Dated: June 18, 2010.

Gina McCarthy,

Assistant Administrator, Office of Air and Radiation.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2010-0027]
[MO 92210-0-0008-B2]

RIN 1018-AV85

Endangered and Threatened Wildlife and Plants; Listing the Cumberland Darter, Rush Darter, Yellowcheek Darter, Chucky Madtom, and Laurel Dace as Endangered Throughout Their Ranges

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; request for public comments.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to list the Cumberland darter (*Etheostoma susanae*), rush darter (*Etheostoma phytophilum*), yellowcheek darter (*Etheostoma moorei*), chucky madtom (*Noturus crypticus*), and laurel dace (*Phoxinus saylori*) as endangered under the Endangered Species Act of 1973, as amended (Act). If we finalize this rule as proposed, it would extend the Act's protections to these species throughout their ranges, including, Cumberland darter in Kentucky and Tennessee, rush darter in Alabama, yellowcheek darter in Arkansas, and chucky madtom and laurel dace in Tennessee. We have determined that critical habitat for these species is prudent, but not determinable at this time.

DATES: We will consider comments we receive on or before August 23, 2010. We must receive requests for public hearings, in writing, at the address shown in the **ADDRESSES** section by August 9, 2010.

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

Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the instructions for submitting comments.

U.S. mail or hand-delivery: Public Comments Processing, Attn: [Docket No. FWS-R4-ES-2010-0027]; Division of Policy and Directives Management, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Suite 222, Arlington, VA 22203.

We will not accept e-mail or faxes. 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 **Request for 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 Rm. 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, MI 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 Mark Sattelberg, 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 931-528-6481; 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:

Request for 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 as accurate and effective as possible. Therefore, we request comments or information from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to these species and regulations that may be addressing those threats;

(2) Additional information concerning the ranges, distribution, and population size of these species, including the locations of any additional populations of the species;

(3) Any additional information on the biological or ecological requirements of the species;

(4) Current or planned activities in the areas occupied by the species and possible impacts of these activities on the species and their habitat;

(5) Potential effects of climate change on the species and their habitats;

(6) The reasons why areas should or should not be designated as critical habitat as provided by section 4 of the Act (16 U.S.C. 1531, *et seq.*), including whether the benefits of designation would outweigh threats to the species that designation could cause (e.g., exacerbation of existing threats, such as overcollection), such that the designation of critical habitat is prudent; and .

(7) Specific information on:

- What areas contain physical and biological features essential for the conservation of the species;
- What areas are essential to the conservation of the species; and
- Special management considerations or protection that proposed critical habitat may require.

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is a threatened or endangered species mush be made "solely on the basis of the best scientific and commercial data available."

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not accept comments sent by e-mail or fax or to an address not listed in the **ADDRESSES** section.

We will post your entire comment, including your personal identifying information, on *http://www.regulations.gov*. If you provide personal identifying information in your hard copy comments, such as your street address, phone number, or e-mail address, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov*. Please include sufficient information with your comments to allow us to verify any scientific or commercial information you include.

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 (see **FOR FURTHER INFORMATION CONTACT** section).

Background

Species Information

Cumberland darter

The Cumberland darter, *Etheostoma susanae* (Jordan and Swain), is a medium-sized member of the fish tribe Etheostomatini (Family Percidae) that reaches over 5.5 centimeters (cm) (2 inches (in)) standard length (SL) (SL, length from tip of snout to start of the caudal peduncle (slender region extending from behind the anal fin to the base of the caudal fin)) (Etnier and Starnes 1993, pp. 512). The species has a straw-yellow background body color with brown markings that form six evenly spaced dorsal (back) saddles and a series of X-, C-, or W-shaped markings on its sides (Etnier and Starnes 1993, p. 510). During spawning season, the overall body color of breeding males darkens, and the side markings become obscure or appear as a series of blotches (Etnier and Starnes 1993, p. 510).

The Cumberland darter was first reported as *Boleosoma susanae* by Jordan and Swain (1883, pp. 249–250) from tributaries of the Clear Fork of the Cumberland River, Kentucky. Subsequent studies by Kuhne (1939, p. 92) and Cole (1967, p. 29) formerly recognized the taxon as a subspecies (*Etheostoma nigrum susanae*) of *E. n. nigrum* (Johnny darter). Starnes and Starnes (1979, p. 427) clarified the subspecific status of the Cumberland darter, differentiating it from the Johnny darter by several diagnostic characteristics. Strange (1994, p. 14; 1998, p. 101) recommended that *E. n. susanae* be elevated to specific status based on the results of mitochondrial DNA analyses of *E. n. susanae* and *E. n. nigrum*. The Cumberland darter was recognized as a valid species, *E. susanae* (Cumberland darter), by Nelson *et al.* (2004, p. 233) based on the work of Strange (1994, p. 14; 1998, p. 101) and a personal communication with W. C. Starnes (May 2000), who suggested the common name.

The Cumberland darter 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 cm (8 to 30 in).

Little is known regarding the reproductive habits of the Cumberland darter. Thomas (2007, p. 4) reported the collection of males in breeding condition in April and May, with water temperatures ranging from 15 to 18° Celsius (C) (59 to 64° Fahrenheit (F)). Extensive searches by Thomas (2007, p. 4) produced no evidence of nests or eggs at these sites. Species commonly associated with the Cumberland darter during surveys by Thomas (2007, pp. 4–5) were creek chub (*Semotilus atromaculatus*), northern hogsucker (*Hypentelium nigricans),* stripetail darter *(Etheostoma kennicotti),* and Cumberland arrow darter *(Etheostoma sagitta sagitta*). Thomas (2007, p. 5) collected individuals of the Federally threatened blackside dace, *Phoxinus cumberlandensis*, from three streams that also supported Cumberland darters.

The Cumberland darter is endemic to the upper Cumberland River system above Cumberland Falls in Kentucky and Tennessee (O'Bara 1988, p. 1; O'Bara 1991, p. 9; Etnier and Starnes 1993, p. 511). The earliest known collections of the species were made by Jordan and Swain (1883, pp. 249–250), who recorded it as abundant in tributaries of Clear Fork of the Cumberland River, Kentucky. The species was later reported from Gum Fork, Scott County, Tennessee, by Shoup and Peyton (1940, p. 11), and seven additional tributaries of the Cumberland River by Burr and Warren (1986, p. 310). More exhaustive surveys by O'Bara (1988, p. 6; 1991, pp. 9–10) and Laudermilk and Cicerello (1998; pp. 83–233, 303–408) determined that the Cumberland darter was restricted to short reaches of 20 small streams (23 sites) in the upper Cumberland River system in Whitley and McCreary Counties, Kentucky, and Campbell and Scott Counties, Tennessee. These studies suggested the extirpation of the species from Little Wolf Creek, Whitley County, Kentucky, and Gum Fork, Scott County, Tennessee. Preliminary reports of disjunct populations in the Poor Fork Cumberland River and Martins Fork in Letcher and Harlan Counties, Kentucky (Starnes and Starnes 1979, p. 427; O'Bara 1988, p. 6; O'Bara 1991, pp. 9–10), were evaluated genetically and determined to be the Johnny darter (Strange 1998, p. 101). Thomas (2007, p. 3) provided the most recent information on status and distribution of the species through completion of a range-wide status assessment in the upper Cumberland River drainage in Kentucky. Between June 2005 and April 2007, a total of 47 sites were sampled qualitatively in the upper Cumberland River drainage. All Kentucky sites with historic records were surveyed (20 sites), as well as 27 others having potentially suitable habitat. Surveys by Thomas (2007, p. 3) produced a total of 51 specimens from 13 localities (12 streams). Only one of the localities represented a new occurrence record for the species.

Currently, the Cumberland darter is known from 14 localities in a total of 12 streams in Kentucky (McCreary and Whitley Counties) and Tennessee (Campbell and Scott Counties). All 14 extant occurrences of the Cumberland darter are restricted to short stream reaches, with the majority believed to be restricted to less than 1.6 kilometers (km) (1 mile (mi)) of stream (O'Bara 1991, pp. 9–10; Thomas 2007, p. 3). These occurrences are thought to form six population clusters (Bunches Creek, Indian Creek, Marsh Creek, Jellico Creek, Clear Fork, and Youngs Creek), which are geographically separated from one another by an average distance of 30.5 stream km (19 mi) (O'Bara 1988, p. 12; O'Bara 1991, p. 10; Thomas 2007, p. 3). Based on collection efforts by O'Bara (1991, pp. 9–10), Laudermilk and Cicerello (1998, pp. 83–233, 303–408), and Thomas (2007, p. 3), the species appears to be extirpated from 11 historic collection sites and a total of 9 streams: Cumberland River mainstem, near mouth of Bunches Creek and Cumberland Falls (Whitley County); Sanders Creek (Whitley County); Brier Creek (Whitley County); Kilburn Fork of Indian Creek (McCreary County); Bridge Fork (McCreary County); Marsh Creek, near mouth of Big Branch and Caddell Branch (McCreary County); Cal Creek (McCreary County), Little Wolf Creek (Whitley County); and Gum Fork (Scott County). No population estimates or status trends are available for the Cumberland darter; however, survey results by Thomas (2007, p. 3) suggest that the species is uncommon or occurs in low densities across its range (Thomas (2007, p. 3).

The Cumberland darter is ranked by the Kentucky State Nature Preserves Commission (2009, p. 38) as a G1G2S1 species: critically imperiled or imperiled globally and critically imperiled in Kentucky. The Kentucky Department of Fish and Wildlife Resources State Wildlife Action Plan

identified the Cumberland darter as a species of Greatest Conservation Need (KDFWR 2005, p. 2.2.2). The plan identified several top conservation actions for the Cumberland darter and other species in its Aquatic Guild (Upland Headwater Streams in Pools): acquisition or conservation easements for critical habitat, development of financial incentives to protect riparian corridors, development and implementation of best management practices, and restoration of degraded habitats through various State and Federal programs.

Rush Darter

The rush darter (*Etheostoma phytophilum*), a medium-sized darter in the subgenus *Fuscatelum*, was described by Bart and Taylor in 1999 (pp. 27–33). The average size of the rush darter is 5 cm (2 in) SL (Bart and Taylor 1999, p. 28; Johnston and Kleiner 2001, p. 3). The rush darter is closely related to the goldstripe darter (*Etheostoma parvipinne*), a drab-colored species with a thin golden stripe along the lateral line (canal along the side of a fish with sensory capabilities) that is surrounded by heavily mottled or stippled sides (Shaw 1996, p. 85). However, the distinct golden stripe characteristic of goldstripe darters is not well developed in rush darters (Bart and Taylor 1999, p. 29). Also, the brown pigment on the sides of the rush darter is usually not as intense as in the goldstripe darter. Other characteristics of the rush darter are described in Bart and Taylor (1999, p. 28).

Rush darters have been collected from various habitats (Stiles and Mills 2008, pp. 1–4; Bart 2002, p. 1; Johnston and Kleiner 2001, pp. 3–4; Stiles and Blanchard 2001, pp. 1–4; Bart and Taylor 1999, p. 32), including root masses of emergent vegetation along the margins of spring-fed streams in very shallow, clear, cool, and flowing water; and from both small clumps and dense stands of bur reed (*Sparganium* sp.), coontail (*Ceratophyllum* sp.), watercress (*Nasturtium officinale*), and rush (*Juncus* sp.) in streams with substrates of silt, sand, sand and silt, muck and sand or some gravel with sand, and bedrock. Rush darters appear to prefer springs and spring-fed reaches of relatively low-gradient small streams which are generally influenced by springs (Stiles and Mills 2008, pp. 1–4; Fluker *et al.* 2007, p. 1; Bart 2002, p. 1; Johnston and Kleiner 2001, pp. 3–4; Stiles and Blanchard 2001, pp. 1–4; Bart and Taylor 1999, p. 32). Rush darters have also been collected in wetland pools (Stiles and Mills 2008; pp. 2–3). Water depth at collection sites ranged from 3.0 cm to 0.5 m (0.1 ft to 1.6 ft), with moderate water velocity in riffles and no flow or low flow in pools. Rush darters have not been found in higher gradient streams with bedrock substrates and sparse vegetation (Stiles and Mills 2008, pp. 1–4; Bart 2002, p. 1; Johnston and Kleiner 2001, pp. 3–4; Stiles and Blanchard 2001, pp. 1–4; Bart and Taylor 1999, p. 32).

Stiles and Mills (2008, p. 2) found gravid rush darter females in February and fry (newly hatched larval fish) in late April from a wetland pool in the Mill Creek watershed (Winston County, Alabama). These pools act as nursery areas for the fry (Stiles and Mills 2008, p. 5). Even though the life history of the rush darter is poorly known, it is likely similar to the closely related goldstripe darter. Spawning of the goldstripe darter in Alabama occurs from mid March through June (Mettee *et al.* 1996, p. 655). Goldstripe larvae reared in captivity avoid downstream drift (Conservation Fisheries, Inc., 2005, p. 7). This behavior alteration may inhibit dispersal capabilities between isolated suitable habitat patches, and may reduce the success of captively bred individuals in the wild. Preferred food items for the goldstripe darter include midges, mayflies, blackflies, beetles, and microcrustaceans (Mettee *et al.* 1996, p. 655). The life span of the goldstripe darter is estimated to be 2 to 3 years.

The rush darter currently has a restricted distribution (Johnston and Kleiner 2001, p. 1). All rush darter populations are located above the Fall Line (the inland boundary of the Coastal Plain physiographic region) and other "highland regions" where topography and elevation changes are observed presenting a barrier for fish movement (Boshung and Mayden 2004, p. 18)) in the Tombigbee–Black Warrior drainage (Warren *et al.* 2000, pp. 9, 10, 24), in portions of the Appalachian Plateau, and Valley and Ridge physiographic provinces of Alabama. The closely related goldstripe darter in Alabama occurs essentially below the Fall Line in all major systems except the Coosa system (Boshung and Mayden 2004, p. 550). Reports of goldstripe darters from the 1960s and 1970s in Winston and Jefferson Counties, Alabama (Caldwell 1965, pp. 13–14; Barclay 1971, p. 38; Dycus and Howell 1974, pp. 21–24; Mettee *et al.* 1989, pp. 13, 61, 64), which are above the Fall Line, were made prior to the description of the rush darter, but are now considered to be rush darters (Kuhajda 2008, pers. comm.).

Historically, rush darters have been found in three distinct watersheds in Alabama: Doe Branch, Wildcat Branch, and Mill Creek of the Clear Creek drainage in Winston County; an unnamed spring run of Beaver Creek and from Penny Springs of the Turkey Creek drainage in Jefferson County; and Cove Spring (Little Cove Creek system) and Bristow Creek of the Locust Fork drainage in Etowah County.

Currently, the three rush darter populations occur in the same watersheds but in a more limited distribution. One population is located in Wildcat Branch and Mill Creek in the Clear Creek drainage in Winston County (Johnston and Kleiner 2001, p. 4); the second is located in an unnamed spring run to Beaver Creek and in Penny Springs in the Turkey Creek drainage in Jefferson County (Stiles and Blanchard 2001, p. 2); and the third is in the Little Cove Creek drainage population. The Little Cove Creek population in Etowah County was known from only a single specimen collected in Cove Spring in 1975 (Bart and Taylor 1999, p. 28) and one specimen from Bristow Creek collected in 1997 (Bart 2002, p. 7). Kuhajda (2008, pers. comm.) discovered a single specimen of the species in 2005, at the confluence of the Cove Spring run where it drains into an unnamed swamp.

Rush darter populations are separated from each other geographically, and individual rush darters are only sporadically collected at a particular site within their range. Where it occurs, the rush darter is apparently an uncommon species that is usually collected in low numbers (Bart and Taylor 1999, p. 32). Since 1969, approximately 100 rush darters have been collected or captured and released within the species' range (compiled from Bart and Taylor 1999, pp. 31–32; Johnston and Kleiner 2001, pp. 2–4; Stiles and Blanchard 2001, pp. 1–4; Johnston 2003, pp.1-3; P. Rakes 2010, pers.comm.); however, there are no population estimates at this time.

Cumulatively, the rush darter is only known from localized collection sites within approximately 14 km (9 mi) of streams in the Clear Creek, Little Cove and Bristow Creek, and Turkey Creek drainages in Winston, Etowah, and Jefferson Counties, respectively. Currently, about 3 km (2 mi) of stream, or about 22 percent of the rush darter's known range, is not occupied, which may be due to non-point source pollution (e.g., sedimentation and chemicals) from agriculture, urbanization, and road construction and maintenance.

Within the Clear Creek drainage, the rush darter has been collected in Wildcat Branch, Mill Creek, and Doe Creek, which represents about 13 km (8 mi) of stream or about 94 percent of the species' total cumulative range. Recent

surveys (Stiles and Mills 2008, pp. 1–4; Johnston and Kleiner 2001, p. 3) have documented the absence of the rush darter in Doe Creek, possibly indicating a reduction of the species' known range within the Clear Creek drainage by about 3 km (2 mi) of stream or 22 percent. Rush darters were collected in October 2005 and again in June 2008 and 2009 in the Little Cove Creek drainage (Cove Spring run), a first since 1975, despite sporadic surveys over the last 30 years. This rediscovery of the species confirms the continued existence of the species in Etowah County and Cove Spring. However, the Little Cove Creek drainage constitutes an increase of only 0.05 km (0.02 mi) of occupied stream habitat or a 1.6 percent addition to the total range of the species. No collections of the species have occurred at Bristow Creek since 1997. Bristow Creek has since been channelized (straightened and deepened to increase water velocity). In the Turkey Creek drainage, rush darters have been collected sporadically within Penny Springs and at the type locality for the species (an unnamed spring run in Jefferson County, Alabama) (Bart and Taylor 1999, pp. 28, 33). This area contains about 0.5 km (0.3 mi) of occupied stream habitat or approximately 4 percent of the rush darter's total range.

The rush darter is ranked by the Alabama Department of Conservation and Natural Resources (2005) as a P1G1S1 species signifying its rarity in Alabama and its status as critically imperiled globally. It is also considered a species of Greatest Conservation Need (GCN) by the State. The rush darter has a High Priority Conservation Actions Needed and Key Partnership Opportunities ranking of "CA 6," the highest of any fish species listed. The plan states that the species consists of disjoint populations and information is needed to determine genetic structuring within the populations. Conservation Actions for the species may require population augmentation and/or reintroduction of the species to suitable habitats to maintain viability.

Yellowcheek Darter

The yellowcheek darter (*Etheostoma moorei*) is a small and compressed fish which attains a maximum SL of about 64 mm (2.5 in), and has a moderately sharp snout, deep body, and deep caudal peduncle (Raney and Suttkus 1964, p. 130). The back and sides are grayish brown, often with darker brown saddles and lateral bars. Breeding males are brightly colored with a bright blue or brilliant turquoise breast, and throat and light green belly, while breeding females possess orange and red-orange spots but are not brightly colored (Robison and Buchanan 1988, pp. 427–429). First collected in 1959 from the Devils Fork Little Red River, Cleburne County, Arkansas, this species was eventually described by Raney and Suttkus in 1964, using 228 specimens from the Middle, South, and Devils Forks of the Little Red River (Devils Fork, Turkey Fork, and Beech Fork represent one stream with three different names and are subsequently referred to in this proposed rule as "Devils Fork"). Wood (1996, p. 305) verified the taxonomic status of the yellowcheek darter within the subgenus *Nothonotus*. The yellowcheek darter is one of only two members of the subgenus *Nothonotus* known to occur west of the Mississippi River.

The yellowcheek darter inhabits high-gradient headwater tributaries with clear water; permanent flow; moderate to strong riffles; and gravel, rubble, and boulder substrates (Robison and Buchanan 1988, p. 429). Yellowcheek darter prey items include aquatic dipteran larvae, stoneflies, mayflies, and caddisflies (McDaniel 1984, p. 56).

Male and female yellowcheek darters reach sexual maturity at one year of age, and maximum life span is around five years (McDaniel 1984, pp. 25, 76). Spawning occurs from late May through June in the swift to moderately swift portions of riffles, often around or under the largest substrate particles (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. It was noted that the yellowcheek darter appears to be a relatively non-mobile species, with 19 of 22 recaptured darters found within 9 meters (29.5 feet) 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 have suggested that the yellowcheek darter 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, female yellowcheek darters bury themselves in fine gravel/sand substrates (often behind large cobble or boulders) with only their heads and caudal fin exposed. A male yellowcheek darter will then position upstream of the buried female and fertilize her eggs as she releases them in a vibrating motion. Clutch size and nest defense behavior were not observed.

The yellowcheek darter is endemic to the Devils, Middle, South, and Archey Forks of the Little Red River and main stem Little Red River in Cleburne, Searcy, Stone, and Van Buren Counties, Arkansas (Robison and Buchanan 1988, p. 429). 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 Devils Fork, Middle Fork, South Fork, and portions of the main stem Little Red River, thus extirpating the species from these reaches. 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 the genetic isolation of populations (McDaniel 1984, p. 1). The yellowcheek darter was known to historically occur in portions of these streams that maintained permanent year-round flows.

In the 1978-81 study by Robison and Harp (1981, pp. 15–16), yellowcheek darter occurred in greatest numbers in the Middle and South Forks of the Little Red River, with populations estimated at 36,000 and 13,500 individuals, respectively, while populations in both Devils Fork and Archey Fork were estimated at approximately 10,000 individuals (Robison and Harp 1981, pp. 5–11). During this study, the four forks of the Little Red River supported an estimated yellowcheek darter population of 60,000 individuals, and the species was considered the most abundant riffle fish present (Robison and Harp 1981, p. 14). Extensive sampling of the first two tributaries of the Little Red River below Greers Ferry Dam (both named Big Creek) failed to find any yellowcheek darters, and no darters were found in immediately adjacent watersheds (Robison and Harp 1981, p. 5).

Two subsequent studies have failed to observe specimens of yellowcheek darter in the Turkey Fork reach of the Devils Fork Little Red River (Wine *et al.* 2000, p. 9; Wine and Blumenshine 2002, p. 11), since four individuals were last collected by Arkansas State University (ASU) researchers in 1999 (Mitchell *et al.* 2002, p. 129). They have been observed downstream within that system in the Beech Fork reach, where flows are more permanent. The reach

downstream of Raccoon Creek is influenced by inundation from Greers Ferry Reservoir and no longer supports yellowcheek darter. The U.S. Army Corps of Engineers channelized approximately 5.6-km (3.5 mi) of the lower Archey and South Forks Little Red River located within the city limits of Clinton, Arkansas, in 1985 for flood control purposes. Yellowcheek darter has not been collected within this 5.6-km (3.5-mi) reach since channelization. The yellowcheek darter otherwise inhabits most of its historical range, although in greatly reduced numbers in the Middle, South, Archey, and Devils Forks of the Little Red River.

While collecting specimens for the 1999 genetic study, ASU researchers discovered that the yellowcheek darter was no longer the most abundant riffle fish and was more difficult to find (Wine *et al.* 2000, p. 2). Because optimal habitat had been destroyed by the creation of Greers Ferry Lake, yellowcheek darters were confined to upper stream reaches with lower summer flow, smaller substrate particle size, and reduced gradient. A thorough status survey conducted in 2000 found the yellowcheek darter in three of four historic forks in greatly reduced numbers (Wine *et al.* 2000, p. 9). Populations in the Middle Fork were estimated at approximately 6,000 individuals, the South Fork at 2,300, and the Archey Fork at 2,000. Yellowcheek darter was not collected from the Devils Fork. Yellowcheek darter was the fifth most abundant riffle fish rangewide, while historically it was the most abundant riffle fish. Fish community composition was similar from 1978-1981 and 2000 studies, but the proportion of yellowcheek darter declined from approximately 28 percent to 6 percent of the overall composition. Fish known to co-exist with yellowcheek darter include the rainbow darter (*E. caeruleum*) and greenside darter (*E. blennioides*), which can use pool habitats during periods of low flow, as evidenced by the collection of these two species from pools during electroshocking activities. Electroshocking has not revealed yellowcheek darter in pools, suggesting perhaps that they are unable to tolerate pool conditions (deep, slow-moving water usually devoid of cobble substrate). An inability to use pools during low flows would make them much more vulnerable to seasonal fluctuations in flows that reduce riffle habitat. As a result, researchers have suggested that yellowcheek darter declines are more likely a species rather than community phenomenon (Wine *et al.* 2000, p. 11).

Weston and Johnson (2005, p. 22) estimated yellowcheek darter populations within the Middle Fork to be between 15,000 and 40,000 individuals, and between 13,000 and 17,000 individuals in the South Fork. Such increases since the status survey done in 2000 would indicate remarkable adaptability to changing environmental conditions. However, it should be noted that estimates were based upon mark/recapture estimates using the Jolly-Seber method which requires high numbers of recaptured specimens for accurate estimations. Recaptures were extremely low during that study; therefore, population estimates were highly variable and confidence in the resulting estimates is low.

The yellowcheek darter is ranked by the Arkansas Natural Heritage Commission (ANHC) (2007, pp. 2–118) as an S1G1 species: extremely rare in Arkansas, and critically imperiled globally. The Arkansas Game and Fish Commission's Arkansas Wildlife Action Plan assigns the yellowcheek darter a score of 100 out of 100, representing a critically imperiled species with declining populations (AGFC 2005, pp. 452–454).

Chucky Madtom

The chucky madtom (*Noturus crypticus*) is a small catfish, with the largest specimen measuring 6.47 cm (2.55 in) SL (Burr *et al.* 2005, p. 795). Burr *et al.* (2005) described the chucky madtom, confirming previous analyses (Burr and Eisenhour 1994), which indicated that the chucky madtom is a unique species, a member of the *Rabida* subgenus (i.e., the "mottled" or "saddled" madtoms), and a member of the *Noturus elegans* species complex (i.e., *N. elegans, N. albater*, and *N. trautmani*) ascribed by Taylor (1969 in Grady and LeGrande 1992). A robust madtom, the chucky madtom body is wide at the pectoral fin origins, greater than 23 percent of the SL. The dorsum (back) contains three dark, nearly black blotches ending abruptly above the lateral midline of the body, with a moderately contrasting, oval, pale saddle anterior to each blotch (Burr *et al.* 2005, p. 795).

The chucky madtom is a rare catfish known from only 15 specimens collected from two Tennessee streams. A lone individual was collected in 1940 from Dunn Creek (a Little Pigeon River tributary) in Sevier County, and 14 specimens have been encountered since 1991 in Little Chucky Creek (a Nolichucky River tributary) in Greene County. Only 3 chucky madtom individuals have been encountered since 2000, 1 in 2000 (Lang *et al.* 2001, p. 2) and 2 in 2004 (Conservation Fisheries, Inc. 2008, unpublished data), despite surveys that have been conducted in both historic localities at least twice a year since 2000 (Rakes and Shute 2004 pp. 2-3; Weber and Layzer 2007, p. 4 Conservation Fisheries, Inc. 2008, unpublished data). In addition, several streams in the Nolichucky, Holston, and French Broad River watersheds of the upper Tennessee River basin, which are similar in size and character to Little Chucky Creek, have been surveyed with no success (Burr and Eisenhour 1994 pp. 1-2; Shute *et al.* 1997 p. 5; Lang *et al.* 2001, pp. 2-3; Rakes and Shute 2004 p.1). Conservation Fisheries, Inc., did not find chucky madtoms in 2007 after attempting new sampling techniques (e.g., PVC "jug" traps) (Conservation Fisheries, Inc. 2008, unpublished data).

Originally, museum specimens collected from the Roaring River (Cumberland River drainage) and from the Paint Rock River system in Alabama (a Tennessee River tributary well downstream of the Nolichucky and Little Pigeon River sites) were first identified and catalogued as *Noturus elegans* and thought to be chucky madtoms. The Roaring River specimens are now considered to be a member of the *N. elegans* group, but have not been assigned to a species. While the specimens from the Paint Rock River system share typical anal ray counts with the chucky madtom, they lack the distinctive cheek characteristics, differ in pelvic ray counts, and are intermediately shaped between the chucky and saddled madtoms, *Noturus fasciatus*, with respect to body width as a proportion of SL (Burr *et al.* 2005, p. 796). Thus, the Little Chucky and Dunn Creek forms are the only forms that are recognized as chucky madtoms.

All of the specimens collected in Little Chucky Creek have been found in stream runs with slow to moderate current over pea gravel, cobble, or slab-rock substrates (Burr and Eisenhour 1994, p. 2). Habitat of these types is 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).

No studies to determine the life history and behavior of this species have been conducted. While nothing is known specifically about chucky madtom reproductive biology, recruitment, growth and longevity, food habits, or mobility, available

information for other similar members of the *Noturus* group are known. *N. hildebrandi* may reach sexual maturity at one or more years of age (i.e., during their second summer) (Mayden and Walsh 1984, p. 351). Only the largest females of *N. albater* were found to be sexually mature, and males were found to be sexually mature primarily within the second age class (Mayden *et al.* 1980, p. 339). Though, a single large male of the first age class showed evidence of sexual maturity (Mayden *et al.* 1980, p. 339). The breeding season in *N. hildebrandi* and *N. baileyi* was primarily during June through July, though development of breeding condition was initiated as early as April in *N. hildebrandi* and May in *N. baileyi* (Mayden and Walsh 1984, p. 353; Dinkins and Shute 1996, p. 56). Fecundity varied among the species for which data were available; however, it should be noted that fecundity in madtoms is generally lower in comparison to other North American freshwater fishes (Breder and Rosen 1966 *in* Dinkins and Shute 1996, p. 58). Dinkins and Shute (1996, p. 58) commented that for *N. baileyi* the combination of relatively large egg size and high level of parental care given to the fertilized eggs and larvae reduce early mortality and therefore the need to produce a large number of young. Sexual dimorphism (two different forms for male and female individuals) has been observed only in a single pair of specimens of *N. baileyi* collected during the month of May; the male of this pair had swollen lips and enlarged mandibulae (lower jaw) muscles behind the eyes, and the female had a distended abdomen (Burr *et al.* 2005, p. 795).

Both *Noturus baileyi* and *N. elegans* were found to nest under flat rocks at or near the head of riffles (Dinkins and Shute 1996, p. 56; Burr and Dimmick 1981, p. 116). Shallow pools were also used by *N. baileyi*, which was observed to select rocks of larger dimension for nesting than were used for shelter during other times of year (Dinkins and Shute 1996, p. 56). Single madtoms were found to guard nests in *N. baileyi* and *N. elegans*, behavior also exhibited by *N. albater* and *N. hildebrandi* (Dinkins and Shute 1996, p. 56; Burr and Dimmick 1981, p. 116; Mayden *et al.* 1980, p. 337; Mayden and Walsh 1984, p. 357). Males of these species were the nest guardians and many were found to have empty stomachs suggesting that they do not feed during nest guarding, which can last as long as 3 weeks.

Conservation Fisheries, Inc., had one male chucky madtom in captivity from 2004 through 2008. However, based on information from other members of this genus for which longevity data are available, *Noturus hildebrandi* and *N. baileyi*, it is unlikely that chucky madtoms can survive this long in the wild. The shorter lived of these, *N. hildebrandi* reached a maximum age of 18 months, though most individuals lived little more than 12 months, dying soon after reproducing (Mayden and Walsh 1984, p. 351). Based on length-frequency distributions, *N. baileyi* exhibited a lifespan of 2 years, with two cohorts present in a given year (Dinkins and Shute 1996, p. 53). Collection of two age classes together provided evidence that life expectancy exceeds 1 year in *N. stanauli* (Etnier and Jenkins 1980, p. 20). *Noturus albater* lives as long as 3 years (Mayden *et al.* 1980, p. 337).

Invertebrate taxa form the primary food base for madtoms. Chironomid (midge), trichopteran (caddisfly), plecopteran (stonefly), and ephemeropteran (mayfly) larvae were frequently encountered in stomach contents of *Noturus hildebrandi* (Mayden and Walsh 1984, p. 339). In *N. baileyi*, ephemeropteran nymphs comprised 70.7 percent of stomach contents analyzed, dipterans (flies, mosquitoes, midges, and gnats) 2.4 percent, trichopterans 4.4 percent, and plecopterans 1.0 percent (Dinkins and Shute 1996, p. 61). Significant daytime feeding was observed in *N. baileyi*.

The only data on mobility were for *Noturus baileyi*, which were found underneath slabrocks 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 (Dinkins and Shute 1996, p. 50).

The current range of the chucky madtom is believed to be restricted to an approximately 3-km (1.8-mi) reach of Little Chucky Creek in Greene County, Tennessee. Because this species was also collected from Dunn Creek, a stream that is in a different watershed and physiographic province than Little Chucky Creek, it is likely that the historic range of the chucky madtom encompassed a wider area in the Ridge and Valley and the Blue Ridge physiographic provinces in Tennessee than is demonstrated by its current distribution. A survey for the chucky madtom in Dunn Creek in 1996 was not successful at locating the species (Shute *et al.* 1997, p. 8). The Dunn Creek population may be extirpated (Shute *et al.* 1997, p. 6; Burr *et al.* 2005, p. 797), because adequate habitat and a diverse fish community were present at the time of the surveys, but no chucky madtoms were found. There are no population size estimates or status trends for the chucky madtom due to low numbers and only sporadic collections of specimens.

The chucky madtom is ranked by the Tennessee Natural Heritage Program (Withers 2009, p. 58) as an S1G1 species: extremely rare in Tennessee, and critically imperiled globally. In the Tennessee Comprehensive Wildlife Conservation Strategy (CWCS), species of Greatest Conservation Need (GCN) were selected based on their Global imperilment (G1-G3; critically imperiled globally—very rare or restricted throughout their range), knowledge of declining trends or vulnerability, or due to significance of an otherwise wide-ranging species (TWRA 2005, p. 36). Species of GCN were further prioritized into three different tiers to distinguish their status within the State and to determine conservation funding availability. The CWCS designated the chucky madtom as a Tier 1 GCN species in the State, representing species defined as wildlife (amphibians, birds, fish, mammals, reptiles, crustaceans, and mollusks) under Tennessee Code Annotated 70-8-101, and excluding Federally listed species (TWRA 2005, p. 44, 49). Tier 1 species were the primary focus of the Tennessee CWCS (TWRA 2005, p. 44).

Laurel Dace

The laurel dace (*Phoxinus saylori*) has two continuous black lateral stripes and black pigment covering the breast and underside of the head of nuptial (breeding) males (Skelton 2001, p. 120). While the belly, breast, and lower half of the head are typically a whitish-silvery color, at any time of the year laurel dace may develop red coloration below the lateral stripe that extends from the base of the pectoral fins to the base of the caudal fin (Skelton 2001, p. 121).

Nuptial males often acquire brilliant coloration during the breeding season, as the two lateral stripes, breast, and underside of head turn intensely black and the entire ventral (lower/abdominal) portion of the body, contiguous with the lower black stripe and black breast, becomes an intense scarlet color. All of the fins acquire a yellow color, which is most intense in the paired fins and less intense in the dorsal, anal, and caudal fins. Females also develop most of these colors, though of lesser intensity (Skelton 2001, p. 121). Broadly rounded pectoral fins of males are easily discerned from the broadly pointed fins of females at any time during the year. The maximum SL

observed is 5.1 cm (2 in) (Skelton 2001, p. 124).

Laurel dace have been most often collected from pools or slow runs from undercut banks or beneath slab boulders, typically in first or second order, clear, cool (maximum 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 boulders, and the streams tend to have a dense riparian zone consisting largely of mountain laurel (Skelton 2001, pp. 125–126).

Skelton (2001, p. 126) reported having collected nuptial individuals from late March until mid-June, though Call (Call 2004, pers. obs.) observed males in waning nuptial color during surveys on July 22, 2004. Laurel dace may be a spawning nest associate where syntopic (sharing the same habitat) with nest-building minnow species, as has been documented in *Phoxinus cumberlandensis* (Starnes and Starnes 1981, p. 366). Soddy Creek is the only location in which Skelton (2001, p. 126) has collected a nest-building minnow with laurel dace. Skelton (2001, p. 126) reports finding as many as three year classes in some collections of laurel dace, though young-of-year fish are uncommon in collections. Observations of three year classes indicate that laurel dace live as long as 3 years.

Skelton (2001, p. 126) qualitatively analyzed stomach contents of 12 laurel dace and found the species eats a mixture of food items, dominantly benthic invertebrates, including Trichopteran, Plecopteran, and Dipteran larva. Some intestines contained plant material and sand grains. Skelton observed that the morphological feeding traits of laurel dace, including 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.

Laurel dace are known historically from seven streams on the Walden Ridge portion of the Cumberland Plateau, where drainages generally meander eastward before dropping abruptly down the plateau escarpment and draining into the Tennessee River. Specifically, these seven streams occur in three independent 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 (Young's, Moccasin, and Bumbee creeks). Skelton (2001, p. 126) considered collections by the Tennessee Valley Authority (TVA) during a rotenone survey of Laurel Branch in 1976 to represent laurel dace that were misidentified as southern redbelly dace, as was found to be true for specimens collected by TVA from Horn Branch in 1976, but no specimens are available for confirmation. In 1991, and in four other surveys (in 1995, 1996 and 2004), laurel dace were not collected in Laurel Branch, leading Skelton to the conclusion that laurel dace have been extirpated from this stream (Skelton 1997, p. 13; 2001, p. 126, Skelton 2009, pers. comm.). Skelton (2009, pers. comm.) also noted that the site was impacted by silt.

The current distribution of laurel dace comprises six of the seven streams that were historically occupied; the species is considered extirpated from Laurel Branch (see above). In these six streams, they are known to occupy reaches of approximately 0.3 to 8 km (0.2 to 5 mi) in length. The laurel dace is known from a single reach in Soddy Creek, and surveys in 2004 produced only a single, juvenile laurel dace (Strange and Skelton 2005, pp. 5–6 and Appendices 1 and 2). In Horn Branch, laurel dace are known from approximately 900 m (2,953 ft), but have become increasingly difficult to collect (Skelton 1997, pp. 13–14). Skelton (1997, p. 14) reports that minnow traps have been the most successful method for collecting live laurel dace from Horn Branch, as it is difficult to electroshock due to in-stream rock formations and fallen trees. Only a single juvenile was caught in 2004 (Strange and Skelton 2005, p. 6). A total of 19 laurel dace were collected from Cupp Creek during 1995 and 1996 using an electroshocker (Skelton 1996, p. 14). However, Skelton found no laurel dace in this stream in 2004, despite attempts to collect throughout an approximately 700-m (2,297-ft) reach (Strange and Skelton 2005, p. 6).

Laurel dace were initially found in Young's, Moccasin, and Bumbee creeks in the Piney River system in 1996 (Skelton 1997, pp. 14–15). Sampling in 2004 led to the discovery of additional laurel dace localities in Young's and Moccasin creeks, but the locality where laurel dace were found in Young's Creek in 1996 was inaccessible due to the presence of a locked gate (Strange and Skelton 2005, p. 6–7). The new localities were in the headwaters of these two streams. Persistence of laurel dace at the Bumbee Creek locality was confirmed in 2004 by surveying from a nearby road using binoculars. Direct surveys were not possible because the land had been leased to a hunt club for which contact information was not available, and therefore survey permission could not be obtained (Strange and Skelton 2005, p. 7). Nuptial males are easily identified from other species present in Bumbee Creek due to their brilliant coloration during the breeding season, as the two lateral stripes, breast, and underside of head turn intensely black and the entire ventral (lower/abdominal) portion of the body, contiguous with the lower black stripe and black breast, becomes an intense scarlet color. This brilliant coloration is easily seen through binoculars at short distances by trained individuals.

No population estimates are available for laurel dace. However, based on trends observed in surveys and collections since 1991, Strange and Skelton (2005, p. 8) concluded that this species is persisting in Young's, Moccasin, and Bumbee creeks in the Piney River watershed, but is at risk of extirpation from the southern part of Walden Ridge in Soddy Creek, and in the Horn Branch and Cupp Creek areas that are tributaries to Sale Creek. As noted above, the species is considered to be extirpated from Laurel Branch, which is part of the Sale Creek system.

The laurel dace is ranked by the Tennessee Natural Heritage Program (Withers 2009, p. 60) as an S1G1 species: extremely rare in Tennessee, and critically imperiled globally.

In the Tennessee CWCS, species of GCN were selected based on their Global imperilment (G1-G3; critically imperiled globally—very rare or restricted throughout their range), knowledge of declining trends or vulnerability, or due to significance of an otherwise wide-ranging species (TWRA 2005, p. 36). Species of GCN were further prioritized into three different tiers to distinguish their status within the State and to determine conservation funding availability. The CWCS designated the laurel dace as a Tier-1 GCN species in the State, representing species defined as wildlife (amphibians, birds, fish, mammals, reptiles, crustaceans, and mollusks) under Tennessee Code Annotated 70-8-101, and excluding federally listed species (TWRA 2005, p. 44, 49). Tier 1 species were the primary focus of the Tennessee CWCS(TWRA 2005, p. 44).

Previous Federal Action

Cumberland Darter

On September 18, 1985, the Service announced that the Cumberland darter was being considered for possible addition to the List of Endangered and Threatened Wildlife (50 FR 37958). It was assigned a Category 2 status, which was given to those species for which the Service possessed information

indicating that proposing to list as endangered or threatened was possibly appropriate, but for which conclusive data on biological vulnerability and threat was not currently available to support proposed rules. In the 1989, 1991, and 1994 Candidate Notices of Review, the Cumberland darter was again assigned a Category 2 status (54 FR 554, 56 FR 58804, 59 FR 58982).

Assigning categories to candidate species was discontinued in 1996, and only species for which the Service had sufficient information on biological vulnerability and threats to support issuance of a proposed rule were regarded as candidate species (61 FR 7596). Candidate species were also assigned listing priority numbers based on immediacy and the magnitude of threat, as well as their taxonomic status. In the 1999, 2001, 2002, and 2004 Candidate Notices of Review, the Cumberland darter was identified as a listing priority 6 candidate species (64 FR 57533, 66 FR 54807, 67 FR 40657, 69 FR 24875). We published a petition finding for Cumberland darter in the 2005 Candidate Notice of Review (70 FR 24869) in response to a petition received on May 11, 2004. We continued to assign the Cumberland darter a listing priority number of 6, reflecting a threat magnitude and immediacy of high and non-imminent, respectively. In the 2006 Candidate Notice of Review, we changed the listing priority number for Cumberland darter from 6 to 5, because it was formally described as a distinct species (71 FR 53755). Based on new molecular evidence, the subspecies *Etheostoma nigrum susanae* was elevated to specific status, *Etheostoma susanae*. The Cumberland darter continued to be recognized as a listing priority 5 candidate in the 2009 Candidate Notice of Review (74 FR 57869).

Rush Darter

We first identified the rush darter as a candidate for listing in the 2002 Candidate Notice of Review (67 FR 40657). The rush darter was assigned a listing priority number of 5. In the 2004 (69 FR 24875) and 2005 (70 FR 24869) Candidate Notice of Review, the rush darter retained a listing priority number of 5. We published a petition finding for rush darter in the 2005 Candidate Notice of Review (70 FR 24869) in response to a petition received on May 11, 2004. The rush darter retained a listing priority number of 5 in the 2005 Candidate Notice of Review (70 FR 24869), in accordance with our priority guidance published on September 21, 1983 (48 FR 43098).

In 2006, we changed the listing priority number of the rush darter from 5 to 2 based on the imminent threat of water quality deterioration (i.e., increased sedimentation due to urbanization, road maintenance, and silviculture practices) (71 FR 53755). In the 2009 Candidate Notice of Review (74 FR 57869), the rush darter retained a listing priority of 2.

Yellowcheek Darter

We first identified the yellowcheek darter as a candidate for listing in the 2001 Candidate Notice of Review (66 FR 54807). The yellowcheek darter was assigned a listing priority number of 2 and has retained that status in the 2002, 2004, 2005, 2006, 2007, 2008, and 2009 Candidate Notices of Review (67 FR 40657, 69 FR 24875, 70 FR 24869, 71 FR 53755, 72 FR 69073, 73 FR 75175). We published a petition finding for yellowcheek darter in the 2005 Candidate Notice of Review in response to a petition received on May 11, 2004 (70 FR 24869). The yellowcheek darter is covered by a 2007 programmatic Candidate Conservation Agreement with Assurances (71 FR 53129) that covers the entire range of the species.

Chucky Madtom

We first identified the chucky madtom as a possible candidate for listing in the 1994 Candidate Notice of Review (59 FR 58982). It was assigned a Category 2 status, which was given to those species for which the Service possessed information indicating that proposing to list as endangered or threatened was possibly appropriate, but for which persuasive data on biological vulnerability and threat was not currently available to support proposed rules. In the 2002, 2004, 2005, 2006, 2007, 2008, and 2009 Candidate Notices of Review, the chucky madtom was again identified as a listing priority 2 candidate species (67 FR 40657, 69 FR 24875, 70 FR 24869, 71 FR 53755, 72 FR 69033, 73 FR 75236, 74 FR 57869).

We published a petition finding for chucky madtom in the 2005 Candidate Notice of Review (70 FR 24869) in response to a petition received on May 11, 2004, stating the chucky madtom would retain a listing priority of 2.

In 1994, the chucky madtom was first added to the candidate list as *Noturus* sp. (59 FR 58982). Subsequently, and based on morphological and molecular evidence, the chucky madtom was formally described as a distinct species, *Noturus crypticus* (Burr *et al.* 2005). We included this new information in the 2006 Candidate Notice of Review (71 FR 53755).

Laurel Dace

We first identified the laurel dace as a new candidate for listing in the 2007 Candidate Notice of Review (72 FR 69036). New candidates are those taxa for which we have sufficient information on biological vulnerability and threats to support preparation of a listing proposal, but for which development of a listing regulation is precluded by other higher priority listing activities.

In the 2007 Candidate Notice of Review, we assigned the laurel dace a listing priority of 5 (72 FR 69036), and it was again identified as a listing priority 5 candidate species in the 2008 and 2009 Candidate Notices of Review (73 FR 75236, 74 FR 57869). This number reflects the high magnitude and non-imminence of threats to the species.

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C 1533), and its implementing regulations (50 CFR Part 424), set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. We may determine a species to be endangered or threatened due to one or more of the five factors described in section 4(a)(1) of the Act. The five listing factors are: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The primary threat to the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace is physical habitat destruction/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; KDOW 2006, pp. 178–185; Skelton 1997, pp. 17, 19; Thomas 2007, p. 5).

Land use practices that affect sediment and water discharges into a stream can also increase the erosion or sedimentation pattern of the stream, which can lead to the destruction or modification of in-stream habitat and riparian vegetation, stream bank collapse, and increased water turbidity and temperature. Sediment has been shown to abrade and or suffocate bottom-dwelling algae and other organisms by clogging gills; reducing aquatic insect diversity and abundance; impairing fish feeding behavior by altering prey base and reducing visibility of prey; impairing reproduction due to burial of nests; and, ultimately, negatively impacting fish growth, survival, and reproduction (Waters 1995, pp. 5–7, 55–62; Knight and Welch 2001, pp. 134–136). Wood and Armitage (1997, pp. 211–212) identified 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. The effects of these types of threats will likely increase as development increases in these watersheds.

Non-point source pollution from land surface runoff can originate from virtually any land use activity and may be correlated with impervious surfaces and storm water runoff. Pollutants may include sediments, fertilizers, herbicides, pesticides, animal wastes, septic tank and gray water leakage, pharmaceuticals, and petroleum products. These pollutants tend to increase concentrations of nutrients and toxins in the water and alter the chemistry of affected streams such that the habitat and food sources for species like the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace are negatively impacted. Construction and road maintenance activities associated with urban development typically involve earth-moving activities that increase sediment loads into nearby streams. Other siltation sources, including timber harvesting, natural gas development activities, clearing of riparian vegetation, mining, and agricultural practices, allow exposed earth to enter streams during or after precipitation events. These activities result in canopy removal, elevated stream temperatures, and increased siltation, thereby degrading habitats used by fishes for both feeding and reproduction (Mattingly *et al.* 2005, p. 5). Undisturbed riparian corridors are important because they prevent elevated stream temperatures due to solar heating, serve as buffers against non-point source pollutants, provide submerged root materials for cover and feeding, and help to stabilize stream banks (Mattingly *et al.* 2005, p. 5).

Cumberland Darter

The Cumberland darter's preferred habitat characteristics (i.e., low- to moderate-gradient, low current velocity, backwater nature) make it extremely susceptible to the effects of siltation (O'Bara 1991, p. 11). Sediment (siltation) has been listed repeatedly by the Kentucky Natural Resources and Environmental Protection Cabinet (Division of Water) as the most common stressor of aquatic communities in the upper Cumberland River basin (KDOW 1996, pp. 50–53, 71–75; 2002, pp. 39–40; 2006, pp. 178–185). The primary source of sediment was identified as resource extraction (e.g., coal mining, logging). The streams within the Cumberland darter's current range that are identified as impaired (due to siltation from mining, logging, and agricultural activities) and have been included on Kentucky's 303(d) list of impaired waters (KDOW 2007, pp. 155–166) include Jenneys Branch (Indian Creek basin), an unnamed tributary of Jenneys Branch (Indian Creek basin), Ryans Creek (Jellico Creek basin), Marsh Creek, and Wolf Creek (Clear Fork basin).

Siltation can also occur in the Cumberland darter's known habitat as a result of construction activities for human development. For example, during the fall of 2007, an 8.4-km (5.2-mi) reach of Barren Fork in McCreary County, Kentucky, was subjected to a severe sedimentation event (Floyd 2008, pers. obs.). This event occurred despite the fact that approximately 95 percent of the Barren Fork watershed is under Federal ownership within the Daniel Boone National Forest (DBNF). Construction activities associated with the development of a 40.47-hectare (100-acre) park site caused excessive sedimentation of two unnamed headwater tributaries of Barren Fork. Successive, large rainfall events in September and October carried sediment off site and impacted downstream areas of Barren Fork known to support Cumberland darters and the Federally threatened blackside dace. Our initial site visit on September 7, 2007, confirmed that sediment had been carried off site, resulting in significant habitat degradation in the Barren Fork mainstem and "adverse effects" on the blackside dace. Several smaller sediment events have occurred despite Federal and State attempts to resolve the issue, and on July 31, 2008, another large rainfall event resulted in excessive sedimentation in two Barren Fork watershed streams.

Another significant threat to the Cumberland darter is water quality degradation caused by a variety of non-point source pollutants. Coal mining represents a major source of these 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, have shown declines in abundance over time as conductivity increased in streams affected by mining (Hartowicz 2008, pers. comm.). Studies indicate that blackside dace are generally absent when conductivity values exceed 240 microSiemens (µS) (Mattingly *et al.* 2005, p. 59; Black and Mattingly 2007, p. 12).

Other non-point 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. Non-point 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 seriously impact aquatic species (KDOW 1996, pp. 48–50; KDOW 2006, pp. 70–73).

In summary, habitat loss and modification represent significant threats to the Cumberland darter. Severe degradation from sedimentation, physical habitat disturbance, and contaminants threatens the habitat and water quality on which the Cumberland darter depends. Sedimentation from coal mining, silviculture, agriculture, and development sites within the upper Cumberland basin negatively affect the

Cumberland darter by reducing growth rates, disease tolerance, and gill function; reducing spawning habitat, reproductive success, and egg, larvae, and juvenile development; modifying migration patterns; reducing food availability through reductions in prey; and reducing foraging efficiency. Contaminants associated with coal mining (metals, other dissolved solids), domestic sewage (bacteria, nutrients), and agriculture (fertilizers, pesticides, herbicides, and animal waste) cause degradation of water quality and habitats through increased acidity and conductivity, instream oxygen deficiencies, excess nutrification, and excessive algal growths. Furthermore, these threats faced by the Cumberland darter from sources of sedimentation and contaminants are imminent; the result of ongoing projects that are expected to continue indefinitely. As a result of the imminence of these threats combined with the vulnerability of the remaining small populations to extirpation from natural and manmade threats, we have determined that the present or threatened destruction, modification, or curtailment of the Cumberland darter habitat and range represents a significant threat of high magnitude. We have no information indicating that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Rush Darter

Sediment is the most abundant pollutant in the Mobile River Basin (Alabama Department of Environmental Management 1996, pp. 14–15). Within the Clear Creek drainage, Johnston and Kleiner (2001, p. 4) reported that during August 2001, land uses in the Doe Branch and Mill Creek area appeared to be dominated by forests, and that there were no obvious threats to water quality. However, Johnston and Kleiner (2001, p. 4) reported that clear cutting in the Wildcat Branch watershed may have increased sedimentation into the stream. Approximately 84 percent (i.e., 5 km or 3 mi) of Wildcat Branch is privately owned, and recent land exchanges within the Bankhead National Forest have taken about 0.9 km (0.6 mi) of stream west of Clear Creek out of U.S. Forest Service (USFS) management and protection. In 2001, Service and USFS personnel noted heavy siltation at the County Road 329 Bridge over Doe Branch during a modest spring rain and also noted heavy siltation at several other road crossings and in other tributary streams in the immediate area. Drennen (2005, pers. obs.) noted increasing erosion and deepening of roadside ditches, and erosion of the gravel County Road 329 at Doe and Wildcat branches, contributing to the sediment in these streams.

Blanco (2001, p. 68) identified siltation from development projects as the greatest threat to the fauna of Turkey Creek. Point source siltation sites have impacted the Turkey Creek watershed, including four sites affecting Beaver Creek, a major tributary to Turkey Creek. These sites included bridge, road, and sewer line construction sites and a wood pallet plant (Drennen 1999, pers. obs.). In addition, Turkey Creek at the confluence of Tapawingo and Penny Springs is often sediment laden and completely turbid after medium to heavy rainfall. Rapid urbanization in this area renders this population extremely vulnerable during the breeding season when rush darters concentrate in wetland pools and shallow pools with aquatic vegetation in headwater streams (Stiles and Mills 2008, p. 5; Fluker *et al.* 2007, p. 10).

Four major soil types occur within the Turkey Creek watershed, and all are considered highly erodible due to the steep topography (Spivey 1982, pp. 5, 7, 8, 14). Therefore, any activity that removes native vegetation on these soils can be expected to lead to increased sediment loads in Turkey Creek (USFWS 2001, p. 59370), including the areas near Penny and Tapawingo Springs. Industrialization is extensive and expanding throughout the watershed, particularly near the type locality for the rush darter (Bart and Taylor 1999, p. 33; Drennen 2007, pers. obs.).

Abundant water from springs throughout the rush darter's range, especially in Pinson Valley, Alabama, is needed as a flushing effect to provide constant cleansing of the streams with cool, fresh water. However, ongoing destruction of spring heads and wetlands has significantly reduced the species' movement and colonization. Little Cove Creek and Bristow Creek spring heads have been channelized, and the head of Cove Spring has a pumping facility built on it (Fluker *et al.* 2007, p. 1). Spring water in these systems may be more impacted by site-specific spring head disturbances rather than overall spring drainage disturbances (Drennen 2005, per. obs.). Alteration of spring head habitats has reduced water quality and increased sediment loads into spring-fed tributary streams throughout the range of the rush darter.

In summary, the most significant threat to rush darters is siltation, caused by an increase in urbanization surrounding the streams and springs, road maintenance and silviculture practices. This threat is ongoing and thus considered imminent. The magnitude of the threat is high due to the small population and high levels of siltation in the springs and streams. We have no information indicating that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Yellowcheek Darter

Robison and Harp (1981, p. 17), McDaniel (1984, p. 92), and Robison and Buchanan (1988, p. 429) have attributed the decline in populations of yellowcheek darters in the four forks of the Little Red River and main stem Little Red River to habitat alteration and degradation. The suspected primary cause of the species' decline is the impoundment of the Little Red River and lower reaches of the Devils, Middle, and South Forks, areas that in the past provided optimal habitat for this species. The creation of Greers Ferry Lake in 1962 converted optimal yellowcheek darter habitat (clear, cool, perennial flow with large substrate particle size (Robison and Buchanan 1988, p. 429)), to a deep, standing water environment. This dramatic change in habitat flooded spawning sites, altered habitat radically, and changed chemical and physical characteristics in the streams which provide optimal habitat for this species. Impoundments profoundly alter channel characteristics, habitat availability, and flow regime with serious consequences for biota (Allan and Flecker 1993, p. 36, Ward and Stanford 1995, pp. 105–119). Some of these include converting flowing to still waters, increasing depths and sedimentation, decreasing dissolved oxygen, drastically altering resident fish populations (Neves *et al.* 1997, p. 63), disrupting fish migration, and destroying spawning habitat (Ligon *et al.* 1995, pp. 185–86). Channelization of the lower 5.6 km (3.5 miles) of Archey and South Forks in 1985 and subsequent channel maintenance to this day by the U.S. Army Corps of Engineers and City of Clinton, Arkansas, degraded habitat in this reach as well as segments upstream of the project area. Based upon current knowledge and a 2004-2005 threats assessment (Davidson and Wine 2004, pp. 6–13; Davidson 2005, pp. 1–4), gravel mining, unrestricted cattle access into streams, water withdrawal for agricultural and recreational purposes (i.e., golf courses), lack of adequate riparian buffers, construction and maintenance of county roads, and non-point source pollution arising from a broad array of activities

also appear to be degrading suitable habitat for the species. The threats assessment documented occurrences of the aforementioned activities and found 52 sites on the Middle Fork, 28 sites on the South Fork, 8 sites on Archey Fork (Davidson 2005, pp. 1–4), and 1 site in the Turkey/Beech/Devils Fork system that are adversely affected by these activities and likely contributors to the decline of the species.

Yellowcheek darter numbers have declined by 83 percent in both the Middle Fork and South Fork of the Upper Little Red River watershed, and 60 percent in the Archey Fork in the past 20 years. Yellowcheek darter was not found in the Turkey Fork reach of the Devils Fork during the 2000 status survey, and is presumed to be extirpated in this reach. A comparison of inhabited stream reaches in the 1981 survey versus the 2000 survey reveals that the largest decline occurred in the South Fork, where reaches formerly inhabited by the yellowcheek darter declined by 70 percent. The second largest decline occurred in the Archey Fork, where there was a 60 percent reduction in inhabited stream reach. The Middle Fork showed the least decline in inhabited stream reach, at 22 percent.

Ozark headwater streams typically exhibit seasonal fluctuations in flows, with flow rates highest in spring, and lowest in late summer and fall. The upper reaches of these small streams are most affected by seasonally fluctuating water levels (Robison and Harp 1981, p. 17). As a result, they often lack consistent and adequate flows, and by late summer or fall are reduced to a series of isolated pools (Wine 2008, pers. comm.). Expanding natural gas development activities that began in the upper Little Red River watershed in 2006 require large quantities of water and pose an imminent threat to the continued existence of yellowcheek darter as these activities rapidly expand and increase in the watersheds of all four forks (Davidson 2008, pers. comm.). Because the yellowcheek darter requires permanent flows with moderate to strong current (Robison and Buchanan 1988, p. 429), and because downstream refugia have been lost, seasonal fluctuations in stream flows that reduce moving water (lotic habitat) to a series of isolated pool habitats are a serious threat.

Additional contributors to yellowcheek declines and continuing threats include habitat degradation from land use activities in the watershed, including agriculture and forestry. Traditional farming practices, feed-lot operations, and associated poor land use practices contribute many pollutants to rivers. Neves *et al.* (1997, p. 65) suggest that agriculture affects 72 percent of impaired river reaches in the United States. Nutrients, bacteria, pesticides, and other organic compounds generally are found in higher concentrations in agricultural areas than forested areas. Nutrient concentrations in streams may result in increased algal growth in streams, and a related alteration in fish community composition (Petersen *et al.* 1999, p. 16). Major agricultural activities within the Little Red River watershed include poultry, dairy, swine, and beef cattle operations.

The Arkansas Natural Resources Conservation Service has identified animal wastes, nutrients, excessive erosion, loss of plant diversity, and declining species as water quality concerns associated with agricultural land use activities in the upper Little Red River watershed (NRCS 1999). Large poultry and dairy operations increase nutrient inputs to streams when producers apply animal waste to pastures to stimulate vegetation growth for grazing and hay production. Continuous grazing methods in the watershed allow unrestricted animal access to grazing areas, and on steeper slopes this results in increased runoff and erosion (NRCS 1999). Since pastures often extend directly to the edge of the stream, and lack a riparian zone with native vegetation, runoff from pastures carries pollutants directly into streams. Eroding stream banks also result in alterations to stream hydrology and geomorphology, degrading habitat. Livestock spend a disproportionate amount of time in riparian areas during hot summer months. Trampling and grazing can change and reduce vegetation and eliminate riparian areas by channel widening, channel aggradation, or lowering of the water table (Armour *et al.* 1991, pp. 7–11).

Additionally, earthen dams were constructed across a riffle in the lower South Fork to create a pool for annual chuck wagon races for many years leading up to 2003. The Service and U.S. Army Corps of Engineers met with the responsible landowner in 2004 and suggested an alternative to dam construction that would minimize impacts to the yellowcheek darter. These recommendations were followed for several years; however, another earthen dam was constructed in 2008 using material from the South Fork to facilitate events associated with the annual chuck wagon races. This dam, like its predecessors, was unpermitted and resulted in significant habitat degradation and alteration for several miles upstream and downstream of the site.

The chuck wagon race event draws approximately 20,000 to 30,000 people per year to the South Fork Little Red River for a 1–week period around Labor Day. Horses and wagons traverse the river and its tributaries for miles leading to increased habitat disturbance, sedimentation, and trampling. The chuck wagon races continue to grow annually and pose a significant threat to the continued existence of yellowcheek darters in the South Fork Little Red River.

Timber harvesting activities involving clear-cutting entire steep hillsides were observed during 1999-2000 in the Devils Fork watershed (Wine 2008, pers. comm.). The failure to implement voluntary State best management practices (BMPs) for intermittent and perennial streams during timber harvests has resulted in water quality degradation and habitat alteration in stream reaches adjacent to harvesting operations. When timber harvests involve clear cutting to the water's edge, without leaving a riparian buffer, silt and sediment enter streams lying at the bottom of steep slopes. The lack of stream side vegetation also promotes bank erosion that alters stream courses and introduces large quantities of sediment into the channel (Allan 1995, p. 321). Timber harvest operations that use roads on steep slopes to transport timber can carry silt and sediment from the road into the stream at the bottom of the slope. Logging impacts on sediment production are considerable, but often erosion of access and haul roads produces more sediment than the land harvested for timber (Brim Box and Mossa 1999, p. 102). These activities have occurred historically and continue to occur in the upper Little Red River watershed.

Natural gas exploration and development is a newly emerging threat to yellowcheek darter populations. Significant erosion and sedimentation issues associated with natural gas development activities, particularly pipelines (herein defined as all flow lines, gathering lines, and non-interstate pipelines), were first documented by Service biologists during 2007 in the South Fork Little Red River watershed. In June 2008, the Service began documenting significant erosion and sedimentation issues associated with natural gas pipeline construction and maintenance as natural gas development activities expanded into the watershed. Service biologists documented significant erosion and sedimentation at almost every new pipeline stream crossing in the South Fork and Middle Fork Little Red River watersheds, regardless of the diameter of the pipe.

Channel incision was documented at numerous stream crossings that are tributaries to the South Fork Little Red River. The incision increased erosion and sedimentation, as well as altering the hydrology and geomorphology characteristics of the streams. Pipeline rights-of-way were found to have one of the following conditions: (1) no BMPs (i.e., silt fences, grade breaks, non-erodible stream crossing materials) installed to prevent erosion and sedimentation, (2) ineffective erosion minimization practices in place, (3) effective erosion minimization practices that had not been maintained and, thus, had become ineffective, or (4) final reclamation of the pipeline right-of-way had not occured for months and in some cases greater than a year after construction activities ceased leading to prolonged periods of erosion and sedimentation. The magnitude of the impacts to the South Fork and Middle Fork Little Red River from 2007-2008 also was exacerbated due to above average rainfall, which led to more frequent and larger pipeline erosion events.

In summary, threats to the yellowcheek darter from the present destruction, modification, or curtailment of its habitat or range negatively impact the species. Threats include such activities as impoundment, sedimentation (from a broad array of activities), nutrient enrichment, gravel mining, channelization/channel instability, and natural gas development. These threats are considered imminent and of high magnitude throughout the species' entire range. We have no information indicating that the magnitude or imminence of these threats is likely to be appreciably reduced in the foreseeable future, and in the case of pipeline disturbance, we expect this threat to become more problematic over the next several years as natural gas development continues to intensify.

Chucky Madtom

The current range of the chucky madtom is believed to be restricted to an approximately 1.8-mi (3-km) reach of Little Chucky Creek in Greene County, Tennessee. Land use data from the Southeast GAP Analysis Program (SE-GAP) show that land use within the Little Chucky Creek watershed is predominantly dominated by agricultural use, with the vast majority of agricultural land being devoted to production of livestock and their forage base (USGS 2008).

Traditional farming practices, feed-lot operations, and associated land use practices contribute many pollutants to rivers. Neves *et al.* (1997, p. 65) suggest that agriculture affects 72 percent of impaired river reaches in the United States. These practices erode stream banks and result in alterations to stream hydrology and geomorphology, degrading habitat. Nutrients, bacteria, pesticides, and other organic compounds generally are found in higher concentrations in agricultural areas than forested areas. Nutrient concentrations in streams may result in increased algal growth in streams, and a related alteration in fish community composition (Petersen *et al.* 1999, p. 16).

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, non-point 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 Little Chucky Creek watershed also contains a portion of the city of Greeneville, providing an additional source for input of sediments and contaminants into the creek and 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.

The chucky madtom is a bottom-dwelling species. Bottom-dwelling fish species are especially susceptible to sedimentation and other pollutants that degrade or eliminate habitat and food sources (Berkman and Rabeni 1987, pp. 290–292; Richter *et al.* 1997, p. 1091; Waters 1995, p. 72). Etnier and Jenkins (1980, p. 20) suggested that madtoms, which are heavily dependent on chemoreception (detection of chemicals) for survival, are susceptible to human-induced disturbances, such as chemical and sediment inputs, because the olfactory (sense of smell) "noise" they produce could interfere with a madtom's ability to obtain food and otherwise monitor its environment.

In summary, threats to the chucky madtom from the present destruction, modification, or curtailment of its habitat or range negatively impact the species. Degradation from sedimentation, physical habitat disturbance, and contaminants threaten the habitat and water quality on which the chucky madtom depends. Sedimentation from agricultural lands could negatively affect the chucky madtom 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. 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. Furthermore, these threats faced by the chucky madtom from sources of sedimentation and contaminants are imminent; the result of ongoing agricultural practices that are expected to continue indefinitely. As a result of the imminence of these threats combined with the vulnerability of the remaining small population to extirpation from natural and manmade threats, we have determined that the present or threatened destruction, modification, or curtailment of the chucky madtom habitat and range represents a significant threat of high magnitude. We have no information indicating that the magnitude or imminence of these threats is likely to be appreciably reduced in the foreseeable future.

Laurel Dace

Skelton (2001, p. 127) concluded that the laurel dace is "presumably tolerant of some siltation." However, Strange and Skelton (2005, p. 7 and Appendix 2) observed levels of siltation they considered problematic during later surveys for the laurel dace and concluded this posed a threat in several localities throughout the range of the species. Sediment has been shown to abrade and or suffocate bottom-dwelling fish and other organisms by clogging gills; reducing aquatic insect diversity and abundance; impairing fish feeding behavior by altering prey base and reducing visibility of prey; impairing reproduction due to burial of nests; and, ultimately, negatively impacting fish growth, survival, and reproduction (Waters 1995, pp. 5–7, 55–62; Knight and Welch 2001, pp. 134–136). However, we do not currently know what levels of siltation laurel dace are able to withstand before populations begin to decline due to these siltation-related stressors. The apparent stability of the northern population of laurel dace in the Piney River system suggests

that this species is at least moderately tolerant of siltation-related stressors. We do not know the extent to which other factors might have driven the decline of the southern populations in Sale and Soddy Creeks.

Of the streams inhabited by the southern populations recognized by Strange and Skelton (2005, p. Appendix 2), the reaches from which laurel dace have been collected in Soddy Creek and Horn Branch approach 0.6 mi (1 km) in length. In Cupp Creek, collections of this species are restricted to less than 984 ft (300 m) of stream, in spite of surveys well beyond the reach known to be inhabited. In each of the streams occupied by the southern populations, Strange and Skelton (2005, Appendix 2) identified siltation as a factor that could alter the habitat and render it unsuitable for laurel dace. The restricted distribution of laurel dace in streams inhabited by the southern populations leaves them highly vulnerable to potential deleterious effects of excessive siltation or other localized disturbances.

A newly emerging threat to laurel dace in Soddy Creek is the conversion of pine plantations to row crop agriculture. Two large plantations within the Soddy Creek Watershed were harvested and then converted to tomato farms. An irrigation impoundment was built on one Soddy Creek tributary and another is under construction. As a result of these activities, a large silt source was introduced into the Soddy Creek headwaters. In addition to contributing sediment, crop fields often allow runoff from irrigation water to flow directly into the creek. This water contains fungicides, herbicides, and fertilizers (Thurman 2010, pers. comm.).

Strange and Skelton (2005, p. 7 and Appendix 2) identified siltation as a threat in all of the occupied Piney River tributaries (Young's, 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. Strange and Skelton (2005, pp. 7 and 8 and Appendix 2) also commented on excessive siltation in localities they sampled on Young's 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 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, mixed hardwoods, pine, and mountain laurel. 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 (land adjacent to stream channels) 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.

Habitat destruction and modification also stem from existing or proposed infrastructure development in association with timber harvesting. 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.

In summary, the primary threat to laurel dace throughout its range is excessive siltation resulting from agriculture and extensive timber harvesting involving both inadequate riparian buffers in harvest areas and the failure to use best management practices in road construction. Severe degradation from sedimentation, physical habitat disturbance, and contaminants threatens the habitat and water quality on which the laurel dace depends. Sedimentation from 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. These threats faced by the laurel dace from sources of sedimentation and contaminants are imminent; the result of ongoing agriculture and forestry practices that are expected to continue. As a result of the imminence of these threats, we have determined that the present or threatened destruction, modification, or curtailment of the laurel dace habitat and range represents a significant threat of high magnitude. We have no information indicating that the magnitude or imminence of these threats is likely to be appreciably reduced in the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace are not commercially utilized. Individuals have been taken for scientific and private collections in the past, but collecting is not considered a factor in the decline of these species and is not expected to be so in the future. The available information does not indicate that overutilization is likely to become a threat to any of these five fishes in the foreseeable future.

C. Disease or Predation

Disease is not considered to be a factor in the decline of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, or laurel dace. Although the Cumberland darter, rush darter, yellowcheek darter, and laurel dace are undoubtedly consumed by predators, the available information suggests that this predation is naturally occurring, or a normal aspect of the population dynamics. As a result, we do not believe that predation is considered to currently pose a threat to these species. Furthermore, the information we do have, does not indicate that disease or predation is likely to become a threat to any of these five fishes in the foreseeable future.

D. The Inadequacy of Existing Regulatory Mechanisms

Cumberland Darter

The Cumberland darter and its habitats are afforded some protection from water quality and habitat degradation under the Clean Water Act of 1977 (33 U.S.C. 1251 *et seq.*), Kentucky's Forest Conservation Act of 1998 (KRS 149.330-355), Kentucky's Agriculture Water Quality Act of 1994 (KRS 224.71-140), additional Kentucky laws and regulations regarding natural resources and environmental protection (KRS 146.200-360; KRS 224; 401 KAR 5:026, 5:031), and Tennessee's Water Quality Control Act of 1977 (T.C.A. 69-

3-101). However, as demonstrated under Factor A, population declines and degradation of habitat for this species are ongoing despite the protection afforded by these laws and corresponding regulations. While these laws have resulted in some improvements in water quality and stream habitat for aquatic life, including the Cumberland darter, they alone have not been adequate to fully protect this species; sedimentation and non-point source pollutants continue to be a significant problem.

States maintain water-use classifications through issuance of National Pollutant Discharge Elimination System (NPDES) permits to industries, municipalities, and others that set maximum limits on certain pollutants or pollutant parameters. For water bodies on the 303(d) list, States are required under the Clean Water Act to establish a total maximum daily load (TMDL) for the pollutants of concern that will bring water quality into the applicable standard. Three Cumberland darter streams, Jenneys Branch, Marsh Creek, and Wolf Creek, have been identified as impaired by the Kentucky Division of Water and placed on the State's 303(d) list (KDOW 2008). Causes of impairment were listed as siltation/sedimentation from agriculture, coal mining, land development, and silviculture and organic enrichment/eutrophication from residential areas. TMDLs have not yet been developed for these pollutants.

The Cumberland darter has been designated as an endangered species by Tennessee (TWRA 2005, p. 240) and Kentucky (KSNPC 2005, p. 11), but the designation in Kentucky conveys no legal protection. Under the Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974 (Tennessee Code Annotated §§ 70-8-101-112), "[I]t is unlawful for any person to take, attempt to take, possess, transport, export, process, sell or offer for sale or ship nongame wildlife, or for any common or contract carrier knowingly to transport or receive for shipment nongame wildlife." Further, regulations included in the Tennessee Wildlife Resources Commission Proclamation 00-15 Endangered Or Threatened Species state the following: "Except as provided for in Tennessee Code Annotated, Section 70-8-106 (d) and (e), it shall be unlawful for any person to take, harass, or destroy wildlife listed as threatened or endangered or otherwise to violate terms of Section 70-8-105 (c) or to destroy knowingly the habitat of such species without due consideration of alternatives for the welfare of the species listed in (1) of this proclamation, or (2) the United States list of Endangered fauna." Under these regulations, potential collectors of this species are required to have a State collection permit. However, in terms of project management, this regulation only provides for the consideration of alternatives, and does not require the level of project review afforded by the Act.

In 7 of 12 streams where the Cumberland darter still occurs, the species is indirectly provided some protection from Federal actions and activities through the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), because these streams (or basins) also support the Federally threatened blackside dace and occupy watersheds that are at least partially owned by the Federal government (Daniel Boone National Forest). The five remaining streams supporting populations of the Cumberland darter are not afforded this protection.

In summary, population declines and degradation of habitat for the Cumberland darter are ongoing despite the protection afforded by State and Federal laws and corresponding regulations. Because of the vulnerability of the small remaining populations of the Cumberland darter and the imminence of these threats, we find the inadequacy of existing regulatory mechanisms to be a significant threat of high magnitude. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Rush Darter

The rush darter and its habitats are afforded some protection from water quality and habitat degradation under the Clean Water Act and the Alabama Water Pollution Control Act, as amended, 1975 (Code of Alabama, §§ 22-22-1 to 22-22-14). However, as demonstrated under Factor A, population declines and degradation of habitat for this species are ongoing despite the protection afforded by these laws. While these laws have resulted in some improvement in water quality and stream habitat for aquatic life, including the rush darter, they alone have not been adequate to fully protect this species; sedimentation and non-point source pollutants continue to be a significant problem. Sediment is the most abundant pollutant in the Mobile River Basin and the greatest threat to the rush darter. There are currently no requirements within the scope of other environmental laws within Alabama to specifically consider the rush darter or ensure that a project will not jeopardize its continued existence.

The State of Alabama maintains water-use classifications through issuance of NPDES permits to industries, municipalities, and others that set maximum limits on certain pollutants or pollutant parameters. For water bodies on the 303(d) list, States are required under the Clean Water Act to establish a TMDL for the pollutants of concern that will bring water quality into the applicable standard. The State of Alabama has not identified any impaired water bodies in Jefferson, Winston, and Etowah Counties in the immediate or upstream portion of the rush darter range or watersheds in Winston or Etowah County. However, sedimentation events are usually related to the stormwater runoff episodes, and are usually not captured by routine water quality sampling. Although stormwater events are temporary, they are still very significant and destructive to the species, habitat, vegetation and food sources, as previously mentioned. When the stormwater water events abate, the water becomes more hospitable to the species, due to the spring influences and constant flushing from spring water. Thus, there is no listing or label for these bodies as impaired and are generally considered satisfactory for the species when stormwater is not involved.

In summary, population declines and degradation of habitat for the rush darter are ongoing despite the protection afforded by State and Federal laws and corresponding regulations. Despite these laws, sedimentation and non-point source pollution continue to adversely affect the species. Because of the vulnerability of the small remaining populations of the rush darter and the imminence of these threats, we find the inadequacy of existing regulatory mechanisms to be a significant threat of high magnitude. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Yellowcheek Darter

The Arkansas Department of Environmental Quality (ADEQ) has established water quality standards for surface waters in Arkansas, including specific standards for those streams designated as "extraordinary resource waters" (ERW) based on "a combination of the chemical, physical, and biological characteristics of a waterbody and its watershed, which is characterized by

scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values" (ADEQ Regulation 2, November 25, 2007). As described in ADEQ's Regulation 2, Section 2.203, ERW "shall be protected by (1) water quality controls, (2) maintenance of natural flow regime, (3) protection of in stream habitat, and (4) pursuit of land management protective of the watershed." This regulatory mechanism has precluded most large scale commercial gravel mining in the watershed; however, illegal gravel mining is still considered a cause of habitat degradation and a threat in the Little Red River watershed. The Middle, Archey, and Devils (and its major tributaries) forks are designated as ERW. The South Fork has not been designated as an ERW. The applicable water quality standards have not protected yellowcheek darter habitat from the damaging habitat alterations and water quality degradation from traditional land use and expanding natural gas development activities.

The Arkansas Forestry Commission is the State agency responsible for establishing Best Management Practices (BMPs) for timber harvests in Arkansas. BMPs for timber harvests in Arkansas are only recommendations. There is no requirement that timber harvesters include BMPs in timber operations. The BMPs are currently under revision, but the Service does not know what effect these revisions will have on aquatic habitats within the range of the species.

Natural gas production in the upper Little Red River watershed presents a unique problem for yellowcheek darter conservation. In Arkansas, mineral rights for properties supersede the surface rights. Even where private landowners agree to implement certain BMPs or conservation measures on their lands for yellowcheek darter conservation, there is no guarantee that these BMPs or conservation measures will be implemented by natural gas companies, their subsidiaries, or contractors that lease and develop the mineral rights for landowners. For this reason, the intended benefits of conservation measures agreed to by landowners in agreements such as Candidate Conservation Agreements with Assurances may never be realized. Additionally, natural gas projects often do not contain a Federal nexus that would allow the Service to comment on proposed or ongoing projects.

The Arkansas Natural Resources Commission regulates water withdrawal in Arkansas streams. To date, they have not precluded water withdrawal for natural gas development activities in the upper Little Red River watershed. The U.S. Army Corps of Engineers regulates instream activities under the Clean Water Act. Their policy to date has been to issue permits for instream activities associated with pipeline construction and maintenance under Nationwide Permits rather than Individual Permits that require more public involvement. ADEQ lacks resources necessary to enforce existing regulations under the Clean Water Act and Arkansas Water and Air Pollution Act for activities associated with natural gas development.

The yellowcheek darter receives incidental protection under the Act due to the coexistence of the federally endangered speckled pocketbook mussel (*Lampsilis streckeri*), which occurs throughout the upper Little Red River drainage.

In summary, the threats of inadequacy of existing regulatory mechanisms are imminent and considered high in magnitude. This is of particular concern in regard to the vulnerability of the species to threats from natural gas development which is already impacting populations in the South and Middle forks of the Little Red River and is expected to intensify in the next several years throughout the range of the species. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Chucky Madtom

The chucky madtom and its habitats are afforded some protection from water quality and habitat degradation under the Clean Water Act and TDEC's Division of Water Pollution Control under the TWQCA. However, as demonstrated under Factor A, population declines and degradation of habitat for this species are ongoing despite the protection afforded by these laws. While these laws have resulted in improved water quality and stream habitat for aquatic life, including the Chucky madtom, they alone have not been adequate to fully protect this species; sedimentation and non-point source pollutants continue to be a significant problem. Sediment is the most abundant pollutant in the Little Chucky Creek watershed and is the greatest threat to the Chucky madtom.

Portions of the Nolichucky River and its tributaries in Greene County, Tennessee, are listed as impaired (303d) by the State of Tennessee due to pasture grazing, irrigated crop production, unrestricted cattle access, land development, municipal point source discharges, septic tank failures, gravel mining, agriculture, and channelization (Tennessee Department of Environment and Conservation (TDEC) 2008, pp. 62–70). However, Little Chucky Creek is not listed as "an impaired water" by the State of Tennessee (TDEC 2008, pp. 62–70). For water bodies on the 303(d) (impaired) list, States are required under the Clean Water Act to establish a TMDL for the pollutants of concern that will bring water quality into the applicable standard. The Tennessee Department of Environment and Conservation has developed TMDLs for the Nolichucky River watershed to address the problems of fecal coliform loads, siltation, and habitat alteration by agriculture.

The chucky madtom receives incidental protection under the Act due to the coexistence of the Federally endangered Cumberland bean (*Villosa trabalis*), which is still thought to occur in Little Chucky Creek, Greene County, Tennessee (Ahlstedt 2008, pers. comm.).

The chucky madtom was listed as Endangered by the State of Tennessee in September of 2000. Under the Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974 (Tennessee Code Annotated §§ 70-8-101-112), "[I]t is unlawful for any person to take, attempt to take, possess, transport, export, process, sell or offer for sale or ship nongame wildlife, or for any common or contract carrier knowingly to transport or receive for shipment nongame wildlife." Further, regulations included in the Tennessee Wildlife Resources Commission Proclamation 00-15 Endangered Or Threatened Species state the following: "Except as provided for in Tennessee Code Annotated, Section 70-8-106 (d) and (e), it shall be unlawful for any person to take, harass, or destroy wildlife listed as threatened or endangered or otherwise to violate terms of Section 70-8-105 (c) or to destroy knowingly the habitat of such species without due consideration of alternatives for the welfare of the species listed in (1) of this proclamation, or (2) the United States list of Endangered fauna." Under these regulations, potential collectors of this species are required to have a State collection permit. However, in terms of project management, this regulation only provides for the consideration of alternatives, and does not require the level of project review afforded by the Act.

In summary, population declines and degradation of habitat for the chucky madtom are ongoing despite the protection afforded by State and Federal laws and corresponding regulations. Despite these laws, sedimentation and

non-point source pollution continue to adversely affect the species. Because of the vulnerability of the small remaining populations of the chucky madtom and the imminence of these threats, we find the inadequacy of existing regulatory mechanisms to be a significant threat of high magnitude. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Laurel Dace

The laurel dace and its habitats are afforded some protection from water quality and habitat degradation under the Clean Water Act and by TDEC's Division of Water Pollution Control under the TWQCA. However, as demonstrated under Factor A, population declines and degradation of habitat for this species are ongoing despite the protection afforded by these laws. While these laws have resulted in improved water quality and stream habitat for aquatic life, including the laurel dace, they alone have not been adequate to fully protect this species; sedimentation and non-point source pollutants continue to be a significant problem. Sediment is the most abundant pollutant in the watershed and one of the greatest threat to the laurel dace.

The State of Tennessee maintains water-use classifications through issuance of NPDES permits to industries, municipalities, and others that set maximum limits on certain pollutants or pollutant parameters. For water bodies on the 303(d) list, States are required under the Clean Water Act to establish a TMDL for the pollutants of concern that will bring water quality into the applicable standard. The Tennessee Department of Environment and Conservation has not identified any impaired water bodies in the Soddy Creek, the Sale Creek system, or the Piney River system (TDEC 2008).

The TWRA lists the laurel dace as endangered. Under the Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974 (Tennessee Code Annotated §§ 70-8-101-112), "[I]t is unlawful for any person to take, attempt to take, possess, transport, export, process, sell or offer for sale or ship nongame wildlife, or for any common or contract carrier knowingly to transport or receive for shipment nongame wildlife." Further, regulations included in the Tennessee Wildlife Resources Commission Proclamation 00-15 Endangered Or Threatened Species state the following: "Except as provided for in Tennessee Code Annotated, Section 70-8-106 (d) and (e), it shall be unlawful for any person to take, harass, or destroy wildlife listed as threatened or endangered or otherwise to violate terms of Section 70-8-105 (c) or to destroy knowingly the habitat of such species without due consideration of alternatives for the welfare of the species listed in (1) of this proclamation, or (2) the United States list of Endangered fauna." Under these regulations, potential collectors of this species are required to have a State collection permit. However, in terms of project management, this regulation only provides for the consideration of alternatives, and does not require the level of project review afforded by the Act.

In summary, population declines and degradation of habitat for the laurel dace are ongoing despite the protection afforded by State and Federal water quality laws. While these laws have resulted in improved water quality and stream habitat for aquatic life, including the laurel dace, they alone have not been adequate to fully protect this species; sedimentation and non-point source pollutants continue to be a significant problem. Non-point pollution is not regulated by the Clean Water Act. Due to the vulnerability of the laurel dace, we find the threat of inadequate regulatory mechanisms to be imminent and of high magnitude. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

The Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace have limited geographic ranges and small population sizes. Their existing populations are extremely localized, and geographically isolated from one another, leaving them vulnerable to localized extinctions from intentional or accidental toxic chemical spills, habitat modification, progressive degradation from runoff (non-point source pollutants), natural catastrophic changes to their habitat (e.g., flood scour, drought), other stochastic disturbances, and to decreased fitness from reduced genetic diversity. Potential sources of unintentional spills include accidents involving vehicles transporting chemicals over road crossings of streams inhabited by one of these five fish, or the accidental or intentional release into streams of chemicals used in agricultural or residential applications.

Species that are restricted in range and population size are more likely to suffer loss of genetic diversity due to genetic drift, potentially increasing their susceptibility to inbreeding depression, decreasing their ability to adapt to environmental changes, and reducing the fitness of individuals (Soule 1980, pp. 157–158; Hunter 2002, pp. 97–101; Allendorf and Luikart 2007, pp. 117–146). It is likely that some of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace populations are below the effective population size required to maintain long-term genetic and population viability (Soule 1980, pp. 162–164; Hunter 2002, pp. 105–107). 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). These separate populations are essential for the species to recover and adapt to environmental change (Noss and Cooperrider 1994, pp. 264–297; Harris 1984, pp. 93–104). The level of isolation seen in these five species makes natural repopulation following localized extirpations virtually impossible without human intervention.

Climate change has the potential to increase the vulnerability of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace to random catastrophic events (e.g., McLaughlin *et al.* 2002; Thomas *et al.* 2004). Climate change is expected to result in increased frequency and duration of droughts and the strength of storms (e.g., Cook *et al.* 2004). During 2007, a severe drought affected the upper Cumberland River basin in Kentucky and Tennessee. Streamflow values for the Cumberland River at Williamsburg, Kentucky (USGS Station Number 03404000), in September and October of 2007 were among the lowest recorded monthly values (99th percentile for low-flow periods) during the last 67 years (Cinotto 2008, pers. comm.). Climate change could intensify or increase the frequency of drought events, such as the one that occurred in 2007. Thomas *et al.* (2009, p. 112) report that the frequency, duration, and intensity of droughts are likely to increase in the southeast as a result of global climate change.

Fluker *et al.* (2007, p. 10) reported that drought conditions, coupled with rapid urbanization in watersheds that contain rush darters, render the populations vulnerable, especially during the breeding season when they concentrate in wetland pools and shallow pools of headwater streams. Drought conditions from 2006 to 2007 greatly reduced spawning habitat for

rush darter in Jefferson County (Drennen 2007, pers. obs.). Survey numbers for the rush darter within the spring-fed headwaters for the unnamed tributary to Turkey Creek during 2007 were reduced due to a lack of water (Kuhajda 2008, pers. comm.). In Winston County, Stiles and Mills (2008, pp. 5–6) noted that Doe Branch almost completely dried up during the summer of 2007. (Stiles 2008, pers. comm.).

The federally endangered watercress darter (*Etheostoma nuchale*) was translocated outside of its native range by the Service into Tapawingo Springs in 1988 in order to assist in the species, recovery by expanding its range (Moss 1995, p. 5). The watercress darter is now reproducing and may be competing with rush darters in Tapawingo Springs (USFWS 1993, p. 1; Drennen 2004, pers. obs.). More recently, a population of watercress darters was found in the Penny Springs site (Stiles and Blanchard 2001, p. 3). We require further investigation to determine whether interspecific competition is occurring between the watercress darter and the rush darter at this site. (Stiles 2008, pers. comm.).

The Little Red River watershed in Arkansas experienced moderate drought conditions during 1997-2000 (Southern Regional Climate Center 2000), which reduced flows in its tributaries and affected yellowcheek darter populations. Stage height was 1 foot lower during the sampling period for the 2000 status survey than during the 1979–1980 study (Wine *et al.* 2000, p. 7). Stream flow is strongly correlated with important physical and chemical parameters that limit the distribution and abundance of riverine species (Power *et al.* 1995, p. 159, Resh *et al.* 1988, p. 437) and regulates the ecological integrity of flowing water systems (Poff *et al.* 1997, p. 769). Yellowcheek darter was not found in the upper reaches of any study streams or in the Turkey/Beech Fork reach of Devils Fork, a likely result of drought conditions, and indicates a contraction of yellowcheek darter range to stream reaches lower in the watershed where flows are maintained for a greater portion of the year (Wine *et al.* 2000, p. 11). The threat immediacy and magnitude of drought is imminent and moderate to high, respectively, in all four watersheds for the yellowcheek darter. Exacerbation of natural drought cycles as a result of global climate change could have detrimental effects on the species which could continue for the foreseeable future.

The low fecundity rates exhibited by many madtom catfishes (Breder and Rosen 1966 *in* Dinkins and Shute 1996, p. 58) could limit the potential for populations to rebound from disturbance events. The short life span exhibited by members of the *N. hildebrandi* clade (a taxonomic group of organisms classified together on the basis of homologous features traced to a common ancestor) of madtoms, if also true of chucky madtoms, would further limit the species' viability by rendering it vulnerable to severe demographic shifts from disturbances that prevent reproduction in even a single year, and could be devastating to the population if the disturbance persists for successive years.

In summary, because the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace all have limited geographic ranges and small population sizes, they are subject to several ongoing natural and manmade threats. Since these threats are ongoing, they are considered to be imminent. Exacerbation of natural drought cycles as a result of global climate change could have detrimental effects on these five species which is expected to continue or increase in the future. The magnitude of these threats is high for each of these species because of their reduced ranges and population sizes which result in a reduced ability to adapt to environmental change. Further, the information available to us at this time does not indicate that the magnitude or imminence of this threat is likely to be appreciably reduced in the foreseeable future.

Proposed Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace. Based on the immediate and ongoing significant threats to these species throughout their entire ranges, as described above in the five-factor analyses, we consider these species to be in danger of extinction throughout all of their ranges. The Endangered Species Act (Sec. 3(5)(C)(6)) defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." Therefore, on the basis of the best available scientific and commercial information, we are proposing to list these five fishes as endangered species, in accordance with Section 4(a)(1) of the Act.

The Cumberland darter is threatened with range curtailment, specifically its disappearance from 9 streams and 11 historic sites, and its small population size (only 51 individuals observed during the most recent surveys by Thomas (2007, p. 3)). Rush darter populations are isolated from each other, and individual rush darters are only sporadically collected within their range. Where it occurs, the rush darter is an uncommon species that is usually collected in low numbers. Yellowcheek darter populations are restricted to portions of four headwater streams, have declined drastically over the last 30 years and are effectively isolated as a result of reservoir construction. Only three specimens of the chucky madtom have been encountered since 2000 (one in 2000 and two in 2004), despite several surveys that have been conducted in Little Chucky Creek and several streams in the Nolichucky, Holston, and French Broad River watersheds of the upper Tennessee River basin, which are similar in size and character to Little Chucky Creek. The laurel dace is restricted to six streams, where they are only known to occupy reaches of approximately 0.3 to 8 km (0.2 to 5 mi) in length. These isolated species have a limited ability to recolonize historically occupied stream and river reaches and are vulnerable to natural or human-caused changes in their stream and river habitats. Their range curtailment, small population size, and isolation make these five species more vulnerable to threats such as sedimentation, disturbance of riparian corridors, changes in channel morphology, point and non-point source pollutants, urbanization, and introduced species.

Therefore, as described above, these five species are in danger of extinction throughout their highly localized ranges due to their reduction of habitat and ranges, small population sizes, current habitat threats, and resulting vulnerability due to lack of regulatory mechanisms and natural or human induced catastrophic events. Efforts to control excessive sedimentation and improve general water quality throughout their ranges coupled with efforts to increase population levels will be essential for these species' survival.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in public awareness and conservation by Federal, State, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for

all listed species. The protection required of Federal agencies and the prohibitions against take and harm are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed, preparation of a draft and final recovery plan, and revisions to the plan as significant new information becomes available. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The recovery plan identifies site-specific management actions that will achieve recovery of the species, measurable criteria that determine when a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (comprised of species experts, Federal and State agencies, non-government organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (*http://www.fws.gov/endangered*), or from our Fish and Wildlife Service Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Listing will also require the Service to review any actions on Federal lands and activities under Federal jurisdiction that may adversely affect the five species; allow State plans to be developed under section 6 of the Act; encourage scientific investigations of efforts to enhance the propagation or survival of the animals under section 10(a)(1)(A) of the Act; and promote habitat conservation plans on non-Federal lands and activities under section 10(a)(1)(B) of the Act.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Federal agencies are required to confer with us informally on any action that is likely to jeopardize the continued existence of a proposed species. Section 7(a)(4) requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal activities that may affect the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace include, but are not limited to, the funding, carrying out, or the issuance of permits for reservoir construction, natural gas extraction, stream alterations, discharges, wastewater facility development, water withdrawal projects, pesticide registration, mining, and road and bridge construction.

Jeopardy Standard

Prior to and following listing and designation of critical habitat, if prudent and determinable, the Service applies an analytical framework for jeopardy analyses that relies heavily on the importance of core area populations to the survival and recovery of the species. The section 7(a)(2) analysis is focused not only on these populations but also on the habitat conditions necessary to support them.

The jeopardy analysis usually expresses the survival and recovery needs of the species in a qualitative fashion without making distinctions between what is necessary for survival and what is necessary for recovery. Generally, if a proposed Federal action is incompatible with the viability of the affected core area populations(s), inclusive of associated habitat conditions, a jeopardy finding is considered to be warranted, because of the relationship of each core area population to the survival and recovery of the species as a whole.

Section 9 Take

Section 9(a)(2) of the Act, and its implementing regulations found at 50 CFR 17.21, set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or to attempt any of these), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to knowingly possess, sell, deliver, carry, transport, or ship any wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 for endangered species. Such permits are available for scientific purposes, to enhance the propagation or survival of the species or for incidental take in connection with otherwise lawful activities. The yellowcheek darter is currently covered under a joint Safe Harbor/Candidate Conservation Agreement with Assurances (SHA/CCAA) in the upper Little Red River watershed in Arkansas along with the endangered speckled pocketbook mussel. Seven landowners have enrolled 3,845 hectares (9,500 acres) in the program since its inception in mid-2007 and 10 more landowners with approximately 19, 420 hectares (48,000 acres) are pending with draft agreements. The CCAA would convert to a SHA if the species becomes listed as threatened or endangered and would be covered by an enhancement of

survival permit, which expires January 1, 2044.

Under the Interagency Cooperative Policy for Endangered Species Act Section 9 Prohibitions, published in the **Federal Register** on July 1, 1994 (59 FR 34272), we identify to the maximum extent practicable those activities that would or would not constitute a violation of section 9 of the Act if the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace are listed. The intent of this policy is to increase public awareness as to the effects of these proposed listings on future and ongoing activities within a species' range. We believe, based on the best available information, that the following actions will not result in a violation of the provisions of section 9 of the Act, provided these actions are carried out in accordance with existing regulations and permit requirements:

(1) Possession, delivery, or movement, including interstate transport that does not involve commercial activity, of specimens of these species that were legally acquired prior to the publication in the **Federal Register** of the Federal List of Endangered or Threatened Wildlife and Plants;

(2) Discharges into waters supporting the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace, provided these activities are carried out in accordance with existing regulations and permit requirements (e.g., activities subject to section 404 of the Clean Water Act and discharges regulated under the National Pollutant Discharge Elimination System (NPDES));

(3) Development and construction activities designed and implemented under State and local water quality regulations and implemented using approved Best Management Practices; and

(4) Any actions that may affect the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace that are authorized, funded, or carried out by a Federal agency (e.g., bridge and highway construction, pipeline construction, hydropower licensing, etc.), when the action is conducted in accordance with the consultation and planning requirements for listed species pursuant to sections 7 and 10 of the Act.

Potential activities that we believe will likely be considered a violation of section 9 if these species become listed, include, but are not limited to, the following:

(1) Unauthorized possession, collecting, trapping, capturing, killing, harassing, sale, delivery, or movement, including interstate and foreign commerce, or harming, or attempting any of these actions, of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace;

(2) Unlawful destruction or alteration of their habitats (e.g., unpermitted instream dredging, impoundment, channelization, discharge of fill material) that impairs essential behaviors such as breeding, feeding, or sheltering, or results in killing or injuring any of these species;

(3) Violation of any discharge or water withdrawal permit that results in harm or death to any of these species or that results in degradation of their occupied habitat to an extent that essential behaviors such as breeding, feeding and sheltering are impaired; and

(4) Unauthorized discharges or dumping of toxic chemicals or other pollutants into waters supporting the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace that kills or injures these species, or otherwise impairs essential life-sustaining requirements such as breeding, feeding, or shelter.

Other activities not identified above will be reviewed on a case-by-case basis to determine if a violation of section 9 of the Act may be likely to result from such activity should these fishes become listed. The Service does not consider these lists to be exhaustive and provides them as information to the public.

If you have questions regarding whether specific activities will likely violate the provisions of section 9 of the Act, contact the Alabama, Arkansas, Tennessee, Kentucky, or Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** section). Requests for copies of regulations regarding listed species and inquiries about prohibitions and permits should be addressed to the U.S. Fish and Wildlife Service, Ecological Services Division, 1875 Century Boulevard, Atlanta, GA 30345 (Phone 404/679-7313; Fax 404/679-7081).

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

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

(I) essential to the conservation of the species, and

(II) that may require special management considerations or protection; and

(ii) specific areas outside the geographic area occupied by a 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 pursuant to the Act are no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. Section 7(a)(2) requires consultation on Federal actions that may affect 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) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the applicant is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, we designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

There is no documentation that the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, or laurel dace are threatened by taking or

other human activity such that identification of critical habitat for each of these species could be expected to increase the degree of threat to them. In the absence of finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then we would determine that the designation of critical habitat is prident. For these species, the potential benefits include: (1) Triggering consultation under section 7 of the Act, in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments, private entities, and the public as a whole; and (4) preventing people from causing inadvertent harm to the species.

The primary regulatory effect of critical habitat is the section 7(a)(2) requirement that Federal agencies refrain from taking any action that destroys or adversely affects critical habitat. Extant populations of the Cumberland darter occur in watersheds that are roughly 60 percent privately owned and 40 percent publicly-owned (U.S. Forest Service (USFS), DBNF). The U.S. Forest Service's ownership is typically fragmented and often occurs on only one side of the stream. The rush darter occupies streams that are approximately 96 percent privately owned industrial, forestry, agricultural, and urbanized lands. The State of Alabama, Jefferson County, and the Freshwater Land Trust own and maintain about two percent of the rush darter's habitat; and the USFS manages approximately two percent of habitat in the Bankhead National Forest. The U.S. Forest Service owns two percent of yellowcheek darter habitat in Arkansas, while the Arkansas Game and Fish Commission owns one percent. The remaining 97 percent is privately owned. In the Little Chucky Creek watershed, the chucky madtom occupies habitat that is primarily privately owned. Approximately five percent of the Dunn Creek watershed is owned by the National Park Service (i.e., portions of the Great Smoky Mountains National Park and Foothills Parkway), but the majority of the watershed is privately owned habitat for the madtom. The laurel dace is only known to occur in waters within privately owned lands. Any of the abovementioned lands that may be designated as critical habitat in the future for these species may be subject to Federal actions that trigger the section 7 consultation requirement, such as the granting of Federal monies for conservation projects and/or the need for Federal permits for projects (e.g., construction and maintenance of roads and bridges subject to section 404 of the Clean Water Act).

There may also be some educational or informational benefits to the designation of critical habitat. Educational benefits include the notification of land owners, land managers, and the general public of the importance of protecting the habitat of these species. In the case of these species, this aspect of critical habitat designation would potentially benefit the conservation of these species.

Therefore, since we have determined that the designation of critical habitat will not likely increase the degree of threat to the species and may provide some measure of benefit, we find that designation of critical habitat is prudent for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace.

Critical Habitat Determinability

As stated above, section 4(a)(3) of the Act requires the designation of critical habitat concurrently with the species' listing "to the maximum extent prudent and determinable." Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

(i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or

(ii) The biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

When critical habitat is not determinable, the Act provides for an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and the regulations at 50 CFR 424.12, in determining which areas 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 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, and rearing (or development) of offspring; and

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

We are currently unable to identify the physical and biological features for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace, because information on the physical and biological features that are considered essential to the conservation of these species is not known at this time. As discussed in the "Species Information" section of this proposed rule, the life histories of these species are poorly known. Although, as described above, we can surmise that habitat degradation from a variety of factors has contributed to the decline of these species, we do not know specifically the essential physical or biological features the habitat is currently lacking. As we are unable to identify the physical and biological features essential to the conservation of these species, we are unable to identify areas that contain these features. Therefore, although we have determined that the designation of critical habitat is prudent for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace, since the biological requirements of these species are not sufficiently known, we find that critical habitat for these species is not determinable at this time.

How the Service Intends to Proceed

We intend to begin preparation of proposed rulemaking in Fiscal Year 2011 and publish a proposed critical habitat designation for Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace in June 2011. We will take the following steps to develop a proposal of critical habitat for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace: (1) Determine the geographical area occupied by the species at the time of listing; (2) identify the physical or biological features essential to the conservation of the species; (3) delineate areas within the geographical area occupied by the species that contain these features, and identify the special management considerations or protections the features may require; (4) delineate any areas outside of the geographical area occupied by the species at the time of listing that are essential for the conservation of the species; and (5) conduct appropriate analyses under section 4(b)(2) of the Act.

To aid us in completing these steps, we will use the best science available. We also solicit the public for additional information (see **Request for Public Information** section below) and will consult experts on the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace.

While the proposed designation of critical habitat for these fishes is under preparation, the areas occupied by these species in the United States will continue to be subject to conservation actions implemented under section 7(a)(1) of the Act, as well as consultation pursuant to section 7(a)(2) of the Act for Federal activities that may affect any of these species, as determined on the basis of the best available scientific information at the time of the action. In addition, the prohibition of taking Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace under section 9 of the Act (e.g., prohibitions against killing, harming, harassing, and capturing endangered species) continues to apply.

We will also continue to use our authorities to work with agencies and other partners in the to conserve and recover these species. We are working with the partners to develop and implement a framework for the conservation of the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace.

Request for Public Information

We intend that any designation of critical habitat for the Cumberland darter, rush darter, yellowcheek darter, chucky madtom, and laurel dace be as accurate as possible. Therefore, we will continue to accept additional information and comments from all concerned governmental agencies, the scientific community, industry, or any other interested party concerning this finding. We are particularly interested in information concerning:

(1)The reasons why areas should or should not be designated as critical habitat as provided by section 4 of the Act (16 U.S.C. 1531, *et seq.*), including whether the benefits of designation would outweigh threats to the species that designation could cause (e.g., exacerbation of existing threats, such as overcollection), such that the designation of critical habitat is prudent; and

(2)Specific information on:

- What areas contain physical and biological features essential for the conservation of the species;
- What areas are essential to the conservation of the species; and
- Special management considerations or protection that proposed critical habitat may require;
- Conservation programs and plans that protect these species and their habitat; and;
- 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.

Public Comment Procedures

To ensure that any final action resulting from this finding will be as accurate and as effective as possible, we request that you send relevant information for our consideration. The comments that will be most useful and likely to influence our decisions are those that you support by quantitative information or studies and those that include citations to, and analyses of, the applicable laws and regulations. Please make your comments as specific as possible and explain the bases for them. In addition, please include sufficient information with your comments to allow us to authenticate any scientific or commercial data you include. For instructions on how to submit comments, please see the **Request for Public Comments**
Section.

Public Availability of Comments

As stated above in more detail, before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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 three appropriate and independent specialists regarding this proposed rule. The purpose of such review is to ensure that our proposed rule is based on scientifically sound data, assumptions, and analyses. We will send these peer reviewers copies of this proposed rule immediately following publication in the **Federal Register**. We will invite these peer reviewers to comment, during the public comment period, on the specific assumptions and the data that are the basis for our conclusions regarding the proposal to list Cumberland darter (*Etheostoma susanae*), rush darter (*Etheostoma phytophilum*), yellowcheek darter (*Etheostoma moorei*), chucky madtom (*Noturus crypticus*), and laurel dace (*Phoxinus saylori*) as endangered and our proposal regarding critical habitat for this species.

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

Public Hearings

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 proposal in the **Federal Register**. Such requests must be made in writing and be addressed to the Field Supervisor at the address in the **FOR FURTHER INFORMATION CONTACT** section. 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.

Persons needing reasonable accommodations to attend and participate in a public hearing should contact the Tennessee Ecological Services Field Office by telephone at 931-528-6481, as soon as possible. To allow sufficient time to process requests, please call no later than one week before the hearing date. Information regarding this proposed rule is available in alternative formats upon request.

Required Determinations

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:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) 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 the rule, your comments should be as specific as possible. For example, you should tell us the names 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.

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 Office of Management and Budget (OMB) under the Paperwork Reduction Act. 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

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited in this rule is available on the Internet at *http://www.regulations.govor* upon request from the Field Supervisor, Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** section).

Author(s)

The primary authors of this document are staff members of the U.S. Fish and Wildlife Service's Tennessee Ecological Services Field Office, Kentucky Ecological Services Field Office, Arkansas Ecological Services Office, and the Mississippi Ecological Services Field Office.

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—[AMENDED]

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; Public Law 99-625, 100 Stat. 3500; unless otherwise noted.

2. In §17.11(h) add the following to the List of Endangered and Threatened Wildlife in alphabetical order under Fishes:

§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	*Phoxinus saylori*	U.S.A (TN)	Entire	E	TBD	NA	NA
*	*	*	*		*	*	*
Darter, Cumberland	*Etheostoma susanae*	U.S.A. (KY, TN)	Entire	E	TBD	NA	NA
*	*	*	*		*	*	*
Darter, rush	*Etheostoma phytophilum*	U.S.A. (AL)	Entire	E	TBD	NA	NA
*	*	*	*		*	*	*
Darter, yellowcheek	*Etheostoma moorei*	U.S.A. (AR)	Entire	E	TBD	NA	NA
*	*	*	*		*	*	*
Madtom, chucky	*Noturus crypticus*	U.S.A. (TN)	Entire	E	TBD	NA	NA
*	*	*	*		*	*	*

* * * * *

Dated: June 2, 2010

Jeffrey L. Underwood,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 2010–15240 Filed 6–23– 10; 8:45 am]

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