



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS-R3-ES-2024-0144; FXES1111090FEDR-256-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:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to designate critical habitat for the rayed bean (*Villosa fabalis*), sheepnose (*Plethobasus cyphus*), snuffbox (*Epioblasma triquetra*), and spectaclecase (*Cumberlandia monodonta*), all species of freshwater mussels, under the Endangered Species Act of 1973, as amended (Act). Specifically, we propose to designate approximately 560 river miles (rmi) (902 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 2,472 rmi (3,979 rkm) in 38 units as critical habitat for snuffbox; and approximately 1,143 rmi (1,839 rkm) in 12 units as critical habitat for spectaclecase. Portions of these proposed designations overlap among the four species; in total, approximately 3,974 rmi (6,396 rkm) of unique 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 proposed critical habitat designations. We also announce the availability of an economic analysis of the proposed designations of critical habitat for all

four species.

**DATES:** We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

Comments submitted electronically using the Federal eRulemaking Portal (see

**ADDRESSES**, below) must be received by 11:59 p.m. eastern time on the closing date.

We must receive requests for a public hearing, in writing, at the address shown in **FOR**

**FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** *Written comments:* You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<https://www.regulations.gov>. In the Search box, enter FWS-R3-ES-2024-0144, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment.”

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS-R3-ES-2024-0144, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments only by the methods described above. We will post all comments on <https://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

*Availability of supporting materials:* Supporting materials, such as the species status assessment report, 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>).

**FOR FURTHER INFORMATION CONTACT:** Rayed bean and snuffbox: Erin Knoll, Field Supervisor, U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office, 4625 Morse Road, Suite 104, Columbus, OH 43230; telephone 614–416–8993; sheepnose: Kraig McPeck, Field Supervisor, U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services Field Office, 1511 47th Avenue, Moline, IL 61265; telephone 309–757–5800; spectaclecase: Betsy Galbraith, Acting Field Supervisor, U.S. Fish and Wildlife Service, Minnesota-Wisconsin Ecological Services Field Office, 3815 American Boulevard East, Bloomington, MN 55425; telephone 952–858–0793. 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. Please see Docket No. FWS-R3-ES-2024-0144 on <https://www.regulations.gov> for a document that summarizes this proposed rule.

## **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. 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.* We propose to 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, we must, to the maximum extent prudent and determinable, designate critical habitat for the species. 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.

### **Information Requested**

We intend that any final action resulting from this proposed rule will be based on the best scientific data available and be as accurate and as effective as possible.

Therefore, we request comments or information from other governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) Specific information related to critical habitat, such as:

(a) The amount and distribution of rayed bean, sheepnose, snuffbox, and spectaclecase habitat;



(b) Any additional areas occurring within the range of the species (Alabama, Arkansas, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin) that should be included in the designation because they (i) are occupied at the time of listing and contain the physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection, or (ii) are unoccupied at the time of listing and are essential for the conservation of the species; and

(c) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change.

(2) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat.

(3) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designations, and the related benefits of including or excluding specific areas.

(4) Information on the extent to which the description of probable economic impacts in the economic analysis is a reasonable estimate of the likely economic impacts and any additional information regarding probable economic impacts that we should consider.

(5) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area, in particular for those areas included within the Columbia Pipeline Group Multi-Species Habitat Conservation Plan (formally NiSource; for more information, see our website at: <https://www.fws.gov/project/columbia-pipeline-group-mshcp-formally->

*nisource*). If you think we should exclude any additional areas, please provide information supporting a benefit of exclusion.

(6) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination. Section 4(b)(2) of the Act directs that the Secretary shall designate critical habitat on the basis of the best scientific data available.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via <https://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <https://www.regulations.gov>.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <https://www.regulations.gov>.

Our final determinations may differ from this proposal because we will consider all comments we receive during the comment period as well as any information that may become available after this proposal. Based on the new information we receive (and, if relevant, any comments on that new information), our final critical habitat designations may not include all areas proposed, may include some additional areas that meet the definition of critical habitat, or may exclude some areas if we find the benefits of exclusion outweigh the benefits of inclusion and exclusion will not result in the extinction of the species. In our final rule, we will clearly explain our rationale and the basis for our final decisions, including why we made changes, if any, that differ from this proposal.

#### *Public Hearing*

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. We may hold the public hearing in person or virtually via webinar. We will announce any public hearing on our website, in addition to the *Federal Register*. The use of virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

#### **Previous Federal Actions**

On November 2, 2010, we proposed to list the rayed bean and snuffbox mussels as endangered species under the Act (75 FR 67552). On January 19, 2011, we proposed to list the sheepnose and spectaclecase mussels as endangered species under the Act (76 FR 3392). In both cases, we considered the best available information and peer review and public comments on the proposed listing rules. We then published two final listing

rules: the first to list the rayed bean and snuffbox mussels as endangered species under the Act (77 FR 8632; February 14, 2012) and the second to list the sheepnose and spectaclecase mussels as endangered species under the Act (77 FR 14914; March 13, 2012). Federal actions that occurred prior to February 14, 2012, or March 13, 2012, are outlined in our final listing rules for these species. For all four species, we found that critical habitat was prudent but not determinable at the time of listing.

On July 2, 2018, the Center for Biological Diversity filed a complaint, challenging the failure of the Service to designate critical habitat for the four mussel species (rayed bean, sheepnose, snuffbox, and spectaclecase) within 1 year of the publication of our final listing rules. We entered a stipulated settlement agreement, which was approved by the court on June 4, 2019, requiring that we submit a determination concerning the designation of critical habitat for the four mussel species and a proposed rule for any species for which critical habitat is prudent to the *Federal Register* by November 30, 2024. This proposed rule complies with the stipulated settlement agreement.

### **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, 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). We sent the SSA reports to 10 independent peer reviewers and received 9 responses. We incorporated the results of these reviews, as appropriate, into the SSA reports, which are the foundation for this proposed rule.

Results of the structured peer review process and all of the SSA reports can be found at <https://www.regulations.gov> at Docket No. FWS-R3-ES-2024-0144.

### **Summary of Peer Reviewer Comments**

As discussed above in **Peer Review**, we received comments from nine unique peer reviewers on the draft SSA reports. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the contents of each SSA report. Specifically, we reviewed the comments on each SSA report that would influence our considerations for critical habitat (i.e., those related to our considerations of occupancy, habitat, and life-history characteristics used to define the essential physical or biological features for each species). Of the comments related to critical habitat considerations, the peer reviewers generally concurred with our conclusions and characterizations for each of the species in their respective SSA reports. Where the peer reviewers suggested corrections, we updated the SSA reports as appropriate (e.g., clarifying the influence of dams as passage barriers and clarifying characterizations of host fish). Otherwise, no substantive changes within the SSA reports were deemed necessary, and peer reviewer comments are addressed in version 1.0 of the SSA reports.

### **Background**

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' life cycle, 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 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.

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.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, 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. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. 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, p. 29–30; Buchanan 1980, p. 13; Parmalee and Bogan 1998, p. 50; Baird 2000, p. 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/or host-fish shelter habitats. Normal fluctuations in flow velocity are expected; however, extreme changes can be detrimental. Significant and/or prolonged increases in velocity, typically associated with flood conditions, has 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/or 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 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, 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 resilient populations into the future than shorter stream reaches; thus, long reaches of connected stream habitat is 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). Gravid females attract host fish with a modified mantle flap. 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 be susceptible, including 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 (*Camptostoma 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 (*Culaea inconstans*) (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, sheepsnose, 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**

<b>Life stage</b>	<b>Supporting habitat or biological features</b>	<b>Reference</b>
Fertilized eggs	<ul style="list-style-type: none"> <li>• Suitable water quality</li> <li>• Sexually mature males in proximity to sexually mature females</li> <li>• Suitable spawning water temperatures</li> <li>• Suitable flow conditions</li> </ul>	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"> <li>• Suitable water quality (clear water for visual attraction of host)</li> <li>• Availability of host fish for attachment <ul style="list-style-type: none"> <li>○ Rayed bean: darter and sculpin species</li> <li>○ Sheepnose: mimic shiner (<i>Notropis volucellus</i>) and sauger (<i>Sander canadensis</i>)</li> <li>○ Snuffbox: logperch (<i>Percina caprodes</i>) and darter and sculpin species</li> <li>○ Spectaclecase: mooneye (<i>Hiodon tergisus</i>) and goldeye (<i>H. alosoides</i>)</li> </ul> </li> <li>• Suitable water temperature</li> <li>• Suitable flow conditions to ensure glochidia encounter host</li> </ul>	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"> <li>• Suitable water quality (appropriate interstitial chemistry, low salinity, low ammonia, low copper and other contaminants, high dissolved oxygen)</li> <li>• Suitable water temperature</li> <li>• Suitable flow conditions</li> <li>• Host fish dispersal</li> <li>• Food availability: smaller algae, detritus, bacteria, organic matter, pedal feeding for first several months</li> <li>• Suitable substrate conditions: <ul style="list-style-type: none"> <li>○ Rayed bean and snuffbox: stable sand and gravel</li> <li>○ Sheepnose: firm/stable; coarse sand and gravel; cobble; may include mud</li> <li>○ Spectaclecase: firm/stable; coarse sand, gravel, and rock free from excessive silt; may include large slabs/boulders</li> </ul> </li> </ul>	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. 2011, entire; Strayer and Malcom 2012, pp. 1,787–1,788; Watters et al. 2009, p. 221.



Adults	<ul style="list-style-type: none"> <li>• Suitable water quality (appropriate interstitial chemistry, low salinity, low ammonia, low copper and other contaminants, high dissolved oxygen)</li> <li>• Suitable water temperature</li> <li>• Suitable flow conditions</li> <li>• Food availability: algae, detritus, bacteria, dissolved organic matter, microscopic animals</li> <li>• Suitable substrate conditions: <ul style="list-style-type: none"> <li>○ Rayed bean and snuffbox: stable sand and gravel</li> <li>○ Sheepnose: firm/stable; coarse sand and gravel; cobble; may include mud</li> <li>○ Spectaclecase: firm/stable; coarse sand, gravel, and rock free from excessive silt; may include large slabs/boulders</li> </ul> </li> </ul>	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.
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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 (e.g., sand and gravel substrate with moderate flow, 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 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 the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which 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, use of best management practices designed to reduce sedimentation, erosion,

and bank destruction; protection of riparian corridors and woody vegetation; modification of dam operations and/or dam removal 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 currently proposing to designate 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 proposed designation includes only the occupied rivers and streams within the species' current range 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 Proposed Units*

First, we identified those areas within the geographical areas occupied by the species at the time of listing and that contain the essential physical or biological features and determined which of these features may require special management considerations or protection. Most of these areas are where the high-condition populations, defined in

the SSA report as stable to increasing populations with high estimated probability of persistence (or low risk), occur because these are the areas that contain the features that 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 stable to slightly decreasing populations with moderate probability of persistence (or moderate risk)—to viability of the species, as well as the amount of threats acting on those populations. We then considered adjacency and connectivity of these populations to the high-condition and other moderate-condition populations. We did not include populations that have potentially low likelihood of recovery due to limited abundances or lack of connectivity, and 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 include them in this proposed 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 proposed 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 and/or extended areas of critical habitat within the overlapping areas. These areas were considered in formulating this proposed 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 proposed 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 conservation of the species using easily recognizable features (e.g., confluence of two named streams, impoundments).

Sources of data for these proposed 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 proposing to designate 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 **Proposed 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 proposed 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 proposing to designate critical habitat for the sheepnose in the Chippewa River, Kankakee River, Meramec and Bourbeuse Rivers, Allegheny River, Green River, Tippecanoe River, Walhonding River, Tennessee River, Clinch River, Powell River, and Big Sunflower River (see **Proposed Critical Habitat Designation**, below). All of these rivers and streams were known to be occupied at the time of listing.

(c) *Snuffbox*: We are proposing to designate 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 **Proposed 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 proposed 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 proposing to designate 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 **Proposed Critical Habitat Designation**, below). All of these rivers and streams were known to be occupied at the time of listing.

When determining proposed 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 proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

The proposed 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 **Proposed Regulation Promulgation**.

### **Proposed Critical Habitat Designation**

We are proposing approximately 560 river miles (rmi) (902 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 2,472 rmi (3,979 rkm) in 38 units as critical habitat for snuffbox; and approximately 1,143 rmi (1,839 rkm) in 12 units as critical habitat for spectaclecase. In total, we are proposing to designate approximately 3,974 rmi (6,396 rkm) of unique critical habitat within 76 units across 17 States; many proposed units overlap entirely or within some portion of the proposed units for other species within this proposed rule. All units are considered to be occupied by the species—which are already listed as endangered species under the Act—and all units are occupied by one or more other species already listed under the Act (i.e., not including the four mussels included in these proposed designations). No unoccupied units are being proposed for any of the four species. All proposed 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 land 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 propose 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 proposed critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each proposed unit, and provides the approximate area of each unit. All proposed units are considered occupied at the time of listing.

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

Critical Habitat Unit	Adjacent Land Ownership Type(s)	Size of Unit in River Miles (River Kilometers)
RABE 1: Black River	State, Private	32 (51)
RABE 2: Pine River	Private	3 (5)
RABE 3: Belle River	Private	8 (13)
RABE 4: River Raisin	Local, Private	8 (13)
RABE 5: Clinton River	Local, Private	8 (13)
RABE 6: Fish Creek	State, Local, Private	31 (50)
RABE 7: Swan Creek	Private	4 (7)
RABE 8: Blanchard River	Local, Private	28 (45)
RABE 9: Allegheny River	Local, Private	32 (52)
RABE 10: Middle Allegheny River	Federal, State, Local, Private	169 (272)
RABE 11: French Creek	Federal, State, Local, Private	100 (161)
RABE 12: Little Darby Creek	State, Local, Private	21 (35)
RABE 13: Big Darby Creek	State, Local, Private	38 (60)
RABE 14: Great Miami River	Private	11 (18)
RABE 15: Tippecanoe River	State, Local, Private	65 (105)

<b>Total</b>		<b>560 (902)</b>
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Note: Lengths may not sum due to rounding.

The 11 areas we propose as critical habitat for the sheepsnout 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 proposed critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each proposed unit, and provides the approximate area of each unit. All proposed units are considered occupied at the time of listing.

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

<b>Critical Habitat Unit</b>	<b>Adjacent Land Ownership Type(s)</b>	<b>Size of Unit in River Miles (River Kilometers)</b>
SHNO 1: Lower Chippewa River	Federal, State, Local, Private	57 (92)
SHNO 2: Kankakee River	Federal, State, Local, Private	51 (82)
SHNO 3: Meramec and Bourbeuse Rivers	State, Local, Private	153 (246)
SHNO 4: Middle Allegheny-Tionesta	State, Local, Private	28 (45)
SHNO 5: Upper Green River	Federal, State, Local, Private	157 (253)
SHNO 6: Tippecanoe River	Federal, State, Local, Private	84 (135)
SHNO 7: Walhonding River	State, Local, Private	24 (38)
SHNO 8: Lower Tennessee River	Federal, Private	23 (36)
SHNO 9: Upper Clinch River	Federal, State, Private	106 (171)
SHNO 10: Powell River	State, Private	63 (101)
SHNO 11: Big Sunflower River	Federal, Private	56 (90)
<b>Total</b>		<b>801 (1,289)</b>

Note: Lengths may not sum due to rounding.

The 38 areas we propose 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 proposed critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each proposed unit, and provides the approximate area of each unit. All proposed units are considered occupied at the time of listing.

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

Critical Habitat Unit	Adjacent Land Ownership Type(s)	Size of Unit in River Miles (River Kilometers)
SNBO 1: Wolf River	Federal, State, Local, Private	8 (13)
SNBO 2: Embarrass River	Private	18 (29)
SNBO 3: Little Wolf River	Private	12 (19)
SNBO 4: Grand River (Michigan)	State, Local, Private	41 (65)
SNBO 5: Clinton River	Local, Private	8 (13)
SNBO 6: Huron River	State, Local, Private	16 (26)
SNBO 7: Grand River (Ohio)	Local, Private	23 (37)
SNBO 8: Allegheny River	State, Local, Private	35 (57)
SNBO 9: French Creek	Federal, State, Local, Private	130 (209)
SNBO 10: West Fork River	Private	22 (35)
SNBO 11: Shenango River	State, Local, Private	28 (45)
SNBO 12: Middle Island Creek	Federal, State, Local, Private	87 (140)
SNBO 13: Little Kanawha River	Federal, State, Local, Private	218 (351)
SNBO 14: Kanawha River	Local, Private	107 (172)
SNBO 15: Olentangy River	Federal, State, Local, Private	30 (48)
SNBO 16: Little Darby Creek	State, Local, Private	21 (35)
SNBO 17: Big Darby Creek	State, Local, Private	38 (60)
SNBO 18: Stillwater River	Local, Private	12 (19)
SNBO 19: Tygarts Creek	State, Private	89 (143)
SNBO 20: Kinniconick Creek	Private	52 (84)
SNBO 21: Licking River	Federal, State, Local, Private	239 (385)
SNBO 22: Middle Fork Kentucky River	Private	13 (21)
SNBO 23: Red Bird River	Federal, Private	60 (96)
SNBO 24: Red River	Federal, State, Private	31 (49)
SNBO 25: Green River	Federal, State, Local, Private	157 (253)
SNBO 26: Salamonie River	Federal, Private	12 (19)
SNBO 27: Tippecanoe River	State, Local, Private	65 (105)
SNBO 28: Embarras River	State, Local, Private	71 (114)
SNBO 29: Rolling Fork Salt River	Private	95 (153)
SNBO 30: Clinch River	Federal, State, Local, Private	170 (273)
SNBO 31: Powell River	State, Private	66 (106)
SNBO 32: Paint Rock River	Federal, State, Private	53 (85)
SNBO 33: Elk River	Private	27 (43)
SNBO 34: Duck River	State, Local, Private	47 (76)
SNBO 35: St. Croix River	Federal, State, Local, Private	53 (85)

SNBO 36: Meramec River	State, Local, Private	227 (365)
SNBO 37: St. Francis River	Federal, State, Private	58 (93)
SNBO 38: Spring River	State, Private	33 (53)
<b>Total</b>		<b>2,472 (3,979)</b>

Note: Lengths may not sum due to rounding.

The 12 areas we propose 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 proposed critical habitat units, identifies the owners by type (Federal, State, local, or private) of land adjacent to each proposed unit, and provides the approximate area of each unit. All proposed units are considered occupied at the time of listing.

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

<b>Critical Habitat Unit</b>	<b>Adjacent Land Ownership Types</b>	<b>Size of Unit in River Miles (River Kilometers)</b>
SPCA 1: Saint Croix	Federal, State, Local, Private	53 (86)
SPCA 2: Mississippi River	Federal, State, Local, Private	132 (213)
SPCA 3: Meramec River	State, Local, Private	156 (251)
SPCA 4: Big River	Local, Private	11 (17)
SPCA 5: Gasconade River	Federal, State, Private	223 (358)
SPCA 6: Big Piney River	Federal, State, Private	53 (86)
SPCA 7: Ouachita River	Local, Private	83 (133)
SPCA 8: Tennessee River	Federal, State, Local, Private	142 (228)
SPCA 9: Clinch River	Federal, State, Local, Private	160 (257)
SPCA 10: Nolichucky River	Federal State, Private	37 (60)
SPCA 11: Green River	Federal, State, Private	77 (125)
SPCA 12: Kanawha River	Federal, Local, Private	16 (25)
<b>Total</b>		<b>1,143 (1,839)</b>

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

### *RABE 1: Black River*

RABE 1 consists of 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. 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. RABE 1 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 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. RABE 2 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 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. RABE 3 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 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 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. RABE 4 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 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 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. RABE 5 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023) 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 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; lack of connectivity due to barriers; and the presence of invasive species.

#### *RABE 6: Fish Creek*

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 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 and local) 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. RABE 6 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 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 agriculture; and the presence of invasive species.

#### *RABE 7: Swan Creek*

RABE 7 consists of 4 rmi (7 rkm) of Swan Creek in Lucas County, Ohio. This unit extends from the Monclova Road Bridge in Maumee downstream to the Ohio Turnpike Interstate 80/Interstate 90 Bridge in 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. RABE 7 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 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. RABE 8 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 agriculture; and the presence of invasive species.

*RABE 9: Allegheny River*

RABE 9 consists of 32 rmi (52 rkm) of the Allegheny River, Olean Creek, Oil Creek, and Oswayo Creek in Allegany and Cattaraugus Counties, New York, and McKean County, Pennsylvania. The Allegheny River portion of this unit includes

approximately 13 rmi (21 rkm) of the Allegheny River from its confluence with Oswayo Creek just west of Portville to the Interstate 86 Bridge in Allegany, in Cattaraugus County, New York. The Olean Creek portion of this unit includes 8 rmi (14 rkm) of Olean Creek from its confluence with Oil Creek in Hinsdale downstream to the confluence with Allegheny River in Olean, in Cattaraugus County, New York. The Oil Creek portion of this unit includes 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 Hinsdale (Cattaraugus County, New York). The Oswayo Creek portion of this unit includes 4 rmi (6 rkm) of Oswayo Creek from the Pennsylvania/New York State Line in McKean County, Pennsylvania, and Allegany County, New York, downstream to its confluence with Allegheny River just west of Portville (Cattaraugus County, New York). The unit includes the river channel up to the ordinary high-water mark.

Approximately 10.2 percent (3 rmi (5 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (local) ownership, and 89.8 percent (29 rmi (47 rkm)) are in private ownership. RABE 9 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 oil and gas extraction; lack of connectivity due to barriers; habitat degradation and loss due to urbanization and agriculture; and the presence of invasive species.

#### *RABE 10: Middle Allegheny River*

RABE 10 consists of 169 rmi (272 rkm) of the Allegheny River in Armstrong, Butler, Clarion, Forest, Venango, and Warren Counties, Pennsylvania. This unit extends from the Kinzua Dam in Warren County, Pennsylvania, downstream to Lock and Dam

Number 5 in Armstrong County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

Approximately 24.6 percent (42 rmi (68 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 75.4 percent (128 rmi (206 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. RABE 10 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with designated critical habitat for the federally threatened longsolid (*Fusconaia subrotunda*) (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), and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023), the federally endangered sheepsnose, 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; lack of connectivity due to barriers; habitat degradation and loss due to urbanization and agriculture; 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 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 Little Cooley downstream to its confluence with French Creek east 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 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. RABE 11 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023), the federally endangered sheepnose, 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; oil and gas development; habitat degradation and loss due to urbanization and agriculture; 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 Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near 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 and local) 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. RABE 12 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit in part or in full overlaps with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and proposed 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 and row crop agriculture; and the presence of invasive species.

### *RABE 13: Big Darby Creek*

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 Milford Center (Union County, Ohio) downstream to the State Route 665 Bridge (London Groveport Road) by 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 (38 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. RABE 13 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed 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 and row crop agriculture; lack of 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 Quincy (Logan County, Ohio) downstream to the Route 47 Bridge (Riverside Drive) in 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. RABE 14 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 and row crop agriculture; lack of connectivity due to barriers; and the presence of invasive species.



### *RABE 15: Tippecanoe River*

RABE 15 consists of 65 rmi (105 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. The unit extends from the State Highway 14 Bridge near Winamac (Pulaski County, Indiana) downstream to the confluence of the Tippecanoe River with the Wabash River northeast of Battle Ground (Tippecanoe County, Indiana), excluding Lakes Shafer and Freeman and the stream reach between the two lakes. The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.1 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 94.9 percent (62 rmi (100 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Indiana Department of Natural Resources. RABE 15 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 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 federally endangered sheepnose, 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 and agriculture; lack of connectivity due to barriers; and the presence of invasive species.

### II. Sheepnose

### *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. SHNO 1 is occupied by the species and contains all the physical and biological features essential to the species' conservation. This unit overlaps in part or in full 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 lack of 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 (Federal, State, and local) ownership, and 45.1

percent (23 rmi (37 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 Illinois Department of Natural Resources. SHNO 2 is occupied by the species and contains all the physical and biological features essential to the species' conservation.

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 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. SHNO 3 is occupied by the species and contains all the physical and biological features essential to the species' conservation. This unit overlaps in part or in full with proposed 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; lack of 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 and local) 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. SHNO 4 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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 threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and proposed 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 oil and gas extraction; lack of connectivity due to barriers; habitat degradation and loss due to urbanization and agriculture; 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. SHNO 5 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in full or in part 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 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), and proposed 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 habitat and water quality from impoundments and associated cold water discharges; siltation and pollution due to improper timbering and agricultural practices; 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 (Federal, State, and local) ownership, and 89.65 percent (75 rmi (121 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), and adjacent State lands are owned or managed by the Indiana Department of Natural Resources. SHNO 6 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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 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 federally endangered rayed bean, 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 and agriculture; lack of 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 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. SHNO 7 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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, oil and gas extraction, and agriculture.

*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 (Federal) ownership, and 98.2 percent (22 rmi (35 rkm)) are in private ownership. Adjacent Federal lands are managed by the NRCS. SHNO 8 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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; lack of 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 (9 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. SHNO 9 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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 threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); the federally threatened slender chub (*Erimystax cahni*) and the federally threatened yellowfin madtom (*Noturus flavipinnis*) (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); and proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023); the federally endangered rayed bean; the federally threatened sickle darter (*Percina*



*williamsi*) (88 FR 4128; January 24, 2023); 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 habitat and water quality from downstream impoundment, mining discharges, siltation, contaminants, oil and gas 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 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. SHNO 10 is occupied by the species and contains all the physical and biological features essential to the species' conservation. This unit overlaps in part or in full 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); and the federally threatened slender chub and federally threatened yellowfin madtom (see 50 CFR 17.95(e) and 42 FR 45526, September 9, 1977); and proposed critical habitat for 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, oil and gas extraction, agriculture, and coal mining and mine runoff; lack of 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) ownership, and 95.9 percent (54 rmi (86 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the NRCS. SHNO 11 is occupied by the species and contains all the physical and biological features essential to the species' conservation. The unit overlaps in part or in full 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 agriculture; degradation and loss of habitat due to dredging; and changes to the hydrological regime.

III. Snuffbox

### *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. SNBO 1 is occupied by the species and contains all the physical and biological features essential to the species' conservation.

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; lack of 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 includes approximately 5 rmi (7 rkm) of the Embarrass River and extends from the Caroline Dam in Grant downstream to its confluence with North Branch Embarrass River, in Shawano County, Wisconsin. The South Branch Embarrass River portion of this unit includes approximately 12 rmi (19 rkm) of the South Branch Embarrass River and extends from Spaulding Street (County Road M) in Tigerton downstream to its confluence with Embarrass River in Grant, 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 Leopolis downstream to its confluence with Embarrass River, in Shawano 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. SNBO 2 is occupied by the species and contains all the physical and biological features essential to the species' conservation.

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; lack of 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 Manawa downstream to the Highway X Bridge in 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. SNBO 3 is occupied by the species and contains all the physical and biological features essential to the species' conservation.

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; lack of 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 Lyons (Ionia County, Michigan) downstream to its confluence with Thornapple River in 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 Lowell downstream to its confluence with Grand River in 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. SNBO 4 is occupied by the species and contains all the physical and biological features essential to the species' conservation.

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; lack of 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 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. SNBO 5 is occupied by the species and contains all the

physical and biological features essential to the species' conservation. The unit overlaps in part or in full with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023) 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; 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; lack of 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 (11 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Michigan Department of Natural Resources. SNBO 6 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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; lack of 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 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. SNBO 7 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 Franklin downstream to Interstate 80 near 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. SNBO 8 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 threatened rabbitsfoot (see 50 CFR 17.95(f) and

80 FR 24692, April 30, 2015), and proposed critical habitat for the federally endangered rayed bean and 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 and row crop agriculture; lack of connectivity due to barriers (e.g., locks and dams); oil and gas development; 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. 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). The West Branch French Creek portion of this unit includes 19 rmi (30 rkm) 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, in Erie County, Pennsylvania. The LeBoeuf Creek portion of this unit includes 3 rmi (5 rkm) from U.S. Highway 19 downstream to its confluence with French Creek in Le Boeuf Township, in Erie County, Pennsylvania. The Cussewago Creek portion of this unit includes 1 rmi (2 rkm) from Dunham Road in Fredericksburg (Lebanon County, Pennsylvania) downstream to its confluence with French Creek in Meadville (Crawford County, Pennsylvania). The Woodcock Creek portion of this unit includes 4 rmi (6 rkm) from the Woodcock Dam downstream to its confluence with French Creek in Saegertown, in Crawford County, Pennsylvania. The Muddy Creek portion of this unit includes 14 rmi (22 rkm) from Pennsylvania Highway 77 near Little



Cooley downstream to its confluence with French Creek east 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. The unit includes the river channel up to the ordinary high-water mark.

Approximately 23.2 percent (30 rmi (48 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 76.8 percent (100 rmi (161 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. SNBO 9 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224, August 22, 2023), the federally endangered rayed bean, and the federally endangered sheepnose.

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 row crop agriculture and oil and gas development.

*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 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. SNBO 10 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 oil and gas development and contaminants, and lack of connectivity due to barriers.

*SNBO 11: Shenango River*

SNBO 11 consists of 28 rmi (45 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 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 (43 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Pennsylvania Bureau of State Parks. SNBO 11 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 oil and gas development and contaminants, and lack of 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 Smithburg in Doddridge County, West Virginia, downstream to the confluence with the Ohio River at 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 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 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 (Federal, State, and local) ownership, and 97.4 percent (85 rmi (137 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Service. Adjacent State lands are owned or managed by the West Virginia Division of Natural Resources. SNBO 12 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 oil and gas development and contaminants, and the presence of invasive species.

*SNBO 13: Little Kanawha River*

SNBO 13 consists of 218 rmi (351 rkm) of the Little Kanawha River, Leading Creek, Hughes River, North Fork Hughes River, and South Fork Hughes River in Braxton, Calhoun, Gilmer, Ritchie, Wood, and Wirt Counties, West Virginia. The Little Kanawha River portion of this unit includes approximately 127 rmi (204 rkm) from Burnsville Dam (which is in neighboring Braxton County) downstream to the confluence with the Ohio River in Parkersburg (Wood County, West Virginia). The Leading Creek portion of this unit includes approximately 12 rmi (20 rkm) from the Ellis Run Road Bridge southwest of Troy downstream to the confluence with the Little Kanawha River northwest of Glenville, in Gilmer County, West Virginia. The Hughes River portion of this unit includes approximately 7 rmi (12 rkm) from the convergence of the North and South Forks Hughes River in Freeport downstream to the confluence of the Little Kanawha River in Greencastle, in Wirt County, West Virginia. The North Fork Hughes River portion of this unit includes approximately 27 rmi (44 rkm) from the North Bend Dam near Harrisville (Ritchie County, West Virginia) downstream to the convergence with the South Fork Hughes River in 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 Freeport (Wirt County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

Approximately 7.9 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 92.1 percent (201 rmi (323 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the Service. Adjacent State lands are owned or managed by the West Virginia Division of Natural Resources. SNBO 13 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 107 rmi (172 rkm) of the Kanawha River and the Elk River in Braxton, 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 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 102 rmi (164 rkm) from Sutton Dam in Braxton and Webster Counties, West Virginia, downstream to its confluence with the Kanawha River in Charleston (Kanawha County, West Virginia). The unit includes the river channel up to the ordinary high-water mark.

Approximately 0.3 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 99.7 percent (107 mi

(172 km)) are in private ownership. SNBO 14 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with 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 (Federal, State, and local) ownership, and 99.1 percent (30 rmi (48 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 Ohio Department of Natural Resources. SNBO 15 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 and row crop agriculture.

*SNBO 16: Little Darby Creek*

SNBO 16 consists of 21 rmi (35 rkm) of Little Darby Creek in Union and Madison Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near 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 and local) 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. SNBO 16 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with designated critical habitat for the federally threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015) and proposed 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 and row crop agriculture.

*SNBO 17: Big Darby Creek*

SNBO 17 consists of 38 rmi (60 rkm) of Big Darby Creek in Union, Madison, and Franklin Counties, Ohio. This unit extends from the U.S. Highway 36 Bridge in Milford Center (Union County, Ohio) downstream to the State Highway 665 Bridge west 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 (38 rkm)) are in private ownership. Adjacent State lands are owned or managed by the Ohio Department of Natural Resources. SNBO 17 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full with proposed 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 and row crop agriculture.

*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. SNBO 18 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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; lack of 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. SNBO 19 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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; lack of 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 Petersville downstream to its confluence with the Ohio River at 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. SNBO 20 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023). The unit overlaps in part or in full 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; lack of connectivity due to barriers; the presence of invasive species; impacts to the hydrological regime; and habitat degradation and loss due to urbanization, agriculture, 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 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 8.6 percent (20 rmi (33 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 (219 rmi (352 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 State Nature Preserves Commission, Kentucky Department of Fish and Wildlife Resources, and the Kentucky Department of Parks. SNBO 21 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit entirely overlaps in part or in full 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 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. SNBO 22 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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, oil and gas development, and pipeline crossings.

*SNBO 23: Red Bird River*

SNBO 23 consists of 60 rmi (96 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 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 Beattyville (Lee County, Kentucky). The unit includes the river channel up to the ordinary high-water mark.

Approximately 8.0 percent (5 rmi (8 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal) ownership, and 92.0 percent (55 rmi (88 rkm)) are in private ownership. Adjacent Federal lands are owned or managed by the U.S. Forest Service. SNBO 23 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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. SNBO 24 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 barriers to connectivity.

*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 Campbellsville (Taylor County, Kentucky) downstream to the confluence with the Barren River at 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. SNBO 25 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 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); and proposed critical habitat for the federally endangered sheepsnout 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 habitat and water quality from impoundments and associated cold water discharges, siltation and pollution due to improper timbering and agricultural practices, 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 lowhead dam by the intersection of County Road W 700 S and S. Belleville Road in Jefferson Township downstream to Salamonie Lake east 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. SNBO 26 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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 65 rmi (105 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. The unit extends from the State Highway 14 Bridge near Winamac (Pulaski County, Indiana) downstream to the Tippecanoe River's confluence with the Wabash River northeast of Battle Ground (Tippecanoe County, Indiana), excluding Lakes Shafer and Freeman and the stream reach between the two lakes. The unit includes the river channel up to the ordinary high-water mark.

Approximately 5.1 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 94.9 percent (62 rmi (100 rkm)) are in private ownership. Adjacent State land is owned or managed by the

Indiana Department of Natural Resources. SNBO 27 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 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 federally endangered sheepsnose, and 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; barriers to connectivity; 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. SNBO 28 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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; barriers to connectivity; 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 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. SNBO 29 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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; barriers to connectivity; 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 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.

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. SNBO 30 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); 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 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 federally endangered sheepnose, 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 habitat and water quality from downstream impoundment, mining discharges, siltation, contaminants, oil and gas 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. SNBO 31 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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); and 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 with proposed critical habitat for the sheepsnose 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, oil and gas extraction, agriculture, and coal mining and mine runoff; lack of 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 Skyline (Jackson County, Alabama) downstream to U.S. Highway 431 south 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. SNBO 32 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 and the federally threatened round hickorynut (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).

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, and row crop agriculture; barriers to connectivity; 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 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. SNBO 33 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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, agriculture, and instream gravel mining; barriers to connectivity; 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 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. SNBO 34 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 threatened rabbitsfoot (see 50 CFR 17.95(f) and 80 FR 24692, April 30, 2015), and 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; barriers to connectivity; 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 St. Croix Falls (Polk County, Wisconsin) and Taylors Falls (Chisago County, Minnesota) downstream to the confluences with the Mississippi River at Prescott (Pierce County, Wisconsin) and Point Douglas (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. SNBO 35 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023) 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; lack of connectivity due to barriers; the presence of invasive species; and habitat degradation and loss due to urbanization, agriculture, 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 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 overlaps in part or in full with proposed critical habitat for the federally endangered sheepsnose, 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 (321 rkm)) are in private ownership. Adjacent State land is owned or managed by the Missouri Department of Natural Resources. SNBO 36 is occupied by the species and contains all the physical or biological features essential to the species' conservation.

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; lack of 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 Saco (Madison County, Missouri) downstream to where inundation begins at Lake Wappello (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. SNBO 37 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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; lack of 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 Hardy (Sharp County, Arkansas) downstream to the confluence with the Black River east 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. SNBO 38 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 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; lack of connectivity due to barriers; the presence of invasive species; and habitat degradation and loss due to urbanization.

#### IV. Spectaclecase

##### *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 St. Croix Falls (Polk County, Wisconsin) downstream to the confluence with the Mississippi River at 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. SPCA 1 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed critical habitat for the proposed endangered salamander mussel (88 FR 57224; August 22, 2023), and the federally endangered snuffbox.

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 agriculture 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 (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 15 at Hampton (Rock Island County, Illinois) downstream to Lock and Dam 19 at 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 39.4 percent (52 rmi (84 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 60.6 percent (80 rmi (129 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. SPCA 2 is occupied by the species and contains all the physical or biological features essential to the species' 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 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 possible genetic isolation 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 Wildwoods (Crawford County, Missouri) downstream to the confluence of the Meramec River with the Mississippi River near 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. SPCA 3 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed 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 (17 rkm) of the Big River in Jefferson County, Missouri. The unit extends from the downstream side of the Highway W bridge near Rockford Beach 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 (1 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. SPCA 4 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with proposed 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 (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 Clark Ford (Laclede County, Missouri) downstream to the confluence of the Gasconade River with the Missouri River at Gasconade (Gasconade County, Missouri). The unit includes the river channel up to the ordinary high-water mark.

Approximately 6.3 percent (14 rmi (22 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal and State) ownership, and 93.7 percent (209 rmi (336 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. SPCA 5 is occupied by the species and contains all the physical or biological features essential to the species' 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 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 from the downstream end of Fort Leonard Wood Military Training Facility (Pulaski County, Missouri) to the confluence with the Gasconade River, near Hooker (Pulaski County, Missouri). The unit 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. SPCA 6 is occupied by the species and contains all the physical or biological features essential to the species' 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 (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 Donaldson (Hot Springs County, Arkansas) downstream to the Highway 79N bridge at Camden (Ouachita County, Arkansas). The unit includes the river channel up to the ordinary high-water mark.

Approximately 1.2 percent (1 rmi (1 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. SPCA 7 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 (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 Guntersville (Marshall County, Alabama)

downstream to Pickwick Landing Dam at Counce (Hardin County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 95.5 percent (136 rmi (218 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 4.5 percent (6 rmi (10 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. SPCA 8 is occupied by the species and contains all the physical or biological features essential to the species' 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 160 rmi (257 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 Swords Creek (Russell County, Virginia) and extends downstream to the Highway 25E bridge near Tazewell (Claiborne County, Tennessee). The unit includes the river channel up to the ordinary high-water mark.

Approximately 6.0 percent (10 rmi (15 rkm)) of the riparian lands adjacent to, but not included in, this unit are in public (Federal, State, and local) ownership, and 94.0

percent (150 rmi (242 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 or Virginia Department of Conservation and Recreation. SPCA 9 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full with designated critical habitat for This unit overlaps in part or in full with designated critical habitat for the federally threatened longsolid (see 50 CFR 17.95(f) and 88 FR 14794, March 9, 2023); 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 slabside pearlymussel (*Pleuonaia dolabelloides*) (see 50 CFR 17.95(f) and 78 FR 59556, September 26, 2013); the federally endangered slabside pearlymussel (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 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 federally endangered sheepsnose, 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 water quality from oil and gas extraction, power generation, coal mining and mine runoff, and legacy pollutants; changes in hydrology, such as sedimentation from agriculture and silviculture, 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; genetic isolation; 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 St. James (Greene County, Tennessee) downstream to the confluence with the French Broad River near 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 (Federal and State) ownership, and 93.3 percent (35 rmi (56 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the Tennessee Valley Authority. Adjacent State land is owned or managed by the Tennessee Wildlife Resources Agency. SPCA 10 is occupied by the species and contains all the physical or biological features essential to the species' conservation. The unit overlaps in part or in full 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 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 oil and gas extraction, power generation, coal mining and mine runoff, and legacy pollutants; changes in hydrology, such as sedimentation from agriculture and silviculture, 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; genetic isolation; and impacts from nonnative species.



### *SPCA 11: Green River*

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 Munfordville (Hart County, Kentucky) downstream to the confluence with the Barren River near 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 (75 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. SPCA 11 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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 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); and proposed critical habitat for the federally endangered sheepsnout 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 in hydrology, such as sedimentation and runoff from agriculture and silviculture, dam impoundments and modifications in flow, and in-stream modifications from transportation projects and utility corridor development; loss of riparian vegetation within the watershed; and further 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 London downstream to the Lock and Dam at 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 (Federal and local) ownership, and 97.5 percent (15 rmi (24 rkm)) are in private ownership. Adjacent Federal land is owned or managed by the U.S. Army Corps of Engineers. SPCA 12 is occupied by the species and contains all the physical or biological features essential to the species' conservation. This unit overlaps in part or in full 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).

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 oil and gas extraction, power generation, coal mining and mine runoff, and legacy pollutants; changes in hydrology, such as sedimentation from agriculture and silviculture, 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. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

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 and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/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 reinitiate 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 reinitiate 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 *Federal Register* documents “shall, to the maximum extent practicable, also include 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**).

## **Exemptions**

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

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) requires 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, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), 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 proposed critical habitat designation for the spectacled case to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. The following areas are Department of Defense (DoD) lands with completed, Service-approved INRMPs within the proposed critical habitat designation.

*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 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 and/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 proposed 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 considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise discretion to exclude the area only if such exclusion would not result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. In our final rules, we explain any decision to exclude areas, as well as decisions not to exclude, to make clear the rational basis for our decision. We describe below the process that we use for taking into consideration each category of impacts and any initial analyses of the relevant impacts.



### *Consideration of 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. To assess the probable economic impacts of a designation, we must first evaluate specific land uses or activities and projects that may occur in the area of the critical habitat. We then must evaluate the impacts that a specific critical habitat designation may have on restricting or modifying specific land uses or activities for the benefit of the species and its habitat within the areas proposed. We then identify which conservation efforts may be the result of the species being listed under the Act versus those attributed solely to the designation of critical habitat for this particular species. The probable economic impact of a proposed critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.”

The “without critical habitat” scenario represents the baseline for the analysis, which includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat (e.g., under the Federal listing as well as other Federal, State, and local regulations). Therefore, the baseline represents the costs of all efforts attributable to the listing of the species under the Act (i.e., conservation of the species and its habitat incurred regardless of whether critical habitat is designated). The “with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts would not be expected without the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs. These are the costs we use when evaluating the benefits of inclusion and exclusion of particular areas from the final designation of critical habitat should we choose to conduct a discretionary 4(b)(2)

exclusion analysis.

Executive Order (E.O.) 14094 amends and reaffirms E.O. 12866 and E.O. 13563 and directs Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consistent with the E.O. regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly affected entities, where practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly affected entities. Section 3(f) of E.O. 12866 identifies four criteria when a regulation is considered a “significant regulatory action” and requires additional analysis, review, and approval if met. The criterion relevant here is whether the designation of critical habitat may have an economic effect of \$200 million or more in any given year (section 3(f)(1) of E.O. 12866 as amended by E.O. 14094). Therefore, our consideration of economic impacts uses a screening analysis to assess whether a designation of critical habitat for the rayed bean, sheepnose, snuffbox, or spectaclecase is likely to exceed this threshold.

For this particular designation, we developed an incremental effects memorandum (IEM) considering the probable incremental economic impacts that may result from this proposed designation of critical habitat. The information contained in our IEM was then used to develop a screening analysis of the probable effects of the designation of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase (Industrial Economics, Incorporated (IEc) 2024, entire). We began by conducting a screening analysis of the proposed designation of critical habitat in order to focus our analysis on the key factors that are likely to result in incremental economic impacts. The purpose of the screening analysis is to filter out particular geographical areas of critical habitat that are already subject to such protections and are, therefore, unlikely to incur incremental economic impacts. In particular, the screening analysis considers baseline costs (i.e., absent critical

habitat designation) and includes any probable incremental economic impacts where land and water use may already be subject to conservation plans, land management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. Ultimately, the screening analysis allows us to focus our analysis on evaluating the specific areas or sectors that may incur probable incremental economic impacts as a result of the designation.

The presence of the listed species in occupied areas of critical habitat means that any destruction or adverse modification of those areas is also likely to jeopardize the continued existence of the species. Therefore, designating occupied areas as critical habitat typically causes little if any incremental impacts above and beyond the impacts of listing the species. As a result, we generally focus the screening analysis on areas of unoccupied critical habitat (unoccupied units or unoccupied areas within occupied units). Overall, the screening analysis assesses whether designation of critical habitat is likely to result in any additional management or conservation efforts that may incur incremental economic impacts. This screening analysis combined with the information contained in our IEM constitute what we consider to be our economic analysis of the proposed critical habitat designation for the rayed bean, sheepnose, snuffbox, and spectaclecase and is summarized in the narrative below.

As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the proposed designation of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase, first we identified, in the IEM dated June 7, 2024, probable incremental economic impacts associated with the following categories of activities: (1) Federal lands management (Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and U.S. Bureau of Reclamation); (2) roadway and

bridge construction; (3) agriculture; (4) groundwater pumping; (5) in-stream dams and diversions, including their construction, maintenance, and/or removal; (6) dredging; and (7) commercial or residential development. We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where the rayed bean, sheepnose, snuffbox, and/or spectaclecase are present, Federal agencies are required to consult with the Service under section 7 of the Act on activities they authorize, fund, or carry out that may affect the species. If we finalize this proposed critical habitat designation, Federal agencies would be required to consider the effects of their actions on the designated habitat, and if the Federal action may affect critical habitat, our consultations would include an evaluation of measures to avoid the destruction or adverse modification of critical habitat.

In our IEM, we attempted to clarify the distinction between the effects that result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for each of the species' critical habitat. The following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would likely adversely affect the essential physical or biological features of occupied critical habitat are also likely to adversely affect any one of the four freshwater mussel species. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this proposed

designation of critical habitat.

The proposed critical habitat designation for the rayed bean, sheepsnose, snuffbox, and spectaclecase includes 76 distinct units totaling approximately 3,974 rmi (6,396 rkm). The proposed critical habitat designation for the rayed bean includes 560 rmi (902 rkm) across 15 units. Ownership of riparian lands adjacent to the proposed units is primarily private; public lands are owned by Federal, State, and local government entities. The proposed critical habitat designation for the sheepsnose includes approximately 801 rmi (1,289 rkm) across 11 units. Ownership of riparian lands adjacent to the proposed units is primarily private; public lands are owned by Federal, State, or local government entities. The proposed critical habitat for the snuffbox includes 2,472 rmi (3,979 rkm) across 38 units. Ownership of riparian lands adjacent to the proposed units is primarily private; public lands are owned by Federal, State, or local government entities. The proposed critical habitat for spectaclecase includes approximately 1,143 rmi (1,839 rkm) across 12 units. Ownership of riparian lands adjacent to the proposed units is primarily private; public lands are owned by Federal, State, and local government entities. A number of these units partially overlap, and all units are considered occupied by one or more species at the time of this proposed designation.

The total incremental costs of critical habitat designation for the rayed bean, sheepsnose, snuffbox, and spectaclecase are anticipated to be less than approximately \$630,000 (2024 dollars) per year for the next 10 years. The costs are reflective of all proposed critical habitat areas being occupied by the species and all four species having been listed under the Act since 2012. Thus, we do not anticipate any additional consultation burden as a result of this proposed critical habitat designation. Since consultation is already required in these areas due to the species being listed, as well as the presence and designated critical habitat of other listed species, the incremental costs associated with designating critical habitat for these mussels are likely to be limited to

additional administrative effort in conducting the adverse modification analysis. In total, we anticipate 11 new formal consultations, 210 informal consultations, and 6 technical assistance efforts to occur annually in the proposed critical habitat areas.

We are soliciting data and comments from the public on the economic analysis discussed above. During the development of a final designation, we will consider the information presented in the economic analysis and any additional information on economic impacts we receive during the public comment period to determine whether any specific areas should be excluded from the final critical habitat designation under authority of section 4(b)(2), our implementing regulations at 50 CFR 424.19, and the 2016 Policy. We may exclude an area from critical habitat if we determine that the benefits of excluding the area outweigh the benefits of including the area, provided the exclusion will not result in the extinction of these species.

#### *Consideration of National Security Impacts*

Section 4(a)(3)(B)(i) of the Act may not cover all DoD lands or areas that pose potential national-security concerns (e.g., a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). If a particular area is not covered under section 4(a)(3)(B)(i), then national-security or homeland-security concerns are not a factor in the process of determining what areas meet the definition of “critical habitat.” However, we must still consider impacts on national security, including homeland security, on those lands or areas not covered by section 4(a)(3)(B)(i) because section 4(b)(2) requires us to consider those impacts whenever we designate critical habitat. Accordingly, if DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns, or we have otherwise identified national-security or homeland-security impacts from designating particular areas as critical habitat, we generally have reason to consider excluding those areas.

However, we cannot automatically exclude requested areas. When DoD, DHS, or another Federal agency requests exclusion from critical habitat on the basis of national-security or homeland-security impacts, we must conduct an exclusion analysis if the Federal requester provides information, including a reasonably specific justification of an incremental impact on national security that would result from the designation of that specific area as critical habitat. That justification could include demonstration of probable impacts, such as impacts to ongoing border-security patrols and surveillance activities, or a delay in training or facility construction, as a result of compliance with section 7(a)(2) of the Act. If the agency requesting the exclusion does not provide us with a reasonably specific justification, we will contact the agency to recommend that it provide a specific justification or clarification of its concerns relative to the probable incremental impact that could result from the designation. If we conduct an exclusion analysis because the agency provides a reasonably specific justification or because we decide to exercise the discretion to conduct an exclusion analysis, we will defer to the expert judgment of DoD, DHS, or another Federal agency as to: (1) Whether activities on its lands or waters, or its activities on other lands or waters, have national-security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected in the absence of an exclusion. In that circumstance, in conducting a discretionary section 4(b)(2) exclusion analysis, we will give great weight to national-security and homeland-security concerns in analyzing the benefits of exclusion.

Under section 4(b)(2) of the Act, we also consider whether a national security or homeland security impact might exist on lands owned or managed by DoD or DHS. In preparing this proposal, we have determined that, other than the land exempted under section 4(a)(3)(B)(i) of the Act based upon the existence of an approved INRMP (see **Exemptions**, above), the lands within the proposed designation of critical habitat for the

rayed bean, sheepnose, snuffbox, and spectaclecase are not owned or managed by DoD or DHS. Therefore, we anticipate no impact on national security or homeland security.

#### *Consideration of 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.

When analyzing other relevant impacts of including a particular area in a designation of critical habitat, we weigh those impacts relative to the conservation value of the particular area. To determine the conservation value of designating a particular area, we consider a number of factors, including, but not limited to, the additional regulatory benefits that the area would receive due to the protection from destruction or adverse modification as a result of actions with a Federal nexus, the educational benefits of mapping essential habitat for recovery of the listed species, and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

In the case of these mussel species, the benefits of critical habitat include public



awareness of the presence of these mussels and the importance of habitat protection, and, where a Federal nexus exists, increased habitat protection for these mussel species due to protection from destruction or adverse modification of critical habitat. Continued implementation of an ongoing management plan that provides conservation equal to or more than the protections that result from a critical habitat designation would reduce those benefits of including that specific area in the critical habitat designation.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction of the species. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

*Private or Other Non-Federal Conservation Plans or Agreements Associated with Permits Under Section 10 of the Act*

As mentioned above, as part of our 4(b)(2) analysis, we consider whether there are approved and permitted conservation agreements or plans covering the species in the area such SHAs, CCAAs, CBAs, or HCPs. Under sections 10(a)(1)(A) and 10(a)(1)(B) of the Act, non-federal entities may develop these agreements or plans when they seek authorization for take that may otherwise be prohibited under section 9 through an enhancement of survival (EOS) or incidental take permit (ITP), respectively.

Property owners seeking an EOS permit collaborate with the Service to develop a CBA to support the application. The EOS permit authorizes take associated with implementing the agreement and ongoing land management activities that provide a net conservation benefit to the covered species. The CBA replaces two previous types of voluntary agreements (SHAs and CCAAs) going forward for new agreements after May 2024. However, permitted SHAs and CCAAs or those noticed in the *Federal Register*

prior to May 2024, remain in effect.

For incidental take permits issued under section 10(a)(1)(B) of the Act, applicants are required to develop a conservation plan, more commonly known as an HCP, to support their application. ITPs authorize take that is incidental to, but not the purpose of, carrying out otherwise lawful activities provided that the impact of the taking is minimized and mitigated to the maximum extent practicable.

For both section 10(a)(1)(A) and 10(a)(1)(B) permits, we provide permittees with assurances. In the case of 10(a)(1)(A) permits, we may not require additional or different conservation measures to be undertaken by a permittee without the consent of the permittee. In the case of section 10(a)(1)(B), we will not impose further land-, water-, or resource-use restrictions, or require additional commitments of land, water, or finances, beyond those agreed to in the HCP.

We place great value on the partnerships that are developed during the preparation and implementation of conservation plans and agreements. In some cases, permittees agree to do more for the conservation of the species and their habitats on private lands than designation of critical habitat would provide alone.

When we undertake a discretionary section 4(b)(2) exclusion analysis based on conservation plans or agreements, we anticipate consistently excluding such areas if incidental take caused by the activities in those areas is covered by the permit under section 10 of the Act and the plan meets all of the following three factors (See the 2016 Policy for additional details. Because combining types of agreements such as SHAs and CCAAs into the term “CBAs” is a recent development (see 89 FR 26070; April 12, 2024), the 2016 Policy did not expressly reference CBAs. However, because CBAs replace CCAAs and SHAs moving forward, we treat CBAs similarly to how we treat CCAAs/SHAs/HCPs described below):

- a. The permittee is properly implementing the CCAA/SHA/HCP and is expected

to continue to do so for the term of the agreement. A CCAA/SHA/HCP is properly implemented if the permittee is and has been fully implementing the commitments and provisions in the CCAA/SHA/HCP, implementing agreement, and permit.

b. The species for which critical habitat is being designated is a covered species in the CCAA/SHA/HCP, or very similar in its habitat requirements to a covered species.

The recognition that the Services extend to such an agreement depends on the degree to which the conservation measures undertaken in the CCAA/SHA/HCP would also protect the habitat features of the similar species.

c. The CCAA/SHA/HCP specifically addresses that species' habitat and meets the conservation needs of the species in the planning area.

The proposed critical habitat designation for the sheepsnose includes areas that are covered by the following permitted plan providing for the conservation of the sheepsnose: the Columbia Pipeline Group Multi-Species Habitat Conservation Plan.

#### Columbia Pipeline Group Multi-Species Habitat Conservation Plan

In preparing this proposal, we have determined that lands associated with the Columbia Pipeline Group Multi-Species HCP within SHNO 11 (Big Sunflower River) for the sheepsnose are included within the boundaries of proposed critical habitat.

The Columbia Pipeline Group Multi-Species 50-year HCP (2013) extends across three Service regions (regions 3, 4, and 5) and 14 States to cover an area stretching from Louisiana northeastward to New York where Columbia Pipeline Group natural gas systems are in place. The lands covered by this HCP are tied to existing Columbia Pipeline Group facilities (e.g., pipelines, ancillary structures, and storage fields), with lands that fall within a 1-mile-wide corridor (i.e., ½ mile on either side of the centerline of a pipeline or existing ancillary company structure or building) being considered part of the coverage area. This HCP includes 43 species from nine taxonomic groups, with Columbia Pipeline Group requesting incidental take authorization for 10 of these species,

including the sheepsnose. Specifically, the HCP allows for take of up to 250.4 acres of sheepsnose habitat. Of the areas where impacts and potential take of sheepsnose may occur, the only location where the coverage area overlaps with proposed critical habitat is within Sunflower County, Mississippi, within SHNO 11 (Big Sunflower River). The HCP includes measures that, to the maximum extent practicable, avoid, minimize, and mitigate the impacts of any incidental take of the species through the following activities: avoiding or minimizing impacts to known or presumed occupied habitat (e.g., minimizing impacts to stream beds and banks, using trenchless pipeline installation); avoiding or minimizing impacts to sheepsnose (e.g., avoiding or minimizing the crushing, killing, and burying of the species); protecting and restoring riparian buffers associated with occupied habitat; and relocating and monitoring sheepsnose and other mussels within the assemblages that are impacted by a project to a suitable upstream or downstream site outside of the impact zone.

#### **Summary of Exclusions Considered Under 4(b)(2) of the Act**

In preparing this proposal, we have determined that no HCPs or other management plans for the rayed bean, snuffbox, and spectaclecase mussels currently exist, and the proposed designations do not include any Tribal lands or trust resources or any lands for which designation would have any economic or national security impacts. Therefore, we anticipate no impact on Tribal lands, partnerships, or HCPs from these proposed critical habitat designations. Therefore, as described above, we are not considering excluding any particular areas on the basis of the presence of conservation agreements or impacts to trust resources for the rayed bean, snuffbox, and spectaclecase mussels.

We have reason to consider excluding all of SHNO 11 (Big Sunflower River) under section 4(b)(2) of the Act from the final critical habitat designation for the sheepsnose given that both the species and this portion of critical habitat are covered by

the Columbia Pipeline Group Multi-Species HCP (56 rmi (90 rkm)).

In conclusion, for this proposed rule, we have reason to consider excluding the area identified above from the final designation for the sheepsnose based on other relevant impacts. We specifically solicit comments on the inclusion or exclusion of such areas. We also solicit comments on whether there are potential economic, national security, or other relevant impacts from designating any other particular areas as critical habitat, then as part of developing the final designations of critical habitat for all four species. As part of developing the final designations of critical habitat for these species, we will evaluate the information we receive regarding potential impacts from designating the area described above or any other particular areas, and we may conduct a discretionary exclusion analysis to determine whether to exclude those areas under the authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19. If we receive a request for exclusion of a particular area and after evaluation of supporting information we do not exclude, we will fully explain our decision in the final rule for this action.

## **Required Determinations**

### *Clarity of the Rule*

We are required by E.O.s 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments

should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

*Regulatory Planning and Review (Executive Orders 12866, 13563 and 14094)*

Executive Order 14094 amends and reaffirms the principles of E.O. 12866 and E.O. 13563 and states that regulatory analysis should facilitate agency efforts to develop regulations that serve the public interest, advance statutory objectives, and are consistent with E.O.s 12866, 13563, and 14094. Regulatory analysis, as practicable and appropriate, shall recognize distributive impacts and equity, to the extent permitted by law. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this proposed rule in a manner consistent with these requirements.

*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 whether 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 would be directly regulated if we adopt the proposed critical habitat 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 would be directly regulated by this rulemaking, the Service certifies that, if made final as proposed, the critical habitat designations will not have a significant economic impact on a substantial number of small entities.

In summary, we have considered whether the proposed designations would result in a significant economic impact on a substantial number of small entities. For the above reasons and based on currently available information, we certify that, if made final, the proposed critical habitat designations would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial 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 an action that (i) meets the definition of a “significant regulatory action” under E.O. 12866, as amended by E.O. 14094; 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 this proposed critical habitat designation 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 proposed 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 areas 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 proposed 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 proposed rule would 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) We do not believe that this rulemaking would significantly or uniquely affect small governments because it would 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 Services 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 for the proposed designations of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase, and it concludes that, if adopted, these designations of critical habitat 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 proposed 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 proposed 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, the proposed 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 proposed 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 rulemaking would not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this proposed rule identifies the physical or biological features essential to the conservation of the species. The proposed areas of critical habitat are presented on maps, and the proposed 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 rulemaking 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 document 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 and/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/or updated information about these species and/or their habitats. No Tribes responded to our information request. No portions of the

proposed designations overlap with Tribal lands. We will continue to work with relevant Tribal entities during the development of a final rule for the designation of critical habitat for the rayed bean, sheepnose, snuffbox, and spectaclecase. We have determined that no Tribal lands fall within the boundaries of the proposed critical habitat for these species, so no Tribal lands would be affected by the proposed designation.

### **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 Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Illinois-Iowa, Minnesota-Wisconsin, and Ohio Ecological Services Field Offices.

### **List of Subjects in 50 CFR Part 17**

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

### **Proposed Regulation Promulgation**

Accordingly, we propose to 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, in paragraph (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). <sup>CH</sup>
* * * * *	* * *			
Sheepnose	<i>Plethobasus cyphus</i>	Wherever found	E	77 FR 14914, 3/13/2012; 50 CFR 17.95(f). <sup>CH</sup>
* * * * *	* * *			
Snuffbox (mussel)	<i>Epioblasma triquetra</i>	Wherever found	E	77 FR 8632, 2/14/2012; 50 CFR 17.95(f). <sup>CH</sup>
Spectaclecase	<i>Cumberlandia monodonta</i>	Wherever found	E	77 FR 14914, 3/13/2012; 50 CFR 17.95(f). <sup>CH</sup>
* * * * *	* * *			

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 “Georgia Pigtoe (*Pleurobema hanleyianum*)”.

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, Venango, and Warren 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 and its host fishes (e.g., sand and gravel substrate with moderate flow, 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).

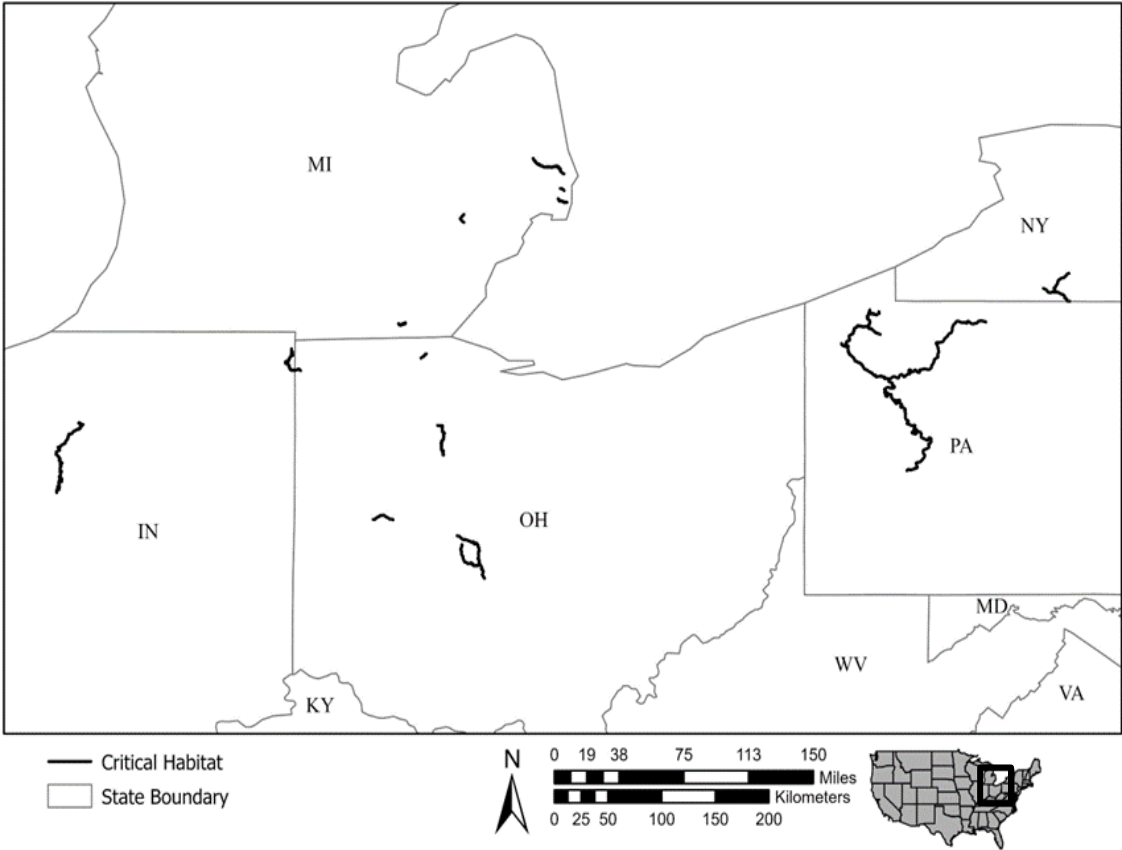
(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

(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.

(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.

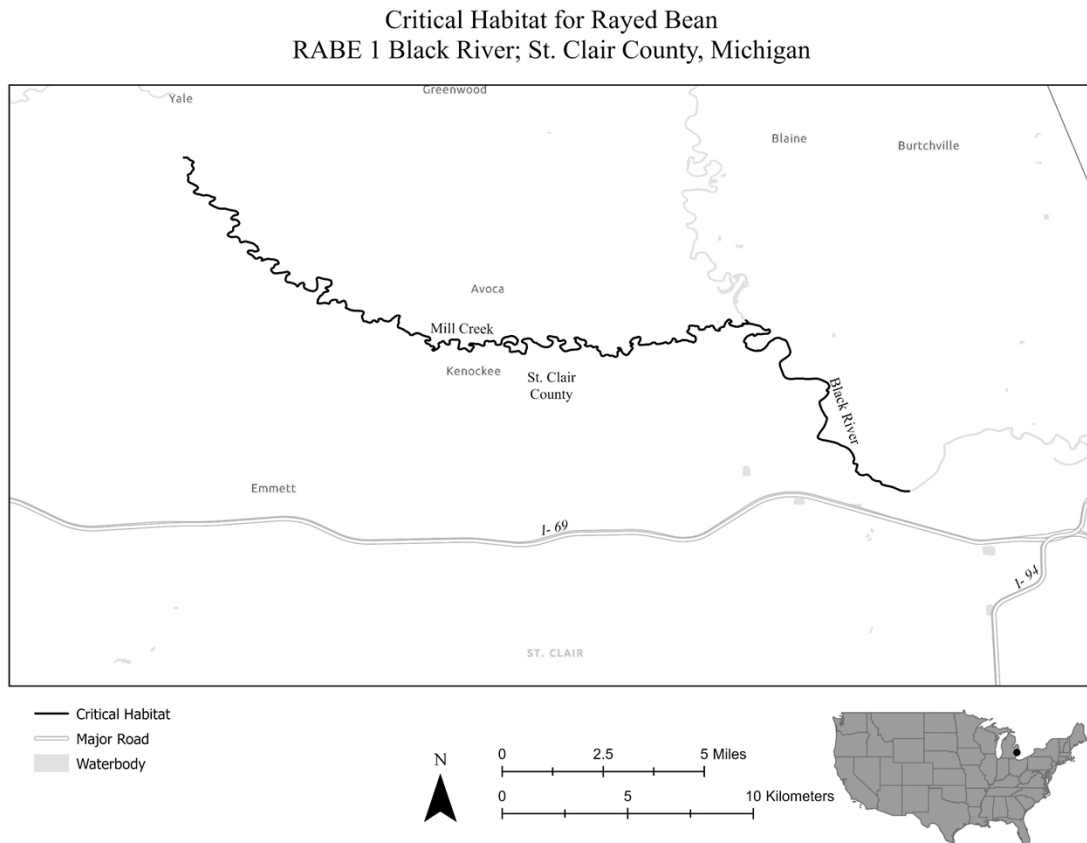
(i) RABE 1 consists of 32 river miles (rmi) (51 river kilometers (rkm)) of the Black River and Mill Creek in St. Clair County, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(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.

(ii) Map of RABE 1 follows:

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

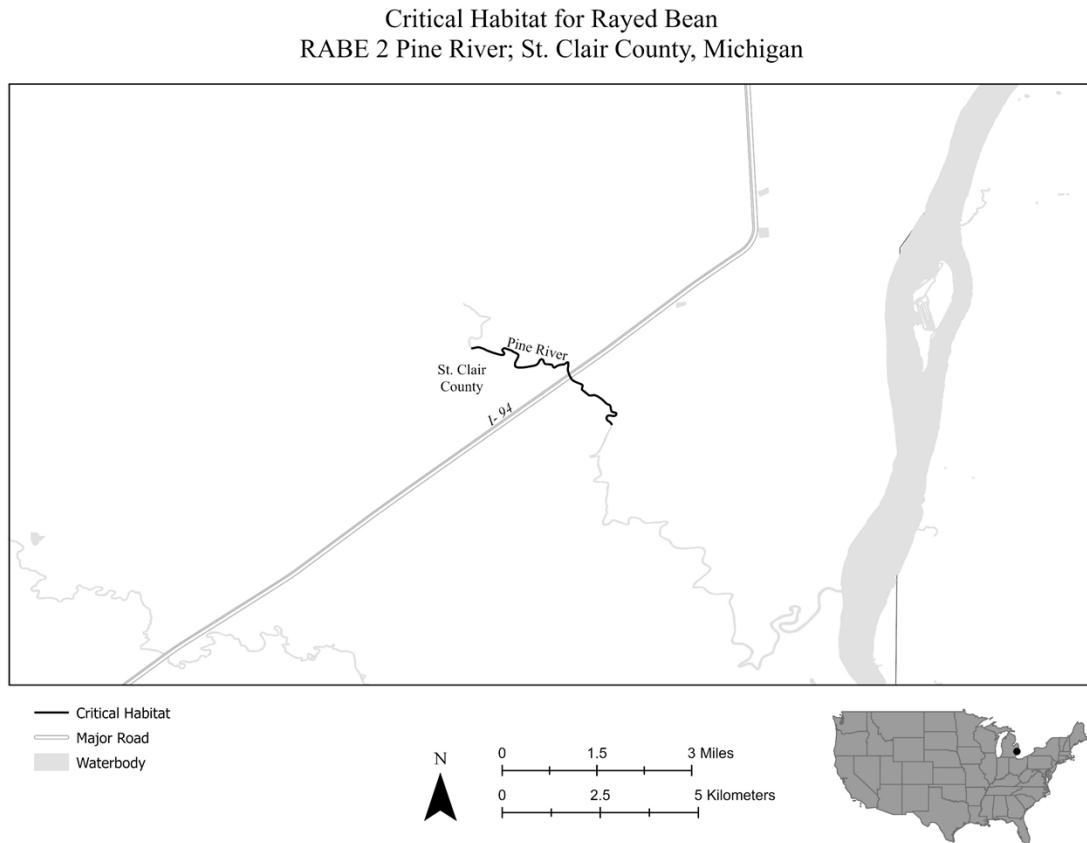


(7) RABE 2: Pine River; St. Clair County, Michigan.

(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)



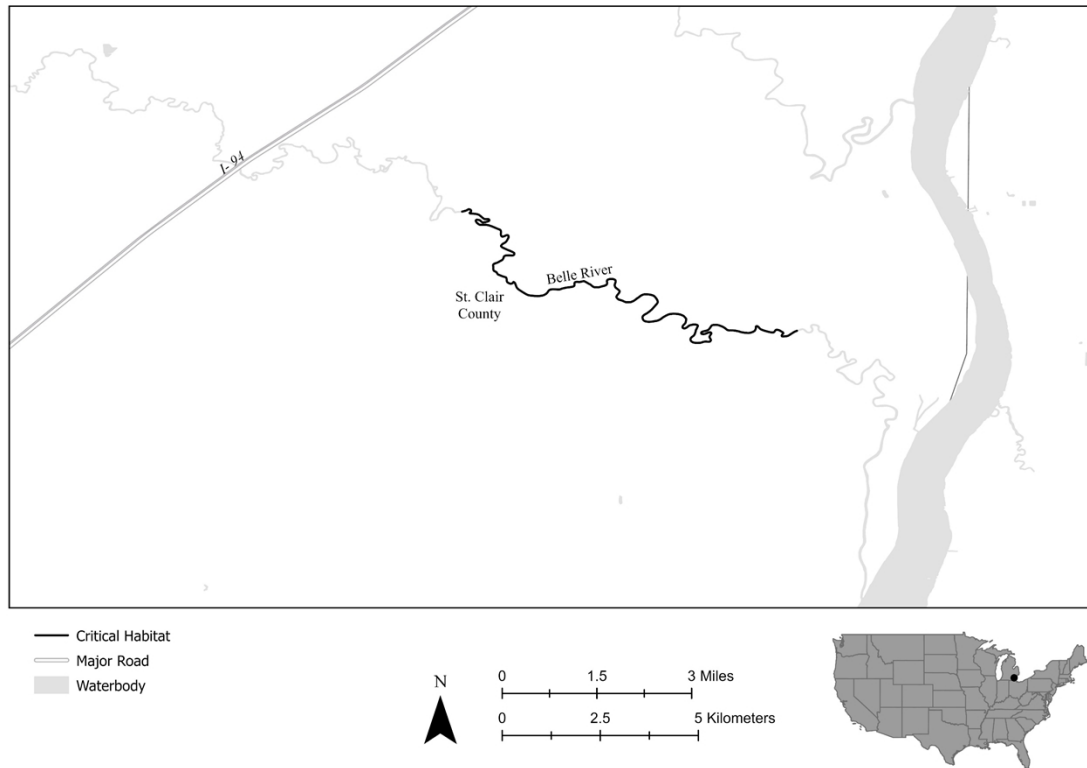
(8) RABE 3: Belle River; St. Clair County, Michigan.

(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



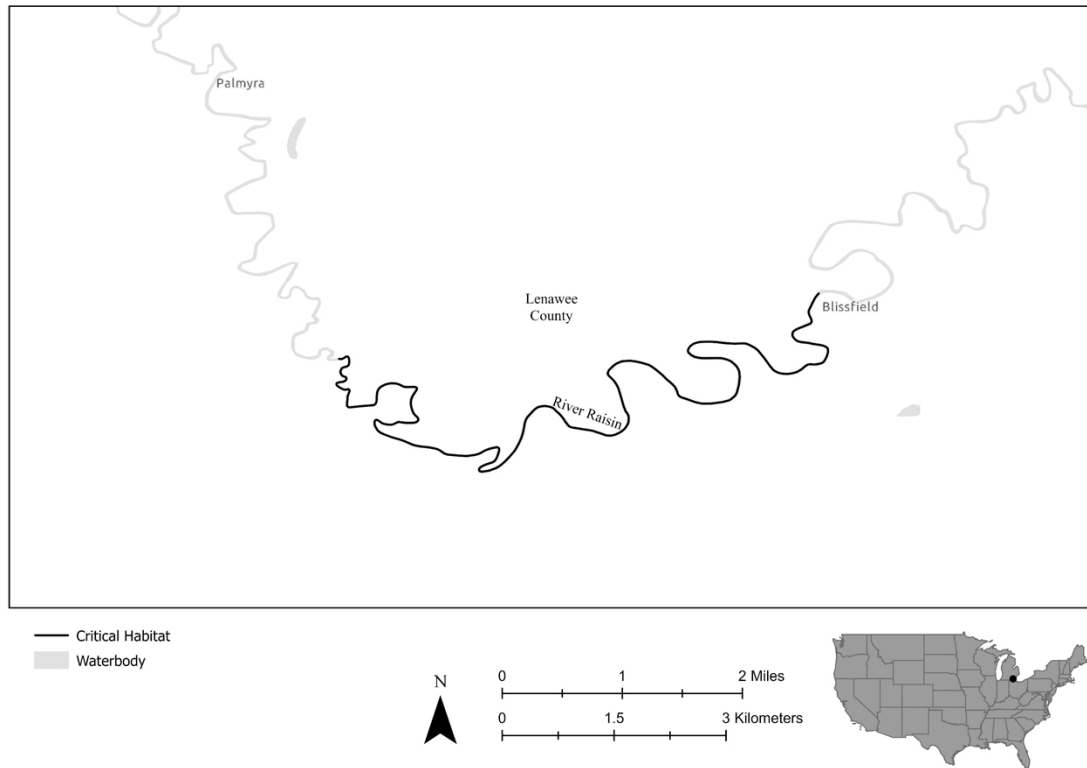
(9) RABE 4: River Raisin; Lenawee County, Michigan.

(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 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



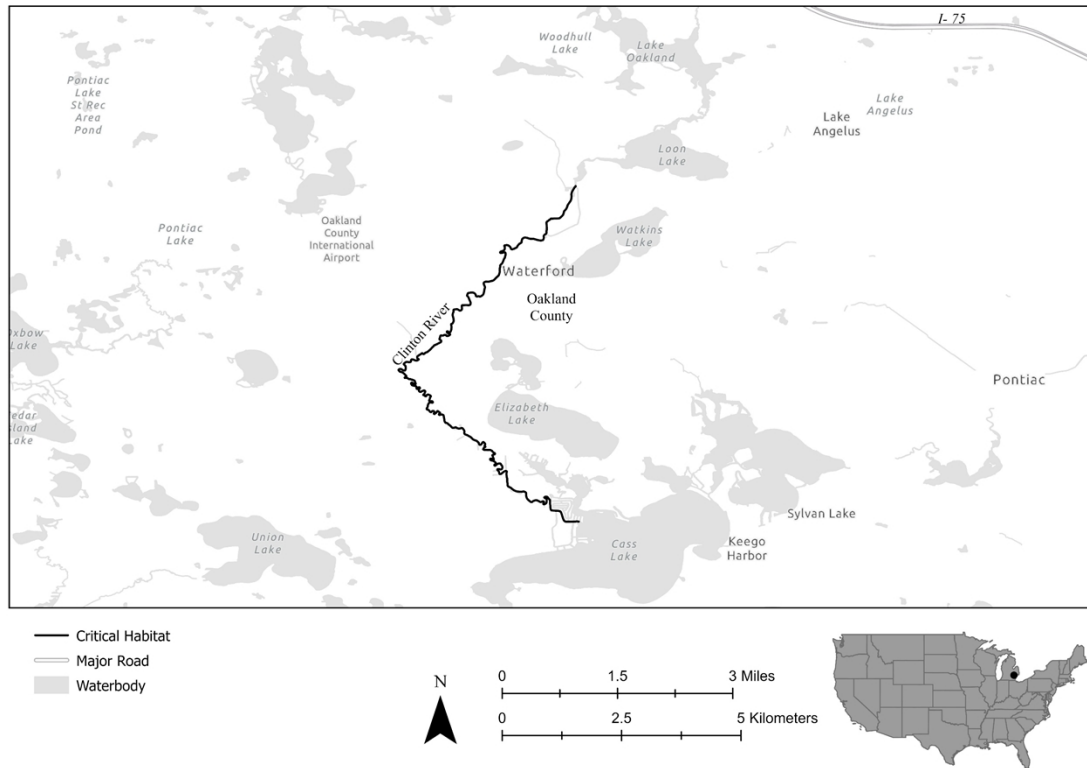
(10) RABE 5: Clinton River; Oakland County, Michigan.

(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 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.

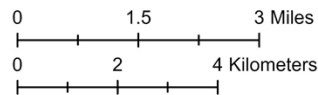
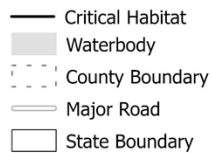
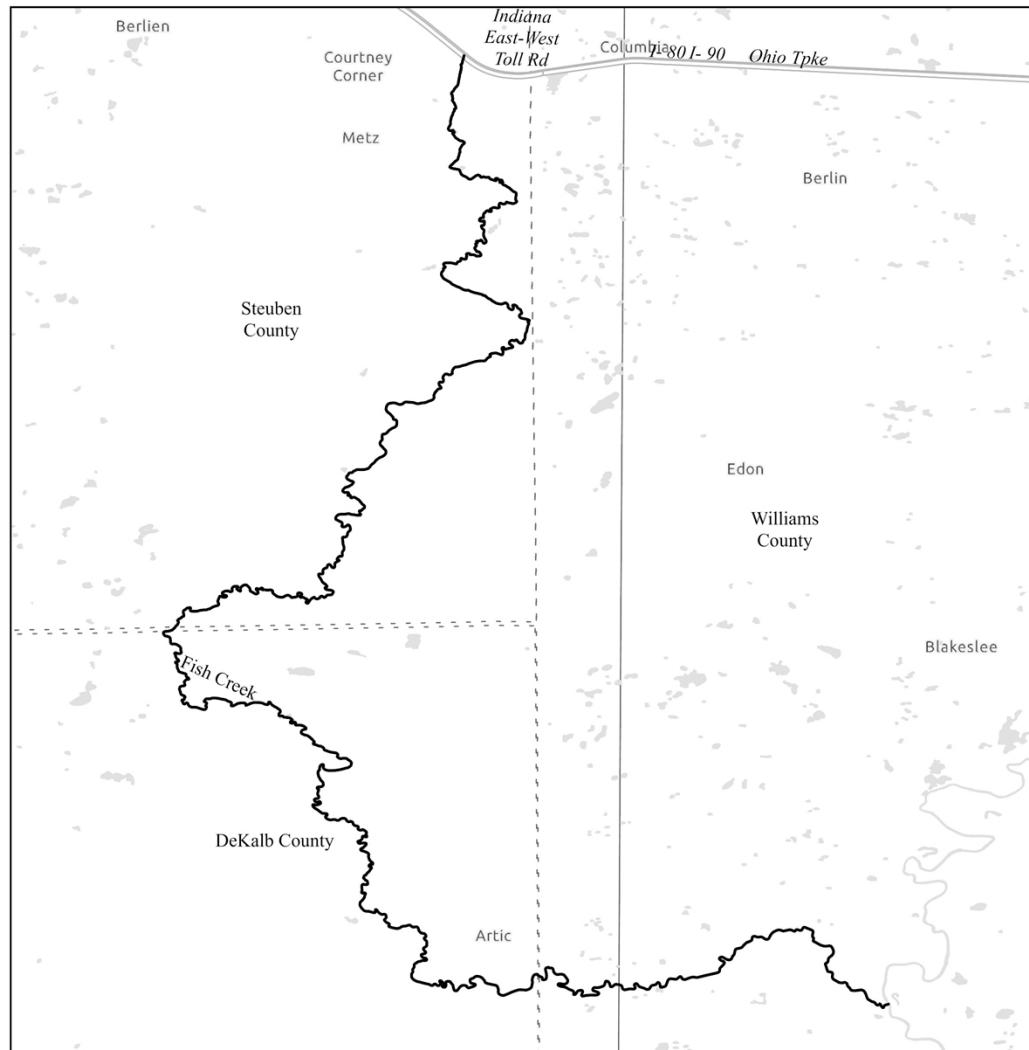
(i) RABE 6 consists of 31 rmi (50 rkm) of Fish Creek in Steuben and DeKalb Counties, Indiana, and Williams County, Ohio. This unit extends from the Ohio Turnpike Interstate 80/Interstate 90 Bridge in Steuben County, Indiana, downstream to the confluence of Fish Creek with St. Joseph River north of Edgerton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



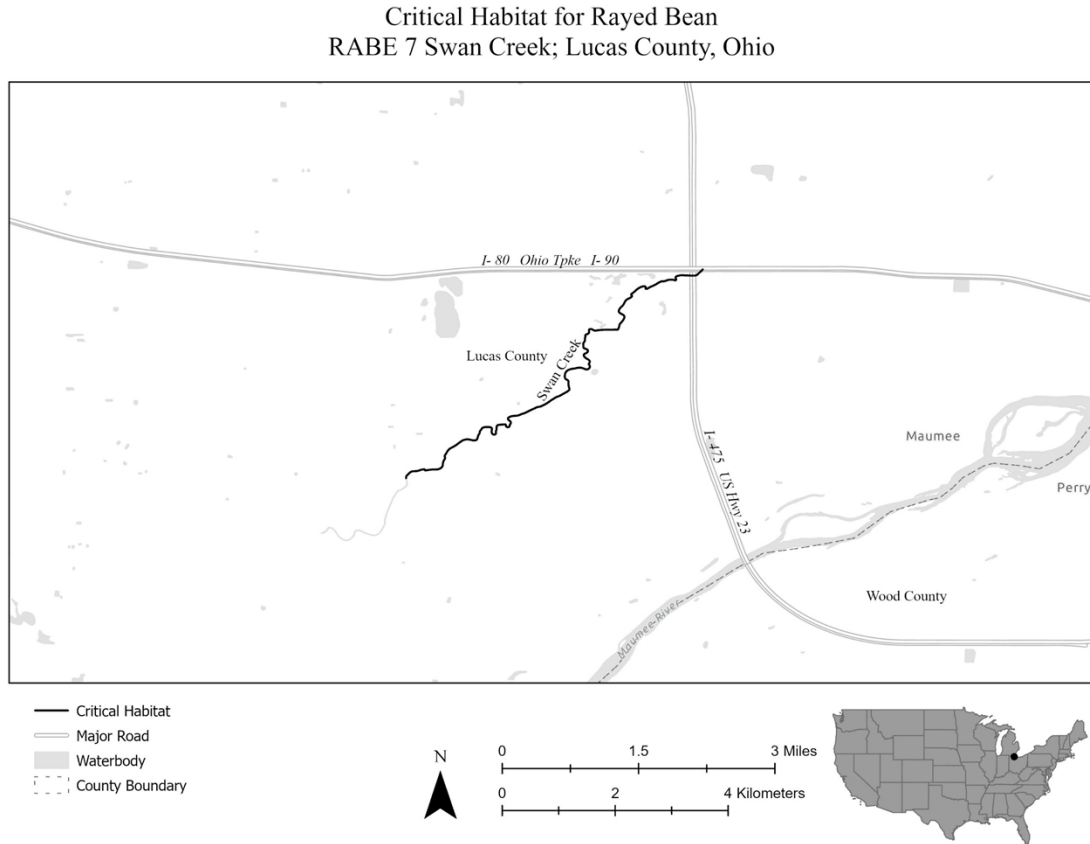
(12) RABE 7: Swan Creek; Lucas County, Ohio.

(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 Maumee downstream to the Ohio Turnpike Interstate 80/Interstate 90 Bridge in 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)



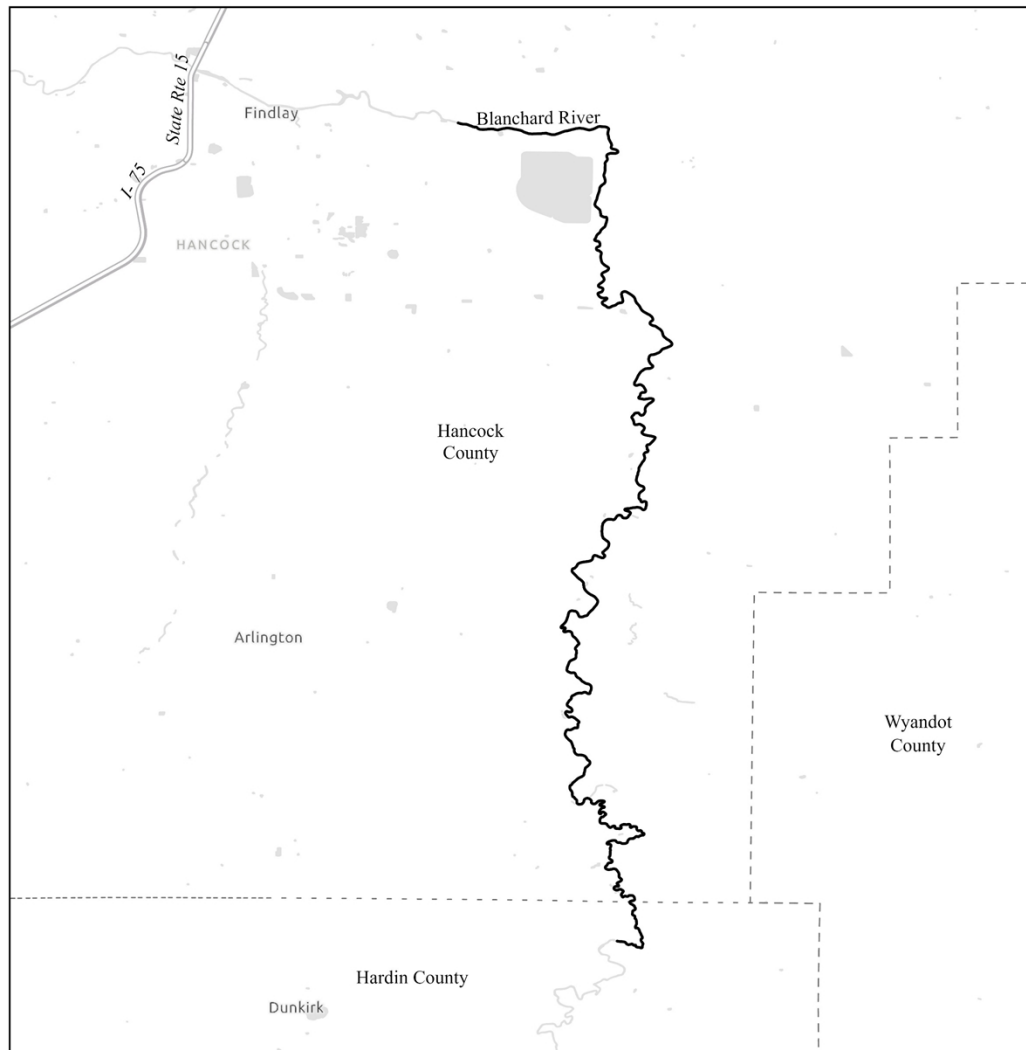
(13) RABE 8: Blanchard River; Hardin and Hancock Counties, Ohio.

(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 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



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

(i) RABE 9 consists of 32 rmi (52 rkm) of the Allegheny River, Olean Creek, Oil Creek, and Oswayo Creek in Allegany and Cattaraugus Counties, New York, and

McKean County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

(A) The Allegheny River portion of this unit includes 13 rmi (21 rkm) in Cattaraugus County, New York, from the confluence of Oswayo Creek just west of Portville to the Interstate 86 Bridge in Allegany.

(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 Hinsdale downstream to the confluence with Allegheny River in Olean.

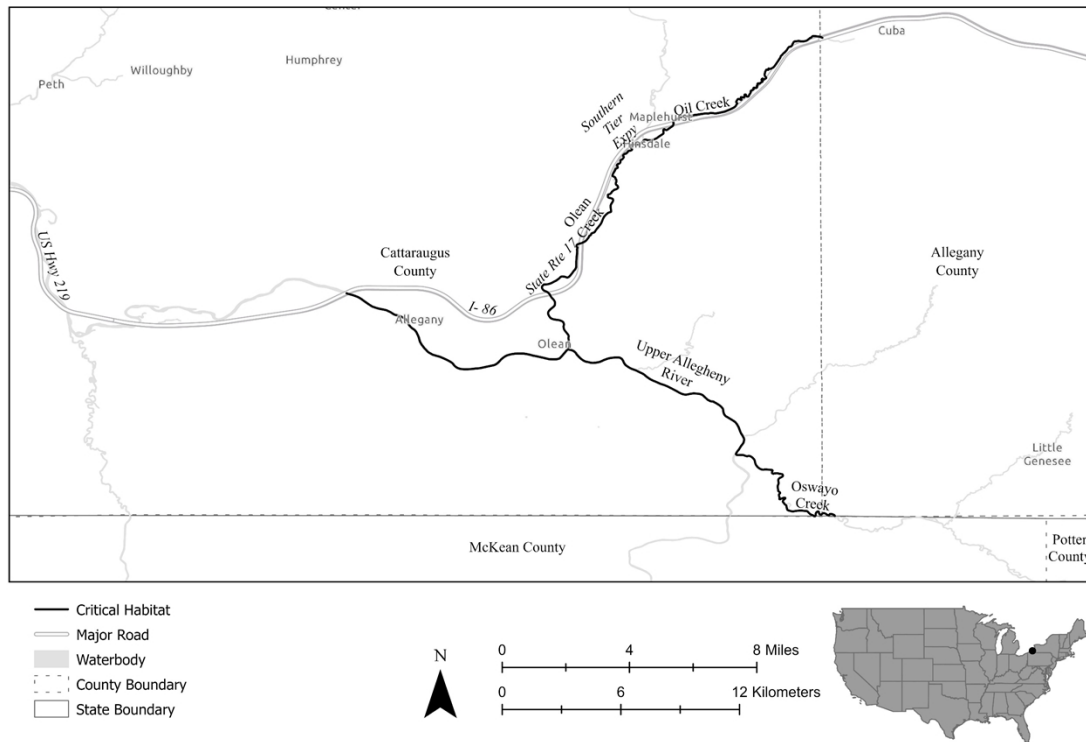
(C) The Oil Creek portion of this unit includes 7 rmi (11 rkm) from the Interstate 86 Bridge near the Cattaraugus County/Allegany County line in New York downstream to the confluence with Olean Creek in Hinsdale (Cattaraugus County, New York).

(D) The Oswayo Creek portion of this unit includes 4 rmi (6 rkm) from Pennsylvania/New York State Line in McKean County, Pennsylvania, and Allegany County, New York, downstream to the confluence with Allegheny River just west of Portville (Cattaraugus County, New York).

(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 County,  
Pennsylvania



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

(i) RABE 10 consists of 169 rmi (272 rkm) of the Allegheny River in Armstrong, Butler, Clarion, Forest, Venango, and Warren Counties, Pennsylvania. This unit extends from the Kinzua Dam in Warren County, Pennsylvania, downstream to Lock and Dam Number 5 in Armstrong County, Pennsylvania. The unit includes the river channel up to the ordinary high-water mark.

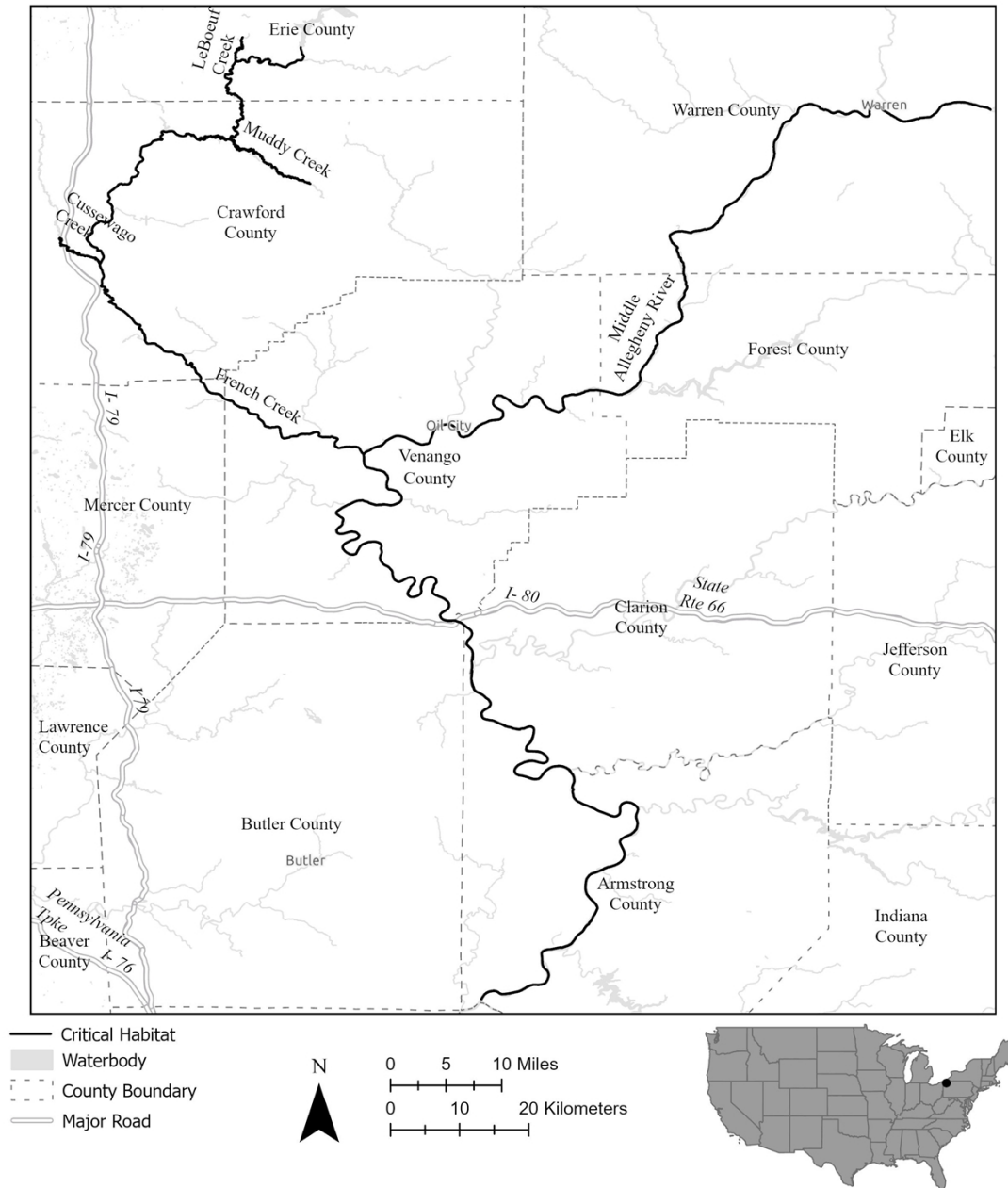
(ii) Map of RABE 10 follows:

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, and Warren 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 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 Little Cooley downstream to the confluence with French Creek east of Cambridge Springs.

(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 Meadville.

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

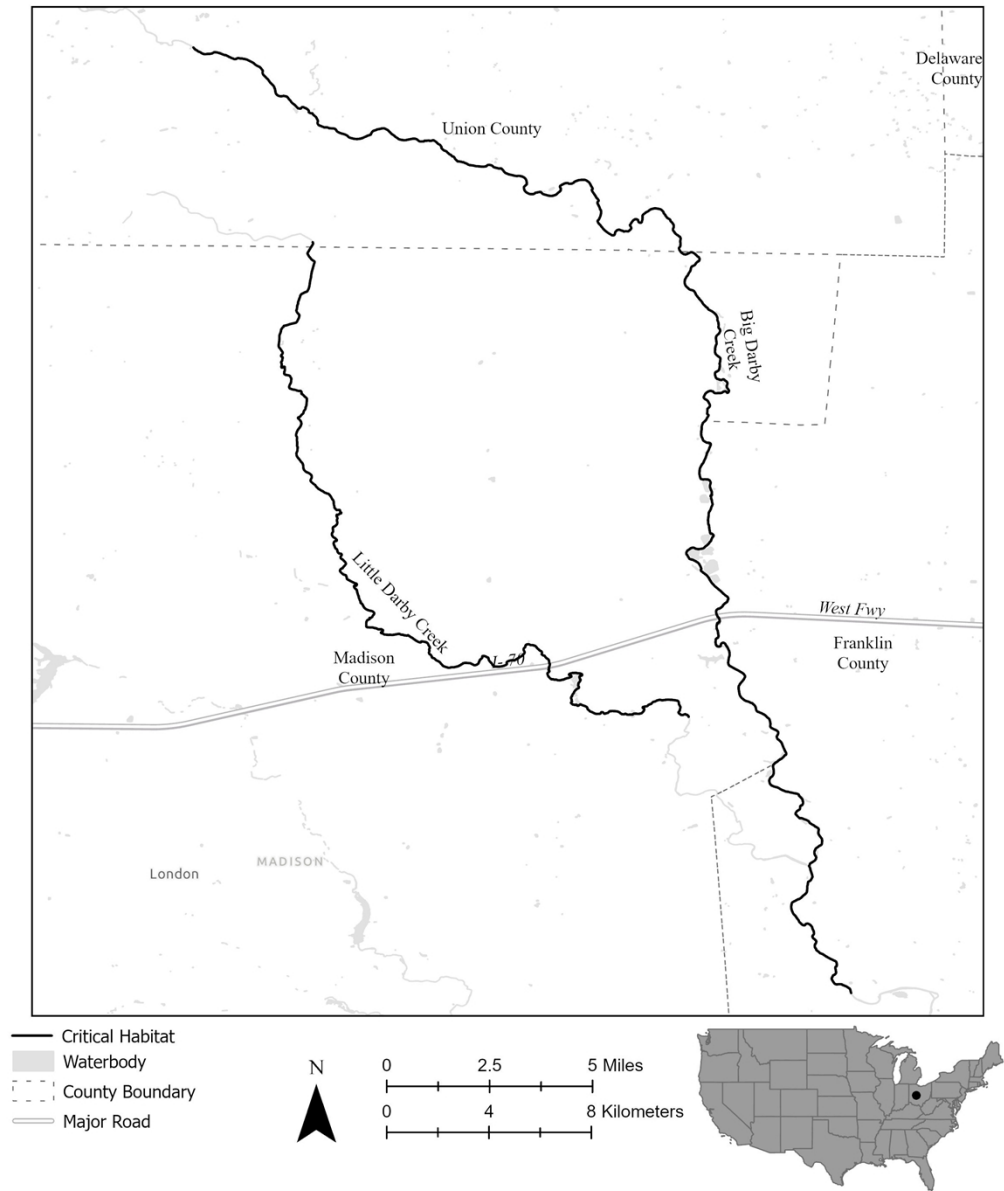
(17) RABE 12: Little Darby Creek; Madison and Union Counties, Ohio.

(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 Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near 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



(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 Milford Center (Union County, Ohio) downstream to the State Route 665 Bridge (London Groveport Road) by 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.

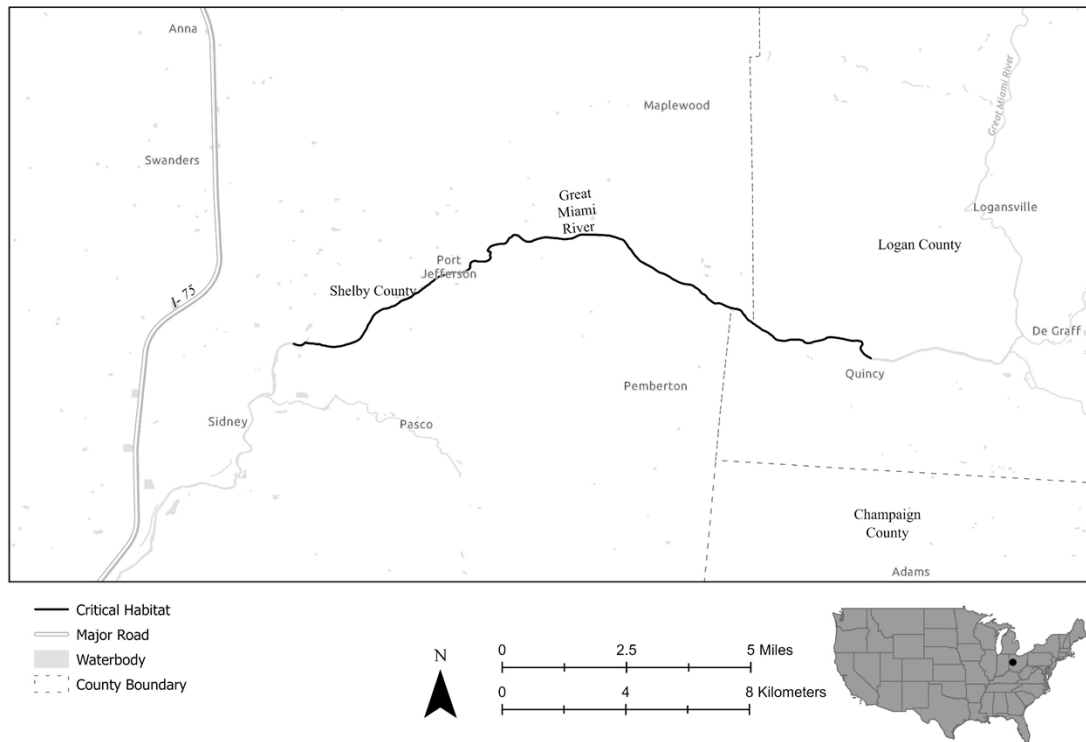
(i) RABE 14 consists of approximately 11 rmi (18 rkm) of the Great Miami River in Logan and Shelby Counties, Ohio. This unit extends from the dam at Riverside Park in Quincy (Logan County, Ohio) downstream to the Route 47 Bridge (Riverside Drive) in Sidney (Shelby County, Ohio). The unit includes the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



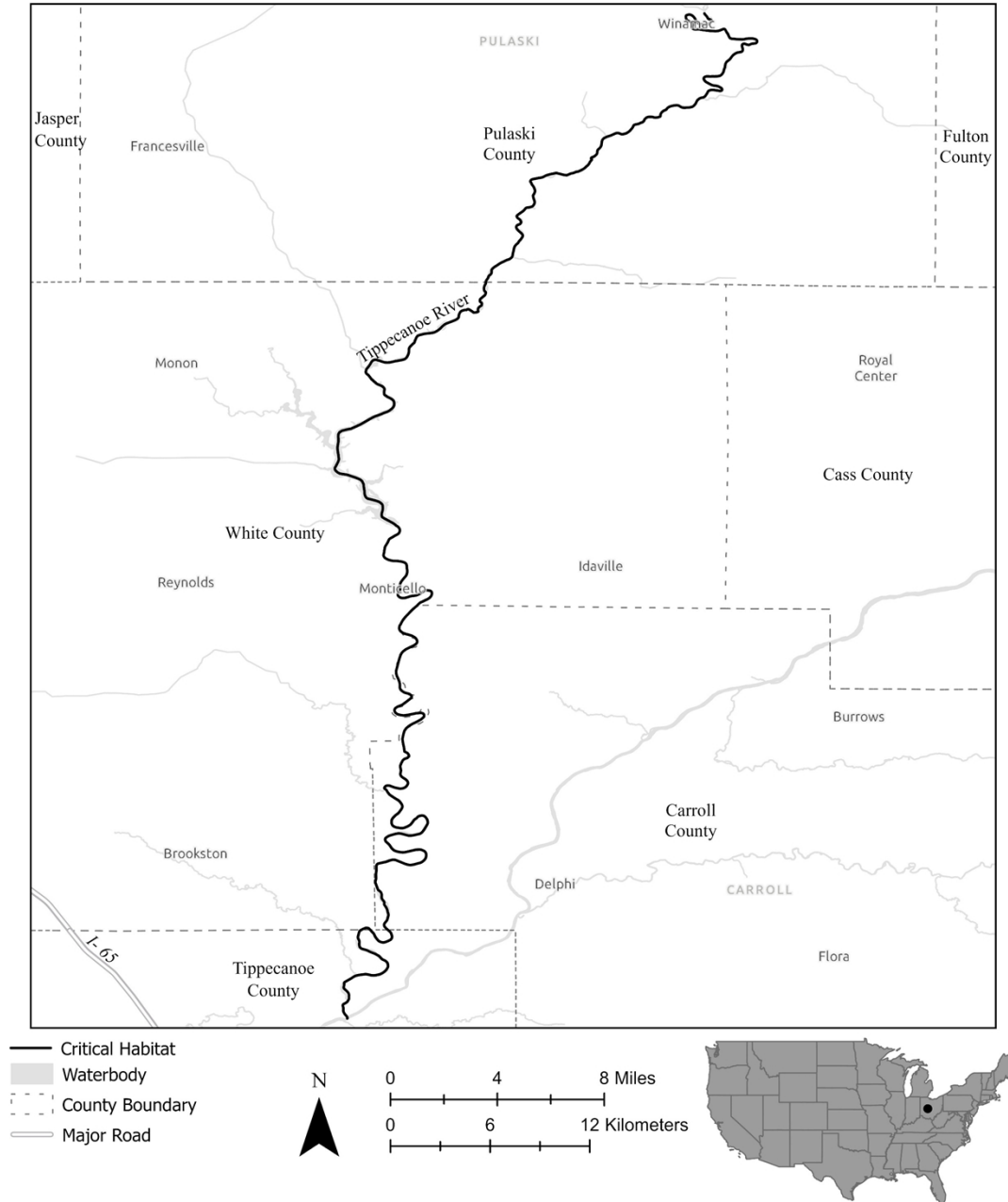
(20) RABE 15: Tippecanoe River; Carroll, Pulaski, Tippecanoe, and White Counties, Indiana.

(i) RABE 15 consists of 65 rmi (105 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. The unit extends from the State Highway 14 Bridge near Winamac (Pulaski County, Indiana) downstream to the confluence of the Tippecanoe River with the Wabash River northeast of Battle Ground (Tippecanoe County, Indiana), excluding Lakes Shafer and Freeman and the stream reach between the two lakes. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of RABE 15 follows:

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

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



\* \* \* \* \*

## 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 (e.g., sand and gravel substrate with moderate flow, 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.

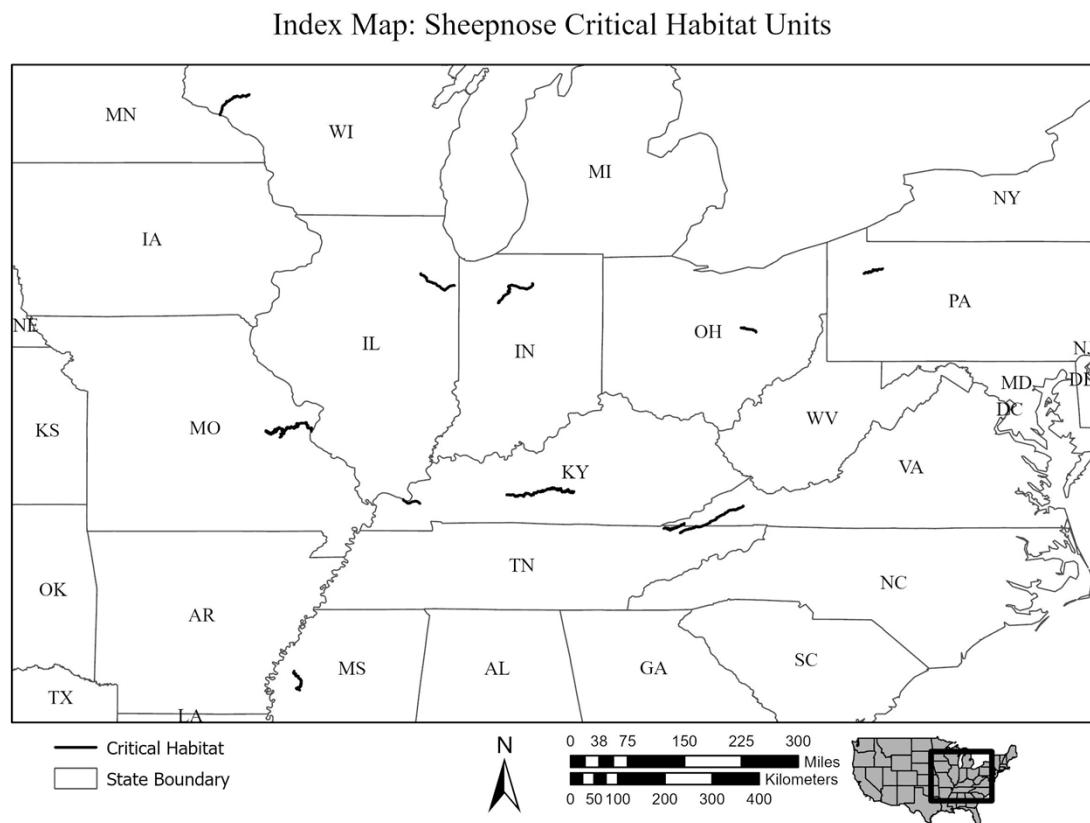
(iv) The presence and abundance of host fishes necessary for recruitment of sheepsnose (mimic shiner (*Notropis volucellus*) and sauger (*Sander canadensis*)).

(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

(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.

(5) Index map follows:

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



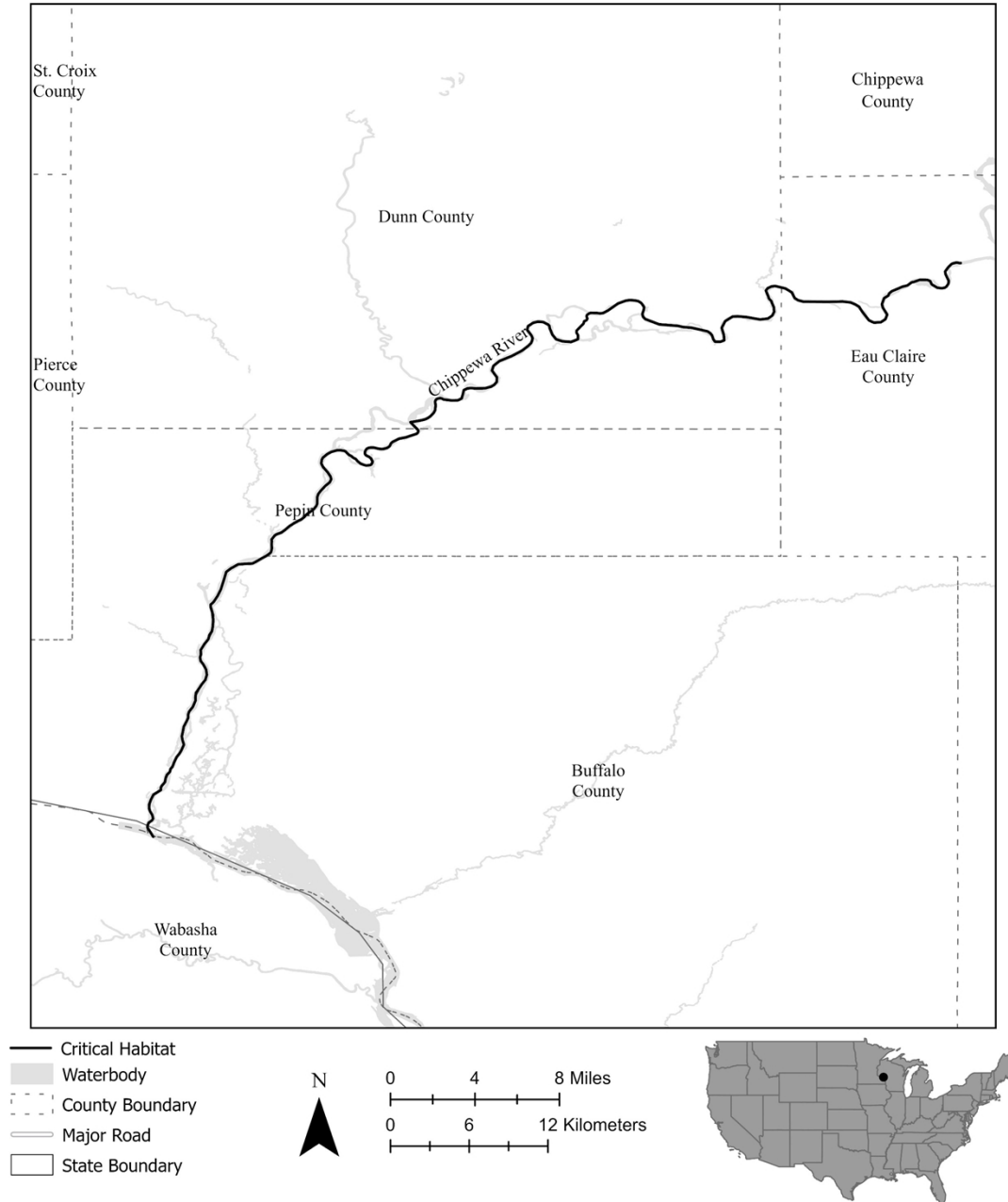
(6) SHNO 1: Lower Chippewa River; Buffalo, Dunn, Eau Claire, and Pepin, Counties, Wisconsin.

(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 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.

(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



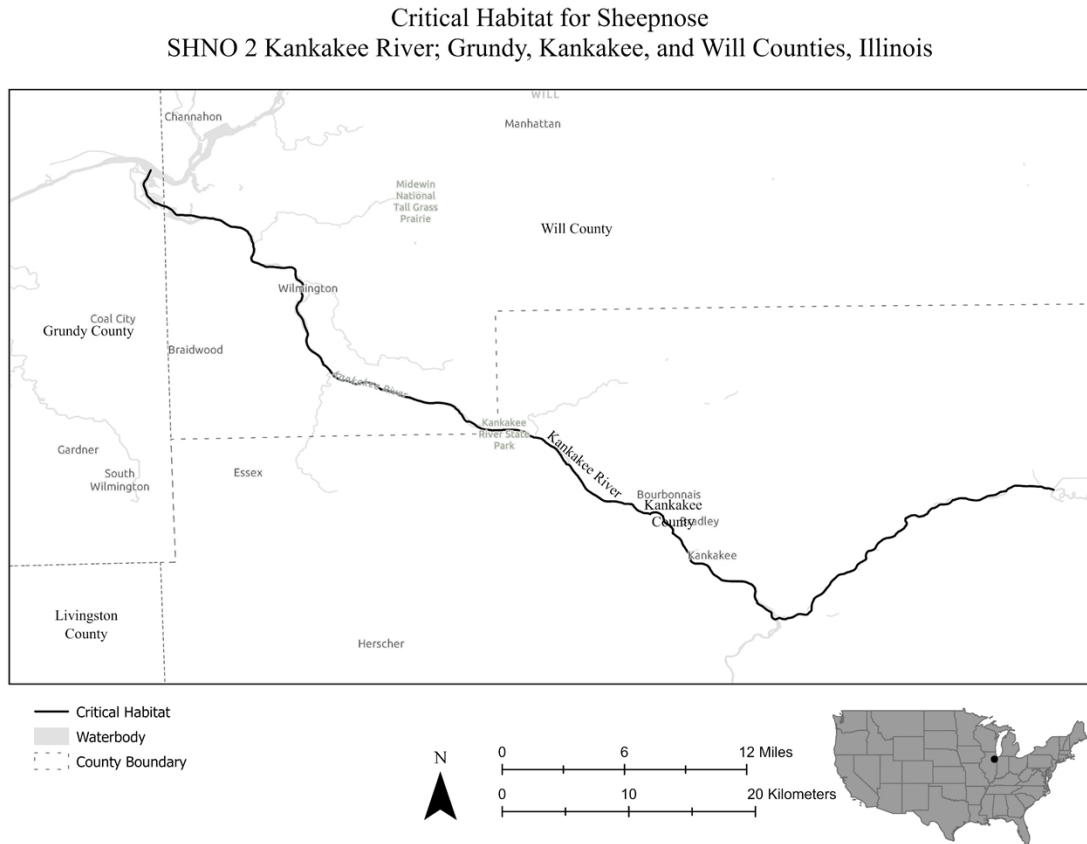
(7) SHNO 2: Kankakee River; Grundy, Kankakee, and Will Counties, Illinois.

(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.

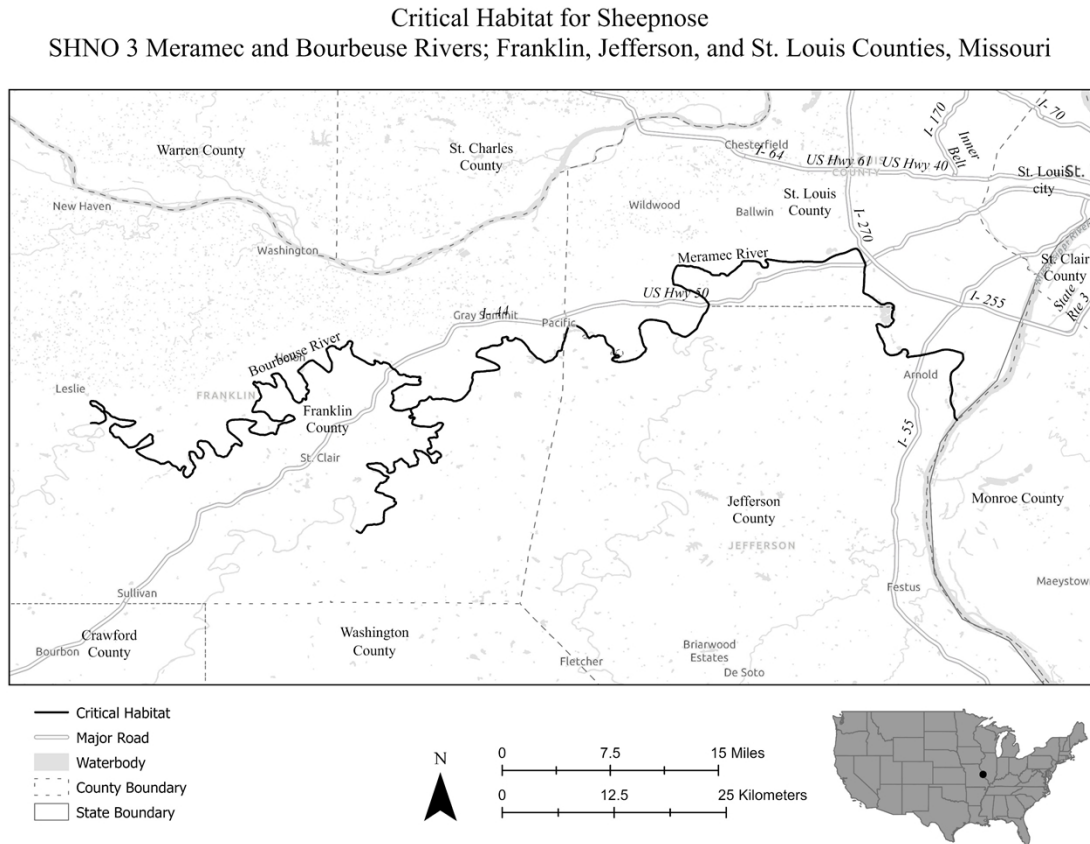
(i) SHNO 3 consists of 153 rmi (246 rkm) of the Meramec and Bourbeuse Rivers in Franklin, Jefferson, and Saint Louis Counties, Missouri. The unit includes the river channel up to the ordinary high-water mark.

(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)



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

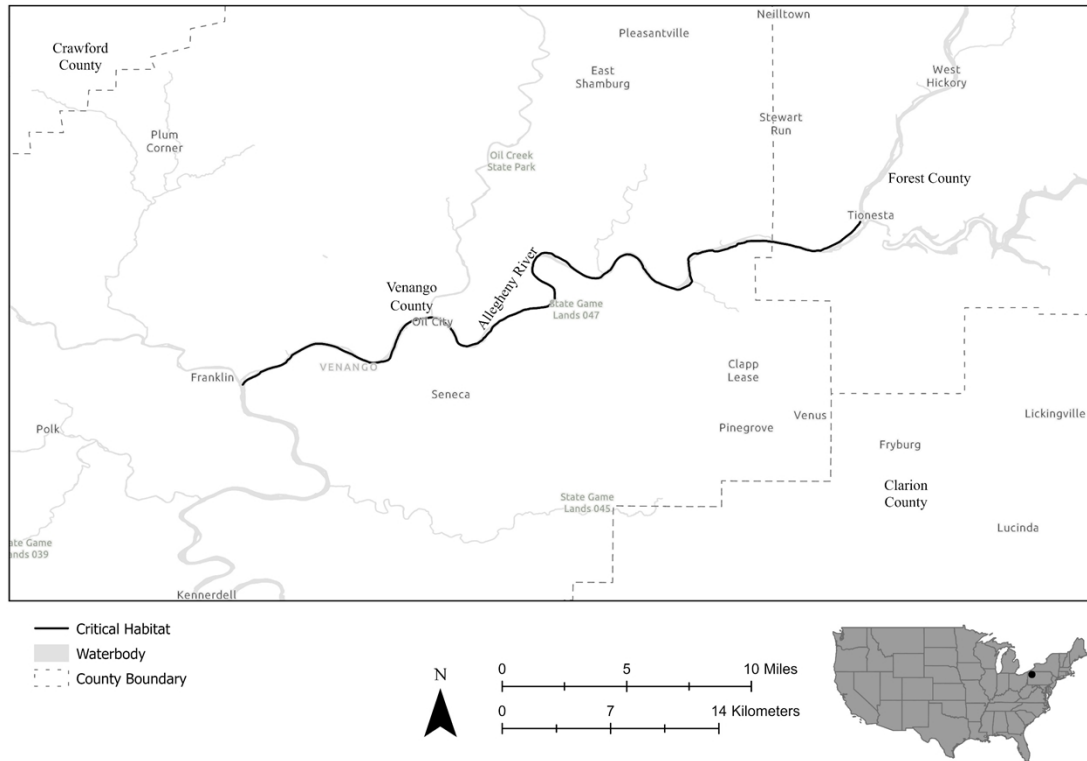
(i) SHNO 4 consists of 28 rmi (45 rkm) of the Allegheny River in Forest and Venango Counties, Pennsylvania. This unit extends from the confluence of the Allegheny River with Tionesta Creek (Forest County, Pennsylvania) downstream to its confluence with French Creek (Venango County, Pennsylvania). The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



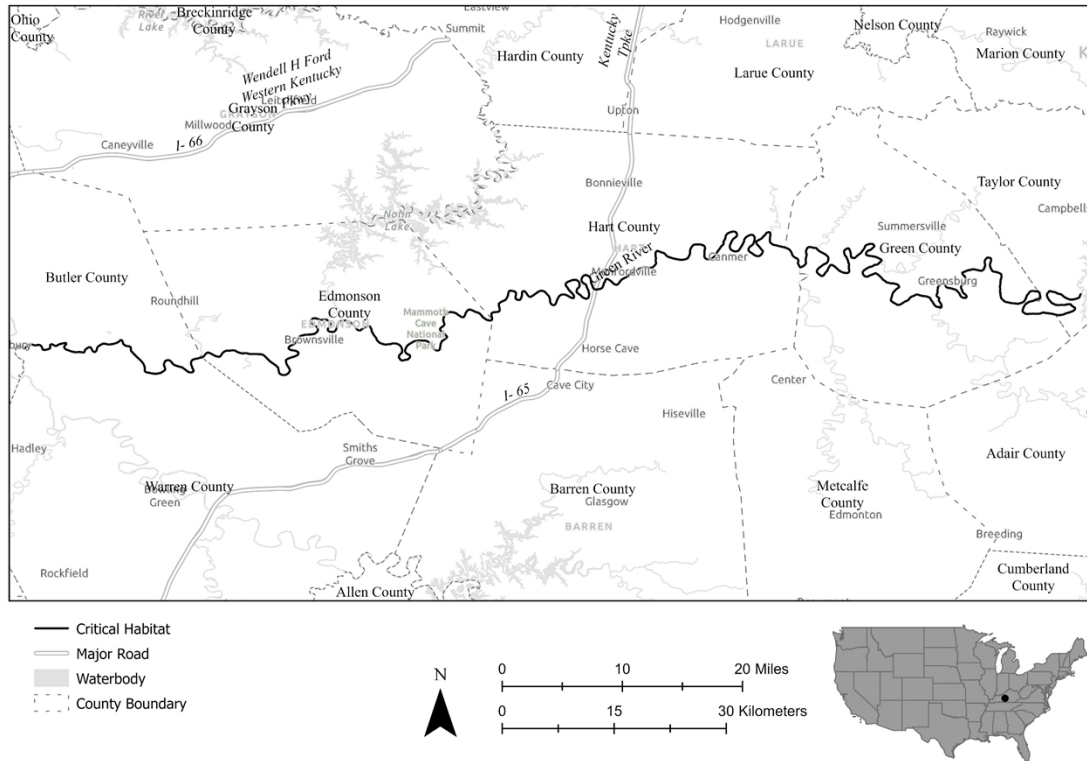
(10) SHNO 5: Upper Green; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky.

(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



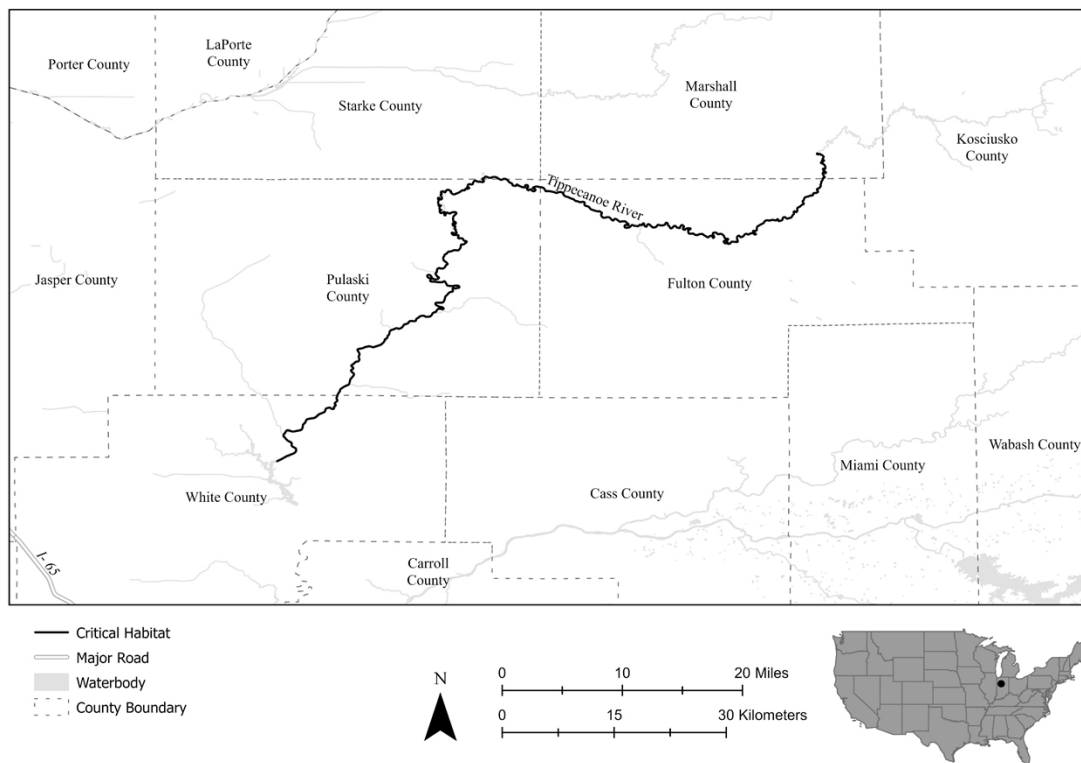
(11) SHNO 6: Tippecanoe River; Fulton, Marshall, Pulaski, Starke, and White Counties, Indiana.

(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



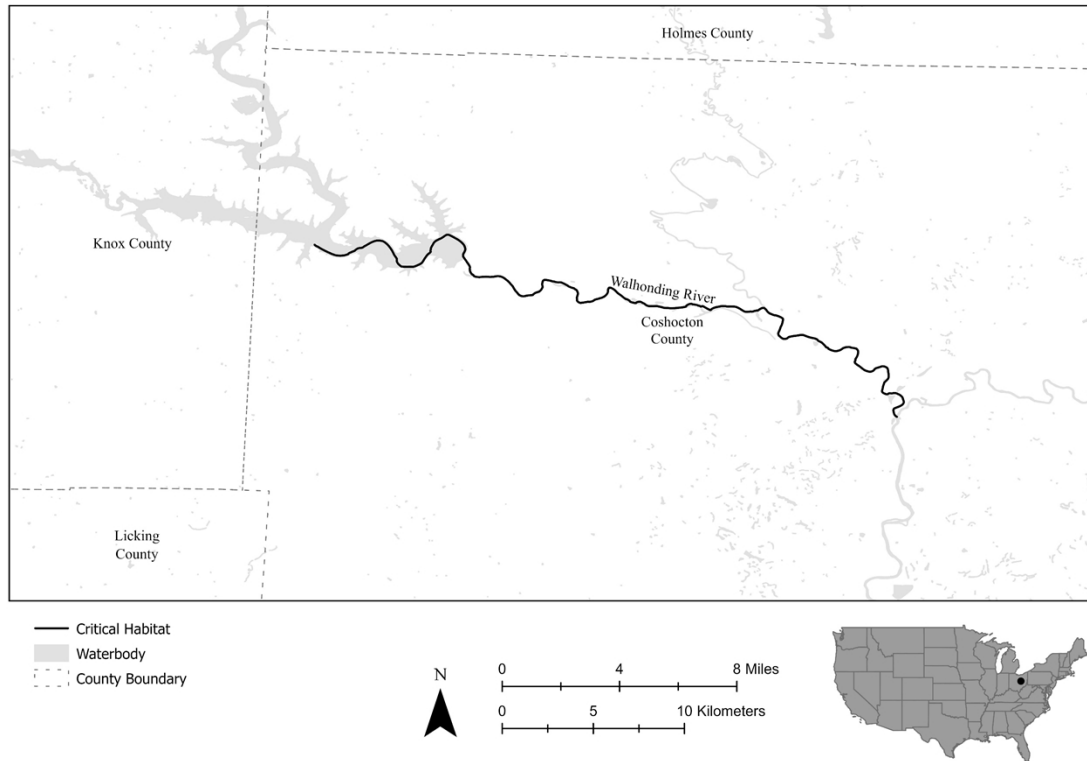
(12) SHNO 7: Walhonding River; Coshocton County, Ohio.

(i) SHNO 7 consists of 24 rmi (38 rkm) of the Walhonding River in Coshocton County, Ohio. This unit extends from the confluency of the Kokosing River and the Mohican River at 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



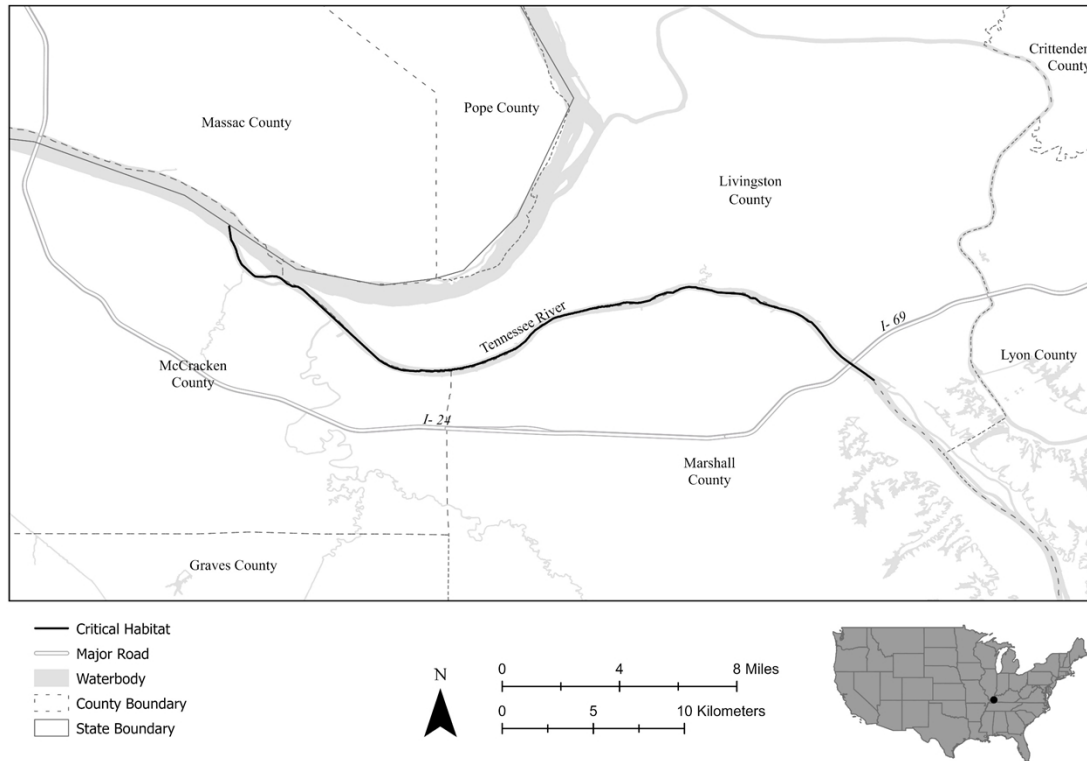
(13) SHNO 8: Lower Tennessee River; Livingston, Marshall, and McCracken Counties, Kentucky.

(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



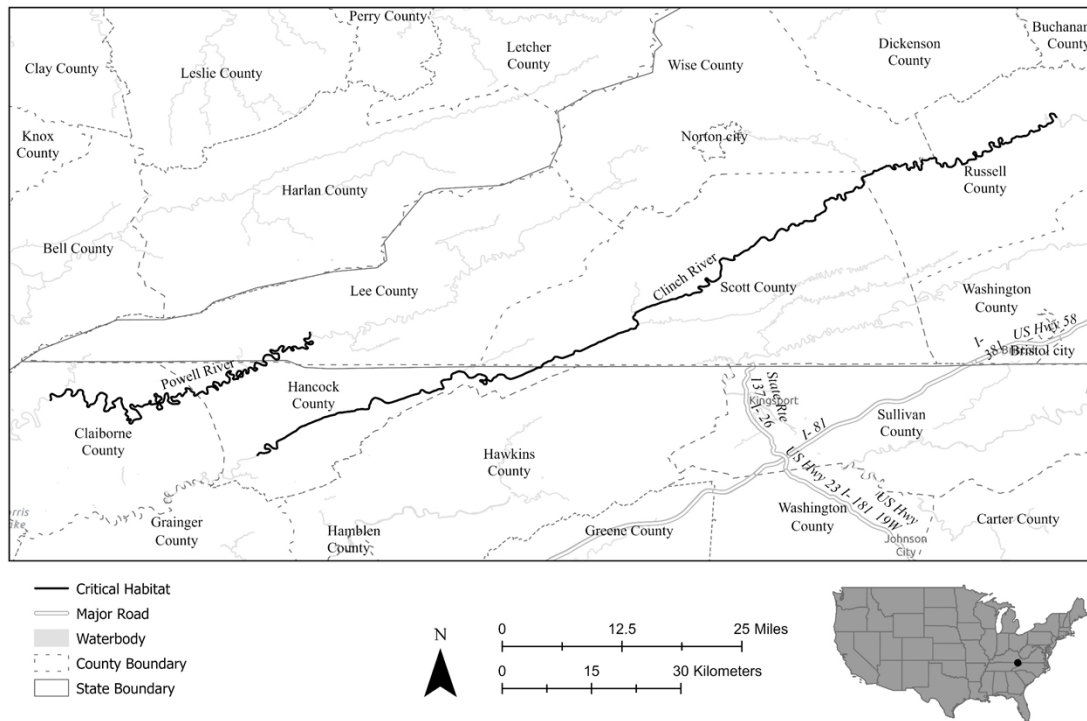
(14) SHNO 9: Upper Clinch River; Russell, Scott, and Wise Counties, Virginia, and Hancock County, Tennessee.

(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.

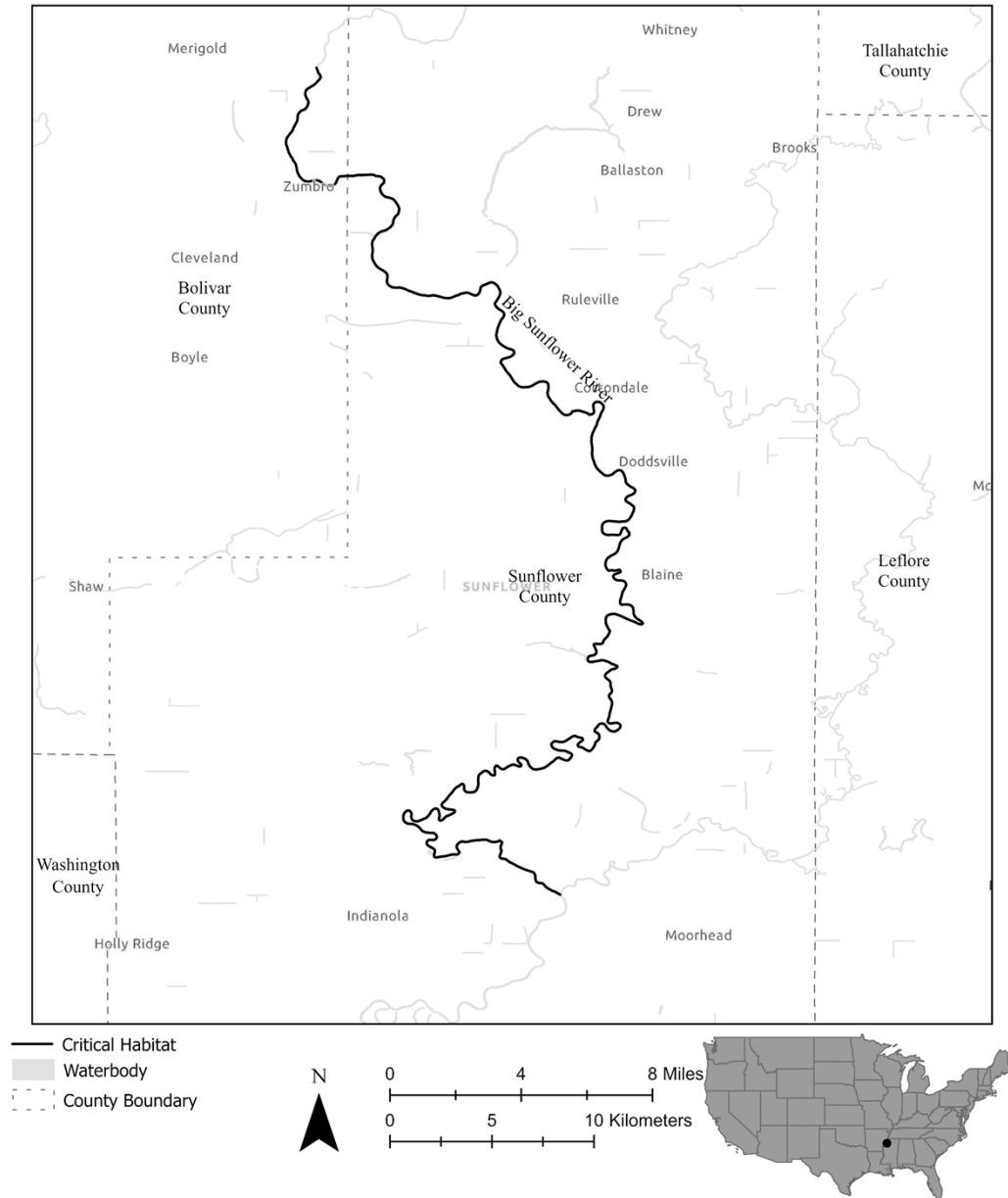
(i) SHNO 11 consists of 56 rmi (90 rkm) of the Big Sunflower River in Bolivar and Sunflower Counties, Mississippi. This unit begins where Merigold-Drew Road crosses the Big Sunflower River (Bolivar County, Mississippi) and extends downstream

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, and Union Counties, Ohio; Crawford, Erie, Lebanon, 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, Wirt, and Wood 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 and its host fishes (e.g., sand and



gravel substrate with moderate flow, 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 snuffbox (logperch (*Percina caprodes*), and darter and sculpin species).

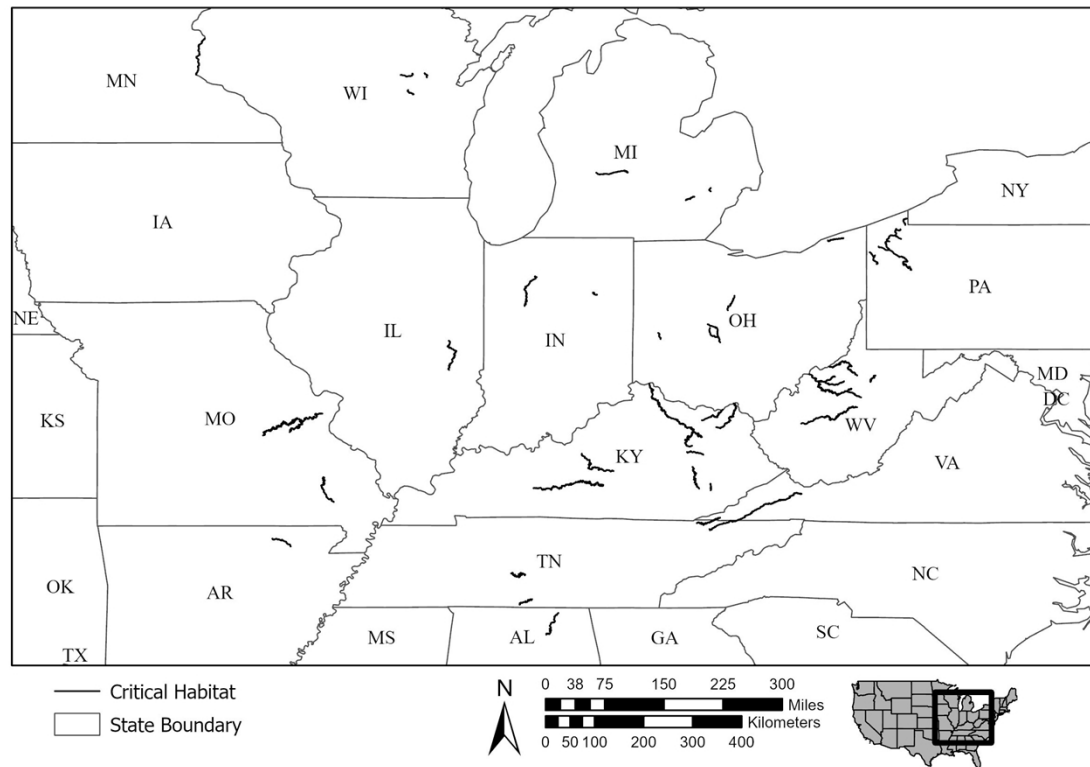
(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

(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.

(5) Index map follows:

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

### Index Map: Snuffbox Critical Habitat Units



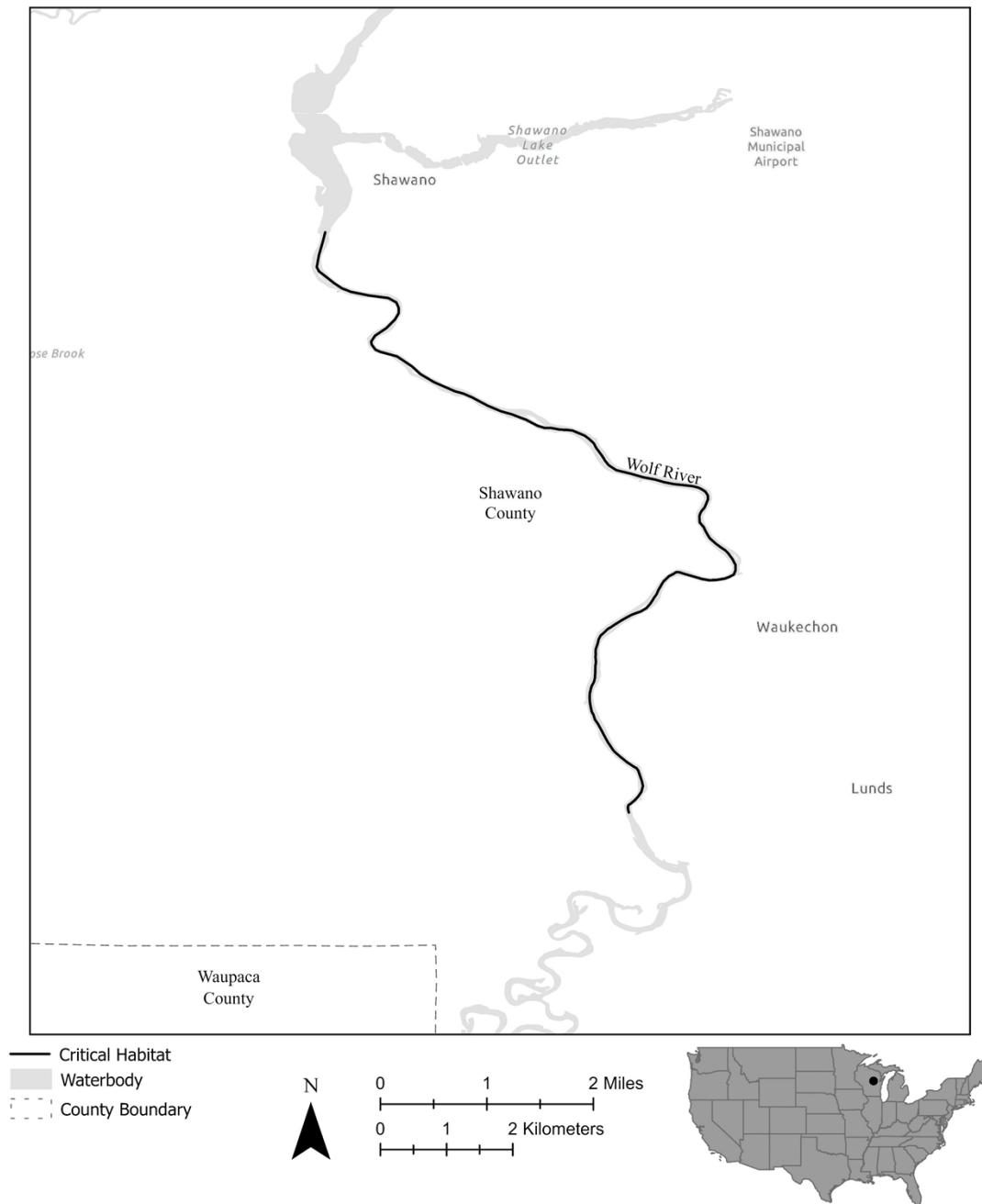
(6) SNBO 1: Wolf River; Shawano County, Wisconsin.

(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. The unit includes the river channel up to the ordinary high-water mark.

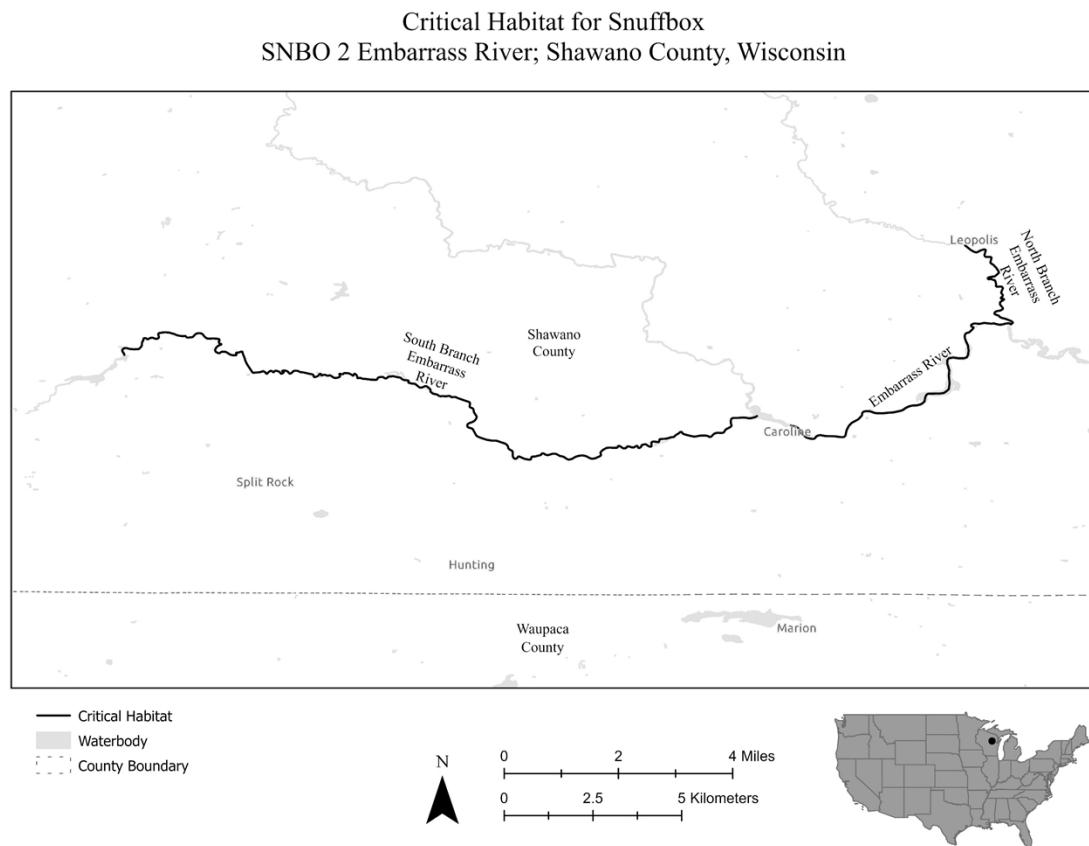
(A) The Embarrass River portion of this unit includes 5 rmi (7 rkm) in Shawano County, Wisconsin, from the Caroline Dam in Grant downstream to its confluence with North Branch Embarrass River.

(B) The South Branch Embarrass River portion of this unit includes 12 rmi (19 rkm) in Shawano County, Wisconsin, from Spaulding Street (County Road M) in Tigerton downstream to its confluence with Embarrass River in Grant.

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

(ii) Map of SNBO 2 follows:

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



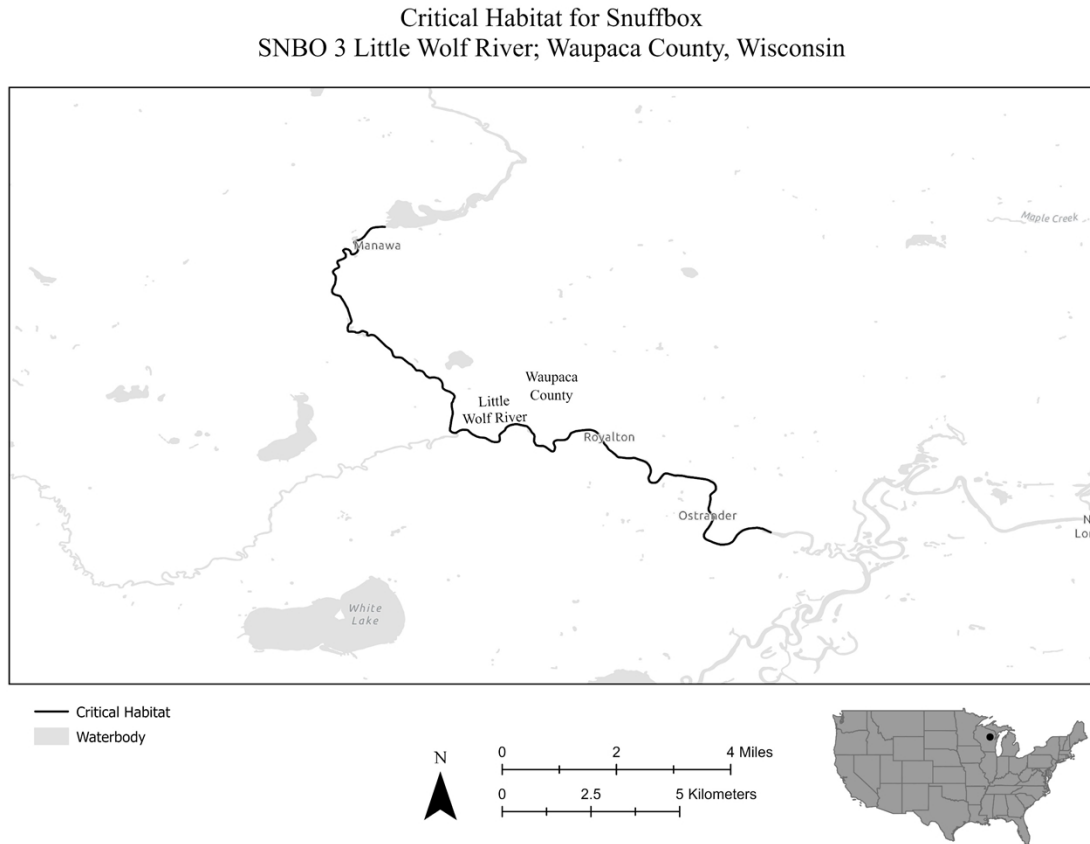
(8) SNBO 3: Little Wolf River; Waupaca County, Wisconsin.

(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 Manawa

downstream to the Highway X Bridge in 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.

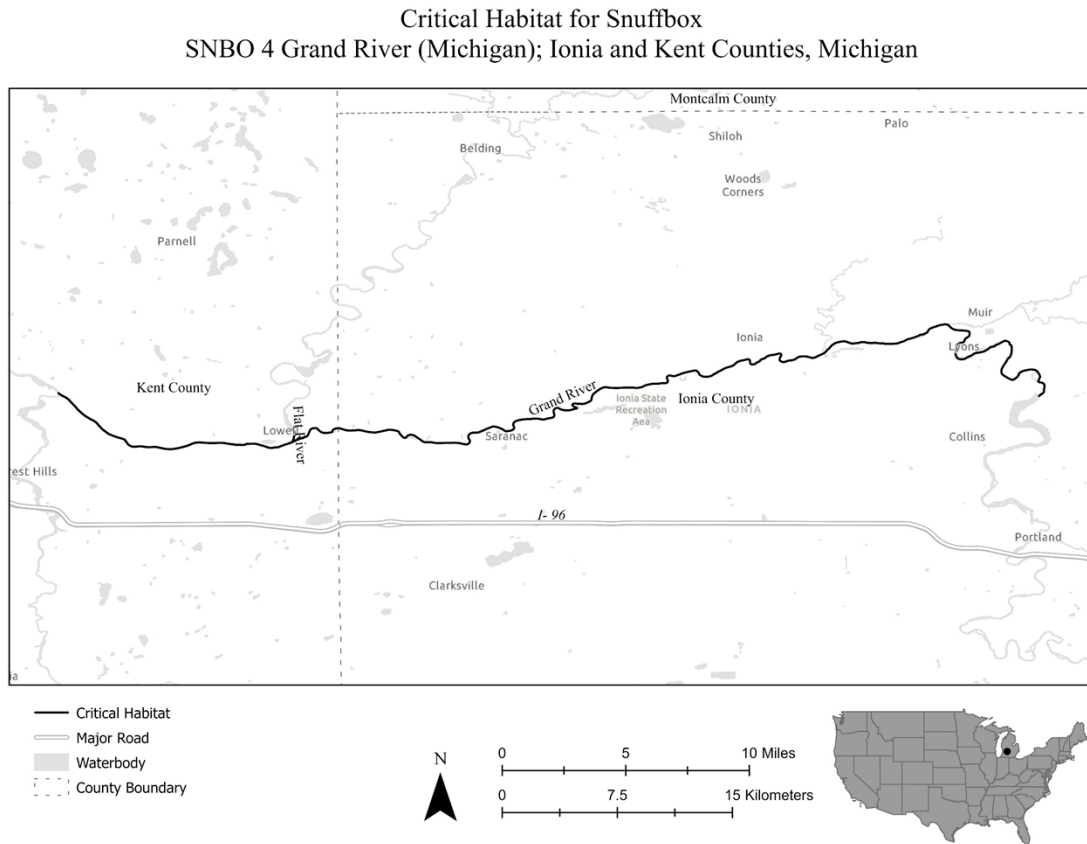
(i) SNBO 4 consists of 41 rmi (65 rkm) of the Grand River and the Flat River in Ionia and Kent Counties, Michigan. The unit includes the river channel up to the ordinary high-water mark.

(A) The Grand River portion of this unit includes 40 rmi (64 rkm) and extends from the Webber Dam upstream of Lyons (Ionia County, Michigan) downstream to its confluence with the Thornapple River in 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 Lowell downstream to its confluence with the Grand River in Lowell.

(ii) Map of SNBO 4 follows:

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



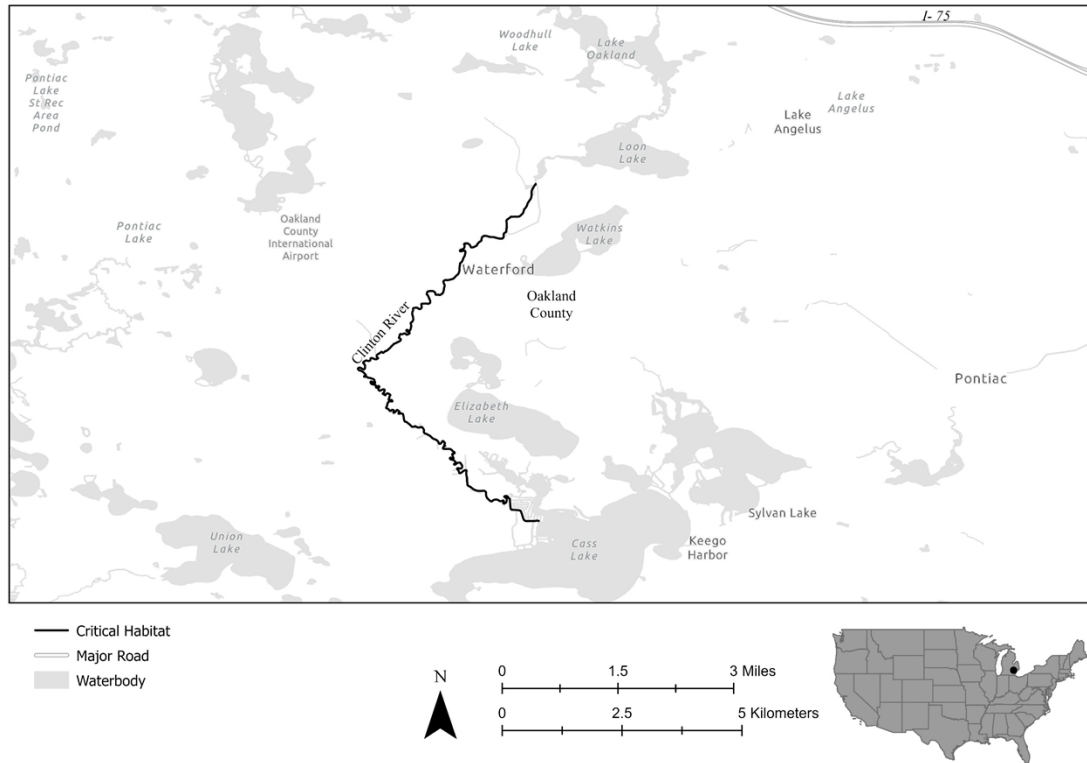
(10) SNBO 5: Clinton River; Oakland County, Michigan.

(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 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)

Critical Habitat for Snuffbox  
SNBO 5 Clinton River; Oakland County, Michigan



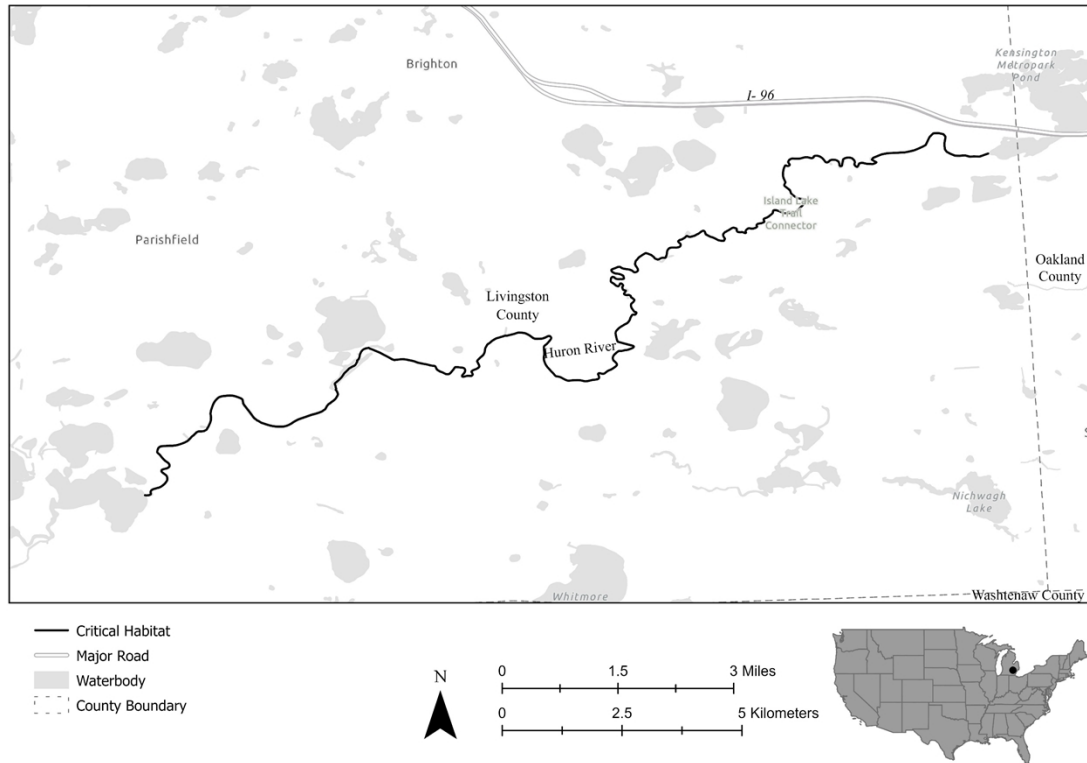
(11) SNBO 6: Huron River; Livingston County, Michigan.

(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.

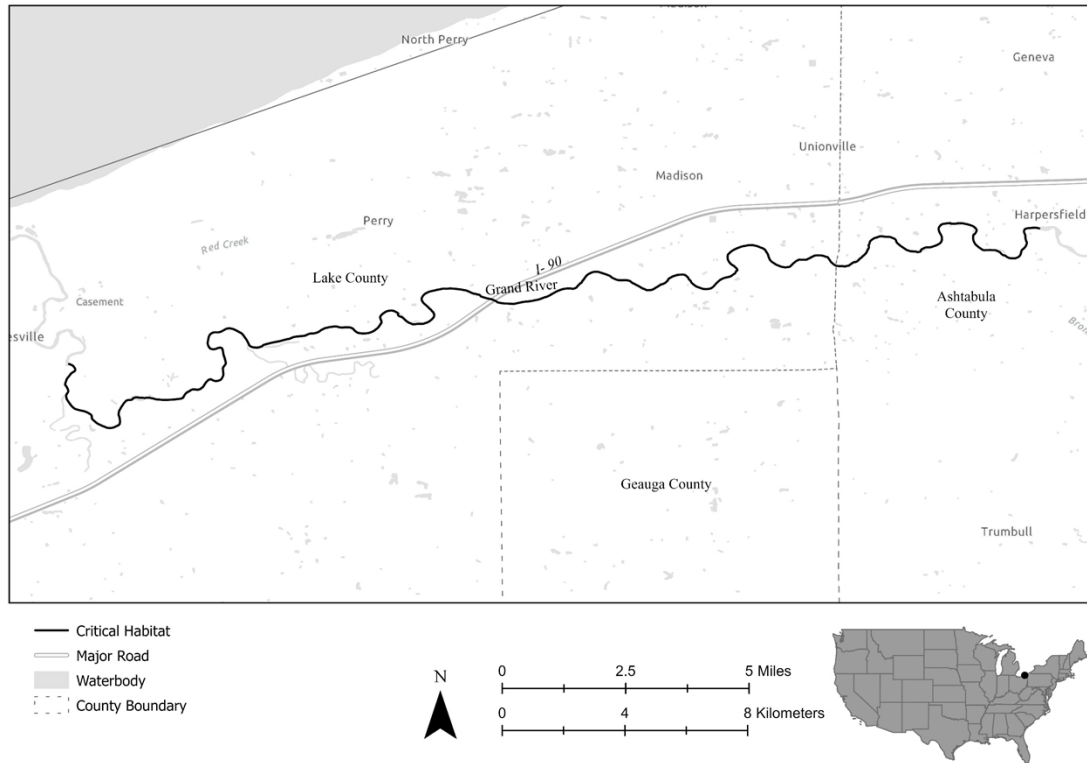
(i) SNBO 7 consists of 23 rmi (37 rkm) of the Grand River in Ashtabula and Lake Counties, Ohio. This unit extends from the Harpersfield Dam in Harpersfield (Ashtabula County, Ohio) downstream to the Norfolk and Western Railroad Trestle (Lake County, Ohio). The unit includes the river channel up to the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



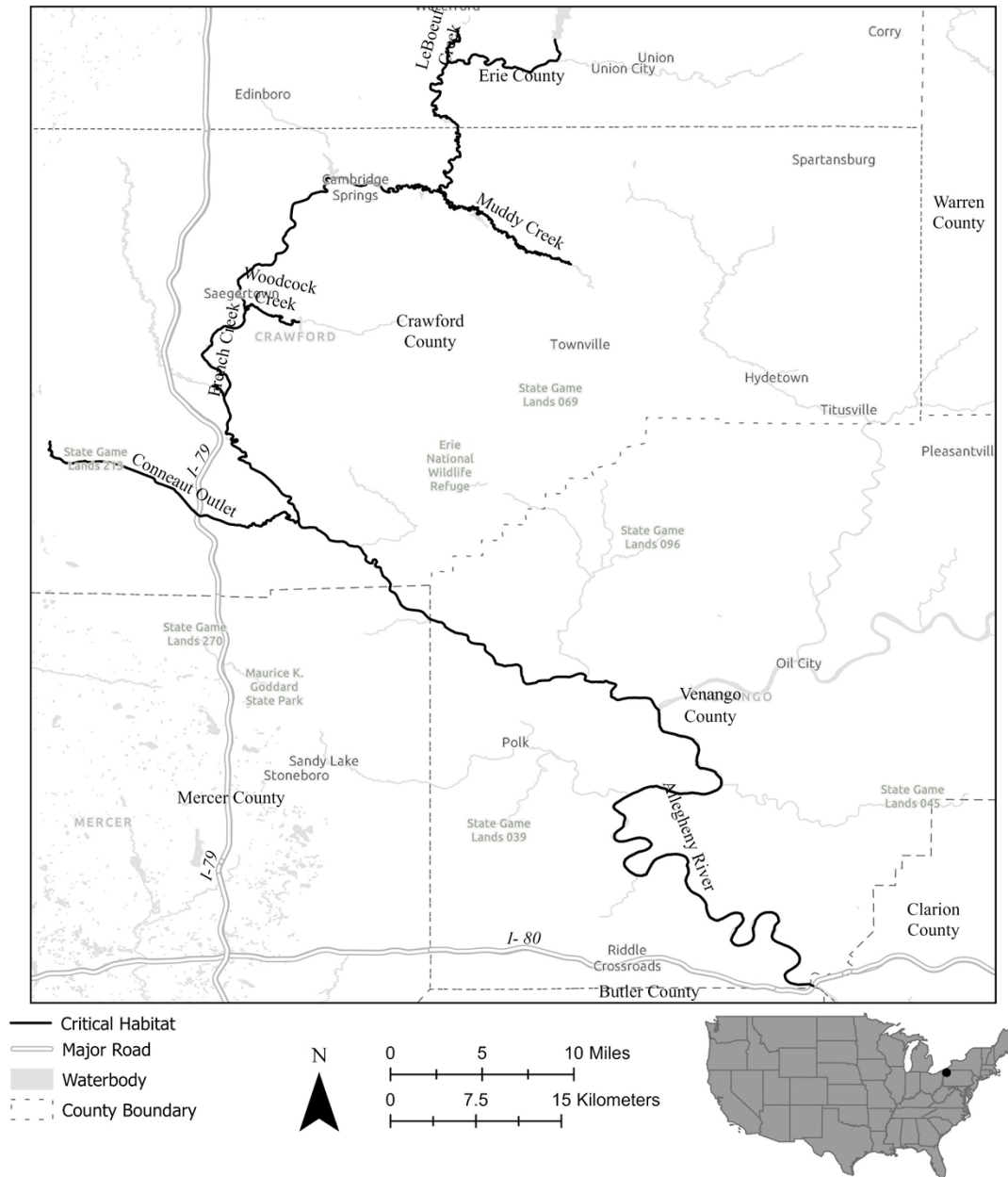
(13) SNBO 8: Allegheny River; Venango County, Pennsylvania.

(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 Franklin downstream to Interstate 80 near 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 9 French Creek; Crawford, Erie, Lebanon, Mercer, and Venango  
 Counties, Pennsylvania



(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, Lebanon, 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 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).

(B) The West Branch French Creek portion of this unit includes 19 rmi (30 rkm) 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.

(C) 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.

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

(E) 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 Saegertown.

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

(G) 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.

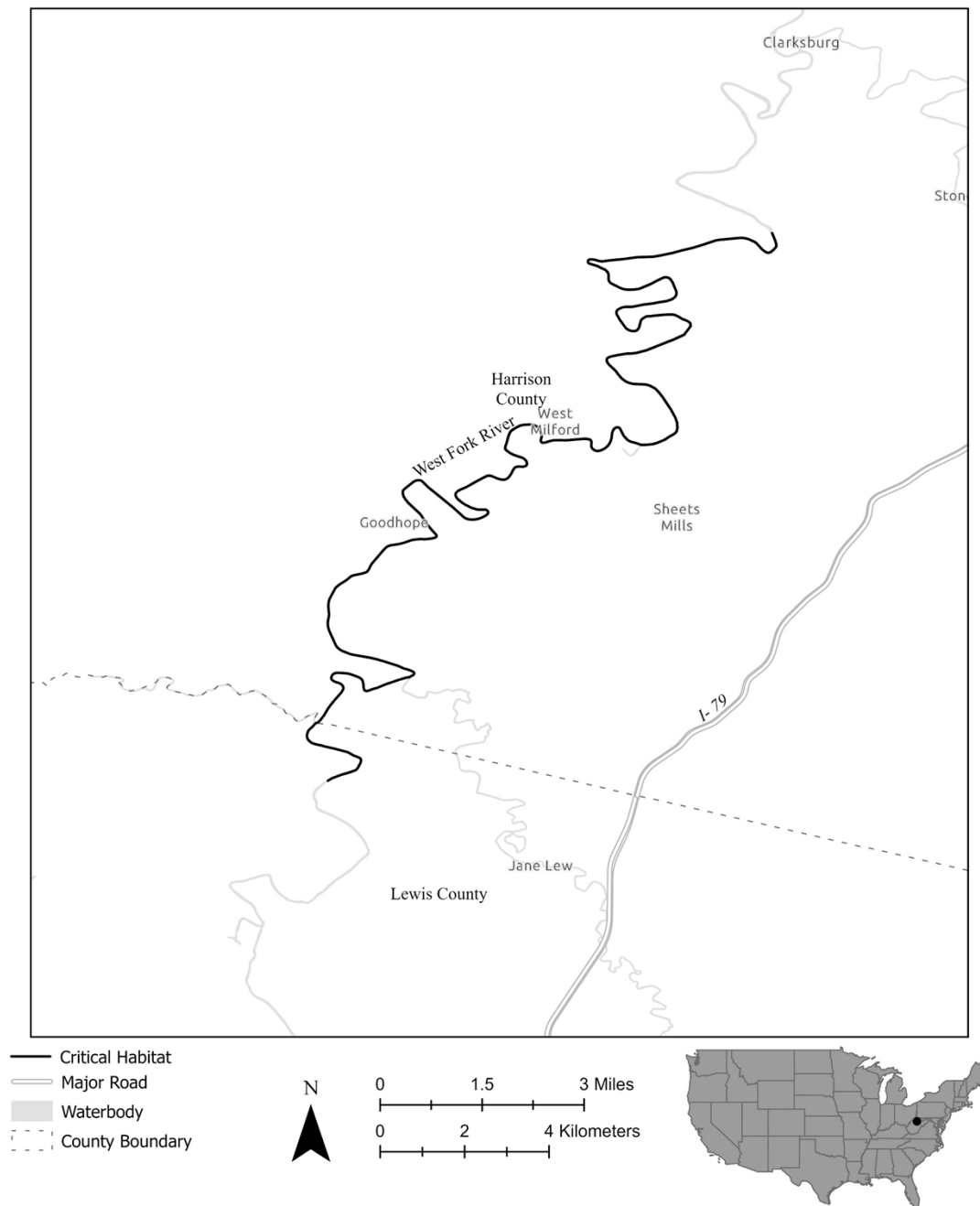
(15) SNBO 10: West Fork River; Harrison and Lewis Counties, West Virginia.

(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 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.

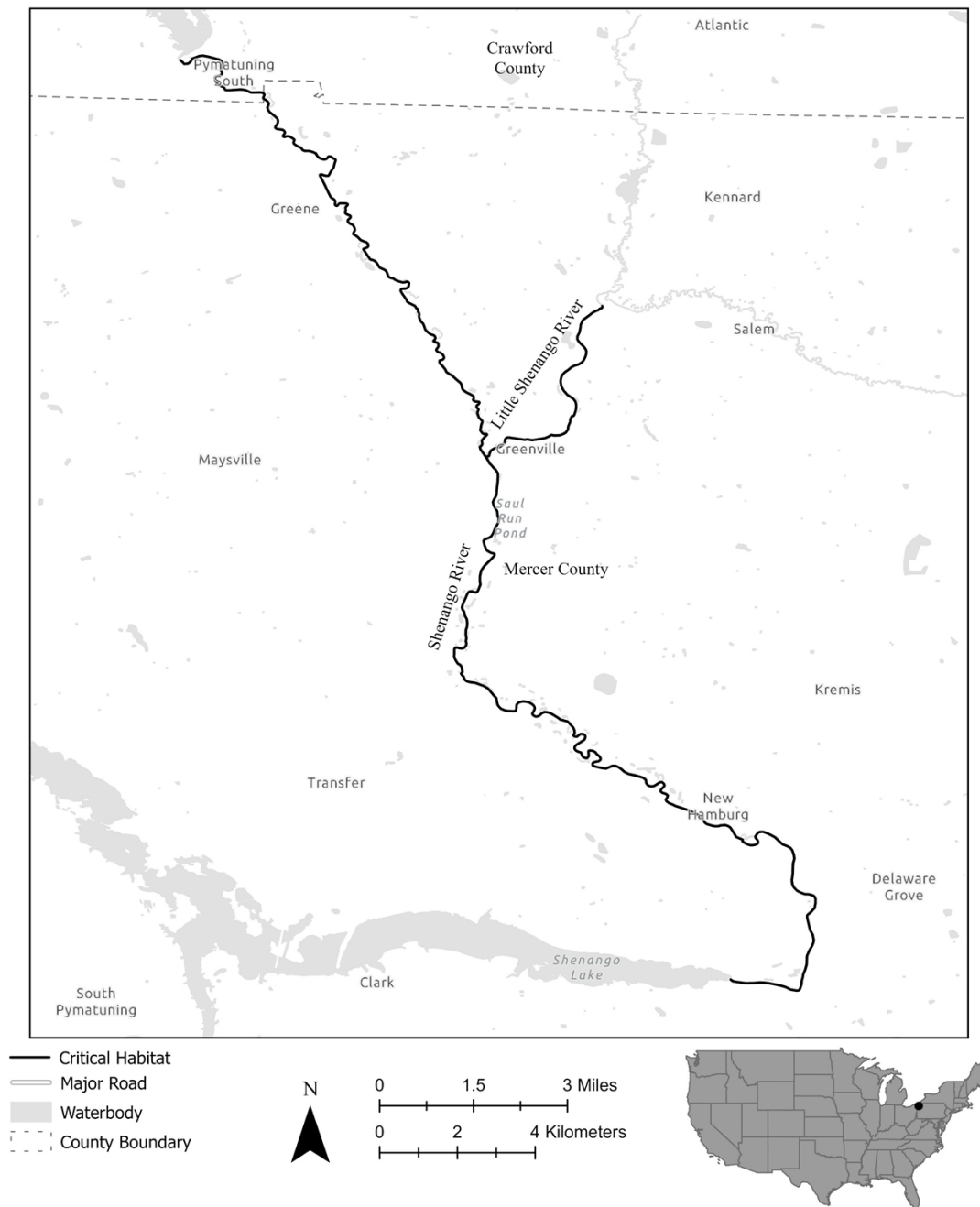
(A) The Shenango River portion of the unit includes 24 rmi (39 rkm) from Dam Road at the Pymatuning Reservoir Dam outlet (Crawford County, Pennsylvania) downstream to the point of inundation by Shenango River Lake near Big Bend (Mercer County, Pennsylvania).

(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 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



(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 Smithburg (Doddridge County, West Virginia), downstream to its confluence with the Ohio River at 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 Blandville downstream to the where Beaver Creek and Meathouse Creek join and form Middle Island Creek.

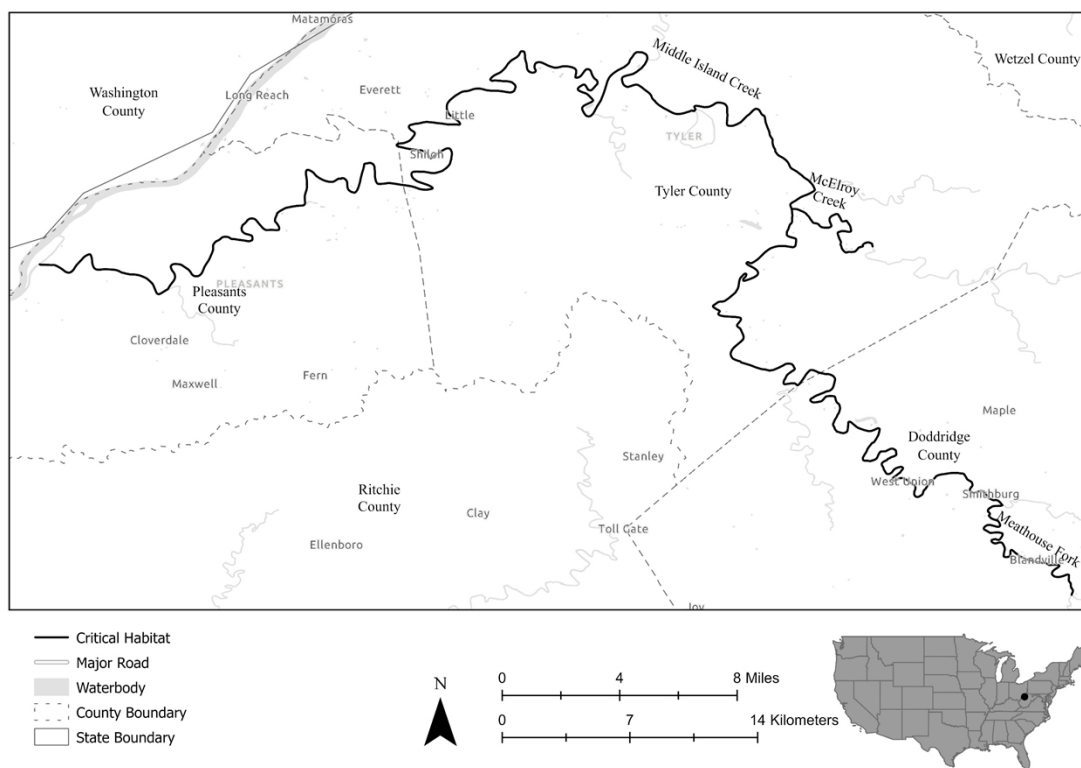
(C) The McElroy Creek portion of this units includes approximately 5 rmi (8 rkm) in Tyler County, West Virginia, from the Whitetail Lane Bridge to its confluence with Middle Island Creek in Alma.

(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, Wirt, and Wood Counties, West Virginia.

(i) SNBO 13 consists of 218 rmi (351 rkm) of the Little Kanawha River, Leading Creek, Hughes River, North Fork Hughes River, and South Fork Hughes River in Braxton, Calhoun, Gilmer, Ritchie, Wirt, and Wood 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 127 rmi (204 rkm) from the Burnsville Dam (Braxton County, West Virginia) downstream to its confluence with the Ohio River in Parkersburg (Wood 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 Troy downstream to the confluence with the Little Kanawha River northwest of Glenville.

(C) The Hughes River portion of this unit includes approximately 7 rmi (12 rkm) in Wirt County, West Virginia, from the convergence of the North and South Forks Hughes River in Freeport downstream to its confluence of the Little Kanawha River in Greencastle.

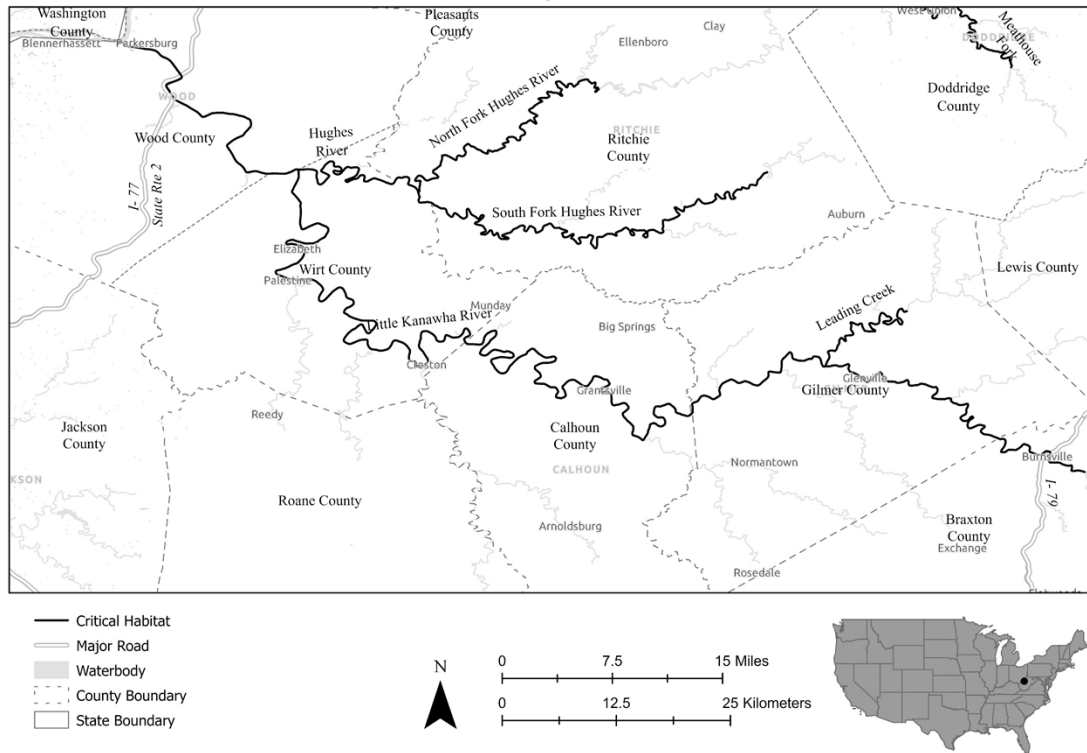
(D) The North Fork Hughes River portion of this unit includes approximately 27 rmi (44 rkm) from the North Bend Dam near Harrisville (Ritchie County, West Virginia) downstream to its convergence with the South Fork Hughes River in Freeport (Wirt County, West Virginia).

(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 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, Wirt, and Wood Counties, West Virginia



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

(i) SNBO 14 consists of 107 rmi (172 rkm) of the Kanawha River and the Elk River in Braxton, Clay, and Kanawha Counties, West Virginia. The unit includes the river channel up to the ordinary high-water mark.

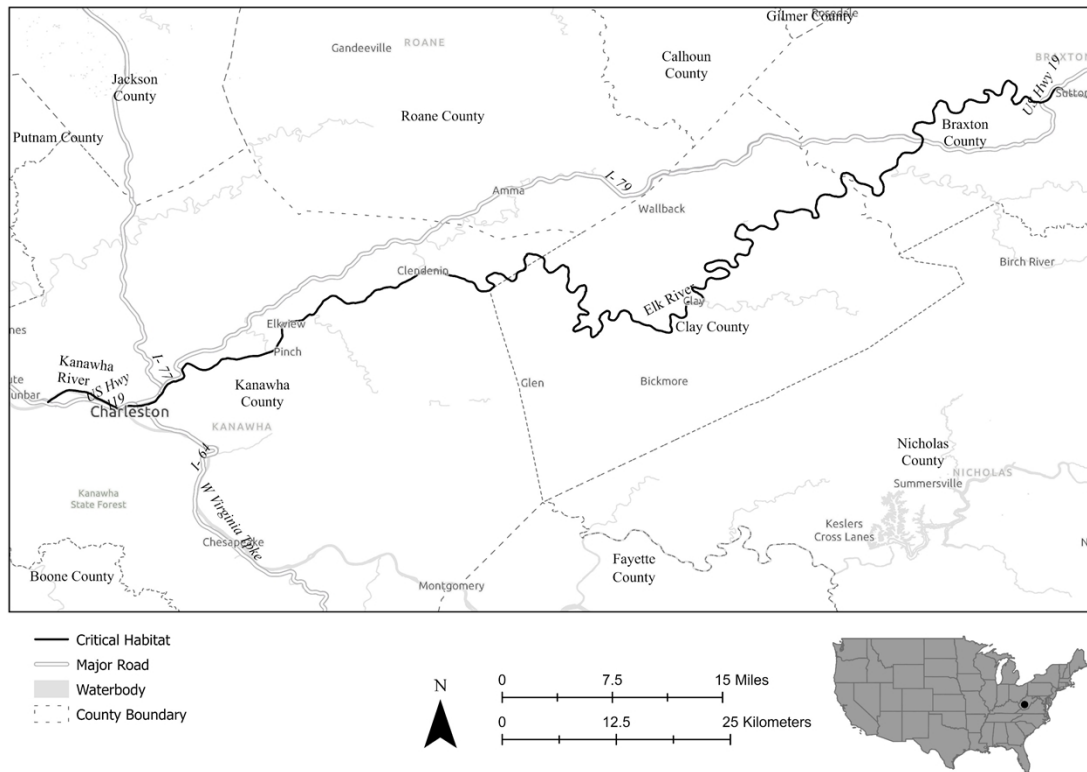
(A) The Kanawha River portion of this unit includes 5 rmi (8 rkm) in Kanawha County, West Virginia, from its confluence with the Elk River in Charleston downstream to the westbound crossing of Interstate 64 in western Charleston.

(B) The Elk River portion of this unit includes 102 rmi (164 rkm) from Sutton Dam in Braxton and Webster Counties, West Virginia, downstream to the confluence with the Kanawha River in 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; Braxton, Clay, and Kanawha Counties, West Virginia



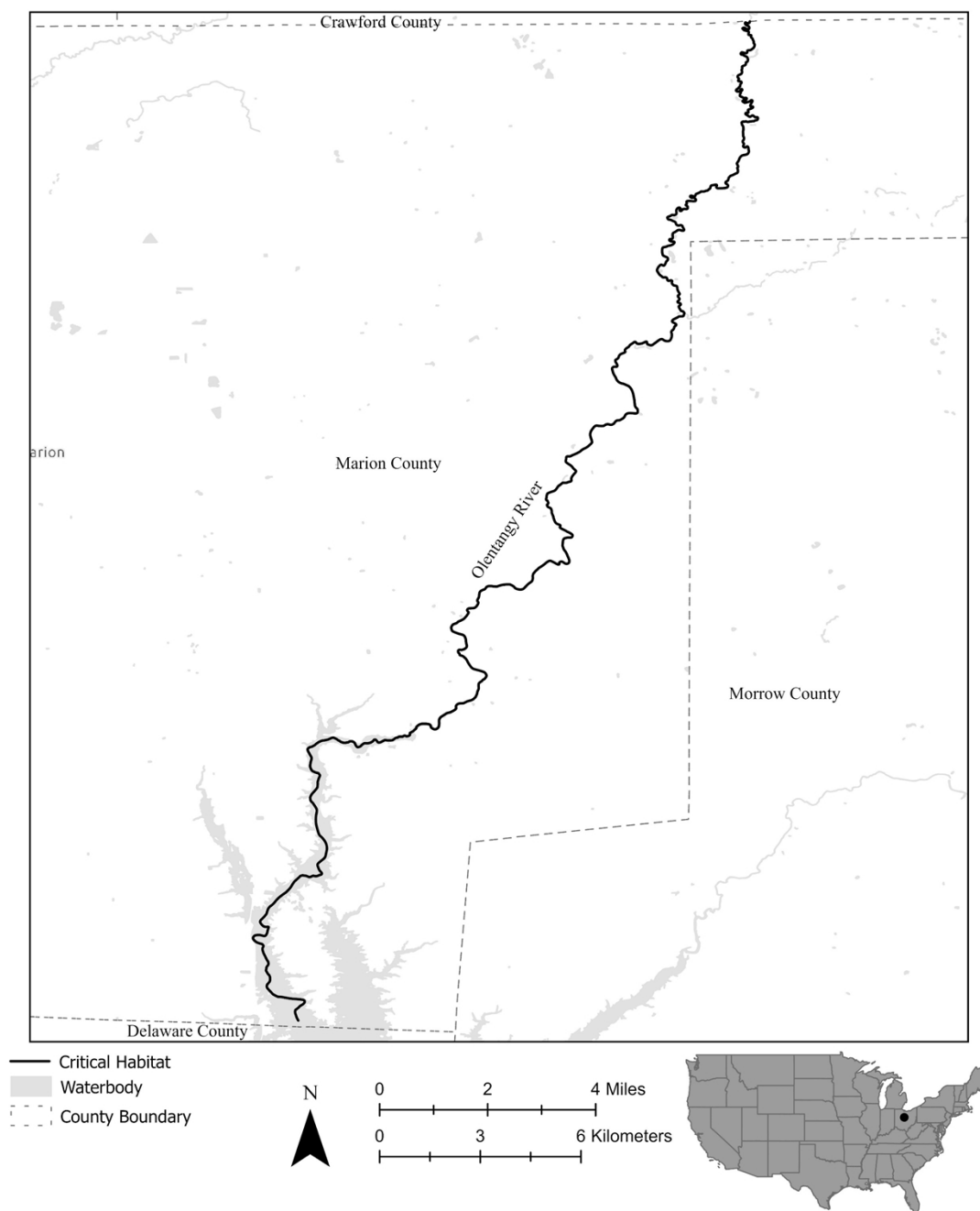
(20) SNBO 15: Olentangy River; Marion County, Ohio.

(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



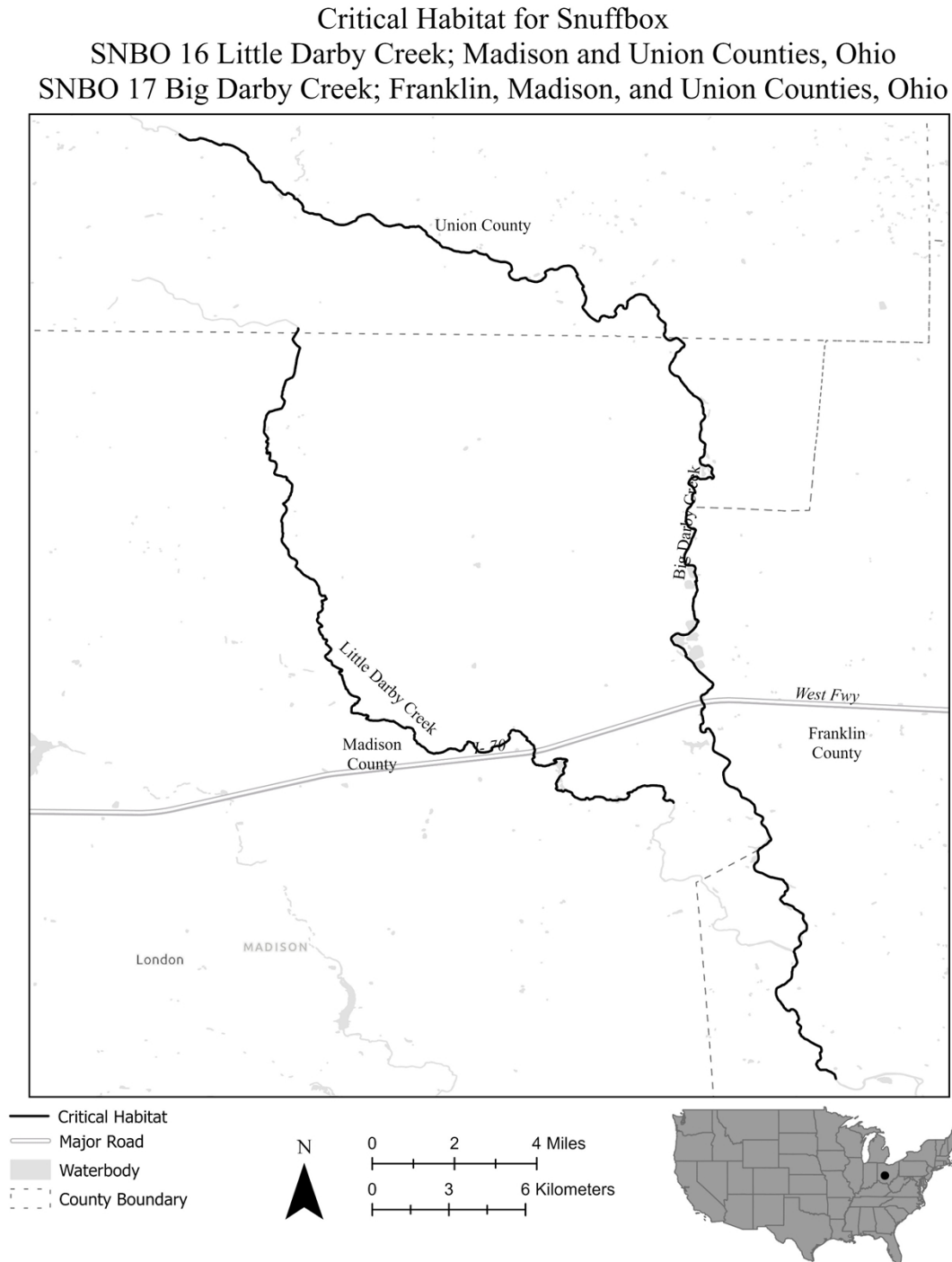
(21) SNBO 16: Little Darby Creek; Madison and Union Counties, Ohio.

(i) SNBO 16 consists of 21 rmi (35 rkm) of Little Darby Creek in Union and Madison Counties, Ohio. This unit extends from the Ohio Highway 161 Bridge near Chuckery (Union County, Ohio) downstream to the U.S. Highway 40 Bridge near West

Jefferson (Madison 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)



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

(i) SNBO 17 consists of 38 rmi (60 rkm) of Big Darby Creek in Franklin, Madison, and Union Counties, Ohio. This unit extends from the U.S. Highway 36 Bridge in Milford Center (Union County, Ohio) downstream to the State Highway 665 Bridge west of Darbydale (Franklin 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.

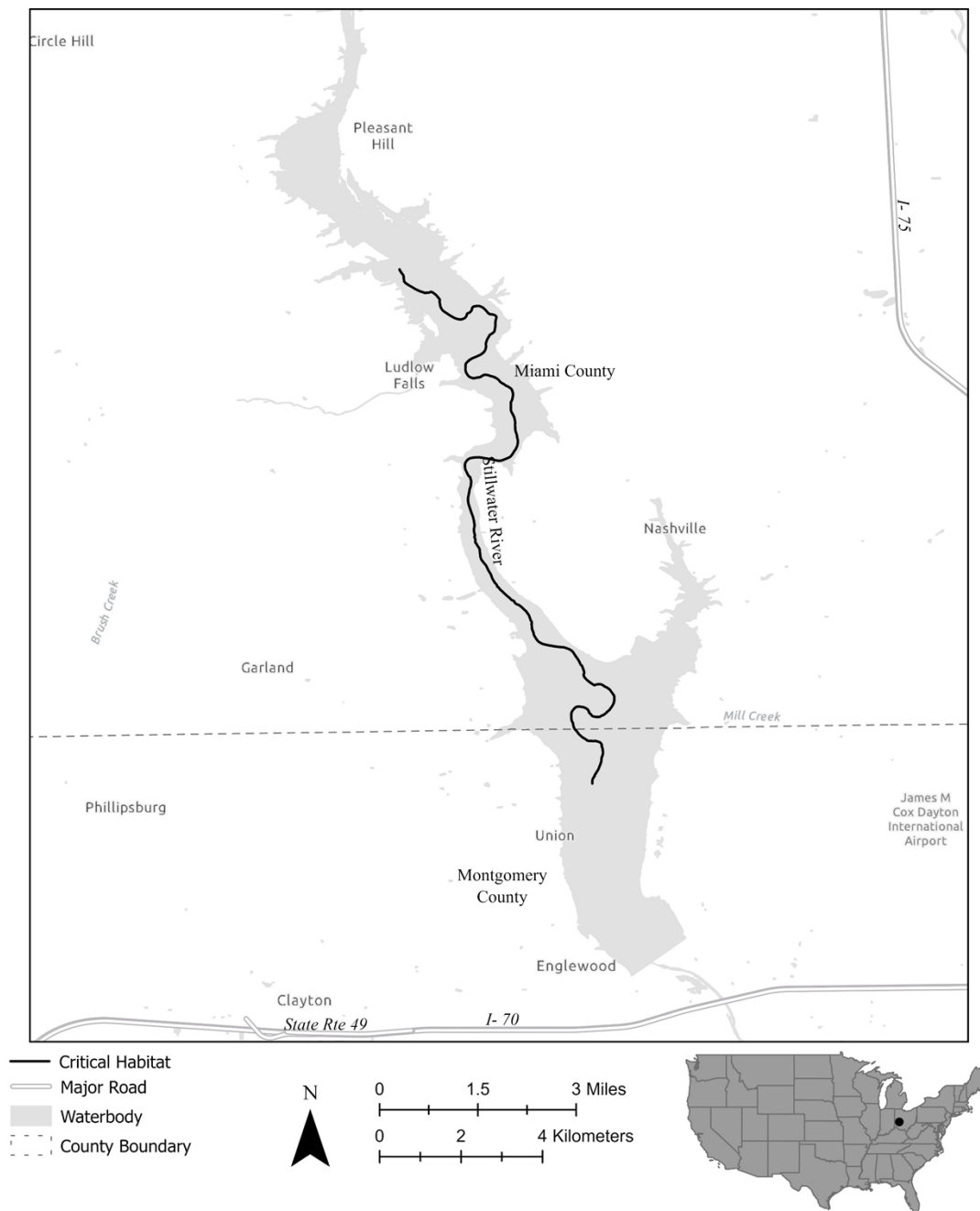
(23) SNBO 18: Stillwater River; Miami and Montgomery Counties, Ohio.

(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



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

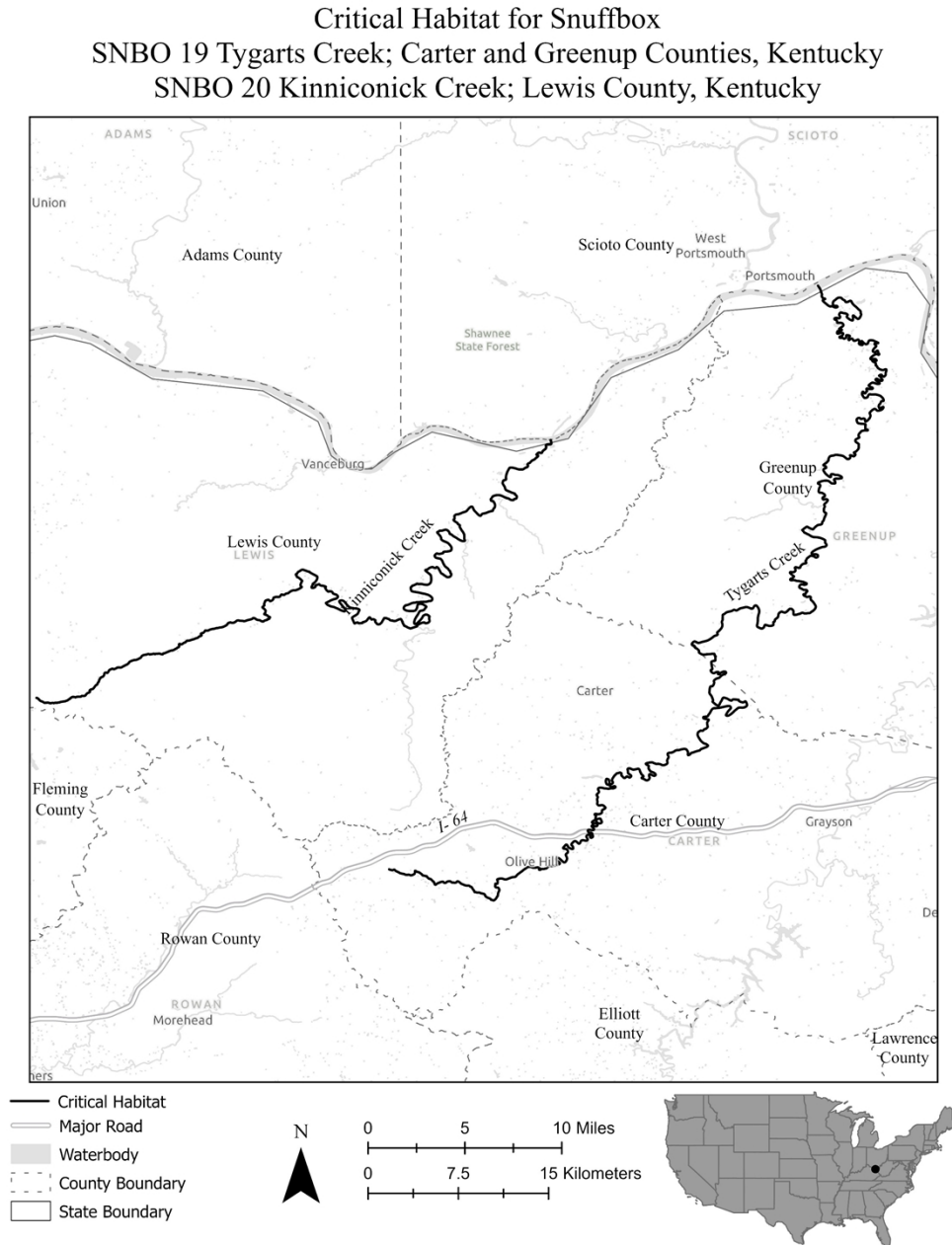
(i) SNBO 19 consists of 89 rmi (143 rkm) of Tygarts Creek in Carter and Greenup Counties, Kentucky. This unit extends from the confluence of Flat Fork just north of U.S Highway 60 in Carter County, Kentucky, downstream to the confluence with the Ohio



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)



(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

Petersville downstream to its confluence with the Ohio River at 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.

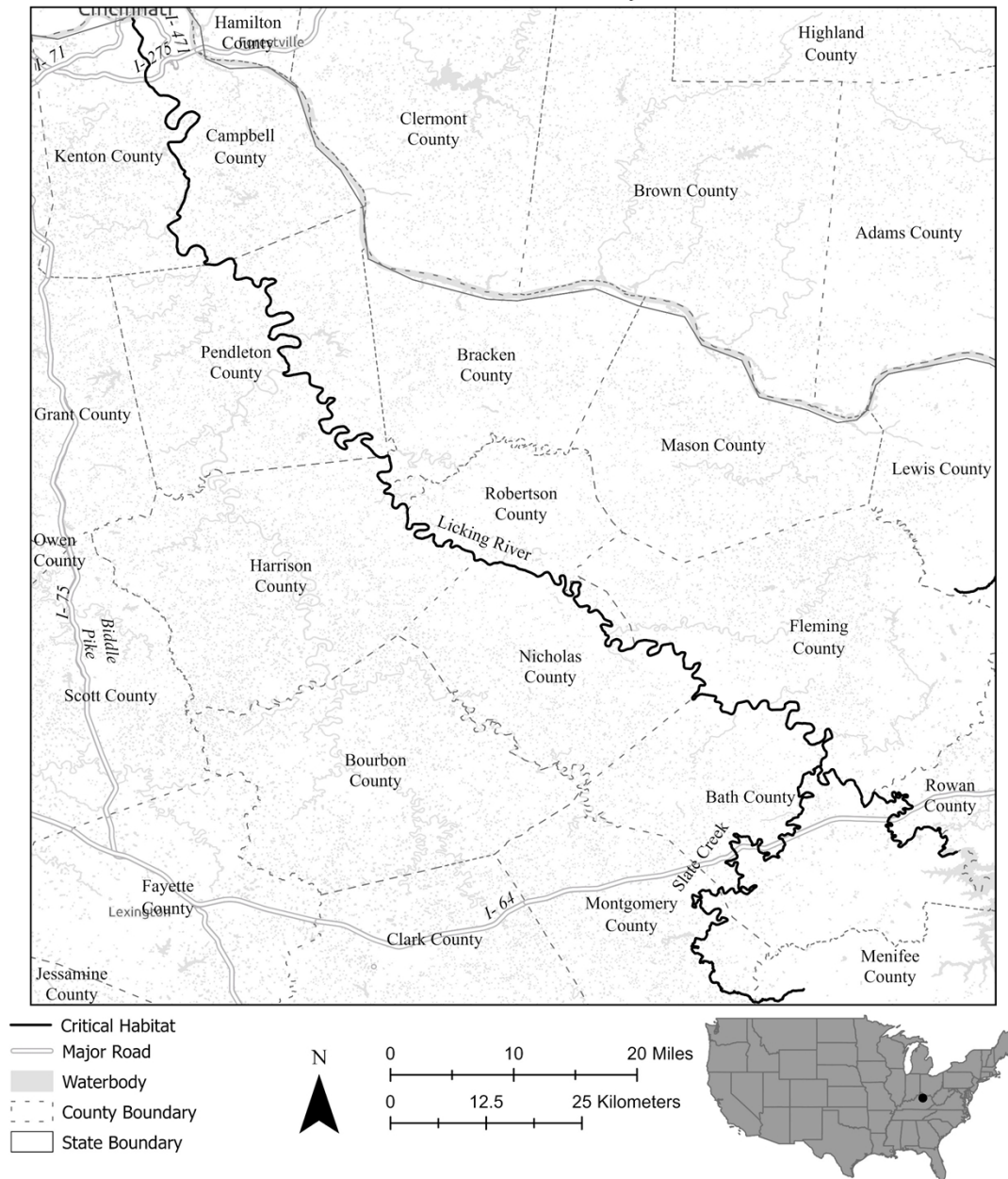
(A) The Licking River portion of this unit includes 179 rmi (288 rkm) from the Cave Run Dam in Bath/Rowan Counties, Kentucky, downstream to its confluence with the Ohio River in Covington (Kenton County, Kentucky).

(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**



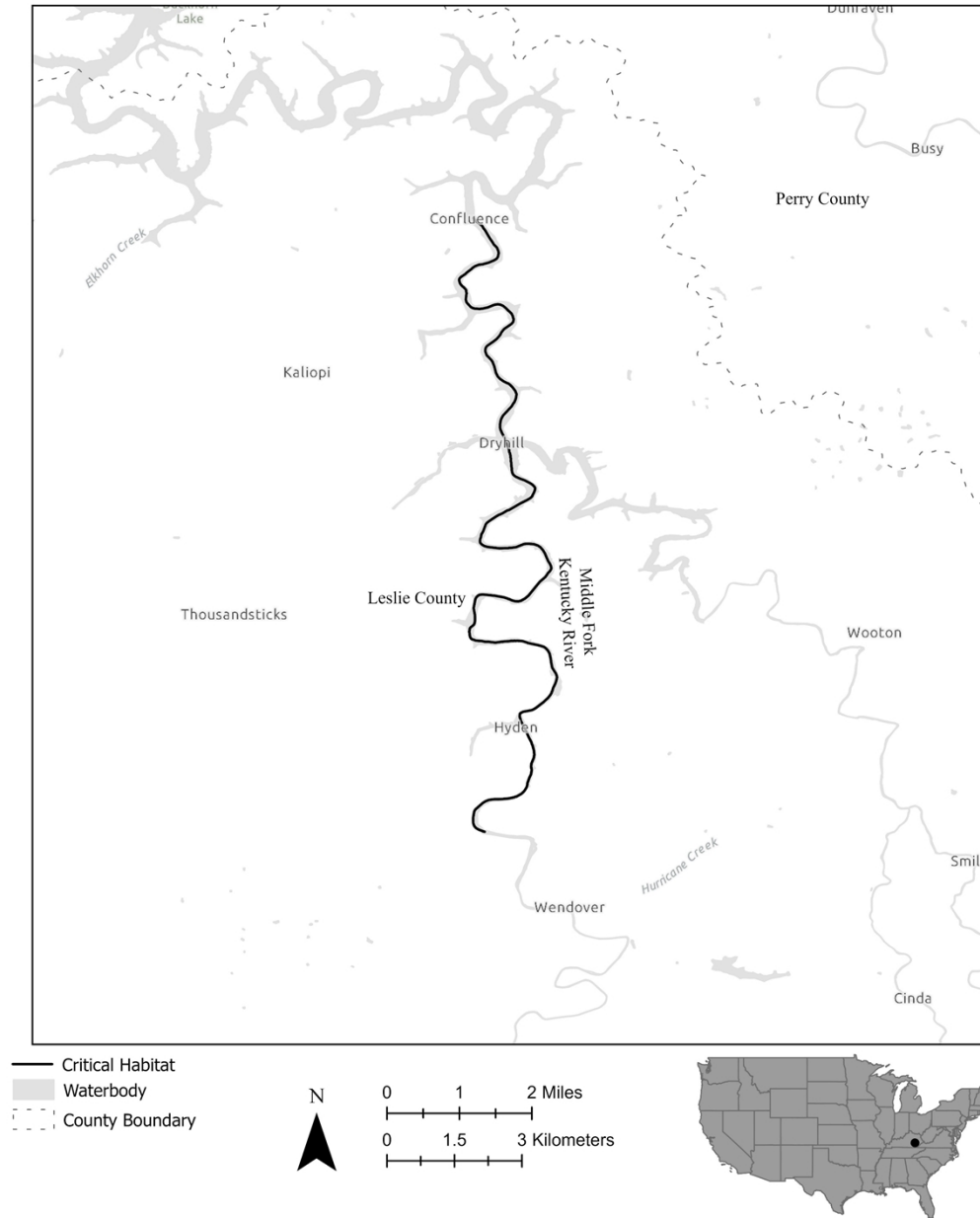
(27) SNBO 22: Middle Fork Kentucky River; Leslie County, Kentucky.

(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 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.

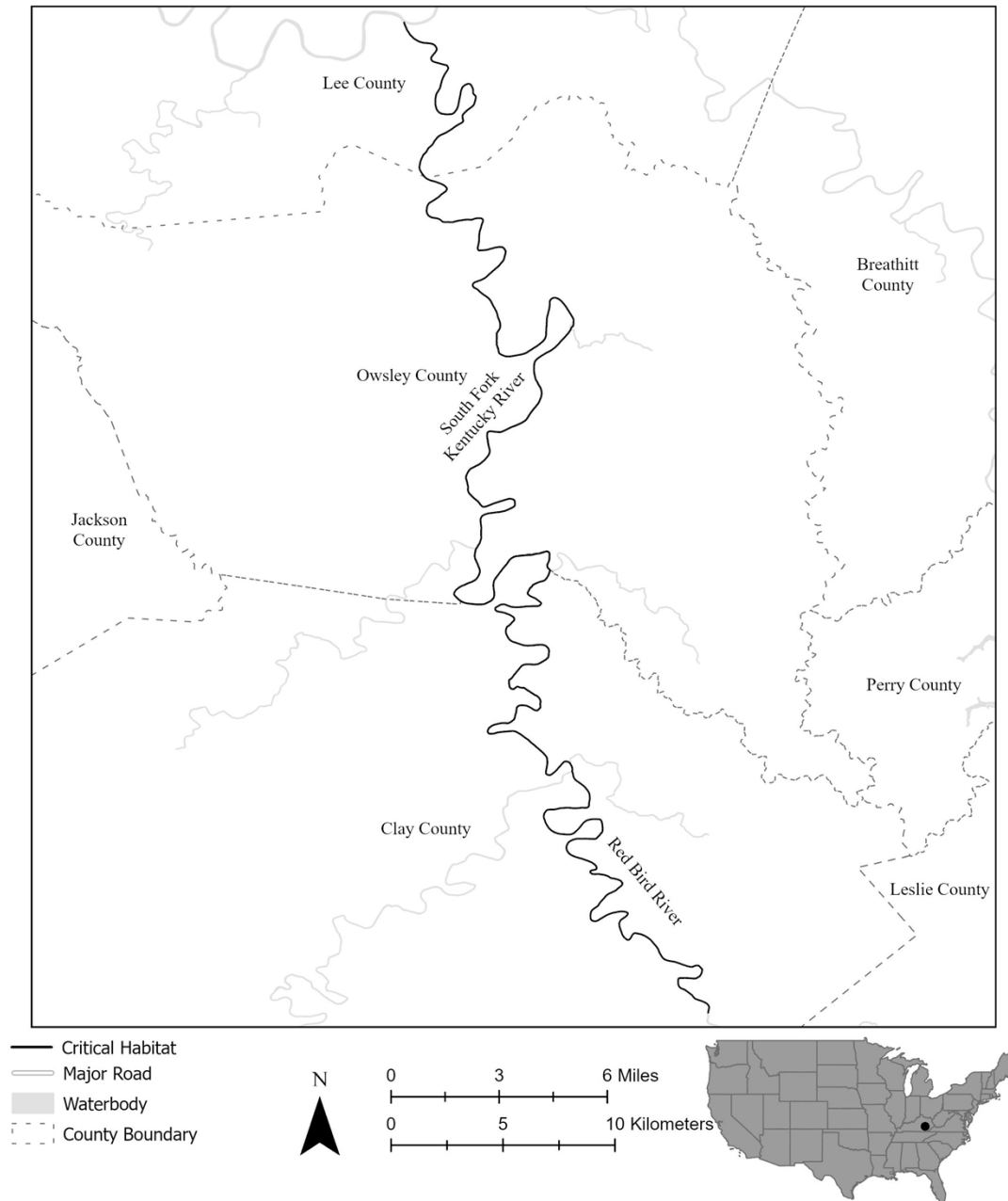
(A) The Red Bird River portion of this unit extends from the East Hal Roger Parkway downstream to its confluence with the South Fork Kentucky River near Oneida, in Clay County, Kentucky.

(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 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 and South Fork Kentucky River; Clay, Lee, and  
Owsley Counties, Kentucky



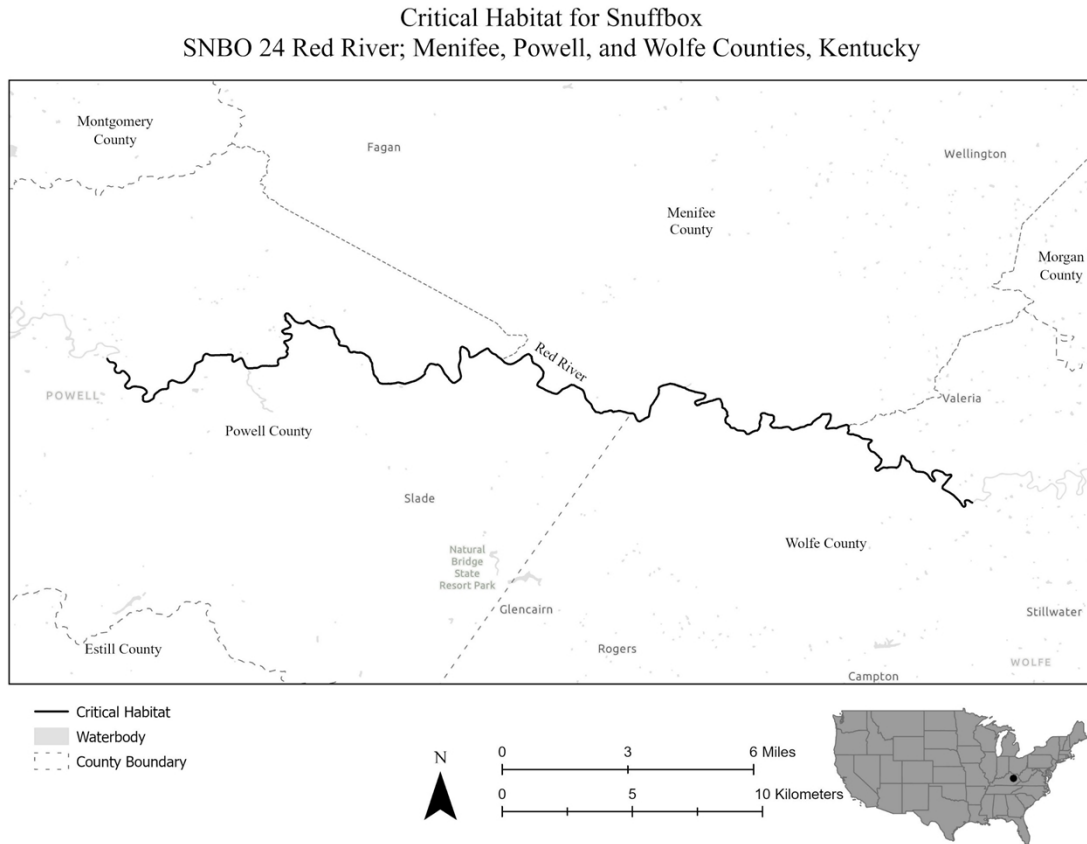
(29) SNBO 24: Red River; Meniffee, Powell, and Wolfe Counties, Kentucky.

(i) SNBO 24 consists of 31 rmi (49 rkm) of the Red River in Wolfe, Meniffee, 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.

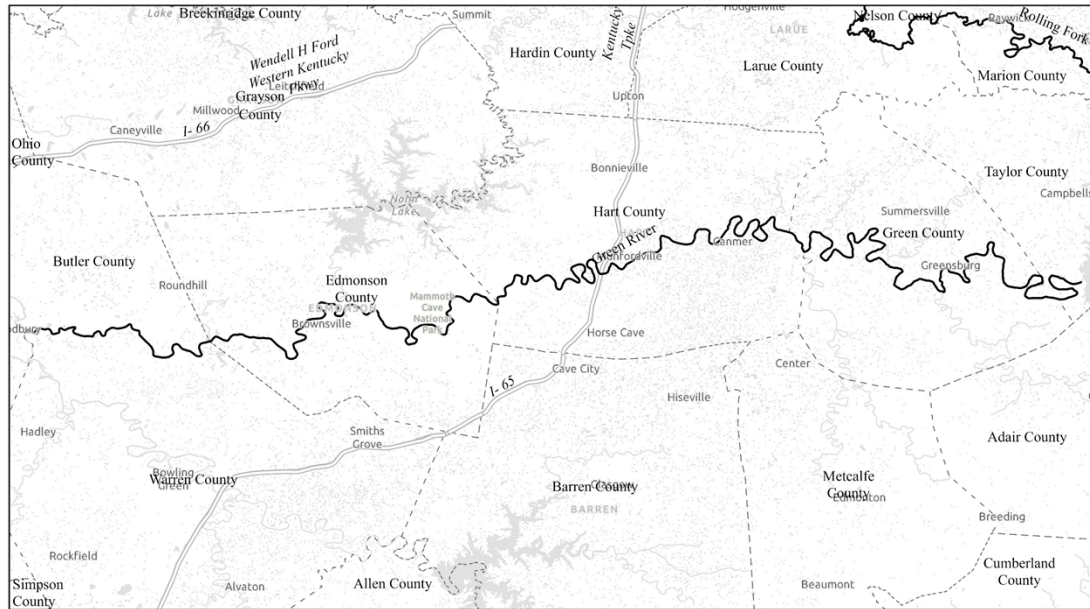
(i) SNBO 25 consists of 157 rmi (253 rkm) of the Green River in Butler, Warren, Edmonson, Green, Hart, and Taylor Counties, Kentucky. This unit extends from Green River Lake Dam south of Campbellsville (Taylor County, Kentucky) downstream to its confluence with the Barren River at Woodbury (Warren/Butler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

(ii) Map of SNBO 25 follows:

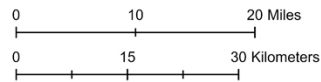
Figure 23 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (30)(ii)

# Critical Habitat for Snuffbox

## SNBO 25 Green River; Butler, Edmonson, Green, Hart, Taylor, and Warren Counties, Kentucky



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



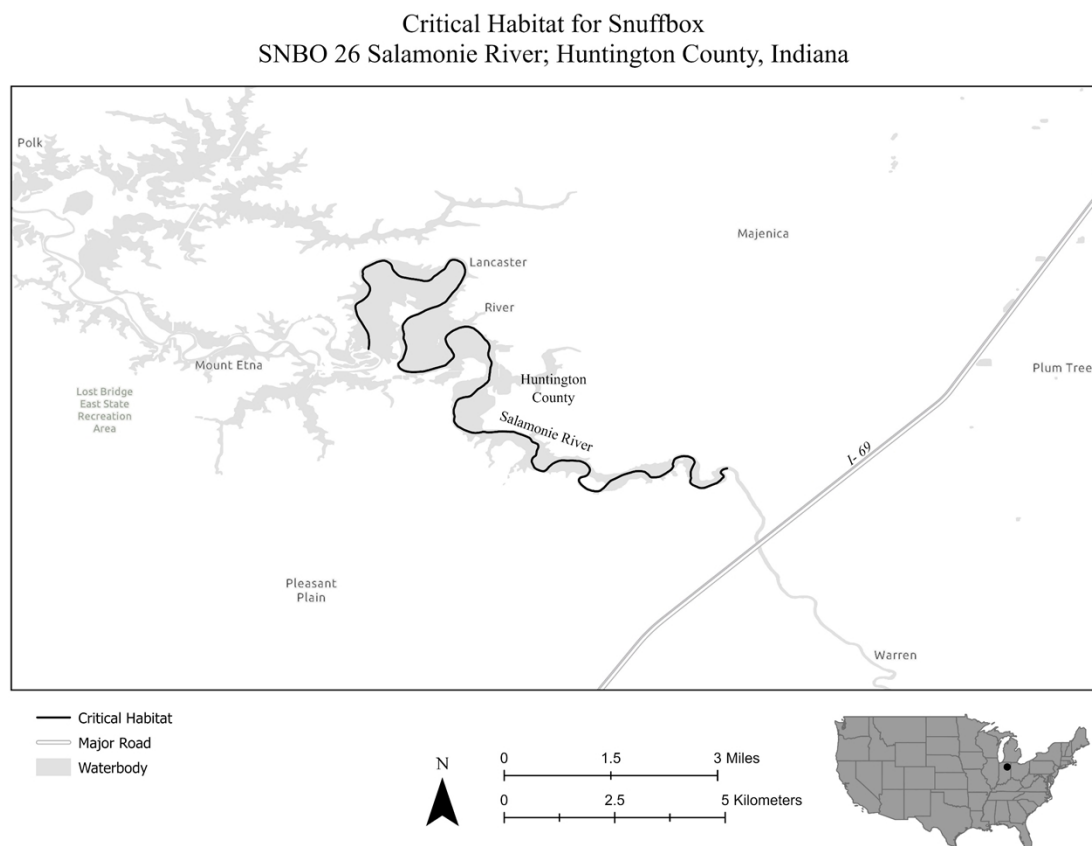


(31) SNBO 26: Salamonie River; Huntington County, Indiana.

(i) SNBO 26 consists of 12 rmi (19 rkm) of the Salamonie River in Huntington County, Indiana. The unit extends from the lowhead dam by the intersection of County Road W 700 S and S. Belleville Road in Jefferson Township downstream to Salamonie Lake east 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.

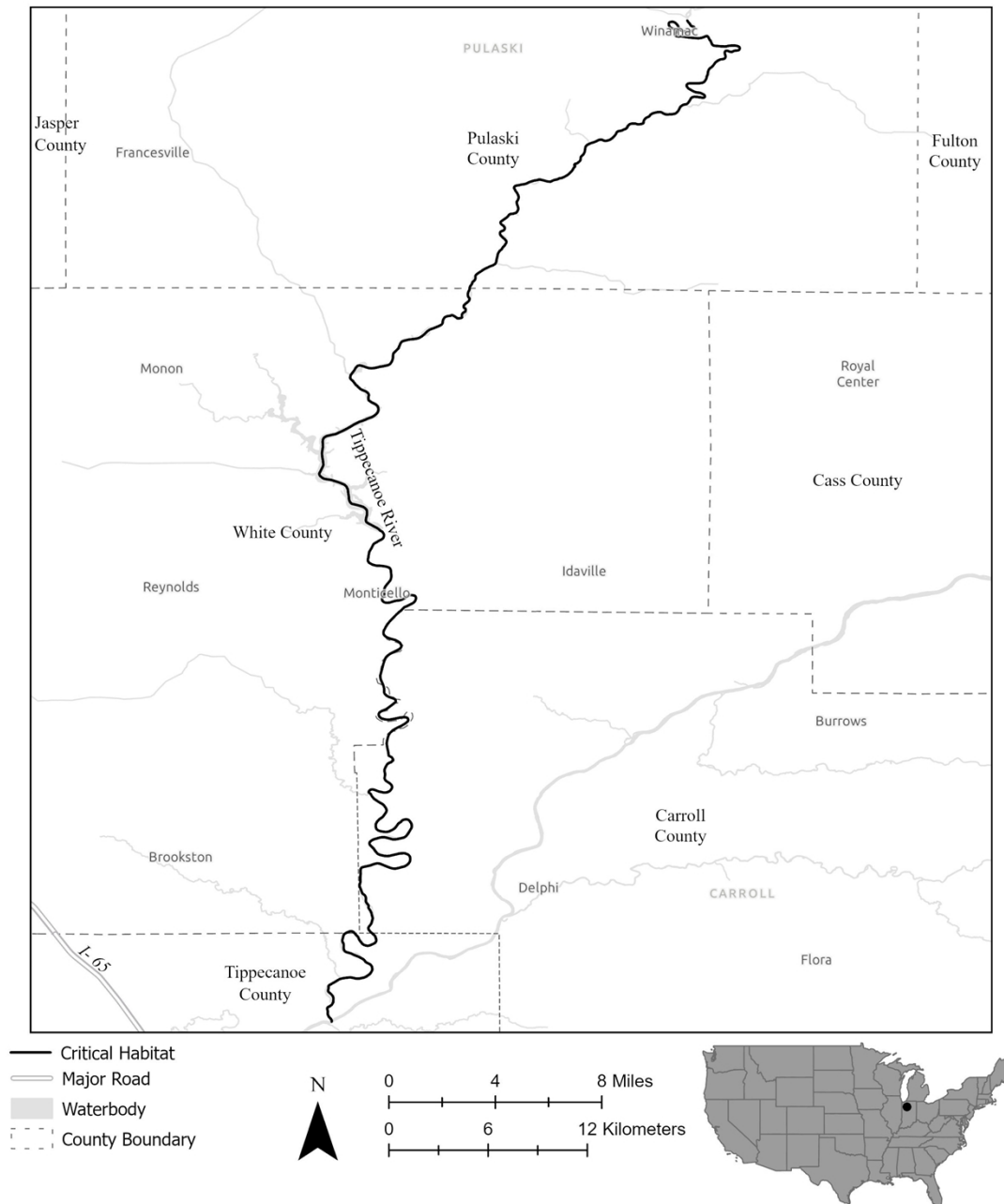
(i) SNBO 27 consists of 65 rmi (105 rkm) of the Tippecanoe River in Carroll, Pulaski, Tippecanoe, and White Counties, Indiana. The unit extends from the State Highway 14 Bridge near Winamac (Pulaski County, Indiana) downstream to the Tippecanoe River's confluence with the Wabash River northeast of Battle Ground

(Tippecanoe County, Indiana), excluding Lakes Shafer and Freeman and the stream reach between the two lakes. The unit includes the river channel up to the ordinary high-water mark.

(ii) Map of SNBO 27 follows:

Figure 25 to Snuffbox Mussel (*Epioblasma triquetra*) paragraph (32)(ii)

Critical Habitat for Snuffbox  
SNBO 27 Tippecanoe River; Carroll, Pulaski, Tippecanoe, and White  
Counties, Indiana



(33) SNBO 28: Embarras River; Coles, Cumberland, and Douglas Counties, Illinois.

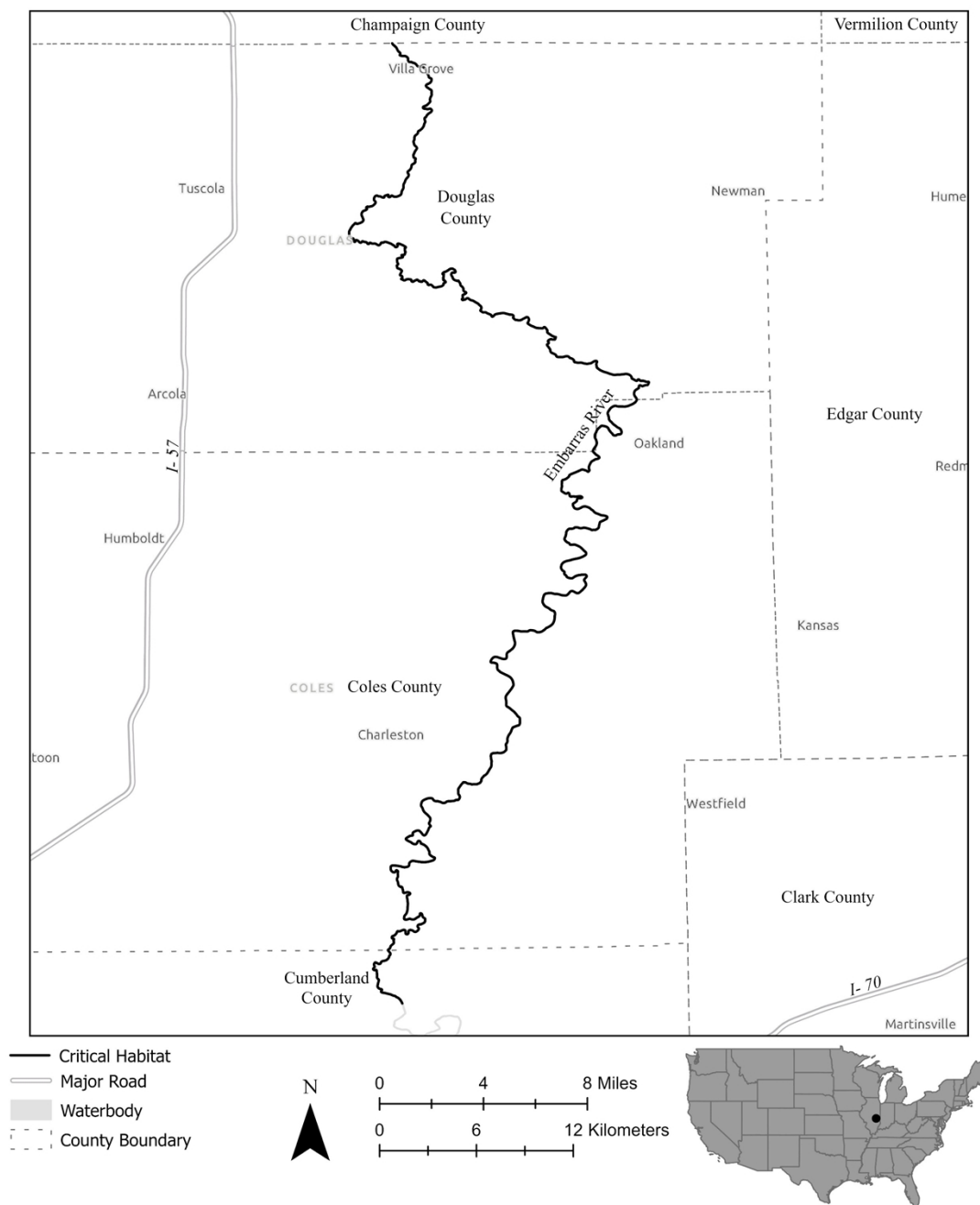
(i) SNBO 28 consists of 71 rmi (114 rkm) of the Embarras River in Coles, Douglas, and Cumberland Counties, Illinois. The unit extends from the East County Road 1550 North Bridge on the border of Crittenden Township and Camargo Township (Douglas County, Illinois) downstream to the County Road 1200 North 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

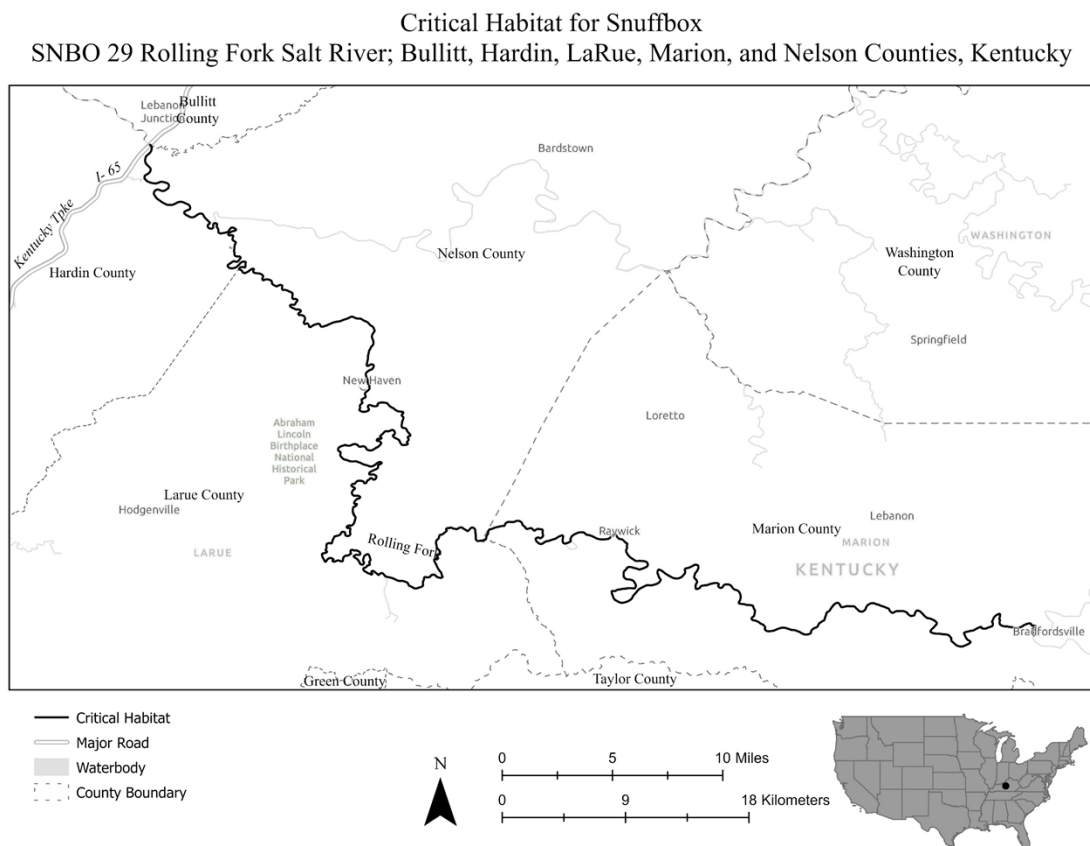


(34) SNBO 29: Rolling Fork Salt River; Bullitt, Hardin, LaRue, Marion, and Nelson Counties, Kentucky.

(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 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)



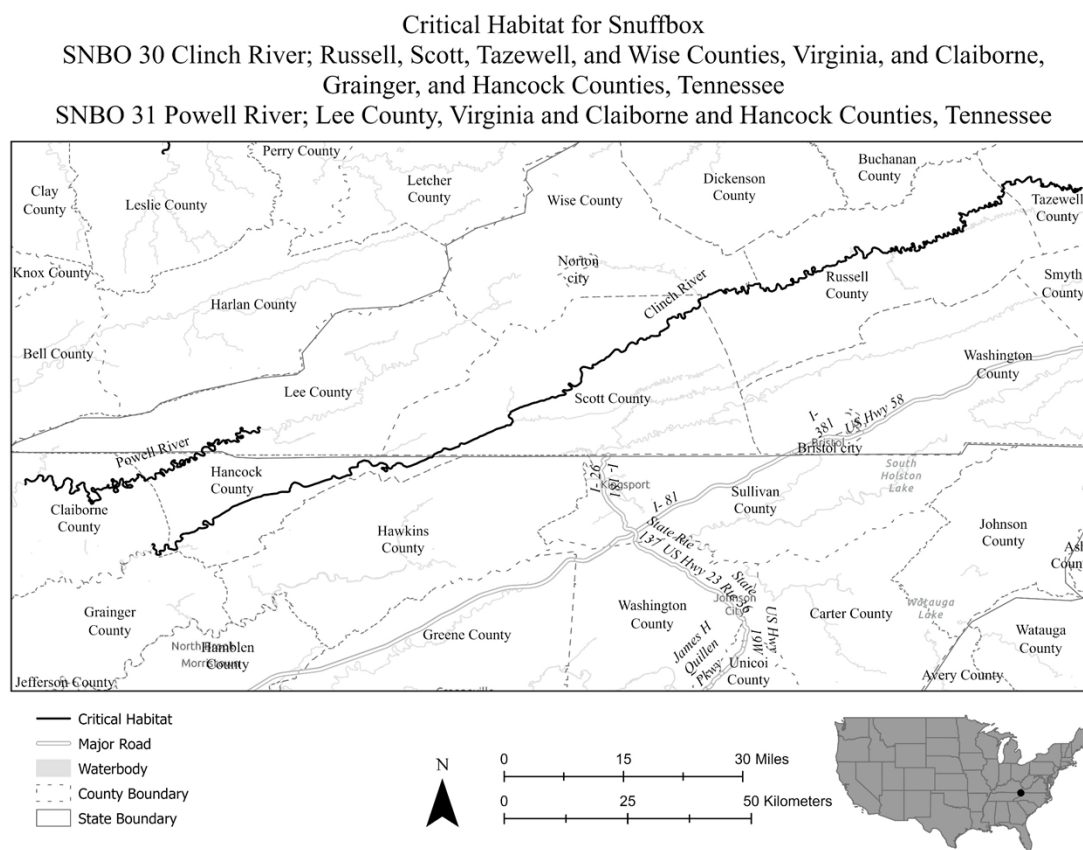
(35) SNBO 30: Clinch River; Russell, Scott, Tazewell, and Wise Counties

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 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)



(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.

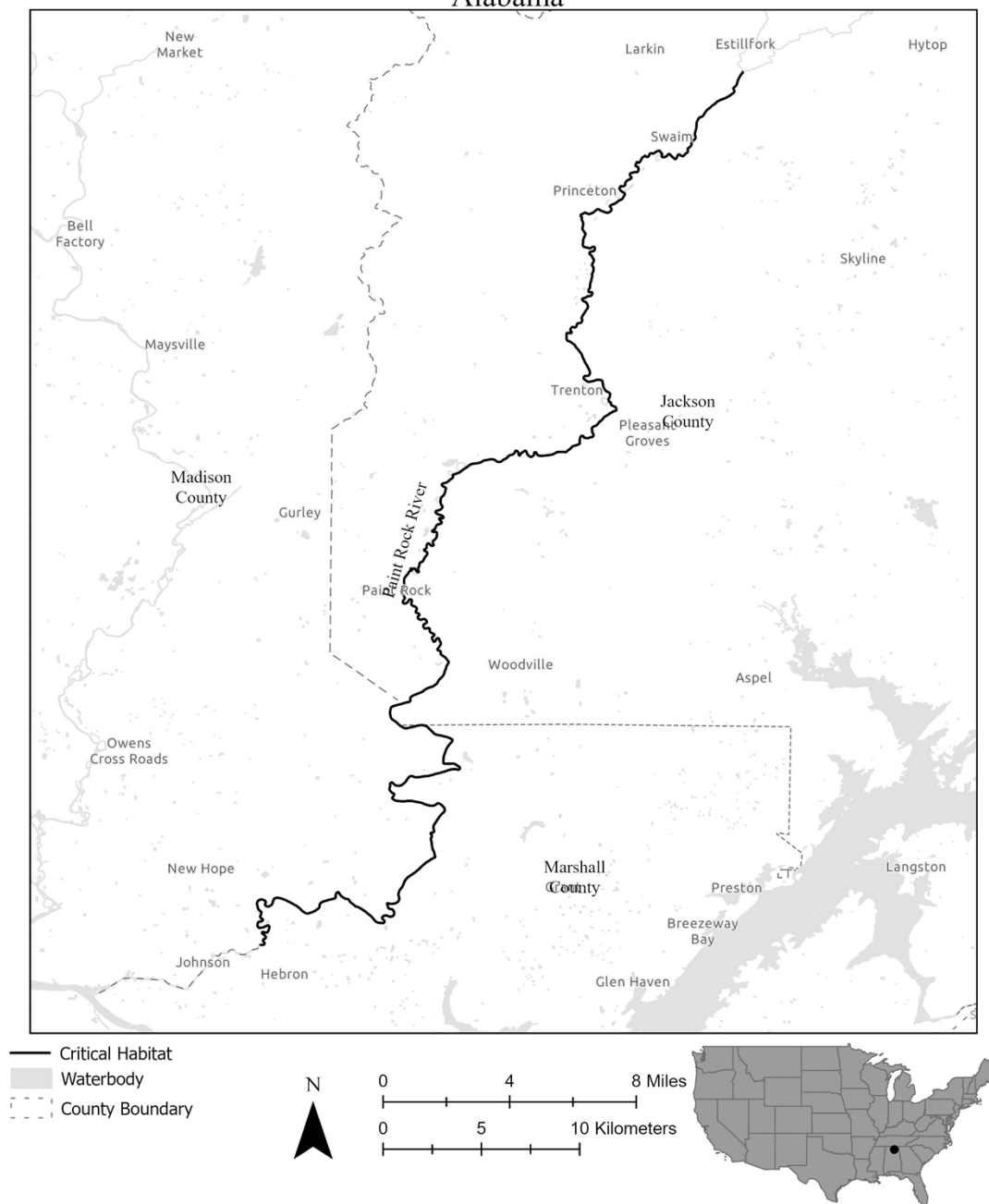
(37) SNBO 32: Paint Rock River; Jackson, Madison, and Marshall Counties, Alabama.

(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 Skyline (Jackson County, Alabama) downstream to U.S. Highway 431 south 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



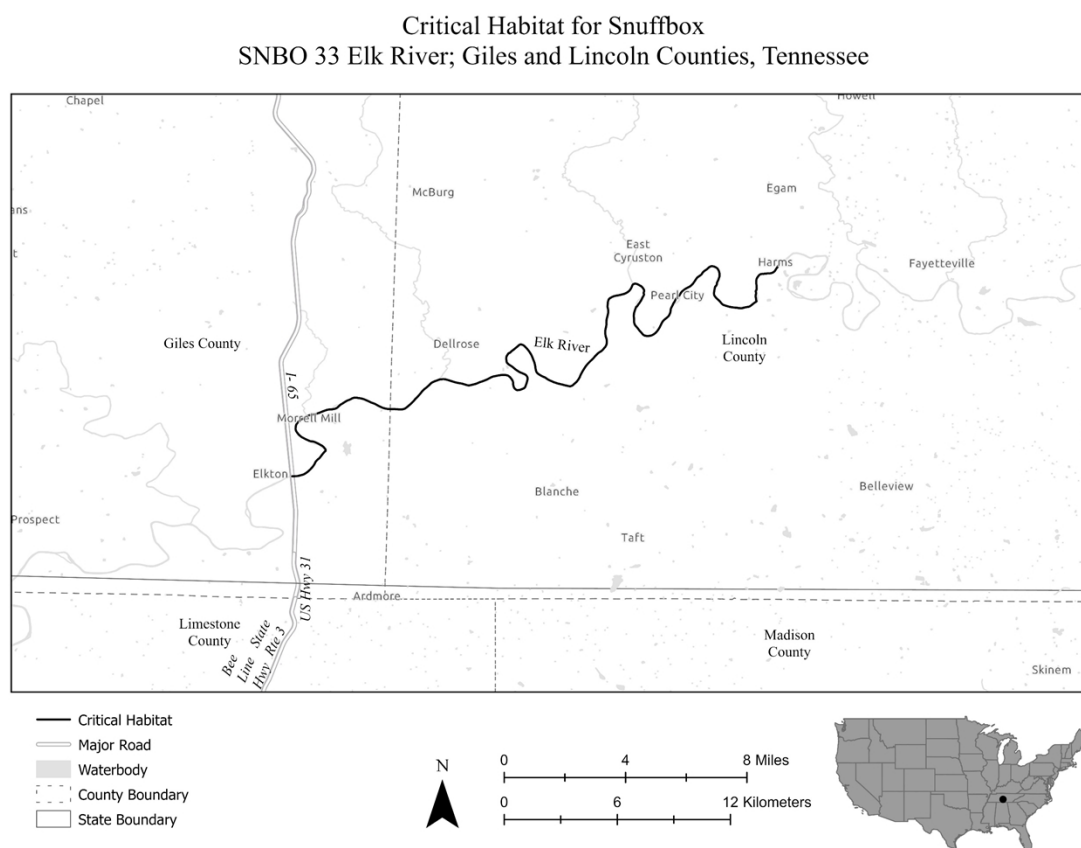


(38) SNBO 33: Elk River; Giles and Lincoln Counties, Tennessee.

(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 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)



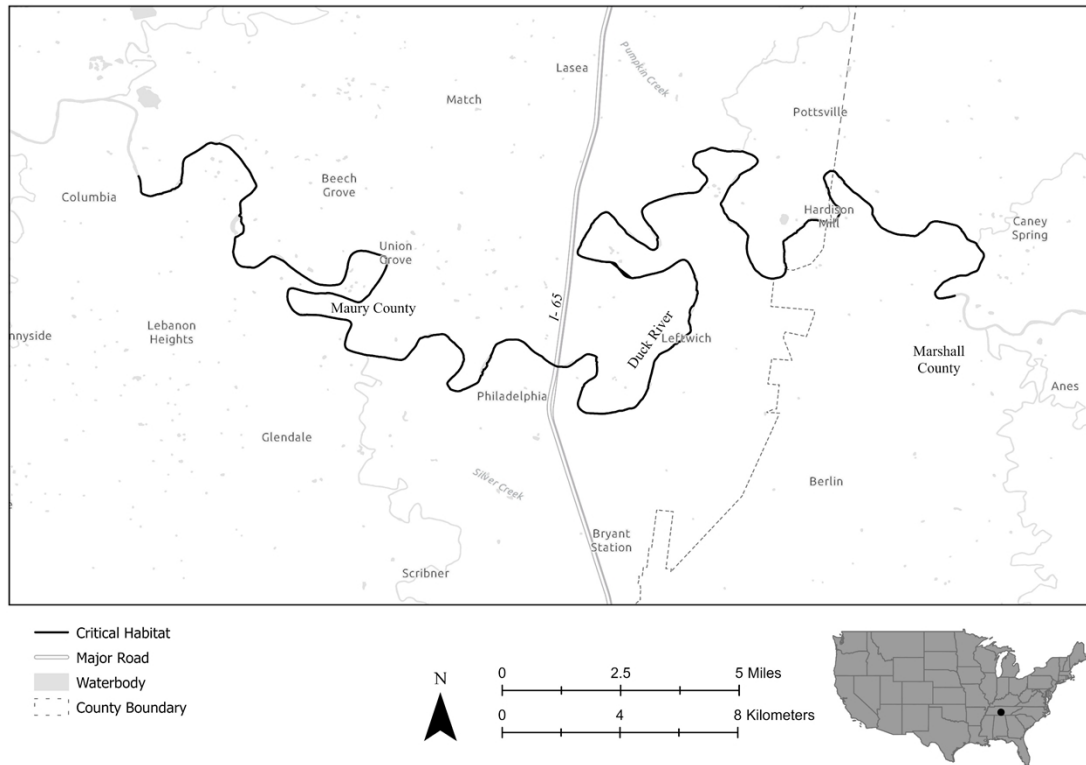
(39) SNBO 34: Duck River; Marshall and Maury Counties, Tennessee.

(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 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



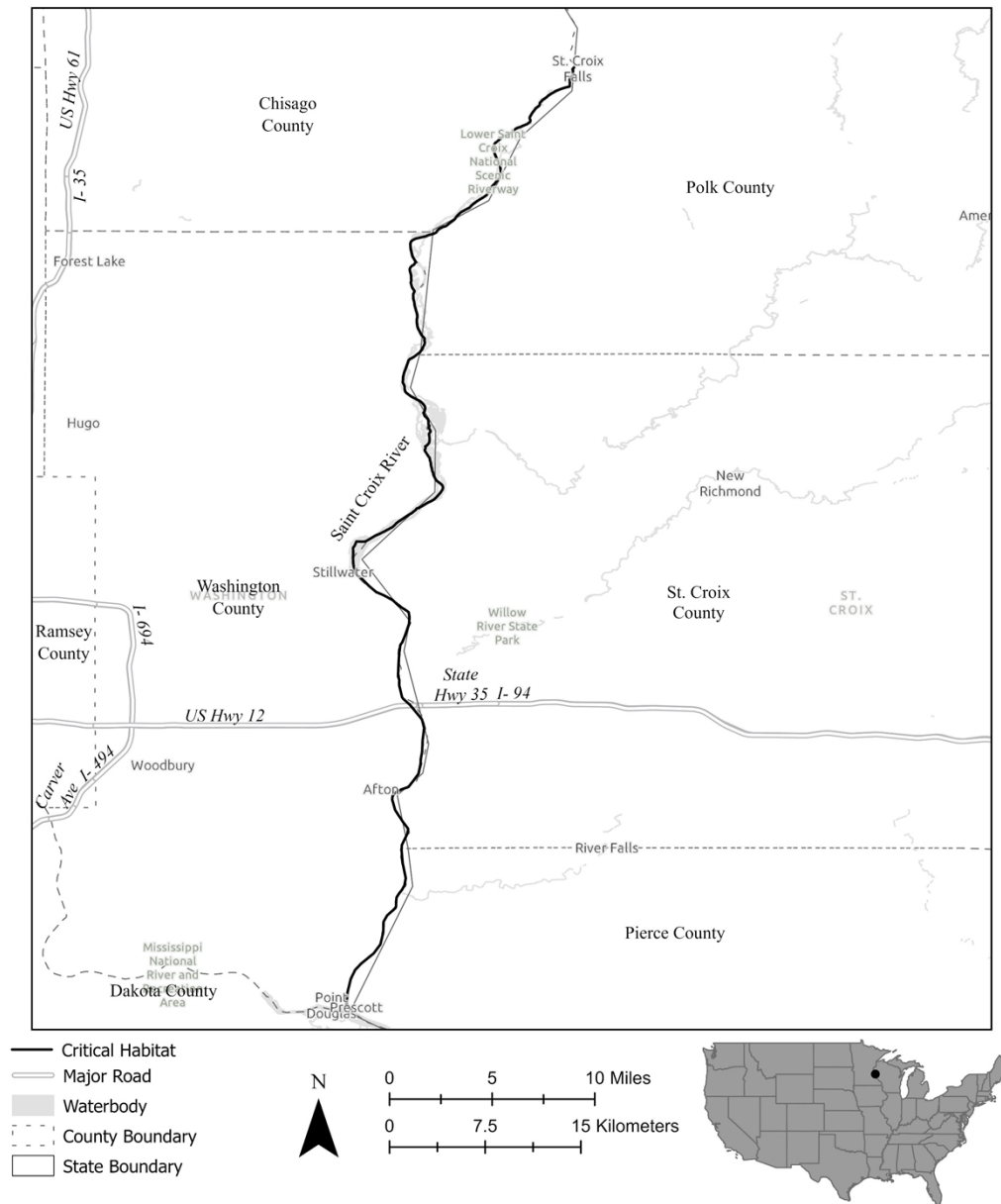
(40) SNBO 35: St. Croix River; Pierce, Polk, and St. Croix Counties, Wisconsin, and Chisago and Washington Counties, Minnesota.

(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 St. Croix Falls (Polk County, Wisconsin) and Taylors Falls (Chisago County, Minnesota) downstream to its confluences with the Mississippi River at Prescott (Pierce County, Wisconsin) and Point Douglas (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.

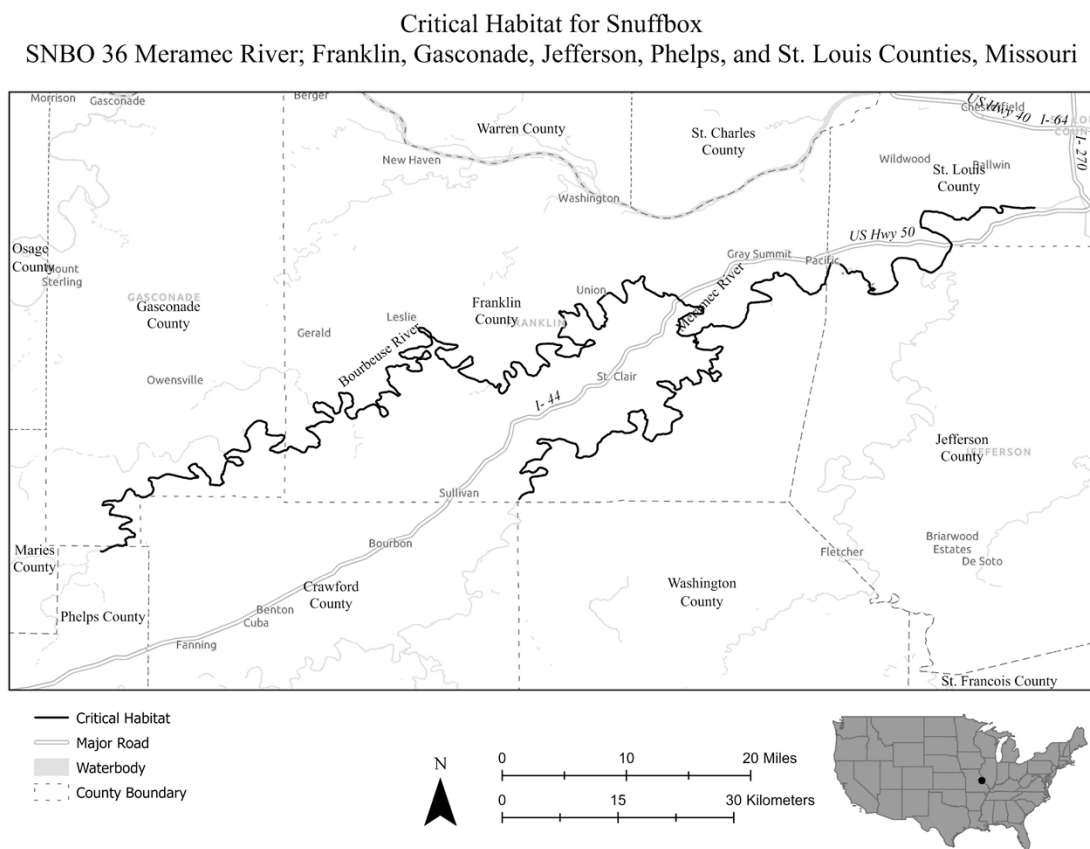
(i) SNBO 36 consists of 227 rmi (365 rkm) of the Meramec River and the Bourbeuse River in Saint Louis, Jefferson, Phelps, Gasconade, and Franklin Counties, Missouri. The unit includes the river channel up to the ordinary high-water mark.

(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 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.

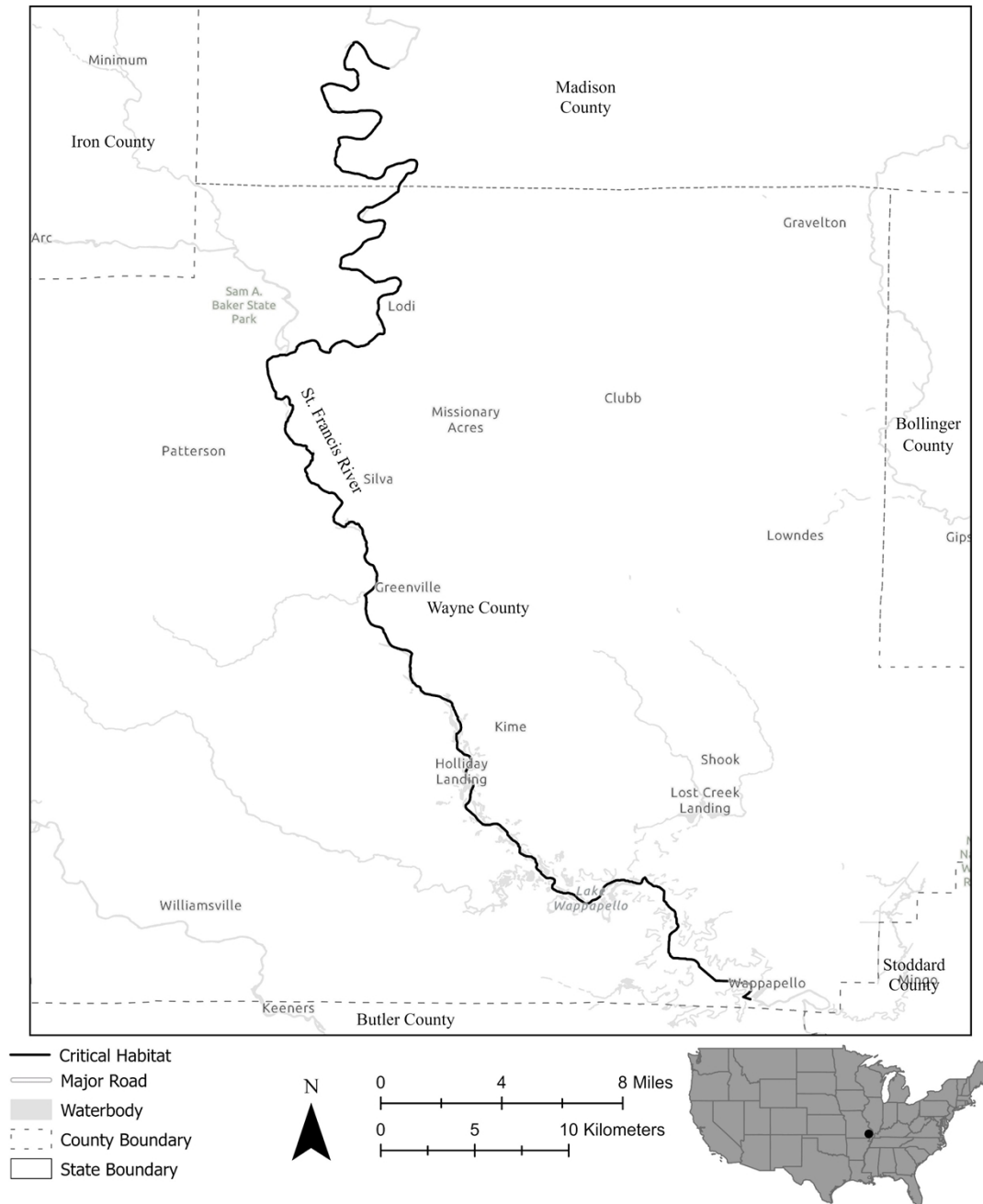
(i) SNBO 37 consists of 58 rmi (93 rkm) of the St. Francis River in Madison and Wayne Counties, Missouri. This unit extends from the St. Francis River's confluence with Twelvemile Creek west of Saco (Madison County, Missouri) downstream to where

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



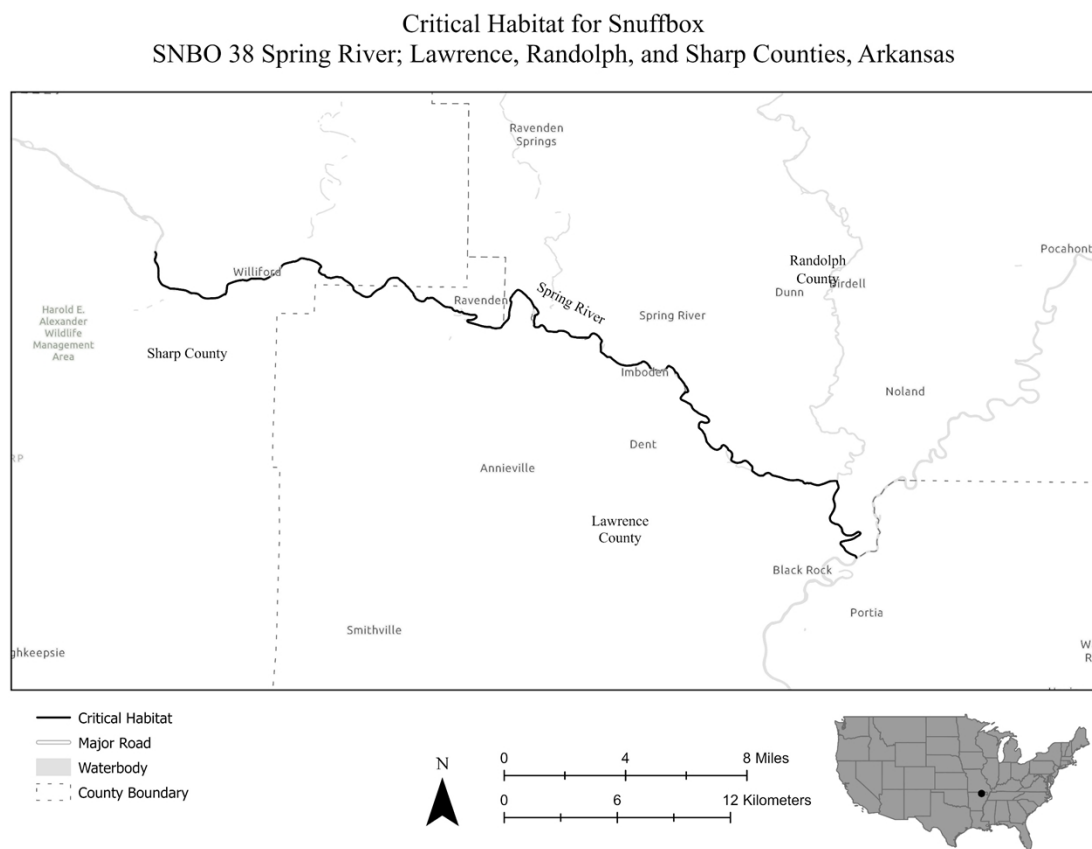
(43) SNBO 38: Spring River; Lawrence, Randolph, and Sharp Counties,

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 Hardy in Sharp County, Arkansas, downstream to its confluence with the Black River east 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 (e.g., sand and gravel substrate with moderate flow, 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 spectaclecase (mooneye (*Hiodon tergisus*) and goldeye (*Hiodon alosoides*)).

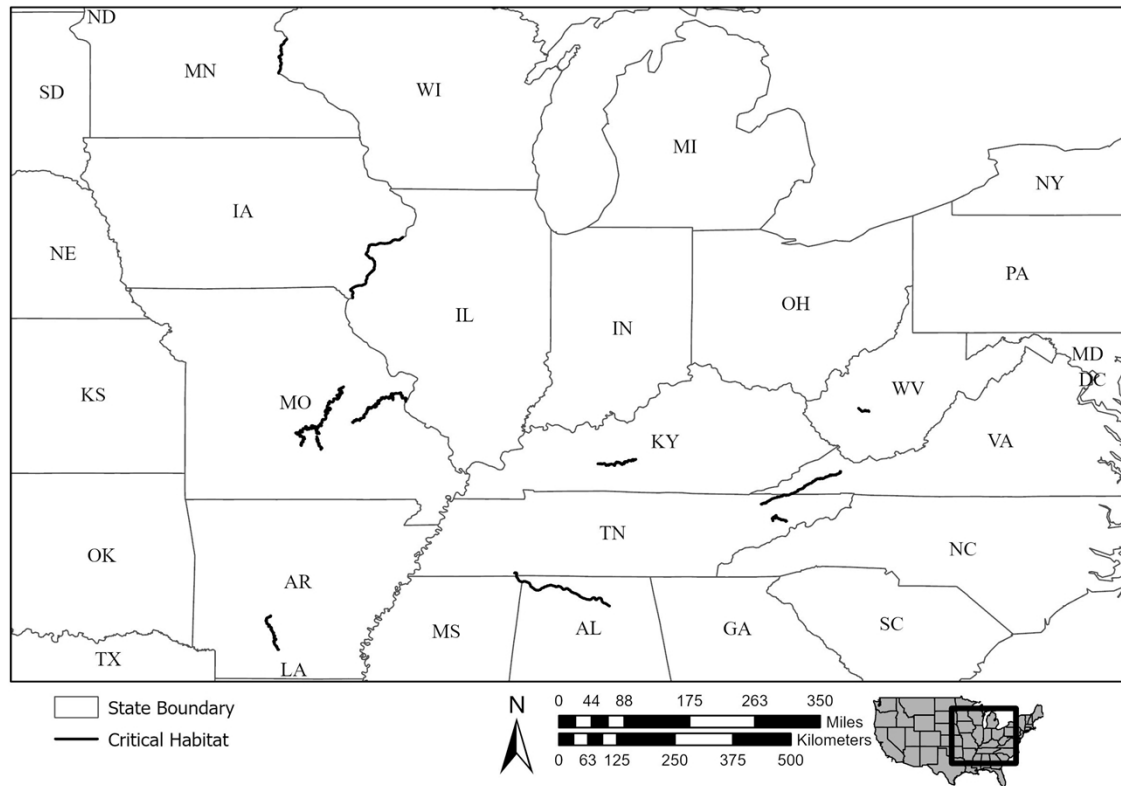
(3) Critical habitat does not include human-made structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the final rule.

(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.

(5) Index map follows:

Figure 1 to Spectaclecase (*Cumberlandia monodonta*) paragraph (5)

Index Map: Spectaclecase Critical Habitat Units





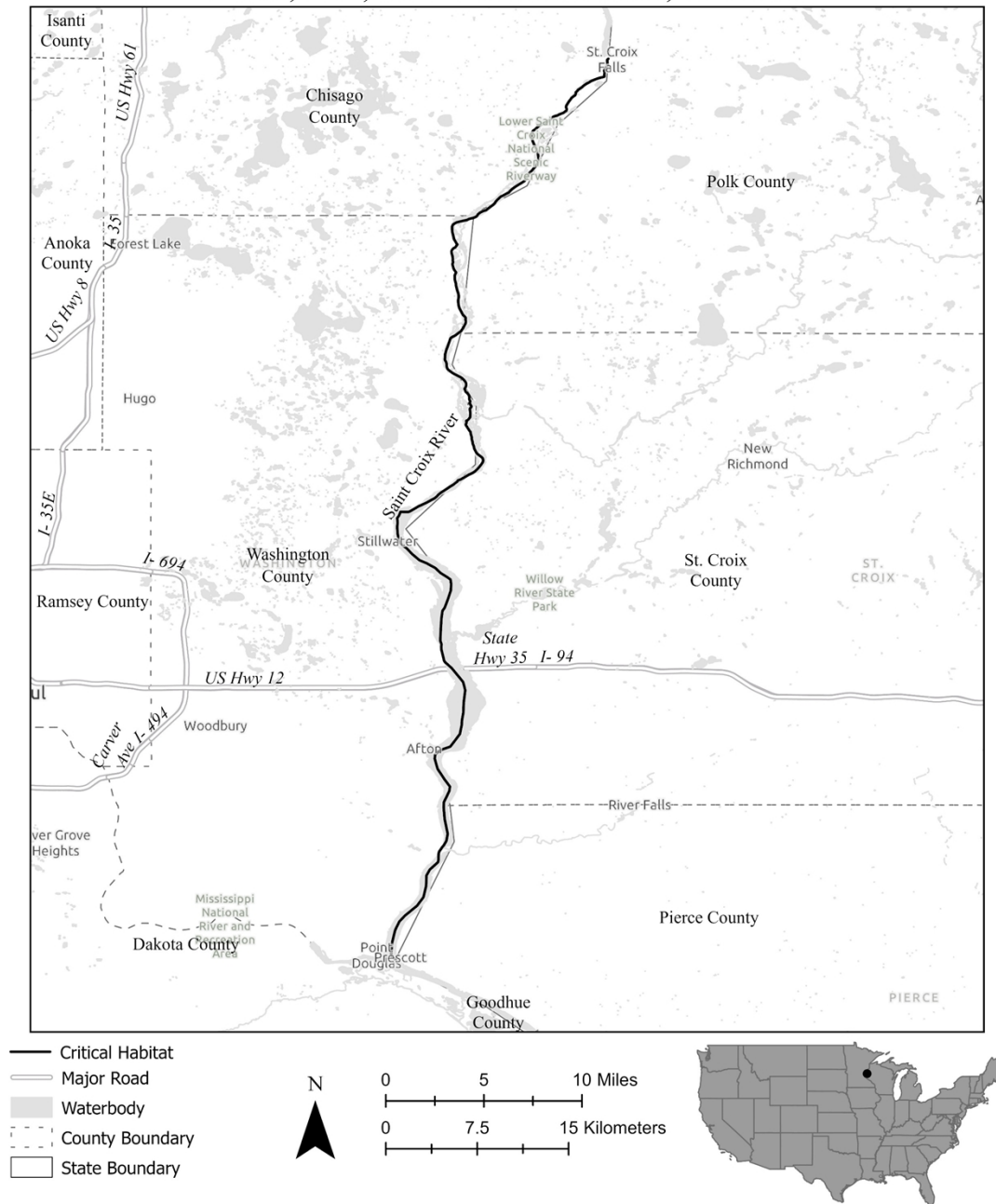
(6) SPCA 1: St. Croix River; Chisago and Washington Counties, Minnesota, and Pierce, Polk, and St. Croix Counties, Wisconsin.

(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 St. Croix Falls (Polk County, Wisconsin) downstream to its confluence with the Mississippi River at 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



(7) SPCA 2: Mississippi River; Des Moines, Lee, Louisa, Muscatine, and Scott Counties, Iowa, and Hancock, Henderson, Mercer, and Rock Island Counties, Illinois.

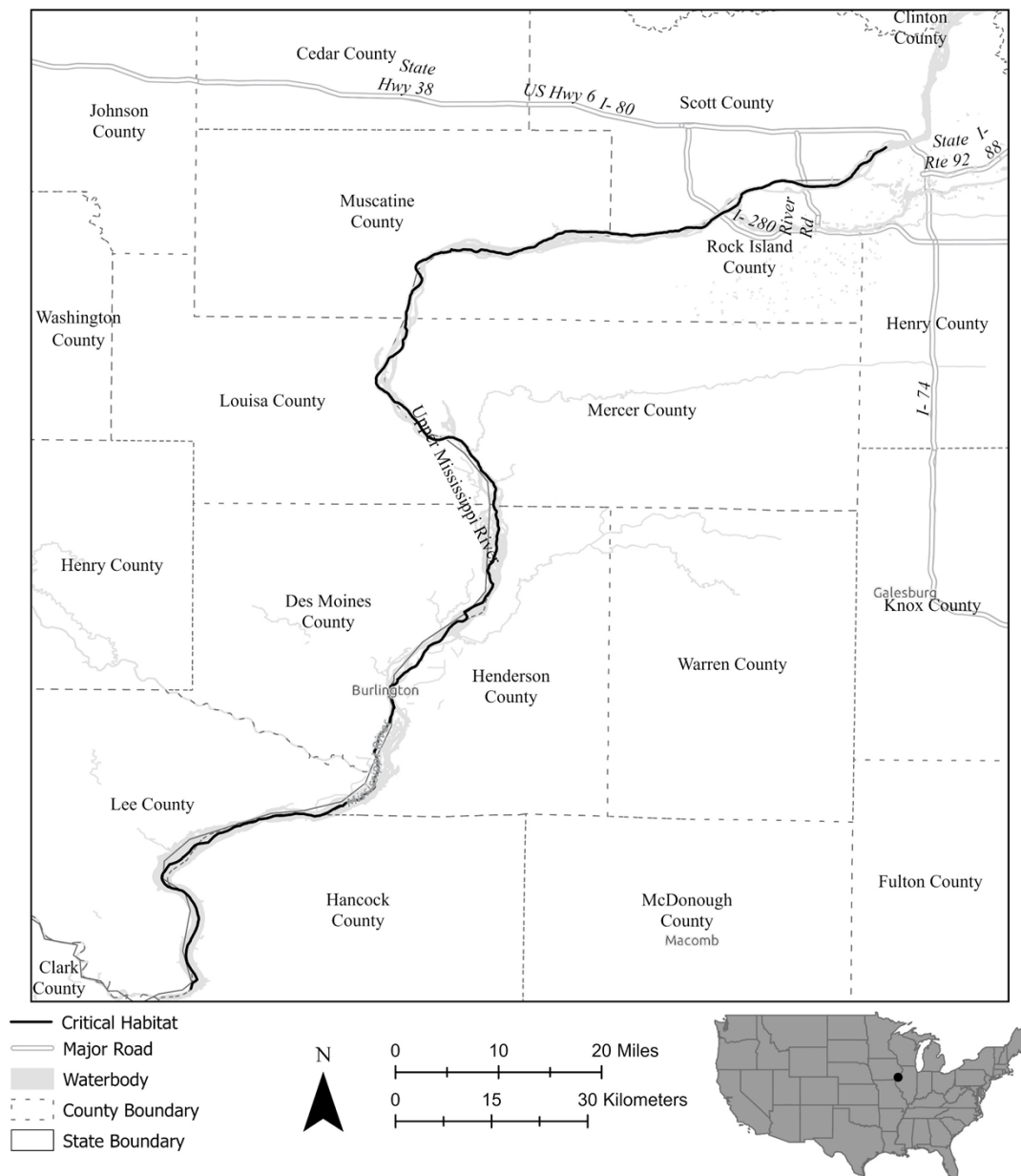
(i) SPCA 2 is on the border between the States of Iowa and Illinois and consists of 132 rmi (213 rkm) of the Mississippi River in Scott, Muscatine, Louisa, Des Moines, and

Lee Counties, Iowa, and Rock Island, Mercer, Henderson, and Hancock Counties, Illinois. The unit extends from the downstream side of Lock and Dam 15 at Hampton (Rock Island County, Illinois) downstream to Lock and Dam 19 at 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.

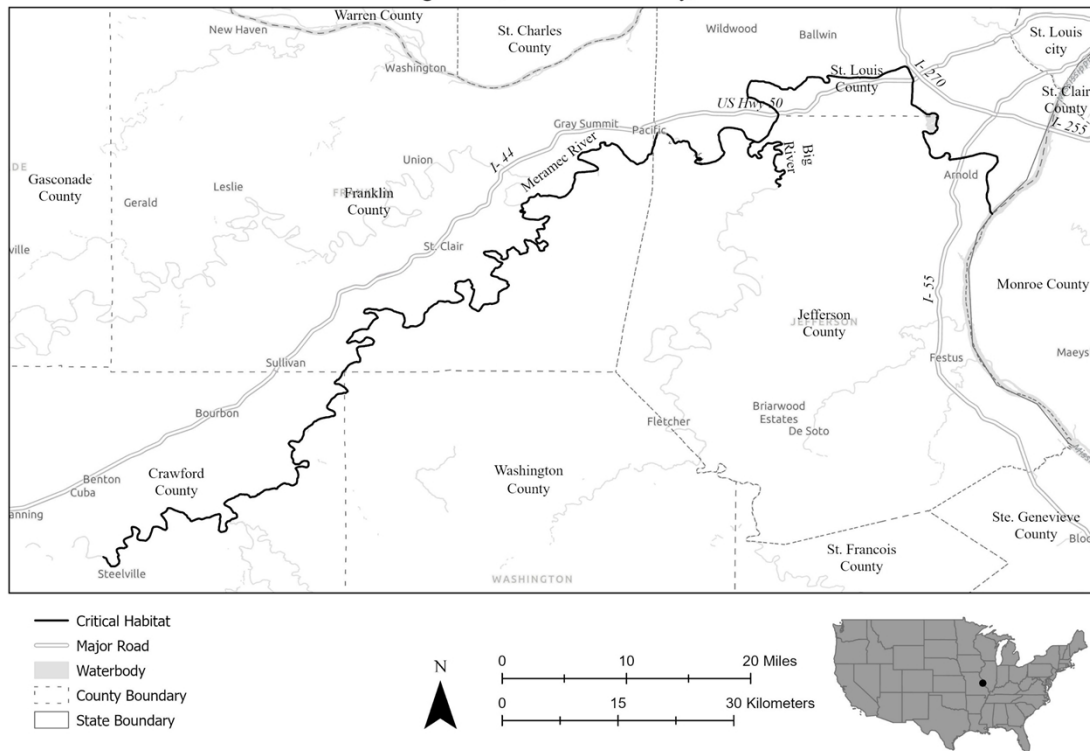
(i) SPCA 3 consists of 156 rmi (251 rkm) of the Meramec River in Jefferson, Saint Louis, Franklin, Crawford, and Washington Counties, Missouri. The unit extends

from the downstream side of the Highway 19 bridge near Wildwoods (Crawford County, Missouri) downstream to the confluence of the Meramec River with the Mississippi River near 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 Beach 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.

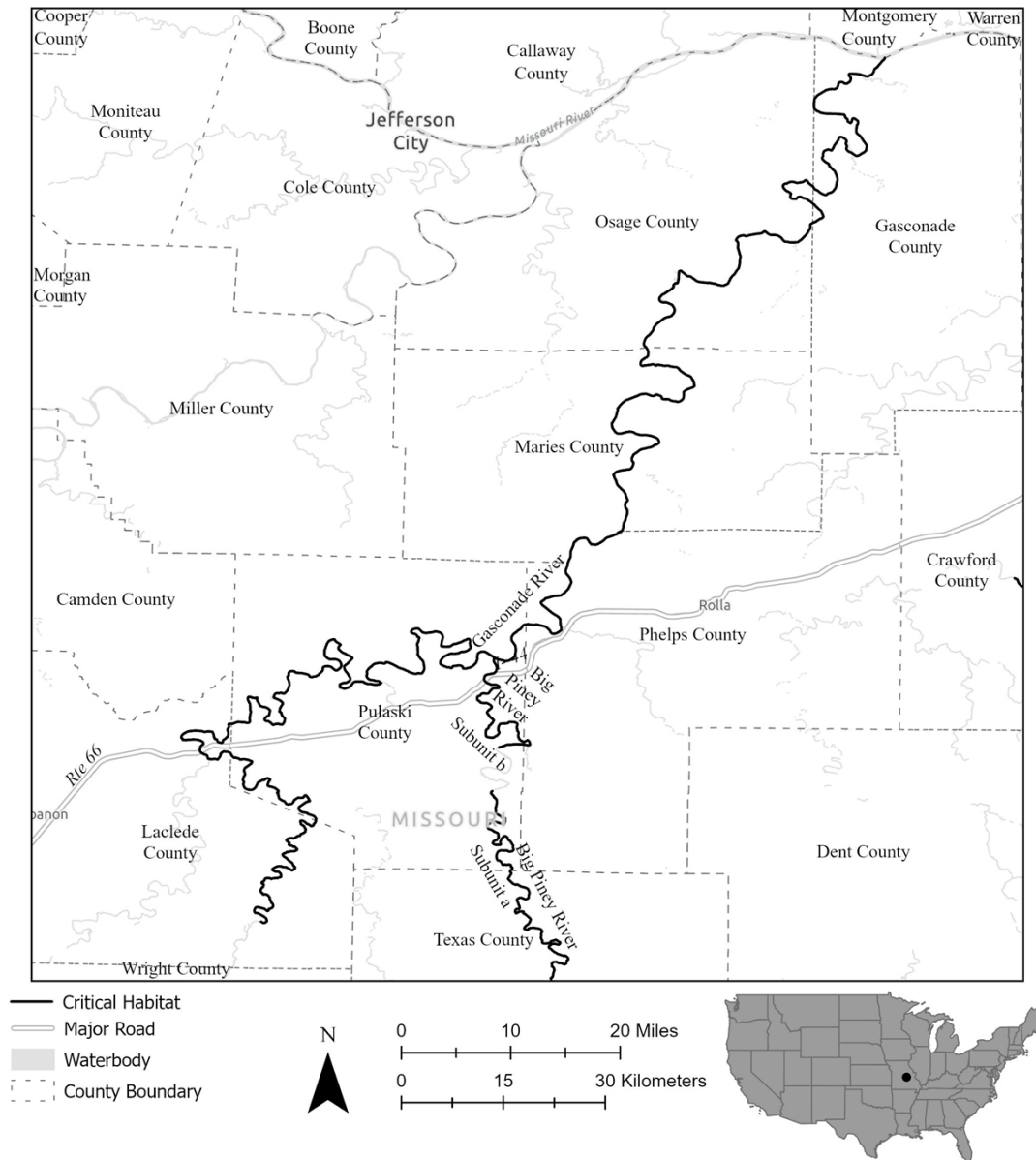
(10) SPCA 5: Gasconade River; Gasconade, Laclede, Maries, Osage, Phelps, and Pulaski Counties, Missouri.

(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 Clark Ford (Laclede County, Missouri) downstream to the confluence of the Gasconade River with the Missouri River at 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. SPCA 6 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 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.

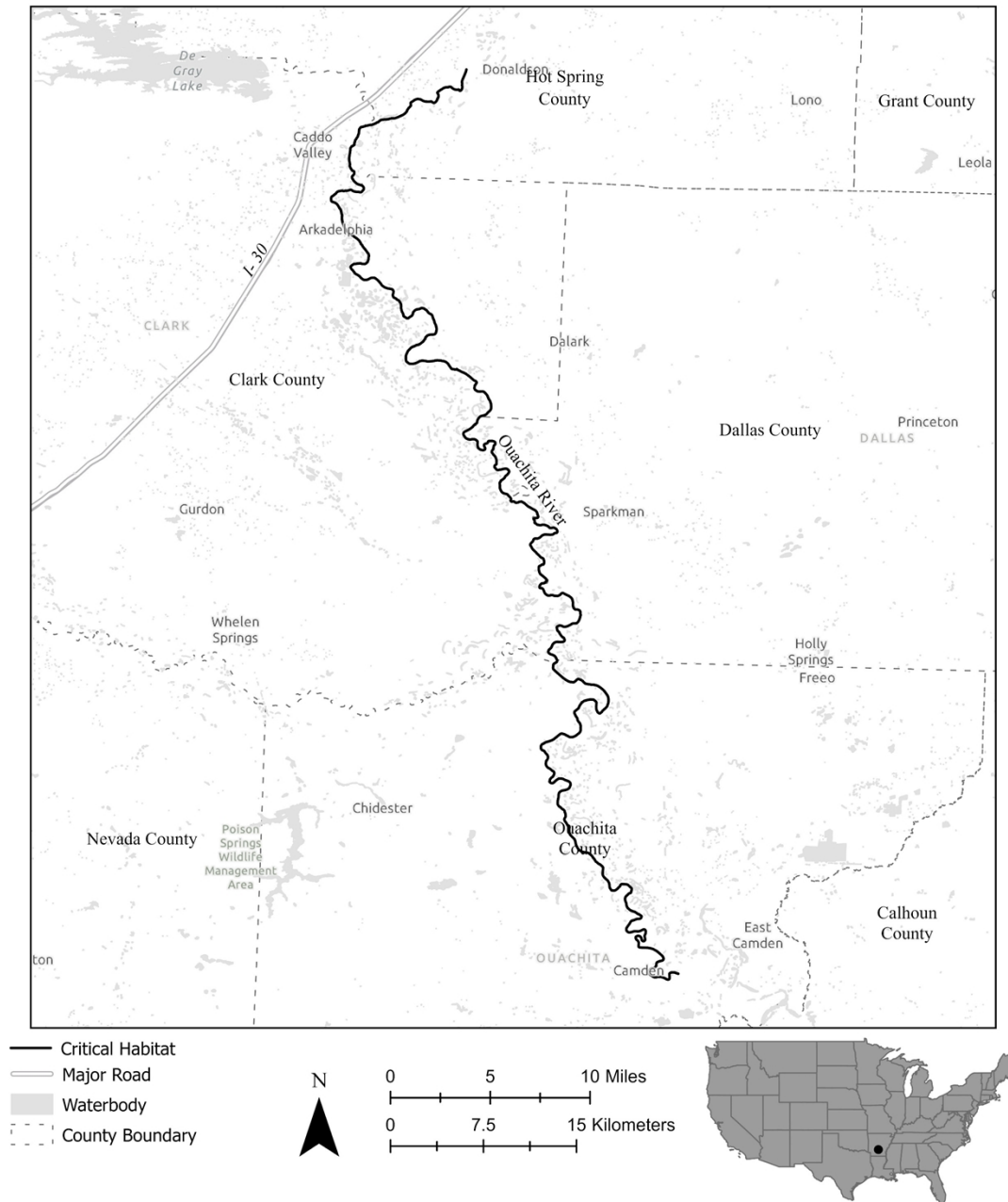
(i) SPCA 7 consists of 83 rmi (133 rkm) of the Ouachita River in Hot Springs, Clark, Dallas, and Ouachita Counties, Arkansas. This unit extends from the downstream side of Highway 67 bridge at Donaldson (Hot Springs County, Arkansas) downstream to the Highway 79N bridge at Camden (Ouachita County, Arkansas). 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

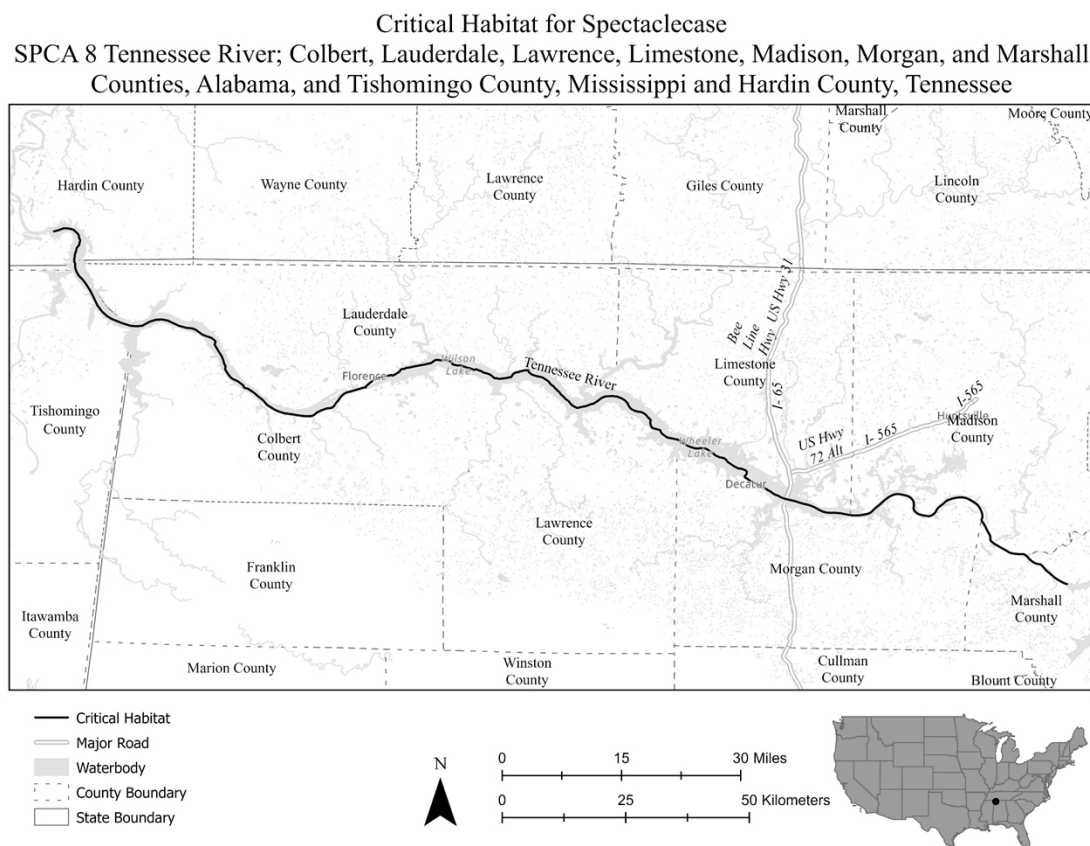


(13) SPCA 8: Tennessee River; Colbert, Lauderdale, Lawrence, Limestone, Madison, Marshall, and Morgan Counties, Alabama; Tishomingo County, Mississippi; and Hardin County, Tennessee.

(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 Guntersville (Marshall County, Alabama) downstream to Pickwick Landing Dam at 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)

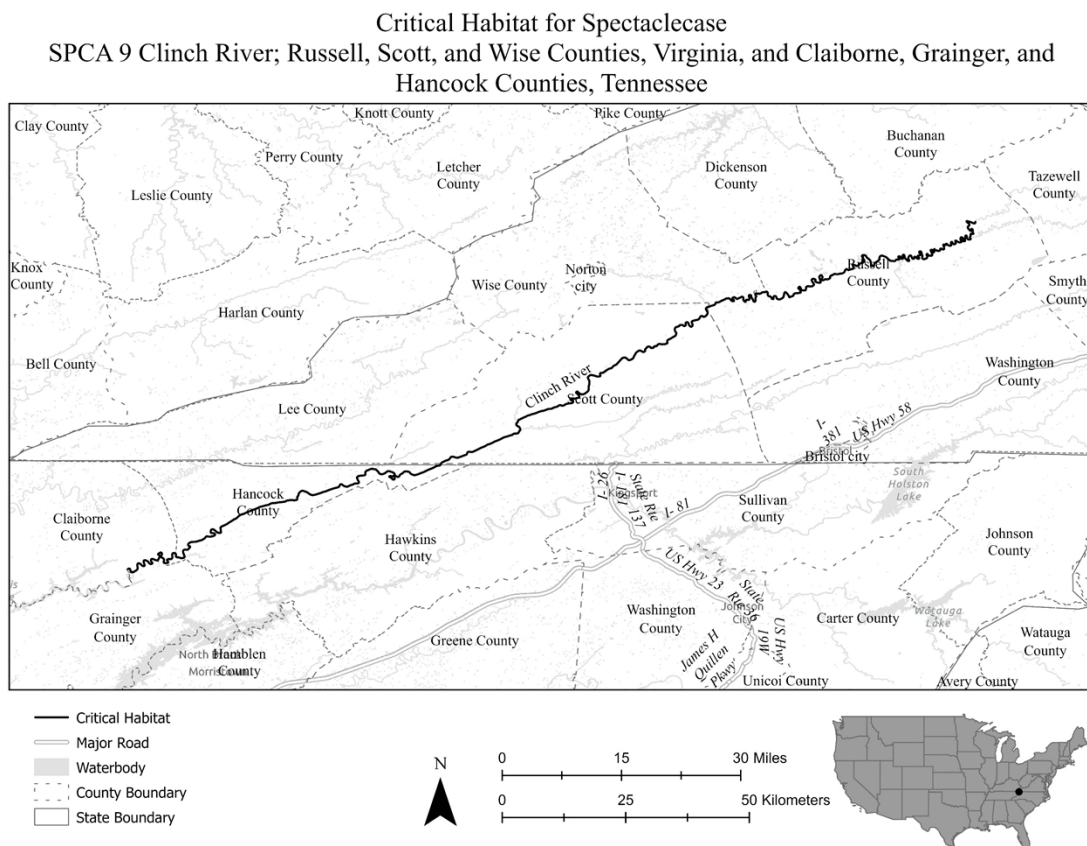


(14) SPCA 9: Clinch River; Russell, Scott, and Wise Counties, Virginia, and Claiborne, Grainger, and Hancock Counties, Tennessee.

(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 Swords Creek (Russell County, Virginia) and extends downstream to the Highway 25E bridge near 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)



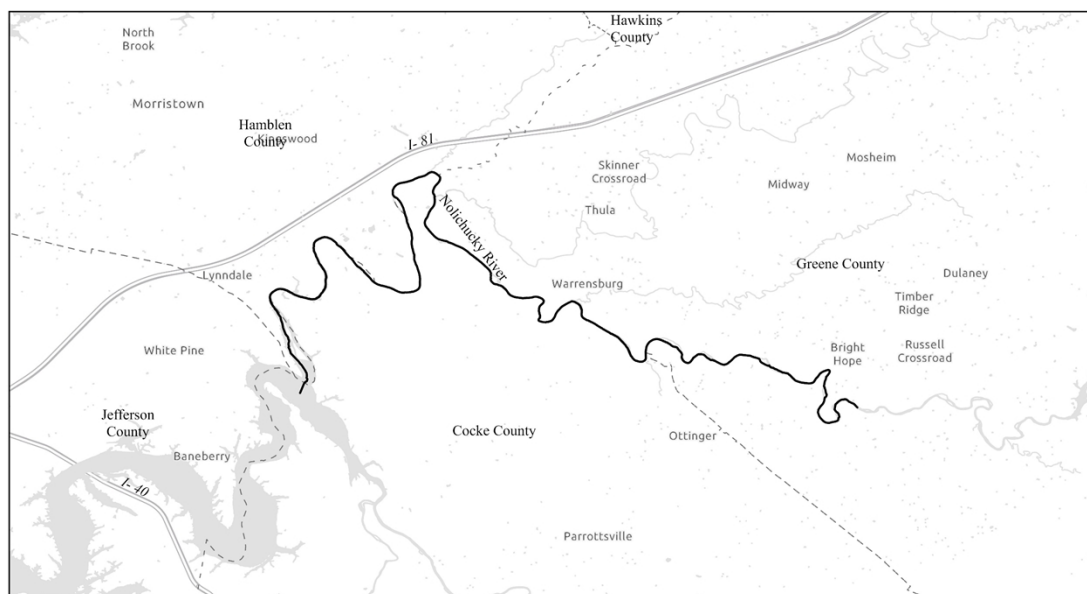
(15) SPCA 10: Nolichucky River; Cocke, Greene, Hamblen, and Jefferson Counties, Tennessee.

(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 St. James (Greene County, Tennessee) downstream to its confluence with the French Broad River near 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



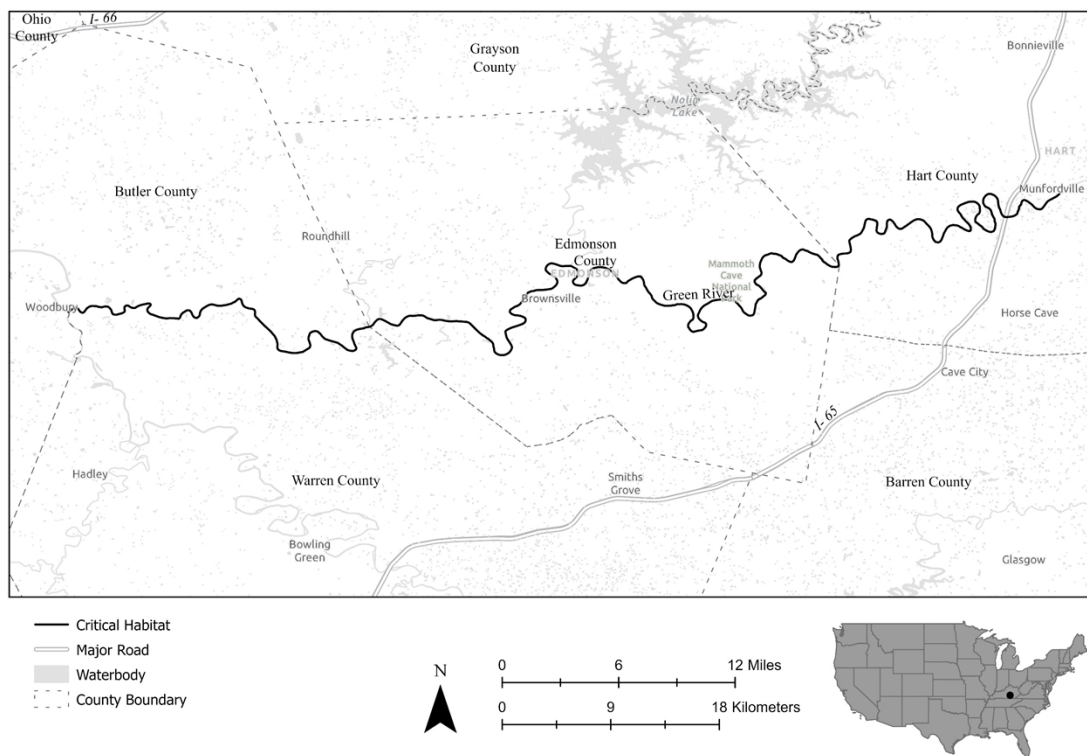
(16) SPCA 11: Green River; Butler, Edmonson, Hart, and Warren Counties, Kentucky.

(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 Munfordville (Hart County, Kentucky) downstream to its confluence with the Barren River near 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



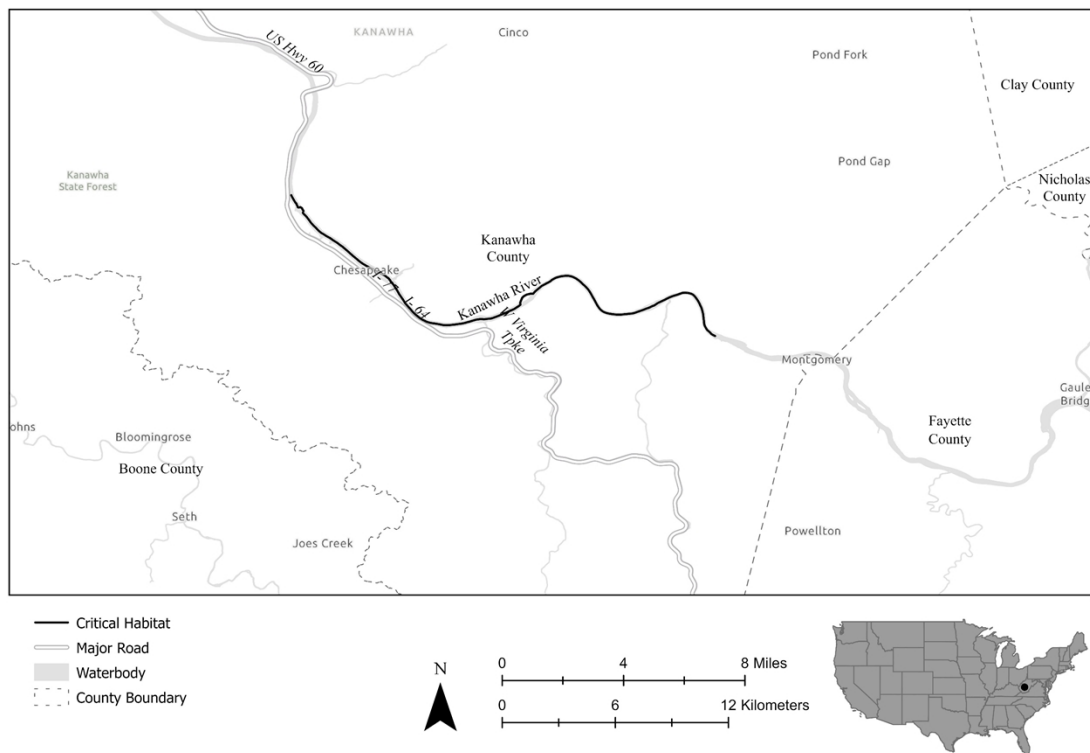
(17) SPCA 12: Kanawha River; Kanawha County, West Virginia.

(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 London downstream to the Lock and Dam at 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



\* \* \* \* \*

**Martha Williams,**  
*Director,*  
*U.S. Fish and Wildlife Service.*

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