



Frequently Asked Questions Final Listing Rule and Designation of Critical Habitat for the Fluted Kidneyshell and Slabside Pearlymussel

September 2013

Q1: Which two freshwater mussels are being listed as endangered under the Endangered Species Act (ESA)?

A1: The U.S. Fish and Wildlife Service is listing the fluted kidneyshell (*Ptychobranthus subtentum*) and the slabside pearlymussel (*Pleuroaia dolabelloides*) as endangered under the Endangered Species Act of 1973, as amended (ESA).

The Service opened two public comment periods on the proposal to list and designate critical habitat for these mussels under the ESA, one on October 4, 2012, and another on April 29, 2013. The Service held a public hearing in Abingdon, Virginia on May 14, 2013.

Q2: Where are the fluted kidneyshell and slabside pearlymussel found?

A2: These two species are only found only in portions of the Cumberland and Tennessee River systems of Alabama, Kentucky, Mississippi, Tennessee, and Virginia. The Cumberland River drainage originates in southeastern Kentucky and flows southwest across Tennessee before turning north and reentering Kentucky to empty into the lower Ohio River. The Cumberland River drainage spans the Appalachian Plateaus and Interior Low Plateaus Physiographic Provinces. The Tennessee River originates in southwest Virginia and western North Carolina, eastern Tennessee, and northern Georgia and flows southwesterly into western Tennessee and Alabama before turning north and flowing into Kentucky before emptying into the Ohio River. The larger Tennessee River drainage spans five physiographic provinces, including the Blue Ridge, Valley and Ridge, Appalachian Plateaus, Interior Low Plateaus, and Coastal Plain.

Q3: Why do these two mussels need protection under the ESA?

A3: The fluted kidneyshell has been eliminated from more than 50 percent of the total number of streams from which it was historically known, and the slabside pearlymussel has been eliminated from about 50 percent of the total number of streams from which it was historically known. Only a handful of populations of both species are considered biologically viable. Threats to these two mussels include impoundments, mining, oil and gas exploration, sedimentation, chemical contaminants, temperature alterations, recurring drought and flooding, population fragmentation and isolation, loss of fish hosts, and the introduced Asian clam.



Q4: What is a freshwater mussel?

A4: Mussels are freshwater animals that belong in the mollusk family, which includes clams, oysters, scallops, snails, slugs, and squid, as well as freshwater mussels.

Mussels generally live embedded in the bottom of rivers, streams, and other bodies of water. They siphon water into their shells and across four gills that are specialized for respiration and food collection. They primarily feed on detritus (disintegrated organic debris), algae, and bacteria. Adults are filter feeders and generally orient themselves on or near the substrate surface to take in food and oxygen from the water above them. Juveniles typically burrow completely beneath the substrate surface and are pedal (foot) feeders (bringing food particles inside the shell for ingestion that adhere to the foot while it is extended outside the shell) until the structures for filter feeding are more fully developed.

Q5: What is critical habitat?

A5: Critical habitat is defined in the ESA. It refers to specific geographic areas that are essential for the conservation of a threatened or endangered species and that may require special management consideration or protection. These areas are generally, but not necessarily, occupied by the species at the time of designation. Federal agencies are charged with ensuring their actions do not 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. It does not grant government or public access to private lands. The designation of critical habitat on private land has no impact on private landowner activities that do not require federal funding or federal permits. The designation of critical habitat is only applicable to federal activities.

Critical habitat refers to physical and/or biological habitat features needed for life and successful reproduction of the species. These include, but are not limited to:

- space for individual and population growth and for normal behavior;
- cover or shelter;
- food, water, air, light, minerals, or other nutritional or physiological requirements;
- sites for spawning and rearing offspring; and
- habitats that are protected from disturbances or are representative of the historic geographical and ecological distributions of a species.

Q6: What physical and biological habitat features do these mussels require?

A6: Here are the habitat features required by these two mussels:

- (1) Riffle habitats within geomorphically stable large stream channels (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).



- (2) Stable substrates of sand, gravel, and cobble with low to moderate amounts of fine sediment and containing flow refugia with low shear stress.
- (3) A natural hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species are found, and connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability for all life stages, and spawning habitat for native fishes.
- (4) Water quality with low levels of pollutants and including a natural temperature regime, pH (between 6.0 to 8.5), oxygen content (not less than 5.0 mg/L), hardness, turbidity, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.
- (5) The presence and abundance of fish hosts necessary for recruitment of the fluted kidneyshell and slabside pearlymussel.

Q7: Why is the Service designating critical habitat for these two mussels?

A7: The ESA requires the Service to identify critical habitat at the time it determines a species should be protected under the ESA, to the maximum extent it is determinable and prudent (the benefits of the designation outweigh the costs). The Service has sufficient knowledge of the habitat requirements of these freshwater mussels to determine critical habitat, and has determined that designation is prudent.

Q8: What geographic areas are proposed as critical habitat?

A8: In total, the Service is designating approximately 2,218 km (1,380 mi) of stream channel in Alabama, Kentucky, Mississippi, Tennessee, and Virginia as critical habitat for the fluted kidneyshell and slabside pearlymussel. Ten of the units overlap and are designated critical habitat for both species. For the fluted kidneyshell, the Service is designating 24 critical habitat units encompassing approximately 1,181 mi (1,899 km) of stream channel in Kentucky, Tennessee, and Virginia. Thirteen critical habitat units encompassing approximately 970 mi (1,562 km) of stream channel in Alabama, Mississippi, Tennessee, and Virginia are being designated for the slabside pearlymussel.

Q9: How did the Service determine which areas to designate as critical habitat?

A9: The Service reviewed the best scientific information available concerning the species' present and historic range, habitat, biology, and potential threats. Through this review, the Service identified those areas that contained the physical and biological features needed by these species and are necessary for their conservation. Critical habitat does not include existing developed sites such as homes or other urban structures, agricultural areas, highways, bridges, or other similar structures.



Q10: Is the Service designating unoccupied habitat for these two mussels?

A10: Yes. While some streams in the rule serve as unoccupied habitat for one or both species, they are occupied by the other species in this rule or by another previously listed mussel species. For instance, the Rockcastle River (Unit FK3) is being designated as unoccupied critical habitat for the fluted kidneyshell. This unit is occupied by other federally listed species, but they do not currently have any critical habitat designations.

Some streams in the rule have no critical habitat designations and instead are designated as nonessential experimental populations (NEPs) for other federally listed species that may or may not occur in these streams. For instance, the Holston River (Unit FK19) and French Broad River (Unit FK20) are being designated as unoccupied critical habitat for the fluted kidneyshell, and these rivers are NEPs for 15 mussels, one snail, and five fishes. These two streams contain other federally-listed species.

The Service has designated streams that are outside the geographical area occupied by the fluted kidneyshell because it has determined that: (1) Such areas are essential for the conservation of the species; and (2) designation of only occupied habitats is not sufficient to conserve the fluted kidneyshell. Unoccupied habitats provide additional habitat for population expansion and promote genetic diversity, which will decrease the risk of extinction for this species.

Q11. Units FK3 (Rockcastle River), FK19 (Holston River), and FK20 (French Broad River) are designated as unoccupied habitat for the fluted kidneyshell, even though the species has not been seen in these rivers for decades. Why are these areas deemed essential to the conservation of the species?

A11. Although the fluted kidneyshell has not recently been collected in the Rockcastle River, the mussel exists in adjacent tributaries, such as Horselick Creek. Recent surveys show that Rockcastle River now has a diverse mussel fauna, suggesting that river conditions have improved and now contain the physical and biological features needed by the fluted kidneyshell for survival and recovery. For the Holston and French Broad rivers, improvements to Tennessee Valley Authority (TVA) dam operations have increased dissolved oxygen levels in the rivers, making them more suitable for the kidneyshell. The Service considers all three units, as well as other unoccupied units in the rule, to be essential for the conservation of the fluted kidneyshell due to the need to re-establish the species within other portions of its historical range to reduce threats from random events, such as droughts and floods.

Q12. What specifically has TVA done to improve conditions in river reaches below its dams?

A12. Beginning in 1987, the TVA launched the Reservoir Releases Improvements/Lake Improvement Plan (RRI/LIP). This project's goals are to improve aquatic life, support economic development, and improve downstream recreational uses below their reservoirs. The RRI/LIP improved water releases from 16 dams in the TVA system of



reservoirs by implementing minimum flows and aeration of the discharges. These improvements were implemented at several dams relevant to this rulemaking: Cherokee Dam on the Holston River; Douglas Dam on the French Broad River; Apalachia Dam on the Hiwassee River; Tims Ford Dam on the Elk River; and Normandy Dam on the Duck River. Portions of all of these rivers below their dams are proposed as critical habitat for one or both mussels. Because of the project's success, the Service designated a non-essential experimental population (NEP) for 21 aquatic species in the Cherokee and Douglas Dam tailwaters. This NEP designation allowed the Service to proceed with a reintroduction program for listed species that were historically found in these tailwaters, but disappeared from these rivers after construction of the dams.

In 2005 and 2006, TVA conducted a formal consultation with the Service regarding routine operation and maintenance of TVA's water control structures. TVA agreed to modify operations at Tims Ford Dam in an attempt to more closely simulate natural flow regimes and to warm water temperatures downstream from the dam. TVA is using an adaptive management process to determine which combination of sluicing, spilling, and hydropower generation at Tims Ford Dam will produce the desired flow and temperature conditions for the boulder darter, a federally-listed, endangered species. This process is ongoing, but is expected to improve habitat conditions for the boulder darter and other aquatic species, including these two mussels, in the entire 133-mile tailwater.

Q13: Can areas be exempted or excluded from a critical habitat designation?

A13: Yes. Military lands can be exempted from critical habitat designation. The ESA states: "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." There are no military lands included in the final critical habitat designation for these two mussels.

The ESA also allows for exclusions from critical habitat, provided that the benefits of the exclusion outweigh the benefits of inclusion, and that the exclusion will not result in the extinction of the species. Exclusions are possible for public and private lands that have secure, long-term conservation plans in place that benefit the mussels, and for economic reasons. The Service is not excluding any areas from this critical habitat designation.

Q14: What is the impact of designating critical habitat on private lands and private landowners?

A14: The designation of critical habitat on private land has no impact on private landowner activities that do not require federal funding or permits. The designation of critical habitat is only applicable to federal activities. See Q15 for how critical habitat impacts private landowners who are seeking federal permits or funding.



Q15: What is the impact of designating critical habitat on federal agencies?

A15: Even when there is no critical habitat designation, federal agencies must consult with the Service on actions that may affect listed species, in order to ensure that any action they carry out, fund, or authorize is not likely to jeopardize a listed species' continued existence. Consultation is a process by which federal agencies use the Service's expertise to evaluate the potential effects of a proposed action on federally listed species and their critical habitats. Where critical habitat is designated, a consultation also ensures that the critical habitat is not destroyed or adversely modified. Consultation also may identify alternatives to the proposed action to avoid adverse effects on listed species and their habitats. Federal agencies are already required to consult with the Service under the ESA whenever a proposed action might impact a listed species or its habitat. Thus, the designation of critical habitat is unlikely to appreciably increase the cost of consultation to either the federal agency or the permit applicant.

Q16: What is destruction or adverse modification of critical habitat?

A16: Destruction or adverse modification of designated critical habitat is defined in the Service's regulations as a "direct or indirect alteration that appreciably diminishes the value of the critical habitat for both the survival and recovery of a listed species" (50 CFR 402.02). Such alterations include, but are not limited to, adverse changes to the physical or biological features that were the basis for determining the habitat to be critical.

Q17: Will a critical habitat designation delay federal decisions on permits or funding?

A17: Under the ESA, the Service has specific time frames in which to complete the consultation process with federal agencies regarding federally protected species. These time frames remain the same with or without designated critical habitat.

Q18: Does the ESA consider economic consequences as a part of designating critical habitat?

A18: Yes. The Service must take into account the economic impact, as well as any other relevant impacts, of specifying any particular area as critical habitat. The Service may exclude any area from critical habitat if it determines the benefits of excluding it outweigh the benefits of specifying the area as a part of critical habitat, unless the Service determines that failure to designate the area as critical habitat would result in the extinction of the species.

The Service contracted with RTI International to conduct the economic analysis of the critical habitat designation for these two species. On April 29, 2013, the Service announced the availability of a draft economic analysis considering the impact of a proposal to designate critical habitat for these two freshwater mussels proposed for listing as endangered.



Q19: What are the economic impacts associated with the critical habitat designation for these mussels?

A19: The Service conducted a draft and final economic analysis of the proposed critical habitat designation, as required under the ESA. The analysis considered the potential impact of the designation on various sectors of the economy. Based on the best available information, including extensive discussions with stakeholders, the Service estimates that the designation will cost around \$3.5 million over 20 years assuming a seven percent discount rate, or \$175,000 on an annualized basis. The majority of these costs are administrative and are borne by federal and state agencies; however, some costs may be incurred by local governments and businesses. These costs stem from the requirement for federal agencies to consult with the Service regarding the impacts of their actions, or those that they fund or authorize, on critical habitat.

Road maintenance and construction activities are likely to be subject to the greatest incremental impacts at \$1.94 million over 20 years; followed by commercial, industrial, residential, and associated utility development at \$1.1 million; restoration and conservation at \$221,000; mining at \$132,000; agricultural and recreational development at \$75,900; federal management plan administration at \$24,200; dam operation at \$21,500; and state water quality standards at \$6,800. More detail on the methods used to generate these estimates, as well as the estimated impacts, are available in the final economic analysis.

Copies of the final economic analysis can be obtained by contacting the U.S. Fish and Wildlife Service, Tennessee Field Office, 446 Neal Street, Cookeville, TN 38501; telephone 931-528-6481. The document also is available electronically at <http://www.fws.gov/cookeville/> or by visiting Docket Number FWS-R4-2013-0026 on www.regulations.gov.

Q21: Who can I contact for more information regarding the final listing and critical habitat designation for the fluted kidneyshell and slabside pearl mussel?

A21: Stephanie Chance, U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, 446 Neal Street, Cookeville, TN 38501; telephone 931-528-6481; facsimile 931-528-7075. Also, please visit <http://www.fws.gov/cookeville/> or Docket #FWS-R4-ES-2012-0004 (listing) and FWS-R4-ES-2013-0026 (critical habitat) on www.regulations.gov.