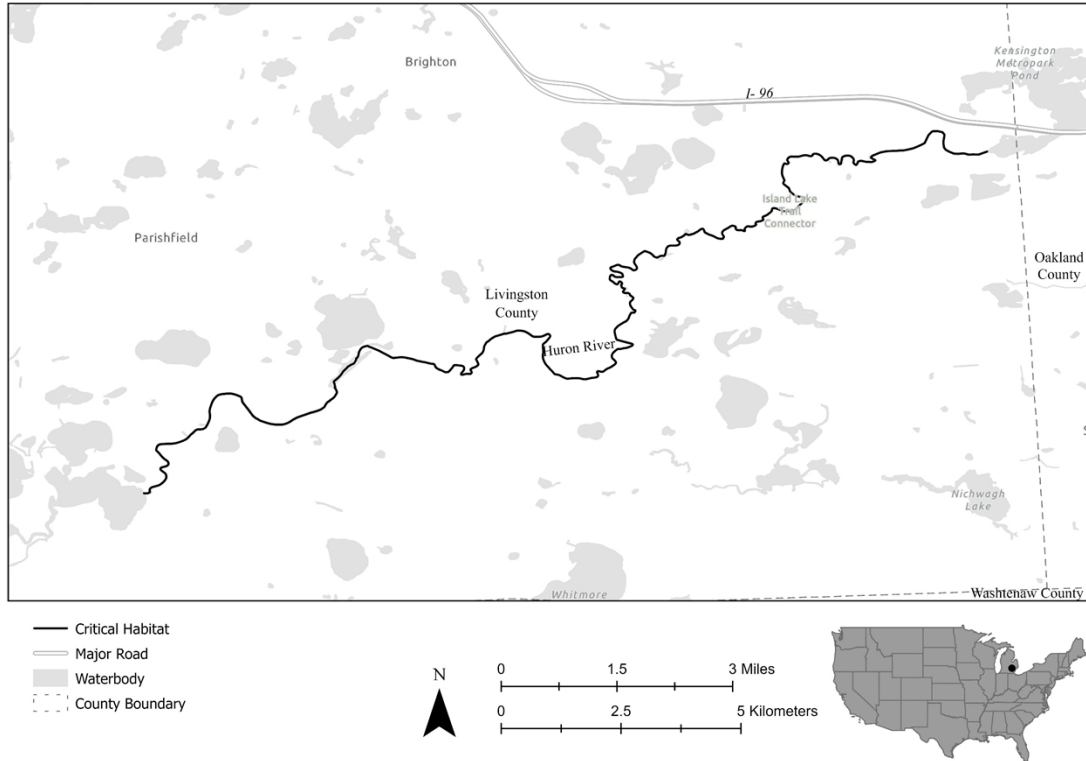
(11) SNBO 6: Huron River; Livingston County, Michigan.

(i) SNBO 6 consists of 16 rmi (26 rkm) of the Huron River in Livingston County, Michigan. This unit extends from Strawberry Lake downstream to the Kent Lake Dam, in Livingston County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 6 follows:

Figure 7 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (11)(ii)

Critical Habitat for Snuffbox
SNBO 6 Huron River; Livingston County, Michigan



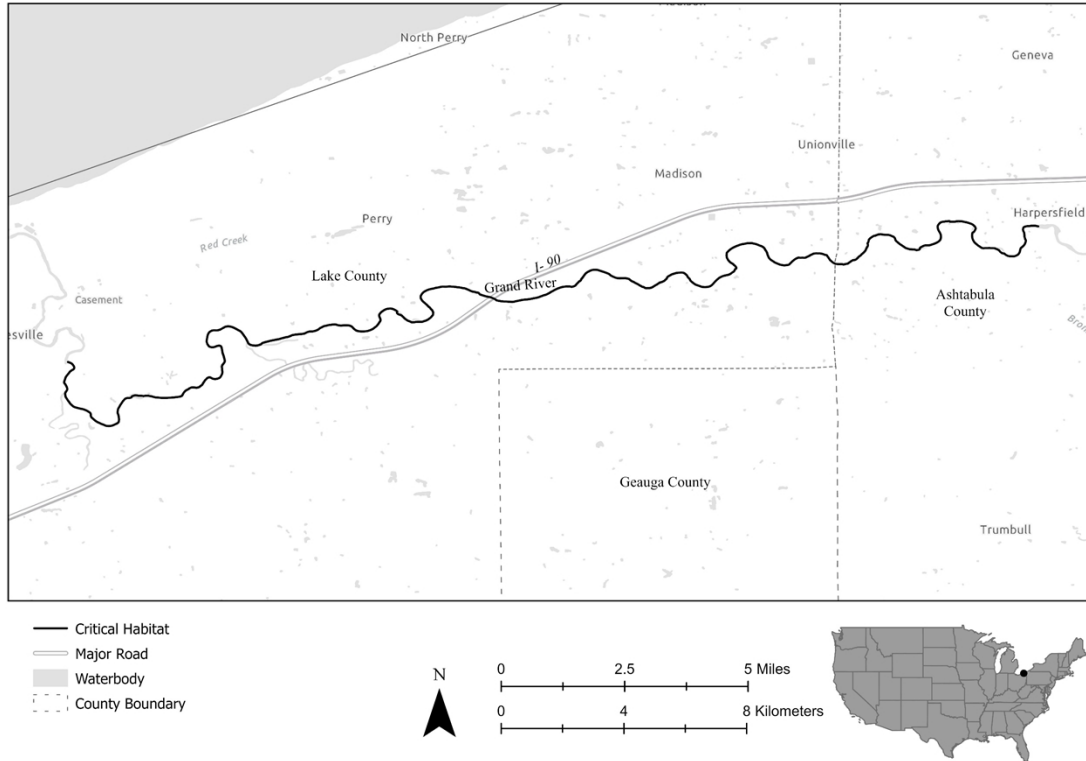
(12) SNBO 7: Grand River (Ohio); Ashtabula and Lake Counties, Ohio.

(i) SNBO 7 consists of 23 rmi (37 rkm) of the Grand River in Ashtabula and Lake Counties, Ohio. This unit extends from the Harpersfield Dam in the unincorporated community of Harpersfield (Ashtabula County, Ohio) downstream to the Norfolk and Western Railroad Trestle (Lake County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 7 follows:

Figure 8 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (12)(ii)

Critical Habitat for Snuffbox
SNBO 7 Grand River (Ohio); Ashtabula and Lake Counties, Ohio



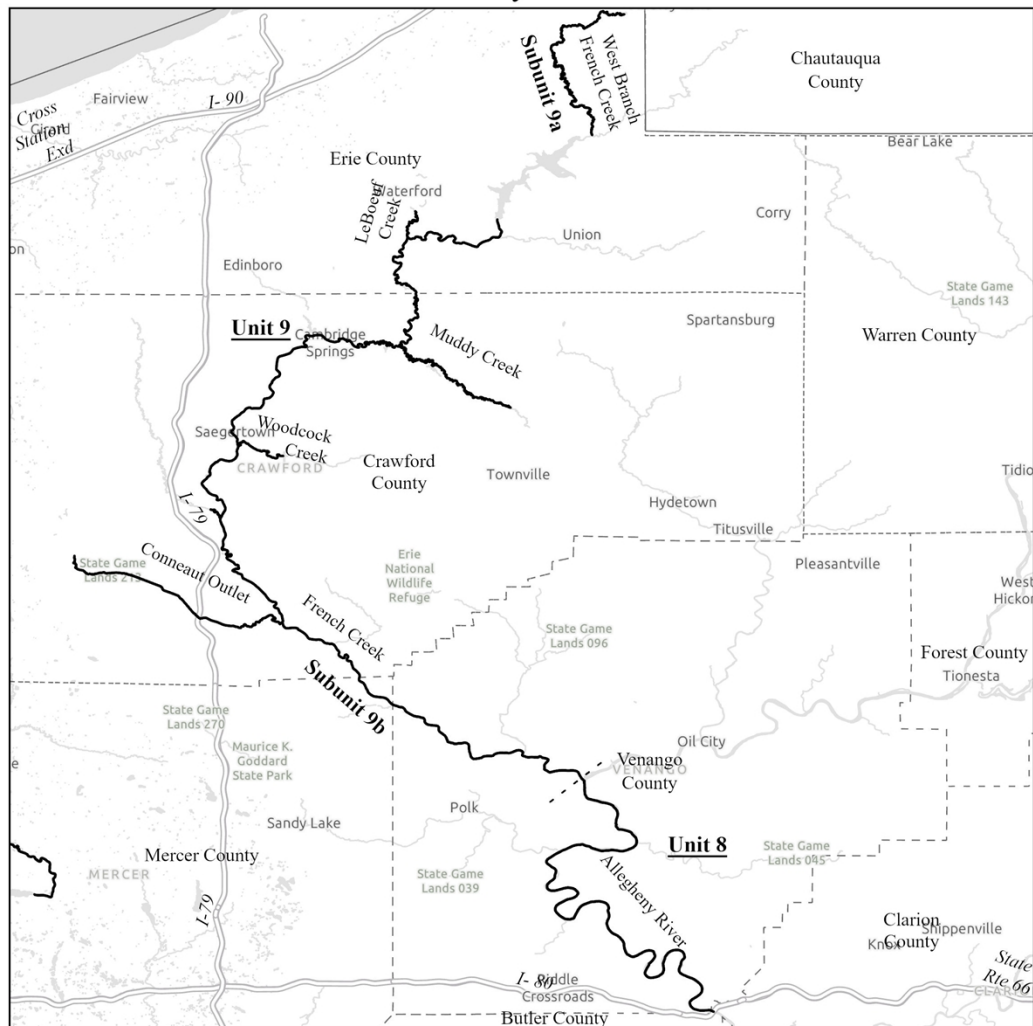
(13) SNBO 8: Allegheny River; Venango County, Pennsylvania.

(i) SNBO 8 consists of 35 rmi (57 rkm) of the Allegheny River in Venango County, Pennsylvania. This unit extends from the Allegheny River’s confluence with French Creek near the city of Franklin downstream to Interstate 80 near the borough of Emlenton, in Venango County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

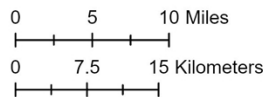
(ii) Map of SNBO 8 follows:

Figure 9 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (13)(ii)

Critical Habitat for Snuffbox
 SNBO 8 Allegheny River; Venango County, Pennsylvania
 SNBO 9a French Creek; Erie County, Pennsylvania
 SNBO 9b French Creek; Crawford, Erie, Mercer, and Venango Counties,
 Pennsylvania



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary
- - - Demarcation of Units



(14) SNBO 9: French Creek; Crawford, Erie, Lebanon, Mercer, and Venango Counties, Pennsylvania.

(i) SNBO 9 consists of 130 rmi (209 rkm) of French Creek, West Branch French Creek, LeBoeuf Creek, Cussewago Creek, Woodcock Creek, Muddy Creek, and Conneaut Outlet in Erie, Crawford, Mercer, and Venango Counties, Pennsylvania. This

unit is composed of two subunits. The unit includes the river channel up to the ordinary high-water mark.

(A) Subunit SNBO 9a includes 19 rmi (30 rkm) of West Branch French Creek in Erie County, Pennsylvania, from the Aston Road Bridge in Greenfield Township just west of the New York/Pennsylvania State line downstream to its confluence with French Creek in Wattsburg (Erie County, Pennsylvania).

(B) Subunit SNBO 9b includes 111 rmi (179 rkm) of the French Creek, LeBoeuf Creek, Cussewago Creek, Woodcock Creek, Muddy Creek and Conneaut Outlet in Erie, Crawford, Mercer, and Venango Counties, Pennsylvania.

(1) The French Creek portion of this unit includes 75 rmi (121 rkm) from the Union City Reservoir Dam northeast of Union City (Erie County, Pennsylvania) downstream to its confluence with Allegheny River near Franklin (Venango County, Pennsylvania).

(2) The LeBoeuf Creek portion of this unit includes 3 rmi (5 rkm) in Erie County, Pennsylvania, from U.S. Highway 19 downstream to its confluence with French Creek in Le Boeuf Township.

(3) The Cussewago Creek portion of this unit includes 1 rmi (2 rkm) in Crawford County, Pennsylvania, from Dunham Road in Fredericksburg downstream to its confluence with French Creek in the city of Meadville.

(4) The Woodcock Creek portion of this unit includes 4 rmi (6 rkm) in Crawford County, Pennsylvania, from the Woodcock Dam downstream to its confluence with French Creek in the borough of Saegertown.

(5) The Muddy Creek portion of this unit includes 14 rmi (22 rkm) in Crawford County, Pennsylvania, from Pennsylvania Highway 77 near the unincorporated community of Little Cooley downstream to its confluence with French Creek east of the borough of Cambridge Springs.

(6) The Conneaut Outlet portion of this unit includes 14 rmi (23 rkm) in Crawford County, Pennsylvania, from Conneaut Lake downstream to its confluence with French Creek in Fairfield Township.

(ii) Map of SNBO 9 is provided at paragraph (13)(ii) of this entry.

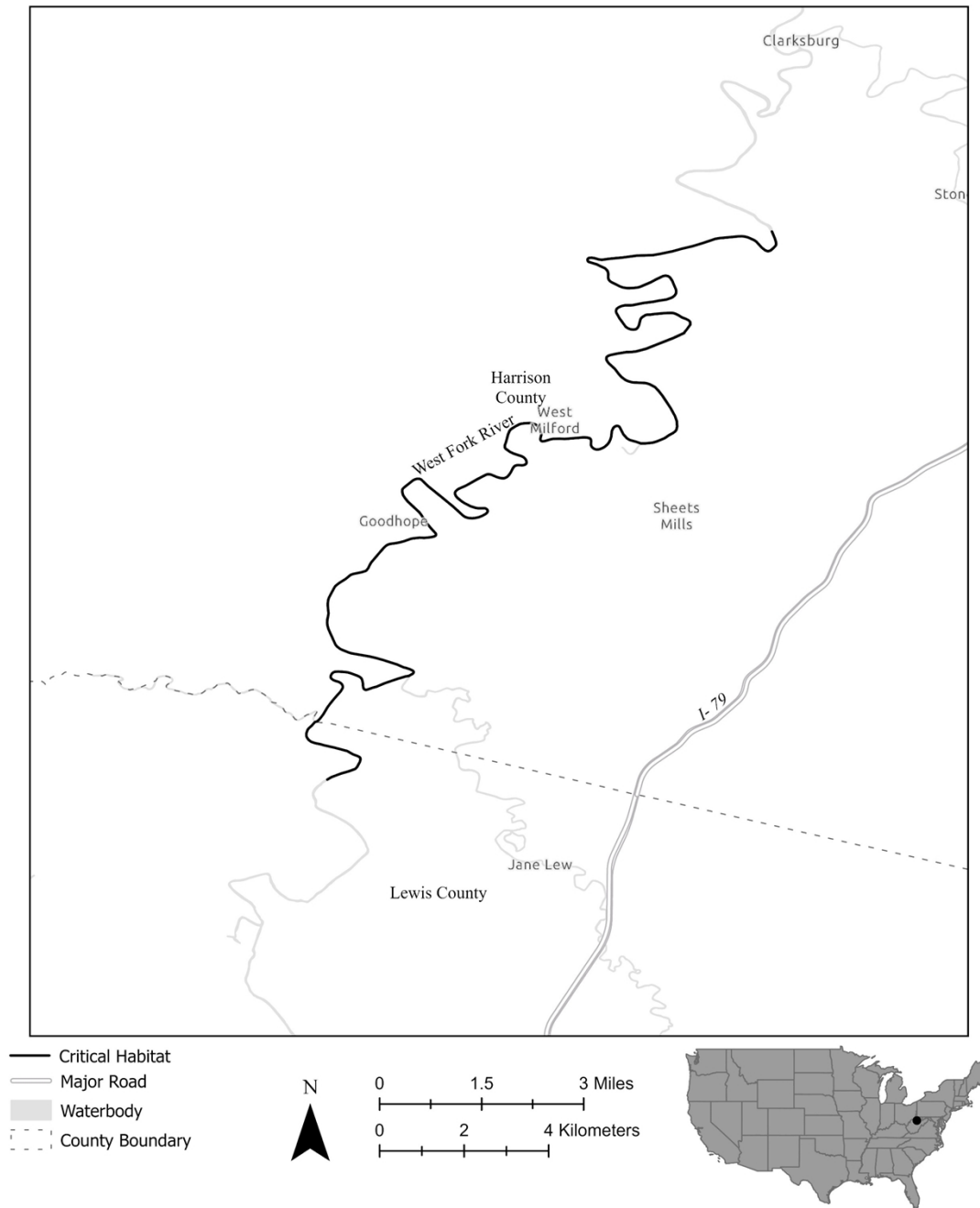
(15) SNBO 10: West Fork River; Harrison and Lewis Counties, West Virginia.

(i) SNBO 10 consists of 22 rmi (35 rkm) of the West Fork River in Lewis and Harrison Counties, West Virginia. This unit extends from the Broad Run Road Bridge (County Road 8) in Lewis County, West Virginia, downstream to the Trolley Car Lane Bridge in the city of Clarksburg (Harrison County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 10 follows:

Figure 10 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (15)(ii)

Critical Habitat for Snuffbox
SNBO 10 West Fork River; Harrison and Lewis Counties, West Virginia



(16) SNBO 11: Shenango River; Crawford and Mercer Counties, Pennsylvania.

(i) SNBO 11 consists of 28 rmi (45 rkm) of the Shenango River and the Little Shenango River in Crawford and Mercer Counties, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

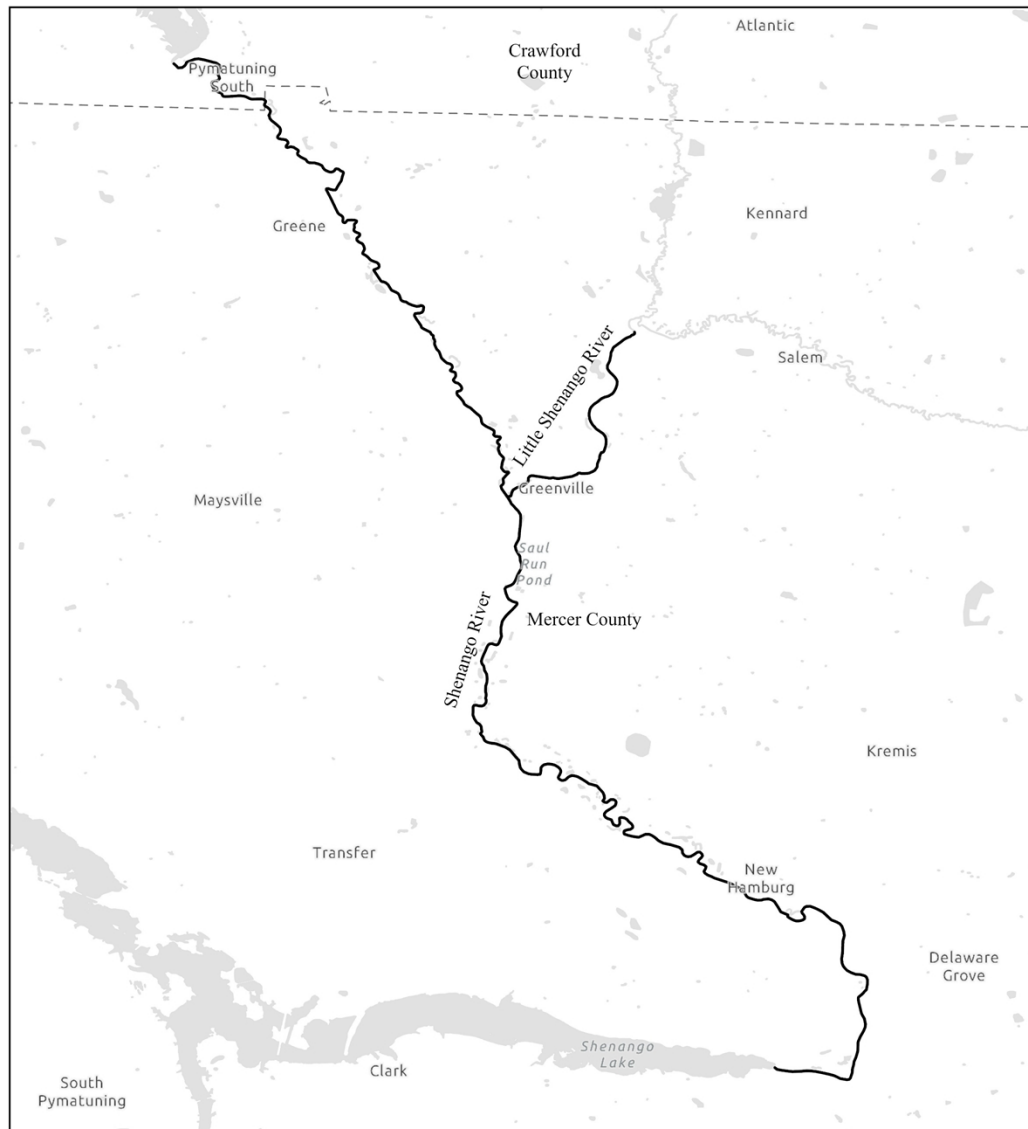
(A) The Shenango River portion of the unit includes 24 rmi (39 rkm) from Dam Road at the Pymatuning Reservoir Dam outlet (Crawford County, Pennsylvania) downstream to the point of inundation by Shenango River Lake near Big Bend (Mercer County, Pennsylvania).

(B) The Little Shenango River portion of this unit includes 4 rmi (6 rkm) in Mercer County, Pennsylvania, from the County Road 4017 Bridge (Werner Road Bridge) downstream to its confluence with the Shenango River in the borough of Greenville.

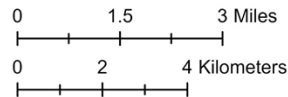
(ii) Map of SNBO 11 follows:

Figure 11 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (16)(ii)

Critical Habitat for Snuffbox
SNBO 11 Shenango River; Crawford and Mercer Counties, Pennsylvania



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary



(17) SNBO 12: Middle Island Creek; Doddridge, Tyler, and Pleasants Counties, West Virginia.

(i) SNBO 12 consists of 87 rmi (140 rkm) of Middle Island Creek, Meathouse Fork, and McElroy Creek in Doddridge, Tyler, and Pleasants Counties, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

(A) The Middle Island Creek portion of this unit includes approximately 76 rmi (122 rkm) from the beginning of Middle Island Creek (i.e., where Meathouse Fork and Beaver Creek join forming Middle Island Creek), south of the unincorporated community of Smithburg (Doddridge County, West Virginia), downstream to its confluence with the Ohio River at the city of St. Mary's (Pleasants County, West Virginia).

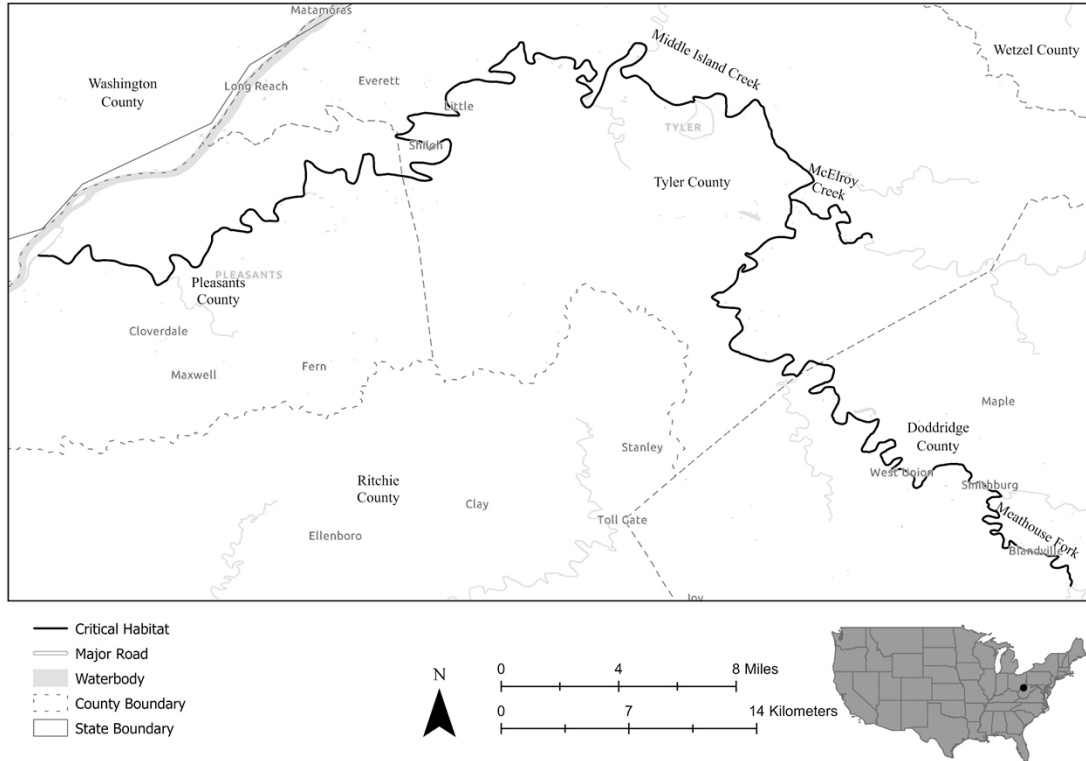
(B) The Meathouse Fork portion of this unit includes approximately 7 rmi (11 rkm) in Doddridge County, West Virginia, from the State Highway 18 Bridge southeast of the unincorporated community of Blandville downstream to where Beaver Creek and Meathouse Creek join and form Middle Island Creek.

(C) The McElroy Creek portion of this unit includes approximately 5 rmi (8 rkm) in Tyler County, West Virginia, from the Whitetail Lane Bridge to its confluence with Middle Island Creek in the unincorporated community of Alma.

(ii) Map of SNBO 12 follows:

Figure 12 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (17)(ii)

Critical Habitat for Snuffbox
SNBO 12 Middle Island Creek; Doddridge, Tyler, and Pleasants Counties, West Virginia



(18) SNBO 13: Little Kanawha River; Braxton, Calhoun, Gilmer, Ritchie, and Wirt Counties, West Virginia.

(i) SNBO 13 consists of 200 rmi (322 rkm) of the Little Kanawha River, Leading Creek, Hughes River, North Fork Hughes River, and South Fork Hughes River in Braxton, Calhoun, Gilmer, Ritchie, and Wirt Counties, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

(A) The Little Kanawha River portion of this unit includes approximately 109 rmi (175 rkm) from the Burnsville Dam (Braxton County, West Virginia) downstream to its confluence with the Hughes River in Wirt County, West Virginia.

(B) The Leading Creek portion of this unit includes approximately 12 rmi (20 rkm) in Gilmer County, West Virginia, from the Ellis Run Road Bridge southwest of the unincorporated community of Troy downstream to the confluence with the Little Kanawha River northwest of the town of Glenville.

(C) The Hughes River portion of this unit includes approximately 7 rmi (11 rkm) in Wirt County, West Virginia, from the convergence of the North and South Forks Hughes River in Freeport downstream to its confluence with the Little Kanawha River in the unincorporated community of Greencastle.

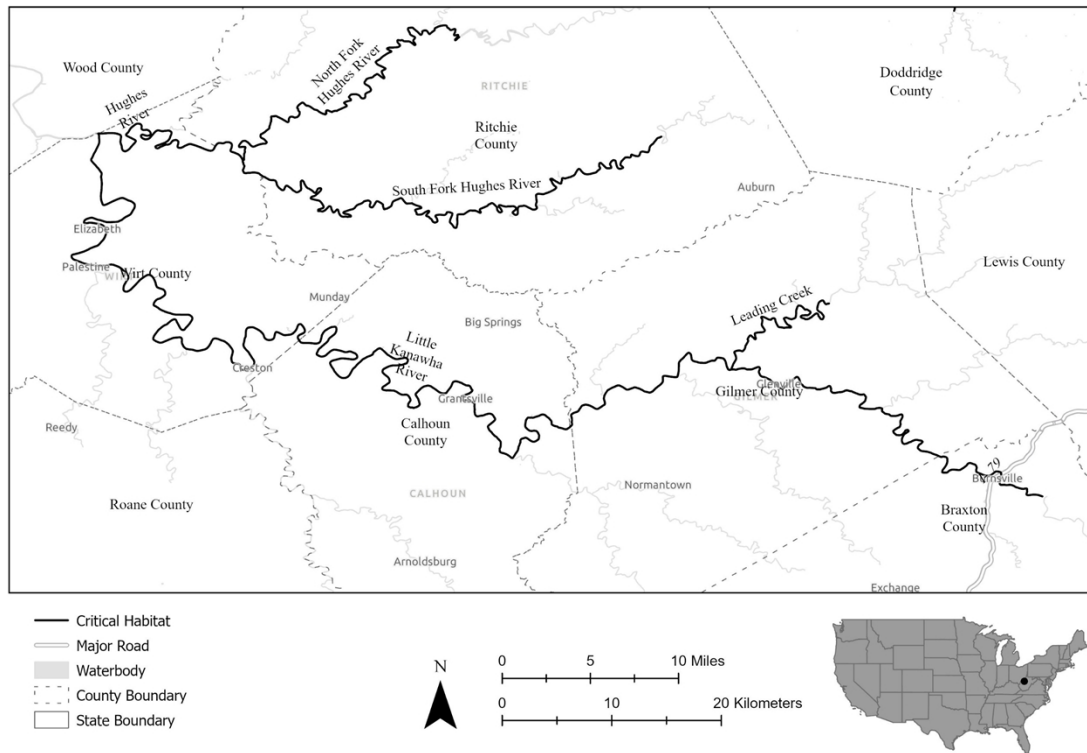
(D) The North Fork Hughes River portion of this unit includes approximately 28 rmi (45 rkm) from the North Bend Dam near the town of Harrisville (Ritchie County, West Virginia) downstream to its convergence with the South Fork Hughes River in the unincorporated community of Freeport (Wirt County, West Virginia).

(E) The South Fork Hughes River portion of this unit includes approximately 44 rmi (71 rkm) from the State Route 74 Bridge in Ritchie County, West Virginia, downstream to its convergence with the North Fork Hughes River in the unincorporated community of Freeport (Wirt County, West Virginia).

(ii) Map of SNBO 13 follows:

Figure 13 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (18)(ii)

Critical Habitat for Snuffbox
SNBO 13 Little Kanawha River; Braxton, Calhoun, Gilmer, Ritchie, and Wirt Counties, West Virginia



(19) SNBO 14: Kanawha River; Clay and Kanawha Counties, West Virginia.

(i) SNBO 14 consists of 58 rmi (93 rkm) of the Kanawha River and the Elk River in Clay and Kanawha Counties, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

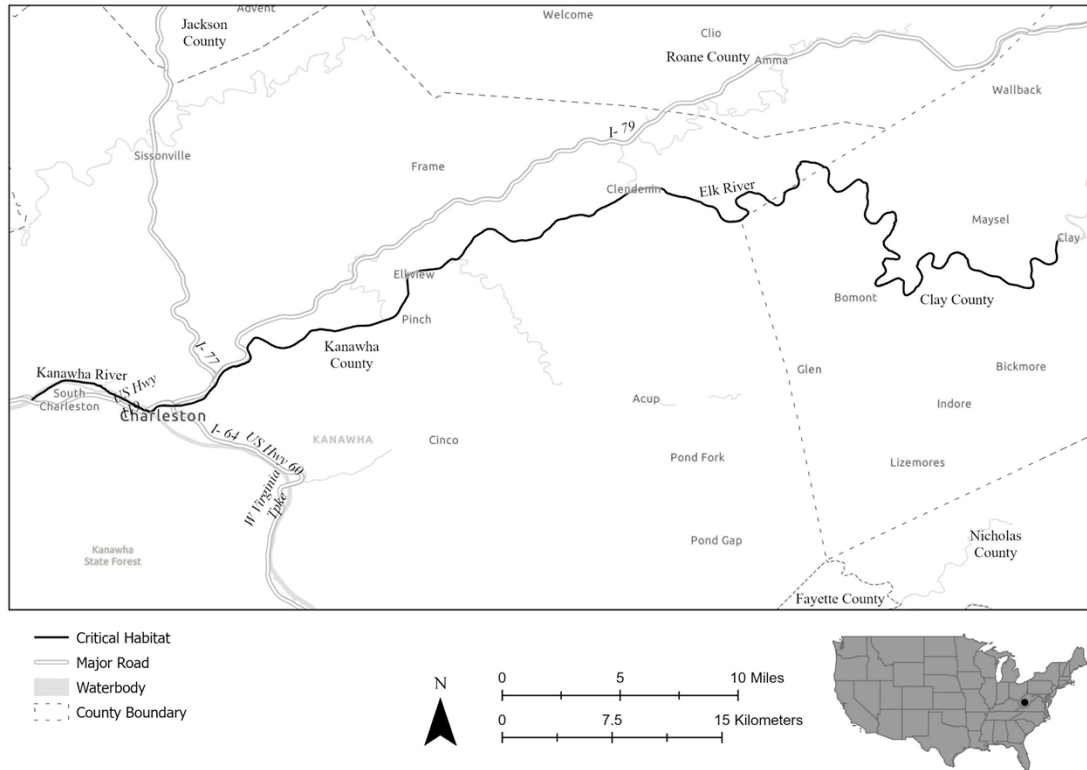
(A) The Kanawha River portion of this unit includes 5 rmi (8 rkm) in Kanawha County, West Virginia, from its confluence with the Elk River in the city of Charleston downstream to the westbound crossing of Interstate 64 in western Charleston.

(B) The Elk River portion of this unit includes 53 rmi (85 rkm) from the Pisgah Ridge Road/Elk Street crossing in Clay County, West Virginia, downstream to its confluence with the Kanawha River in the city of Charleston (Kanawha County, West Virginia).

(ii) Map of SNBO 14 follows:

Figure 14 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (19)(ii)

Critical Habitat for Snuffbox
 SNBO 14 Kanawha River; Clay and Kanawha Counties, West Virginia



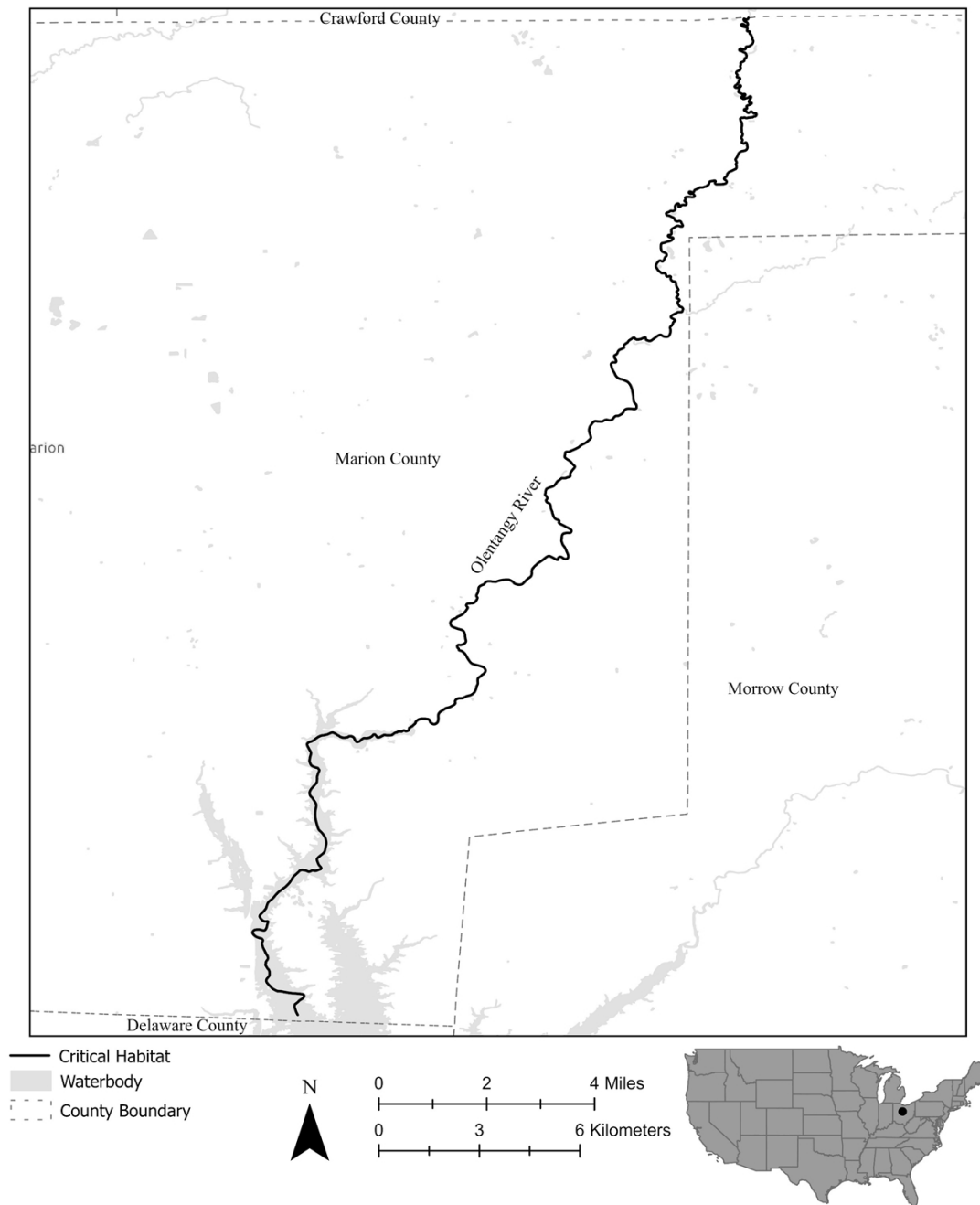
(20) SNBO 15: Olentangy River; Marion County, Ohio.

(i) SNBO 15 consists of 30 rmi (48 rkm) of the Olentangy River in Marion County, Ohio. This unit extends from the Crawford-Marion Line Road Bridge at the Crawford and Marion County line downstream to the Delaware Dam impoundment (Marion/Delaware County Line, Ohio). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 15 follows:

Figure 15 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (20)(ii)

Critical Habitat for Snuffbox
SNBO 15 Olentangy River; Marion County, Ohio



(21) SNBO 16: Little Darby Creek; Franklin, Madison, and Union Counties, Ohio.

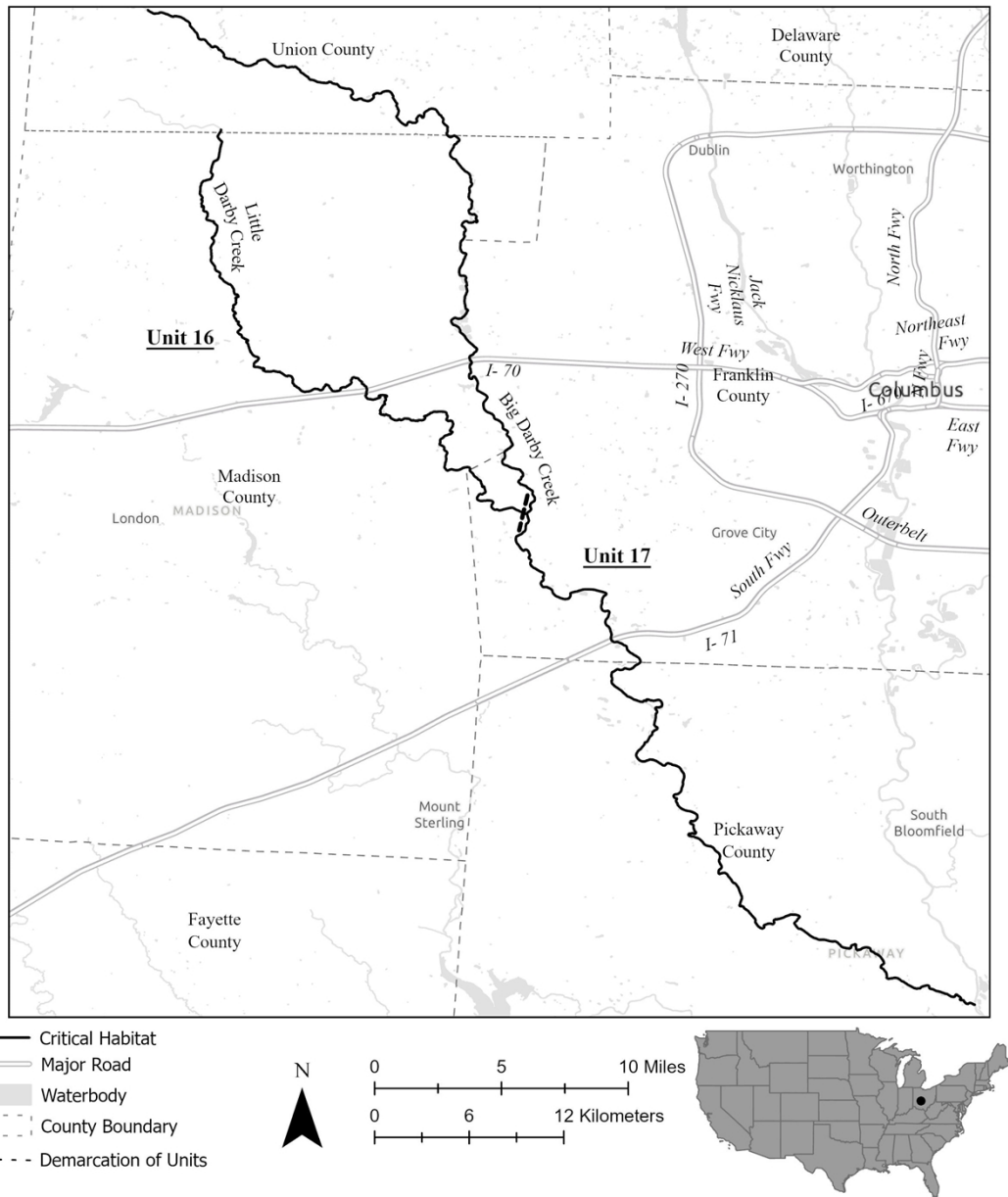
(i) SNBO 16 consists of 28 rmi (45 rkm) of Little Darby Creek in Franklin, Madison, and Union Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near the unincorporated community of Chuckery (Union County, Ohio)

downstream to its confluence with Big Darby Creek in Franklin County, Ohio. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 16 follows:

Figure 16 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (21)(ii)

Critical Habitat for Snuffbox
 SNBO 16 Little Darby Creek; Franklin, Madison and Union Counties, Ohio
 SNBO 17 Big Darby Creek; Franklin, Madison, Pickaway, and Union Counties,
 Ohio



(22) SNBO 17: Big Darby Creek; Franklin, Madison, Pickaway, and Union Counties, Ohio.

(i) SNBO 17 consists of 69 rmi (111 rkm) of Big Darby Creek in Franklin, Madison, Pickaway, and Union Counties, Ohio. This unit extends from the U.S. Highway 36 Bridge in village of Milford Center (Union County, Ohio) downstream to its confluence with the Scioto River near city of Circleville (Pickaway County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 17 is provided at paragraph (21)(ii) of this entry.

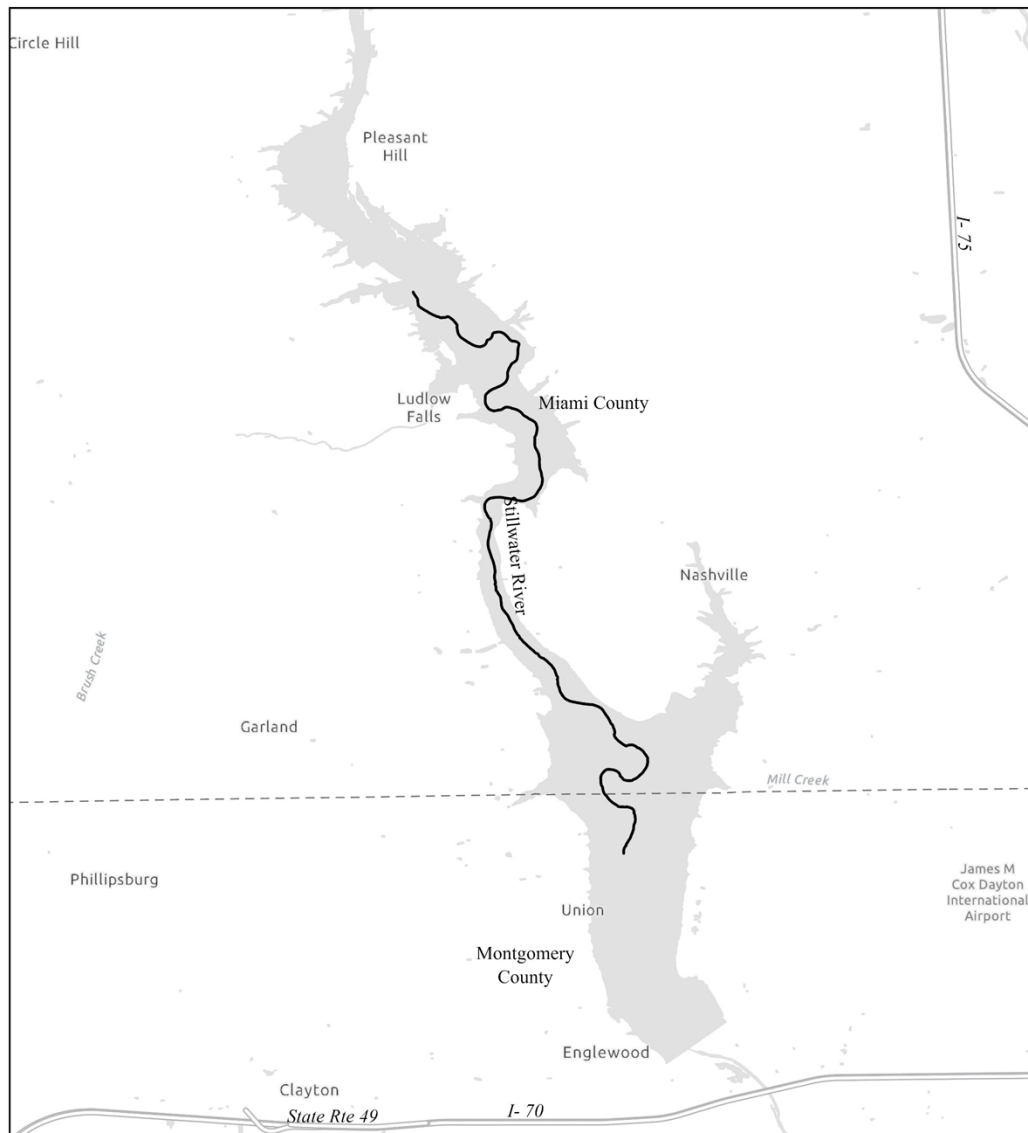
(23) SNBO 18: Stillwater River; Miami and Montgomery Counties, Ohio.

(i) SNBO 18 consists of 12 rmi (19 rkm) of the Stillwater River in Miami and Montgomery Counties, Ohio. This unit extends from the Fenner Road Bridge (County Road 37) in Miami County, Ohio, downstream to the Old Springfield Road Bridge in Union City (Montgomery County, Ohio). The unit includes the river channel up to the ordinary high-water mark.

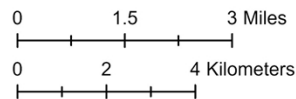
(ii) Map of SNBO 18 follows:

Figure 17 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (23)(ii)

Critical Habitat for Snuffbox
SNBO 18 Stillwater River; Miami and Montgomery Counties, Ohio



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary



(24) SNBO 19: Tygarts Creek; Carter and Greenup Counties, Kentucky.

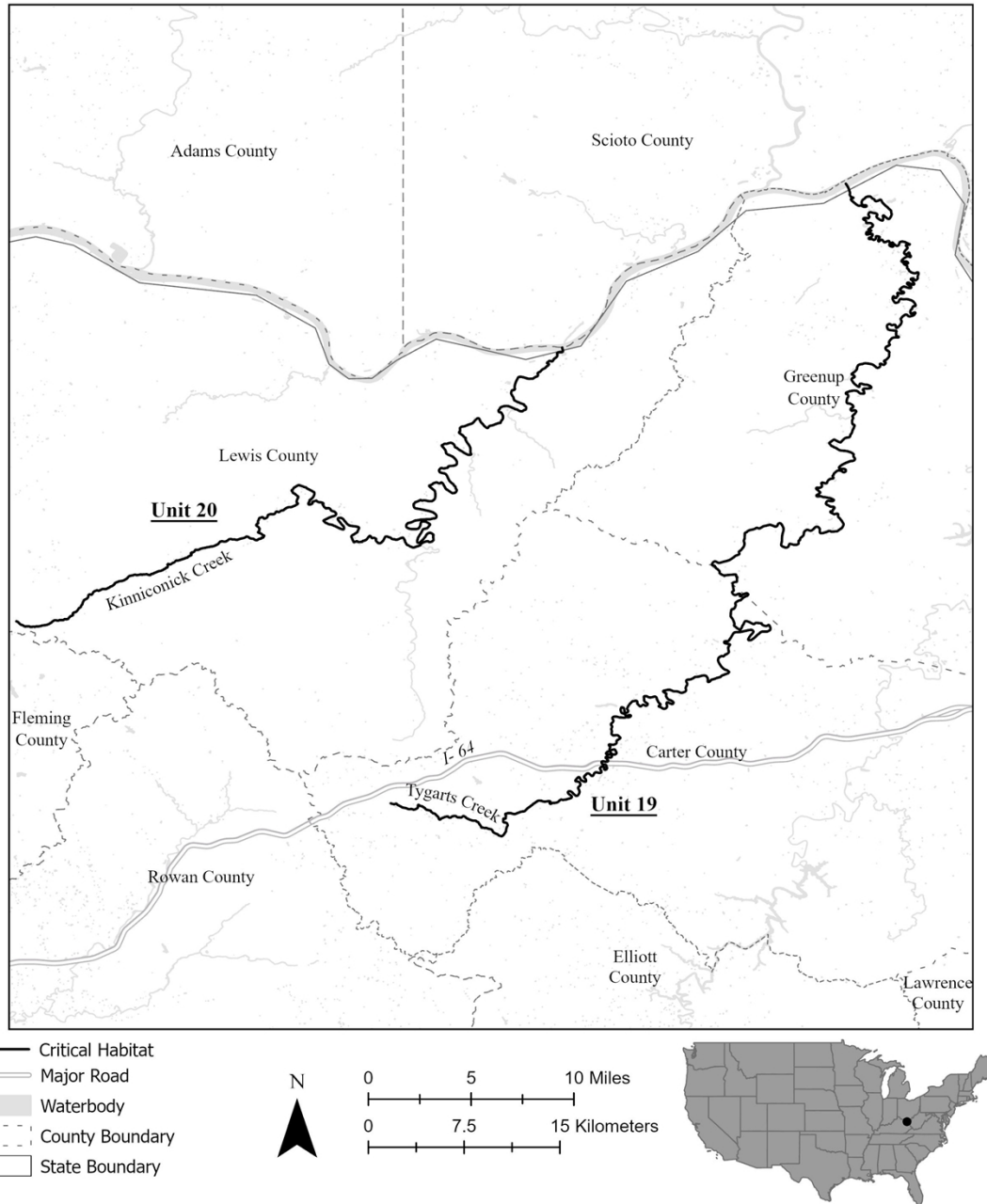
(i) SNBO 19 consists of 89 rmi (143 rkm) of Tygarts Creek in Carter and Greenup Counties, Kentucky. This unit extends from the confluence of Flat Fork just north of U.S Highway 60 in Carter County, Kentucky, downstream to the confluence with the Ohio

River in South Shore (Greenup County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 19 follows:

Figure 18 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (24)(ii)

Critical Habitat for Snuffbox
SNBO 19 Tygarts Creek; Carter and Greenup Counties, Kentucky
SNBO 20 Kinniconick Creek; Lewis County, Kentucky



(25) SNBO 20: Kinniconick Creek; Lewis County, Kentucky.

(i) SNBO 20 consists of 52 rmi (84 rkm) of Kinniconick Creek in Lewis County, Kentucky. This unit extends from the headwaters of Kinniconick Creek southwest of the unincorporated community of Petersville downstream to its confluence with the Ohio River at the unincorporated community of Rexton, in Lewis County, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 20 provided at paragraph (24)(ii) of this entry.

(26) SNBO 21: Licking River; Bath, Bracken, Campbell, Fleming, Harrison, Kenton, Menifee, Montgomery, Nicholas, Pendleton, Robertson, and Rowan Counties, Kentucky.

(i) SNBO 21 consists of 239 rmi (385 rkm) of the Licking River and Slate Creek in Bath, Bracken, Campbell, Fleming, Harrison, Kenton, Menifee, Montgomery, Nicholas, Pendleton, Robertson, and Rowan Counties, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

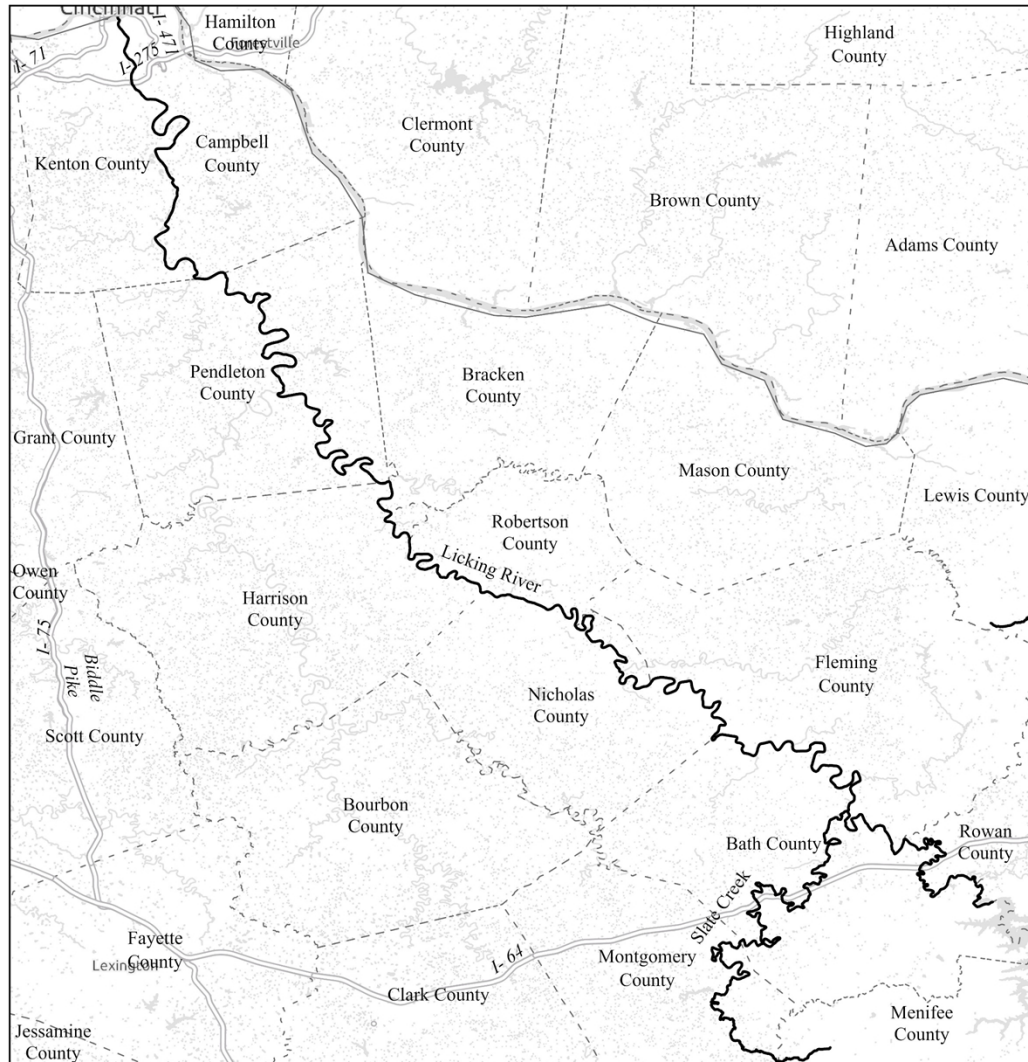
(A) The Licking River portion of this unit includes 179 rmi (288 rkm) from the Cave Run Dam in Bath/Rowan Counties, Kentucky, downstream to its confluence with the Ohio River in the city of Covington (Kenton County, Kentucky).

(B) The Slate Creek portion of this unit includes 60 rmi (97 rkm) from the U.S. Route 460 Bridge in Menifee County, Kentucky, downstream to its confluence with the Licking River in Bath County, Kentucky.

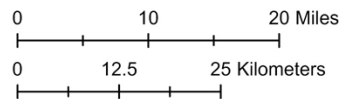
(ii) Map of SNBO 21 follows:

Figure 19 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (26)(ii)

Critical Habitat for Snuffbox
SNBO 21 Licking River; Bath, Bracken, Campbell, Fleming, Harrison,
Kenton, Menifee, Montgomery, Nicholas, Pendleton, Robertson, and Rowan
Counties, Kentucky



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary
- State Boundary



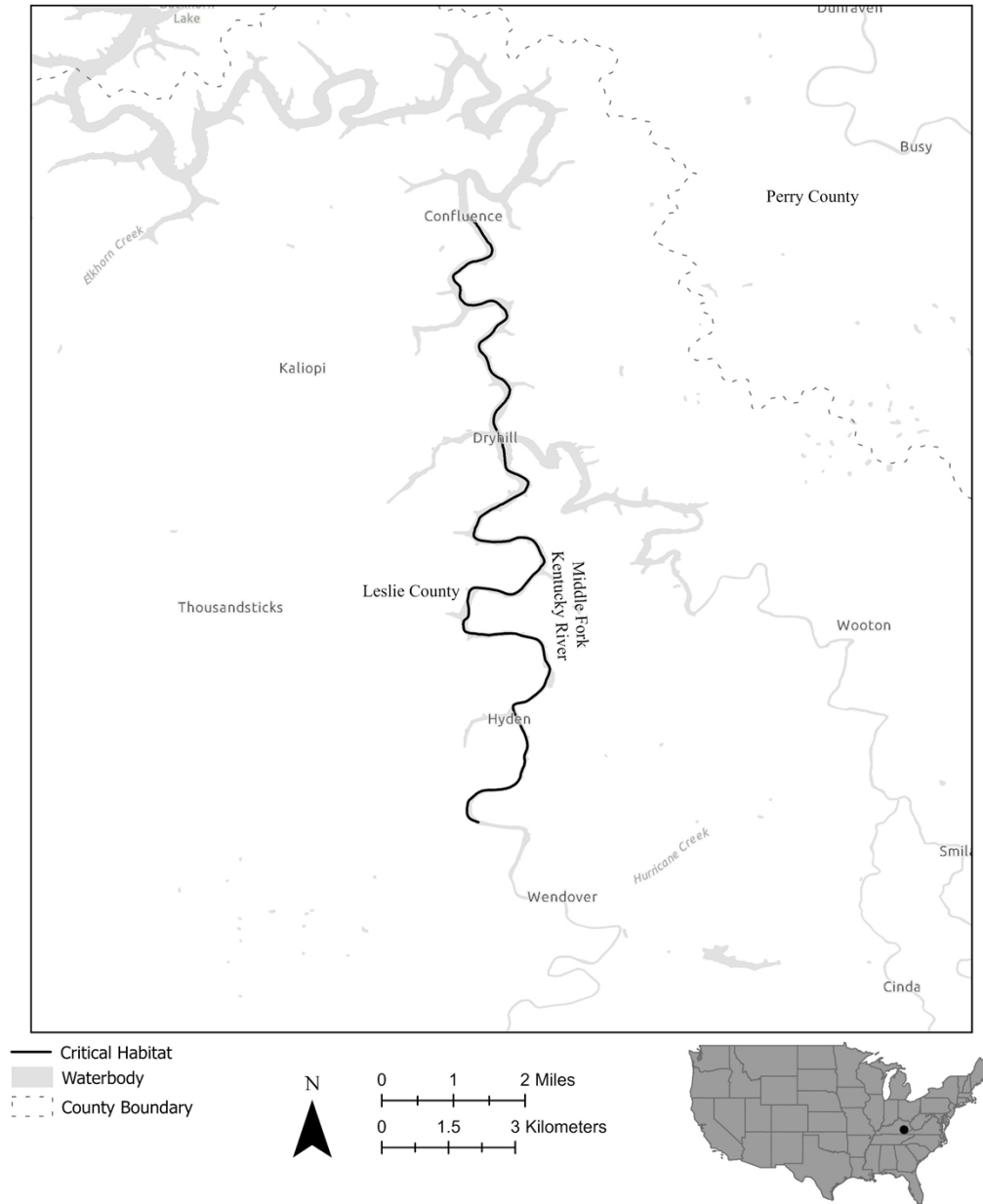
(27) SNBO 22: Middle Fork Kentucky River; Leslie County, Kentucky.

(i) SNBO 22 consists of 13 rmi (21 rkm) of the Middle Fork Kentucky River in Leslie County, Kentucky. This unit extends from the dam south of the city of Hyden downstream to County Road 1475, in Leslie County, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 22 follows:

Figure 20 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (27)(ii)

Critical Habitat for Snuffbox
SNBO 22 Middle Fork Kentucky River; Leslie County, Kentucky



(28) SNBO 23: Red Bird River; Clay, Lee, and Owsley Counties, Kentucky.

(i) SNBO 23 consists of 60 rmi (96 rkm) of the Red Bird River and the South Fork Kentucky River in Clay, Lee, and Owsley Counties, Kentucky. The unit includes the river channel up to the ordinary high-water mark.

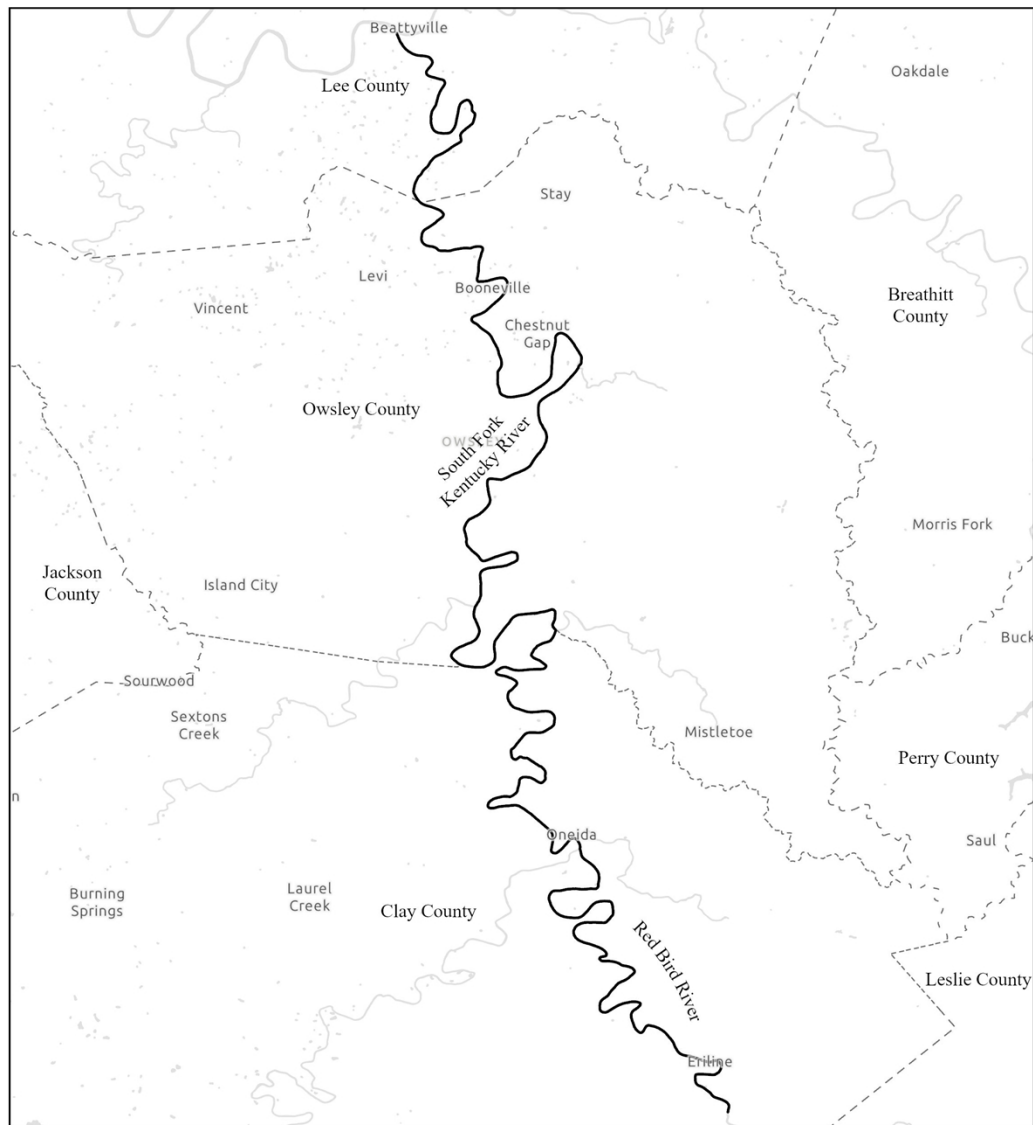
(A) The Red Bird River portion of this unit extends from the East Hal Roger Parkway downstream to its confluence with the South Fork Kentucky River near the unincorporated community of Oneida, in Clay County, Kentucky.

(B) The South Fork Kentucky River portion of this unit extends from its confluence with the Red Bird River (Clay County, Kentucky) downstream to its confluence with the North Fork Kentucky River in the city of Beattyville (Lee County, Kentucky).

(ii) Map of SNBO 23 follows:

Figure 21 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (28)(ii)

Critical Habitat for Snuffbox
SNBO 23 Red Bird River; Clay, Lee, and Owsley Counties, Kentucky



— Critical Habitat
 ■ Waterbody
 - - - County Boundary



0 2.5 5 Miles
 0 4 8 Kilometers



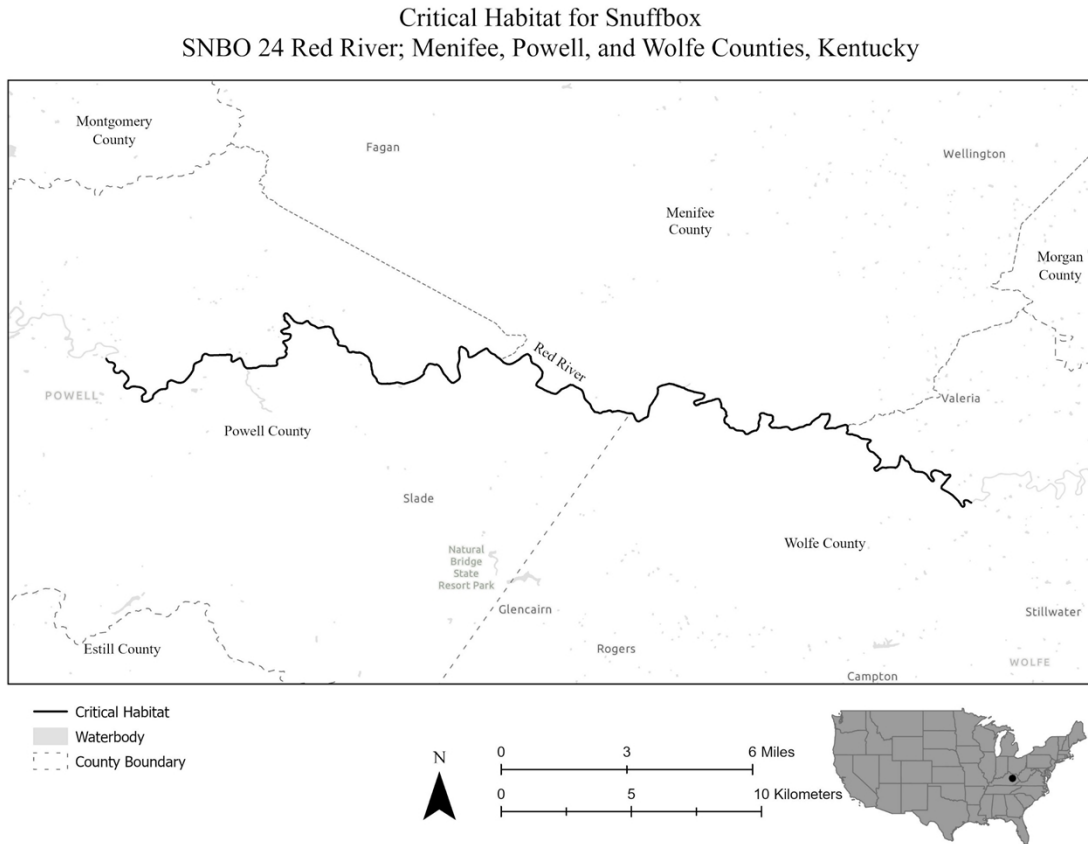
(29) SNBO 24: Red River; Menifee, Powell, and Wolfe Counties, Kentucky.

(i) SNBO 24 consists of 31 rmi (49 rkm) of the Red River in Wolfe, Menifee, and Powell Counties, Kentucky. This unit extends from the Red River’s confluence with Stillwater Creek (Wolfe County, Kentucky) downstream to the Bert T. Combs Mountain

Parkway Bridge (Powell County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 24 follows:

Figure 22 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (29)(ii)



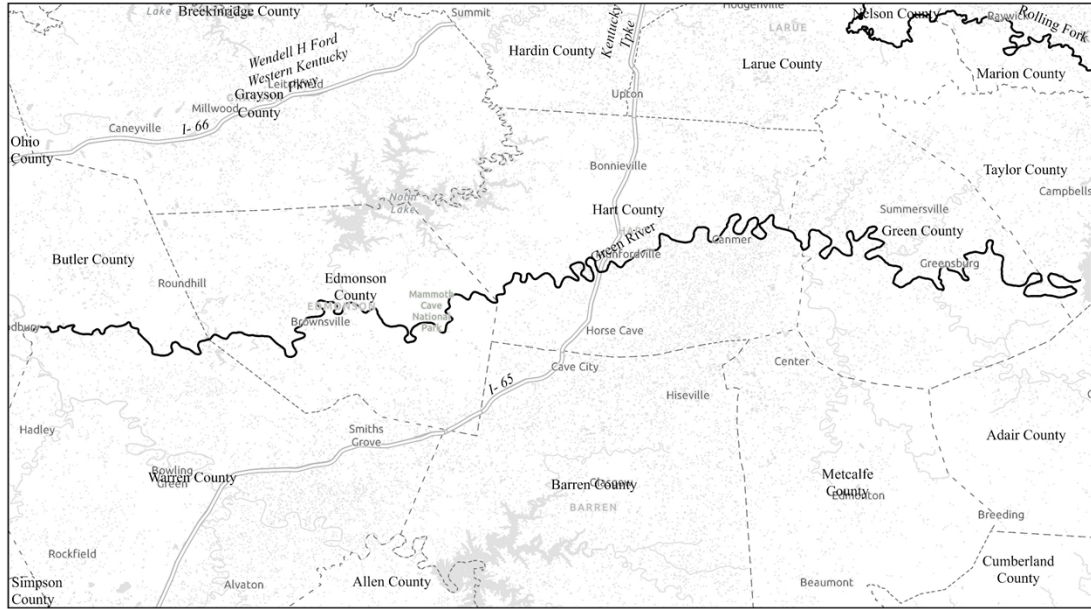
(30) SNBO 25: Green River; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky.

(i) SNBO 25 consists of 157 rmi (253 rkm) of the Green River in Butler, Warren, Edmonson, Green, Hart, and Taylor Counties, Kentucky. This unit extends from Green River Lake Dam south of the city of Campbellsville (Taylor County, Kentucky) downstream to its confluence with the Barren River at the city of Woodbury (Warren/Butler Counties, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

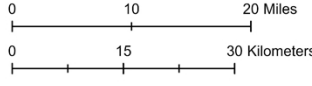
(ii) Map of SNBO 25 follows:

Figure 23 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (30)(ii)

Critical Habitat for Snuffbox
 SNBO 25 Green River; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky



- Critical Habitat
- == Major Road
- Waterbody
- - - County Boundary

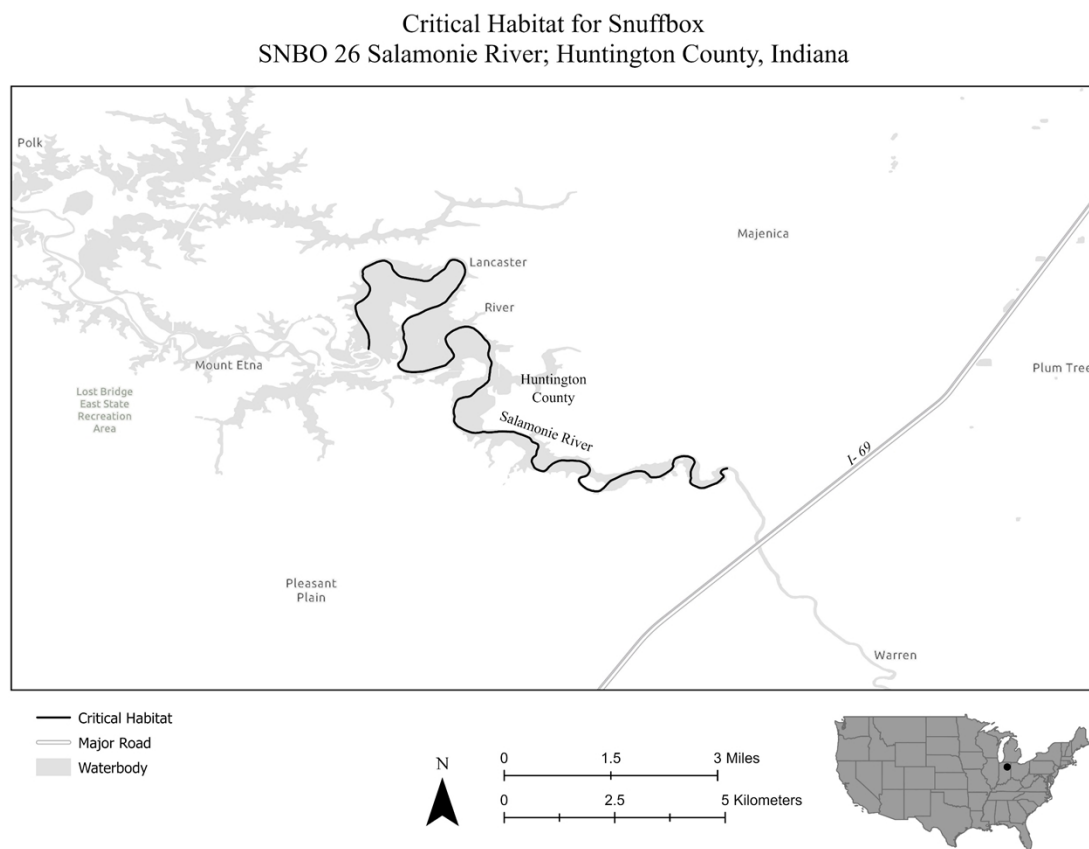


(31) SNBO 26: Salamonie River; Huntington County, Indiana.

(i) SNBO 26 consists of 12 rmi (19 rkm) of the Salamonie River in Huntington County, Indiana. The unit extends from the low-head dam by the intersection of County Road W 700 S and S. Belleville Road in Jefferson Township downstream to Salamonie Lake east of the town of Mount Etna, in Huntington County, Indiana. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 26 follows:

Figure 24 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (31)(ii)



(32) SNBO 27: Tippecanoe River; Carroll, Pulaski, Tippecanoe, and White Counties, Indiana.

(i) SNBO 27 consists of 47 rmi (76 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. This unit is composed of two subunits, and each subunit includes the river channel up to the ordinary high-water mark.

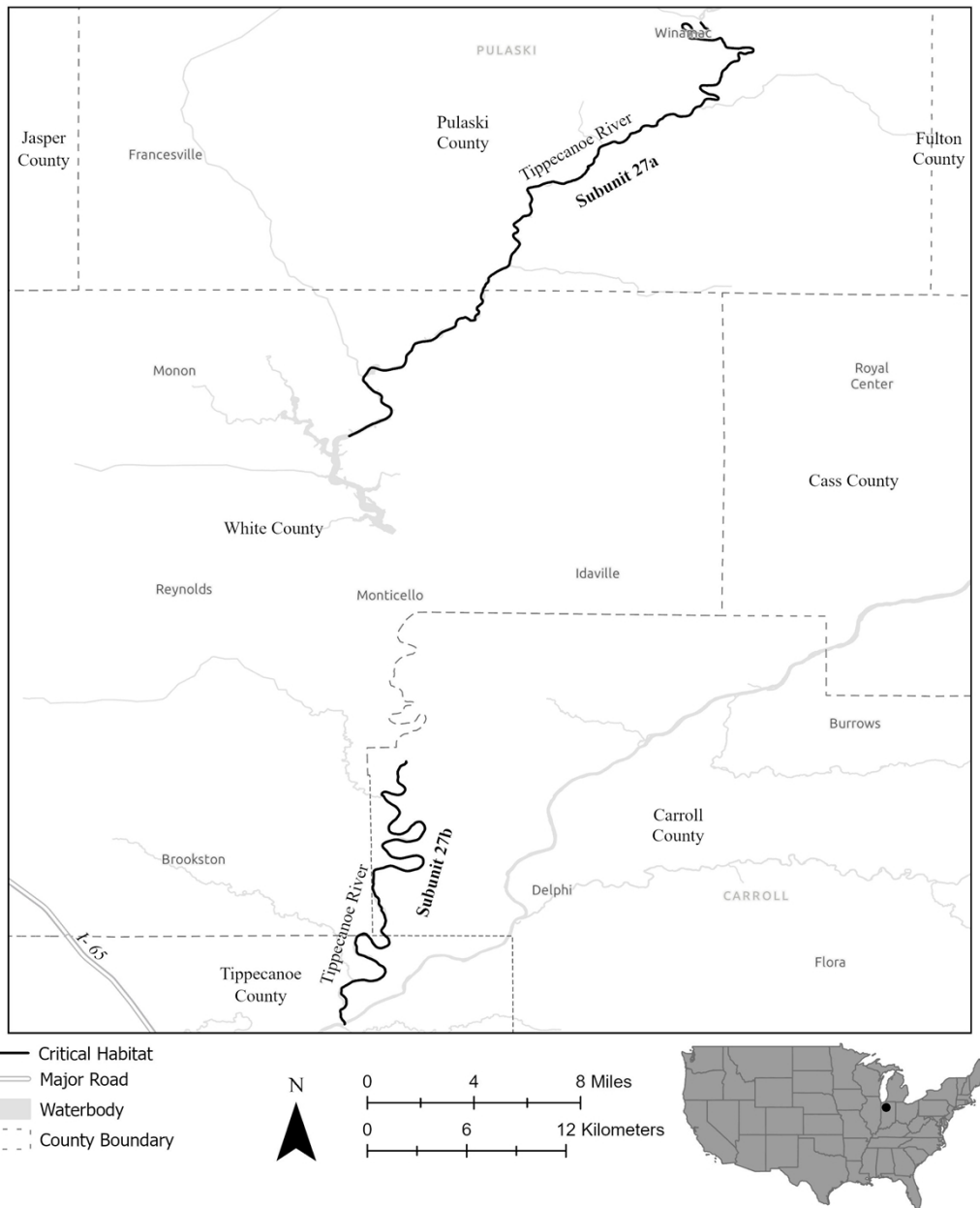
(A) Subunit SNBO 27a includes 28 rmi (45 rkm) of the Tippecanoe River from the State Highway 14 Bridge near the town of Winamac (Pulaski County, Indiana) downstream to the Lowes Bridge Road crossing in White County, Indiana.

(B) Subunit SNBO 27b includes 19 rmi (31 rkm) of the Tippecanoe River from the Oakdale Dam in Carroll County, Indiana, downstream to the confluence of the Tippecanoe River with the Wabash River northeast of the town of Battle Ground (Tippecanoe County, Indiana)

(ii) Map of SNBO 27 follows:

Figure 25 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (32)(ii)

Critical Habitat for Snuffbox
SNBO 27a Tippecanoe River; Pulaski and White Counties, Indiana
SNBO 27b Tippecanoe River; Carroll and Tippecanoe Counties, Indiana



(33) SNBO 28: Embarras River; Coles, Cumberland, and Douglas Counties, Illinois.

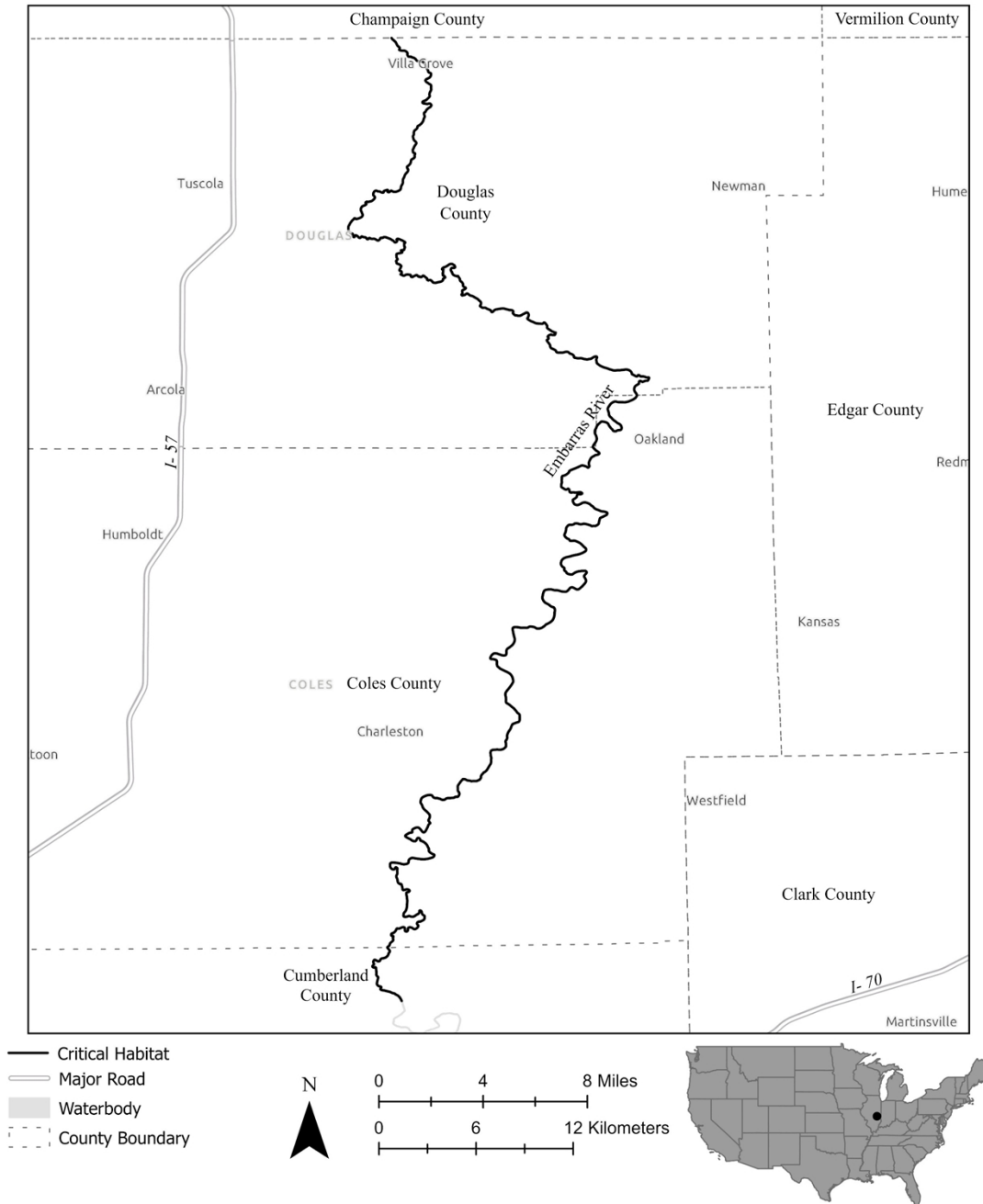
(i) SNBO 28 consists of 71 rmi (114 rkm) of the Embarras River in Coles, Douglas, and Cumberland Counties, Illinois. The unit extends from the East County Road 1550 North Bridge on the border of Crittenden Township and Camargo Township (Douglas County, Illinois) downstream to the County Road 1200 North Bridge in

Cottonwood Township (Cumberland County, Illinois). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 28 follows:

Figure 26 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (33)(ii)

Critical Habitat for Snuffbox
SNBO 28 Embarras River; Coles, Cumberland, and Douglas Counties, Illinois



(34) SNBO 29: Rolling Fork Salt River; Bullitt, Hardin, LaRue, Marion, and Nelson Counties, Kentucky.

(i) SNBO 29 consists of 95 rmi (153 rkm) of the Rolling Fork Salt River in Marion, LaRue, Hardin, Nelson, and Bullitt Counties, Kentucky. This unit extends from its confluence with North Rolling Fork near State Highway 337 in Marion County, Kentucky, downstream to the Interstate 65 Bridge southwest of the city of Lebanon Junction (Bullitt County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 29 follows:

Figure 27 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (34)(ii)

Critical Habitat for Snuffbox
SNBO 29 Rolling Fork Salt River; Bullitt, Hardin, LaRue, Marion, and Nelson Counties, Kentucky



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary



0 5 10 Miles

0 9 18 Kilometers



(35) SNBO 30: Clinch River; Russell, Scott, Tazewell, and Wise Counties

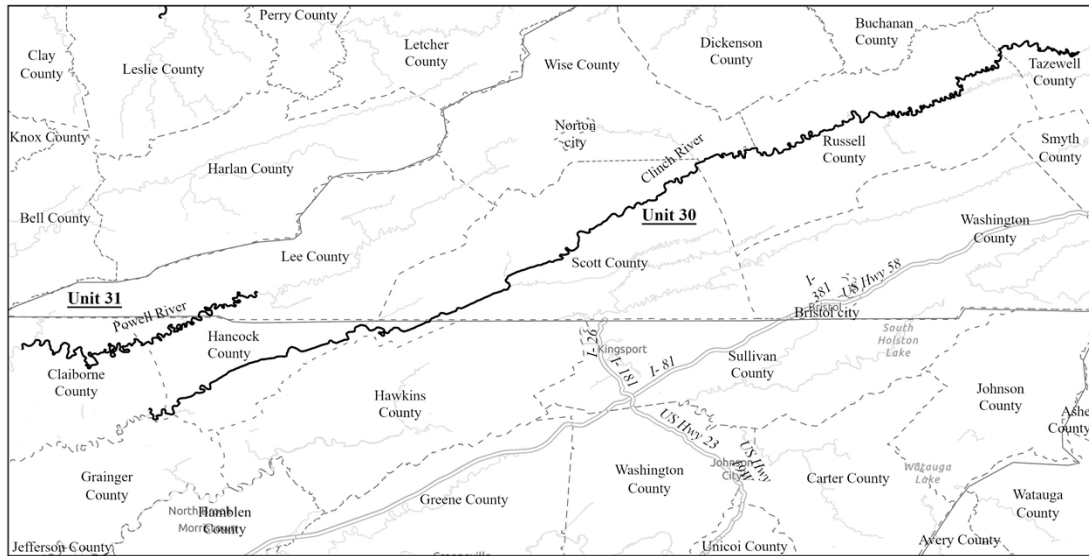
Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee.

(i) SNBO 30 consists of 170 rmi (273 rkm) of the Clinch River in Russell, Scott, Tazewell, and Wise Counties, Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee. This unit extends from State Highway 637 west of the unincorporated community of Pounding Mill in Tazewell County, Virginia, to just downstream of Grissom Island, in Hancock County, Tennessee. The unit includes the river channel up to the ordinary high-water mark.

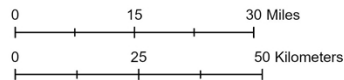
(ii) Map of SNBO 30 follows:

Figure 28 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (35)(ii)

Critical Habitat for Snuffbox
SNBO 30 Clinch River; Russell, Scott, Tazewell, and Wise Counties, Virginia, and Claiborne,
Grainger, and Hancock Counties, Tennessee
SNBO 31 Powell River; Lee County, Virginia and Claiborne and Hancock Counties, Tennessee



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary
- State Boundary



(36) SNBO 31: Powell River; Lee County, Virginia, and Claiborne and Hancock Counties, Tennessee.

(i) SNBO 31 consists of 66 rmi (106 rkm) of the Powell River in Lee County, Virginia, and Hancock and Claiborne Counties, Tennessee. This unit extends from the Flanary Bridge Road Bridge (State Highway 758) in Lee County, Virginia, downstream to U.S. 25E Bridge in Claiborne County, Tennessee. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 31 is provided at paragraph (35)(ii) of this entry.

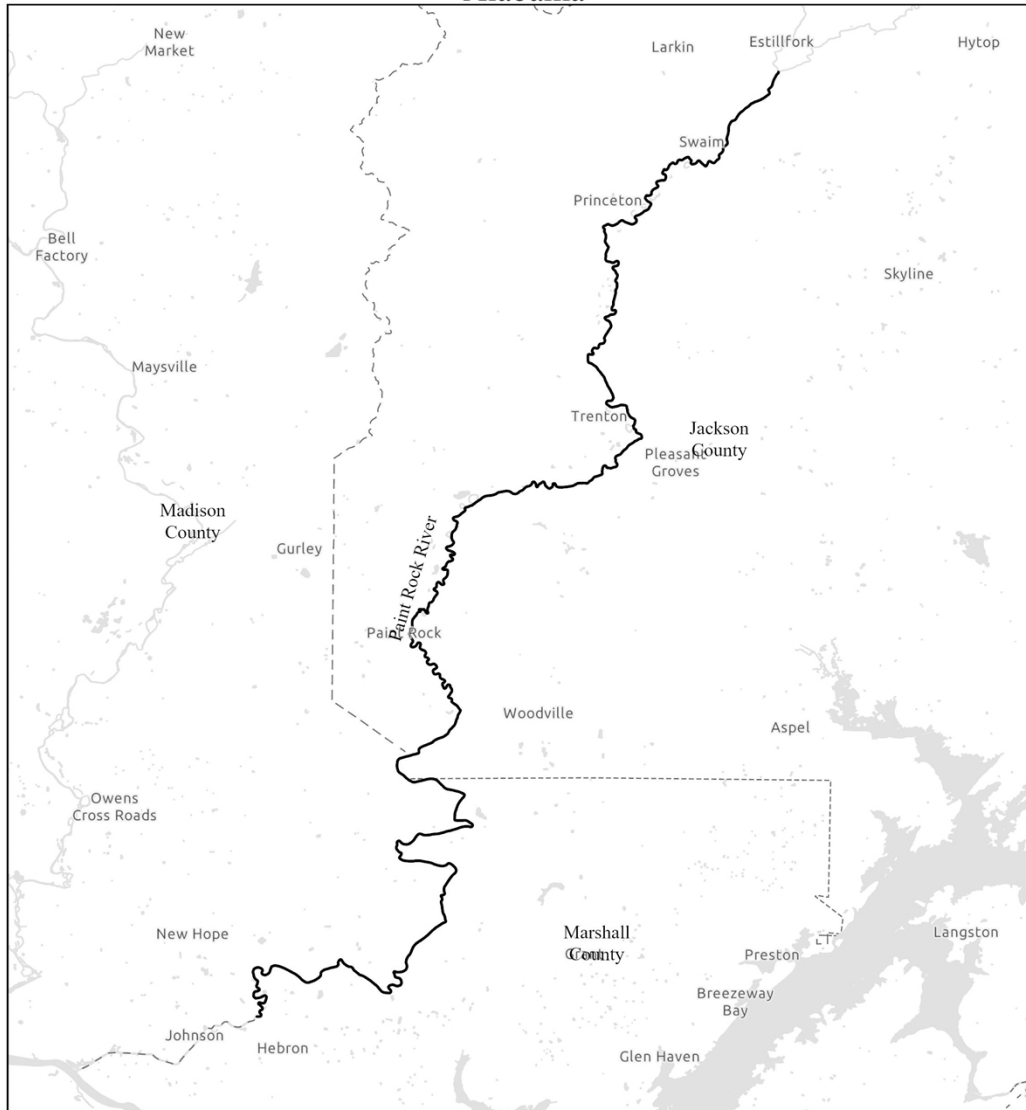
(37) SNBO 32: Paint Rock River; Jackson, Madison, and Marshall Counties, Alabama.

(i) SNBO 32 consists of 53 rmi (85 rkm) of the Paint Rock River in Jackson, Madison, and Marshall Counties, Alabama. The unit extends from the convergence of Estill Fork and Hurricane Creek north of the town of Skyline (Jackson County, Alabama) downstream to U.S. Highway 431 south of the city of New Hope (Madison and Marshall Counties, Alabama). The unit includes the river channel up to the ordinary high-water mark.

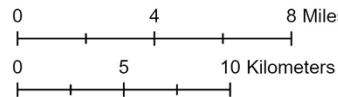
(ii) Map of SNBO 32 follows:

Figure 29 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (37)(ii)

Critical Habitat for Snuffbox
SNBO 32 Paint Rock River; Jackson, Madison, and Marshall Counties,
Alabama



- Critical Habitat
- Waterbody
- - - County Boundary

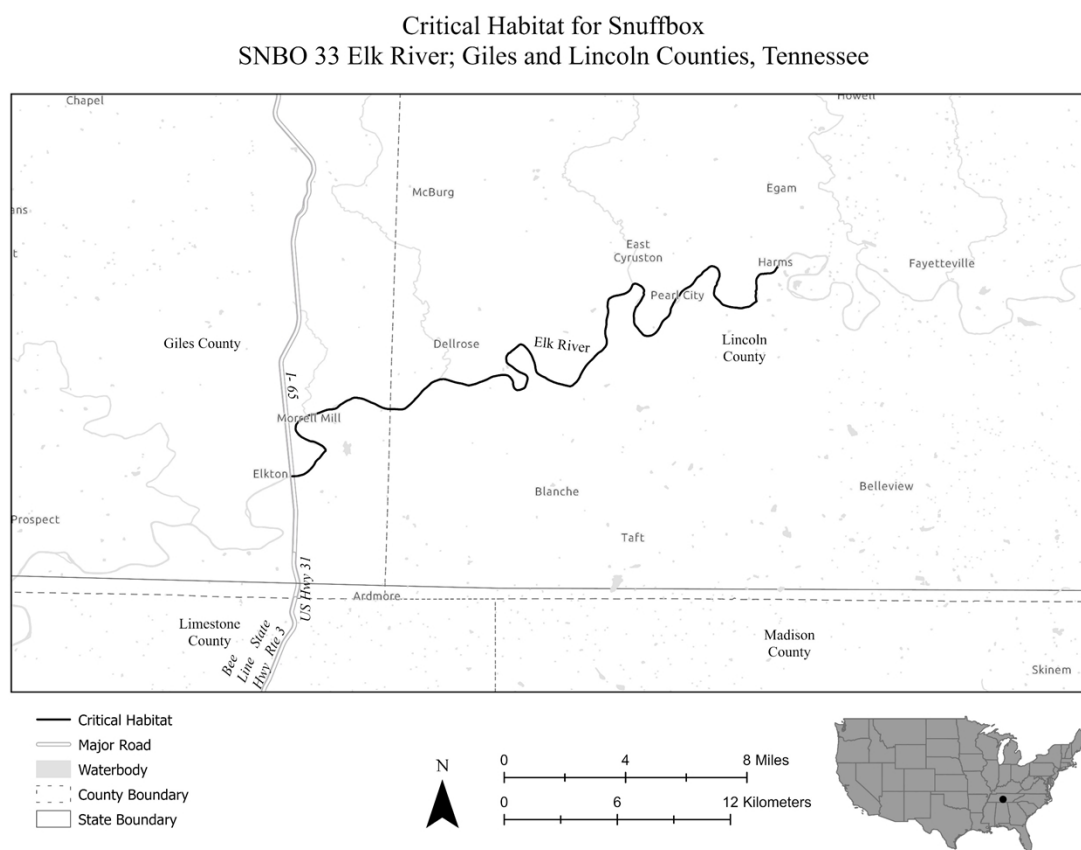


(38) SNBO 33: Elk River; Giles and Lincoln Counties, Tennessee.

(i) SNBO 33 consists of 27 rmi (43 rkm) of the Elk River in Lincoln and Giles Counties, Tennessee. This unit extends from Harms Mill Dam (Lincoln County, Tennessee) downstream to the Interstate 65 Bridge in the city of Elkton (Giles County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 33 follows:

Figure 30 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (38)(ii)



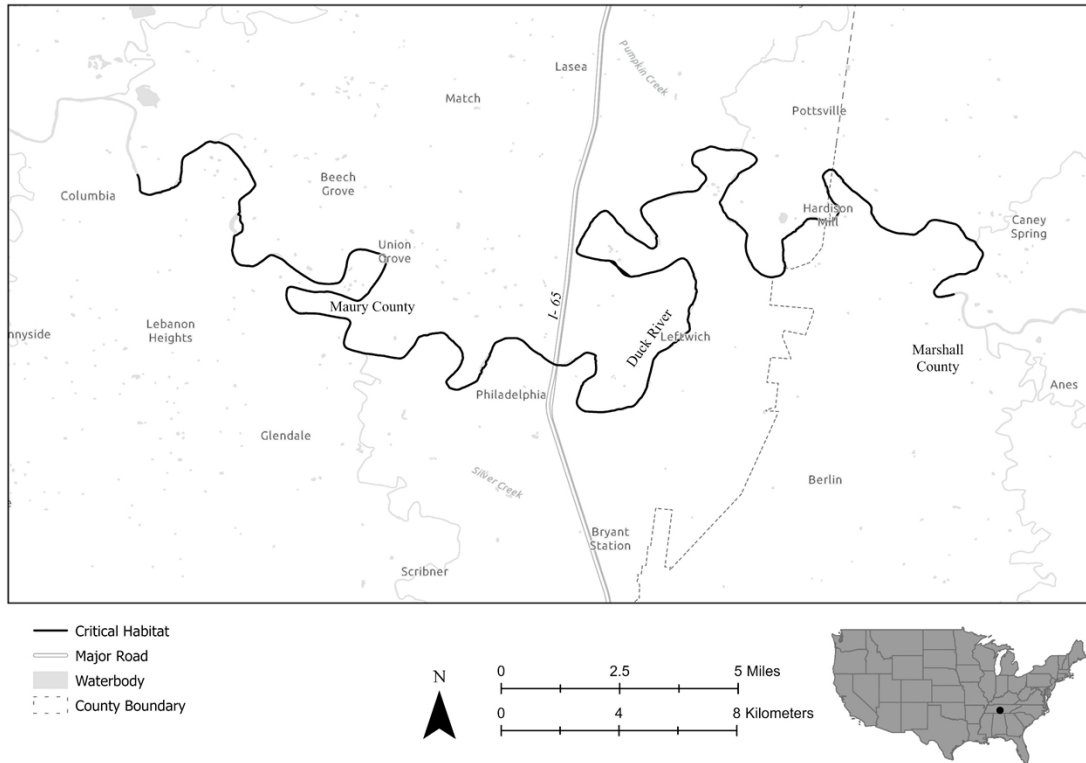
(39) SNBO 34: Duck River; Marshall and Maury Counties, Tennessee.

(i) SNBO 34 consists of 47 rmi (76 rkm) of the Duck River in Marshall and Maury Counties, Tennessee. This unit extends from the Lillard's Mill Dam (Marshall County, Tennessee) downstream to the First Street Bridge in the city of Columbia (Maury County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 34 follows:

Figure 31 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (39)(ii)

Critical Habitat for Snuffbox
SNBO 34 Duck River; Marshall and Maury Counties, Tennessee



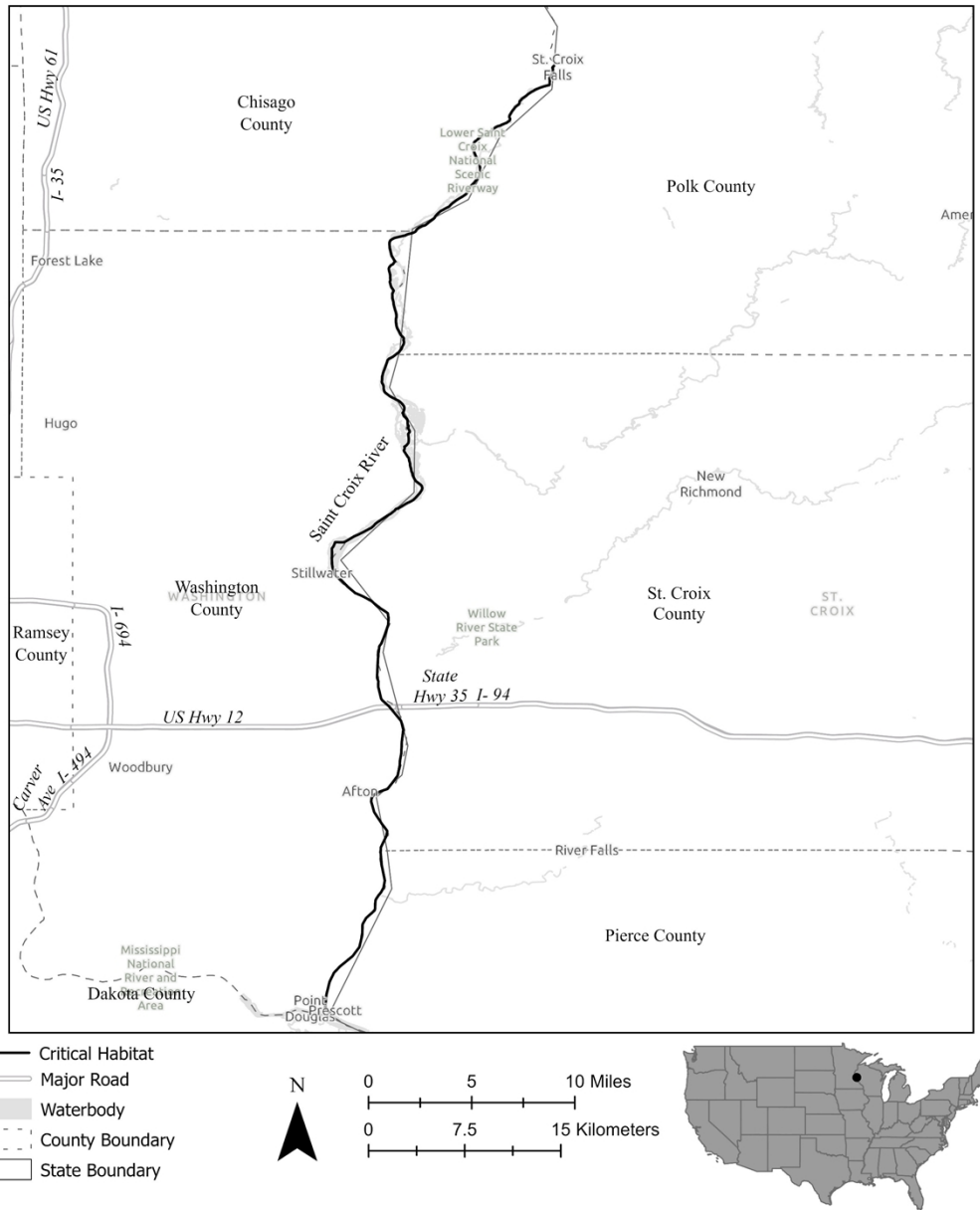
(40) SNBO 35: St. Croix River; Pierce, Polk, and St. Croix Counties, Wisconsin, and Chisago and Washington Counties, Minnesota.

(i) SNBO 35 consists of 53 rmi (85 rkm) of the St. Croix River in Polk, St. Croix, and Pierce Counties, Wisconsin, and Chisago and Washington Counties, Minnesota. This unit extends from the base of the dam at the city of St. Croix Falls (Polk County, Wisconsin) and the city of Taylors Falls (Chisago County, Minnesota) downstream to its confluences with the Mississippi River at the city of Prescott (Pierce County, Wisconsin) and Point Douglas Park (Washington County, Minnesota). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 35 follows:

Figure 32 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (40)(ii)

Critical Habitat for Snuffbox
SNBO 35 St. Croix River; Pierce, Polk, and St. Croix Counties, Wisconsin,
and Chisago and Washington Counties, Minnesota



(41) SNBO 36: Meramec River; Franklin, Gasconade, Jefferson, Phelps, and Saint Louis Counties, Missouri.

(i) SNBO 36 consists of 227 rmi (365 rkm) of the Meramec River and the Bourbeuse River in Saint Louis, Jefferson, Phelps, Gasconade, and Franklin Counties, Missouri. The unit includes the river channel up to the ordinary high-water mark.

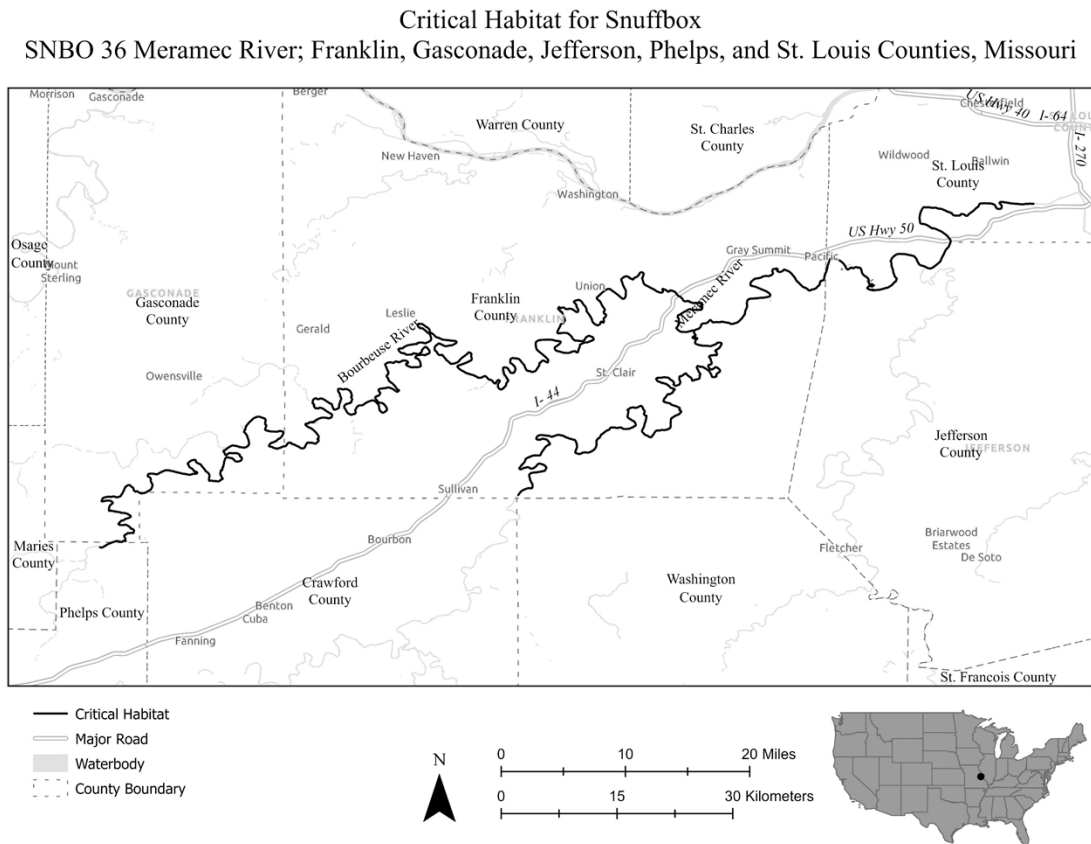
(A) The Meramec River portion of this unit includes 92 rmi (148 rkm) from the State Route 185 Bridge in Meramec Township (Franklin County, Missouri) downstream

to the State Highway 141 Bridge in the city of Valley Park (Saint Louis County, Missouri).

(B) The Bourbeuse River portion of this unit includes 135 rmi (217 rkm) from the County Road B Bridge in Dawson Township (Phelps County, Missouri) downstream to its confluence with the Meramec River (Franklin County, Missouri).

(ii) Map of SNBO 36 follows:

Figure 33 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (41)(ii)



(42) SNBO 37: St. Francis River; Madison and Wayne Counties, Missouri.

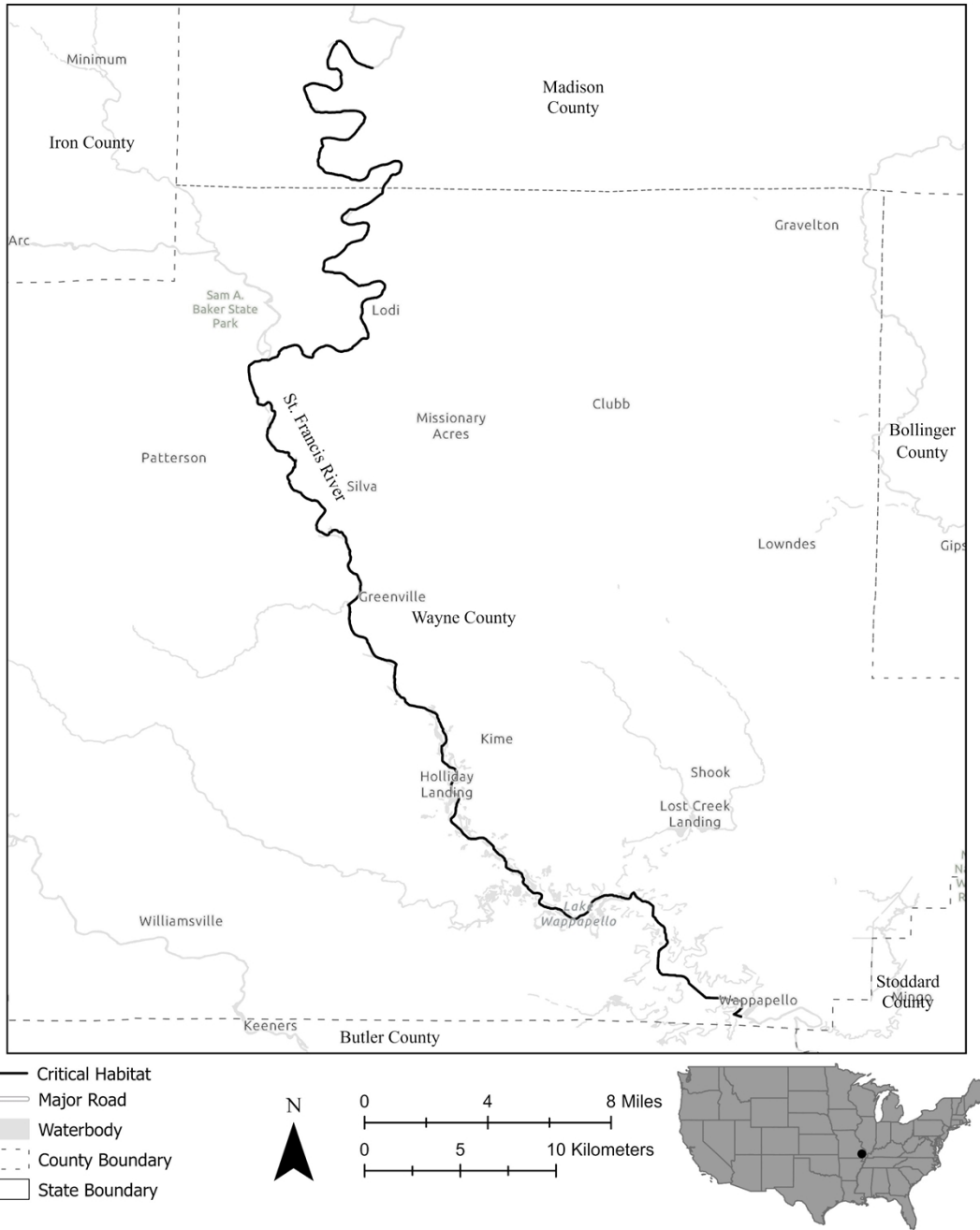
(i) SNBO 37 consists of 58 rmi (93 rkm) of the St. Francis River in Madison and Wayne Counties, Missouri. This unit extends from the St. Francis River's confluence with Twelvemile Creek west of the unincorporated community of Saco (Madison County,

Missouri) downstream to where inundation begins at Lake Wappapello (Wayne County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 37 follows:

Figure 34 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (42)(ii)

Critical Habitat for Snuffbox
SNBO 37 St. Francis River; Madison and Wayne Counties, Missouri



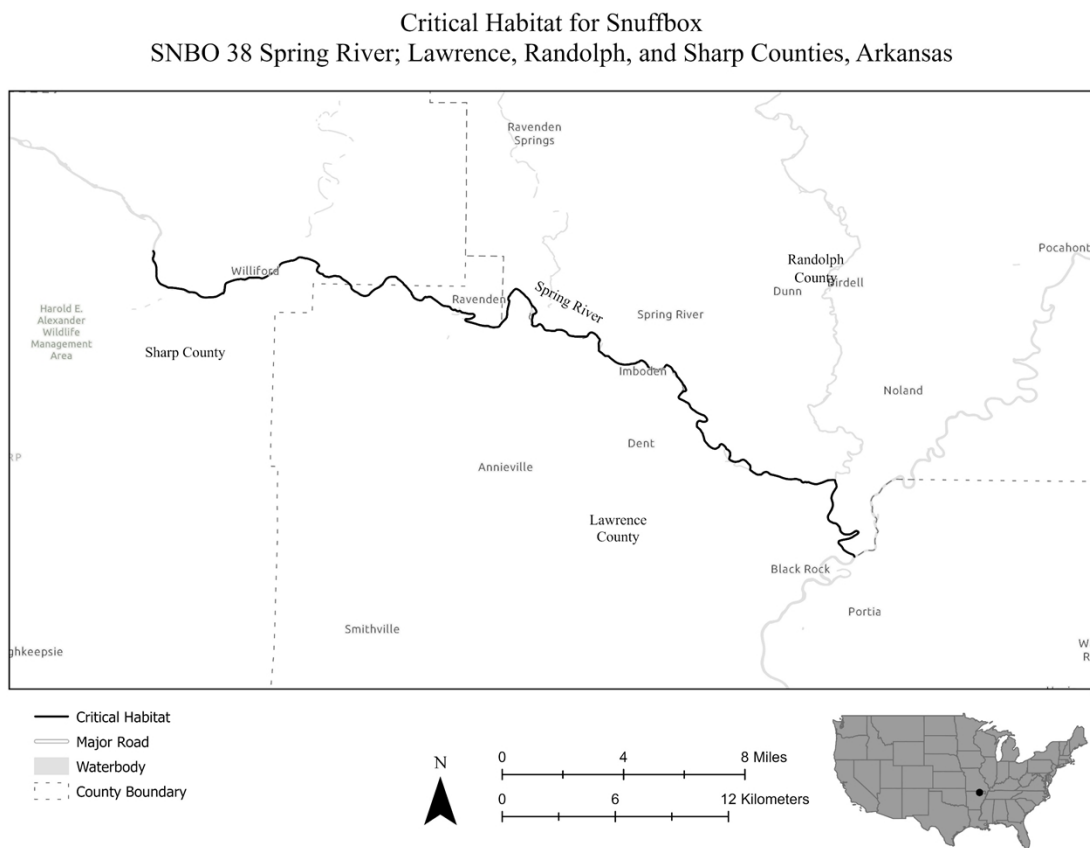
(43) SNBO 38: Spring River; Lawrence, Randolph, and Sharp Counties,

Arkansas.

(i) SNBO 38 consists of 33 rmi (53 rkm) of the Spring River in Sharp, Lawrence, and Randolph Counties, Arkansas. This unit extends from the Spring River's confluence with Ott Creek southeast of the city of Hardy in Sharp County, Arkansas, downstream to its confluence with the Black River east of the city of Black Rock (Lawrence and Randolph Counties, Arkansas). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 38 follows:

Figure 35 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (43)(ii)



Spectaclecase (*Cumberlandia monodonta*)

(1) Critical habitat units for spectaclecase are depicted on the maps in this entry for Colbert, Lauderdale, Lawrence, Limestone, Madison, Marshall, and Morgan Counties, Alabama; Clark, Dallas, Hot Spring, and Ouachita Counties, Arkansas;

Hancock, Henderson, Mercer, and Rock Island Counties, Illinois; Des Moines, Lee, Louisa, Muscatine, and Scott Counties, Iowa; Butler, Edmonson, Hart, and Warren Counties, Kentucky; Chisago and Washington Counties, Minnesota; Tishomingo County, Mississippi; Crawford, Franklin, Gasconade, Jefferson, Laclede, Maries, Osage, Phelps, Pulaski, Saint Louis, Texas, and Washington Counties, Missouri; Claiborne, Cocke, Grainger, Greene, Hamblen, Hancock, Hardin, and Jefferson Counties, Tennessee; Russell, Scott, and Wise Counties, Virginia; Kanawha County, West Virginia; and Pierce, Polk, and St. Croix Counties, Wisconsin.

(2) Within these areas, the physical or biological features essential to the conservation of spectaclecase consist of the following components within waters and streambeds up to the ordinary high-water mark:

(i) Adequate flows, or a hydrological flow regime (magnitude, timing, frequency, duration, rate of change, and overall seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain stream connectivity.

(ii) Suitable substrates and connected instream habitats, characterized by geomorphologically stable stream channels and banks (i.e., channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) that support the spectaclecase and its host fishes. For spectaclecase, these substrates are firm or stable substrates of coarse sand and gravel, are free from excessive silt, and typically include large rock, slabs, or boulders.

(iii) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including appropriate levels of dissolved oxygen (generally above 2 to 3 parts per million (ppm)), salinity (generally below 2 to 4 ppm), and temperature (generally below 86 °F (30 °C)). Additionally, concentrations of contaminants, including (but not limited to) ammonia, nitrate, copper, and chloride, are below acute toxicity levels for mussels.

(iv) The presence and abundance of host fishes necessary for recruitment of spectaclecase (mooneye (*Hiodon tergisus*) and goldeye (*Hiodon alosoides*)).

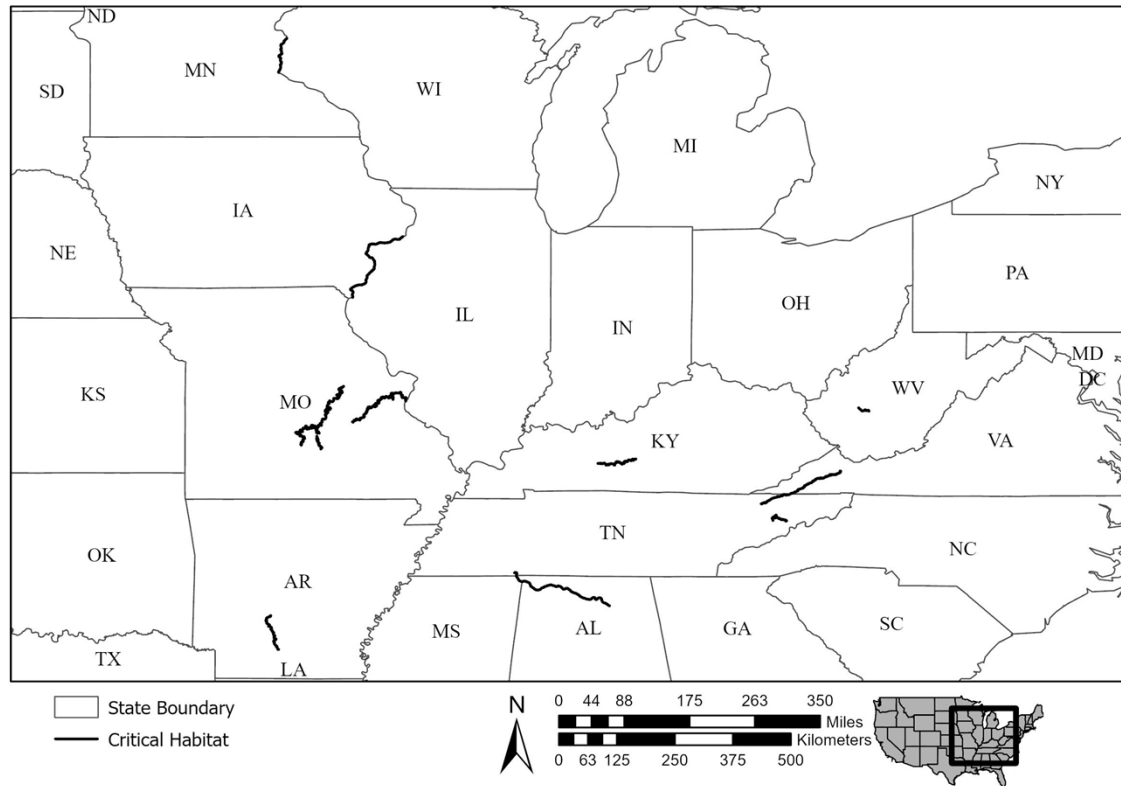
(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas and existing in-water pilings, docks, and sea walls) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

(4) Data layers defining map units were created using the 1984 World Geographic System ellipsoid or the 1983 North American datum, and the associated geographic coordinate system. The National Hydrography Dataset Plus High Resolution was used to create the critical habitat units. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at <https://www.regulations.gov> at Docket No. FWS–R3–ES–2024–0144 and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Spectaclecase (*Cumberlandia monodonta*) paragraph (5)

Index Map: Spectaclecase Critical Habitat Units



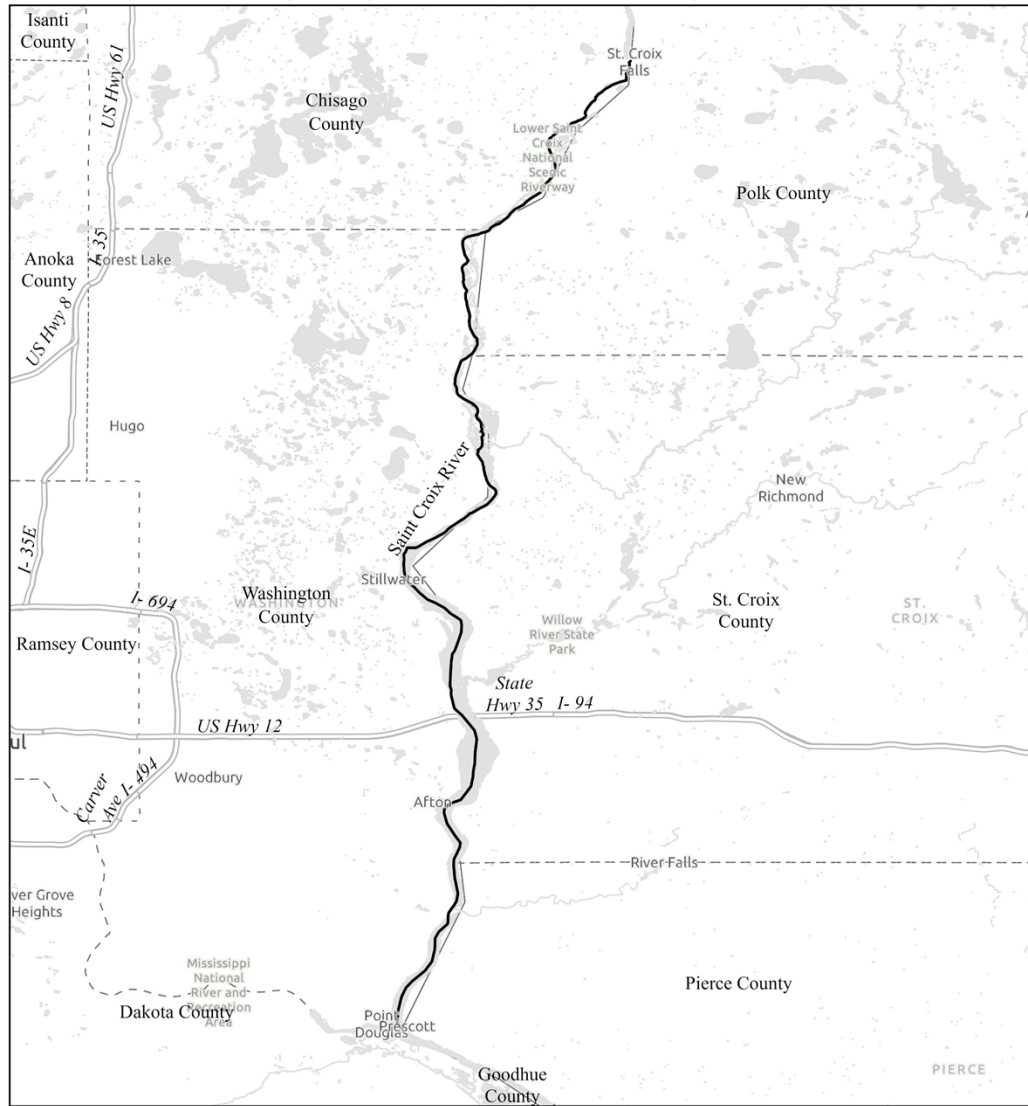
(6) SPCA 1: St. Croix River; Chisago and Washington Counties, Minnesota, and Pierce, Polk, and St. Croix Counties, Wisconsin.

(i) SPCA 1 is on the border between the States of Minnesota and Wisconsin and consists of 53 river miles (rmi) (86 river kilometers (rkm)) of the St. Croix River in Chisago and Washington Counties, Minnesota, and Polk, St. Croix, and Pierce Counties, Wisconsin. This unit extends from the downstream side of St. Croix Falls dam at the city of St. Croix Falls (Polk County, Wisconsin) downstream to its confluence with the Mississippi River at the city of Prescott (Pierce County, Wisconsin). The unit includes the river channel up to the ordinary high-water mark.

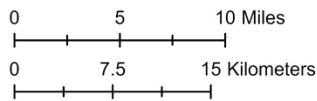
(ii) Map of SPCA 1 follows:

Figure 2 to Spectaclecase (*Cumberlandia monodonta*) paragraph (6)(ii)

Critical Habitat for Spectaclecase
 SPCA 1 St. Croix River; Chisago and Washington Counties, Minnesota and
 Pierce, Polk, and St. Croix Counties, Wisconsin



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary
- State Boundary



(7) SPCA 2: Mississippi River; Des Moines, Lee, Louisa, Muscatine, and Scott Counties, Iowa, and Hancock, Henderson, Mercer, and Rock Island Counties, Illinois.

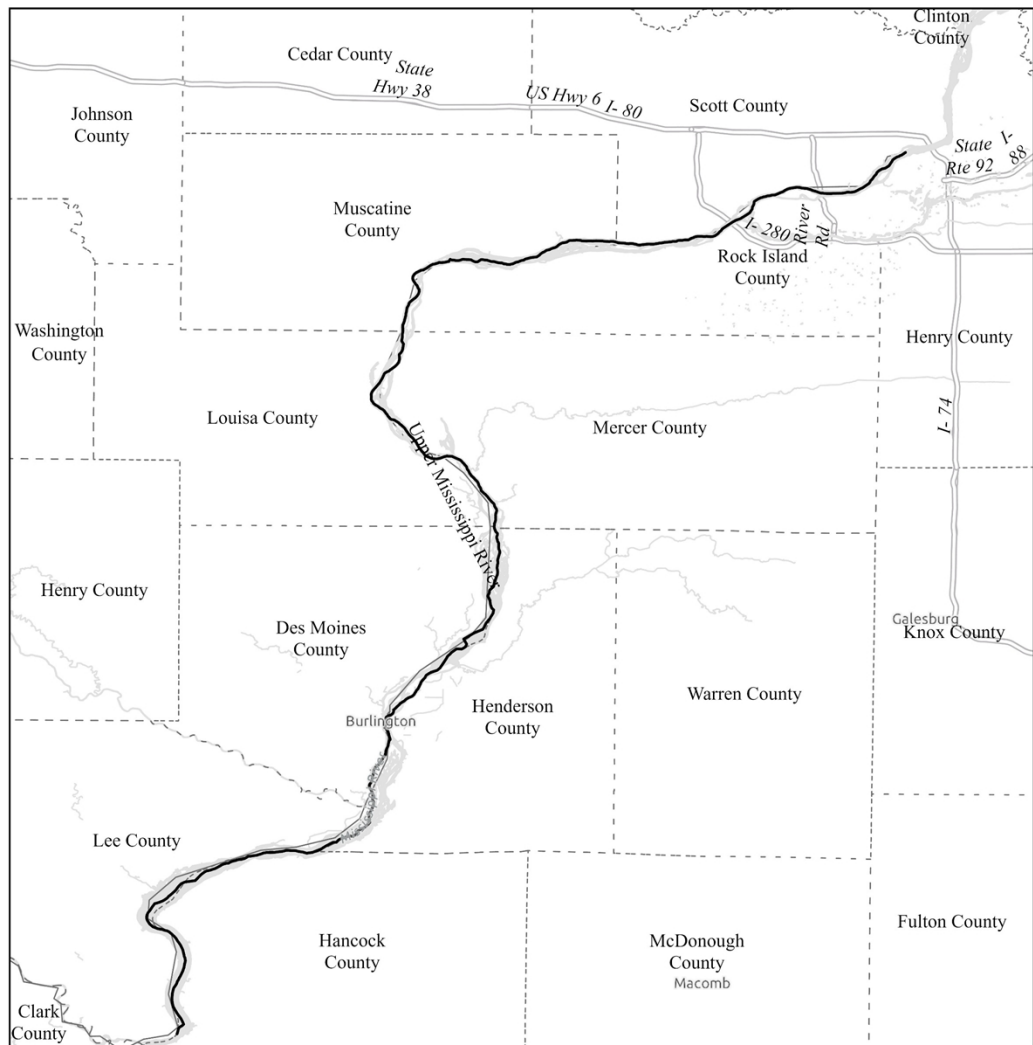
(i) SPCA 2 is on the border between the States of Iowa and Illinois and consists of 132 rmi (213 rkm) of the Mississippi River in Scott, Muscatine, Louisa, Des Moines, and

Lee Counties, Iowa, and Rock Island, Mercer, Henderson, and Hancock Counties, Illinois. The unit extends from the downstream side of Lock and Dam 14 at the village of Hampton (Rock Island County, Illinois) downstream to Lock and Dam 19 at the city of Keokuk (Lee County, Iowa). The unit occurs within Mississippi River Pools 15, 16, 17, 18, and 19, and the unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 2 follows:

Figure 3 to Spectaclecase (*Cumberlandia monodonta*) paragraph (7)(ii)

Critical Habitat for Spectaclecase
 SPCA 2 Mississippi River; Des Moines, Lee, Louisa, Muscatine, and Scott
 Counties, Iowa and Hancock, Henderson, Mercer, and Rock Island Counties,
 Illinois



(8) SPCA 3: Meramec River; Crawford, Franklin, Jefferson, Saint Louis, and Washington Counties, Missouri.

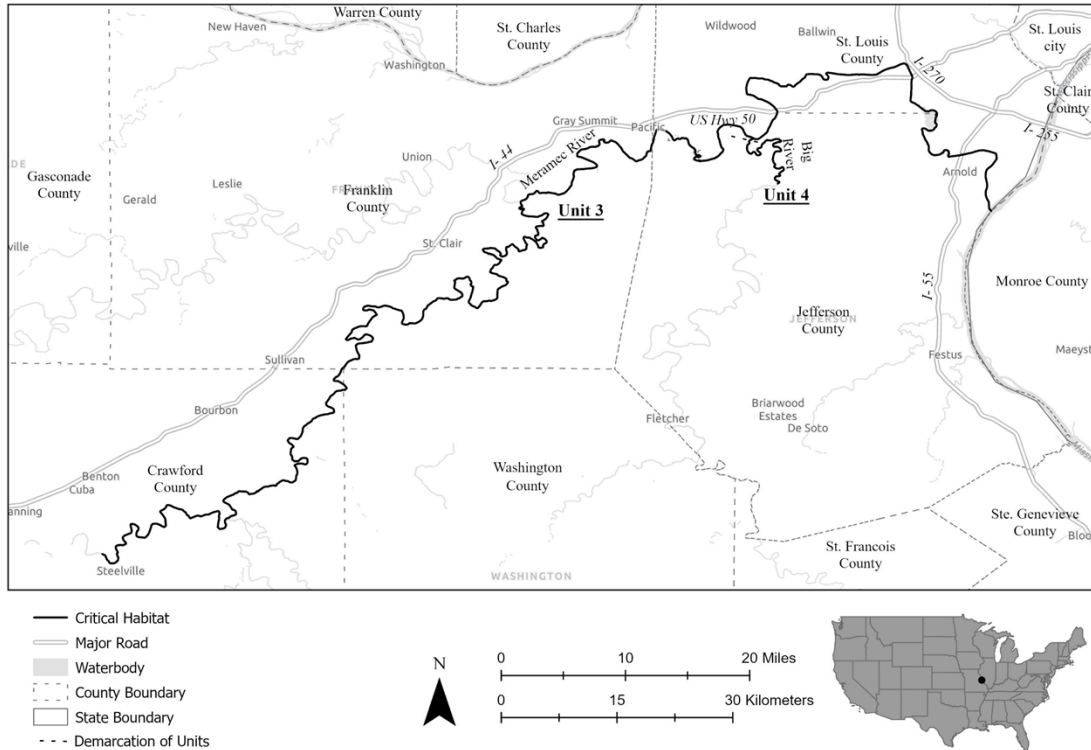
(i) SPCA 3 consists of 156 rmi (251 rkm) of the Meramec River in Jefferson, Saint Louis, Franklin, Crawford, and Washington Counties, Missouri. The unit extends

from the downstream side of the Highway 19 bridge near the unincorporated community of Wildwoods (Crawford County, Missouri) downstream to the confluence of the Meramec River with the Mississippi River near the city of Kimmswick (Jefferson County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 3 follows:

Figure 4 to Spectaclecase (*Cumberlandia monodonta*) paragraph (8)(ii)

Critical Habitat for Spectaclecase
 SPCA 3 Meramec River; Crawford, Franklin, Jefferson, St. Louis, and Washington Counties, Missouri
 SPCA 4 Big River; Jefferson County, Missouri



(9) SPCA 4: Big River; Jefferson County, Missouri.

(i) SPCA 4 consists of 11 rmi (17 rkm) of the Big River in Jefferson County, Missouri. The unit extends from the downstream side of the Highway W bridge near Rockford Park downstream to the confluence of the Big River with the Meramec River

near Twin River Park, in Jefferson County, Missouri. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 4 is provided at paragraph (8)(ii) in this entry.

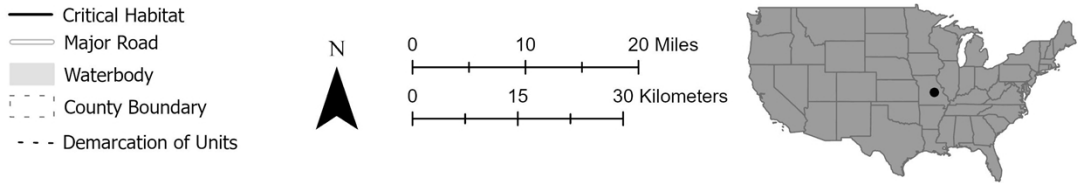
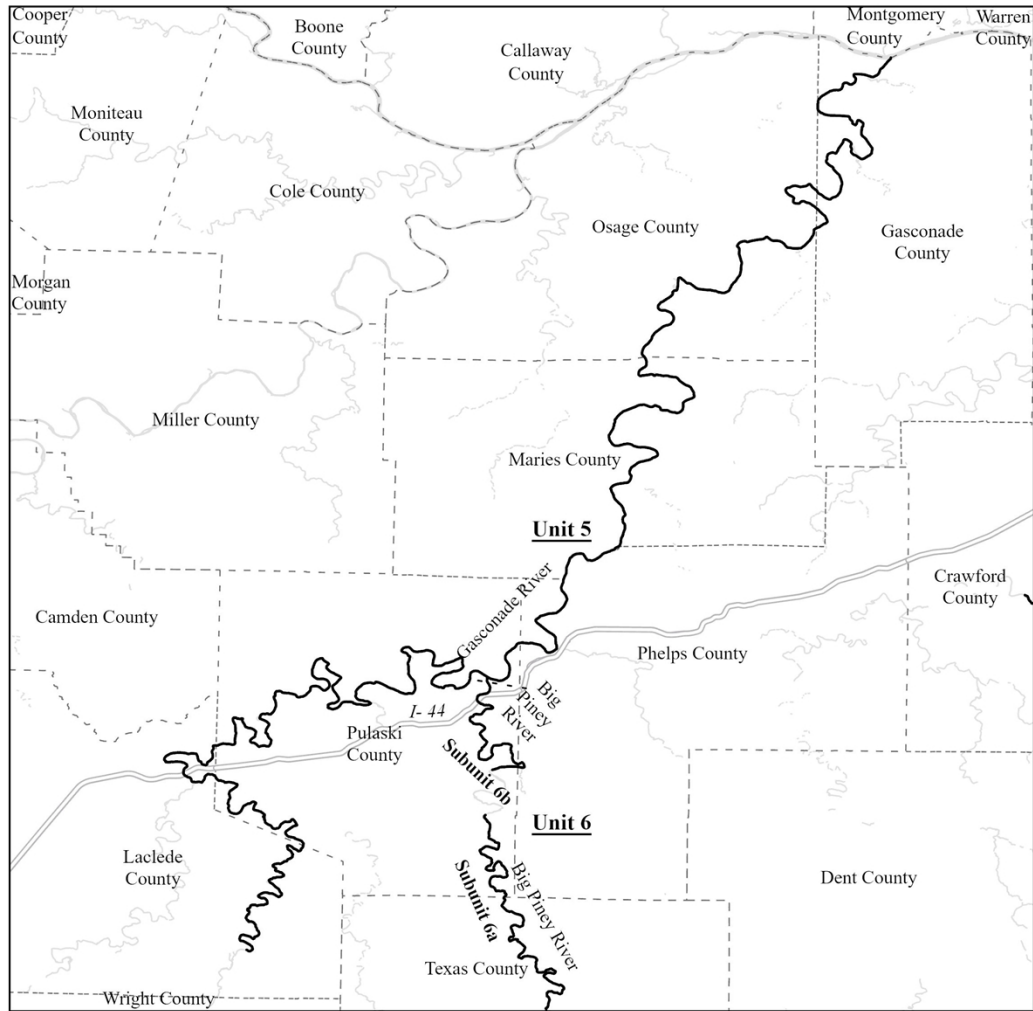
(10) SPCA 5: Gasconade River; Gasconade, Laclede, Maries, Osage, Phelps, and Pulaski Counties, Missouri.

(i) SPCA 5 consists of 223 rmi (358 rkm) of the Gasconade River in Gasconade, Osage, Maries, Phelps, Pulaski, and Laclede Counties, Missouri. The unit extends from the downstream side of the Highway AD bridge near the unincorporated community of Clark Ford (Laclede County, Missouri) downstream to the confluence of the Gasconade River with the Missouri River at the city of Gasconade (Gasconade County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 5 follows:

Figure 5 to Spectaclecase (*Cumberlandia monodonta*) paragraph (10)(ii)

Critical Habitat for Spectaclecase
 SPCA 5 Gasconade River; Gasconade, Laclede, Maries, Osage, Phelps, and
 Pulaski Counties, Missouri
 SPCA 6a Big Piney River; Pulaski and Texas Counties, Missouri
 SPCA 6b Big Piney River; Phelps and Pulaski Counties, Missouri



(11) SPCA 6: Big Piney River; Phelps, Pulaski, and Texas Counties, Missouri.

(i) SPCA 6 consists of 53 rmi (86 rkm) of the Big Piney River in Pulaski, Phelps, and Texas Counties, Missouri. This unit is composed of two subunits. Each subunit includes the river channel up to the ordinary high-water mark.

(A) Subunit SPCA 6a extends from the downstream side of Boiling Springs Road, at Boiling Springs Access (Texas County, Missouri), downstream to the upstream end of Fort Leonard Wood Military Training Facility (Pulaski County, Missouri).

(B) Subunit SPCA 6b extends from the downstream end of Fort Leonard Wood Military Training Facility (Pulaski County, Missouri) to the Big Piney River's confluence with the Gasconade River, near the unincorporated community of Hooker (Pulaski County, Missouri).

(ii) Map of SPCA 6 is provided at paragraph (10)(ii) of this entry.

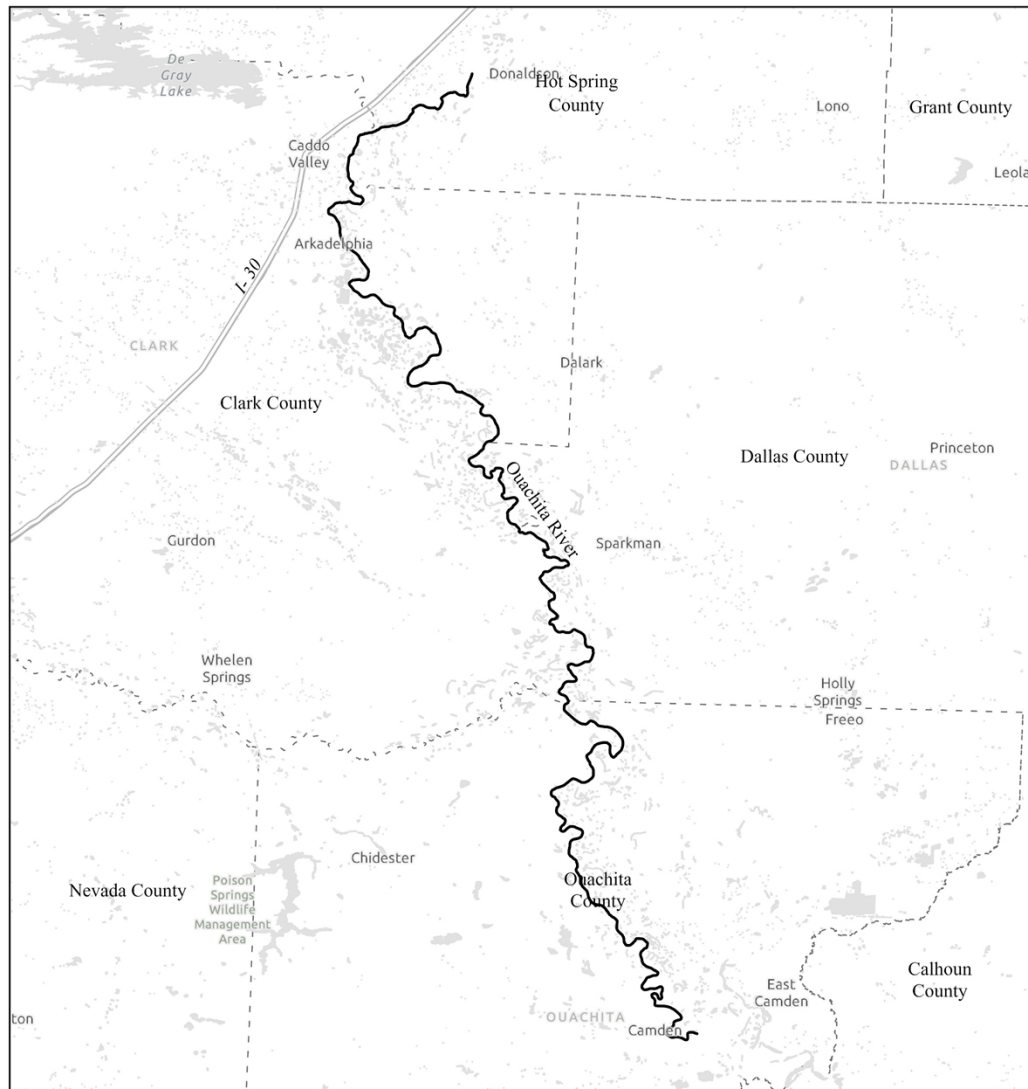
(12) SPCA 7: Ouachita River; Clark, Dallas, Hot Springs, and Ouachita Counties, Arkansas.

(i) SPCA 7 consists of 83 rmi (133 rkm) of the Ouachita River in Hot Springs, Clark, Dallas, and Ouachita Counties, Arkansas. This unit extends from the downstream side of Highway 67 bridge at the town of Donaldson (Hot Springs County, Arkansas) downstream to the Highway 79N bridge at city of Camden (Ouachita County, Arkansas). The unit includes the river channel up to the ordinary high-water mark.

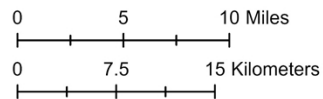
(ii) Map of SPCA 7 follows:

Figure 6 to Spectaclecase (*Cumberlandia monodonta*) paragraph (12)(ii)

Critical Habitat for Spectaclecase
 SPCA 7 Ouachita River; Clark, Dallas, Hot Springs, and Ouachita Counties,
 Arkansas



- Critical Habitat
- Major Road
- Waterbody
- - - County Boundary

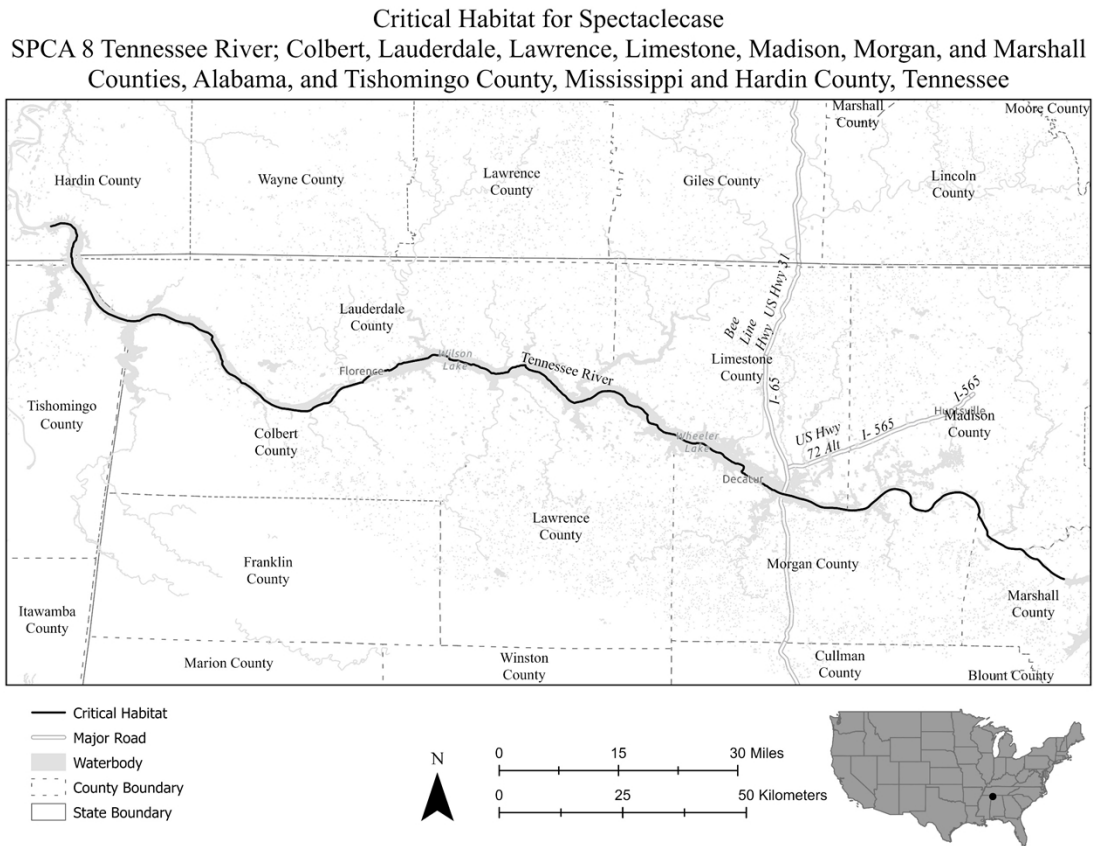


(13) SPCA 8: Tennessee River; Colbert, Lauderdale, Lawrence, Limestone, Madison, Marshall, and Morgan Counties, Alabama; Tishomingo County, Mississippi; and Hardin County, Tennessee.

(i) SPCA 8 consists of 142 rmi (228 rkm) of the Tennessee River in Marshall, Madison, Morgan, Lawrence, Lauderdale, Limestone, and Colbert Counties, Alabama; Tishomingo County, Mississippi; and Hardin County, Tennessee. The unit extends from the downstream side of Guntersville Dam at the city of Guntersville (Marshall County, Alabama) downstream to Pickwick Landing Dam at the unincorporated community of Counce (Hardin County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 8 follows:

Figure 7 to Spectaclecase (*Cumberlandia monodonta*) paragraph (13)(ii)



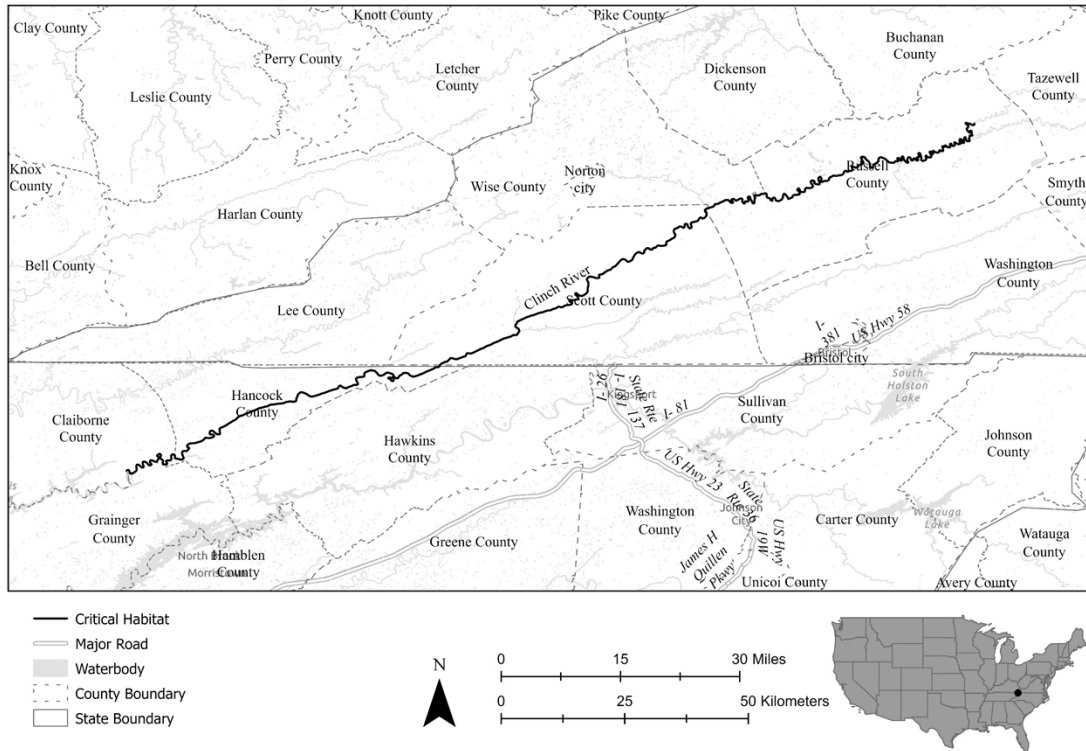
(14) SPCA 9: Clinch River; Russell, Scott, and Wise Counties, Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee.

(i) SPCA 9 consists of 160 rmi (257 rkm) of the Clinch River in Russell, Wise, and Scott Counties, Virginia, and Hancock, Claiborne, and Grainger Counties, Tennessee. Critical habitat is located on the downstream side of the bridge at Kents Ridge Road at the unincorporated community of Swords Creek (Russell County, Virginia) and extends downstream to the Highway 25E bridge near the town of Tazewell (Claiborne County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 9 follows:

Figure 8 to Spectaclecase (*Cumberlandia monodonta*) paragraph (14)(ii)

Critical Habitat for Spectaclecase
SPCA 9 Clinch River; Russell, Scott, and Wise Counties, Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee



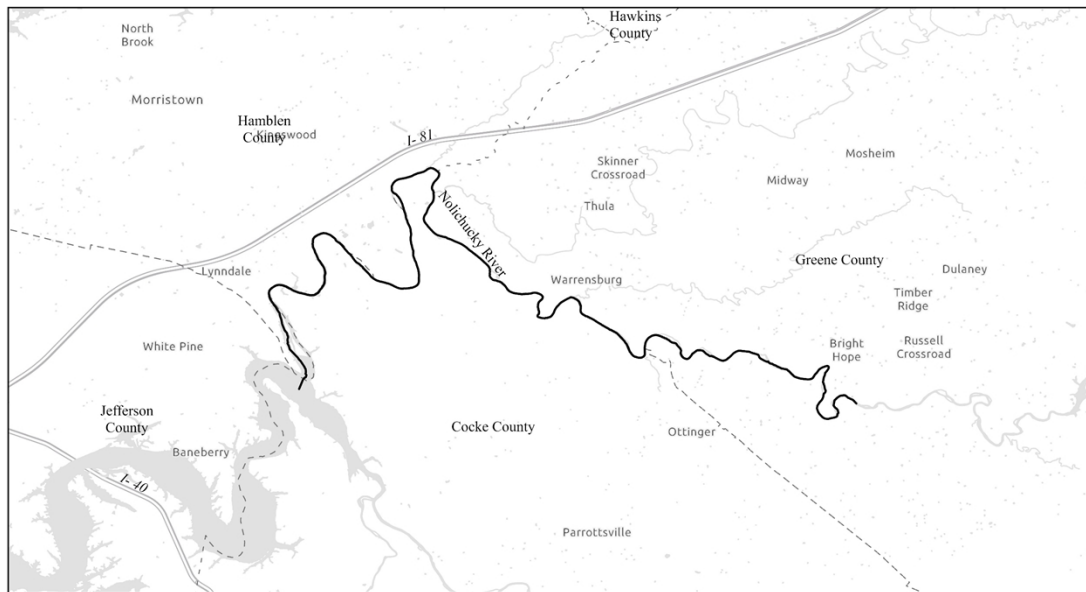
(15) SPCA 10: Nolichucky River; Cocke, Greene, Hamblen, and Jefferson Counties, Tennessee.

(i) SPCA 10 consists of 37 rmi (60 rkm) of the Nolichucky River in Greene, Cocke, Hamblen, and Jefferson Counties, Tennessee. The unit extends from the downstream side of the bridge at Highway 321 near the unincorporated community of St. James (Greene County, Tennessee) downstream to its confluence with the French Broad River near the unincorporated community of Leadvale (Cocke County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 10 follows:

Figure 9 to Spectaclecase (*Cumberlandia monodonta*) paragraph (15)(ii)

Critical Habitat for Spectaclecase
SPCA 10 Nolichucky River; Cocke, Greene, Hamblen, and Jefferson Counties, Tennessee



— Critical Habitat
= Major Road
Waterbody
--- County Boundary



0 4 8 Miles
0 6 12 Kilometers



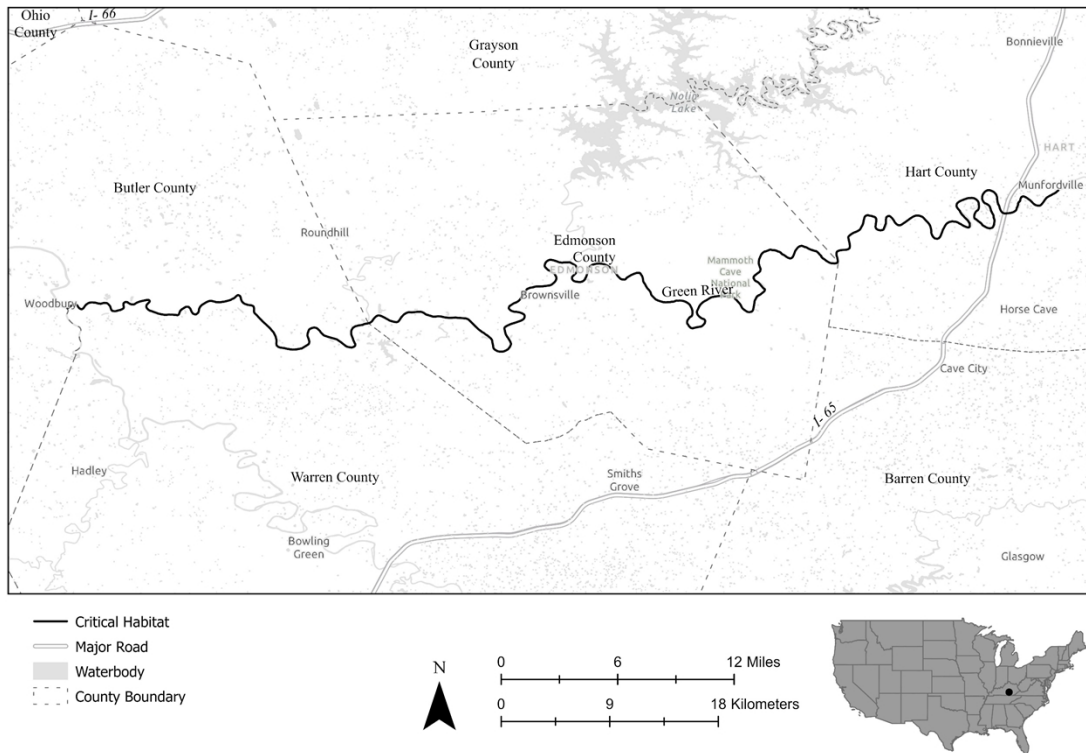
(16) SPCA 11: Green River; Butler, Edmonson, Hart, and Warren Counties, Kentucky.

(i) SPCA 11 consists of 77 rmi (125 rkm) of the Green River in Hart, Edmonson, Warren, and Butler Counties, Kentucky. The unit extends from the downstream side of the bridge at Highway 31W at the city of Munfordville (Hart County, Kentucky) downstream to its confluence with the Barren River near the city of Woodbury (Warren County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 11 follows:

Figure 10 to Spectaclecase (*Cumberlandia monodonta*) paragraph (16)(ii)

Critical Habitat for Spectaclecase
SPCA 11 Green River; Butler, Edmonson, Hart, and Warren Counties, Kentucky



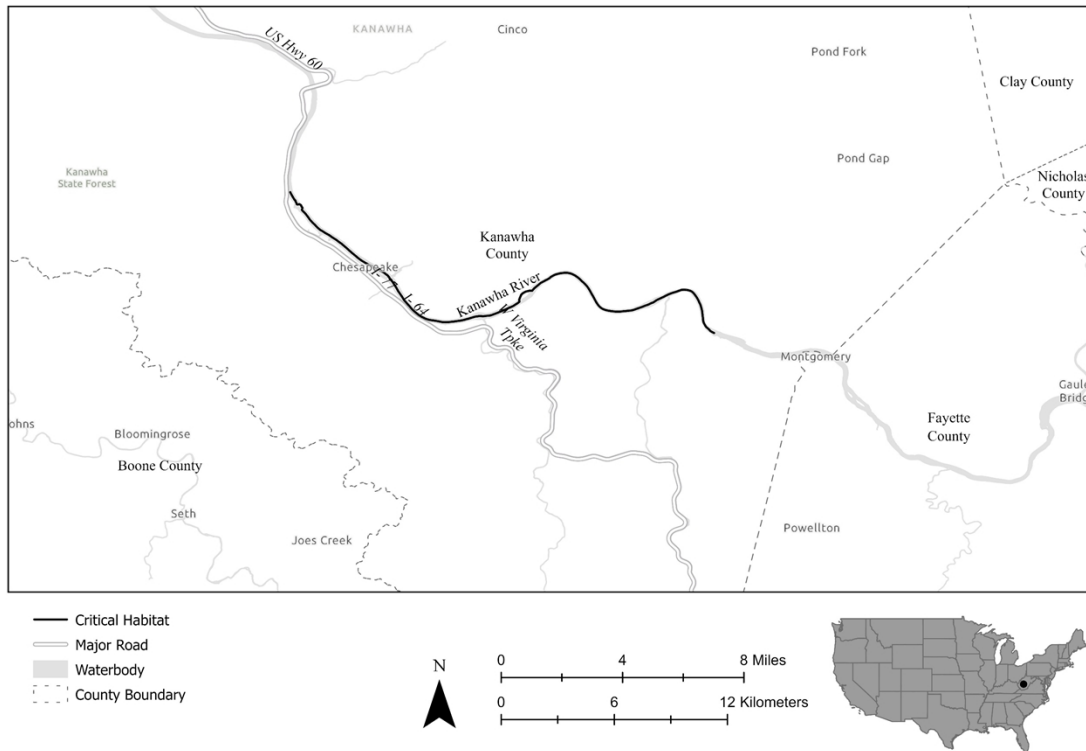
(17) SPCA 12: Kanawha River; Kanawha County, West Virginia.

(i) SPCA 12 consists of 16 rmi (25 rkm) of the Kanawha River in Kanawha County, West Virginia. This unit extends from the downstream side of the Lock and Dam located at the unincorporated community of London downstream to the Lock and Dam at city of Marmet, in Kanawha County, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SPCA 12 follows:

Figure 11 to Spectaclecase (*Cumberlandia monodonta*) paragraph (17)(ii)

Critical Habitat for Spectaclecase
SPCA 12 Kanawha River; Kanawha County, West Virginia



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Brian R. Nesvik
Director
U.S. Fish and Wildlife Service

[FR Doc. 2026-08146 Filed: 4/24/2026 8:45 am; Publication Date: 4/27/2026]