DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2011–0074; MO 92210–0–0009 B4]

RIN 1018–AX76

Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Cumberland Darter, Rush Darter, Yellowcheek Darter, Chucky Madtom, and Laurel Dace

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose critical habitat for the Cumberland darter (*Etheostoma susanae*), rush darter (*Etheostoma phytophilum*), yellowcheek darter (*Etheostoma moorei*), chucky madtom (*Noturus crypticus*), and laurel dace (*Chrosomus saylori*) under the Endangered Species Act of 1973, as amended (Act). Approximately 85 river kilometers (rkm) (53 river miles (rmi)) are being proposed for designation of critical habitat for the Cumberland darter in McCreary and Whitley Counties, Kentucky, and Campbell and Scott Counties, Tennessee; 42 rkm (27 rmi) and 19 hectares (ha) (22 acres (ac)) are being proposed for designation of critical habitat for the rush darter in Etowah, Jefferson, and Winston Counties, Alabama; 157 rkm (98 rmi) are being proposed for designation of critical habitat for the yellowcheek darter in Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas; 32 rkm (20 rmi) are being proposed for designation of critical habitat for the chucky madtom in Greene County, Tennessee; and 42 rkm (26 rmi) are being proposed for designation of critical habitat for the laurel dace in Bledsoe, Rhea, and Sequatchie Counties, Tennessee.

DATES: We will accept comments received or postmarked on or before December 12, 2011. We must receive requests for public hearings, in writing, at the address shown in the **ADDRESSES** section by November 28, 2011.

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

(1) *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the instructions for submitting comments on Docket no. FWS–R4–ES–2011–0074.

(2) *U.S. mail or hand-delivery:* Public Comments Processing, *Attn:* FWS–R4–ES–2011–0074; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Public Comments section below for more information).

FOR FURTHER INFORMATION CONTACT: For information regarding the Cumberland darter, contact Lee Andrews, Field Supervisor, U.S. Fish and Wildlife Service, Kentucky Ecological Services Field Office, J.C. Watts Federal Building, 330 W. Broadway, Room 265, Frankfort, KY 40601; telephone 502–695–0468; facsimile 502–695–1024. For information regarding the rush darter, contact Stephen Ricks, Field Supervisor, U.S. Fish and Wildlife Service, Mississippi Ecological Services Field Office, 6578 Dogwood View Parkway, Suite A, Jackson, MS 39213; telephone 601–965–4900; facsimile 601–965–4340 or Bill Pearson, Field Supervisor, U.S. Fish and Wildlife Service, Alabama Ecological Services Field Office, 1208–B Main Street, Daphne, AL 36526; telephone 251–441–5181; fax 251–441–6222. For information regarding the yellowcheek darter, contact Jim Boggs, Field Supervisor, U.S. Fish and Wildlife Service, Arkansas Ecological Services Field Office, 110 South Amity Road, Suite 300, Conway, AR 72032; telephone 501–513–4470; facsimile 501–513–4480. For information regarding the chucky madtom or laurel dace, contact Mary Jennings, Field Supervisor, U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, 446 Neal Street, Cookeville, TN 38501; telephone 931–525–4973; facsimile 931–528–7075. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Public Comments

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and effective as possible. Therefore, we request comments or information from government agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not designate habitat as ''critical habitat'' under section 4 of the Act (16 U.S.C. 1531 *et seq.*) including whether there are threats to any of the five species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(2) Specific information on:

(a) The amount and distribution of each species' habitat;

(b) What areas, that were occupied at the time of listing (or are currently occupied) and that contain features essential to the conservation of any of the five species, should be included in the designation and why;

(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, and

(d) What areas not occupied at the time of listing are essential for the conservation of any of the five species and why.

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

(4) Information on the projected and reasonably likely impacts of climate change on any of the five species or their proposed critical habitat.

(5) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation; in particular, any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

(6) 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 under section 4(b)(2) of the Act.

(7) 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.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will post your entire comment—including your personal identifying information—on *http://www.regulations.gov.* You may request at the top of your document that we withhold personal information such as your street address, phone number, or e-mail address from public review; however, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, Cookeville, Tennessee (see **FOR FURTHER INFORMATION CONTACT**).

Background

It is our intent to discuss only those topics directly relevant to the designation of critical habitat in this proposed rule. For more information on the Cumberland darter (*Etheostoma susanae*), rush darter (*Etheostoma phytophilum*), yellowcheek darter (*Etheostoma moorei*), chucky madtom (*Noturus crypticus*), and laurel dace (*Chrosomus saylori*), refer to the final listing rule published in the **Federal Register** on August 9, 2011 (76 FR 48722). See also the discussion of habitat in the Physical and Biological Features section below.

Cumberland Darter

The Cumberland darter (*Etheostoma susanae*) is a narrowly endemic fish species, occurring in sparse, fragmented, and isolated populations in the upper Cumberland River system of Kentucky and Tennessee. The species inhabits pools or shallow runs of low to moderate gradient sections of streams with stable sand, silt, or sand-covered bedrock substrates (O'Bara 1988, pp. 10–11; O'Bara 1991, p. 10; Thomas 2007, p. 4). Thomas (2007, p. 4) did not encounter the species in high-gradient sections of streams or areas dominated by cobble or boulder substrates. Thomas (2007, p. 4) reported that streams inhabited by Cumberland darters were second to fourth order, with widths ranging from 4 to 9 meters (m) (11 to 30 feet (ft)) and depths ranging from 20 to 76 centimeters (cm) (8 to 30 inches (in)).

The Cumberland darter's current distribution is limited to 13 streams in McCreary and Whitley Counties, Kentucky, and Campbell and Scott Counties, Tennessee (Thomas 2007, pp. 11–12). Occurrences from these streams are thought to form six population clusters (Bunches Creek, Indian Creek, Marsh Creek, Jellico Creek, Wolf Creek, and Youngs Creek), which are geographically separated from one another by an average distance of 30.5 stream km (19 stream mi) (O'Bara 1988, p. 12; O'Bara 1991, p. 10; Thomas 2007, p. 3).

The primary threat to the Cumberland darter is physical habitat destruction or modification resulting from a variety of human-induced impacts such as siltation, disturbance of riparian corridors, and changes in channel morphology (Waters 1995, pp. 2–3; Skelton 1997, pp. 17, 19; Thomas 2007, p. 5). The most significant of these impacts is siltation (excess sediments suspended or deposited in a stream) caused by excessive releases of sediment from activities such as resource extraction (*e.g.,* coal mining, silviculture, natural gas development), agriculture, road construction, and urban development (Waters 1995, pp. 2–3; Skelton 1997, pp. 17, 19; KDOW 2006, pp. 178–185; Thomas 2007, p. 5).

Rush Darter

The rush darter (*Etheostoma phytophilum*) is a narrowly endemic, rare, and difficult to collect fish species in north-central Alabama. The rush darter occurs in sparse, fragmented, and isolated populations. The species is currently known from tributaries and associated spring systems of the Turkey Creek (Jefferson County), Clear Creek (Winston County), and Little Cove Creek watersheds (Etowah County). Most of these tributaries contain sites with intact physical characteristics such as riffles, runs, pools, transition zones, and emergent vegetation. Rush darters prefer springs and spring-fed reaches of relatively low-gradient, small streams (Bart and Taylor 1999, p. 32; Johnston and Kleiner 2001, pp. 3–4; Stiles and Blanchard 2001, pp. 1–4; Bart 2002, p. 1; Fluker *et al.* 2007, p. 1; Stiles and Mills 2008, pp. 1–4). Rush darters are also found in wetland pools and in some ephemeral tributaries of the aforementioned watersheds (Stiles and Mills 2008, pp. 2–3). This species also relies heavily on aquatic vegetation (Fluker *et al.* 2007, p. 1), including both small clumps and dense stands, and root masses of emergent vegetation along stream margins. These habitats tend to be shallow, clear, and cool, with moderate current and substrates composed of a combination of sand with silt, muck, gravel, or bedrock.

The species is found in both urban and industrial zoned areas (Jefferson County) and rural settings (Winston and Etowah Counties). Within these areas, the rush darters' habitat has been degraded by alteration of stream banks and bottoms; channelization; inadequate storm water management; inappropriate placement of culverts, pipes, and bridges; road maintenance; and haphazard silvicultural and agricultural practices. The persistence of a constant flow of clean groundwater from various springs has somewhat offset the destruction of the species' habitat, water quality, and water quantity; however, the species' status still appears to be declining.

Yellowcheek Darter

The yellowcheek darter (*Etheostoma moorei*) is endemic to the Devil's, Middle, South, and Archey forks of the Little Red River in Cleburne, Searcy, Stone, and Van Buren Counties in Arkansas (Robison and Buchanan 1988, p. 429). These streams are located primarily within the Boston Mountains subdivision of the Ozark Plateau. In 1962, the construction of a dam on the Little Red River to create Greers Ferry Reservoir impounded much of the range of this species, including the lower reaches of Devil's Fork, Middle Fork, South Fork, and portions of the main stem Little Red River, thus extirpating the species from these reaches. Cold tailwater releases below the dam preclude the yellowcheek darter from inhabiting the main stem Little Red River. The yellowcheek darter inhabits high-gradient headwater tributaries with clear water; permanent flow; moderate to strong riffles; and gravel, cobble, and boulder substrates (Robison and Buchanan 1988, p. 429). Prey items consumed by yellowcheek darters include blackfly larvae, stoneflies, and mayflies.

Robison and Harp (1981, p. 5) estimated the range of the yellowcheek darter in the South Fork to extend from 2.9 km (1.8 mi) north northeast of Scotland, Arkansas, to U.S. Highway 65 in Clinton, Arkansas. The Middle Fork population was estimated to extend from just upstream of U.S. Highway 65 near Leslie, Arkansas, to 4.8 km (3.0 mi) west of Shirley, Arkansas. The Archey Fork population extended from its confluence with South Castleberry Creek to immediately downstream of U.S. Highway 65 in Clinton, Arkansas. The Devil's Fork population extended from 4.8 km (3.0 mi) north of Prim, Arkansas, to 6.1 km (3.8 mi) east southeast of Woodrow, Arkansas.

The yellowcheek darter is threatened primarily by factors associated with the present destruction, modification, or curtailment of its habitat or range. Threats include sedimentation and nutrient enrichment from impoundment, water diversion, gravel mining, channelization or channel instability, and natural gas development.

Chucky Madtom

The chucky madtom (*Noturus crypticus*) is a rare catfish found in Greene County, Tennessee. Specimens collected in Little Chucky Creek have been found in stream runs with slow to moderate current over pea gravel,

cobble, or slab-rock boulder substrates (Burr and Eisenhour 1994, p. 2). These habitats are sparse in Little Chucky Creek, and the stream affords little loose, rocky cover suitable for madtoms (Shute *et al.* 1997, p. 8). It is notable that intact riparian buffers are present in the locations where chucky madtoms have been found (Shute *et al.* 1997, p. 9).

Little is known about chucky madtom lifehistory and behavior; however, this information is available for other similar members of the *Noturus* group. Dinkins and Shute (1996, p. 50) found smoky madtoms (*N. baileyi*) underneath slab-rock boulders in swift to moderate current during May to early November. Habitat use shifted to shallow pools over the course of a 1-week period, coinciding with a drop in water temperature to 7 or 8 °C (45 to 46 °F), and persisted from early November to May. Eisenhour *et al.* (1996, p. 43) collected saddled madtoms (*N. fasciatus*) in gravel, cobble, and slab-rock boulders in riffle habitats with depths ranging from 0.1 to 0.3 m (0.3 to 1.0 ft). Based on their limited number of observations, Eisenhour *et al.* (1996, p. 43) hypothesized that saddled madtoms occupy riffles and runs in the daylight hours and then move to pools at night and during crepuscular hours (dawn and dusk) to feed.

The current range of the chucky madtom is restricted to an approximate 3-km (1.8-mi) reach of Little Chucky Creek in Greene County, Tennessee. Degradation from sedimentation, physical habitat disturbance, and contaminants threaten the habitat and water quality on which the chucky madtom depends. Sedimentation could negatively affect the chucky madtom by reducing growth rates, disease tolerance, and gill function; reducing spawning habitat, reproductive success, and egg, larval, and juvenile development; reducing food availability through reductions in prey; and reducing foraging efficiency. Contaminants associated with agriculture (*e.g.,* fertilizers, pesticides, herbicides, and animal waste) can cause degradation of water quality and habitats through instream oxygen deficiencies, excess nutrification, and excessive algal growths.

Laurel Dace

The laurel dace (*Chrosomus saylori*) is endemic to seven streams on the Walden Ridge portion of the Cumberland Plateau (Bledsoe, Rhea, and Sequatchie Counties, Tennessee), where drainages generally meander eastward before dropping abruptly down the plateau escarpment and draining into the Tennessee River. Laurel dace are known historically from seven streams in three disjunct systems: Soddy Creek; three streams that are part of the Sale Creek system (the Horn and Laurel branch tributaries to Rock Creek, and the Cupp Creek tributary to Roaring Creek); and three streams that are part of the Piney River system (Youngs, Moccasin, and Bumbee Creeks). In 1991, and in four other surveys (two in 1995, one in 1996, and one in 2004), laurel dace were not collected in Laurel Branch, leading Skelton to the conclusion that laurel dace had been extirpated from the stream (Skelton 1997, p. 13; Skelton 2001, p. 126; Skelton 2009, pers. comm.).

The current distribution of laurel dace encompasses six of seven historical streams; the species is considered extirpated from Laurel Branch (see above). In these six streams, the species is known to occupy reaches ranging in length from 0.3 to 8.0 km (0.2 to 5 mi). Laurel dace have been most often collected from pools or slow runs from undercut banks or beneath slab-rock boulders, typically in first or second order, clear, cool (maximum temperature 26 °C or 78.8 °F) streams. Substrates in laurel dace streams typically consist of a mixture of cobble, rubble, and boulders and the streams tend to have a dense riparian zone consisting largely of mountain laurel (Skelton 2001, pp. 125–126).

The primary threat to laurel dace throughout its range is excessive siltation resulting from agriculture and extensive silviculture, especially those involving inadequate riparian buffers in harvest areas and the failure to use best management practices (BMPs) during road construction. Severe degradation from sedimentation, physical habitat disturbance, and contaminants threaten the habitat and water quality on which the laurel dace depends. Sedimentation negatively affects the laurel dace by reducing growth rates, disease tolerance, and gill function; reducing spawning habitat, reproductive success, and egg, larvae, and juvenile development; reducing food availability through reductions in prey; and reducing foraging efficiency.

Previous Federal Action

The Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace were listed as endangered under the Act on August 9, 2011 (76 FR 48722). In the June 24, 2010 proposed listing rule (75 FR 36035) for the five species we determined that designation of critical habitat was prudent for all five species. However, we found that critical habitat was not determinable at the time and set forth the steps we would undertake to obtain the information necessary to develop a proposed designation of critical habitat. We were unable to include a proposal to designate critical habitat with the final listing rule of the five species (76 FR 48722) due to an internal publishing requirement that proposed and final rules be separately published in the **Federal Register**. For the full history of previous federal actions regarding these five species, please refer to the final listing rule (76 FR 48722).

Critical Habitat

Background

Critical habitat is defined in section 3 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.

Conservation, as defined under section 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 under 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 Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require

implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain the physical and biological features which are essential to the conservation of the species and which may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical and biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat), focusing on the principal biological or physical constituent elements (primary constituent elements) within an area that are essential to the conservation of the species (such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type). Primary constituent elements are the elements of physical and biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life history processes, are essential to the conservation of the species.

Under the Act, 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. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species. When the best available scientific data do not demonstrate that the conservation needs of the species require such additional areas, we will not designate critical habitat in areas outside the geographical area occupied by the species. An area currently occupied by the species but that was not occupied at the time of listing may, however, be essential to the conservation of the species and may be included in the critical habitat designation.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial 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 determine which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include articles in peer-reviewed journals, conservation plans developed by States and Counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. Climate change will be a particular challenge for biodiversity because the interaction of additional stressors associated with climate change and current stressors may push species beyond their ability to survive (Lovejoy 2005, pp. 325–326). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah *et al.* 2005, p. 4). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 1–3; Hayhoe *et al.* 2004, p. 12422; Cayan *et al.* 2005, p. 6; Intergovernmental Panel on Climate Change (IPCC) 2007, p. 1181). Climate change may lead to increased frequency and duration of severe storms and droughts (McLaughlin *et al.* 2002, p. 6074; Golladay *et al.* 2004, p. 504; Cook *et al.* 2004, p. 1015).

The information currently available on the effects of global climate change and increasing temperatures does not make sufficiently precise estimates of the location and magnitude of the effects. Nor are we currently aware of any climate change information specific to the habitat of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, or laurel dace that would indicate what areas may become important to the species in the future. Therefore, we are unable to determine what additional areas, if any, may be appropriate to include in the final critical habitat for these species to address the effects of climate change.

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 required 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 insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. 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 this species. Similarly, critical habitat designations made on the basis of the best available information 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 these planning efforts calls for a different outcome.

Physical and Biological Features

In accordance with sections 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical and biological features essential to the conservation of the species and which may require special management considerations or

protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distribution of a species.

We derive the specific physical and biological features required for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace from studies of these species' habitats, ecology, and life history as described below. Additional information can be found in the final listing rule published in the **Federal Register** on August 9, 2011 (76 FR 48722). To identify the physical and biological features essential to the conservation of the these species, we have relied on current conditions at locations where the species survive, the limited information available on these species and their close relatives, as well as factors associated with the decline of other fishes that occupy similar habitats in the Southeast. We have determined that these five species require the following physical and biological features:

Space for Individual and Population Growth and for Normal Behavior

Cumberland Darter

Little is known about the specific space requirements of the Cumberland darter; however, the species is typically found in low to moderate gradient, second- to fourth-order, geomorphically stable streams, where it occupies shallow pools or runs with gentle current over sand or sand-covered bedrock substrates with patches of gravel or debris (O'Bara 1991, p. 10; Thomas 2007, p. 4). Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width to depth ratio and cross-sectional area), pattern (sinuosity), and longitudinal profile (riffles, runs, and pools), thereby conserving the physical characteristics of the stream, including bottom features such as riffles, runs, and pools and the transition zones between these features. The protection and maintenance of these habitat features accommodate spawning, rearing, growth, migration, and other normal behaviors of the Cumberland darter.

Limited information exists with regard to upstream or downstream movements of Cumberland darters; however, Winn (1958a, pp. 163–164) reported considerable pre-spawn movements for its closest relative, the Johnny darter. In Beer Creek, Monroe County, Michigan, Johnny darters migrated several miles between temporary stream habitats and permanent pools in downstream reaches. Recent capture data for tagged individuals in Cogur Fork, McCreary County, Kentucky, demonstrate that Cumberland darters may make similar movements (Thomas 2010, pers. comm.). Individuals tagged and released by the Kentucky Department of Fish and Wildlife Resources (KDFWR) and Conservation Fisheries, Inc. (CFI) traveled distances ranging from 0.4 to 0.7 km (0.2 to 0.4 mi) between their release date of September 22, 2010, and their recapture date of November 9, 2010 (period of 48 days) (Thomas 2010, pers. comm.). Over longer periods, it is likely that Cumberland darters can utilize stream reaches longer than 0.7 km (0.4 mi).

The current range of the Cumberland darter has been reduced to 13 streams (15 occurrences) due to destruction and fragmentation of habitat. Fragmentation of the species' habitat has subjected these small populations to genetic isolation, reduced space for rearing and reproduction, reduced adaptive capabilities, and an increased likelihood of local extinctions (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Genetic variation and diversity within a species are essential for recovery, adaptation to environmental change, and long-term viability (capability to live, reproduce, and develop) (Noss and Cooperrider 1994, pp. 282–297; Harris 1984, pp. 93–107; Fluker *et al.* 2007, p. 2). The long-term viability of a species is founded on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93–104). Connectivity of these habitats is essential in preventing further fragmentation and isolation of Cumberland darter populations and promoting species movement and genetic flow between populations.

Therefore, based on the information above, we identify shallow pools and runs and associated stream segments of geomorphically stable, second- to fourth-order streams to be a physical or biological feature for the Cumberland darter. The connectivity of these habitats is essential in accommodating feeding, breeding, growth, and other normal behaviors of the Cumberland darter and in promoting gene flow within the species.

Rush Darter

Little is known about the specific space requirements of the rush darter in the Turkey Creek, Little Cove Creek, and Clear Creek systems (Boschung and Mayden 2004, p. 551); however, in general, darters depend on space within geomorphically stable streams with varying water quantities and flow. Specifically, rush darters appear to prefer springs and spring-fed reaches of relatively low-gradient, small streams (Bart and Taylor 1999, p. 32; Johnston and Kleiner 2001, pp. 3–4; Stiles and Blanchard 2001, pp. 1–4; Bart 2002, p. 1; Fluker *et al.* 2007, p. 1; Stiles and Mills 2008, pp. 1–4) and wetland pools (Stiles and Mills 2008, pp. 2–3). This species also relies heavily on aquatic vegetation (Fluker *et al.* 2007, p. 1) including: root masses of emergent vegetation along the margins of spring-fed streams in very shallow, clear, cool, and flowing water; and both small clumps and dense stands of bur reed (*Sparganium* sp.), coontail (*Ceratophyllum* sp.), watercress (*Nasturtium officinale*), and rush (*Juncus* sp.). The rush darter inhabits streams with substrates of silt, sand, sand and silt, muck and sand or some gravel with sand, and bedrock.

Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width to depth ratio and cross-sectional area), pattern (sinuosity), and longitudinal profile (riffles, runs, and pools), thereby conserving the physical characteristics of the stream, including bottom features such as riffles, runs, and pools and the transition zones between these features that contain some silt, sand, and finer substrates. The riffles, runs, and pools not only provide space for the rush darter, but also provide space for emergent vegetation in shallow water along the margins of the small streams and springs for cover, and shelter necessary for breeding, reproduction, and growth of offspring.

The current range of the rush darter within the entire Turkey Creek, Clear Creek, and Little Cove Creek watersheds is reduced to localized sites due to fragmentation, separation, and destruction of rush darter habitats and populations. There are dispersal barriers (pipes and culverts for road crossings; channelized stream segments; and emergent aquatic plant control, which eliminates cover habitat for the species) that may contribute to the separation and isolation of rush darter populations and affect water quality. Fragmentation

of the species' habitat has isolated populations and reduced available spaces for rearing and reproduction, thereby reducing adaptive capability and increasing the likelihood of local extinctions (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Genetic variation and diversity within a species are essential for recovery, adaptation to environmental changes, and long-term viability (capability to live, reproduce, and develop) (Harris 1984, pp. 93–107; Noss and Cooperrider 1994, pp. 282–297; Fluker *et al.* 2007, p. 2). Long-term viability is founded on numerous interbreeding, local populations throughout the range (Harris 1984, pp. 93–107). Continuity of water flow between suitable habitats is essential in preventing further fragmentation of the species' habitat and populations, conserving the essential emergent vegetation in shallow water on the margins of small streams and springs, and promoting genetic flow throughout the populations. Continuity of habitat will maintain spawning, foraging, and resting sites, and allow for gene flow throughout the population. Connectivity of habitats, as a whole, also permits improvement in water quality and water quantity by allowing unobstructed water flow throughout the connected habitats.

Therefore, based on the information above, we identify springs and spring-fed reaches of relatively low-gradient, geomorphically stable streams with emergent vegetation to be a physical or biological feature for the rush darter. The connectivity of these habitats is essential in accommodating feeding, breeding, growth, and other normal behaviors of the rush darter and in promoting gene flow within the species.

Yellowcheek Darter

The yellowcheek darter is typically found in clear, high-gradient, second- to fifth-order, geomorphically stable streams, maintaining permanent year-round flows (Robison and Buchanan 1988, p. 429). The species occupies riffles with moderate to fast current over gravel, cobble, and boulder substrates (Robison and Buchanan 1988, p. 429). Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width to depth ratio and cross-sectional area), pattern (sinuosity), and longitudinal profile (riffles, runs, and pools), thereby conserving the physical characteristics of the stream, including bottom features such as riffles, runs, and pools and the transition zones between these features. The protection and maintenance of these habitat features accommodate spawning, rearing, growth, migration, and other normal behaviors of the yellowcheek darter.

In 1962, the construction of Little Red River Dam to create Greers Ferry Reservoir impounded much of the range of the yellowcheek darter, including the lower reaches of Devil's Fork, Middle Fork, South Fork, and portions of the main stem Little Red River, thus extirpating the species from these reaches. The yellowcheek darter was also extirpated from the Little Red River downstream of Greers Ferry Reservoir due to cold tailwater releases. The lake flooded optimal habitat for the species, and caused genetic isolation of populations (McDaniel 1984, p. 1), with only the South and Archey forks of the Little Red River maintaining a non-inundated confluence.

As stated earlier, of the four streams supporting the yellowcheek darter, only the South and Archey forks maintain a non-inundated confluence. Instream habitat at the confluence of the two streams is suboptimal due to previous channelization, but restoration could provide an opportunity for vital population interactions between streams to maintain genetic diversity. Fragmentation of the species' habitat has subjected these small populations to genetic isolation, reduced space for rearing and reproduction, reduced adaptive capabilities, and an increased likelihood of local extinctions (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Genetic variation and diversity within a species are essential for recovery, adaptation to environmental change, and long-term viability (capability to live, reproduce, and develop) (Harris 1984, pp. 93–107; Noss and Cooperrider 1994, pp. 282–297; Fluker *et al.* 2007, p. 2). The long-term viability of a species is founded on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93–104). Connectivity of these habitats is essential to prevent further fragmentation and isolation of yellowcheek darter populations and to promote species movement and genetic flow between populations.

Therefore, based on the information above, we identify riffles of geomorphically stable, second- to fifth-order streams to be a physical or biological feature for the yellowcheek darter. The connectivity of these habitats is essential to accommodate feeding, breeding, growth, and other normal behaviors of the yellowcheek darter and to promote gene flow within the species.

Chucky Madtom

Little is known about the specific space requirements of the chucky madtom; however, all of the specimens collected in Little Chucky Creek have been found in shallow pool and run habitats with slow to moderate current over pea gravel, cobble, or slab-rock boulder substrates (Burr and Eisenhour 1994, p. 2). Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width to depth ratio and cross-sectional area), pattern (sinuosity), and longitudinal profile (riffles, runs, and pools), thereby conserving the physical characteristics of the stream, including bottom features, such as riffles, runs, and pools and the transition zones between these features. The protection and maintenance of these habitat features accommodate spawning, rearing, growth, migration, and other normal behaviors of the chucky madtom.

The current range of the chucky madtom has been reduced to only one stream due to fragmentation and destruction of habitat. Habitat fragmentation has subjected the small population to genetic isolation, reduced space for rearing and reproduction, reduced adaptive capabilities, and increased the likelihood of extinction (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Genetic variation and diversity within a species are essential for recovery, adaptation to environmental change, and long-term viability (capability to live, reproduce, and develop) (Harris 1984, pp. 93–107; Noss and Cooperrider 1994, pp. 282–297; Fluker *et al.* 2007, p. 2). The long-term viability of a species is founded on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93–104). Connecting instream habitats is essential in preserving the genetic viability of the chucky madtom in Little Chucky Creek.

Therefore, based on the information above, we identify shallow pools and runs of geomorphically stable streams to be a physical or biological feature for the chucky madtom. The connectivity of these habitats is essential to accommodate feeding, breeding, growth, and other normal behaviors of the chucky madtom and to promote gene flow within the species.

Laurel Dace

Little is known about the specific space requirements of the laurel dace; however, the species is typically found in low to moderate gradient, first- to second-order, geomorphically stable

streams. The laurel dace occupies pools or slow runs beneath undercut banks or slab-rock boulders in clear, cool (maximum temperature 26 °C (78.8 °F)) streams. Substrates in streams where laurel dace are found typically consist of a mixture of cobble, rubble, and boulders and the streams tend to have a dense riparian zone consisting largely of mountain laurel (Skelton 2001, pp. 125–126).

Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width to depth ratio and cross-sectional area), pattern (sinuosity), and longitudinal profile (riffles, runs, and pools), thereby conserving the physical characteristics of the stream, including bottom features such as riffles, runs, and pools and the transition zones between these features. The protection and maintenance of these habitat features accommodate spawning, rearing, growth, migration, and other normal behaviors of the laurel dace.

Strange and Skelton (2005, p. 8) assessed the genetic structure within populations of laurel dace and, based on distribution of genetic diversity among populations, they recognized two genetically distinct management units: (1) The southern populations in Sale and Soddy creeks, and (2) the northern population in the Piney River system.

The current range of the laurel dace has been reduced to short reaches (approximately 0.3 to 8 km (0.2 to 5 mi) in length) of six streams due to fragmentation and destruction of habitat. Fragmentation of the species' habitat has subjected these small populations to genetic isolation, reduced space for rearing and reproduction, reduced adaptive capabilities, and an increased likelihood of local extinctions (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Genetic variation and diversity within a species are essential for recovery, adaptation to environmental change, and long-term viability (capability to live, reproduce, and develop) (Harris 1984, pp. 93–107; Noss and Cooperrider 1994, pp. 282–297; Fluker *et al.* 2007, p. 2). The long-term viability of a species is founded on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93–104). Connectivity of these habitats is essential in preventing further fragmentation and isolation of laurel dace populations.

Therefore, based on the information above, we identify shallow pools and runs and associated stream segments of geomorphically stable, first- to second-order streams with riparian vegetation to be a physical or biological feature for the laurel dace. The connectivity of these habitats is essential in accommodating feeding, breeding, growth, and other normal behaviors of the laurel dace and in promoting gene flow within the species.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Cumberland Darter

Feeding habits of the Cumberland darter are unknown but are likely similar to that of its sister species, the Johnny darter (*E. nigrum* Rafinesque). Johnny darters are diurnal sight feeders, with prey items consisting of midge larvae, mayfly nymphs, caddisfly larvae, and microcrustaceans (Kuehne and Barbour 1983, p. 104; Etnier and Starnes 1993, p. 511). Similar to other darters, juvenile Cumberland darters likely feed on planktonic organisms or other small invertebrates.

Like most other darters, the Cumberland darter depends on perennial stream flows that create suitable habitat conditions needed for successful completion of its life cycle. An ample supply of flowing water provides a means of transporting nutrients and food items, moderating water temperatures and dissolved oxygen levels, removing fine sediments that could damage spawning or foraging habitats, and diluting nonpoint source pollutants. Water withdrawals do not represent a significant threat to the species, but the species is faced with occasional low-flow conditions that occur during periods of drought. One such event occurred in the summer and fall of 2007 when recorded streamflows in the upper Cumberland River basin of Kentucky and Tennessee (USGS Station Number 03404000) were among the lowest monthly values of the last 67 years (Cinotto 2008, pers. comm.).

Water quality is also important to the persistence of the Cumberland darter. The species requires relatively clean, cool, flowing water to successfully complete its life cycle, but specific water quality requirements (such as temperature, dissolved oxygen, pH, and conductivity) that define suitable habitat conditions for the Cumberland darter have not been determined. In general, optimal water quality conditions for fishes and other aquatic organisms are characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, and the lack of harmful levels of pollutants, such as inorganic contaminants like iron, manganese, selenium, and cadmium; organic contaminants such as human and animal waste products; pesticides and herbicides; nitrogen, potassium, and phosphorus fertilizers; and petroleum distillates.

Sediment is the most common pollutant within the upper Cumberland River system (KDOW 1996, pp. 50–53, 71–75; 2002, pp. 39–40; 2006, pp. 178–185), and the primary sources of sediment include resource extraction (*e.g.,* coal mining, silviculture, natural gas development), agriculture, road construction, and urban development (Waters 1995, pp. 2–3; Skelton 1997, pp. 17, 19; KDOW 2006, pp. 178–185; Thomas 2007, p. 5). Siltation (excess sediments suspended or deposited in a stream) has been shown to abrade and suffocate bottom-dwelling organisms; reduce aquatic insect diversity and abundance; impair fish feeding behavior by altering prey base and reducing visibility of prey; impair reproduction due to burial of nests; and, ultimately, negatively impact fish growth, survival, and reproduction (Waters 1995, pp. 5–7, 55–62; Knight and Welch 2001, pp. 134–136). O'Bara (1991, p. 11) reported that Cumberland darter habitats are very susceptible to siltation because of the habitat's low to moderate gradient, low velocity, and shallow depth. O'Bara (1991, p. 11) concluded that siltation was the major limiting factor for the species' continued existence and its ability to colonize new stream systems.

Cumberland darters are threatened by water quality degradation caused by a variety of nonpoint source pollutants. Coal mining represents a major source of nonpoint source pollutants (O'Bara 1991, p. 11; Thomas 2007, p. 5), because it has the potential to contribute high concentrations of dissolved metals and other solids that lower stream pH or lead to elevated levels of stream conductivity (Pond 2004, pp. 6–7, 38–41; Mattingly *et al.* 2005, p. 59). These impacts have been shown to negatively affect fish species, including listed species, in the Clear Fork system of the Cumberland basin (Weaver 1997, pp. 29; Hartowicz 2008, pers. comm.). The direct effect of elevated stream conductivity on fishes, including the Cumberland darter, is poorly understood, but some species, such as blackside dace (*Chrosomus cumberlandensis*), have shown declines in abundance over time as conductivity increased in streams affected by mining (Hartowicz 2008, pers. comm.). Other nonpoint source pollutants that affect the Cumberland darter include domestic sewage (through septic tank leakage or straight pipe discharges); agricultural pollutants such as fertilizers, pesticides, herbicides, and animal waste; and other

chemicals associated with oil and gas development. Nonpoint source pollutants can cause excess nutrification (increased levels of nitrogen and phosphorus), excessive algal growth, instream oxygen deficiencies, increased acidity and conductivity, and other changes in water chemistry that can negatively impact aquatic species (KDOW 1996, pp. 48–50; 2006, pp. 70–73).

Therefore, based on the information above, we identify aquatic macroinvertebrate prey items; permanent surface flows, as measured during average rainfall years; and adequate water quality with substrates that are relatively silt-free to be physical or biological features for the Cumberland darter. Relatively silt-free is defined for the purpose of this rule as silt or fine sand within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

Rush Darter

Feeding habits of the rush darter are unknown but are likely similar to that of its sister species, the goldstripe darter (*Etheostoma parvipinnis*). The goldstripe darter is a benthic (bottom) insectivore and is known to consume midge larvae, mayfly nymphs, blackfly larvae, beetles, and microcrustaceans (Mettee *et al.* 1996, p. 655). Variations in instream flows maintain the stream bottom substrates, providing oxygen and other attributes to various invertebrate life stages. Sedimentation has been shown to wear away and suffocate periphyton (organisms that live attached to objects underwater) and disrupt aquatic insect communities (Waters 1995, pp. 53–86; Knight and Welch 2001, pp. 132–135). In addition, nutrification promotes heavy algal growth that covers and eliminates the clean rock or gravel habitats necessary for rush darter feeding. Thus, a decrease in water quality and instream flow would correspondingly cause a decline in the major food species for the rush darter.

Much of the cool, clean water provided to the Turkey Creek system (Beaver Creek, Unnamed Tributary to Beaver Creek, Tapawingo or Penny Springs and the Highway 79 site; Jefferson County) and Cove Spring run of Little Cove Creek (Etowah County) comes from consistent and steady groundwater sources (springs and seeps). Clear, flowing water provides a means for transporting nutrients and food items, moderating water temperatures and dissolved oxygen levels, and diluting nonpoint and point source pollution. Without clean water sources, water quality and water quantity would be considerably lower and would significantly impair the normal life stages and behavior of the rush darter.

Favorable water quantity for the rush darter includes moderate water velocity in riffles and no flow or low flow in pools (Stiles and Mills 2008, pp. 1–4), a continuous daily discharge that allows for longitudinal connectivity within the species' habitat (Instream Flow Council 2004, p. 117), and discharge from both surface water runoff and groundwater sources (springs and seepages). Along with the continuous daily discharge, both minimum and flushing flows are necessary to remove fine sediments and dilute other pollutants (Moffett and Moser 1978, pp. 20–21; Gilbert *et al.,* eds. 1994, pp. 505–522; Instream Flow Council 2004, pp.103–104; Drennen 2009, pers. obs.). At some sites, water depth ranges from 3.0 to 50 cm (0.1 to 1.6 ft). Groundwater provides a constant source of flows to dilute pollutants and maintain water quality for the persistence of the rush darter.

Factors that can potentially alter water quality include: droughts and periods of low seasonal flow, precipitation events, nonpoint source runoff, human activities within the watershed, random spills, unregulated stormwater discharge events (Instream Flow Council 2004, pp. 29–50), and water extraction. Instream pooling may also affect water quality by reducing water flow, altering temperatures, concentrating pollutants (Blanco and Mayden 1999, pp. 5–6, 36), and retarding aquatic and emergent vegetation growth.

Fishes require acceptable levels of dissolved oxygen. Generally, among fishes, the young life forms require more dissolved oxygen and are the most sensitive. The amount of dissolved oxygen that is present in the water (the saturation level) depends upon water temperature. As water temperature increases, the saturated dissolved oxygen level decreases. The more oxygen there is in the water, the greater the assimilative capacity (ability to consume organic wastes with minimal impact) of that water; lower water flows have a reduced assimilative capacity (Pitt 2000, pp. 6–7). Low-flow conditions affect the chemical environment occupied by fishes; extended low-flow conditions coupled with higher pollutant levels could likely result in behavioral changes within all life stages, which could be particularly detrimental to early life stages (*e.g.,* embryo, larvae, and juvenile).

Optimal water quality lacks harmful levels of pollutants, such as inorganic contaminants like copper, arsenic, mercury, and cadmium; organic contaminants such as human and animal waste products; endocrine-disrupting chemicals; pesticides; nitrogen, potassium, and phosphorous fertilizers; and petroleum distillates (Alabama Department of Environmental Management (ADEM) 1996, pp. 13–15). Sediment is the most abundant pollutant produced in the Mobile River Basin (ADEM 1996, pp. 13–15). Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to reduce photosynthesis in aquatic plants, suffocate aquatic insects, smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival. Nutrification (excessive nutrients present, such as nitrogen and phosphorous) promotes heavy algal growth that covers and eliminates clean rock or gravel habitats and aquatic and emergent vegetation, necessary for rush darter feeding and spawning. Generally, early life stages of fishes are less tolerant of environmental contamination than adults or juveniles (Little *et al.* 1993, p. 67). Appropriate water quality and quantity are necessary to dilute impacts from stormwater and other non-natural effluents. Harmful levels of pollutants impair critical behavior processes in fishes, as reflected in population-level responses (reduced population size, biomass, year class success, *etc.*). However, excessive water quantity in the form of substantial stormwater runoff may destabilize and move bottom and bankside substrates and increase instream sedimentation.

Essential water quality attributes for darters and other fish species in fast to medium water flow streams include the following: dissolved oxygen levels greater than 6 parts per million (ppm), temperatures between 7 and 26.7 °C (45 and 80 °F) with spring egg incubation temperatures from 12.2 to 18.3 °C (54 to 65 °F), a specific conductance (ability of water to conduct an electric current, based on dissolved solids in the water) of less than approximately 225 micro Siemens per cm at 26.7 °C (80 °F), and low concentrations of free or suspended solids (organic and inorganic sediments) less than 10 Nephelometric Turbidity Units (NTU; units used to measure sediment discharge) and 15 milligrams/Liter (mg/L) Total Suspended Solids (TSS; measured as mg/L of sediment in water) (Teels *et al.* 1975, pp. 8–9;

Ultschet *et al.* 1978, pp. 99–101; Ingersoll *et al.* 1984, pp. 131–138; Kundell and Rasmussen 1995, pp. 211–212; Henley *et al.* 2000, pp. 125–139; Meyer and Sutherland 2005, pp. 43–64).

Therefore, based on the information above, we identify cool, clean, flowing water; shallow depths; moderate water velocity in riffles and low flow in pools; aquatic macroinvertebrate prey items; and adequate water quality to be physical or biological features for the rush darter.

Yellowcheek Darter

Adult and juvenile yellowcheek darters' prey items include blackfly larvae, stonefly larvae, mayfly nymphs, and caddisfly larvae among other stream insects (McDaniel 1984, p. 56). McDaniel (1984, p. 37) noted a strong selectivity by yellowcheek darters for fly larvae year round, while other prey taxa were consumed proportionally depending on seasonal availability. Larval stages of yellowcheek darters have not been studied in the field but are assumed to feed on planktonic organisms based on laboratory rearing efforts and known larval fish dietary habits.

Drought conditions and low water levels have been identified as contributing factors in the decline of the yellowcheek darter (Wine *et al.* 2000, p. 11). Expanding natural gas development activities that began in the upper Little Red River watershed in 2005 require large quantities of water and pose a threat to the continued existence of the yellowcheek darter (75 FR 36045, June 24, 2010). Water diversion from the Middle and South forks has increased in recent years due to large-scale extraction of natural gas in the Fayetteville Shale (which encompasses nearly all of the upper Little Red River drainage). Natural gas development is imminent in the Archey and Devil's forks as well and is predicted to affect numerous tributaries in all four watersheds. Because the yellowcheek darter requires permanent flows with moderate to strong current (Robison and Buchanan 1988, p. 429), seasonal fluctuations in stream flows exacerbated by water diversion for natural gas, agricultural, municipal or other land uses represent a serious threat to the species.

In addition to water quantity, water quality is also important to the persistence of the yellowcheek darter. Although the Middle Fork is designated as an Extraordinary Resource Water, it is listed as impaired along a 33.5-km (20.8-mi) reach due to fecal coliform bacteria contamination according to the Arkansas Department of Environmental Quality (ADEQ) List of Impaired Waterbodies. This same report listed a 3.2-km (2.0-mi) stretch of the South Fork as impaired due to elevated mercury levels (ADEQ 2010, p. 22). Boston Mountain streams that support the yellowcheek darter are typically characterized by adequate water quality; however, increasing activity within the watersheds related to resource extraction, urban development, and other human related activities is reason for concern regarding the recovery potential of the yellowcheek darter.

Therefore, based on the information above, we identify aquatic macroinvertebrate prey items; permanent surface flows, as measured during average rainfall years; moderate to strong water velocity in riffles; and adequate water quality to be physical or biological features for the yellowcheek darter.

Chucky Madtom

The chucky madtom's prey items are unknown; however, least madtom (*N. hildebrandi*) prey items include midge larvae, caddisfly larvae, stonefly larvae, and mayfly nymphs (Mayden and Walsh 1984, p. 339). In smoky madtoms, mayfly nymphs comprised 70.7 percent of stomach contents analyzed, followed by fly, mosquito, midge, and gnat larvae (2.4 percent); caddisfly larvae (4.4 percent); and stonefly larvae (1.0 percent) (Dinkins and Shute 1996, p. 61). Significant daytime feeding was observed in smoky madtoms.

The TVA Index of Biological Integrity results indicate that Little Chucky Creek is biologically impaired (Middle Nolichucky Watershed Alliance 2006, p. 13). Given the predominantly agricultural land use within the Little Chucky Creek watershed, nonpoint source sediment and agrochemical discharges may pose a threat to the chucky madtom by altering the physical characteristics of its habitat, thus potentially impeding its ability to feed, seek shelter from predators, and successfully reproduce. The City of Greeneville also discharges sediments and contaminants into the creek, thereby threatening the chucky madtom. Wood and Armitage (1997, pp. 211–212) identify at least five impacts of sedimentation on fish, including: (1) Reduction of growth rate, disease tolerance, and gill function; (2) reduction of spawning habitat and egg, larvae, and juvenile development; (3) modification of migration patterns; (4) reduction of food availability through the blockage of primary production; and (5) reduction of foraging efficiency.

Water quality is important to the persistence of the chucky madtom. The species requires relatively clean, cool, flowing water to successfully complete its life cycle, but specific water quality requirements (such as temperature, dissolved oxygen, pH, and conductivity) that define suitable habitat conditions for the chucky madtom have not been determined. In general, optimal water quality conditions for fishes and other aquatic organisms are characterized by moderate stream temperatures and acceptable dissolved oxygen concentrations, and they lack harmful levels of pollutants, such as inorganic contaminants like iron, manganese, selenium, and cadmium; organic contaminants such as human and animal waste products; pesticides and herbicides; nitrogen, potassium, and phosphorus fertilizers; and petroleum distillates.

As relatively sedentary animals, madtoms must tolerate the full range of such parameters that occur naturally within the streams where they persist. Both the amount of water (flow) and its physical and chemical conditions (water quality) vary widely according to seasonal precipitation events and seasonal human activities within the watershed. In general, the species survives in areas where the magnitude, frequency, duration, and seasonality of water flow is adequate to remove fine particles and sediments (silt-free) without causing degradation, and where water quality is adequate for year-round survival (for example, moderate to high levels of dissolved oxygen, low to moderate input of nutrients, and relatively unpolluted water and sediments). Relatively silt-free is defined for the purpose of this rule as silt or fine sand within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

Therefore, based on the information above, we identify aquatic macroinvertebrate prey items; cool, clean, flowing water; shallow depths; permanent surface flows, as measured during average rainfall years; and adequate water quality with substrates that are relatively silt-free to be physical or biological features for the chucky madtom.

Laurel Dace

The laurel dace's preferred prey items include fly larvae, stonefly larvae, and caddisfly larvae (Skelton 2001, p. 126). Skelton observed that the morphological feeding traits of laurel dace, including a large mouth, short digestive tract, reduced number of pharyngeal (located within the throat) teeth, and primitively shaped basioccipital bone (bone that articulates the vertebra), are consistent

with a diet consisting largely of animal material.

Strange and Skelton (2005, p. 7 and Appendix 2) identified siltation as a threat in all of the occupied Piney River tributaries (Youngs, Moccasin, and Bumbee Creeks). The Bumbee Creek type locality for the laurel dace is located within industrial forest that has been subjected to extensive clear-cutting and road construction in close proximity to the stream. Strange and Skelton (2005, p. 7) noted a heavy sediment load at this locality and commented that conditions there in 2005 had deteriorated since the site was visited by Skelton in 2002. In general, the species occupies areas that are relatively silt-free. Relatively silt-free is defined for the purpose of this rule as silt or fine sand within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

Strange and Skelton (2005, pp. 7 and 8 and Appendix 2) also commented on excessive siltation in localities they sampled on Youngs and Moccasin creeks, and observed localized removal of riparian vegetation around residences in the headwaters of each of these streams. They considered the removal of riparian vegetation problematic not only for the potential for increased siltation, but also for the potential thermal alteration of these small headwater streams. Skelton (2001, p. 125) reported that laurel dace occupy cool streams with a maximum recorded temperature of 26 °C (78.8 °F). The removal of riparian vegetation could potentially increase temperatures above the laurel dace's maximum tolerable limit.

Water quality is important to the persistence of the laurel dace. The species requires relatively clean, cool, flowing water to successfully complete its life cycle, but specific water quality requirements (such as temperature, dissolved oxygen, pH, and conductivity) that define suitable habitat conditions for the laurel dace have not been determined. In general, optimal water quality conditions for fishes and other aquatic organisms are characterized by moderate stream temperatures and acceptable dissolved oxygen concentrations, and they lack harmful levels of pollutants, such as inorganic contaminants like iron, manganese, selenium, and cadmium; organic contaminants such as human and animal waste products; pesticides and herbicides; nitrogen, potassium, and phosphorus fertilizers; and petroleum distillates.

Other factors that can potentially alter water quality and quantity are droughts and periods of low flow, nonpoint source run-off from adjacent land surfaces (for example, excessive amounts of nutrients, pesticides, and sediment), and random spills or unregulated discharge events. Run-off or discharges could be particularly harmful during drought conditions when flows are depressed and pollutants are more concentrated. Adequate water quality is essential for normal behavior, growth, and viability during all life stages of the laurel dace. Adequate water quantity and flow and good to optimal water quality are essential for normal behavior, growth, and viability during all life stages. Culverts, pipes, and bridge or road maintenance sites within the watersheds serve as dispersal barriers and have altered stream flows from natural conditions.

Other nonpoint source pollutants that affect the laurel dace include domestic sewage (through septic tank leakage or straight pipe discharges); agricultural pollutants such as fertilizers, pesticides, herbicides, and animal waste. There are no active coal mines within the range of the laurel dace; however, coal mining represents a potential threat to the species in the foreseeable future. Coal mining represents a major source of nonpoint source pollutants because it has the potential to contribute high concentrations of dissolved metals and other solids that lower stream pH or lead to elevated levels of stream conductivity (Pond 2004, pp. 6–7, 38–41; Mattingly *et al.* 2005, p. 59). The direct effect of elevated stream conductivity on fishes, including the laurel dace, is poorly understood, but some species, such as blackside dace, have shown declines in abundance over time as conductivity increased in streams affected by mining (Hartowicz 2008, pers. comm.).

Water temperature may also be a limiting factor in the distribution of this species (Skelton 1997, pp. 17, 19). Canopy cover of laurel dace streams often consists of eastern hemlock (*Tsuga canadensis*), mixed hardwoods, pines (*Pinus* sp.), and mountain laurel (*Kalmia latifolia*). The hemlock woolly adelgid (*Adelges tsugae*) is a nonnative insect that infests hemlocks, causing damage or death to trees. The woolly adelgid was recently found in Hamilton County, Tennessee, and could impact eastern hemlock in floodplains and riparian buffers along laurel dace streams in the future (Simmons 2008, pers. comm.). Riparian buffers filter sediment and nutrients from overland runoff, allow water to soak into the ground, protect stream banks and lakeshores, and provide shade for streams. Because eastern hemlock is primarily found in riparian areas, the loss of this species adjacent to laurel dace streams would be detrimental to fish habitat.

Therefore, based on the information above, we identify aquatic macroinvertebrate prey items; cool, clean, flowing water; shallow depths; permanent surface flows, as measured during average rainfall years; and adequate water quality with substrates that are relatively silt-free to be physical or biological features for the laurel dace.

Cover or Shelter

Cumberland Darter

Cumberland darters depend on specific habitats and bottom substrates for normal life processes such as spawning, rearing, resting, and foraging. As described above, the species' preferred habitats (shallow pools and runs) are dominated by sand or sand-covered bedrock with patches of gravel or debris (Thomas 2007, p. 4). Individuals were observed by O'Bara (1991, p. 10) and Thomas (2007, p. 4) in gently flowing runs or pools at depths ranging from 20 to 76 cm (average 36.2 cm) (3.9 to 30 in, average 14.3 in). Most of these habitats contain isolated boulders and large cobble that the species likely uses as cover. According to O'Bara (1991, p. 11), areas used by the Cumberland darter for cover and shelter are very susceptible to the effects of siltation, and the presence of relatively silt-free substrates is the major limiting factor for both the species' continued existence and its ability to colonize new habitats. Relatively silt-free is defined for the purpose of this rule as silt or fine sand—within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

Therefore, based on the information above, we identify stable, shallow pools and runs with relatively silt-free sand, sand-covered bedrock substrates, and isolated boulders and large cobble substrates to be a physical or biological feature for the Cumberland darter.

Rush Darter

Rush darters depend on specific stream substrates and stream margins consisting of aquatic vegetation for normal and robust life processes such as spawning, rearing, protection of young, protection of adults when threatened, foraging, and feeding. Preferred substrates are dominated by fine gravel, with lesser amounts of sand, fine silt, coarse gravel, cobble, and bedrock (Blanco and Mayden 1999, pp. 24–26; Drennen 2009, pers. obs.). In addition to these preferred substrates, rush darters generally prefer aquatic emergent

vegetation such as watercress (*Nasturtium officinale*), parrots feather (*Myriophyllum* sp.), rushes (*Juncus* spp.), and sedges (*Carex* spp.). This emergent vegetation is utilized by the rush darter, especially in the quiet water along stream margins and in ephemeral pools and tributaries (Boschung and Mayden 2004, p. 552; Stiles 2011, pers. comm.).

Excessive siltation of gravel substrates removes foraging and feeding sites for the rush darter (Sylte and Fischenich 2002, pp. 1–25), and eliminates conditions necessary for some aquatic plant species to flourish. Similarly, excessive nutrients promote dense filamentous algae growth on the substrate and within the water column (Drennen 2007, pers. obs.; Stiles 2011, pers. comm.), which may restrict rush darter habitat for foraging and spawning (Stiles 2011, pers. comm.).

Stormwater flows may result in scouring and erosion of important cover and shelter sites for the rush darter. Conversely, drought conditions render the darter populations vulnerable to higher water temperatures and restricted habitat, especially during the breeding season when they concentrate in wetland pools and shallow pools of headwater streams (Fluker *et al* 2007, p. 10).

Therefore, based on the information above, we identify quiet water along stream margins and in shallow ephemeral pools and headwater tributaries; aquatic emergent vegetation; a combination of silt, sand, and gravel substrates; and seasonal stream flows sufficient to provide connectivity and to remove excessive sediment covering the vegetation and stream bottom substrates to be a physical or biological feature for the rush darter.

Yellowcheek Darter

Summertime habitat selected by the yellowcheek darter includes high-velocity (greater than 0.4 meters per second or 1.3 feet per second) water over 8 to 128 millimeters (mm) (0.3 to 5.0 in) gravel and cobble substrate at depths of 11 to 30 cm (4.3 to 11.8 in) (Brophy and Stoeckel 2006, p. 42), which lends evidence to the suggestion by other researchers that it is a ''riffle-obligate'' species and is unlikely to occupy pool or run habitats when riffles are available. Preferred water depths for yellowcheek darters ranged between 11 and 30 cm (4.3 and 11.8 in), but yellowcheek darters have been found in shallower water, when greater depths with suitable velocities were scarce. Gravel and cobble from 8 to 128 mm (0.3 to 5.0 in) median diameter appears to be the important substrate type for yellowcheek darter (Brophy and Stoeckel 2006, p. 42). Larger boulder substrates are important during spring spawning periods (McDaniel 1984, p. 82). Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to suffocate aquatic insects, smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival. In general, the species occupies areas that are relatively silt-free. Relatively silt-free is defined for the purpose of this rule as silt or fine sand within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

Therefore, based on the information above, we identify high-quality riffle substrates that are relatively silt-free and contain a mixture of gravel, cobble, and boulder substrates to be a physical or biological feature for the yellowcheek darter.

Chucky Madtom

While nothing is known specifically about chucky madtom habitat preferences, available information for other similar members of the *Noturus* group is known. Both smoky and elegant madtoms (*N. elegans*) were found to nest under flat rocks (slab-rock boulders) at or near the head of riffles (Burr and Dimmick 1981, p. 116; Dinkins and Shute 1996, p. 56). Smoky madtoms have also been observed using shallow pools and to select rocks of larger dimension for nesting than were used for shelter during other times of year (Dinkins and Shute 1996, p. 56). Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival.

Dinkins and Shute (1996, p. 50) found smoky madtoms underneath slab-rock boulders in swift to moderate current during May to early November. Habitat use shifted to shallow pools over the course of a 1-week period, coinciding with a drop in water temperature to 7 or 8 °C (45 to 46 °F), and persisted from early November to May. Eisenhour *et al.* (1996, p. 43) collected saddled madtoms in gravel, cobble, and slab-rock boulder substrates in riffle habitats with depths ranging from 0.1 to 0.3 m (0.33 to 0.98 ft). Based on their limited number of observations, Eisenhour *et al.* (1996, p. 43) hypothesized that saddled madtoms occupy riffles and runs in the daylight hours and then move to pools at night and during crepuscular hours (dawn and dusk) to feed.

Therefore, based on the information above, we identify gently flowing runs and pools with relatively silt-free flat gravel, cobble, and slab-rock boulder substrates to be a physical or biological feature for the chucky madtom.

Laurel Dace

Laurel dace have been most often collected from pools or slow runs from undercut banks or beneath slab-rock boulders, typically in first- or second-order, clear, cool (maximum recorded temperature 26 °C or 78.8 °F) streams. Substrates in streams where laurel dace are found typically consist of a mixture of cobble, rubble, and boulder and the streams tend to have a dense riparian zone consisting largely of mountain laurel (Skelton 2001, pp. 125–126). Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival.

Water temperature may be a limiting factor in the distribution of this species (Skelton 1997, pp. 17, 19). Canopy cover of laurel dace streams often consists of eastern hemlock (*Tsuga canadensis*), mixed hardwoods, pines (*Pinus* spp.), and mountain laurel (*Kalmia latifolia*). Riparian buffers filter sediment and nutrients from overland runoff, allow water to soak into the ground, protect stream banks and lakeshores, and provide shade for streams. The hemlock woolly adelgid is a nonnative insect that infests hemlocks, causing damage or death to trees. The woolly adelgid was recently found in Hamilton County, Tennessee, and could impact eastern hemlock in floodplains and riparian buffers along laurel dace streams in the future (Simmons 2008, pers. comm.). Because eastern hemlock is primarily found in riparian areas, the loss of this species adjacent to laurel dace streams would be detrimental to fish habitat.

Habitat destruction and modification also stem from existing or proposed infrastructure development in association with silvicultural activities. The presence of culverts at one or more

road crossings in most of the streams inhabited by laurel dace may disrupt upstream dispersal within those systems (Chance 2008, pers. obs.). Such dispersal barriers could prevent re-establishment of laurel dace populations in reaches where they suffer localized extinctions due to natural or human-caused events.

Therefore, based on the information above, we identify stream connectivity, gently flowing runs and pools with relatively silt-free cobble and slab-rock boulder substrates with undercut banks, and canopy cover to be a physical or biological feature for the laurel dace.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Cumberland Darter

Little is known regarding the reproductive habits of the Cumberland darter. Thomas (2007, p. 4) reported the collection of male Cumberland darters in breeding condition in April and May, with water temperatures ranging from 15 to 18 °C (59 to 64 °F). Extensive searches by Thomas (2007, p. 4) produced no evidence of nests or eggs at these sites. Reproductive habits of its closest relative, the Johnny darter, have been well studied by Winn (1958a, pp. 163–183; 1958b, pp. 205–207), Speare (1965, pp. 308–314), and Bart and Page (1991, pp. 80–86). Spawning occurs from April to June, with males migrating to spawning areas prior to females and establishing territories at selected spawning sites. Males establish a nest under a submerged object (boulder or woody debris) by using fin movements to remove silt and fine debris. Females enter the nests, the spawning pair inverts, and females deposit between 40 and 200 adhesive eggs on the underside of the nest object. Males care for the nest by periodically fanning the area to remove silt. The eggs hatch in about 6 to 16 days, depending on water temperature. Hatchlings are about 5 mm (0.2 in) and reach 29 to 38 mm (1.1 to 1.5 in) at age 1. Given these specialized reproductive behaviors, it is apparent that the Cumberland darter requires second- to fourth-order streams containing gently flowing run and pool habitats with sand and bedrock substrates, boulders, woody debris, or other cover and that are relatively silt-free. It is essential to maintain the connectivity of these sites, to accommodate breeding, growth, and other normal behaviors of the Cumberland darter and to promote gene flow within the species.

Therefore, based on the information above, we identify stable, second- to fourth-order streams containing gently flowing run and pool habitats with sand and bedrock substrates, boulders, large cobble, woody debris, or other cover and that are relatively silt-free and stream connectivity to be a physical or biological feature for the Cumberland darter.

Rush Darter

Rush darters depend on bottom substrates dominated by sand, fine silt, fine gravel and some coarse gravel, and that have significant amounts of emergent aquatic vegetation (Drennen 2009, pers. obs.).

In July 2008, rush darter young-of-the-year were collected within areas of very little water in the headwaters of an unnamed tributary in Jefferson County (Kuhajda 2008, pers. comm.), and in January 2008, the same tributary was dry. In previous years, this area was a spawning and nursery site for rush darters (Kuhajda 2008, pers. comm.). During May and June, rush darters spawned at this site even though the area had been dewatered occasionally in the summer, fall, and winter (Kuhajda 2008, pers. comm.). Adults may be migrating upstream from watered areas or juveniles and adults may be moving downstream from the spring-fed wetland that constitutes the headwaters of the unnamed tributary (Kuhajda 2008, pers. comm.).

Therefore, based on the information above, we identify permanent and ephemeral shallow streams with quiet water along stream margins and in shallow ephemeral pools and headwater tributaries, along with seasonal stream flows sufficient to provide connectivity and promote the emergent aquatic vegetation necessary for spawning and rearing of young, to be a physical or biological feature for the rush darter.

Yellowcheek Darter

Yellowcheek darter spawning occurs from late May through June in the swift to moderately swift portions of riffles, often around or under the largest rocks (McDaniel 1984, p. 82), although brooding females have been found at the head of riffles in smaller gravel substrate (Wine *et al.* 2000, p. 3). During non-spawning months, there is a general movement to portions of the riffle with smaller substrate, such as gravel or cobble, and less turbulence (Robison and Harp 1981, p. 3). Weston and Johnson (2005, p. 24) observed that the yellowcheek darter moved very little during a 1-year migration study, with 19 of 22 recaptured darters found within 9 m (29.5 ft) of their original capture position after periods of several months.

A number of life-history characteristics, including courtship patterns, specific spawning behaviors, egg deposition sites, number of eggs per nest, degree of nest protection by males, and degree of territoriality are unknown at this time; however, researchers suggest that yellowcheek darters deposit eggs on the undersides of larger rubble in swift water (McDaniel 1984, p. 82). Wine and Blumenshine (2002, p. 10) noted that during laboratory spawning, yellowcheek darter females bury themselves in fine gravel or sand substrates (often behind large, fist-sized cobble) with only their heads and caudal fin exposed. A yellowcheek darter male will then position himself upstream of the buried female and fertilize her eggs. Clutch size and nest defense behavior were not observed. Given these specialized reproductive behaviors, the importance of riffle habitats that are characterized by good water quality and sufficient substrates that are relatively silt-free is apparent.

Therefore, based on the information above, we identify swift to moderately swift riffles with gravel, cobble, and boulder substrates that are characterized by good water quality and are relatively silt-free to be a physical or biological feature for the yellowcheek darter.

Chucky Madtom

Little is known regarding the reproductive habits of the chucky madtom; however, both smoky and elegant madtoms were found to nest under flat slab-rock boulders at or near the head of riffles (Burr and Dimmick 1981, p. 116; Dinkins and Shute 1996, p. 56). Shallow pools were also used by the smoky madtom. Smoky madtoms selected larger rocks for nesting than were used for shelter during other times of year (Dinkins and Shute 1996, p. 56). A single male madtom guards the nest in the cases of smoky, elegant, Ozark (*N. albater*), and least madtoms (Mayden *et al.* 1980, p. 337; Burr and Dimmick 1981, p. 116; Mayden and Walsh 1984, p. 357; Dinkins and Shute 1996, p. 56). While guarding the nest, many were found to have empty stomachs suggesting that they do not feed during nest guarding, which can last as long as 3 weeks.

Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival.

Therefore, based on the information above, we identify streams containing

gently flowing run and pool habitats with flat or slab-rock boulder substrates that are relatively silt-free to be a physical or biological feature for the chucky madtom.

Laurel Dace

Little is known regarding the reproductive habits of the laurel dace. Skelton (2001, p. 126) reported having collected nuptial individuals from late March until mid-June, although Call (2004, pers. obs.) observed males in waning nuptial color during surveys on July 22, 2004. Laurel dace may be a spawning nest associate with nest-building minnow species, as has been documented in blackside dace (Starnes and Starnes 1981, p. 366). Soddy Creek is the only location in which Skelton (2001, p. 126) collected a nest-building minnow with laurel dace. The nests used by blackside dace had moderate flow and consisted of gravel substrate at depths of 20 cm (7.9 in) (Starnes and Starnes 1981, p. 366). These nests were noted to be approximately 0.7 m (2.3 ft) from undercut banks (Starnes and Starnes 1981, p. 366).

Siltation (excess sediments suspended or deposited in a stream) contributes to turbidity of the water and has been shown to smother fish eggs, clog fish gills, and may fill in essential interstitial spaces (spaces between stream substrates) used by aquatic organisms for spawning and foraging; therefore, excessive siltation negatively impacts fish growth, physiology, behavior, reproduction, and survival.

Therefore, based on the information above, we identify headwater streams containing moderately flowing run and pool habitats with gravel substrates, containing undercut banks, and that are relatively silt-free to be a physical or biological feature for the laurel dace.

Primary Constituent Elements

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements to be the elements of physical and biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the five species' life history processes, we determine that the primary constituent elements are:

Cumberland darter

(1) Primary Constituent Element 1—Shallow pools and gently flowing runs of geomorphically stable second- to fourth-order streams with connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(2) Primary Constituent Element 2—Stable bottom substrates composed of relatively silt-free sand and sand-covered bedrock, boulders, large cobble, woody debris, or other cover.

(3) Primary Constituent Element 3—An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(4) Primary Constituent Element 4—Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the Cumberland darter.

(5) Primary Constituent Element 5—Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, caddisfly larvae, and microcrustaceans.

Rush Darter

(1) Primary Constituent Element 1—Springs and spring-fed reaches of geomorphically stable, relatively low-gradient, headwater streams with appropriate habitat (bottom substrates) to maintain essential riffles, runs, and pools; emergent vegetation in shallow water and on the margins of small streams and spring runs; cool, clean, flowing water; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(2) Primary Constituent Element 2—Stable bottom substrates consisting of a combination of sand with silt, muck, gravel, or bedrock and adequate emergent vegetation in shallow water on the margins of small permanent and ephemeral streams and spring runs.

(3) Primary Constituent Element 3—Instream flow with moderate velocity and a continuous daily discharge that allows for a longitudinal connectivity regime inclusive of both surface runoff and groundwater sources (springs and seepages) and exclusive of flushing flows caused by stormwater runoff.

(4) Primary Constituent Element 4—Water quality with temperature not exceeding 26.7 °C (80 °F), dissolved oxygen 6.0 milligrams or greater per liter, turbidity of an average monthly reading of 10 Nephelometric Turbidity Units (NTU; units used to measure sediment discharge) and 15mg/L Total Suspended Solids (TSS; measured as mg/L of sediment in water) or less; and a specific conductance (ability of water to conduct an electric current, based on dissolved solids in the water) of no greater than 225 micro Siemens per centimeter at 26.7 °C (80 °F).

(5) Primary Constituent Element 5—Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, blackfly larvae, beetles, and microcrustaceans.

Yellowcheek Darter

(1) Primary Constituent Element 1—Geomorphically stable second- to fifth-order streams with riffle habitats; and connectivity between spawning, foraging, and resting sites to promote gene flow within the species' range where possible.

(2) Primary Constituent Element 2—Stable bottom composed of relatively silt-free, moderate to strong velocity riffles with gravel, cobble, and boulder substrates.

(3) Primary Constituent Element 3—An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(4) Primary Constituent Element 4—Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the yellowcheek darter.

(5) Primary Constituent Element 5—Prey base of aquatic macroinvertebrates, including blackfly larvae, stonefly larvae, mayfly nymphs, and caddisfly larvae.

Chucky Madtom

(1) Primary Constituent Element 1—Gently flowing run and pool reaches of geomorphically stable streams with cool, clean, flowing water; shallow depths; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(2) Primary Constituent Element 2—Stable bottom substrates composed of

relatively silt-free, flat gravel, cobble, and slab-rock boulders.

(3) Primary Constituent Element 3—An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(4) Primary Constituent Element 4—Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the chucky madtom.

(5) Primary Constituent Element 5—Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, caddisfly larvae, and stonefly larvae.

Laurel Dace

(1) Primary Constituent Element 1—Pool and run habitats of geomorphically stable first- to second-order streams with riparian vegetation; cool, clean, flowing water; shallow depths; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(2) Primary Constituent Element 2—Stable bottom substrates composed of relatively silt-free cobble and slab-rock boulder substrates with undercut banks and canopy cover.

(3) Primary Constituent Element 3—An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(4) Primary Constituent Element 4—Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the laurel dace.

(5) Primary Constituent Element 5—Prey base of aquatic macroinvertebrates, including midge larvae, caddisfly larvae, and stonefly larvae.

With this proposed designation of critical habitat, we intend to identify the physical and biological features essential to the conservation of these five species, through the identification of the appropriate quantity and spatial arrangement of the primary constituent elements sufficient to support the life-history processes of the species. All units proposed to be designated as critical habitat are currently occupied by these five species, except for Cumberland darter Units 5 (Indian Creek) and 7 (Kilburn Fork). All occupied units for these five species contain the primary constituent elements in the appropriate quantity and spatial arrangement sufficient to support the life-history needs of these species. All unoccupied units for the Cumberland darter are considered essential to the conservation of the species.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and which may require special management considerations or protection.

Cumberland Darter

The 15 units we are proposing for designation as critical habitat for the Cumberland darter will require some level of management to address the current and future threats to the physical and biological features of the species. Due to their location on the Daniel Boone National Forest (DBNF), at least a portion of 13 of the 15 proposed critical habitat units are being managed and protected under DBNF's Land and Resource Management Plan (LRMP) (United States Forest Service (USFS) 2004, pp. 1–14). The LRMP is implemented through a series of project-level decisions based on appropriate site-specific analysis and disclosure. It does not contain a commitment to select any specific project; rather, it sets up a framework of desired future conditions with goals, objectives, and standards to guide project proposals. Projects are proposed to solve resource management problems, move the forest environment toward desired future conditions, and supply goods and services to the public (USFS 2004, pp. 1–14). The LRMP contains a number of protective standards that in general are designed to avoid and minimize potential adverse effects to the Cumberland darter and other federally listed species; however, the DBNF will continue to conduct project-specific section 7 consultation under the Act when their activities may adversely affect streams supporting Cumberland darters.

Two of the 15 proposed critical habitat units are located entirely on private property and are not presently under the special management or protection provided by a legally operative plan or agreement for the conservation of the species. Activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features essential to the Cumberland darter. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal surface mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from stormwater runoff, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to adverse effects of drought, floods, or other natural phenomena. Other activities that may affect physical and biological features in the proposed critical habitat units include those listed in the Effects of Critical Habitat Designation section below.

Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater springs and streams; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the areas we are proposing as critical habitat for the Cumberland darter contain the physical or biological features for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of each unit. Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Rush Darter

The eight units we are proposing for designation as critical habitat will require some level of management to address the current and future threats to the physical and biological features of the rush darter. None of the proposed critical habitat units are presently under special management or protection provided by a legally operative plan or agreement for the conservation of the

rush darter. However, 4.7 km (2.9 mi) of the Turkey Creek watershed (Jefferson County) is designated critical habitat for the vermilion darter (*Etheostoma chermocki*) (75 FR 75913, December 7, 2010) which includes a portion of proposed rush darter unit 2. Various activities in or adjacent to the critical habitat units described in this proposed rule may affect one or more of the physical and biological features. For example, features in the proposed critical habitat designation may require special management due to threats posed by the following activities or disturbances: urbanization activities and inadequate stormwater management (such as stream channel modification for flood control or gravel extraction) that could cause an increase in bank erosion; significant changes in the existing flow regime within the streams due to water diversion or withdrawal; significant alteration of water quality; significant alteration in the quantity of groundwater and alteration of spring discharge sites; significant changes in stream bed material composition and quality due to construction projects and maintenance activities; off-road vehicle use; sewer, gas, and water easements; bridge construction; culvert and pipe installation; and other watershed and floodplain disturbances that release sediments or nutrients into the water. Other activities that may affect physical and biological features in the proposed critical habitat units include those listed in the Effects of Critical Habitat Designation section below.

Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater springs, spring runs, and ephemeral rivulets; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the areas we are proposing as critical habitat for the rush darter contain the physical or biological features for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of each unit. Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Yellowcheek Darter

The four units we are proposing for designation as critical habitat for the yellowcheek darter will require some level of management to address the current and future threats to the physical and biological features of the species. The yellowcheek darter is currently covered under a Candidate Conservation Agreement with Assurances (CCAA) in the upper Little Red River watershed in Arkansas, along with the endangered speckled pocketbook mussel, which does not have critical habitat designated. Of the 205,761 hectares (ha) (508,446 acres (ac)) within the upper Little Red River watershed and known to support the yellowcheek darter, approximately 35,208 ha (87,000 ac) are owned by private parties (Service 2007, p. 4). To date, multiple landowners have enrolled 4,672 ha (11,544 ac) in the program since its inception in mid-2007 and 10 more landowners with approximately 20,234 ha (50,000 ac) have pending draft agreements. Lands enrolled in these conservation programs include areas within the proposed critical habitat as well as riparian and upland areas that are outside of the proposed critical habitat boundary. Various activities in or adjacent to proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by natural gas extraction; timber harvest; gravel mining; unrestricted cattle access into streams; water diversion for agriculture, industry, municipalities, or other purposes; lack of adequate riparian buffers; construction and maintenance of county and State roads; and nonpoint source pollution arising from development and a broad array of human activities. These threats are in addition to random effects of drought, floods, or other natural phenomena. Other activities that may affect physical and biological features in the proposed critical habitat units include those listed in the Effects of Critical Habitat Designation section below.

Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater springs and streams; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the areas we are proposing as critical habitat for the yellowcheek darter contain the physical or biological features for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of each unit. Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Chucky Madtom

The single unit we are proposing for designation of critical habitat for the chucky madtom will require some level of management to address the current and future threats to the physical and biological features of the species. The critical habitat unit is located on private property and is not presently under the special management or protection provided by a legally operative plan or agreement for the conservation of the species. Various activities in or adjacent to the critical habitat unit described in this proposed rule may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by agricultural activities (*e.g.,* row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, gravel mining, and nonpoint source pollution arising from a wide variety of human activities. These threats are in addition to random effects of drought, floods, or other natural phenomena. Other activities that may affect physical and biological features in the proposed critical habitat unit include those listed in the Effects of Critical Habitat Designation section below.

Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater springs and streams; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the area we are proposing as critical habitat for the chucky madtom contains the physical or biological features for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of the unit. Additional discussion of threats facing the unit is provided in the unit description below.

Laurel Dace

The six units we are proposing for designation as critical habitat will require some level of management to address the current and future threats to the physical and biological features of the laurel dace. These units are located on private property and are not presently under the special management or protection provided by a legally operative plan or agreement for the conservation of the species. Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena. Other activities that may affect physical and biological features in the proposed critical habitat units include those listed in the Effects of Critical Habitat Designation section below.

Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; moderation of surface and ground water withdrawals to maintain natural flow regimes; increase of stormwater management and reduction of stormwater flows into the systems; preservation of headwater springs and streams; regulation of off-road vehicle use; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

In summary, we find that the areas we are proposing as critical habitat for the laurel dace contain the physical or biological features for the species, and that these features may require special management considerations or protection. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of each unit. Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Criteria Used To Identify Proposed Critical Habitat

As required by section 4(b)(1)(A) of the Act, we use the best scientific and commercial data available to designate critical habitat. We review available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we consider whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species.

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 usually lack physical and biological features for endangered species. 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 and biological features in the adjacent critical habitat. The designation of critical habitat does not imply that lands outside of critical habitat do not play an important role in the conservation of the species.

Cumberland Darter

We are proposing to designate critical habitat in areas within the geographical area occupied by the Cumberland darter at the time of listing in 2011. We also are proposing to designate specific areas outside the geographical area occupied by the species at the time of listing because we have 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 this species. Unoccupied habitats provide additional habitat for population expansion and promote greater genetic diversity, which will decrease the risk of extinction for the species.

We used information from surveys and reports prepared by the Kentucky Department of Fish and Wildlife Resources, Kentucky Division of Water, and Service records to identify specific locations occupied by the Cumberland darter. Delineations were based on the best available scientific information indicating portions of streams containing necessary physical and biological features to support the Cumberland darter. We set the upstream and downstream limits of each critical habitat unit by identifying landmarks (bridges, confluences, road crossings, dams) above and below the upper and lowermost reported locations of the Cumberland darter in each stream reach to ensure incorporation of all potential sites of occurrence.

We used ARCGIS to delineate the specific stream segments occupied by the Cumberland darter at the time of listing, and those locations outside the geographical area occupied by the species at the time it was listed that were determined to be essential for the conservation of the species. Areas proposed for critical habitat for the Cumberland darter include only stream channels within the ordinary high water line and do not contain any developed areas or structures. The designation of critical habitat does not imply that lands outside of critical habitat do not play an important role in the conservation of the Cumberland darter.

We are proposing to designate as critical habitat all stream reaches in occupied habitat. We have defined occupied habitat as those stream reaches occupied at the time of listing and still known to be occupied by the Cumberland darter. These stream reaches comprise the entire known range of the species. As discussed above, currently occupied habitat for the Cumberland darter is limited to 13 streams in McCreary and Whitley Counties, Kentucky, and Campbell and Scott Counties, Tennessee. All currently occupied areas contain the physical and biological features of the species.

To identify essential areas outside of the geographical area occupied at the time of listing, we focused on identifying areas historically occupied (currently unoccupied) in the upper Cumberland River basin in Kentucky

(McCreary and Whitley Counties) and Tennessee (Campbell and Scott Counties). We then assessed the critical life-history components of the Cumberland darter, as they relate to the physical and biological features. We determined the appropriate length of stream segments by identifying the upstream and downstream limits of unoccupied sections necessary for the conservation of the Cumberland darter.

The unoccupied reaches we are proposing as critical habitat were not occupied by the Cumberland darter at the time of listing, but they are located within the historical range of the species. During our evaluation of unoccupied stream reaches that could be essential for the conservation of the Cumberland darter, we considered the availability of potential habitat throughout the historical range that may be essential to the survival and conservation of the species. We eliminated from consideration streams with degraded habitat and water quality conditions and other streams with potentially suitable habitat, but separated from basins with occupied habitats. This screening process produced two unoccupied stream reaches (Indian Creek and Kilburn Fork), which we are proposing as critical habitat. These reaches are adjacent to currently occupied areas where there is potential for natural dispersal and reoccupation by the species.

Currently occupied habitats of the Cumberland darter are highly localized and fragmented, with populations separated from one another by an average distance of 30.5 stream km (19 stream mi). As explained above, this fragmentation and isolation of populations reduces the amount of space for rearing and reproduction, reduces the connectivity between populations, and decreases genetic diversity. Long-term viability is founded on the conservation of numerous local populations that can move freely between habitats and exchange genetic information. These reaches are essential to the Cumberland darter because they provide additional habitat for population expansion and will promote connectivity and genetic exchange between populations; in addition both streams support diverse fish assemblages, including federally listed and at-risk species.

We are proposing for designation as critical habitat streams that we determined were occupied at the time of listing and contain sufficient elements of physical and biological features to support life-history processes essential for the conservation of the species, and lands outside of the geographical area occupied at the time of listing that we determined are essential to the conservation of the Cumberland darter. Thirteen units are proposed for designation based on sufficient elements of physical and biological features present to support Cumberland darter life-history processes. We consider these thirteen units to contain all of the identified elements of physical and biological features and to support multiple life-history processes for the Cumberland darter. Two additional units are proposed for designation because we consider them to be essential to the conservation of the species, and they may require special management considerations or protection.

Rush Darter

We are proposing to designate critical habitat in areas within the geographical area occupied by the rush darter at the time of listing in 2011. We are not currently proposing to designate any areas outside the geographical area occupied by the rush darter because occupied areas are sufficient for the conservation of the species.

We used information from surveys and reports prepared by the Alabama Department of Conservation and Natural Resources, Alabama Geological Survey, Samford University, University of Alabama, the U.S. Forest Service, the Natural Resources Conservation Service, and the Service to identify the specific locations occupied by the rush darter. Currently, occupied habitat for the species is limited and isolated. The species is currently located within tributaries of three watersheds in three counties in Alabama: the Turkey Creek watershed (Jefferson County) (Drennen 2008, pers. obs.); the Clear Creek watershed (Winston County); and the Cove Creek watershed (Etowah County). In the Turkey Creek watershed, the species is found in four tributaries including Beaver Creek, an unnamed tributary to Beaver Creek, the Highway 79 site, and Tapawingo or Penny Springs. In the Clear Creek watershed, it is found in Wildcat Branch, Doe Branch, and Mill Creek. In the Cove Creek watershed, it found in Little Cove Creek, Cove Spring and spring run, and Bristow Creek.

Following the identification of the specific locations occupied by the rush darter, we determined the appropriate length of stream segments by identifying the upstream and downstream limits of these occupied sections necessary for the conservation of the rush darter. Because populations of rush darters are isolated due to dispersal barriers, to set the upstream and downstream limits of each critical habitat unit, we identified landmarks (bridges, confluences, road crossings, and dams), and in some instances latitude and longitude coordinates and section lines above and below the upper and lowermost reported locations of the rush darter, in each stream reach to ensure incorporation of all potential sites of occurrence. In addition, within the Cove Spring run and Tapawingo or Penny Spring run, the total area of water that is pooled, and is rush darter habitat, was calculated in hectares (acres). The proposed critical habitat areas were then mapped using ARCGIS to produce the critical habitat map.

We are proposing to designate as critical habitat all stream and spring reaches in occupied habitat. We have defined occupied habitat as those stream reaches occupied at the time of listing and still known to be occupied by the rush darter; these stream reaches comprise the entire known range of the rush darter. We are not proposing to designate any areas outside the occupied range of the species because occupied areas are sufficient for the conservation of the species, and because the historical range of the rush darter, beyond currently occupied areas, is unknown and dispersal beyond the current range is not likely due to dispersal barriers. Areas proposed for critical habitat for the rush darter below include only stream channels within the ordinary high water line and spring pool areas and do not contain any developed areas or structures.

We are proposing for designation as critical habitat streams that we have determined were occupied at the time of listing and contain sufficient elements of physical and biological features to support life-history processes essential to the conservation of rush darter. Eight units are proposed for designation based on sufficient elements of physical and biological features present to support rush darter life-history processes. Some units contain all of the identified elements of physical and biological features and support multiple life-history processes. Some units contain only some elements of the physical and biological features necessary to support the rush darter's particular use of that habitat.

Yellowcheek Darter

We are proposing to designate critical habitat in areas within the geographical area occupied by the yellowcheek darter at the time of listing in 2011. We are not currently proposing to designate any areas outside the geographical area occupied by the yellowcheek darter

because occupied areas are sufficient for the conservation of the species.

We used information from surveys and reports prepared by Arkansas State University, Arkansas Tech University, Arkansas Game and Fish Commission, Arkansas Department of Environmental Quality, and the Service to identify the specific locations occupied by the yellowcheek darter. We identified those areas to propose for designation as critical habitat, within the geographical area occupied by the species at the time of listing, that contain the physical and biological features of the yellowcheek darter and which may require special management consideration or protection. All of the areas we considered for designation are currently part of ongoing recovery initiatives for this species and are targeted for special management considerations.

We used ARCGIS to delineate the specific stream segments occupied by the yellowcheek darter at the time of listing, which contain the physical and biological features essential to the species. We assessed the critical life-history components of the yellowcheek darter, as they relate to habitat. Delineations were based on the best available scientific information indicating portions of streams containing necessary physical and biological features necessary to support the yellowcheek darter. We set the upstream and downstream limits of each critical habitat unit by identifying landmarks (bridges, confluences, road crossings, dams, reservoir inundation elevations) above and below the upper and lowermost reported locations of the yellowcheek darter in each stream reach to ensure incorporation of all potential sites of occurrence. Areas proposed as yellowcheek darter critical habitat include only stream channels within the ordinary high water line and do not contain any developed areas or structures.

We are proposing for designation as critical habitat streams that we have determined were occupied at the time of listing and contain sufficient elements of physical and biological features to support life-history processes essential to the conservation of the yellowcheek darter. Four units are proposed for designation based on sufficient elements of physical and biological features present to support yellowcheek darter life-history processes. All units contain all of the identified elements of physical and biological features and support multiple life-history processes.

Chucky Madtom

We are proposing to designate critical habitat in areas within the geographical area occupied by the chucky madtom darter at the time of listing in 2011. We are not currently proposing to designate any areas outside the geographical areas occupied by the chucky madtom at the time of listing because the historical range, beyond currently occupied areas, is not well known.

We used information from surveys and reports prepared by Conservation Fisheries, Inc., and the Tennessee Valley Authority to identify the specific locations occupied by the chucky madtom. Currently, occupied habitat for the species is limited and isolated. At the time of listing, the current range of the chucky madtom was restricted to an approximately 3-km (1.8-mi) reach of Little Chucky Creek in Greene County, Tennessee.

Following the identification of the specific locations occupied by the chucky madtom, we determined the appropriate length of stream segments by identifying the upstream and downstream limits of these occupied sections necessary for the conservation of the species. To set the upstream and downstream limits of the single critical habitat unit, we identified landmarks (bridges, confluences, and road crossings) above and below the upper and lowermost reported locations of the chucky madtom in Little Chucky Creek to ensure incorporation of all potential sites of occurrence. The proposed critical habitat areas were then mapped using ARCGIS to produce the critical habitat unit map.

We are proposing to designate as critical habitat a single stream reach in Little Chucky Creek, which is occupied habitat. This stream reach comprises the entire known range of the chucky madtom. The proposed unit contains one or more of the physical and biological features in the appropriate quantity and spatial arrangement essential to the conservation of this species and support multiple life processes for the chucky madtom. The area proposed for critical habitat for the chucky madtom includes only the stream channel within the ordinary high water line and does not contain any developed areas or structures.

We are proposing for designation as critical habitat a stream that we have determined was occupied at the time of listing and contain sufficient elements of physical and biological features to support life-history processes essential to the conservation of the chucky madtom. One unit is proposed for designation based on sufficient elements of physical and biological features present to support chucky madtom life-history processes.

Laurel Dace

We are proposing to designate critical habitat in areas within the geographical area occupied by the laurel dace at the time of listing in 2011. We are not currently proposing to designate any areas outside the geographical area occupied by the laurel dace because occupied areas are sufficient for the conservation of the species.

We used information from surveys and reports prepared by the Tennessee Valley Authority, Tennessee Wildlife Resources Agency, University of Tennessee, and the Service to identify the specific locations occupied by the laurel dace. Currently, occupied habitat for the species is limited and isolated. The species is currently located in three independent systems: Soddy Creek, the Sale Creek system, and the Piney River system. Following the identification of the specific locations occupied by the laurel dace, we determined the appropriate length of stream segments by identifying the upstream and downstream limits of these occupied sections necessary for the conservation of the laurel dace. Because populations of laurel dace are isolated due to dispersal barriers, to set the upstream and downstream limits of each critical habitat unit, we identified landmarks (bridges, confluences, and road crossings), and in some instances latitude and longitude coordinates and section lines above and below the upper and lowermost reported locations of the laurel dace, in each stream reach to ensure incorporation of all potential sites of occurrence. The proposed critical habitat areas were then mapped using ARCGIS to produce the critical habitat unit maps.

We are proposing to designate as critical habitat all stream reaches in occupied habitat. We have defined occupied habitat as those stream reaches occupied at the time of listing and still known to be occupied by the laurel dace; these stream reaches comprise the entire known range of the laurel dace. The six proposed units contain one or more of the physical and biological features in the appropriate quantity and spatial arrangement essential to the conservation of this species and support multiple life-history processes for the laurel dace. Areas proposed for critical habitat for the laurel dace include only stream channels within the ordinary high water line and do not contain any developed areas or structures.

We are proposing for designation of critical habitat streams that we determined were occupied at the time of listing and contain sufficient elements of physical and biological features to

support life-history processes essential to the conservation of the laurel dace. Six units are proposed for designation based on sufficient elements of physical and biological features present to support laurel dace life-history processes. All units contain all of the identified elements of physical and biological features and support multiple life-history processes.

Proposed Critical Habitat Designation

Cumberland Darter

We are proposing 15 units as critical habitat for the Cumberland darter. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the Cumberland darter. The 15 areas we propose as critical habitat are as follows: (1) Bunches Creek, (2) Calf Pen Fork, (3) Youngs Creek, (4) Barren Fork, (5) Indian Creek, (6) Cogur Fork, (7) Kilburn Fork, (8) Laurel Fork, (9) Laurel Creek, (10) Elisha Branch, (11) Jenneys Branch, (12) Wolf Creek, (13) Jellico Creek, (14) Rock Creek, and (15) Capuchin Creek. Critical habitat units are either in private ownership or public ownership (DBNF). In Kentucky and Tennessee, landowners own the land under non-navigable streams (*e.g.,* the stream channel or bottom), but the water is under State jurisdiction. Portions of the public-to-private boundary for units 6, 7, 8, 9, and 13 were located along the mid-line of the stream channel; lengths for these segments were divided equally between public and private ownership. Table 1 shows the occupancy of the units and ownership of the proposed designated areas for the Cumberland darter.

TABLE 1—OCCUPANCY AND OWNERSHIP OF THE PROPOSED CRITICAL HABITAT UNITS FOR THE CUMBERLAND DARTER

Unit	Location	Occupied	Private ownership km (mi)	Federal, State, County, City ownership km (mi)	Total length km (miles)
1	Bunches Creek	Yes	0	5.3 (3.3)	5.3 (3.3)
2	Calf Pen Fork	Yes	0	2.9 (1.8)	2.9 (1.8)
3	Youngs Creek	Yes	7.4 (4.6)	0	7.4 (4.6)
4	Barren Fork	Yes	0	6.3 (3.9)	6.3 (3.9)
5	Indian Creek	No	0	4.0 (2.5)	4.0 (2.5)
6	Cogur Fork	Yes	2.7 (1.7)	5.9 (3.7)	8.6 (5.4)
7	Kilburn Fork	No	0.9 (0.6)	3.7 (2.3)	4.6 (2.9)
8	Laurel Fork	Yes	1.3 (0.8)	2.2 (1.4)	3.5 (2.2)
9	Laurel Creek	Yes	0.6 (0.4)	8.8 (5.5)	9.4 (5.9)
10	Elisha Branch	Yes	0	2.1 (1.3)	2.1 (1.3)
11	Jenneys Branch	Yes	0	3.1 (1.9)	3.1 (1.9)
12	Wolf Creek	Yes	6.3 (3.9)	0	6.3 (3.9)
13	Jellico Creek	Yes	8.2 (5.1)	3.3 (2.1)	11.5 (7.2)
14	Rock Creek	Yes	3.9 (2.4)	2.2 (1.4)	6.1 (3.8)
15	Capuchin Creek	Yes	3.4 (2.1)	0.8 (0.5)	4.2 (2.6)
Total					85.3 (53.2)

We present brief descriptions of all units and reasons why they meet the definition of critical habitat for the Cumberland darter. The proposed critical habitat units include the stream channels of the creek within the ordinary high water line. As defined in 33 CFR 329.11, the ordinary high water mark on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. For each stream reach proposed as a critical habitat unit, the upstream and downstream boundaries are described generally below. More precise definitions are provided in the Proposed Regulation Promulgation at the end of this proposed rule.

Unit 1: Bunches Creek, Whitley County, Kentucky

This unit is located between Kentucky Highway 90 (KY 90) and the Cumberland River and includes 5.3 km (3.3 mi) of Bunches Creek from the confluence of Seminary Branch and Amos Falls Branch downstream to its confluence with the Cumberland River. Live Cumberland darters have been captured at two sites within proposed Unit 1 (Thomas 2007, pp. 11–12), specifically at the mouth of Bunches Creek and just below its confluence with Calf Pen Fork. This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on federal lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14). The lower portion of Bunches Creek (stream km 0 to 0.3 (mi 0 to 0.1)) flows through a designated Kentucky Wild River corridor (KRS 146.200 to 146.360) that extends along an approximately 25.7-km (16-mi) reach of the Cumberland River. This Wild River corridor extends from Summer Shoals downstream to the backwaters of Lake Cumberland (KRS 146.241). The Bunches Creek-Cumberland River confluence is located approximately 3.0 km (1.9 mi) upstream of Cumberland Falls. The Bunches Creek watershed is relatively undisturbed and access is limited (no road crossings). The channel within proposed Unit 1 is relatively stable, with excellent instream habitat (PCE 1). There is an abundance of pool and run habitats (PCE 1), with relatively silt-free sand and bedrock substrates (PCE 2) and adequate instream flows (PCE 3). Water quality is good to excellent (PCE 4), as evidenced by diverse fish and macroinvertebrate communities (PCE 5).

Within proposed Unit 1, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects associated with silviculture-related activities, natural gas and oil exploration activities in headwater reaches, illegal off-road

vehicle use and other recreational activities, nonpoint source pollution originating in headwater reaches, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 2: Calf Pen Fork, Whitley County, Kentucky

This unit includes 2.9 km (1.8 mi) of Calf Pen Fork, a tributary of Bunches Creek, from its confluence with Polly Hollow downstream to its confluence with Bunches Creek. Live Cumberland darters have been captured in Calf Pen Fork just above its confluence with Bunches Creek (Thomas 2007, pp. 11–12). This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on federal lands within the DBNF. Land and resource management decisions and activities within the DB proposed NF are guided by DBNF's LRMP (USFS 2004, pp. 1–14). Similar to the watershed of Unit 1, the Calf Pen Fork watershed is relatively undisturbed and access is limited (no road crossings). Within proposed Unit 2, the channel is relatively stable, with excellent instream habitat (PCE 1), an abundance of run and pool habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), and adequate instream flows (PCE 3). Water quality is good to excellent (PCE 4), with diverse fish and macroinvertebrate communities (PCE 5).

Within proposed Unit 2, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects associated with silviculture-related activities, natural gas and oil exploration activities, illegal off-road vehicle use and other recreational activities, nonpoint source pollution arising from headwater reaches, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 3: Youngs Creek, Whitley County, Kentucky

Proposed Unit 3 includes 7.4 km (4.6 mi) of Youngs Creek from Brays Chapel Road downstream to its confluence with the Cumberland River. Live Cumberland darters have been captured within proposed Unit 3 (Thomas 2007, pp. 11–12), specifically at the KY 204 bridge crossing. This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on private land. The watershed of Youngs Creek is less forested than proposed Units 1 and 2, with scattered residences and small farms. The channel is relatively stable (PCE 1), but activities associated with agriculture, silviculture, and residential development have contributed to a more open riparian zone, increased bank erosion, and some siltation of instream habitats. Despite these impacts, proposed Unit 3 continues to provide pool and run habitats with suitable sand and bedrock substrates for Cumberland darters to use in spawning, foraging, and other behaviors (PCEs 1 and 2). Flow is adequate as measured during years with average rainfall (PCE 3), water quality is adequate (PCE 4), and macroinvertebrate prey items are present (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 4: Barren Fork, McCreary County, Kentucky

Proposed Unit 4 includes 6.3 km (3.9 mi) of Barren Fork from its confluence with an unnamed tributary downstream to its confluence with Indian Creek. Based on survey results by Thomas (2007, pp. 11–12) and Stephens (2009, pp. 10–23), Barren Fork supports the most robust population of Cumberland darters within the species' range. Over the past 4 years, over 75 Cumberland darters have been observed within this unit (Thomas 2007, pp. 11–12; Stephens 2009, pp. 10–23). This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on federal lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14). In the summer and fall of 2008, the Barren Fork watershed was adversely affected by several large sedimentation events originating from a county park construction site in the headwaters of the basin. Inadequate site planning and poor BMP implementation allowed significant quantities of sediment to leave the construction site and enter headwater tributaries of Barren Fork. The sediment was carried downstream into the mainstem of Barren Fork, eventually affecting the entire reach of proposed Unit 4. Until the construction site was stabilized in 2009, important spawning and foraging habitats for the Cumberland darter were degraded.

Despite these significant adverse effects, habitat conditions have improved since 2008, and are now similar to those described for proposed Units 1 and 2. The watershed is mostly forested, with relatively stable channels (PCE 1), abundant pool and run habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), adequate flow (PCE 3), adequate water quality (PCE 4), and a diverse macroinvertebrate community (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, construction and maintenance of county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 5: Indian Creek, McCreary County, Kentucky

Proposed Unit 5 includes 4.0 km (2.5 mi) of Indian Creek from its confluence with an unnamed tributary, downstream to its confluence with Barren Fork. Live Cumberland darters have not been captured within proposed Unit 5. This unit was not included in the geographical area occupied by the species at the time of listing and it is not currently occupied by the species.

This unit is located entirely on federal lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

This unit is located within the historical range of the species, and is adjacent to currently occupied areas where there is potential for natural dispersal and reoccupation by the Cumberland darter. This unit is essential to the conservation of the Cumberland darter because it provides additional habitat for population expansion and will promote connectivity and genetic exchange between adjacent units to the south (Unit 4, Barren Fork) and to the north (Unit 6, Cogur Fork).

Unit 6: Cogur Fork, McCreary County, Kentucky

Proposed Unit 6 includes 8.6 km (5.4 mi) of Cogur Fork from its confluence with an unnamed tributary downstream to its confluence with Indian Creek. Live Cumberland darters have been captured at several locations within an approximately 1-km (0.62-mi) reach

upstream of the KY 1045 road crossing (Thomas 2010, pers. comm.). This unit was included in the geographical area occupied by the species at the time of listing. The majority of this unit (5.9 km (3.7 mi)) is in public ownership (DBNF), with the remainder of the unit (2.7 km (1.7 mi)) in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

Cumberland darters have been captured within proposed Unit 6, but the population is considered to be small (Thomas 2010, pers. comm.). From 2008 to present, the fauna has been bolstered through propagation and augmentation efforts by KDFWR, Conservation Fisheries, Inc. (CFI), and the Service (Thomas *et al.* 2010, p. 107). Initial brood stock were collected in 2008, with subsequent releases of propagated darters in 2009 (60 individuals (inds)) and 2010 (335 inds). Both tagged (propagated, 50 inds) and non-tagged (native, 4 inds) darters were observed during recent surveys in November 2010. Individuals tagged and released by KDFWR and CFI traveled distances ranging from 0.4 to 0.7 km (0.2 to 0.4 mi) between their release date of September 22, 2010, and their recapture date of November 9, 2010 (period of 48 days) (Thomas 2010, pers. comm.).

Similar to other units located entirely or predominately on the DBNF (Units 1, 2, 4, and 5), this unit has relatively stable channels (PCE 1), abundant pool and run habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), adequate flow (PCE 3), adequate water quality (PCE 4), and a diverse macroinvertebrate community (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, construction and maintenance of county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 7: Kilburn Fork, McCreary County, Kentucky

Proposed Unit 7 includes 4.6 km (2.9 mi) of Kilburn Fork from its confluence with an unnamed tributary downstream to its confluence with Laurel Fork. Live Cumberland darters have not been captured within proposed Unit 7 over the last 15 years (Thomas 2007, pp. 11–12). This unit was not included in the geographical area occupied by the species at the time of listing, and it is not currently occupied by the species.

The majority of this unit (3.7 km (2.3 mi)) is in public ownership (DBNF), with the remainder of the unit (0.9 km (0.6 mi)) in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

This unit is located within the historical range of the species, and is adjacent to currently occupied areas where there is potential for natural dispersal and reoccupation by the Cumberland darter. This unit is essential to the conservation of the Cumberland darter because it provides additional habitat for population expansion and will promote connectivity and genetic exchange between adjacent units to the south (Unit 6, Cogur Fork) and to the north (Unit 8, Laurel Fork).

Unit 8: Laurel Fork, McCreary County, Kentucky

Proposed Unit 8 includes 3.5 km (2.2 mi) of Laurel Fork from its confluence with Tom Fork downstream to its confluence with Indian Creek. Live Cumberland darters have been captured within proposed Unit 8 (Thomas 2007, pp. 11–12), specifically just upstream of its confluence with Kilburn Fork. This unit was included in the geographical area occupied by the species at the time of listing.

The majority of this unit (2.2 km (1.4 mi)) is in public ownership (DBNF), with the remainder of the unit (1.3 km (0.8 mi)) in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

Similar to other streams with major portions of their basins in the DBNF, the watershed of Laurel Fork is relatively intact and access is limited (limited roads and residential development). The channel within proposed Unit 8 is relatively stable (PCE 1), with suitable instream habitat to support the life-history functions of the Cumberland darter. There is an abundance of pool and run habitats (PCE 1), with relatively silt-free sand and bedrock substrates (PCE 2) and adequate flows (PCE 3). Water quality is good to excellent (PCE 4), as evidenced by diverse fish and macroinvertebrate communities (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, construction and maintenance of county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 9: Laurel Creek, McCreary County, Kentucky

Proposed Unit 9 includes 9.4 km (5.9 mi) of Laurel Fork Creek from Laurel Fork Reservoir downstream to its confluence with Jenneys Branch. Live Cumberland darters have been captured within proposed Unit 9 (Thomas 2007, pp. 11–12), specifically just upstream of its confluence with Elisha Branch and at the KY 478 bridge crossing. This unit was included in the geographical area occupied by the species at the time of listing. The majority of this unit (8.8 km (5.5 mi)) is in public ownership (DBNF), with the remainder of the unit (0.6 km (0.4 mi)) in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

The watershed of Laurel Creek is relatively intact, with extensive forest cover and few roads. The channel within Proposed Unit 9 is relatively stable (PCE 1), with suitable instream habitat to support the life-history functions of the Cumberland darter. There is an abundance of pool and run habitats (PCE 1), with relatively silt-free sand and bedrock substrates (PCE 2) and adequate instream flows (PCE 3). Water quality is good to excellent (PCE 4), with a diverse macroinvertebrate community (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, construction and maintenance of county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 10: Elisha Branch, McCreary County, Kentucky

Proposed Unit 10 includes 2.1 km (1.3 mi) of Elisha Branch from its confluence with an unnamed tributary (36.70132, −84.40843) downstream to its confluence with Laurel Creek. Live Cumberland darters have been captured within proposed Unit 10 (Thomas 2007, pp. 11–12), specifically just upstream of

its confluence with Laurel Creek. This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on public lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

The watershed of Elisha Branch is relatively intact, with extensive forest cover and no road crossings. Within proposed Unit 10, the channel is relatively stable, with excellent instream habitat (PCE 1), an abundance of run and pool habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), and adequate flows (PCE 3). Water quality is good to excellent (PCE 4), with diverse fish and macroinvertebrate communities (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 11: Jenneys Branch, McCreary County, Kentucky

Proposed Unit 11 includes 3.1 km (1.9 mi) of Jenneys Branch from its confluence with an unnamed tributary (36.73680, -84.42420) downstream to its confluence with Laurel Creek. Live Cumberland darters have been captured within proposed Unit 11 (Thomas 2007, pp. 11–12), specifically just upstream of its confluence with Laurel Creek. This unit was included in the geographical area occupied by the species at the time of listing. This unit is located entirely on public lands within the DBNF. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

The watershed of Jenneys Branch is relatively intact and remote, with extensive forest cover and only one road crossing in its headwaters. Within proposed Unit 11, the stream channel is relatively stable, with excellent instream habitat (PCE 1), an abundance of run and pool habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), and adequate instream flows (PCE 3). Water quality is good to excellent (PCE 4), with diverse fish and macroinvertebrate communities (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), lack of adequate riparian buffers, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 12: Wolf Creek, Whitley County, Kentucky

Proposed Unit 12 includes 6.3 km (3.9 mi) of Wolf Creek from its confluence with Sheep Creek downstream to Wolf Creek River Road. Live Cumberland darters have been captured within proposed Unit 12 just downstream of the Little Wolf Creek River Road bridge crossing (Thomas 2007, pp. 11–12). This unit was included in the geographical area occupied by the species at the time of listing.

This unit is located entirely on private land. Land use within the watershed of Wolf Creek is similar to proposed Unit 3 and is less forested than units within the DBNF. The channel is relatively stable (PCE 1), but activities associated with agriculture, silviculture, and residential development have contributed to a more open riparian zone, increased bank erosion, and some siltation of instream habitats. Despite these impacts, proposed Unit 12 continues to provide pool and run habitats with suitable sand and bedrock substrates for Cumberland darters to use in spawning, foraging, and other behaviors (PCEs 1 and 2). Flow is adequate as measured during years with average rainfall (PCE 3), water quality is adequate (PCE 4), and macroinvertebrate prey items are present (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, and nonpoint source pollution arising from a wide variety of human activities.

Unit 13: Jellico Creek, McCreary County, Kentucky, and Scott County, Tennessee

Proposed Unit 13 includes 11.5 km (7.2 mi) of Jellico Creek from its confluence with Scott Branch, Scott County, Tennessee downstream to its confluence with Capuchin Creek, McCreary County, Kentucky. Live Cumberland darters have been captured within proposed Unit 13 at the Jellico Creek and Shut-In Branch confluence and at the Gum Fork and Jellico Creek confluence (O'Bara 1988, p. 12; Thomas 2007, pp. 11–12). This unit was included in the geographical area occupied by the species at the time of listing. A portion of this unit in Kentucky (3.3 km (2.1 mi)) is in public ownership (DBNF), with the remainder of the unit (8.2 km (5.1 mi)) in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

Land use within the watershed of Jellico Creek is predominately forest, with scattered residences and small farms (cattle and hay production). The channel in proposed Unit 13 is relatively stable (PCE 1), but activities associated with agriculture, silviculture, and residential development have contributed to a more open riparian zone, increased bank erosion, and some siltation of instream habitats. Despite these impacts, proposed Unit 13 continues to provide pool and run habitats with suitable sand and bedrock substrates for Cumberland darters to use in spawning, foraging, and other behaviors (PCEs 1 and 2). Flow is adequate as measured during years with average rainfall (PCE 3), water quality is adequate (PCE 4), and macroinvertebrate prey items are present (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, and nonpoint source pollution arising from a wide variety of human activities.

Unit 14: Rock Creek, McCreary County, Kentucky

Proposed Unit 14 includes 6.1 km (3.8 mi) of Rock Creek from its confluence with Sid Anderson Branch downstream to its confluence with Jellico Creek. Live Cumberland darters have been captured within proposed Unit 14 just above the mouth of Rock Creek at its confluence with Jellico Creek (Thomas 2007, pp. 11–12). This unit was included in the geographical area occupied by the species at the time of listing. A portion of this unit (2.2 km (1.4 mi)) is in public ownership (DBNF), but the majority (3.9 km (2.4 mi)) is in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

Most of the watershed is forested (especially along the ridge tops), but the valley floor has several open fields and is easily accessible via Little Rock Creek Road. Portions of the channel in Unit 14 have been modified by beaver (with some ponding), but it continues to be relatively stable, with excellent instream habitat (PCE 1), an abundance of run and pool habitats (PCE 1), relatively silt-free sand and bedrock substrates (PCE 2), and adequate instream flows (PCE 3). Water quality is good to excellent (PCE 4), with diverse fish and macroinvertebrate communities (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid.

Unit 15: Capuchin Creek, McCreary County, Kentucky, and Campbell County, Tennessee

Proposed Unit 15 includes 4.2 km (2.6 mi) of Capuchin Creek from its confluence with Hatfield Creek downstream to its confluence with Jellico Creek. Live Cumberland darters have been captured within proposed Unit 15 at the Kentucky-Tennessee State line (Thomas 2007, pp. 11–12). This unit was included in the geographical area occupied by the species at the time of listing. A portion of this unit in Kentucky (0.8 km (0.5 mi)) is in public ownership (DBNF); the remainder in Kentucky and Tennessee (3.4 km (2.1 mi)) is in private ownership. Land and resource management decisions and activities within the DBNF are guided by DBNF's LRMP (USFS 2004, pp. 1–14).

Land use within the watershed of Capuchin Creek is predominately forest, with scattered residences and small farms (cattle and hay production). The channel in proposed Unit 15 is relatively stable (PCE 1), but activities associated with agriculture, silviculture, and residential development have contributed to a more open riparian zone, increased bank erosion, and some siltation of instream habitats. Despite these impacts, proposed Unit 15 continues to provide pool and run habitats with suitable sand and bedrock substrates for Cumberland darters to use in spawning, foraging, and other behaviors (PCEs 1 and 2). Flow is adequate as measured during years with average rainfall (PCE 3), water quality is adequate (PCE 4), and macroinvertebrate prey items are present (PCE 5).

Within this unit, the Cumberland darter and its habitat may require special management considerations or protection to address potential adverse effects caused by resource extraction (mining, silviculture, natural gas and oil exploration activities), agricultural activities (livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, illegal off-road vehicle use, and nonpoint source pollution arising from a wide variety of human activities.

Rush Darter

We are proposing eight units as critical habitat for the rush darter. The critical habitat areas described below constitute our current best assessment of areas that meet the definition of critical habitat for the rush darter. The eight areas we propose as critical habitat are as follows: (1) Beaver Creek, (2) Unnamed Tributary to Beaver Creek and Highway 79 Spring Site, (3) Tapawingo or Penny Spring and Spring Run, (4) Wildcat Branch, (5) Mill Creek, (6) Doe Branch, (7) Little Cove Creek, Cove Spring Site, and (8) Bristow Creek. Table 2 shows the occupancy of the units and ownership of the proposed designated areas for the rush darter.

TABLE 2—OCCUPANCY AND OWNERSHIP OF THE PROPOSED CRITICAL HABITAT UNITS FOR THE RUSH DARTER

Unit	Location	Occupied	Private ownership km (mi)	State, county, city ownership km (mi)	Total length km (mi)	Total area** ha (ac)
1	Beaver Creek	Yes	0.9 (0.6)	< 0.1 (< 0.1)	1.0 (0.6)	
2	Unnamed Tributary to Beaver Creek and Highway 79 Spring Site.	Yes	3.6 (2.2)	0.7 (0.4)	4.3 (2.6)	
3	Tapawingo or Penny Spring and Spring Run	Yes	0.6 (0.4)	< 0.1 (< 0.06)	0.6 (0.4)	6.7 (16.5)
4	Wildcat Branch	Yes	6.6 (4.1)	< 0.1 (< 0.06)	6.6 (4.1)	
5	Mill Creek	Yes	5.9 (3.7)	< 0.1 (< 0.06)	5.9 (3.7)	
6	Doe Branch	Yes	4.3 (2.7)	< 0.1 (< 0.06)	4.3 (2.7)	
7	Little Cove Creek, Cove Spring, Spring Run	Yes	11.2 (6.1)	< 0.1 (< 0.06)	11.2 (6.1)	5.1 (12.7)
8	Bristow Creek	Yes	10.2 (6.3)	< 0.1 (< 0.06)	10.2 (6.3)	
Total *					42.3 (26.9)	19.4 (21.7)

* Totals may not sum due to rounding.
** Total area in ha (ac) are in private ownership.

We present brief descriptions of each unit and reasons why they meet the definition of critical habitat below. The proposed critical habitat units include the stream channels of the creek within the ordinary high water line, and the flooded spring pool in the case of Tapawingo or Penny Springs (Jefferson County) and Cove Springs (Etowah County). As defined in 33 CFR 329.11, the ordinary high water line on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural water line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. In Alabama, the riparian landowner owns the stream to the middle of the channel for non-navigable streams and rivers. For the spring pools, the area was determined and delineated by the presence of emergent vegetation patterns as noted on aerial photographs.

For each stream reach of proposed critical habitat, the upstream and downstream boundaries are described generally below; more precise descriptions are provided in the Proposed Regulation Promulgation at the end of this proposed rule.

Unit 1: Beaver Creek, Jefferson County, Alabama

Proposed Unit 1 includes 1.0 km (0.6 mi) of Beaver Creek from the confluence with Dry Creek, downstream to the confluence with Turkey Creek. This unit was included in the geographical area occupied by the species at the time of listing. Almost 0.9 km (0.6 mi), or 94 percent of this area is privately owned. The remaining 0.1 km (< 0.1 mi), or 6 percent, is publicly owned by the City of Pinson or Jefferson County in the form of bridge crossings and road easements.

Beaver Creek contains adequate bottom substrate and emergent vegetation for rush darters to use in spawning, foraging, and other life processes (PCE 2). Beaver Creek makes available additional habitat and spawning sites, and offers connectivity with other rush darter populations within the Highway 79 Spring System site and the Unnamed Tributary to Beaver Creek (PCE 1).

Beaver Creek provides habitat for the rush darters with adequate number of pools, riffles, runs (PCE 1), and emergent vegetation (PCE 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with good water quality, quantity, and flow, which support the normal life stages and behavior of the rush darter (PCEs 3 and 4), the species' prey sources (PCE 5), and associated aquatic vegetation.

Threats to the rush darter and its habitat at Beaver Creek that may require special management of the PCEs include the potential of: urbanization activities (such as channel modification for flood control, construction of impoundments, and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management, water diversion, or water withdrawal; significant alteration of water quality; and significant changes in stream bed material composition and quality as a result of construction projects and maintenance activities, destruction of emergent vegetation, off-road vehicle use, sewer, gas and water easements, bridge and road construction and maintenance, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

There are three road crossings over Beaver Creek (Pinson Valley Parkway, Old Bradford Road, and Spring Street) that at times may limit the overall connectivity and movement of the species within this unit. Movement might be limited due to changes in flow regime and habitat including: emergent vegetation, water quality, water quantity, and stochastic events such as drought. Populations of rush darters are small and isolated within specific habitat sites of Beaver Creek.

Unit 2: Unnamed Tributary to Beaver Creek and Highway 79 Spring Site, Jefferson County, Alabama

Proposed Unit 2 includes 4.3 km (2.6 mi) of the Unnamed Tributary of Beaver Creek and a spring run. The site begins at the Section 1 and 2 (T16S, R2W) line, as taken from the U.S. Geological Survey 7.5 topographical map (Pinson quadrangle), downstream to its confluence with Dry Creek, and includes a spring run beginning at the springhead (33.67449, −86.69300) just northwest of Old Pinson Road and intersecting with the Unnamed Tributary to Beaver Creek on the west side of Highway 79. This unit was included in the geographical area occupied by the species at the time of listing.

Almost 3.6 km (2.2 mi), or 85 percent, of this area is privately owned. The remaining 0.7 km (0.4 mi), or 15 percent, is publicly owned by the City of Pinson or Jefferson County in the form of bridge crossings and road easements.

The Unnamed Tributary to Beaver Creek supports populations of rush darters and is a feeder stream to Beaver Creek (PCEs 1 and 2). The Unnamed Tributary to Beaver Creek has been intensely geomorphically changed by man over the last 100 years. The majority of this reach has been channelized for flood control, as it runs parallel to Highway 79. There are several bridge crossings, and the reach has a history of industrial uses along the bank. However, owing to the groundwater that constantly supplies this reach with clean and flowing water (PCEs 3 and 4), the reach has been able to support significant emergent vegetation in shallow water on the margins to support several rush darter populations. The headwaters of the Unnamed Tributary to Beaver Creek is characterized by natural flows that are attributed to an abundance of spring groundwater discharges contributing adequate water quality, water quantity, emergent vegetation and appropriate substrates (PCEs 1, 2, 3, and 4). Increasing the connectivity of the rush darter populations (PCE 1) throughout the reaches of this tributary is an essential conservation requirement as it would decrease the vulnerability of these populations to stochastic threats. The Highway 79 Spring Site is the type locality for the species (Bart 2004, p. 194), supporting populations of rush darters and providing supplemental water quantity to the Unnamed Tributary to Beaver Creek (PCEs 1 and 3). The reach contains adequate bottom substrate and emergent vegetation for rush darters to use in spawning, foraging, and other life processes (PCE 2). The Highway 79 Spring site provides habitat and spawning sites, and offers connectivity with rush darter populations in the Unnamed Tributary to Beaver Creek (PCE 1).

Threats to the rush darter and its habitat that may require special management and protection of PCEs are: Urbanization activities (such as channel modification for flood control, and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management and impoundment construction, water diversion, or water withdrawal; significant alteration of water quality; and significant changes in stream bed material composition and quality as a result of construction projects and road maintenance activities, off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 3: Tapawingo or Penny Spring and Spring Run, Jefferson County, Alabama

Proposed Unit 3 includes 0.6 km (0.4 mi) of spring run, historically called Tapawingo Plunge, along with 6.7 ha (16.5 ac) of flooded spring basin making up Penny Springs. Unit 3 is located south of Turkey Creek, north of Bud Holmes Road, and just east of Tapawingo Trail Road. The east boundary is at (33.69903, -86.66528): 1.0 km (0.6 mi) west of Section Line 28 to 29 (T15S, R1W) (U.S. Geological Survey 7.5 topographical map (Pinson quadrangle)). This unit was included in the geographical area occupied by the species at the time of listing. All 0.6 km (0.4 mi) stream miles and 6.7 ha (16.5 ac) of Unit 3 is privately owned except for that small amount that is publicly owned in the form of bridge crossings and road easements.

The Tapawingo or Penny Spring complex consists of an abundance of springs that drain directly into Turkey Creek by means of a large spring run at the old railroad crossing and Tapawingo Springs Road (PCEs 1 and 2). The historical spring run discharge ranges from 0.03 to 2.4 cubic meters per second (m^3/s) (500 to 38,800 gallons per minute (gal/min)) (Chandler and Moore 1987, p. 49), and there is an abundance of emergent vegetation (PCEs 1, 2, and 3).

Historically small numbers of rush darter have been collected in the spring area.

Threats to the rush darter and its habitat that may require special management and protection of physical and biological features are: Urbanization activities (such as channel modification for flood control, vegetation management, and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management and impoundment construction, water diversion, or water withdrawal; significant alteration of water quality; significant alteration or destruction of aquatic and emergent vegetation, and significant changes in stream bed material composition and quality as a result of construction projects and maintenance activities, off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 4: Wildcat Branch, Winston County, Alabama

Proposed Unit 4 includes 6.6 km (4.1 mi) of Wildcat Branch from the streams headwaters just east of Winston County Road 29 to the confluence with Clear Creek. This unit was included in the geographical area occupied by the species at the time of listing. Almost 6.6 km (4.1 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Winston County in the form of bridge crossings and road easements.

Wildcat Branch provides habitat for rush darters with a network of small pools and spring runs, along with an abundance of emergent vegetation (PCE 1 and 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with good water quality, quantity, and flow (PCEs 3 and 4), which support the normal life stages and behavior of the rush darter, the species' prey sources (PCE 5). Rush darters are consistently collected in Wildcat Branch, but not in large numbers.

Threats that may require special management and protection of physical and biological features include: Road and roadside maintenance, urbanization activities (such as channel modification for flood control and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management and impoundment construction, water diversion, or water withdrawal; significant alteration of water quality; significant alteration or destruction of aquatic and emergent vegetation, and significant changes in stream bed material composition and quality as a result of construction projects and maintenance activities, off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 5: Mill Creek, Winston County, Alabama

Proposed Unit 5 includes 5.9 km (3.7 mi) of Mill Creek from the stream headwaters just east of Winston County Road 195 to the confluence with Clear Creek. This unit was included in the geographical area occupied by the species at the time of listing. Almost 5.9 km (3.7 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Winston County in the form of bridge crossings and road easements.

Mill Creek provides habitat for the rush darter with a network of small pools, and spring runs, along with an abundance of emergent vegetation (PCE 1 and 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with good water quality, quantity, and flow (PCEs 3 and 4), which support the normal life stages and behavior of the rush darter, the species' prey sources (PCE 5). Rush darters are consistently collected in Mill Creek.

Threats that may require special management and protection of PCEs include: Road and roadside maintenance, urbanization activities (such as channel modification for flood control and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management and impoundment construction, water diversion, or water withdrawal; significant alteration of water quality; significant alteration or destruction of aquatic and emergent vegetation, and significant changes in stream bed material composition and quality as a result of construction projects and maintenance activities, off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 6: Doe Branch, Winston County, Alabama

Proposed Unit 6 includes 4.3 km (2.7 mi) of Doe Branch from the stream headwaters North and West of Section Line 23 and 14 (R9W, T11S; Popular Springs Quadrangle) to the confluence with Wildcat Branch. This unit was included in the geographical area occupied by the species at the time of listing. Almost 4.3 km (2.7 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Winston County in the form of bridge crossings and road easements.

Doe Branch provides habitat for the rush darter with a small network of small pools, and spring runs, along with adequate emergent vegetation (PCE 1 and 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with good water quality, quantity, and flow (PCEs 3 and 4), which support the normal life stages and behavior of the rush darter, the species' prey sources (PCE 5). Although the species is considered rare in Doe Branch, there have been few collection attempts in the stream with a few darters captured (Mettee *et al.* 1989, p. 61). Doe Branch contains habitat for the species and is considered occupied. The stream joins Wildcat Branch before flowing into Clear Creek.

Threats that may require special management and protection of physical and biological features include: road and roadside maintenance, urbanization activities (such as channel modification for flood control and gravel extraction) that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management and impoundment construction, water diversion, or water withdrawal; significant alteration of water quality; significant alteration or destruction of aquatic and emergent vegetation, and significant changes in stream bed material composition and quality as a result of construction projects and maintenance activities, off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 7: Little Cove Creek, Cove Spring and Spring Run, Etowah County, Alabama

Proposed Unit 7 includes 11.2 km (6.1 mi) of Little Cove Creek and the Cove Spring run system along with 5.1 ha (12.7 ac) of the spring run floodplain. Specifically, the Little Cove Creek section (11.0 km (6.0 mi)) is from the intersection of Etowah County Road 179 near the creek headwaters, downstream to its confluence with the Locust Fork

River. The Cove Spring and spring run section includes 0.2 km (0.1 mi) of the spring run from the springhead at the West Etowah Water and Fire Authority pumping station on Cove Spring Road to the confluence with Little Cove Creek and includes 5.1 ha (12.7 ac) of the spring run floodplain due south of the pumping facility. This unit was included in the geographical area occupied by the species at the time of listing. All 11.2 km (6.1 mi) of Unit 7 is privately owned except for that small amount that is publicly owned by Etowah County in the form of bridge crossings and road easements.

Little Cove Creek provides habitat for the rush darter with a network of small pools, and spring runs, along with an abundance of emergent aquatic vegetation (PCE 1 and 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with good water quality, quantity, and flow (PCEs 3 and 4), which support the normal life stages and behavior of the rush darter, the species' prey sources (PCE 5). Rush darters are collected in Little Cove Creek, but not in large numbers. The Cove Spring and Spring Run site supports small populations of rush darters and provides supplemental water quantity to Little Cove Creek (PCEs 1 and 3). Water quantity from the spring averages 0.2 m^3/s (3,000 gal/min) (Snead 2011, pers. comm.) (PCE 4). The spring contains an abundance of gravel and silt along with significant emergent vegetation for rush darters to use in spawning, foraging, and other life processes (PCE 2). The Cove Spring and Spring Run site provides habitat and spawning sites, and offers connectivity with rush darter populations to Little Cove Creek (PCE 1).

Threats that may require special management and protection of physical and biological features include: road and roadside maintenance, agricultural and silviculture activities that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management; impoundment construction, water diversion, or water withdrawal for livestock and irrigation; significant alteration or destruction of aquatic and emergent vegetation, significant alteration of water quality due to release of chlorinated water and other chemicals into the Cove Spring run or Little Cove Creek by the water pumping facility or other sources; off-road vehicle use, sewer, gas and water easements, bridge construction, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Unit 8: Bristow Creek, Etowah County, Alabama

Proposed Unit 8 includes 10.2 km (6.3 mi) of Bristow Creek beginning from its intersection with Fairview Cove Road, downstream to the confluence with the Locust Fork River. This unit was included in the geographical area occupied by the species at the time of listing. All 10.2 km (6.3 mi) of Bristow Creek, beginning at the bridge at Fairview Road, downstream to the confluence with the Locust Fork River is privately owned except for that small amount that is publicly owned by Etowah County in the form of bridge crossings and road easements.

Bristow Creek, although channelized in some locations, provides habitat and connectivity for the rush darters (PCE 1). Locations within the creek have the necessary stream attributes of some small pools, and spring runs (PCE 1) along with emergent vegetation (PCE 2). These geomorphic structures provide the species with spawning, foraging, and resting areas (PCE 1), along with supplemental water quantity and flow (PCE 3), which support the normal life stages and behavior of the rush darter, the species' prey sources (PCE 5). The rush darter is considered rare in Bristow Creek, but sampling has been limited.

Threats that may require special management and protection of physical and biological features include: road and roadside maintenance, agricultural and silviculture activities that could result in increased bank erosion; significant changes in the existing flow regime due to inadequate stormwater management; significant alteration or destruction of aquatic and emergent vegetation, impoundment construction, water diversion, or water withdrawal for livestock and irrigation; off-road vehicle use, sewer, gas and water easements, septic tank drain fields, bridge construction and maintenance, culvert and pipe installation, and other watershed and floodplain disturbances that release sediments or nutrients into the water.

Yellowcheek Darter

We are proposing four units as critical habitat for the yellowcheek darter. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the yellowcheek darter. The four areas on the Little Red River that we propose as critical habitat are as follows: (1) Middle Fork, (2) South Fork, (3) Archey Fork, and (4) Devil's Fork (Includes Turkey Creek and Beech Fork). Table 3 shows the occupancy of the units and ownership of the proposed designated areas for the yellowcheek darter.

TABLE 3—OCCUPANCY AND OWNERSHIP OF THE PROPOSED CRITICAL HABITAT UNITS FOR THE YELLOWCHEEK DARTER

Unit	Location	Occupied	Private ownership km (mi)	State, county, city ownership km (mi)	Total length km (mi)
1	Middle Fork of Little Red River	Yes	64.2 (39.9)	6.0 (3.7)	70.2 (43.6)
2	South Fork of Little Red River	Yes	30.3 (18.8)	1.6 (1.0)	31.9 (19.8)
3	Archey Fork of Little Red River	Yes	27.1 (16.8)	≤ .3(.2)	27.4 (17.0)
4	Devil's Fork of Little Red River	Yes	26.4 (16.4)	1.1 (0.7)	27.5 (17.1)
Total					157.0 (97.5)

We present brief descriptions of all units and reasons why they meet the definition of critical habitat for the yellowcheek darter. The proposed critical habitat units include the river channels within the ordinary high water line. As defined in 33 CFR 329.11, the ordinary high water mark on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. In Arkansas, the riparian landowner owns the stream to the middle of the channel for non-navigable streams and

rivers. For each stream reach proposed as a critical habitat unit, the upstream and downstream boundaries are described generally below.

Unit 1: Middle Fork of the Little Red River, Searcy, Stone, and Van Buren Counties, Arkansas

Proposed Unit 1 includes 70.2 km (43.6 mi) of the Middle Fork of the Little Red River from Searcy County Road 167 approximately 3.4 km (2.1 miles) southwest of Leslie, Arkansas, to a point on the stream 7.7 river km (4.8 mi) downstream (35.66515, -92.25942) of the Arkansas Highway 9 crossing of the Middle Fork near Shirley, Arkansas. The lower boundary coincides with the 140.5-m (461-ft) elevation of the conservation pool for Greers Ferry Lake where suitable habitat becomes inundated by Greers Ferry Lake and no longer supports the yellowcheek darter. Live yellowcheek darters have been collected from four sites within proposed Unit 1. The uppermost site is immediately below the Hwy 65 Bridge near Leslie, Arkansas, and the lowermost site is immediately below the Hwy 9 Bridge in Shirley, Arkansas (Wine and Blumenshine 2002, p. 18). This unit was included in the geographical area occupied by the species at the time of listing. Approximately 64.2 km (39.9 mi), or 92 percent, of proposed Unit 1 is privately owned, and 6.0 km (3.7 mi) is within the Cherokee Wildlife Management Area owned by the State of Arkansas. County and State road crossings exist in all three counties and account for less than one percent of total proposed Unit 1 ownership.

This unit contains stable riffle areas of moderate to swift velocity (PCE 1) that are relatively silt-free (PCE 2) and maintain surface flows year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of yellowcheek darters. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for yellowcheek darters (PCE 5).

The yellowcheek darter and its habitat may require special management considerations or protection to address changes in the existing stream ecology due to activities as associated with natural gas development, livestock grazing, county road maintenance, timber harvest, water diversion, gravel mining, and rock harvesting operations. Alteration of water quality and changes in streambed material composition from any other activities that would release sediments, nutrients, or toxins into the water also threaten the yellowcheek darter.

Unit 2: South Fork of the Little Red River, Van Buren County, Arkansas

Proposed Unit 2 includes 31.9 km (19.8 mi) of the South Fork of the Little Red River from Van Buren County Road 9 three miles north of Scotland, Arkansas, to a point on the stream (35.57364, -92.42718) approximately 5.5 river km (3.4 mi) downstream of U.S. Highway 65 in Clinton, Arkansas, where suitable habitat becomes inundated by Greers Ferry Lake and no longer supports the yellowcheek darter. Live yellowcheek darters have been collected from four sites along the South Fork Little Red River, including the uppermost boundary at the County Road 9 Bridge and just above the Hwy 65 Bridge in Clinton, Arkansas. This unit was included in the geographical area occupied by the species at the time of listing. Approximately 30.3 km (18.8 mi), or 95 percent, of proposed Unit 2 is privately owned, and 1.6 km (1.0 mi) is within the Cherokee Wildlife Management Area owned by the State of Arkansas or the city limits of Clinton, Arkansas. County and State road crossings account for less than one percent of total Unit 2 ownership.

This unit contains stable riffle areas of moderate to swift velocity (PCE 1) that are relatively silt-free (PCE 2) and maintain surface flows year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of yellowcheek darters. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for yellowcheek darters (PCE 5).

The yellowcheek darter and its habitat may require special management considerations or protection to address changes in the existing stream ecology due to activities as associated with natural gas development, livestock grazing, county road maintenance, timber harvest, water diversion, and gravel mining. Alteration of water quality and changes in streambed material composition from any other activities that would release sediments, nutrients, or toxins into the water also threaten the yellowcheek darter.

Unit 3: Archey Fork of the Little Red River, Van Buren County, Arkansas

Proposed Unit 3 includes 27.4 km (17.0 mi) of the Archey Fork of the Little Red River from its junction with South Castleberry Creek to its confluence with the South Fork of the Little Red River near Clinton, Arkansas. Live yellowcheek darters have been collected just above the confluence of the Archey and South Forks (Wine *et al.* 2000, p. 10) and at a point 15.3 km (9.5 mi) above the confluence (Brophy and Stoeckel 2006, p. 3). This unit was included in the geographical area occupied by the species at the time of listing. Proposed Unit 3 is nearly 100 percent privately owned. County and state road crossings and portions within the city of Clinton, Arkansas, account for less than one percent of total Unit 3 ownership.

This unit contains stable riffle areas of moderate to swift velocity (PCE 1) that are relatively silt-free (PCE 2) and maintain surface flows year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of yellowcheek darters. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for yellowcheek darters (PCE 5).

The yellowcheek darter and its habitat may require special management considerations or protection to address changes in the existing stream ecology due to activities as associated with natural gas development, livestock grazing, county road maintenance, timber harvest, water diversion, and gravel mining. Alteration of water quality and changes in streambed material composition from any other activities that would release sediments, nutrients, or toxins into the water also threaten the yellowcheek darter.

Unit 4: Devil's Fork of the Little Red River (Including Turkey Creek and Beech Fork), Stone and Cleburne Counties, Arkansas

Proposed Unit 4 includes 27.5 km (17.1 mi) of stream from Stone County Road 21 approximately 3 miles north of Prim, Arkansas, to a point (35.63556, -92.03400) on the Devil's Fork approximately 5.1 km (3.2 mi) southeast of Woodrow, Arkansas, where suitable habitat becomes inundated by Greers Ferry Lake and no longer supports the yellowcheek darter. Live yellowcheek darters have not been collected at the

uppermost site (Turkey Creek) since 1999 (Mitchell *et al.* 2002, p. 131). However, Wine and Blumenshine (2002, p. 11) did detect yellowcheek darters in the Beech Fork and it is likely that the species persists in very low numbers within the upper portions of the watershed during normal flow years. This unit was included in the geographical area occupied by the species at the time of listing. Approximately 26.4 km (16.4 mi), or 96 percent, of proposed Unit 4 is privately owned, and 1.1 km (0.7 mi) is within the Cherokee Wildlife Management Area owned by the State of Arkansas. County road crossings exist in both counties and account for less than one percent of total Unit 4 ownership.

This unit contains stable riffle areas of moderate to swift velocity (PCE 1) that are relatively silt-free (PCE 2) and maintain surface flows year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of yellowcheek darters. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for yellowcheek darters (PCE 5).

The yellowcheek darter and its habitat may require special management considerations or protection to address changes in the existing stream ecology due to activities as associated with natural gas development, livestock grazing, county road maintenance, timber harvest, water diversion, and gravel mining. Alteration of water quality and changes in streambed material composition from any other activities that would release sediments, nutrients, or toxins into the water also threaten the yellowcheek darter.

Chucky Madtom

We are proposing one unit as critical habitat for the chucky madtom. The critical habitat area we describe below constitutes our current best assessment of the area that meets the definition of critical habitat for the chucky madtom. Lands in the critical habitat unit are either in private ownership or public ownership (Greene County road easements). In Tennessee, landowners own the land under non-navigable streams (*e.g.,* the stream channel or bottom), but the water is under State jurisdiction. The area we propose as critical habitat is: Little Chucky Creek, and was occupied at the time of listing. Table 4 shows the occupancy of the unit and ownership of the proposed designated area for the chucky madtom.

TABLE 4—OCCUPANCY AND OWNERSHIP OF THE PROPOSED CRITICAL HABITAT UNIT FOR THE CHUCKY MADTOM

Unit	Location	Occupied	Private ownership km (mi)	State, county, city ownership km (mi)	Total length km (mi)
	Little Chucky Creek	Yes	31.8 (19.7)	< 0.1 (< 0.06)	31.9 (19.8)
Total					31.9 (19.8)

We present a brief description of the unit and reasons why it meets the definition of critical habitat for the chucky madtom. The proposed critical habitat unit includes the river channel within the ordinary high water line. As defined in 33 CFR 329.11, the ordinary high water mark on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. For the stream reach proposed as a critical habitat unit, the upstream and downstream boundaries are described generally below; a more precise description is provided in the Proposed Regulation Promulgation at the end of this proposed rule.

Unit 1: Little Chucky Creek, Greene County, Tennessee

This unit includes 31.9 km (19.8 mi) of Little Chucky Creek from its confluence with an unnamed tributary, downstream to its confluence with the Nolichucky River, at the Greene and Cocke County line, Tennessee. Although the chucky madtom has not been observed since 2004, we still consider it to exist in Little Chucky Creek. Observations of the species have always been sporadic, and it is a cryptic species that is hard to locate. This unit was included in the geographical area occupied by the species at the time of listing. Almost 31.9 km (19.8 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Greene County in the form of bridge crossings and road easements.

This proposed unit contains stable riffle and run areas of moderate to swift velocity (PCE 1); flat gravel, cobble, and slab-rock boulders that are relatively silt-free (PCE 2); and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of chucky madtoms. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for the chucky madtom (PCE 5).

This critical habitat unit is located on private property and is not presently under the special management or protection provided by a legally operative plan or agreement for the conservation of the species. Various activities in or adjacent to the critical habitat unit described in this proposed rule may affect one or more of the PCEs. For example, features in this proposed critical habitat designation may require special management due to threats posed by agricultural activities (*e.g.,* row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, gravel mining, and nonpoint source pollution arising from a wide variety of human activities.

Laurel Dace

We are proposing six units as critical habitat for the laurel dace. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the laurel dace. The six areas we propose as critical habitat are as follows: (1) Bumbee Creek, (2) Youngs Creek, (3) Moccasin Creek, (4) Cupp Creek, (5) Horn Branch, and (6) Soddy Creek. Lands in critical habitat units are either in private ownership or public

ownership (county road easements). In Tennessee, landowners own the land under non-navigable streams (*e.g.,* the stream channel or bottom), but the water is under State jurisdiction. Table 5 shows the occupancy of the units and ownership of the proposed designated areas for the laurel dace.

TABLE 5—OCCUPANCY AND OWNERSHIP OF THE PROPOSED CRITICAL HABITAT UNITS FOR THE LAUREL DACE

Unit	Location	Occupied	Private ownership km (mi)	State, county, city ownership km (mi)	Total length km (mi)
1	Bumbee Creek	Yes	7.7 (4.7)	< 0.1 (< 0.06)	7.8 (4.8)
2	Youngs Creek	Yes	7.8 (4.8)	< 0.1 (< 0.06)	7.9 (4.9)
3	Moccasin Creek	Yes	8.9 (5.5)	< 0.1 (< 0.06)	9.0 (5.6)
4	Cupp Creek	Yes	4.9 (3.0)	< 0.1 (< 0.06)	5.0 (3.1)
5	Horn Branch	Yes	3.9 (2.4)	< 0.1 (< 0.06)	4.0 (2.5)
6	Soddy Creek	Yes	8.3 (5.1)	< 0.1 (< 0.06)	8.4 (5.2)
Total					42.2 (26.2)

We present brief descriptions of all units and reasons why they meet the definition of critical habitat for the laurel dace. The proposed critical habitat units include the river channels within the ordinary high water line. As defined in 33 CFR 329.11, the ordinary high water mark on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. For each stream reach proposed as a critical habitat unit, the upstream and downstream boundaries are described generally below; more precise descriptions are provided in the Proposed Regulation Promulgation at the end of this proposed rule.

Unit 1: Bumbee Creek, Bledsoe and Rhea Counties, Tennessee

Proposed Unit 1 includes 8.0 km (5.0 mi) of Bumbee Creek from its headwaters in Bledsoe County, downstream to its confluence with Mapleslush Branch in Rhea County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 7.9 km (4.9 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Bledsoe and Rhea Counties in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free, contain cobble and slab-rock boulder substrates with canopy cover (PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

Unit 2: Youngs Creek, Bledsoe and Rhea Counties, Tennessee

Proposed Unit 2 includes 7.8 km (4.8 mi) of Youngs Creek from its headwaters in Bledsoe County, downstream to its confluence with Moccasin Creek in Rhea County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 7.7 km (4.7 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Bledsoe and Rhea Counties in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free, contain cobble and slab-rock boulder substrates with canopy cover (PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

Unit 3: Moccasin Creek, Bledsoe County, Tennessee

Proposed Unit 3 includes 9.0 km (5.6 mi) of Moccasin Creek from its headwaters downstream to 0.1 km (0.6 mi) below its confluence with Lick Creek in Bledsoe County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 8.9 km (5.5 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Bledsoe County in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free, contain cobble and slab-rock boulder substrates with canopy cover

(PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

Unit 4: Cupp Creek, Bledsoe County, Tennessee

Proposed Unit 4 includes 5.0 km (3.1 mi) of Cupp Creek from its headwaters downstream to its confluence with an unnamed tributary in Bledsoe County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 4.9 km (3.0 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Bledsoe County in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free; contain cobble and slab-rock boulder substrates with canopy cover (PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

Unit 5: Horn Branch, Bledsoe County, Tennessee

Proposed Unit 5 includes 4.0 km (2.5 mi) of Horn Branch from its headwaters downstream to its confluence with Rock Creek in Bledsoe County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 3.9 km (2.4 mi), or 100 percent, of this area is privately owned except for that small amount that is publicly owned by Bledsoe County in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free, contain cobble and slab-rock boulder substrates with canopy cover (PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

Unit 6: Soddy Creek, Sequatchie and Bledsoe Counties, Tennessee

Proposed Unit 6 includes 8.4 km (5.2 mi) of Soddy Creek from its headwaters in Sequatchie County, downstream to its confluence with Harvey Creek in Sequatchie County, Tennessee. This unit was included in the geographical area occupied by the species at the time of listing. Almost 8.3 km (5.1 mi), or 100 percent, of this area is privately owned except for a small amount that is publicly owned by Sequatchie and Bledsoe Counties in the form of bridge crossings and road easements.

This unit contains stable headwater streams (PCE 1) that are relatively silt-free, contain cobble and slab-rock boulder substrates with canopy cover (PCE 2), and surface flows that are maintained year round (PCE 3). Such characteristics are necessary for reproductive and sheltering requirements of laurel dace. Water quality within this unit is also characterized by moderate temperatures, relatively high dissolved oxygen concentrations, moderate pH, and low levels of pollutants (PCE 4), which support abundant populations of aquatic macroinvertebrates that serve as prey items for laurel dace (PCE 5).

Various activities in or adjacent to these areas of proposed critical habitat may affect one or more of the physical and biological features. For example, features in this proposed critical habitat designation may require special management due to threats posed by resource extraction (coal and gravel mining, silviculture, natural gas and oil exploration activities), agricultural activities (row crops and livestock), lack of adequate riparian buffers, construction and maintenance of State and county roads, nonpoint source pollution arising from a wide variety of human activities, and canopy loss caused by infestations of the hemlock wooly adelgid. These threats are in addition to random effects of drought, floods, or other natural phenomena.

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 fund, authorize, 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.

Decisions by the 5th and 9th Circuits Court of Appeals have invalidated our regulatory definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F.3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.,* 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) 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, or 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 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 or destruction or adverse modification of critical habitat. We define ''reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during 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 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 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for the species. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace. These activities include, but are not limited to:

(1) Actions that would alter the geomorphology of stream habitats. Such activities could include, but are not limited to, instream excavation or dredging, impoundment, channelization, road and bridge construction, mining, and discharge of fill materials. These activities could cause aggradation or degradation of the channel bed elevation or significant bank erosion, result in entrainment or burial of these fishes, and cause other direct or cumulative adverse effects to these species.

(2) Actions that would significantly alter the existing flow regime or water quantity. Such activities could include, but are not limited to, impoundment, water diversion, water withdrawal, and hydropower generation. These activities could eliminate or reduce the habitat necessary for growth and reproduction of these fishes.

(3) Actions that would significantly alter water quantity or water quality (for example, temperature, pH, contaminants, and excess nutrients). Such activities could include, but are not limited to, hydropower discharges, or the release of chemicals, biological pollutants, or heated effluents into surface water or connected groundwater at a point source or by dispersed release (nonpoint source). These activities could alter water conditions that are beyond the tolerances of these fishes and result in direct or cumulative adverse effects to the species.

(4) Actions that would significantly alter stream bed material composition and quality by increasing sediment deposition or filamentous algal growth. Such activities could include, but are not limited to, construction projects, livestock grazing, timber harvest, off-road vehicle use, and other watershed and floodplain disturbances that release sediments or nutrients into the water. These activities could eliminate or reduce habitats necessary for the growth and reproduction of these fishes by causing excessive sedimentation or nutrification.

Exemptions

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

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a)

required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

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

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: ''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 Department of Defense lands with a completed INRMP within the proposed critical habitat designation.

Exclusions

Application of 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, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, 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.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, and any other relevant impacts. In considering whether to exclude a particular area from the designation, we must identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and determine 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 his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we are preparing an analysis of the economic impacts of the proposed critical habitat designation and related factors.

We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available for downloading from the Internet at *http://www.regulations.gov,* or by contacting the Tennessee Ecological Services Field Office directly (see **FOR FURTHER INFORMATION CONTACT** section). During the development of a final designation, we will consider economic impacts, public comments, and other new information, and areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist. In preparing this proposal, we have determined that the lands within the proposed designation of critical habitat for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace are not owned or managed by the Department of Defense, and, therefore, we anticipate no impact on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors, including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any tribal issues, and consider the government-to-government relationship of the United States with tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this proposal, we have determined that there is one conservation agreement that exists for the yellowcheek darter in the upper Little Red River, Arkansas. The yellowcheek darter is currently covered under a joint Candidate Conservation Agreement with Assurances (CCAA) in the upper Little Red River watershed in Arkansas along with the endangered speckled pocketbook mussel. The CCAA will convert to a SHA, as the yellowcheek darter is listed as endangered and would be covered by an enhancement of survival permit, which expires January 1, 2044. We welcome comments pertaining to designation of critical habitat in the CCAA coverage area. Designation of critical habitat for the yellowcheek darter may be also beneficial to the federally endangered speckled pocketbook mussel given that extensive range overlap and water quality requirements occurs between the two species.

There are no HCPs or other management plans for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, or laurel dace, and the proposed designation does not include any tribal lands or trust resources. We anticipate no impact on tribal lands, partnerships, or HCPs from this proposed critical habitat designation.

Peer Review

In accordance with our joint policy published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least 1 to 2 appropriate and independent specialists for each species regarding this proposed

rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We will invite these peer reviewers to comment during this public comment period on our specific assumptions and conclusions in this proposed designation of critical habitat.

We will consider all comments and information we receive during this comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register**. Such requests must be sent to the Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Required Determinations

Regulatory Planning and Review—Executive Order 12866

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this proposed rule under Executive Order 12866 (Regulatory Planning and Review). OMB bases its determination upon the following four criteria:

(1) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(2) Whether the rule will create inconsistencies with other Federal agencies' actions.

(3) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

(4) Whether the rule raises novel legal or policy issues.

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 (SBREFA) of 1996 (5 U.S.C. 801 *et seq.*), whenever an agency must 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 (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 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.

At this time, we lack the available economic information necessary to provide an adequate factual basis for the required RFA finding. Therefore, we defer the RFA finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act and Executive Order 12866. This draft economic analysis will provide the required factual basis for the RFA finding. Upon completion of the draft economic analysis, we will announce availability of the draft economic analysis of the proposed designation in the **Federal Register** and reopen the public comment period for the proposed designation. We will include with this announcement, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination. On the basis of the development of our proposal, we have identified certain sectors and activities that may potentially be affected by a designation of critical habitat for these five fishes. These sectors include coal, oil, and natural gas operations; timber operations; industrial development; urbanization; and the accompanying infrastructure associated with such projects such as road, storm water drainage, and bridge and culvert construction and maintenance.

We have concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that we make a sufficiently informed determination based on adequate economic information and provide the necessary opportunity for public comment.

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 when undertaking certain actions. We do not expect the designation of this proposed critical habitat to significantly affect energy supplies, distribution, or use. Natural gas and oil exploration and development activities occur or could potentially occur in the Cumberland darter (13 of 15 critical habitat units) and Yellowcheek darter (4 of 4 critical habitat units) proposed critical habitat. However, compliance with State regulatory requirements or voluntary BMPs would be expected to minimize impacts of natural gas and oil exploration and development in the areas of proposed critical habitat for both species. The measures for natural gas and oil exploration and development are generally not considered a substantial cost compared with overall project costs and are already being implemented by oil and gas companies.

Coal mining occurs or could potentially occur in 11 of the 15 proposed critical habitat units for the Cumberland darter. Incidental take for listed species associated with surface coal mining activities is currently covered under a programmatic, non-jeopardy biological opinion between the Office of Surface Mining and the Service completed in 1996 (Service 1996, entire). The biological opinion covers existing, proposed, and future endangered and threatened species that may be affected by the implementation and administration of surface coal mining programs under the Surface Mining Control and Reclamation Act of 1977. Through its analysis, the Service concluded that the proposed action (surface coal mining and reclamation activities) was not likely to jeopardize the continued existence of any threatened, endangered, or proposed species or result in adverse modification of designated or proposed critical habitat. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

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 findings:

(1) This 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,

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

(2) This rule would not significantly or uniquely affect small governments. The lands being proposed for Cumberland darter critical habitat designation are owned by the DBNF and private landowners. The lands being proposed for rush darter critical habitat designation are mostly owned by private landowners; a small portion of the City of Pinson; and road easements in Etowah, Jefferson, and Winston Counties, Alabama. The lands being proposed for yellowcheek darter are mostly owned by private landowners; a small portion are owned by the State of Arkansas (Cherokee Wildlife Management Area and road easements); and road easements in Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas. Most of the lands being proposed for chucky madtom are private, a small portion consisting of road easements in Greene County, Tennessee. Most of the lands being proposed for laurel dace are located on private lands, a small portion consisting of road easements in Bledsoe, Rhea, and Sequatchie Counties, Tennessee. Therefore, a Small Government Agency Plan is not required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment if appropriate.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace in a takings implications assessment. Critical habitat designation 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. The takings implications assessment concludes that this designation of critical habitat for these five species does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with Executive Order 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, this proposed critical habitat designation with appropriate State resource agencies in Kentucky, Alabama, Arkansas, and Tennessee. The designation of critical habitat in areas currently occupied by these five fishes may impose nominal additional regulatory restrictions to those currently in place and, therefore, may have little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments because the areas that contain the physical and biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to 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 these local governments in long-range planning (rather than having them 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) 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 Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does 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. This proposed rule uses standard property descriptions and identifies the elements of physical and biological features essential to the conservation of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace within the designated areas to assist the public in understanding the habitat needs of the species.

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

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is 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.*)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F. 3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Clarity of the Rule

We are required by Executive Orders 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 the **ADDRESSES** section. To better help us revise this 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.*

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), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial 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 determined that there are no tribal lands that were occupied by the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, or laurel dace at the time of listing that contain the features essential for conservation of these species, and no tribal lands unoccupied by these five species that are essential for the conservation of these species. Therefore, we are not proposing to designate critical habitat for these five species on tribal lands.

References Cited

A complete list of references cited in this proposed rulemaking is available on the Internet at *http://www.regulations.gov* and upon request from the Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Author(s)

The primary authors of this package are the staff members of the Arkansas, Kentucky, Mississippi, and Tennessee Ecological Services Field Offices.

List of Subjects in 50 CFR Part 17

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

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; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. In § 17.11(h) revise the entries for ''Dace, laurel,'' ''Darter, Cumberland,'' ''Darter, rush,'' ''Darter, yellowcheek,'' and ''Madtom, chucky'' under FISHES in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
FISHES							
*	*	*	*	*	*		*
Dace, laurel	*Chrosomus saylori*	U.S.A (TN)	Entire	E	791	17.95(e)	NA
*	*	*	*	*	*		*
Darter, Cumberland	*Etheostoma susanae*	U.S.A. (KY, TN)	Entire	E	791	17.95(e)	NA
*	*	*	*	*	*		*
Darter, rush	*Etheostoma phytophilum.*	U.S.A. (AL)	Entire	E	791	17.95(e)	NA

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
Darter, yellowcheek	*Etheostoma moorei*	U.S.A. (AR)	Entire	E	791	17.95(e)	NA
*	*	*	*	*	*		*
Madtom, chucky	*Noturus crypticus*	U.S.A. (TN)	Entire	E	791	17.95(e)	NA
*	*	*	*	*	*		*

3. In § 17.95, amend paragraph (e) by adding entries for ''Laurel Dace (*Chrosomus saylori*)'', ''Cumberland Darter (*Etheostoma susanae*)'', ''Rush Darter (*Etheostoma phytophilum*)'', ''Yellowcheek Darter (*Etheostoma moorei*)'', and ''Chucky madtom (*Noturus crypticus*)'' in the same alphabetical order that those species appear in the table at § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes.*

* * * * *

Laurel Dace (*Chrosomus saylori*)

(1) Critical habitat units are depicted for Bledsoe, Rhea, and Sequatchie Counties, Tennessee, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the laurel dace consist of five components:

(i) Pool and run habitats of geomorphically stable first- to second-order streams with riparian vegetation; cool, clean, flowing water; shallow depths; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(ii) Stable bottom substrates composed of relatively silt-free cobble and slab-rock boulder substrates with undercut banks and canopy cover. Relatively silt-free is defined for the purpose of this rule as silt or fine sand within interstitial spaces of substrates in amounts low enough to have minimal impact to the species.

(iii) An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(iv) Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the laurel dace.

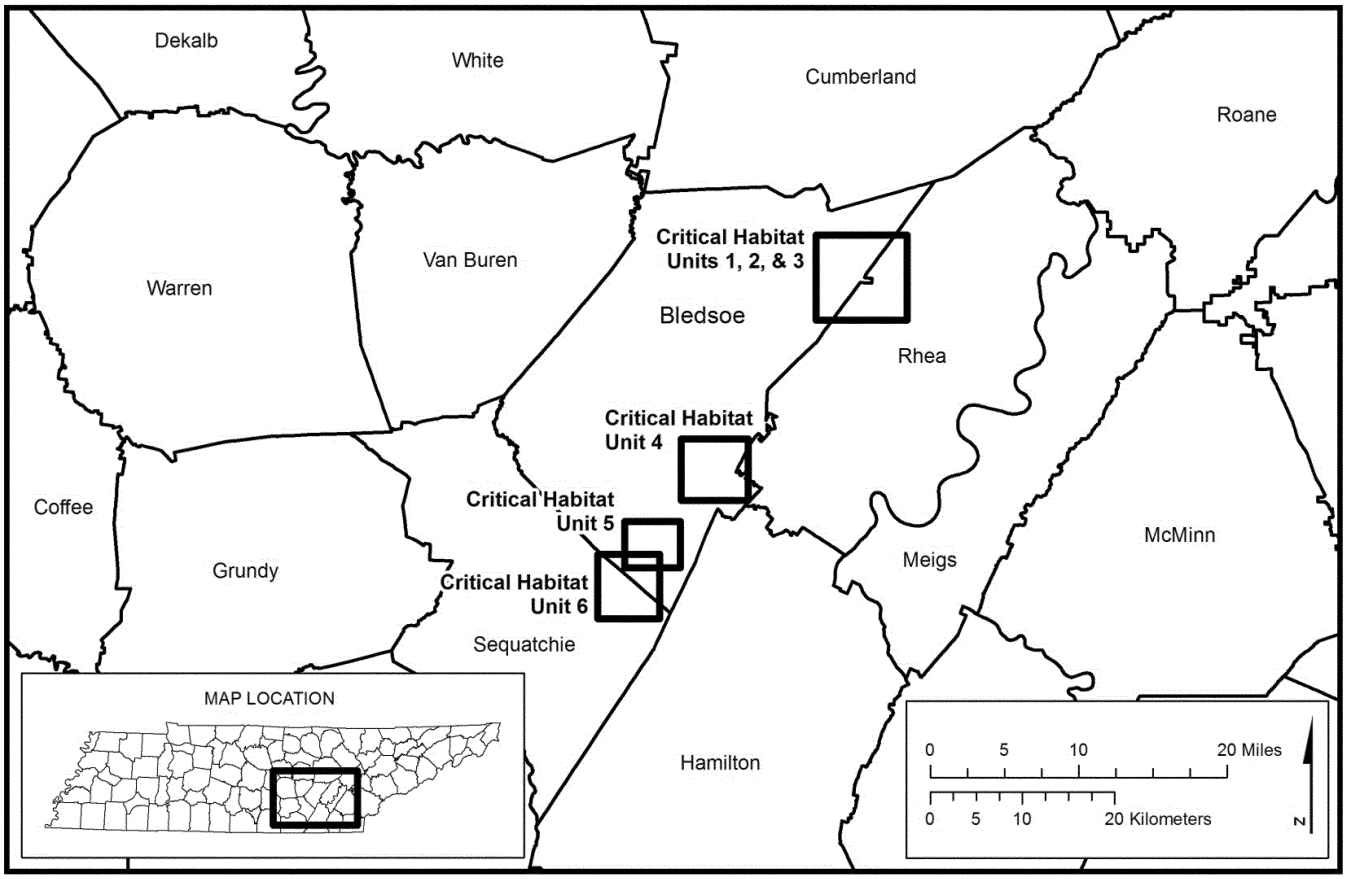
(v) Prey base of aquatic macroinvertebrates, including midge larvae, caddisfly larvae, and stonefly larvae.

(3) Critical habitat does not include manmade 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 this rule.

(4) *Critical habitat unit maps.* Data layers defining map units were created on a base of USGS digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Tennessee State Plane, Lambert Conformal Conic Projection, units feet. Upstream and downstream limits were then identified by longitude and latitude using decimal degrees and projected in WGS 1984.

(5) *Note:* Overview of Critical Habitat Locations for Laurel Dace in Tennessee follows:

Overview of Critical Habitat Locations for Laurel Dace in Tennessee



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(6) Units 1, 2, and 3: Bumbee Creek and Youngs Creek, Bledsoe and Rhea Counties, Tennessee; and Moccasin Creek, Bledsoe County, Tennessee.

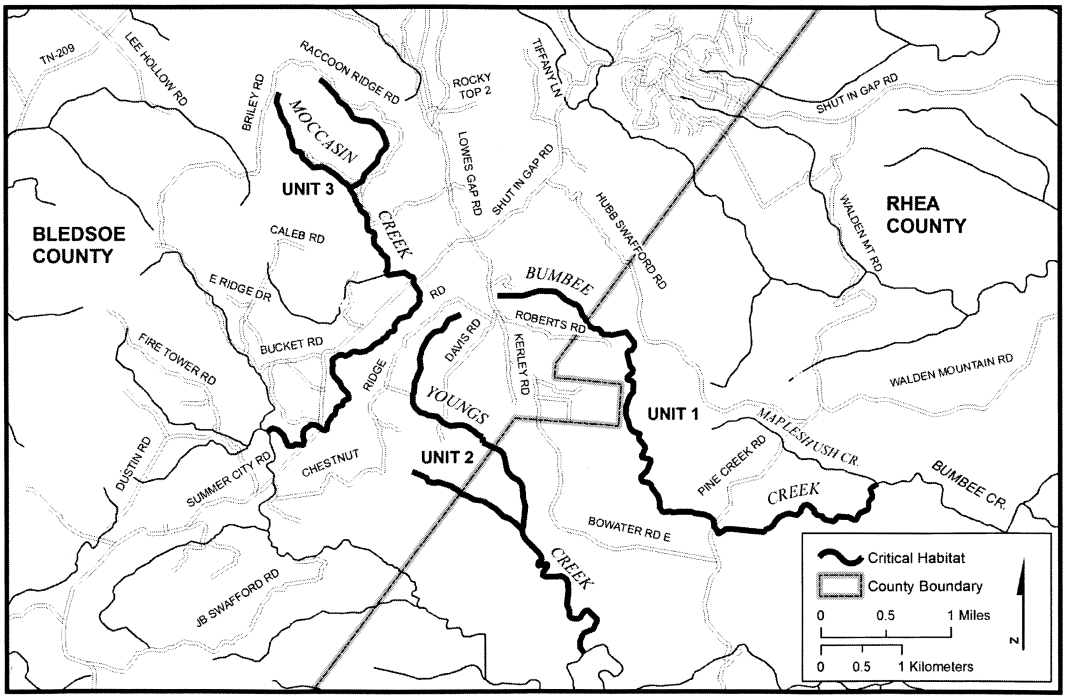
(i) Unit 1 includes 8.0 km (5.0 mi) of Bumbee Creek from its headwaters at (35.68933, −84.99763) in Bledsoe County, downstream to its confluence with Mapleslush Branch (35.66833, −84.94714) in Rhea County, Tennessee.

(ii) Unit 2 includes 7.8 km (4.8 mi) of Youngs Creek from its headwaters at (35.68745, −85.00261) and (35.67015, −85.00935) in Bledsoe County, downstream to its confluence with Moccasin Creek (35.65003, −84.98665) in Rhea County, Tennessee.

(iii) Unit 3 includes 9.0 km (5.6 mi) of Moccasin Creek from its headwaters at (35.71313, −85.02109) and (35.71179, −85.02662) downstream to 0.1 km (0.6 mi) below its confluence with Lick Creek (35.07462, −85.02876) in Bledsoe County, Tennessee.

(iv) *Note:* Map of Units 1 (Bumbee Creek), 2 (Youngs Creek), and 3 (Moccasin Creek) of critical habitat for the laurel dace follows:

Map of Units 1 (Bumbee Creek), 2 (Youngs Creek), and 3 (Moccasin Creek) of critical habitat for the laurel dace



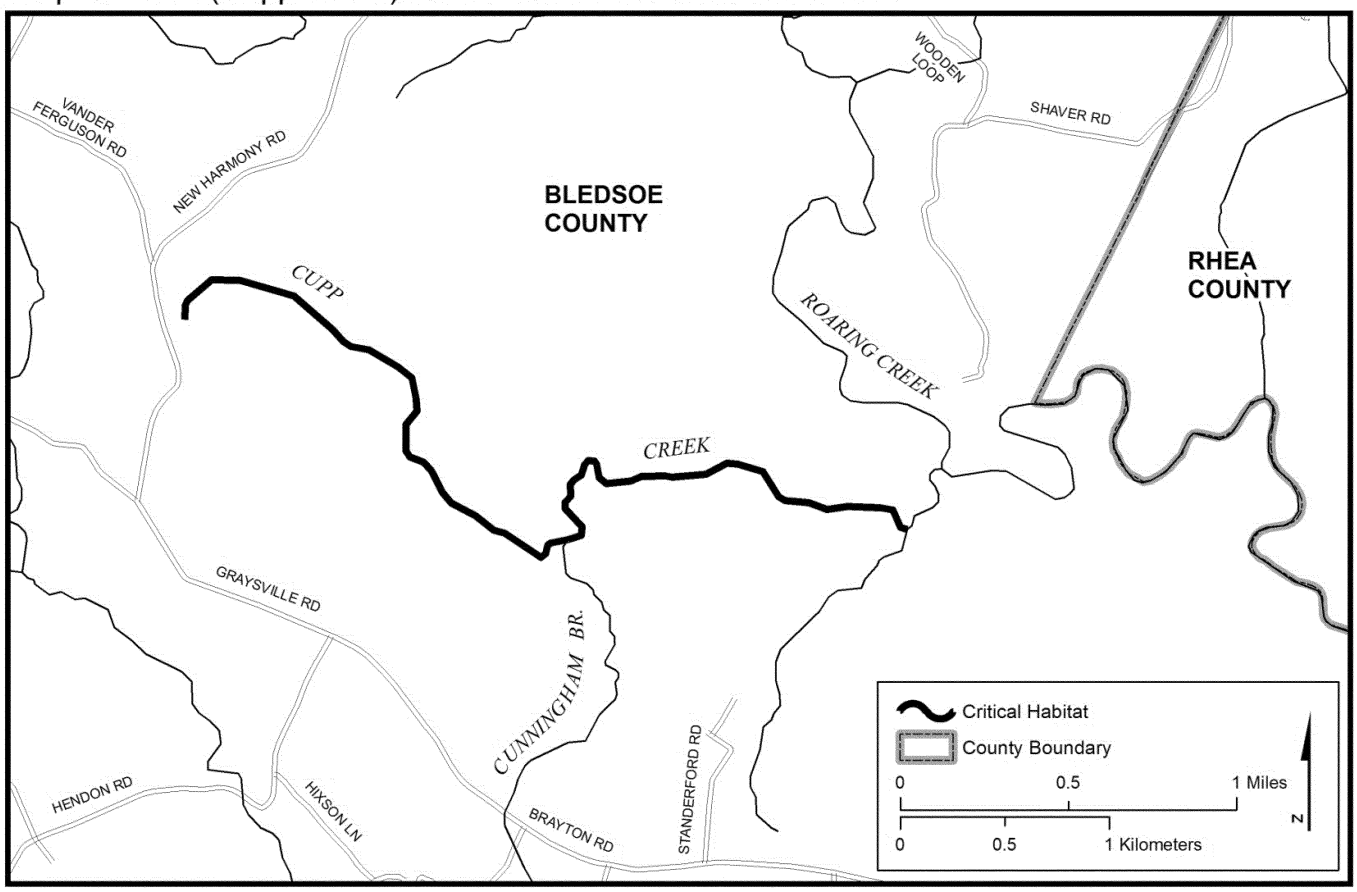
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(7) Unit 4: Cupp Creek, Bledsoe County, Tennessee.

(i) Unit 4 includes 5.0 km (3.1 mi) of Cupp Creek from its headwaters at (35.49533, −85.19120) downstream to its confluence with an unnamed tributary (35.48597, −85.15334) in Bledsoe County, Tennessee.

(ii) *Note:* Map of Unit 4 (Cupp Creek) of critical habitat for the laurel dace follows:

Map of Unit 4 (Cupp Creek) of critical habitat for the laurel dace



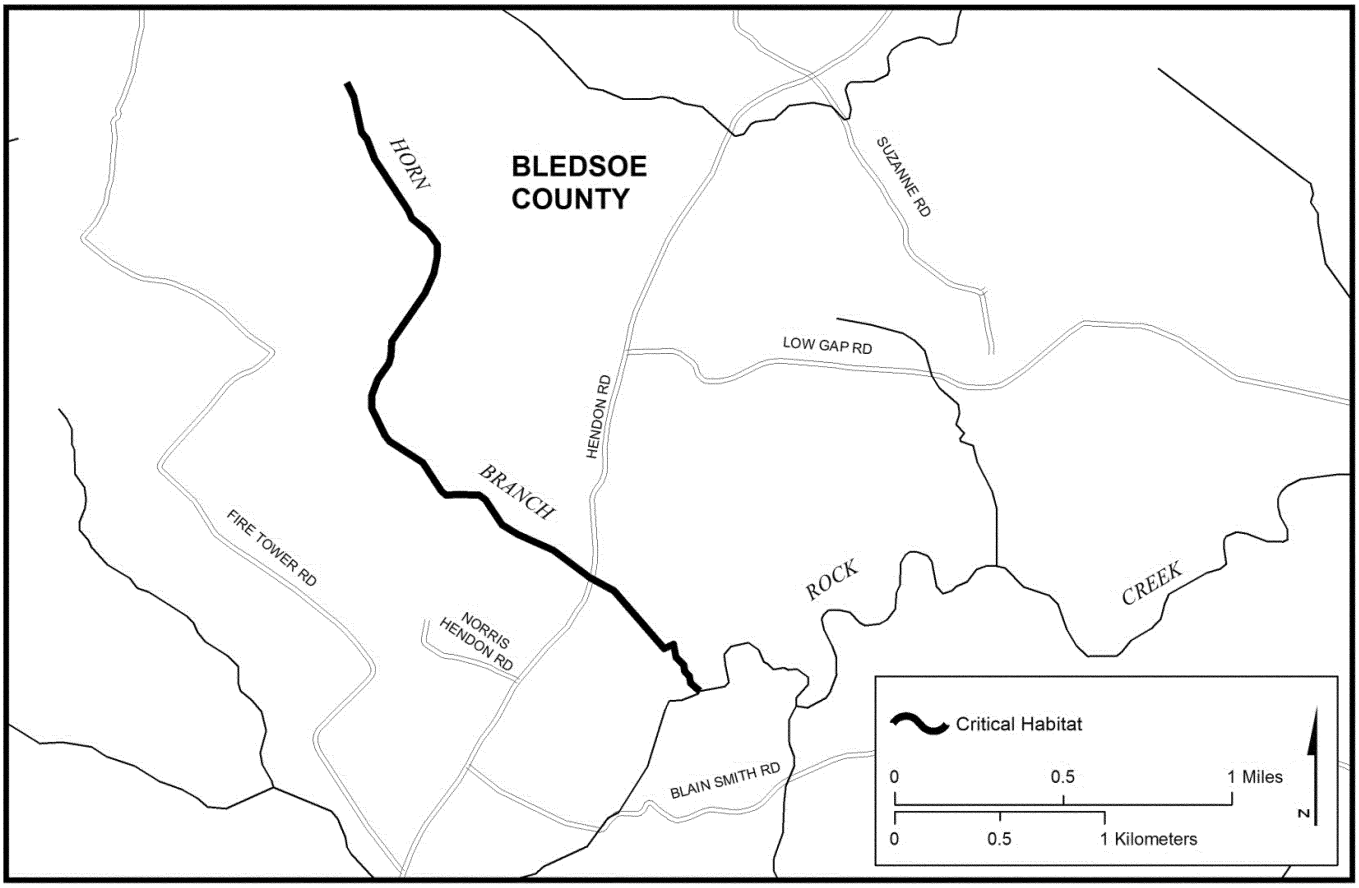
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(8) Unit 5: Horn Branch, Bledsoe County, Tennessee.

(i) Unit 5 includes 4.0 km (2.5 mi) of Horn Branch from its headwaters (35.43605, −85.25560) downstream to its confluence with Rock Creek (35.40999, −85.23731), Bledsoe County, Tennessee.

(ii) *Note:* Map of Unit 5 (Horn Branch) of critical habitat for the laurel dace follows:

Map of Unit 5 (Horn Branch) of critical habitat for the laurel dace



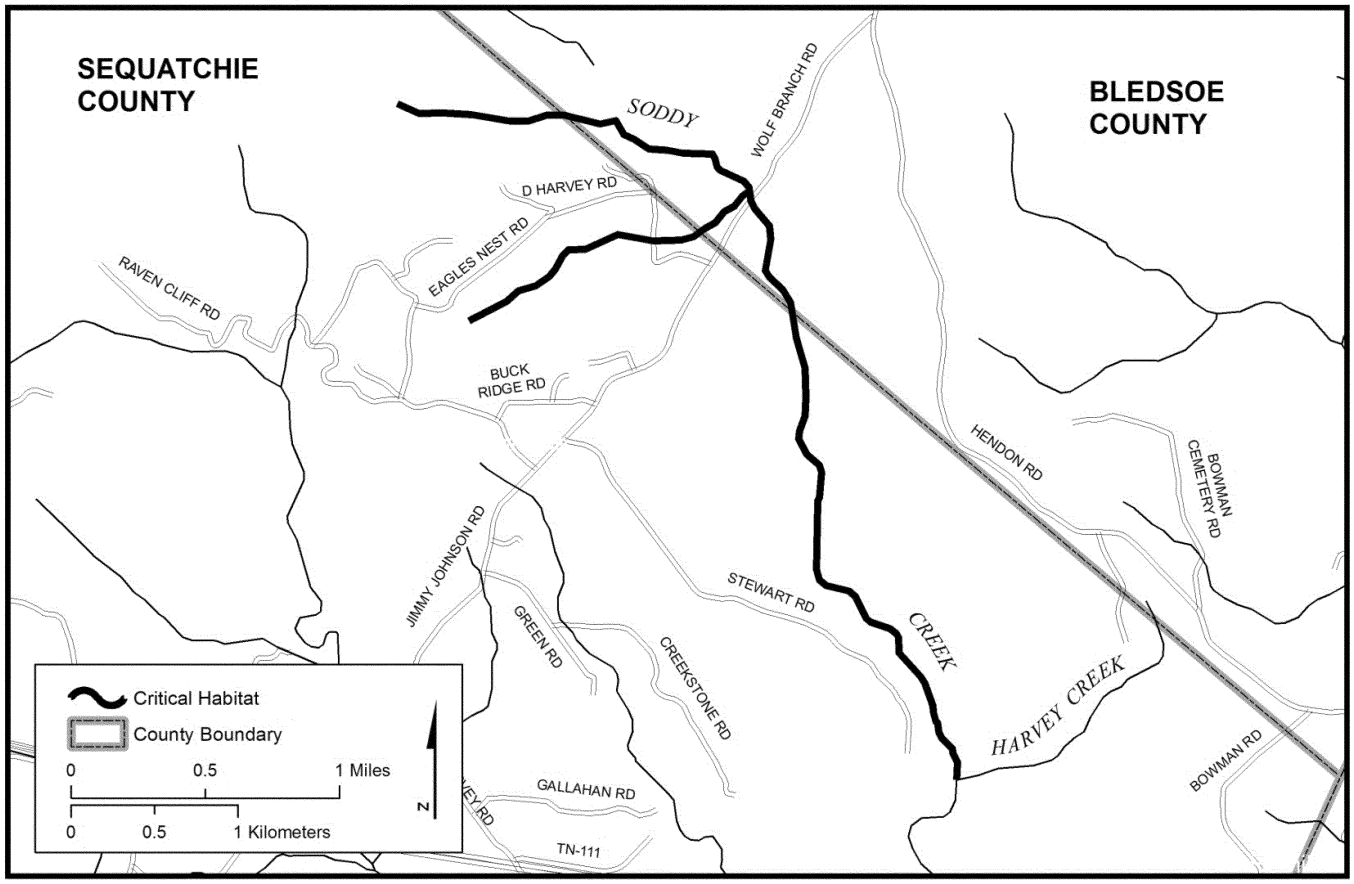
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(9) Unit 6: Soddy Creek, Sequatchie and Bledsoe Counties, Tennessee.

(i) Unit 6 includes 8.4 km (5.2 mi) of Soddy Creek from its headwaters at (35.39107, −85.28803) and (35.37926, −85.28331), Sequatchie County, downstream to its confluence with Harvey Creek (35.35422, −85.25133), in Sequatchie County, Tennessee.

(ii) *Note:* Map of Unit 6 (Soddy Creek) of critical habitat for the laurel dace follows:

Map of Unit 6 (Soddy Creek) of critical habitat for the laurel dace



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

* * * * *

Cumberland Darter (*Etheostoma susanae*)

(1) Critical habitat units are depicted for McCreary and Whitley Counties, Kentucky, and Campbell and Scott Counties, Tennessee, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the Cumberland darter consist of five components:

(i) Shallow pools and gently flowing runs of geomorphically stable second- to fourth-order streams with connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(ii) Stable bottom substrates composed of relatively silt-free sand and sand-covered bedrock, boulders, large cobble, woody debris, or other cover.

(iii) An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(iv) Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the Cumberland darter.

(v) Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, caddisfly larvae, and microcrustaceans.

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

(4) *Critical habitat map units.* Data layers defining map units were created on a base of USGS digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Tennessee State Plane, Lambert Conformal Conic Projection, units feet. Upstream and downstream limits were then identified by longitude and latitude using decimal degrees and projected in WGS 1984.

Note: Overview of Critical Habitat Locations for the Cumberland Darter in Tennessee and Kentucky follows:

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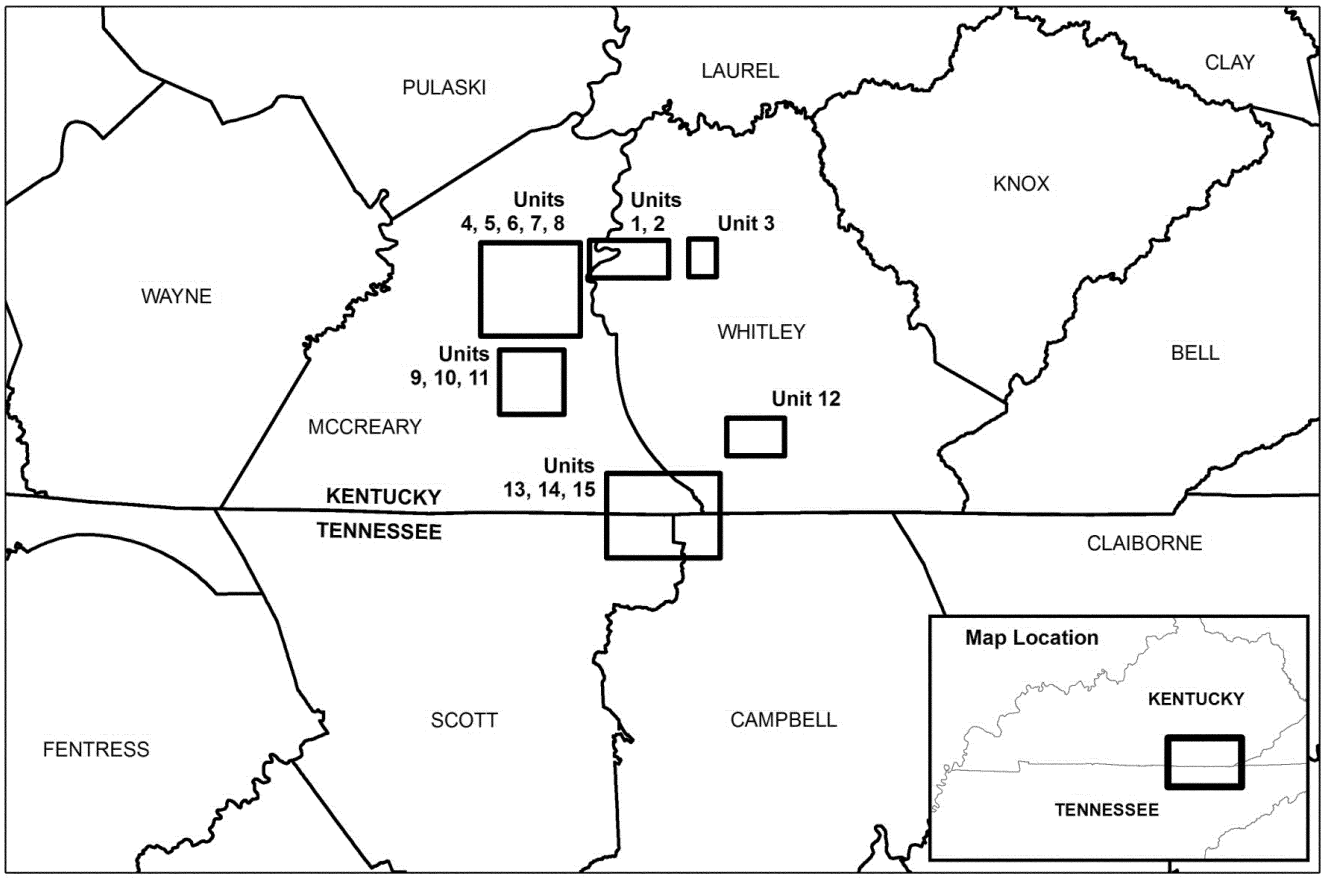
Overview of Critical Habitat Locations for the Cumberland Darter in Tennessee and Kentucky



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

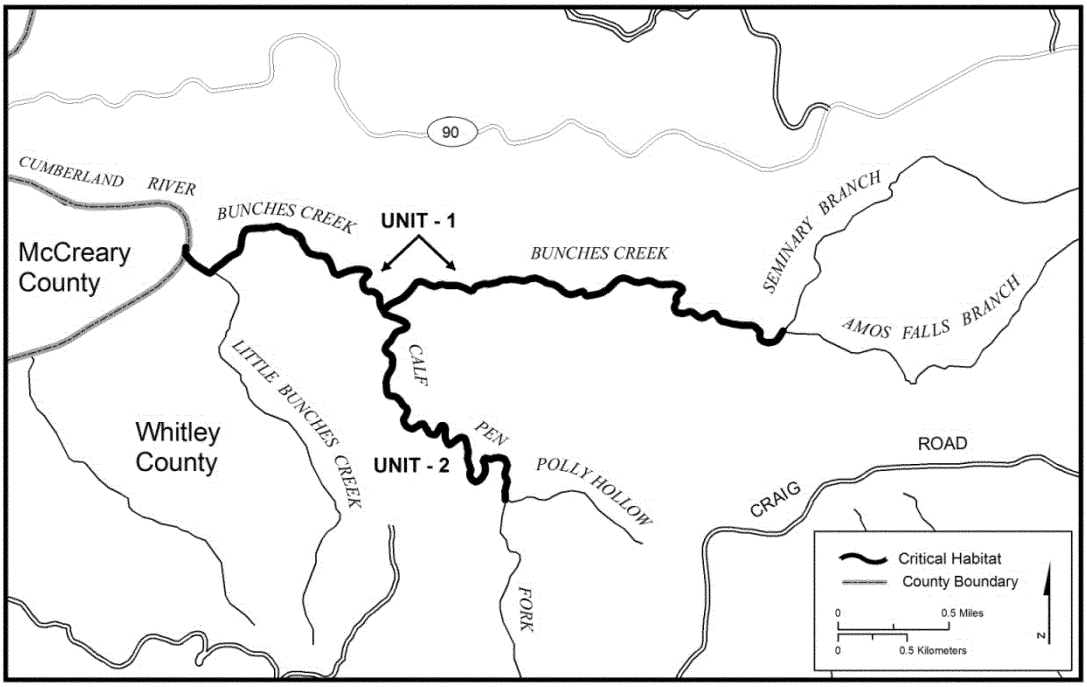
(6) Units 1 and 2: Bunches Creek and Calf Pen Fork, Whitley County, Kentucky.

(i) Unit 1 includes 5.3 km (3.3 mi) of Bunches Creek from the Seminary Branch and Amos Falls Branch confluence (36.82754, −84.26958) downstream to its confluence with the Cumberland River (36.83270, −84.31787).

(ii) Unit 2 includes 2.9 km (1.8 mi) of Calf Pen Fork from its confluence with Polly Branch (36.82955, −84.30191) downstream to its confluence with Bunches Creek (36.82935, −83.30215).

(iii) *Note:* Map of Units 1 (Bunches Creek) and 2 (Calf Pen Fork) of critical habitat for the Cumberland darter follows:

Map of Units 1 (Bunches Creek) and 2 (Calf Pen Fork) of critical habitat for the Cumberland darter



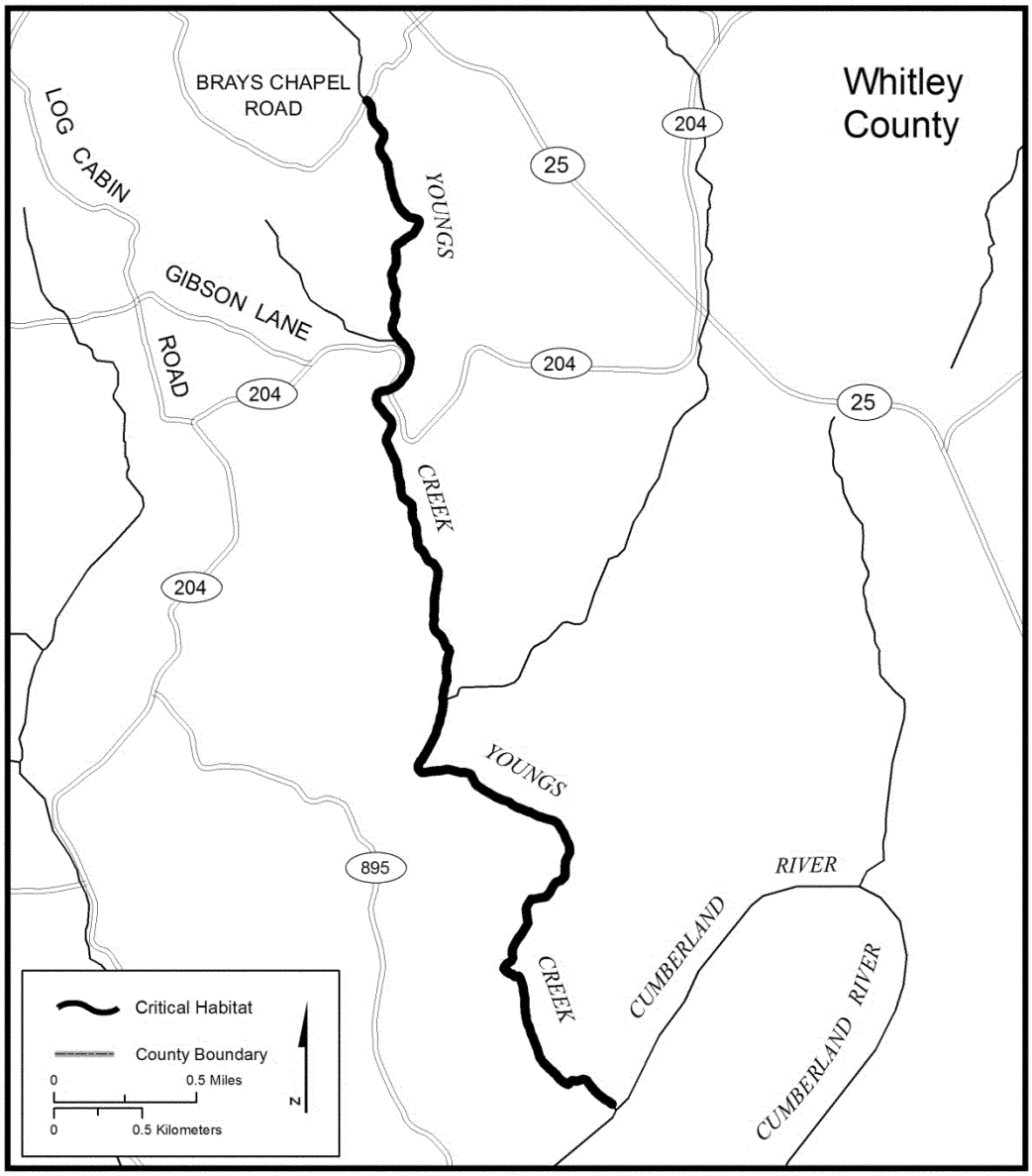
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(7) Unit 3: Youngs Creek, Whitley County, Kentucky.

(i) Unit 3 includes 7.4 km (4.6 mi) of Youngs Creek from Brays Chapel Road (36.83902, −84.22657) downstream to its confluence with the Cumberland River (36.81601, −84.21902).

(ii) *Note:* Map of Unit 3 (Youngs Creek) of critical habitat for the Cumberland darter follows:

Map of Unit 3 (Youngs Creek) of critical habitat for the Cumberland darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(8) Units 4, 5, 6, 7, and 8: Barren Fork, Indian Creek, Cogur Fork, Kilburn Fork, and Laurel Fork, McCreary County, Kentucky.

(i) Unit 4 includes 6.3 km (3.9 mi) of Barren Fork from its confluence with an unnamed tributary (36.76642, −84.46574) downstream to its confluence with Indian Creek (36.78652, −84.41622).

(ii) Unit 5 includes 4.0 km (2.5 mi) of Indian Creek from its confluence with an unnamed tributary (36.79511, −84.45084) downstream to its confluence with Barren Fork (36.78652, −84.41622).

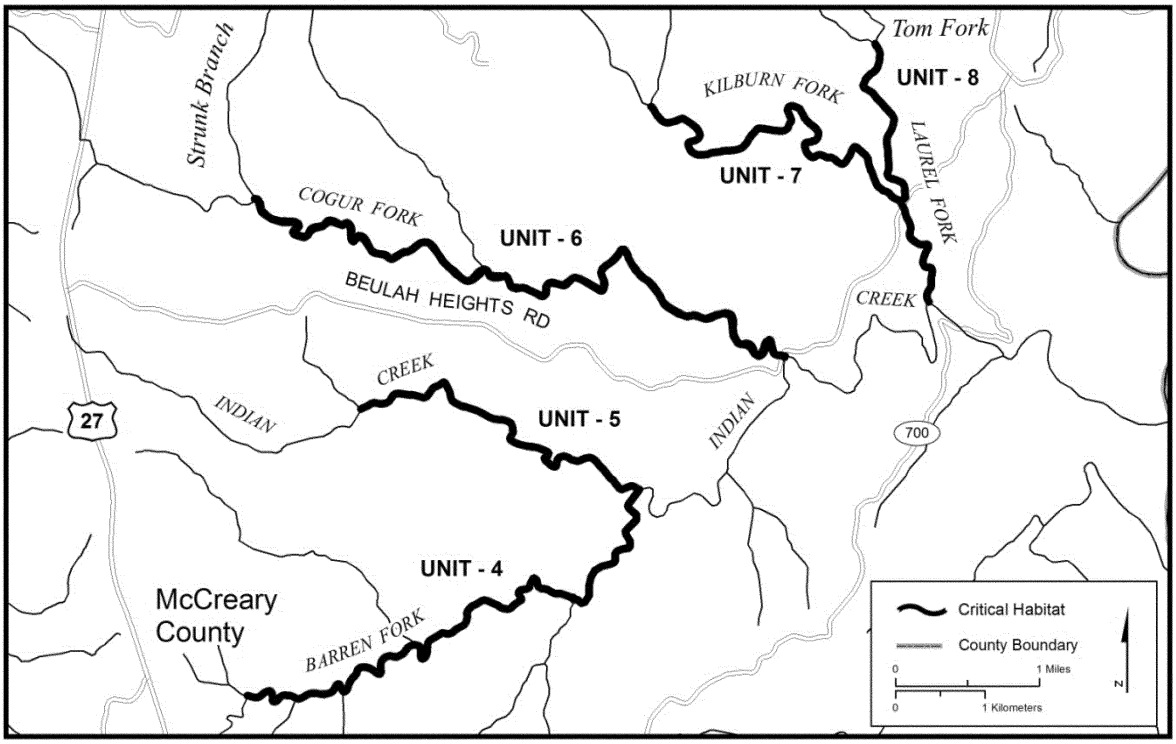
(iii) Unit 6 includes 8.6 km (5.4 mi) of Cogur Fork from its confluence with an unnamed tributary (36.81645, −84.46389) downstream to its confluence with Indian Creek (36.79965, −84.39775).

(iv) Unit 7 includes 4.6 km (2.9 mi) of Kilburn Fork from its confluence with an unnamed tributary (36.82518, −84.41411) downstream to its confluence with Laurel Fork (36.81527, −84.38298).

(v) Unit 8 includes 3.5 km (2.2 mi) of Laurel Fork from its confluence with Toms Fork (36.83115, −84.38582) downstream to its confluence with Indian Creek (36.80482, −84.37966).

(vi) *Note:* Map of Units 4 (Barren Fork), 5 (Indian Creek), 6 (Cogur Fork), 7 (Kilburn Fork), and 8 (Laurel Fork) of critical habitat for the Cumberland darter follows:

Map of Units 4 (Barren Fork), 5 (Indian Creek), 6 (Cogur Fork), 7 (Kilburn Fork), and 8 (Laurel Fork) of critical habital for the Cumberland darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(9) Units 9, 10, and 11: Laurel Creek, Elisha Branch, and Jenneys Branch, McCreary County, Kentucky.

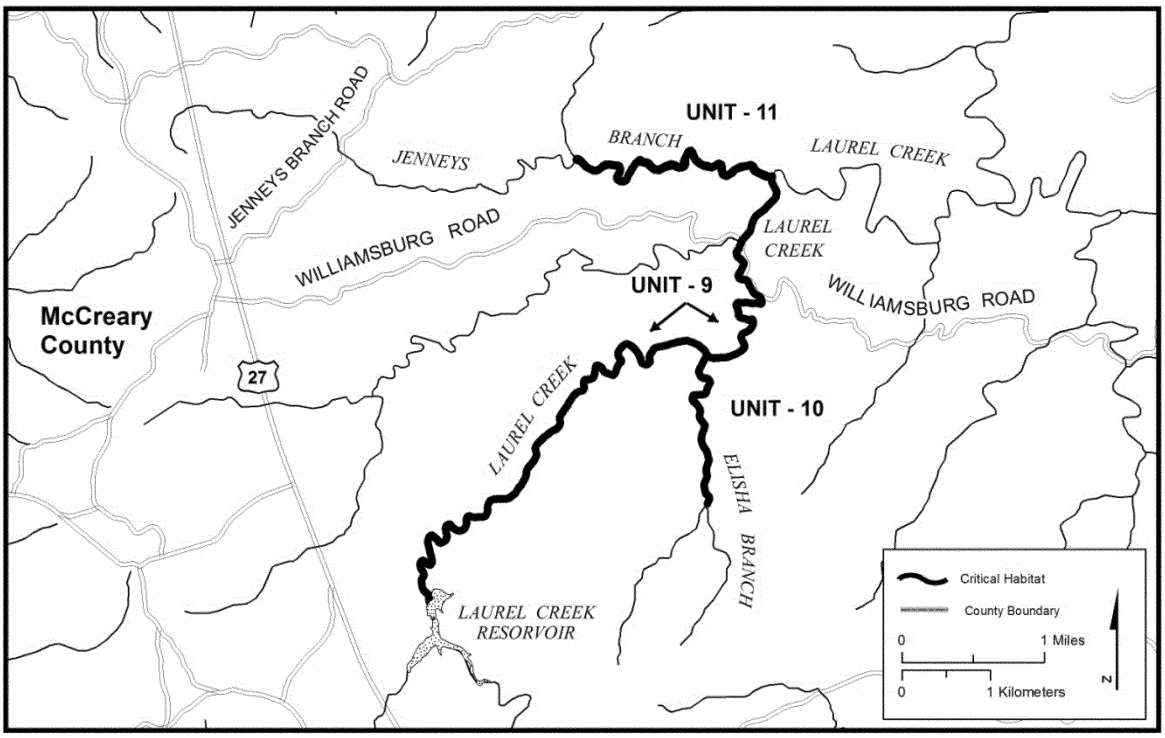
(i) Unit 9 includes 9.4 km (5.9 mi) of Laurel Creek from Laurel Creek Reservoir (36.69028, −84.44313) downstream to its confluence with Jenneys Branch (36.73485, −84.39951).

(ii) Unit 10 includes 2.1 km (1.3 mi) of Elisha Branch from its confluence with an unnamed tributary (36.70132, −84.40843) downstream to its confluence with Laurel Creek.

(iii) Unit 11 includes 3.1 km (1.9 mi) of Jenneys Branch from its confluence with an unnamed tributary (36.73701, −84.43159) downstream to its confluence with Laurel Creek.

(iv) *Note:* Map of Units 9 (Laurel Creek), 10 (Elisha Branch), and 11 (Jenneys Branch) of critical habitat for the Cumberland darter follows:

Map of Units 9 (Laurel Creek),10 (Elisha Fork), and 11 (Jenneys Branch) of critical habitat for the Cumberland darter



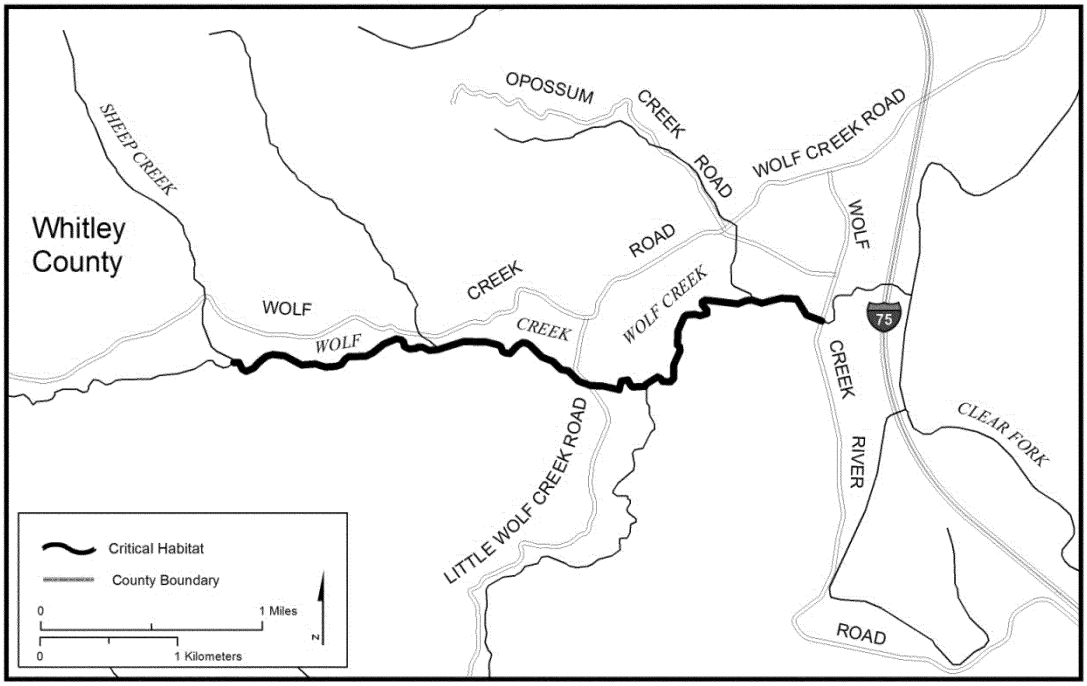
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(10) Unit 12: Wolf Creek, Whitley County, Kentucky.

(i) Unit 12 includes 6.3 km (3.9 mi) of Wolf Creek from its confluence with Sheep Creek downstream to its intersection with Wolf Creek River Road.

(ii) *Note:* Map of Unit 12 (Wolf Creek) of critical habitat for the Cumberland darter follows:

Map of Unit 12 (Wolf Creek) of critical habitat for the Cumberland darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(11) Units 13, 14, and 15: Jellico Creek, Rock Creek, and Capuchin Creek, McCreary and Whitley Counties, Kentucky, and Campbell and Scott Counties, Tennessee.

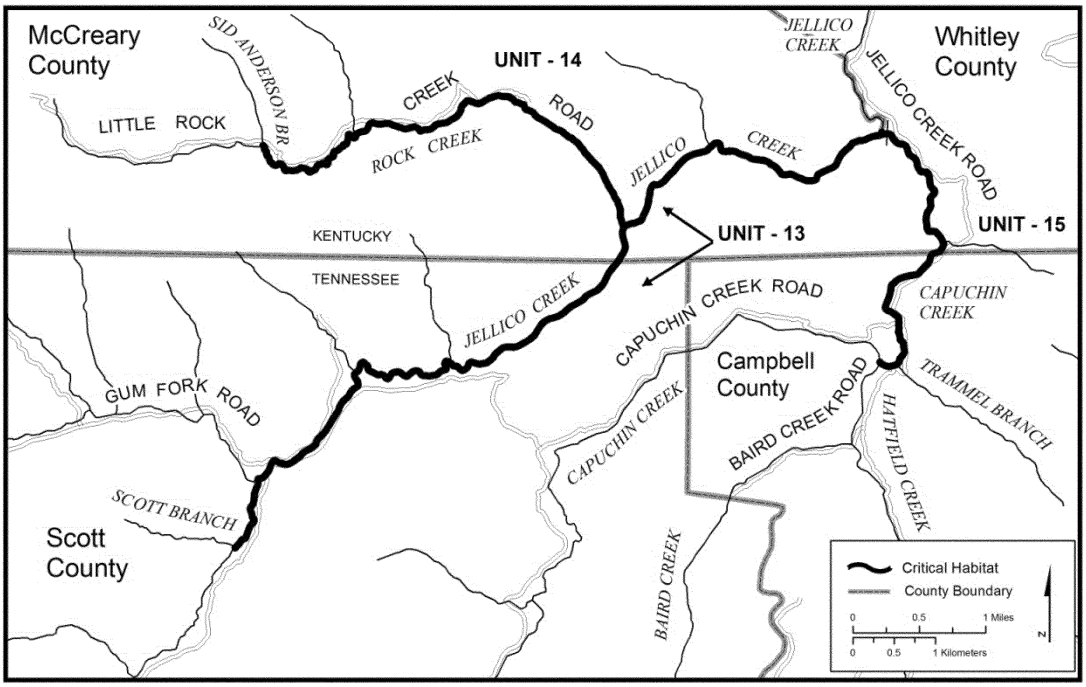
(i) Unit 13 includes 11.5 km (7.2 mi) of Jellico Creek from its confluence with Scott Branch, Scott County, Tennessee, downstream to its confluence with Capuchin Creek, McCreary County, Kentucky.

(ii) Unit 14 includes 6.1 km (3.8 mi) of Rock Creek from its confluence with Sid Anderson Branch downstream to its confluence with Jellico Creek.

(iii) Unit 15 includes 4.2 km (2.6 mi) of Capuchin Creek from its confluence with Hatfield Creek downstream to its confluence with Jellico Creek.

(iv) *Note:* Map of Units 13 (Jellico Creek), 14 (Rock Creek), and 15 (Capuchin Creek) of critical habitat for the Cumberland darter follows:

Map of Units 13 (Jellico Creek),14 (Rock Creek), and 15 (Capuchin Creek) of critical habitat for the Cumberland darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

* * * * *

Rush Darter (*Etheostoma phytophilum*)

(1) The critical habitat units are depicted for Jefferson, Winston, and Etowah Counties in Alabama, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the rush darter consist of five components:

(i) Springs and spring-fed reaches of geomorphically stable, relatively low-gradient, headwater streams with appropriate habitat (bottom substrates) to maintain essential riffles, runs, and pools; emergent vegetation in shallow water and on the margins of small streams and spring runs; cool, clean, flowing water; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(ii) Stable bottom substrates consisting of a combination of sand with silt, muck, gravel, or bedrock and adequate emergent vegetation in shallow water on the margins of small permanent and ephemeral streams and spring runs.

(iii) Instream flow with moderate velocity and a continuous daily discharge that allows for a longitudinal connectivity regime inclusive of both surface runoff and groundwater sources (springs and seepages) and exclusive of flushing flows caused by stormwater runoff.

(iv) Water quality with temperature not exceeding 26.7 °C (80 °F), dissolved oxygen 6.0 milligrams or greater per liter, turbidity of an average monthly reading of 10 Nephelometric Turbidity Units (NTU; units used to measure sediment discharge) and 15mg/L Total Suspended Solids (TSS; measured as mg/L of sediment in water) or less; and a specific conductance (ability of water to conduct an electric current, based on dissolved solids in the water) of no greater than 225 micro Siemens per centimeter at 26.7 °C (80 °F).

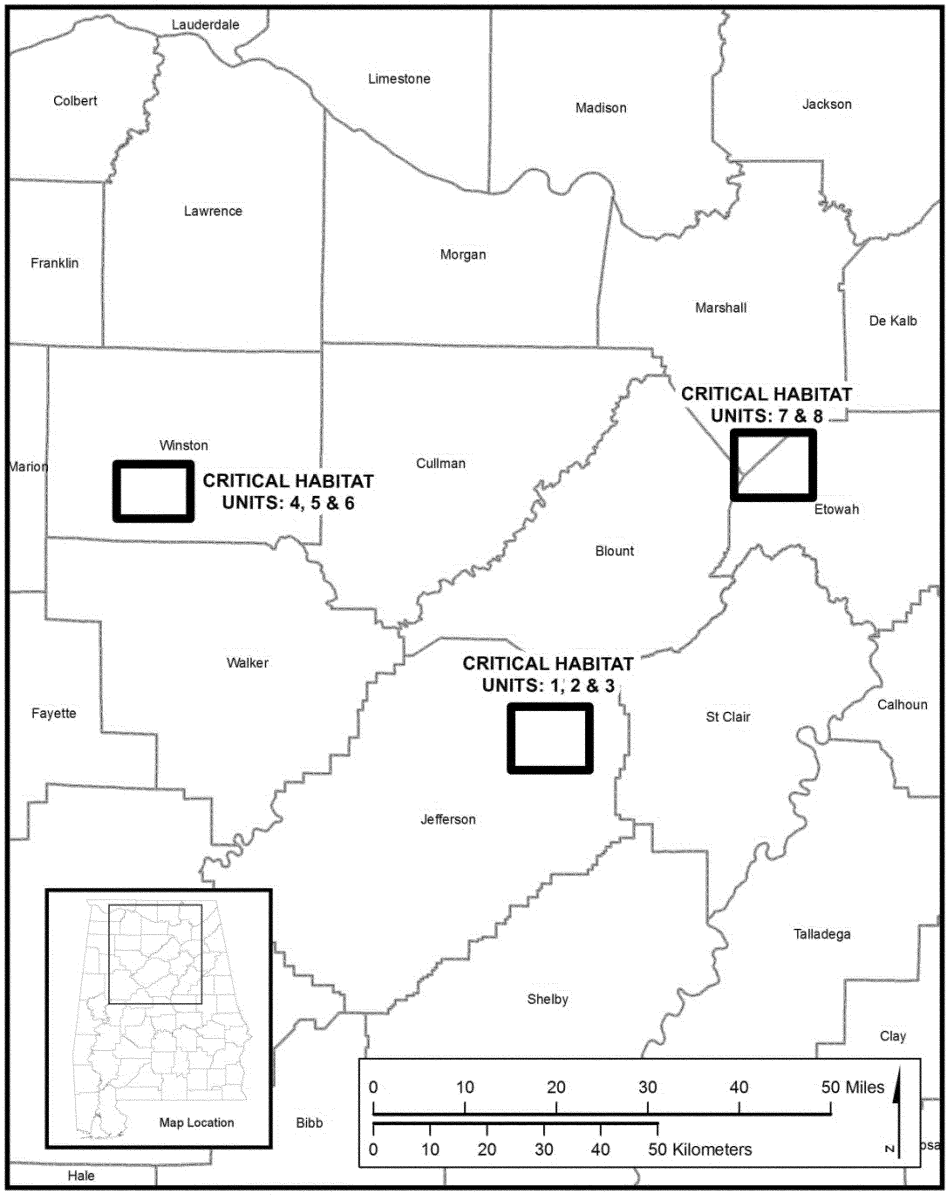
(v) Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, blackfly larvae, beetles, and microcrustaceans.

(3) Critical habitat does not include manmade 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 this rule.

(4) *Critical habitat map units.* Data layers defining map units were created on a base of USGS digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Universal Transverse Mercator (UTM) Zone 16N, NAD1983, coordinates. Upstream and downstream limits were then identified by longitude and latitude using decimal degrees and projected in WGS 1984.

(5) *Note:* Overview of Critical Habitat Locations for the Rush Darter in Alabama follows:

Overview of Critical Habitat Locations for the Rush Darter in Alabama



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(6) Units 1, 2, and 3: Beaver Creek, Unnamed Tributary to Beaver Creek and Highway 79 Spring Site, and Tapawingo or Penny Spring and Spring Run, Jefferson County, Alabama.

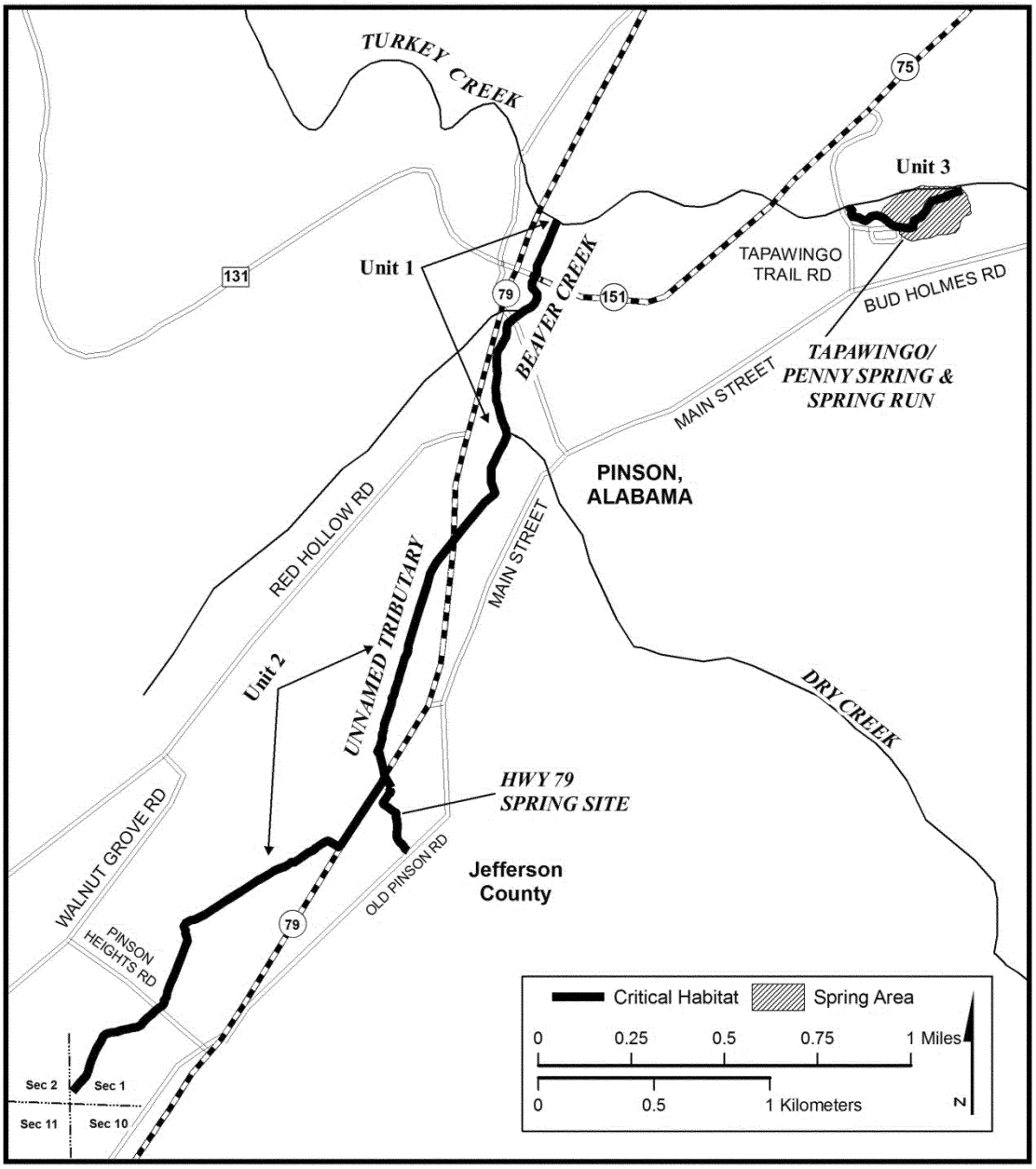
(i) Unit 1 includes 1.0 km (0.62 mi) of Beaver Creek from the confluence with an unnamed tributary to Beaver Creek, downstream to the confluence with Turkey Creek.

(ii) Unit 2 includes 4.3 km (2.57 mi) of an unnamed tributary of Beaver Creek and a spring run. The site begins at the section 1 and 2 (T16S, R2W) line, as taken from the U.S. Geological Survey 7.5 topographical map (Pinson quadrangle), downstream to its confluence with Dry Creek, and includes a spring run beginning at the springhead (latitude 33°40′28.15″ N, longitude 86°41′34.81″ W) just northwest of Old Pinson Road and intersecting with an unnamed tributary to Beaver Creek on the west side of Highway 79.

(iii) Unit 3 includes 0.63 km (0.39 mi) of spring run, historically called Tapawingo Plunge, along with 16.5 acres (6.68 ha) of flooded spring basin making up Penny Springs, located south of Turkey Creek, north of Bud Holmes Road, east of Tapawingo Trail Road. The east boundary is at latitude 33°41′56.50″ N and longitude 86°39′55.01″ W: 1.0 km (0.63 mi) west of section line 28 and 29 (T15S, R1W) (U.S. Geological Survey 7.5 topographical map (Pinson quadrangle)).

(iv) *Note:* Map of Units 1 (Beaver Creek), 2 (unnamed tributary to Beaver Creek and Highway 79 Spring Site), and 3 (Tapawingo or Penny Spring and Spring Run) of critical habitat for the rush darter follows:

Map of Units 1 (Beaver Creek), 2 (unamed tributary to Beaver Creek and Highway 79 Spring Site) and 3 (Tapawingo or Penny Spring and Spring Run) of critical habitat for the rush darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions

(7) Units 4, 5, and 6: Wildcat Branch, Mill Creek, and Doe Branch, Winston County, Alabama.

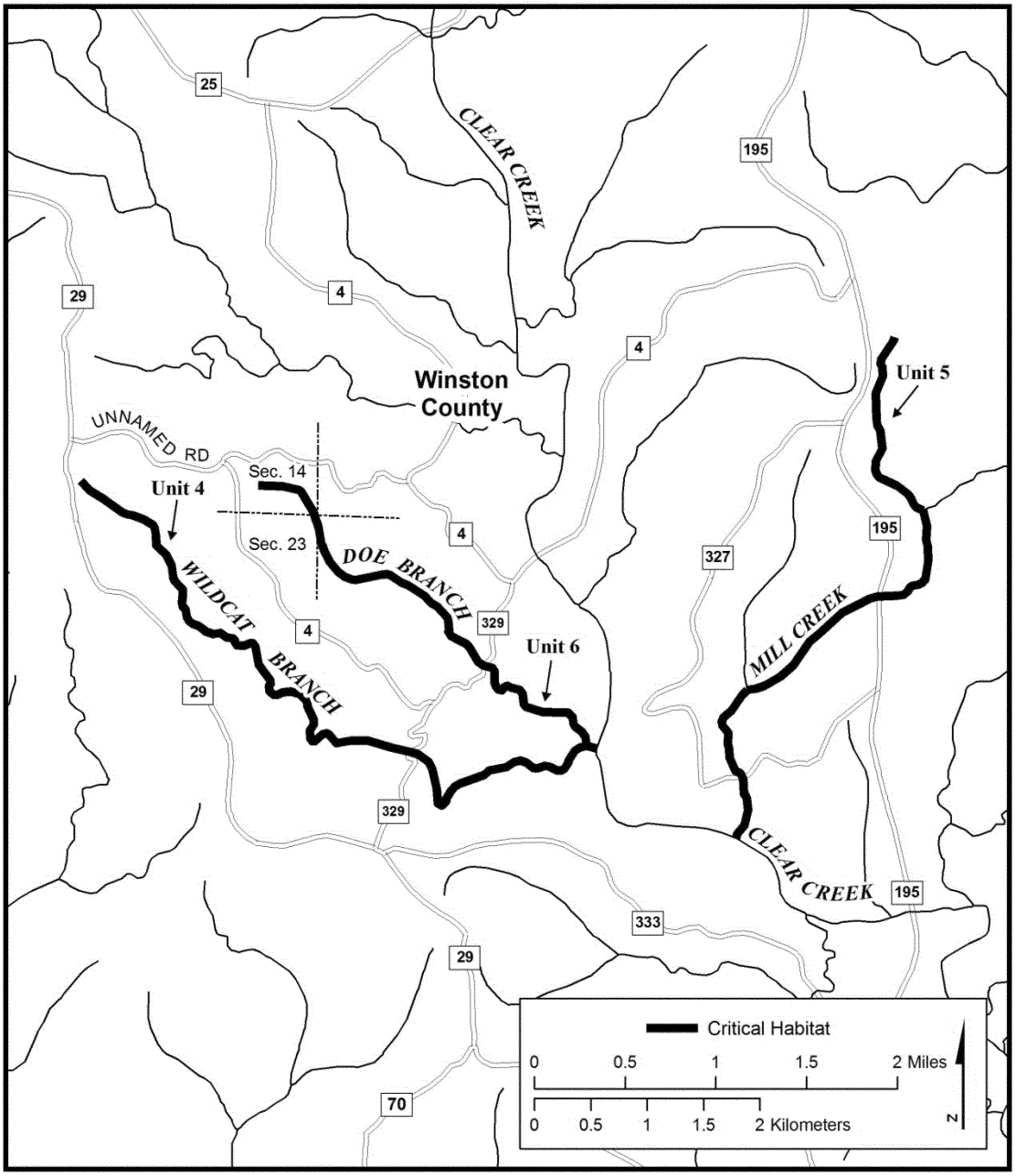
(i) Unit 4 includes 6.63 km (4.12 mi) of Wildcat Branch from the streams headwaters just east of Winston County Road 29 to the confluence with Clear Creek.

(ii) Unit 5 includes 5.89 km (3.66 mi) of Mill Creek from the streams headwaters just east of Winston County Road 195 to the confluence with Clear Creek.

(iii) Unit 6 includes 4.28 km (2.66 mi) of Doe Branch from the streams headwaters north and west of section line 23 and 14 (R9W, T11S; Popular Springs Quadrangle) to the confluence with Wildcat Branch.

(iv) *Note:* Map of Units 4 (Wildcat Branch), 5 (Mill Creek), and 6 (Doe Branch) of critical habitat for the rush darter follows:

Map of Units 4 (Wildcat Branch), 5 (Mill Creek) and 6 (Doe Branch) of critical habitat for the rush darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

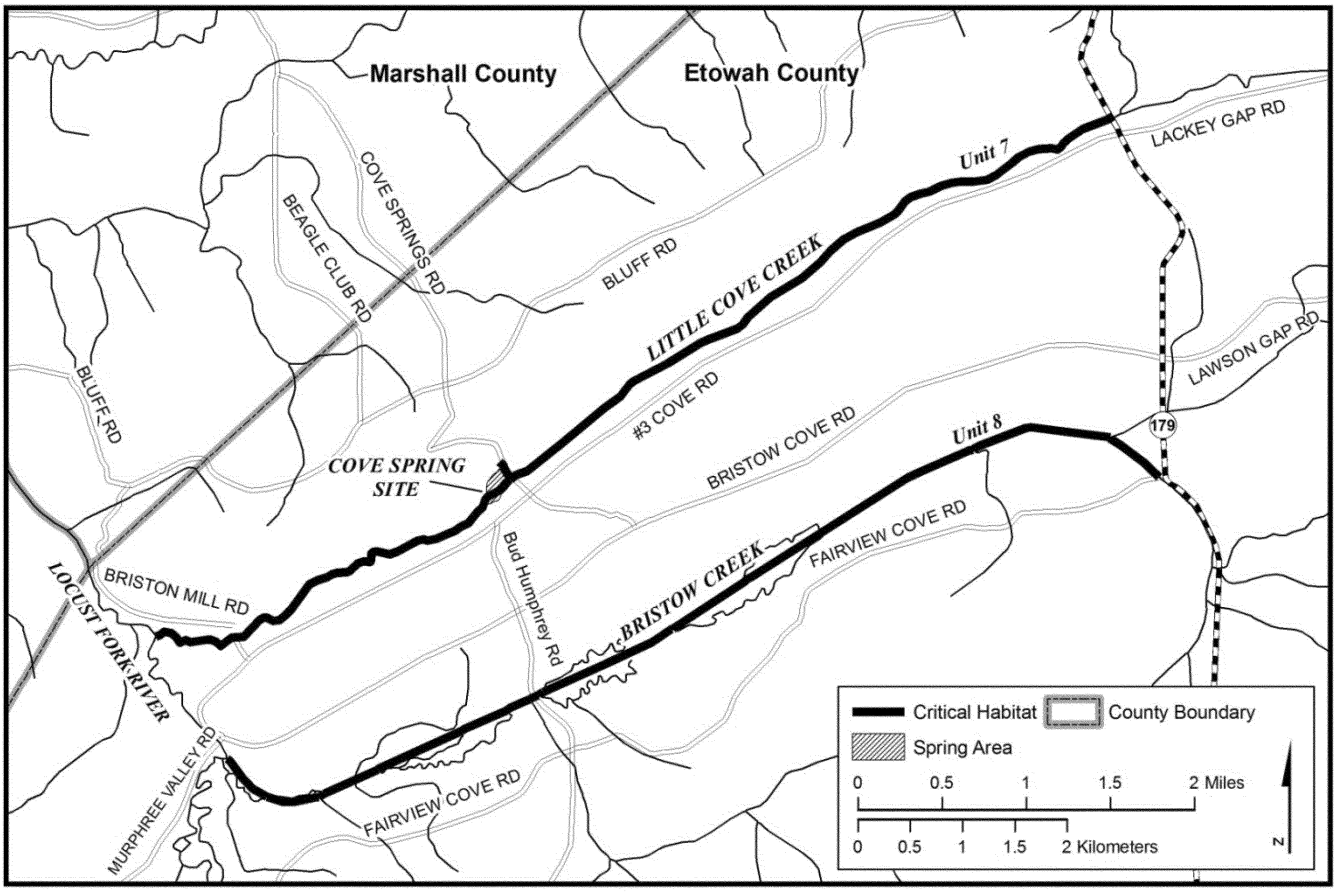
(8) Units 7 and 8: Little Cove Creek, Cove Spring and Spring Run, County, Alabama; and Bristow Creek, Etowah County, Alabama.

(i) Unit 7 includes 11.22 km (6.13 mi) of Little Cove Creek and the Cove Spring run system along with 12.7 acres (5.1 ha) of the spring run floodplain. Specifically, the Little Cove Creek section (11.01 km (6.00 mi)) is from the intersection of Etowah County Road 179 near the creek headwaters, downstream to its confluence with the Locust Fork River. The Cove Spring and spring run section includes 0.21 km (0.13 mi) of the spring run from the springhead at the West Etowah Water and Fire Authority pumping station on Cove Spring Road to the confluence with Little Cove Creek and includes 12.7 acres (5.1 ha) of the spring run floodplain due south of the pumping facility.

(ii) Unit 8 includes 10.12 km (6.29 mi) of Bristow Creek beginning from the bridge at Fairview Cove Road, downstream to the confluence with the Locust Fork River.

(iii) Map of Units 7 (Little Cove Creek, Cove Spring Site) and 8 (Bristow Creek) of critical habitat for the rush darter follows:

Map of Units 7 (Little Cove Creek, Cove Spring Site) and 8 (Bristow Creek) of critical habitat for the rush darter



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

* * * * *

Yellowcheek darter (*Etheostoma moorei*)

(1) Critical habitat units are depicted for Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the yellowcheek darter consist of five components:

(i) Geomorphically stable second- to fifth-order streams with riffle habitats; and connectivity between spawning, foraging, and resting sites to promote gene flow within the species' range where possible.

(ii) Stable bottom composed of relatively silt-free, moderate to strong velocity riffles with gravel, cobble, and boulder substrates.

(iii) An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(iv) Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the yellowcheek darter.

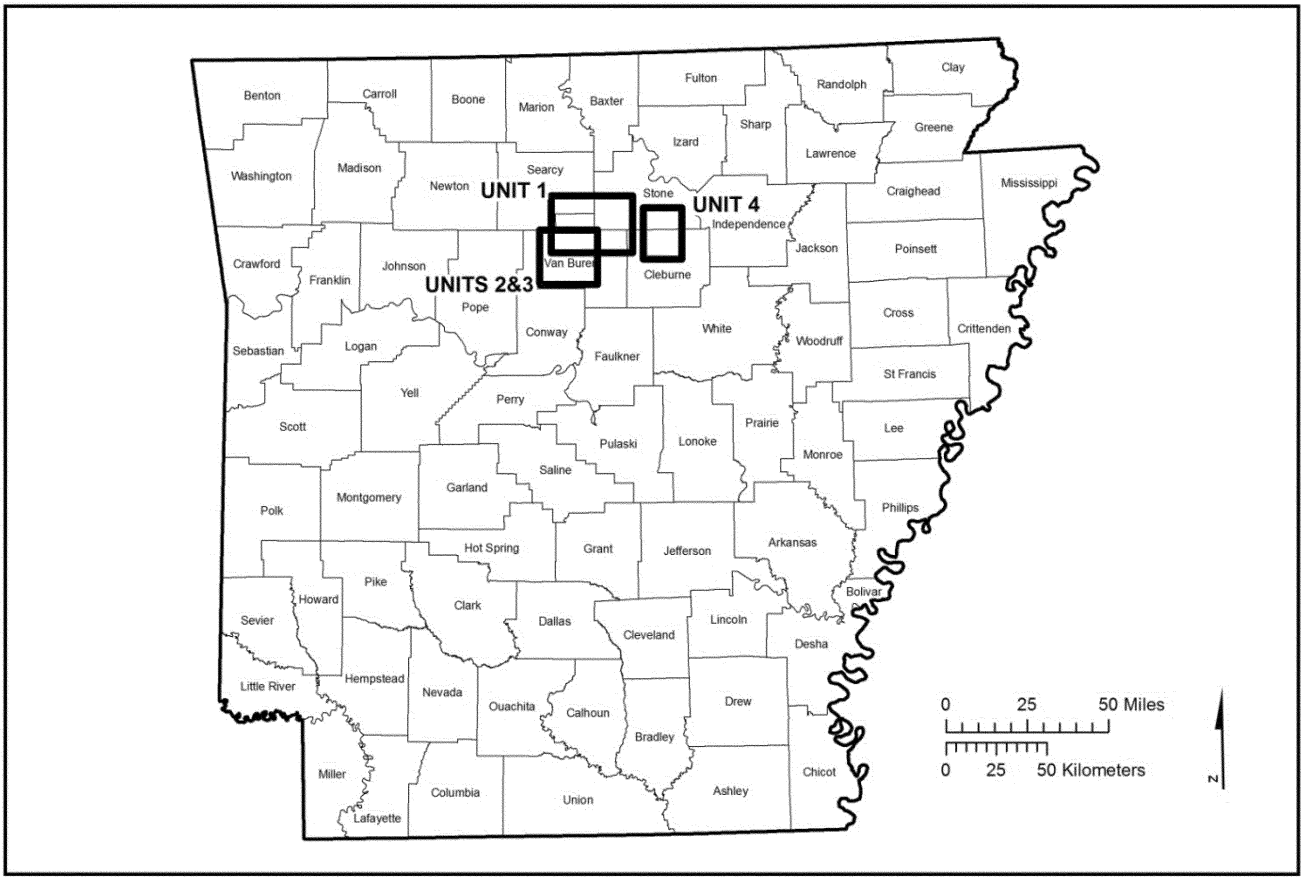
(v) Prey base of aquatic macroinvertebrates, including blackfly larvae, stonefly larvae, mayfly nymphs, and caddisfly larvae.

(3) Critical habitat does not include manmade 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 this rule.

(4) *Critical habitat unit maps.* Data layers defining map units were created on a base of USGS digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Universal Transverse Mercator (UTM) Zone 15N, NAD1983, coordinates. Upstream and downstream limits were then identified by longitude and latitude using decimal degrees and projected in WGS 1984.

(5) *Note:* Overview of Critical Habitat Locations for Yellowcheek Darter in Arkansas follows:

Overview of Critical Habitat Locations for Yellowcheek darter in Arkansas



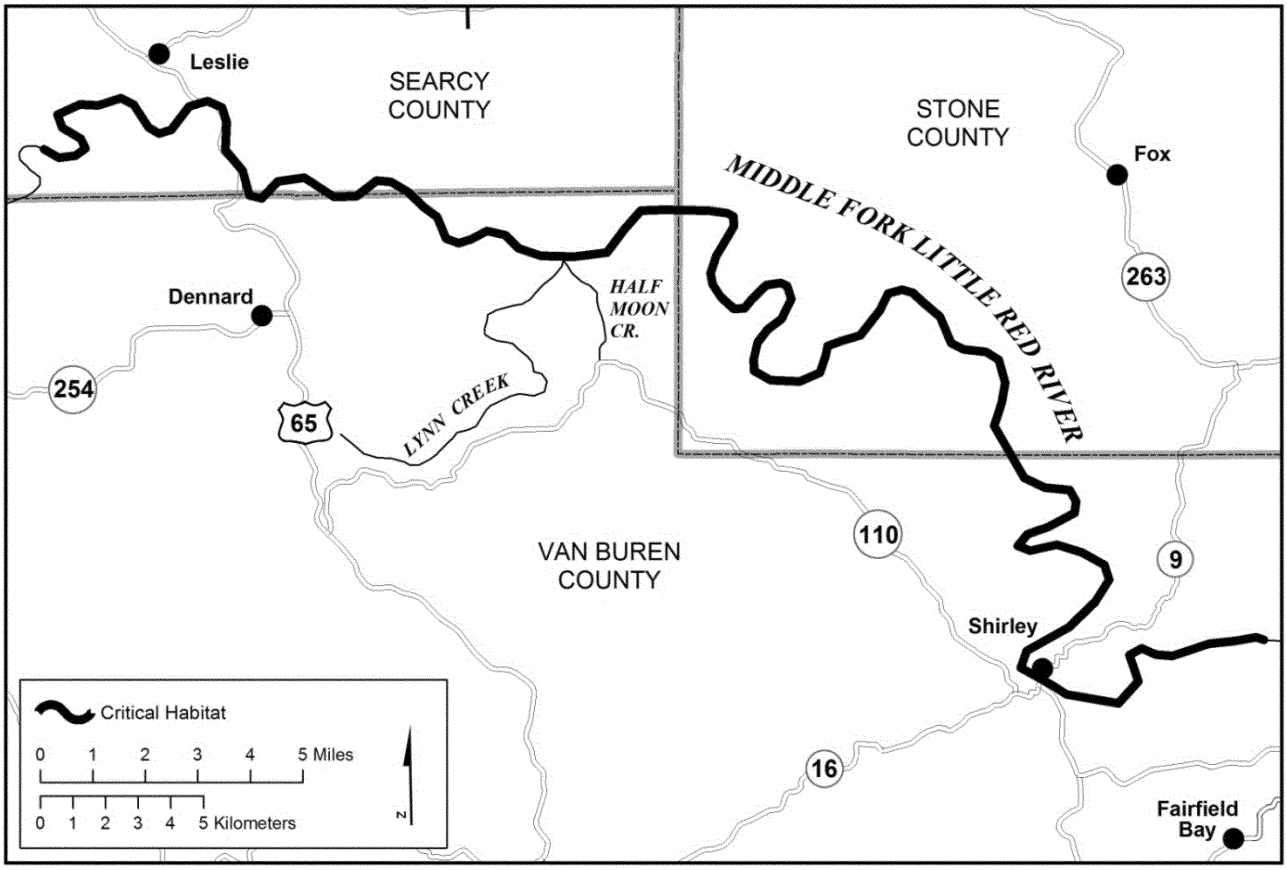
This map is provided for illustrative purposes of critical habitat only.
For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(6) Unit 1: Middle Fork Little Red River; Searcy, Stone and Van Buren Counties, Arkansas.

(i) Unit 1 includes 70.2 km (43.6 mi) of the Middle Fork of the Little Red River from Searcy County Road 167 approximately 3.4 km (2.1 miles) southwest of Leslie, Arkansas, to a point on the stream 7.7 river km (4.8 mi) downstream (35.665146, −92.259415) of the Arkansas Highway 9 crossing of the Middle Fork near Shirley, Arkansas

(ii) *Note:* Map of Unit 1 (Middle Fork) of critical habitat for the yellowcheek darter follows:

Map of Unit 1 (Middle Fork) of critical habitat for the yellowcheek darter



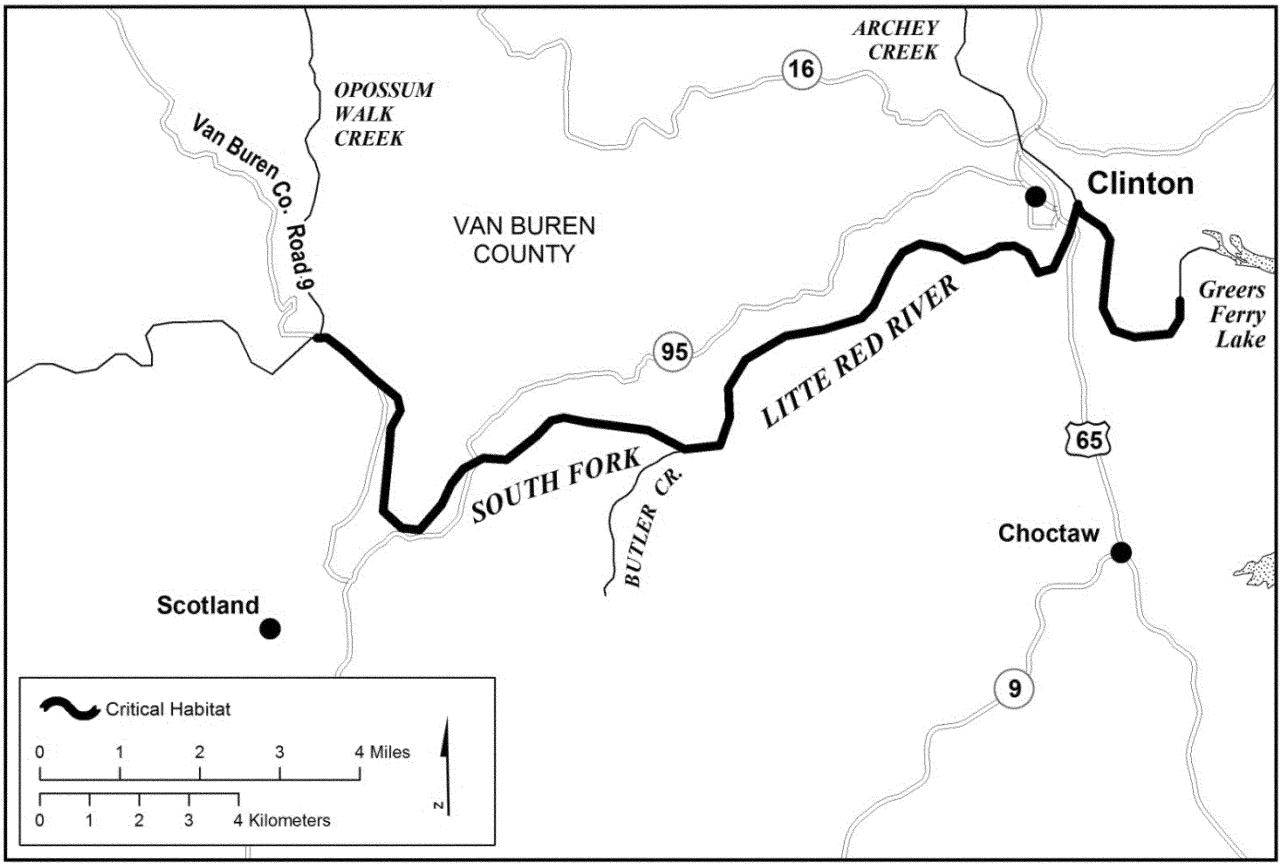
This map is provided for illustrative purposes of critical habitat only.
For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(7) Unit 2: South Fork Little Red River; Van Buren County, Arkansas.

(i) Unit 2 includes 31.9 km (19.8 mi) of the South Fork of the Little Red River from Van Buren County Road 9 three miles north of Scotland, Arkansas, to a point on the stream (35.573636, -92.427176) approximately 5.5 river km (3.4 mi) downstream of U.S. Highway 65 in Clinton, Arkansas, where it becomes inundated by Greers Ferry Lake.

(ii) *Note:* Map of Unit 2 (South Fork) of critical habitat for the yellowcheek darter follows:

Map of Unit 2 (South Fork) of critical habitat for the yellowcheek darter



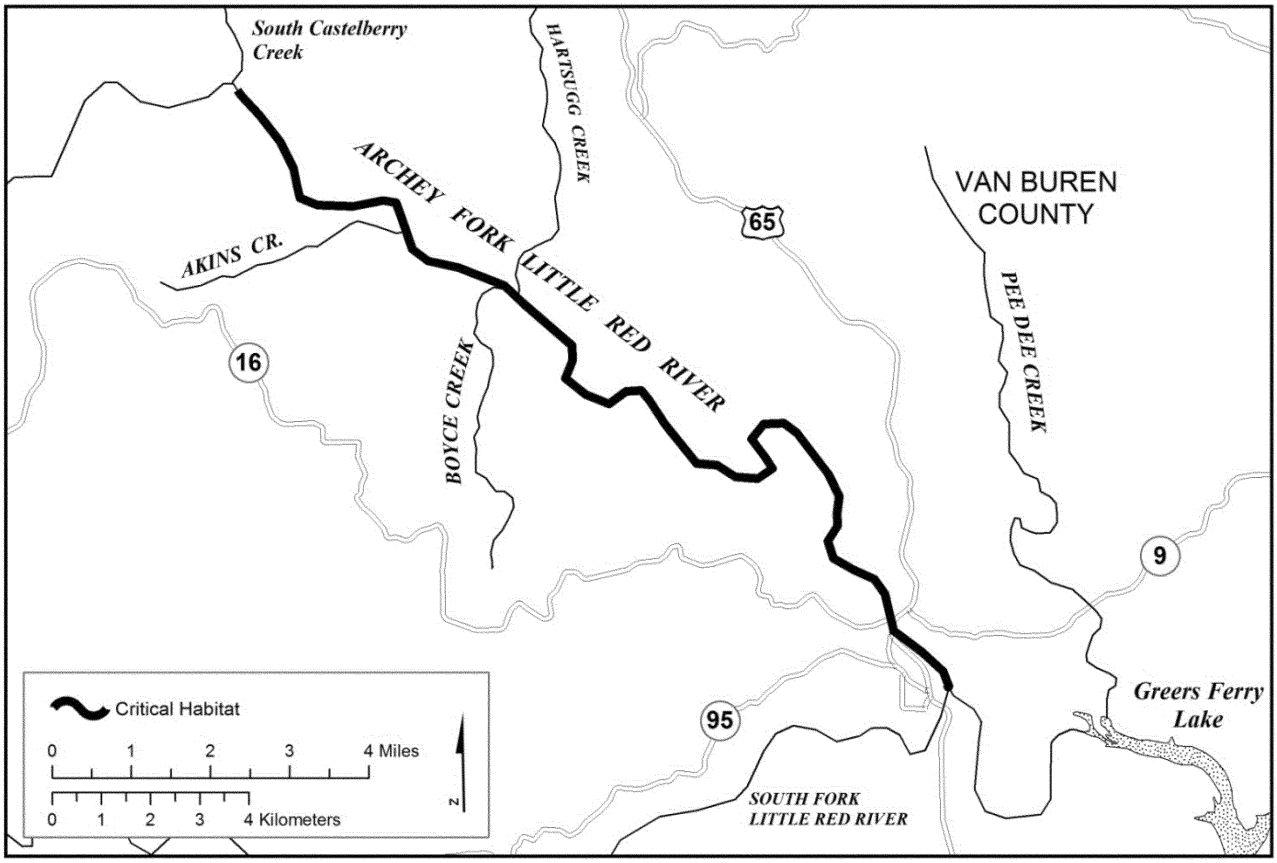
This map is provided for illustrative purposes of critical habitat only.
For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(8) Unit 3: Archey Fork Little Red River; Van Buren County, Arkansas.

(i) Unit 3 includes 27.4 km (17.0 mi) of the Archey Fork of the Little Red River from its confluence with South Castleberry Creek to its confluence with the South Fork of the Little Red River near Clinton, Arkansas.

(ii) *Note:* Map of Unit 3 (Archey Fork) of critical habitat for the yellowcheek darter follows:

Map of Unit 3 (Archey Fork) of critical habitat for the yellowcheek darter



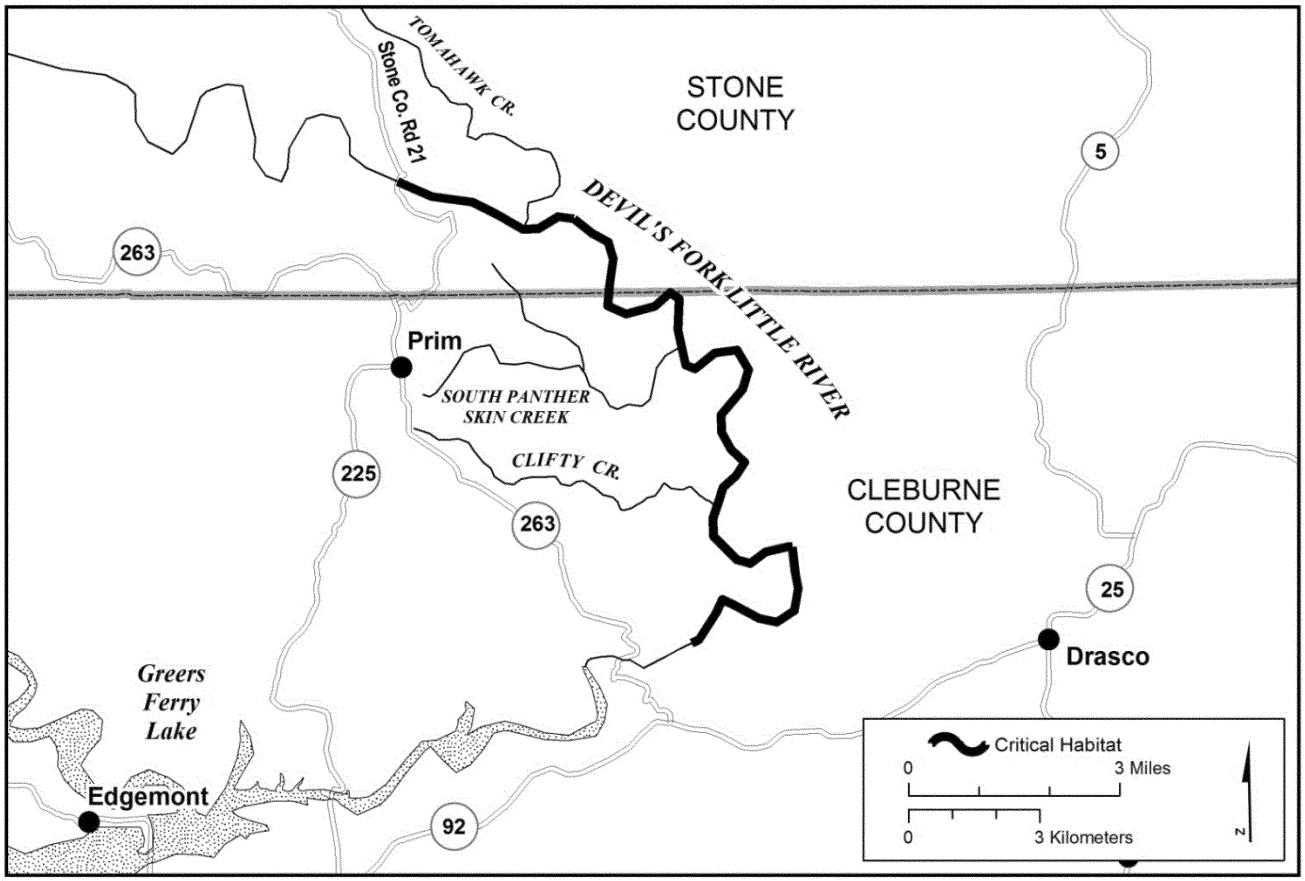
This map is provided for illustrative purposes of critical habitat only.
For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(9) Unit 4: Devil's Fork Little Red River (including Turkey Creek and Beech Fork); Cleburne and Stone Counties, Arkansas.

(i) Unit 4 includes 27.5 km (17.1 mi) of stream from Stone County Road 21 approximately three miles north of Prim, Arkansas, to a point on the Devil's Fork approximately 5.1 km (3.2 mi) southeast of Woodrow, Arkansas, at the point of inundation by Greers Ferry Lake (35.635557, −92.034003).

(ii) *Note:* Map of Unit 4 (Devil's Fork) of critical habitat for the yellowcheek darter follows:

Map of Unit 4 (Devil's Fork) of critical habitat for the yellowcheek darter



This map is provided for illustrative purposes of critical habitat only.
For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

* * * * *

Chucky Madtom (*Noturus crypticus*)

(1) Critical habitat units are depicted for Greene County, Tennessee, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the chucky madtom consist of five components:

(i) Gently flowing run and pool reaches of geomorphically stable streams with cool, clean, flowing water; shallow depths; and connectivity between spawning, foraging, and resting sites to promote gene flow throughout the species' range.

(ii) Stable bottom substrates composed of relatively silt-free, flat gravel, cobble, and slab-rock boulders.

(iii) An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) sufficient to provide permanent surface flows, as measured during years with average rainfall, and maintain benthic habitats utilized by the species.

(iv) Adequate water quality characterized by moderate stream temperatures, acceptable dissolved oxygen concentrations, moderate pH, and low levels of pollutants. Adequate water quality is defined for the purpose of this rule as the quality necessary for normal behavior, growth, and viability of all life stages of the chucky madtom.

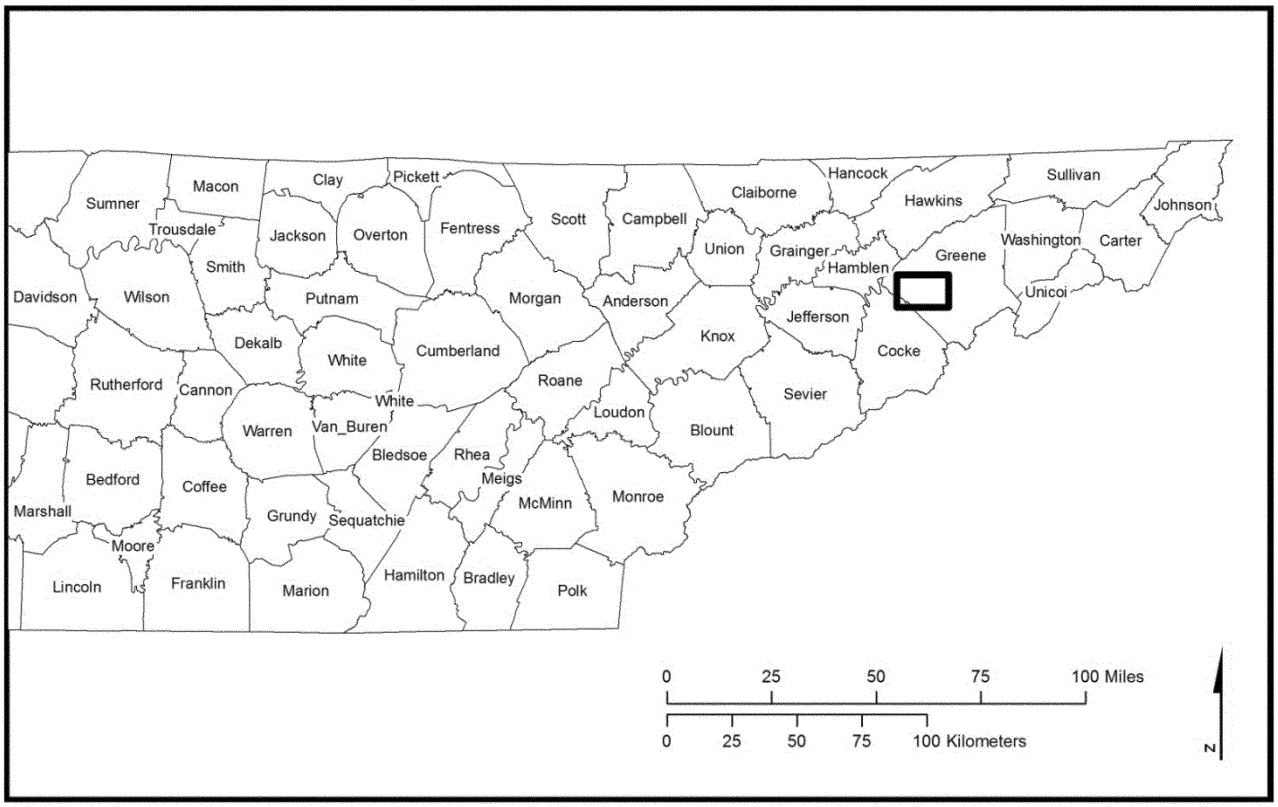
(v) Prey base of aquatic macroinvertebrates, including midge larvae, mayfly nymphs, caddisfly larvae, and stonefly larvae.

(3) Critical habitat does not include manmade 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 this rule.

(4) *Critical habitat unit maps.* Data layers defining map units were created on a base of USGS digital ortho-photo quarter-quadrangles, and critical habitat units were then mapped using Tennessee State Plane, Lambert Conformal Conic Projection, units feet. Upstream and downstream limits were then identified by longitude and latitude using decimal degrees and projected in WGS 1984.

(5) *Note:* Overview of Critical Habitat Locations for the Chucky Madtom in Tennessee follows:

Overview of Critical Habitat Locations for the Chucky Madtom in Tennessee



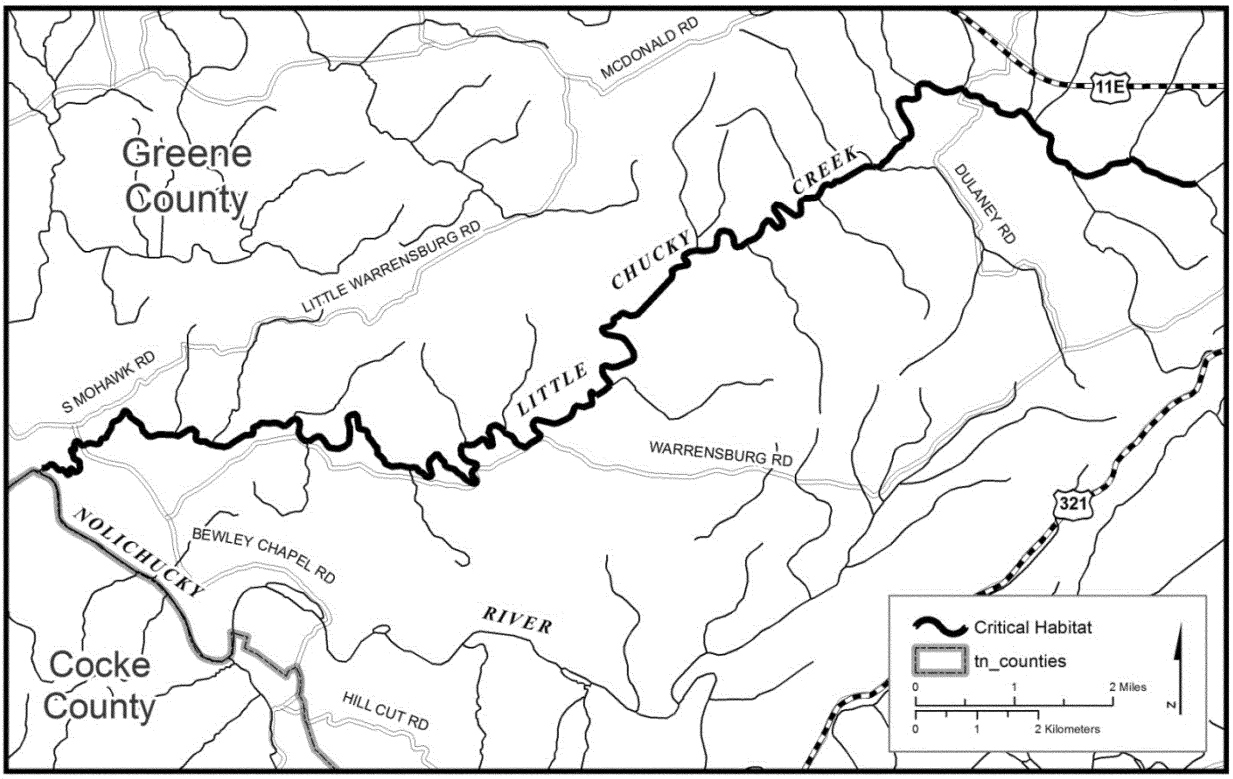
This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

(6) Little Chucky Creek Unit, Greene County, Tennessee.

(i) Little Chucky Creek Unit includes 31.9 km (19.8 mi) of Little Chucky Creek from its confluence with an unnamed tributary (36.15810, −82.88996), downstream to its confluence with the Nolichucky River (36.12095, −83.10665), at the Greene and Cocke County line, Tennessee.

(ii) *Note:* Map of Little Chucky Creek Unit of critical habitat for the chucky madtom follows:

Map of Little Chucky Creek Unit of critical habitat for the chucky madtom



This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.

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Dated: September 23, 2011.

Eileen Sobeck,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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