DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2012-0068]

[4500030113]

RIN 1018-AY19

Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding, Listing of the Spring Pygmy Sunfish as Threatened, and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: 12-month finding; proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the spring pygmy sunfish (*Elassoma alabamae*) as threatened under the Endangered Species Act of 1973, as amended (Act), and to designate critical habitat. After review of all available scientific and commercial information, we find that

listing the spring pygmy sunfish as a threatened species under the Act is warranted. Accordingly, we propose to list the spring pygmy sunfish as a threatened species throughout its range and designate critical habitat for the species under the Act. In total, we propose approximately 8 stream miles (mi) (12.9 kilometers (km)) and 1,617 acres (ac) (654.4 hectares (ha)) of spring pool and spring-influenced wetland in Limestone County, Alabama, for designation as critical habitat.

DATES: We will consider comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. We must receive requests for a public hearing, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES** section, below) must be received by 11:59 p.m. Eastern Time on the closing date.

ADDRESSES: (1) *Electronically*: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. Search for Docket No. FWS–R4–ES–2012–0068, which is the docket number for this rulemaking.

(2) *By hard copy*: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R4–ES–2012–0068; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We request that you send comments **only** by the methods described above. 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 **Information Requested** section below for more details).

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at http://www.fws.gov/mississippiES/, http://www.regulations.gov at Docket No. FWS–R4–ES–2012–0068, and at the Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). Any additional tools or supporting information that we may develop for this critical habitat designation will also be available at the above locations.

FOR FURTHER INFORMATION CONTACT: Stephen Ricks, Field Supervisor, Mississippi Ecological Services Field Office, 6578 Dogwood View Parkway, Jackson, MS 39213; by telephone (601-321-1122); or by facsimile (601-965-4340). If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

This document consists of: (1) A 12-month petition finding that listing the spring pygmy sunfish under the Act is warranted; (2) a proposed rule to list the spring pygmy sunfish as threatened; and (3) a proposed rule to designate critical habitat for this species.

Executive Summary

Why we need to publish a rule. Under the Endangered Species Act, 16 U.S.C. 1531 *et seq.*, a species or subspecies may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. We are proposing to list the spring pygmy sunfish as threatened under the Act because of current and future threats, and listing can only be done by issuing a rule. The spring pygmy sunfish no longer occurs at two of the three spring systems in which it historically was found, and faces a variety of threats in the Beaverdam Spring/Creek System, the only location where it currently occurs. We are also proposing to designate critical habitat under the Act. Critical habitat represents geographical areas that are essential to a species' conservation, and is designated on the basis of the best scientific information available after taking into consideration the economic impact, impact on national security, and any other relevant impact of specifying any particular area as critical habitat.

The basis for our action. Under the Act, a species may be determined to be endangered or threatened based on any of five factors: (A) 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; or (E) other natural or manmade factors affecting its continued existence. The spring pygmy sunfish is facing threats due to three of these five factors (A, D, and E), and potentially faces threats under a fourth (Factor C) The Act also requires that the Service designate critical habitat at the time of listing provided that it is prudent and determinable. We have determined that it is both prudent and determinable (see **Critical Habitat** section below) and are proposing approximately 8 stream mi (12.9 km) and 1,617 ac (654.4 ha) of spring system habitat and adjacent upland buffers for designation as critical habitat.

Peer review is important. In addition to seeking public comments, we will solicit peer review of this proposal from at least three experts knowledgeable in spring pygmy sunfish biology and basic conservation biology principles and concepts.

Information Requested

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

(1) Additional information concerning the historical and current status, range, distribution, and population size of the spring pygmy sunfish, including the locations of any additional populations.

(2) Any information on the biological or ecological requirements of the species and ongoing conservation measures for the species and its habitat.

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

(4) Current or planned activities in the areas occupied by the species and possible impacts of these activities on this species.

(5) Additional information regarding the threats to the species under the five listing factors, which 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.

(6) Any information regarding ongoing conservation activities for the spring pygmy sunfish, including the Belle Mina Farm, Ltd., candidate conservation agreement with assurances (CCAA), and their effect on the status of the species.

(7) The reasons why areas should or should not be designated as critical habitat as provided by section 4 of the Act, including the possible risks or benefits of designating critical habitat, including risks associated with publication of maps designating any area on which this species may be located, now or in the future, as critical habitat.

(8) The following specific information on:

(a) The amount and distribution of habitat for spring pygmy sunfish;

(b) What areas, that would be occupied at the time of listing (i.e., are currently occupied) and that contain the physical and biological features essential to the conservation of this species, should be included in a critical habitat designation and why;

(c) Special management considerations or protection that may be needed for the essential features in critical habitat areas, including managing for the potential effects of climate change; and

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

(9) Information on the projected and reasonably likely impacts of changing environmental conditions resulting from climate change on the species and its habitat.

(10) Information on groundwater aquifer or recharge areas for spring systems that support the spring pygmy sunfish, and the possible implications of extracting ground and surface water and its impact on the spring pygmy sunfish and its habitat.

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

(12) Information on whether the benefits of the exclusion of lands covered by the Belle Mina Farm, Ltd., CCAA, or any other particular area, outweigh the benefits of inclusion under section 4(b)(2) of the Act.

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

Please 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 an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available," and section 4(b)(2) directs that critical habitat designations be made based on the best scientific data available and after consideration of economic and other relevant impacts.

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

If you submit information via *http://www.regulations.gov*, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, such as your address, phone number, and 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, Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(B) of the Act requires that, for any petition to revise the Federal Lists of Threatened and Endangered Wildlife and Plants (Lists) that contains substantial scientific or commercial information that listing a species may be warranted, we make a finding within 12 months of the date of receipt of the petition that the petitioned action is either: (a) Not warranted; (b) warranted; or (c) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether any species is endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Lists. With this publication, we have determined that the petitioned action to list spring pygmy sunfish is warranted, and we are proposing to list the species and to designate critical habitat for the species.

Previous Federal Actions

The spring pygmy sunfish was proposed for listing as endangered with critical habitat on November 29, 1977 (42 FR 60765). The critical habitat portion of the proposal was withdrawn on March 6, 1979 (44 FR 12382), in order to make a new critical habitat proposal that conformed to new, more prescriptive provisions for critical habitat made in the 1978 amendments to the Act. The Service proposed critical habitat again for the species on July 27, 1979 (44 FR 44418). The pending proposal to list the spring pygmy sunfish, along with the proposed critical habitat designation, were withdrawn effective November 29, 1979, as announced in the **Federal Register** on January 24, 1980 (45 FR 5782).

The spring pygmy sunfish was included in the December 30, 1982, notice of review (47 FR 58454) as a category 2 candidate species for listing. Category 2 status 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 threats were not currently available to support proposed rules. Subsequently, in the September 18, 1985 (50 FR 37958); January 6, 1989 (54 FR 554); and November 15, 1994 (59 FR 58982) notices of review, the spring pygmy sunfish was identified as a category 1 candidate species for listing. Category 1 status was given to those species for which the Service had on file sufficient information on biological vulnerability and threat(s) to support a proposal to list as endangered or threatened but for which a proposal had not yet been issued because of other listing actions. On February 28, 1996 (61 FR 7457), the Service published a notice of review removing the spring pygmy sunfish from the candidate list because of

successful introduction, increased distribution (outside of the range of the introduction), and the discovery of additional populations, including one on Wheeler National Wildlife Refuge. At that time, we reported that the known populations, each exceeding 1,000 individuals, were increasing.

On November 24, 2009, we received a petition from the Center for Biological Diversity (CBD) and Michael Sandel of the University of Alabama, requesting that the spring pygmy sunfish be listed as endangered under the Act. In a December 17, 2009, letter to the petitioners, we responded that we reviewed the information presented in the petition, and we outlined the petition process and timelines. In July 2010, we received letters from the North American Native Fishes Association (NANFA) and Dr. Bruce Stallsmith (University of Alabama at Huntsville) requesting that we emergency list the species under section 4(b)(7) of the Act. Following review of the petition, the letters, and information in our files, we determined that issuing an emergency regulation temporarily listing the species was not warranted. We notified NANFA and Dr. Stallsmith of our determination on July 21, 2010.

On April 1, 2011, we published in the **Federal Register** (76 FR 18138) our 90-day finding that the petition to list the spring pygmy sunfish as endangered presented substantial information indicating that the requested action may be warranted, and we initiated a status review of the species.

Since 2010, Belle Mina Farms, the owner of Beaverdam Spring, Moss Spring, and the upper reach of Beaverdam Creek, in Limestone County, Alabama, and the Service have been engaged in drafting a candidate conservation agreement with assurances (CCAA) for a population of spring pygmy sunfish. The CCAA outlines a variety of

conservation measures that will be implemented to benefit the species (see "Conservation Efforts to Reduce Habitat Destruction, Modification, or Curtailment" under the Factor A discussion, below). On September 14, 2010, we received the completed application from the landowner for an enhancement of survival permit for the spring pygmy sunfish under section 10(a)(1)(A) of the Act along with a draft CCAA. The CCAA, the permit application, and the environmental action statement (EAS) were made available for public comment for a 30-day period beginning on February 21, 2012 (77 FR 9958). The CCAA and EAS were finalized in April 2012, and the associated permit was issued on June 7, 2012. If the spring pygmy sunfish is listed under the Act, the permit authorizes incidental take of the spring pygmy sunfish due to otherwise lawful activities (e.g., crop cultivation, livestock grazing, silviculture, vegetation management, water usage, road maintenance, fencerow maintenance, etc.) in accordance with the terms of the CCAA.

Species Information

Taxonomy and Description

The spring pygmy sunfish (*Elassoma alabamae)* was discovered in 1937, but not described until 1993 (Mayden 1993, pp.1–14). This species is the smallest member of the genus *Elassoma.* Males are normally smaller than females and are very dark to black with iridescent blue-green color on their sides, cheeks, and gill covers (Boschung and Mayden 2004, pp. 614–615). The maximum standard length (distance from tip of snout to the end of the last vertebrae) for adult males is 0.80 in (20.4 mm) and for adult females it is 0.96 in (24.5 mm) (Boschung and Mayden 2004, pp. 614–615). Both sexes have

broad vertical and narrow bars on their flanks. We accept the characterization of the spring pygmy sunfish as a valid species based on the taxonomic characters distinguishing the species from other members of the *Elassoma* genus (Mayden 1993, p.4). Its uniqueness is widely accepted by the scientific community, and there has been no discrepancy concerning its distinctiveness as a separate taxonomic entity (Boschung *et al*. 2004, p. 614).

Current Distribution

The range of the spring pygmy sunfish is very restricted. The species currently occupies about 5.9 mi (9.5 km) and 1,435 ac (580.6 ha) of four spring pools and associated features confluent with the middle to upper Beaverdam Spring/Creek watershed. These spring pools, which include Moss, Beaverdam, Thorsen, and Horton springs, all in Limestone County, Alabama, along with associated spring runs and wetlands, are collectively referred to as the Beaverdam Spring/Creek system. The greatest concentration of spring pygmy sunfish occurs within the Beaverdam Spring site, which comprises 24 percent of the total occupied habitat for the species.

Life History

The spring pygmy sunfish has high fecundity (reproductive capacity) and quickly populates areas of available habitat (Sandel pers. obs. 2004 through 2009). Adults reproduce from January to October. Spawning occurs in March and April, when water quality parameters are within a suitable range (pH of 6.0 to 7.7 and water temperatures of 57.2 to 68 degrees Fahrenheit (°F) (15 to 20 degrees Celsius (°C)). Spring pygmy sunfish

produce about 65 eggs, and hatching occurs from April to September (Sandel pers. obs. 2004 through 2009). Two spawning attempts per year have been reported in captivity (Petty *et al*. 2011, p. 4). In captivity, the spring pygmy sunfish may live slightly longer than 2 years, but normally their life span is 1 year or less (Boschung and Mayden 2004, pp. 614–615).

Habitat

The spring pygmy sunfish is a spring-associated (Warren 2004, p.185) and groundwater-dependent (Jandebeur, pers. comm., 2011) fish endemic to the Tennessee River drainage in the Eastern Highland Rim physiographic province and Dissected Tablelands (Marbut *et al.* 1913, p. 53) of Lauderdale and Limestone Counties in northern Alabama. The preferred habitat for the spring pygmy sunfish is colorless to slightly stained spring water, occurring within several components of spring geomorphology including the spring head (where water emerges from the ground), spring pool (water pool at spring head), spring run (stream or channel downstream of spring pool), and associated spring-fed wetlands (Warren 2004, pp. 184-185). No contemporary water flow rates characterizing groundwater flow from the springs are available. However, historical flow rates for Pryor Spring (where the species once occurred) and Moss Spring of 800 to 5,000 gallons per minute (gpm) (3,000 to 19,000 liters per minute (lpm))(tabulated from Chandler and Moore 1987, pp. 3–4), respectively, indicate that the spring pygmy sunfish is associated with moderately flowing springs of the second to fourth order (after Meinzer 1923, in Chandler and Moore 1987, p. 5; McMaster and Harris 1963, p. 28).

Natural spring pool habitats are typically static, persisting without disruption for long periods, even during droughts, in the absence of water extraction. The species is most abundant at the spring outflow or emergence (spring head) and spring pool area. The spring pygmy sunfish is typically found at water depths from 5 to 40 inches (in) (13 to 102 centimeters (cm)) and rarely in the upper 5 inches (13 cm) of the water column. Species of submergent and emergent vegetation providing important habitat for the spring pygmy sunfish include clumps and stands of *Sparganium* sp. (bur reed), *Ceratophyllum* sp. (coontail), *Nasturtium officinale* (watercress), *Juncus* sp. (rush), *Carex* sp. (sedges), *Nuphar luteum* (yellow pond lily), *Myriophyllum* sp. (parrot feather), *Utricularia* sp. (bladderwort), *Polygonum* sp. (smartweed), *Lythrum salicaria* (purple loosestrife), and *Callitriche* sp. (water starwort) (Mayden 1993, p. 11; Jandebeur 1997, pp. 42-44; Sandel 2011, pp. 3-5, 9-11). The species is also associated with certain animal species such as amphipods, isopods, spring salamanders, crayfish, and snails (Sandel 2011, pp.11-12; Mayden 1993, p. 11).

Historical Distribution and Status

The spring pygmy sunfish was known to have historically occurred at two other sites. This species was initially discovered in 1938, in Cave Springs, Lauderdale County, Alabama, where it was extirpated about a year later due to inundation from the formation of Pickwick Reservoir. In 1941, this species was also discovered in Pryor Spring within the Swan Creek watershed in Limestone County, Alabama, by Tarzwell and Bretton, where it was noted to be common (Jandebeur 2011a, pp. 1-5). Limited

sampling efforts in the Pryor Springs complex between 1966 and 1979 indicated a sparse population of spring pygmy sunfish west of, and none east of, Highway 31. The exact location of the original collection in Pryor Spring is uncertain, but Jandebeur (2011a, pp. 1-5) speculates the original site to be solely west of Highway 31, within the Pryor Spring Branch (spring-fed wetlands) and not in Pryor Spring proper (spring head and pool), east of the highway. However, in 1984, in an effort to enhance this population in Pryor Spring, fish were moved from Moss Spring (Beaverdam Spring/Creek System) into Pryor Spring on both sides of Highway 31 (Mettee *et. al*. 1986, pp. 14-15). Reintroduction efforts continued into 1986 and 1987 (Mettee *et. al*. 1986, pp. 6-7). However, by 2007, the population was determined to be extirpated due to impaired water quality and quantity, likely attributable to contaminants from agricultural runoff (Sandel 2008, p. 2; 2011, pp. 3, 6).

The spring pygmy sunfish exhibits metapopulation (a group of individual populations that have some level of gene flow between them) structure by occupying all suitable spring habitats where there is flowing spring water and connectivity. Migration and continuity of the species between spring pools is very important in maintaining the genetic diversity of species within these sections of the Beaverdam Spring/Creek system. Sandel (2008, pp. 15–16; 2011, p. 8) suggests that the spring pygmy sunfish population in Beaverdam Spring/Creek is a single, structured, continuous group of breeding individuals, genetically identifiable with limited gene flow from each springhead subpopulation, and that the loss of many subpopulations could cause extinction of the metapopulation. However, Jandebeur (2011b, pp. 1-13) speculates that these populations

of spring pygmy sunfish evolved with beaver ecology and that during migration of spring pygmy sunfish from beaver pond habitats, the species may colonize or recolonize existing habitat downstream, even though individual subpopulations may be extirpated due to drought or other ecological issues.

Summary of Information Pertaining to the Five Factors

Section 4 of the Act 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. A species may be determined to be an endangered or threatened species due to one or more of the following five factors described in section 4(a)(1) of the Act:

(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.

In considering what factors might constitute threats to a species, we must look beyond the exposure of the species to a particular factor to evaluate whether the species may respond to that factor in a way that causes actual impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat. The factor is a threat if it drives, or contributes to, the risk of extinction of the species such that the species warrants listing as endangered or threatened as those terms are defined in the Act. However, the identification of factors that could impact a species negatively may not be sufficient to compel a finding that the species warrants listing. The information must include evidence sufficient to suggest that these factors are operative threats that act on the species to the point that the species may meet the definition of endangered or threatened under the Act.

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

Increased human population growth, and the accompanying demand for water, will likely alter the Beaverdam Spring/Creek system and its recharge areas through increased water extraction (pumping), diversion, and retention (Erman 2002, p. 8). Because springs provide shelter, thermal refuge, breeding sites, movement corridors, and prey source habitat for the spring pygmy sunfish, the species is dependent on water quantities sufficient to provide spring habitat that is stable and permanent (Erman 2002, p. 8).

Urban and Industrial Development

Urban development adjacent to the Beaverdam Spring/Creek system would likely fragment and directly impact suitable spring pygmy sunfish habitat by decreasing water quality and quantity, and by limiting the species' movement throughout the system. When an area is urbanized, many impermeable surfaces are constructed such as roofs, pavements, and road surfaces. All are intentionally constructed to be far less permeable than natural soils and to remove stormwater quickly, which results in a reduction in direct recharge into the aquifer, increased stormwater runoff (Younger 2007, p. 39), immediate changes in water quality parameters such as decreased oxygen levels and increased temperature, and increased water quantity and flow velocity (Field *et al*. 2003, pp. 326-333). The stormwater flow velocity carries sediments that may scarify (make scratches or cuts in) rock and gravel substrates (Waters 1995, pp. 57, 66) and uproot aquatic vegetation, thereby destroying important foraging, spawning, and refuge habitat for the species (Field *et al*. 2003, pp. 326-333).

The spring pygmy sunfish is currently facing threats from planned large-scale residential and industrial projects and ongoing development within the vicinity of the Beaverdam Spring/Creek watershed. Sandel (2011, p. 11) observed declines in the species' population and attributed it to sedimentation from two nearby construction activities: the construction of a new sewer line adjacent to the spring system and the construction of the Ashbury subdivision 2.3 mi (3.7 km) northeast of the species' habitat. The Ashbury subdivision, adjacent to Hardeman Branch and draining into the upper

Beaverdam Spring/Creek watershed, filled adjacent wetlands when residential housing, roads, utility crossings, and stormwater drains were constructed (U.S. Army Corps of Engineers 2011, pp. 1–6).

The City of Huntsville's Master Plan for Western Annexed Land (Sasaki 2011, pp. 1-83) proposes developing a total of 10,823 ac (4,379.9 ha) adjacent to spring pygmy sunfish habitat. More than 68 percent of the proposed development site is adjacent to the Beaverdam Spring/Creek watershed. The restricted-use area for subdivision development, within the City of Huntsville, is a minimum of 25 feet (7.6 meters) from the perimeter of a perennial spring. However, no restrictions are set forth for ephemeral springs or seasonal groundwater seepages (City of Huntsville 2007, p. 28), which include many of the ephemeral springs, seepages, and streams draining into the Beaverdam Spring/Creek watershed. These features are necessary for maintenance of seasonal flow rates. Filling them or converting them to developed areas could therefore adversely affect the spring pygmy sunfish. In addition, there are roads proposed to connect the planned developments with the Interstate 65 and Interstate 565 corridors (Sasaki 2011, pp. 1-83), along with feeder roads and improvements on primary and secondary existing roadways in support of new residential and industrial projects (Sasaki 2011, pp. 1-83). Developed, paved-over areas (impervious substrate) promote runoff and inhibit infiltration, changing water flow rates from slow and incremental to fast and localized, because stormwater is directed via surface routes into specific areas of the receiving stream, rather than infiltrating into the soil or draining naturally into surface water.

Pumping or diversion of springs creates unstable conditions for spring-dependent species such as the spring pygmy sunfish through fluctuating water levels and temperature changes. The incremental and cumulative groundwater recharge effects on the habitat of the spring pygmy sunfish may not become evident for years (Likens 2009, p. 90). Within north Alabama, the availability of large quantities of groundwater from springs has been an important factor in industrial and urban development (Warman and Causey 1963, p. 93). It is estimated that, by 2015, the population in Limestone and Lauderdale Counties will increase dramatically (Roop 2010, p. 1), along with expanding urbanization and industrialization (Sasaki 2011, pp. 1-83).

The Fort Payne Chert of the Early Mississippian Age is the principal aquifer of spring pygmy sunfish habitat and provides groundwater to all of Limestone County (McMaster and Harris, Jr. 1963, p. 1). Groundwater in the County is ultimately derived from percolation of precipitation (McMaster and Harris, Jr. 1963, p. 17) into the aquifer system. In urban settings, percolation of rainwater to the aquifer may be disrupted due to less pervious zones and more shunting of rainfall into stormwater systems (Healy 2010, pp. 70-72; Younger 2007, pp. 117-121). Change in land use from rural to urban/ industrial within the Beaverdam Spring/Creek area will be detrimental to the spring pygmy sunfish due to changes in the water quality parameters such as oxygen and temperature, along with changes in water quantity, such as increased stream flow and velocity, due to increased amounts of impervious materials and associated stormwater runoff in the watershed. This may be coupled with a subsequent reduction in

precipitation infiltrating through the soil surface to the aquifer, which will ultimately reduce spring baseflow (Field et al. 2003, pp. 326-333; Healy 2010, p. 3).

Water Quantity

Excessive groundwater extraction from the aquifer supplying Beaverdam Spring/Creek is a threat to the spring pygmy sunfish (Drennen, pers. obsv. 2007-2011; Sandel 2011, pp. 3-6; National Water Quality Assessment (NAWQA) program, http://tn.water.usgs.gov/lten/lten.html) because of the reduction of the water levels in the aquifer and resultant decreased spring outflow (Cook, Geological Survey of Alabama (GSA), pers. comm., 2011). Sandel (in Kuhajda *et al.* 2009, p. 19; 2011, pp. 3-6) documented a relationship between pumping activities in Moss, Horton, and Thorsen Springs and degraded spring pygmy sunfish habitat. Specifically, in Thorsen Spring, during 2007, water was extracted to a level that destroyed vegetation and decreased the abundance of the spring pygmy sunfish by 99 percent (Sandel, pers. obs., 2004 through 2009; Sandel 2011, p. 6). The proximity of the spring pygmy sunfish's habitat to agricultural land throughout its range makes it vulnerable to impacts due to the extraction of groundwater for agricultural uses. Sandel (in Kuhajda *et al.* 2009, p. 19) estimated that up to 16,000 gpm (62,000 lpm) of water was extracted from the Beaverdam Spring/Creek watershed for agricultural purposes during drought conditions during the 2008 growing season. He further estimated that this level of withdrawal desiccated and killed aquatic vegetation necessary for the spawning, foraging, and shelter of the species.

Commercial water withdrawal from this same aquifer by the Limestone County pumping station, between 2006 and 2011, was over 1 billion gallons (3.9 billion liters) at an estimated flow rate of 450 gpm (1,740 lpm)(Holland, pers. comm., 2011). Heavy groundwater withdrawal by the cities of Huntsville and Madison (east of the spring pygmy sunfish habitat), and the adjacent rural population, is estimated at 16 million gallons per day (62 million liters per day) (U.S. Geological Survey National Aquatic Water Quality Assessment 2001, 2009; Sandel, pers. comm., 2007-2009; Kingsbury 2003, p. 2; Hoos *et al.* 2001, p. 1). Withdrawal of groundwater by pumping, at high levels such as those above, especially during drought conditions, can cause changes to water budgets (Healy 2010, p. 15) and the natural flow of spring systems (Alley in Likens 2009, p. 91). Pumping from wells beside streams also lowers groundwater levels and reduces surface water flow within streams and spring runs. In smaller streams, decreased flow caused by pumping can be large enough to create harmful effects upon the stream and its wildlife (Hunt 1999, pp. 98-102). Water extraction by pumping also causes a loss of aquifer storage and lowers the pressure in the aquifer (Theis 1935, p. 519), resulting in decreased spring flow velocity and quantity to adjacent streams. These reductions in the natural flow regime can adversely affect the spring pygmy sunfish.

In several large springs in the United States, groundwater extraction for public consumption and agricultural use has impacted listed fish species by decreasing groundwater levels. Examples include the endangered Devil's Hole pupfish (*Cyprinodon diabolis*) (Hoffman *et al*. 2003, p. 1248) and the endangered fountain darter (*Etheostoma fonticola*) (Service 1996, p. 19). Water extraction in spring pygmy sunfish habitat is causing desiccation and reduction of the aquatic vegetation, and concentrating pollutants.

The effects on stream flow after water extraction stops may be greater due to the overall decrease in water quantity in the stream. Decreased water levels after pumping in the spring pool correspond to decreased aquatic vegetation in the system; less water quantity increases the desiccation of vegetation, which may negatively impact the species (Jandebeur 1979, pp. 4-8; Mayden 1993, pp. 11-12) by reducing the vegetative cover and contributing to eutrophication of the water, as demonstrated with spring pygmy sunfish habitat impacts and subsequent population declines in Moss, Horton, and Thorsen Springs (Sandel pers. obs. 2004 through 2009; 2011, pp. 3-6).

Water Quality

The heavy use of chemicals within spring pygmy sunfish habitat and the recharge areas of occupied spring systems is a potential threat to the species. The intensive agricultural practices and proposed urbanization and industrialization plans within the immediate area of the watershed threaten to contaminate the groundwater in the aquifer supplying the Beaverdam Spring/Creek site (Healy 2010, p. 70). Transportation of contaminants to the aquifer by recharge water can be slow and steady or highly episodic over time (Healy 2010, p. 75). In a similar spring system in northeast Alabama, the threatened pygmy sculpin (*Cottus paulus*) is believed to be impacted by the increased concentration of toxins entering the aquifer from a nearby military base (Thomas, pers. comm., 2009).

Fertilizers and pesticides are transported to the aquifer by recharge, or into surface water routes, where they eventually enter springs and are a threat to the survival of fishes found there (Hoffman *et al*. 2003, p. 1248; U.S. Fish and Wildlife Service 1996, pp. 35-36). Toxins can concentrate when spring flow is reduced, posing an even greater threat to spring fishes. The Beaverdam Spring/Creek watershed has the highest annual crop harvest, the highest total annual nitrogen use, and second highest annual phosphorus use, along with elevated pesticide usages detected in groundwater, within the Eastern Highland Rim (Mooreland 2011, p. 2; NAWQA 2009, http://water.usgs.gov/nawqa/digmap.html; Kingsbury 2003, p. 20). Both the historic and extant spring pygmy sunfish populations in Limestone County (Beaverdam Spring/Creek, Pryor Springs) are within the Wheeler Lake Basin (southern boundary of Limestone County), where Tsegaye *et al.* (2006, pp. 175-176) found that rapid urbanization with associated decrease in agricultural land cover is likely responsible for water quality degradation in streams from non-point source phosphorus pollution. Phosphorus content of groundwater is generally low (Wetzel 1983, p. 281). However, urbanization increases the amount of phosphorus from residential fertilizers and storm sewer drainage (Wetzel 1983, p. 281) that may enter groundwater recharge areas. Phosphorus limits biological productivity (Wetzel 1983, p. 255) by impacting organismal metabolism. Nitrogen also impacts aquatic life. For instance, un-ionized ammonia (which contains nitrogen) is highly toxic to fish (Hoffman *et al*. 2003, p. 681). The planned development adjacent to spring pygmy sunfish habitat is likely to increase phosphorus and nitrogen levels in the future.

Aquatic plants, which the spring pygmy sunfish uses for spawning, shelter, and foraging, are also impacted by indiscriminate use of chemicals (Jandebeur 2012, p. 2; Sandel 2011, pp. 1–5, 8–9). Since 1945, herbicide usage, cattle grazing, and irrigation have occurred throughout the spring systems and waterways that are habitat for this species (Jandebeur 1979, pp. 4–8). Aquatic vegetation management within Thorsen Spring, Horton Spring, and the Pryor Spring/Branch system has removed the spring pygmy sunfish's shelter vegetation, egg substrate, and food sites (Jandebeur 1979, pp. 4–8; Mayden 1993, p. 9; Jandebeur 2012, p. 2). Agricultural chemical contamination results in sublethal toxic effects in fish species, affecting the immune system, hormone regulation, reproduction, and developmental stages (Hoffman *et al.* 2003, pp. 1056-–1063, 1242). The spring pygmy sunfish's negative response to herbicides (Hoffman *et al.* 2003, p. 1242) is documented by the subsequent reduction and eventual loss of the population in Pryor Branch after the application of 2, 4-dichlorophenoxyacetic acid (2,4-D) to that area in the 1940s (Jandebeur 2012, pp. 1–18). This herbicide is toxic to fish and aquatic invertebrates, and has properties and characteristics associated with chemicals generally detected in groundwater contamination. Decaying vegetation caused by the application of this herbicide also impacts fishes by reducing dissolved oxygen levels (Environmental Protection Agency (EPA) Material Safety Data Sheet, pp. 1–13).

Many of the same chemicals used in large-scale agricultural practices are also used by municipal entities including urban and rural households. Stormwater runoff from city streets, construction sites, and storm sewers; household wastes; and leachate from septic tanks and landfills alter the sediment load in aquatic systems and deposit

contaminants into surface and groundwater sources (Likens 2009, p. 90). Water quality degradation from chemicals will increase with the expected increase in urbanization and industrialization of the area.

Overgrazing by livestock is a major threat to springs, especially where animals have free range through spring systems and wetlands. Cows tend to congregate in wetland areas, where they consume and trample vegetation, thereby reducing shade around the spring and increasing the water temperature. Livestock also trample banks in springs and spring runs, leading to increased stormwater and sediment runoff, which eliminates habitat for invertebrate prey species (Erman 2002, p. 8; Sada *et al*. 2001, pp. 14–16). Excessive sediment runoff during stormwater events decreases water clarity, which reduces light penetration needed for plant growth and results in impacts to the spring pygmy sunfish's spawning and feeding sites.

Timber harvesting and land clearing can also have impacts on spring water quality and associated spring species. Recent tree removal along the boundary of the Wheeler National Wildlife Refuge, which is spring pygmy sunfish habitat and part of the Beaverdam Spring/Creek system, highlights the need for careful management of spring habitats (Hurt, pers. comm., 2012). The removal of the trees greatly reduced the buffer along the Beaverdam Spring/Creek system and will likely increase sedimentation into the stream during stormwater runoff. An appropriate mixture of shade and sunlight is needed for the proper growth and maintenance of vegetation in the spring environment. This vegetation is important to maintaining a stable water temperature and habitat for an invertebrate prey base. Reducing shade by mechanical logging and clearing can increase

atypical spring flow, lead to greater spring run flow variability, and increase sedimentation (Erman 2002, p. 9) by altering the existing geomorphology and enhancing stormwater runoff.

Conservation Efforts to Reduce Habitat Destruction, Modification, or Curtailment

When considering whether or not to list a species under the Act, we must identify existing conservation efforts and their effect on the species. Under the Act and our policy implementing this provision, known as the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) (68 FR 15100; March 28, 2003), we must evaluate the certainty of an effort's effectiveness on the basis of whether the effort or plan: Establishes specific conservation objectives; identifies the necessary steps to reduce threats or factors for decline; includes quantifiable performance measures for the monitoring of compliance and effectiveness; incorporates the principles of adaptive management; is likely to be implemented; and is likely to improve the species' viability at the time of the listing determination. In general, in order to meet these standards for the spring pygmy sunfish, conservation efforts must, at minimum, report data on existing populations, describe activities taken toward conservation of the species, demonstrate either through data collection or best available science how these measures will alleviate threats, provide for a mechanism to integrate new information (adaptive management), and provide information regarding certainty of the implementation (e.g., funding and staffing mechanisms).

The Service entered into a CCAA for the benefit of the spring pygmy sunfish with Belle Mina Farms, Ltd., and the Land Trust of Huntsville and North Alabama

(Land Trust) on June 7, 2012. The area covered under the CCAA is approximately 3,200 acres and encompasses the upper 24 percent of habitat occupied by the Beaverdam Spring/Creek metapopulation, which is currently the only known population for the species. Under the CCAA, the landowner agrees to implement conservation measures to address known threats to the species. These measures will help protect the species on his property in the near term and also minimize any incidental take of the species that might occur as a result of conducting other covered activities, if the species becomes federally listed in the future. Conservation measures to be implemented by the landowner on this property will assist in the reduction of chemical usage and stormwater runoff from agricultural fields by establishing and maintaining vegetated buffer zones around Moss and Beaverdam Spring. The landowner also agrees to restrict timber harvest and cattle grazing within the Beaverdam Spring/Creek and Moss Spring habitats, and to refrain from any deforestation, industrial/residential development, aquaculture, temporary or permanent ground water removal installations, and other potentially damaging actions without prior consultation with the Service and the Service's written agreement. These actions will minimize impacts and help to maintain groundwater recharge of the aquifer and adequate spring flow. The Land Trust will conduct monitoring on the progress of the conservation actions and annual habitat analyses.

The CCAA and associated enhancement of survival permit have a duration of 20 years; however, under a special provision of this CCAA, if at any time a 15 percent decline in the status of the spring pygmy sunfish is determined, there will be a

reevaluation of the conservation measures set forth in the CCAA. If such a reevaluation reflects a need to change the conservation measures, the amended measure(s) will be implemented or the CCAA will be terminated and the permit surrendered.

Conservation efforts set forth in this CCAA are a positive step toward the conservation of the spring pygmy sunfish. These conservation actions will reduce the severity of some of the threats to the species outlined under Factor A within the upper portion of the Beaverdam Spring/Creek and Moss Spring sites. However, these conservation measures and the CCAA are restricted to only the upper 24 percent of occupied habitat in the Beaverdam Spring/Creek complex. There is no protection for the 24 percent of the species' habitat within the middle reach of the Beaverdam Spring/Creek System. The remaining 52 percent of the species' habitat, although it is federally owned and protected, is considered marginal habitat in the lower reach of the Beaverdam Spring/Creek System. In the middle and non-protected area below the CCAA protected site, land use practices continue to contribute to water quantity and water quality degradation. In addition, the large-scale development planned adjacent to this species' habitat, and outside the boundaries of the land enrolled in the CCAA, continues to pose a threat to the spring pygmy sunfish and its habitat. Furthermore, since this CCAA has been just recently enacted, there has yet to be long-term monitoring, which is needed to evaluate the overall effectiveness of these efforts.

Summary of Factor A

As discussed above, the spring pygmy sunfish and its habitat are currently facing the threats of both declining water quality and quantity. Excessive groundwater usage, and the resultant reduction of the water levels in the aquifer/recharge areas and decreased spring outflow in the Beaverdam Spring/Creek system, is believed to have negatively impacted the spring pygmy sunfish and its habitat. Contamination of the recharge area and aquifer from the intensive use of chemicals (i.e., herbicides, pesticides, fertilizers) within the spring pygmy sunfish's habitat poses a threat to the species' survival. Stormwater discharge from agricultural lands and urban sites compounds the water quality degradation by increasing sediment load and depositing contaminants into surface and groundwater sources. In addition, the large-scale residential and industrial development planned adjacent to the Beaverdam Spring/Creek system will exacerbate the decreasing water quantity and quality issues within the habitat of the spring pygmy sunfish's single metapopulation. Overgrazing by livestock and land clearing near and within the spring systems reduces the vegetation in the spring and increases stormwater and sediment runoff, posing a threat to the single spring pygmy sunfish population, particularly in the middle and lower portions of its range.

Based on our review of the best commercial and scientific data available, we conclude that the present or threatened destruction, modification, and curtailment of its habitat or range is currently a threat to the spring pygmy sunfish and is expected to persist and possibly escalate in the future, particularly in light of the increasing demands for groundwater and large-scale development that is planned near this species' habitat. While the CCAA has reduced some of the threats under this factor, it only covers a

portion of the extant range of the species, and will not ameliorate all threats of ongoing and potential water quantity and water quality degradation.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The spring pygmy sunfish is not a commercially valuable species. However, this species has been actively sought by researchers since its discovery in 1937. Overcollecting may have been a localized factor in the historical decline of this species, particularly within the introduced population in Pryor Spring/Branch (Jandebeur 2012, p. 14); however, the overall impact of collection on the spring pygmy sunfish population is unknown (Jandebeur 2012, p. 14). The localized distribution and small size of known populations renders them vulnerable to overzealous recreational or scientific collecting. However, at this time we have no specific information indicating that overcollection rises to the level to pose a threat to the species now or in the future. Therefore, we find that overutilization for commercial, recreational, scientific, or educational purposes does not constitute a threat to the spring pygmy sunfish at this time.

Factor C: Disease or Predation

Diseases of the spring pygmy sunfish are poorly known, and we have no specific information indicating that disease occurs within spring pygmy sunfish populations or poses a threat to the species. Eggs, juveniles, and adult spring pygmy

sunfish are preyed upon by some invertebrate species, parasites, and vertebrate species such as frogs, snakes, turtles, other fish, and piscivorous (fish-eating) birds. It is possible that predation increases when fish are concentrated in smaller areas when groundwater is depleted through water extraction. However, we have no evidence of any specific declines in the spring pygmy sunfish due to predation.

In summary, we conclude that the best scientific and commercial information available indicates, at the present time, that diseases or predation are not threats to the spring pygmy sunfish.

Factor D: The Inadequacy of Existing Regulatory Mechanisms

The spring pygmy sunfish and its habitat are afforded some protection from surface water quality and habitat degradation under the Clean Water Act (33 U.S.C. 1251 et seq.), and the Alabama Water Pollution Control Act (Code of Alabama, sections 22-22-1 *et seq*.) and regulations promulgated by the Alabama Department of Environmental Management (Maynard and Gale 1995, pp. 20-28). While these laws have resulted in some improvement in water quality and stream habitat for aquatic life, such as requiring landowners engaged in agricultural practices to have an erosion prevention component within their farm plan, alone they have not been fully adequate to protect this species due to inconsistent implementation, monitoring, and enforcement. Furthermore, habitat degradation is ongoing despite the protection afforded by these laws.

The State of Alabama maintains water-use classifications through issuance of National Pollutant Discharge Elimination System (NPDES) permits to industries, municipalities, and others; these permits set maximum limits on certain pollutants or pollutant parameters. For water bodies on the Clean Water Act's section 303(d) List of Impaired Water Bodies, 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. Many of the water bodies within the occupied range of the spring pygmy sunfish do not meet Clean Water Act standards (Alabama 2008 section 303(d) List of Impaired Water Bodies).

The State of Alabama's surface water quality standards, adopted from the national standards set by the EPA, were established with the intent to protect all aquatic resources within the State of Alabama. These water quality regulations appear to be protective of the spring pygmy sunfish as long as discharges are within permitted limits and are enforced according to the provisions of the Clean Water Act. Unregulated and indiscriminate groundwater and surface water extraction has been identified as a threat to spring species (see Factor A discussion above). Within the State of Alabama, regulations concerning groundwater issues are limited (Alabama Law Review 1997, p. 1). Alabama common law follows a "reasonable use rule" for the extraction of groundwater, and there is a statutory framework that regulates and governs groundwater extraction (Chapman *et al.* 2005, p. 9; Alabama Water Resources Act, Code of Alabama, sections 9-10B-1 *et seq*.). Water users must file a declaration of beneficial use, be issued a certificate of use, and be permitted and monitored periodically. The Alabama Water Commission can place restrictions on certificates of use in certain designated water capacity stressed areas;

however, the Alabama Water Commission has not identified any stressed groundwater areas in or near spring pygmy sunfish habitat. Large volumes of groundwater continue to be extracted in areas not identified as "stressed groundwater areas" such as the Beaverdam Spring/Creek watershed, and this likely depresses water levels in nearby wells (Hairston *et al*. 1990, p. 7) and springs (Younger 2007, p. 162). Such groundwater extraction has likely depleted the aquifer that supplies water to Beaverdam Spring and the spring pygmy sunfish. Thus, water use restrictions under common law (Chapman *et al.* 2005, p. 10) provide marginal protection for the species.

Summary of Factor D

The spring pygmy sunfish and its habitat are afforded limited protection from surface water quality and habitat degradation under Federal and State regulations. Notwithstanding this limited protection, large volumes of groundwater are continually extracted, and these extractions likely threaten the aquifer that supplies water to spring pygmy sunfish habitat. Degradation of habitat within the current range of this species is ongoing despite the protections afforded by these existing laws. Therefore, based on the best scientific and commercial information available, we consider the inadequacy of existing regulatory mechanisms to be a threat to spring pygmy sunfish.

Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence

Impediments to migration, connectivity, and gene flow between or within spring systems are threats to maintaining genetic diversity in the spring pygmy sunfish. Habitat

connectivity is critical to maintaining heterozygosity (genetic diversity) within populations of the species and reducing inbreeding, thereby maintaining the integrity of the population (Hallerman 2003, pp. 363–364). Connectivity of spring pygmy sunfish habitats is also necessary for improvement in water quality through flushing and diluting pollutants and increasing water quantity, and by linking spring segments together. Connectivity maintains water flow between Beaverdam Spring/Creek habitats and allows for potential colonization of unoccupied areas when conditions become favorable for the species. Mechanical fragmentation of the habitat has formed smaller, isolated subpopulations of spring pygmy sunfish. Localized environmental changes caused by agriculture, urbanization, and other anthropogenic disturbances of the spring systems throughout the watersheds of the Eastern Highland Rim have exacerbated fragmentation of spring habitat (Sandel 2011, pp. 3-–6; 2008, pp. 2–4, 13). Over time, this fragmentation of the spring pygmy sunfish's habitat will impose negative selective pressures on the species' populations, such as genetic isolation; reduction of space for rearing, recruitment, and reproduction; reduction of adaptive capabilities; and increased likelihood of local extinctions (Sandel 2011, pp. 8–10; Burkhead *et al*. 1997, pp. 397–399).

Climate Change

"Climate" refers to an area's long-term average weather statistics (typically for at least 20- or 30-year periods), including the mean and variation of surface variables such as temperature, precipitation, and wind; "climate change" refers to a change in the mean

or variability or both of climate properties that persists for an extended period (typically decades or longer), whether due to natural processes or human activity (Intergovernmental Panel on Climate Change (IPCC) 2007a, p. 26). Although changes in climate occur continuously over geological time, changes are now occurring at an accelerated rate. For example, at continental, regional, and ocean basin scales, recent observed changes in long-term trends include: A substantial increase in precipitation in eastern parts of North American and South America, northern Europe, and northern and central Asia, and an increase in intense tropical cyclone activity in the North Atlantic since about 1970 (IPCC 2007a, p. 30); and an increase in annual average temperature of more than 2 °F (1.1 °C) across United States since 1960 (Global Climate Change Impacts in the United States (GCCIUS) 2009, p. 27). Examples of observed changes in the physical environment include: An increase in global average sea level, and declines in mountain glaciers and average snow cover in both the northern and southern hemispheres (IPCC 2007a, p. 30); substantial and accelerating reductions in Arctic sea-ice (e.g., Comiso *et al*. 2008, p. 1); and a variety of changes in ecosystem processes, the distribution of species, and the timing of seasonal events (e.g., GCCIUS 2009, pp. 79–88).

The IPCC used Atmosphere-Ocean General Circulation Models and various greenhouse gas emissions scenarios to make projections of climate change globally and for broad regions through the 21st century (Randall *et al*. 2007, pp. 596–599), and reported these projections using a framework for characterizing certainty (Solomon *et al*. 2007, pp. 22–23). For example: (1) It is virtually certain there will be warmer and more frequent hot days and nights over most of the earth's land areas; (2) it is very likely there

will be increased frequency of warm spells and heat waves over most land areas, and the frequency of heavy precipitation events will increase over most areas; and (3) it is likely that increases will occur in the incidence of extreme high sea level (excludes tsunamis), intense tropical cyclone activity, and the area affected by droughts (IPCC 2007b, p. 8, Table SPM.2). More recent analyses using a different global model and comparing other emissions scenarios resulted in similar projections of global temperature change across the different approaches (Prinn *et al*. 2011, pp. 527, 529).

All models (not just those involving climate change) have some uncertainty associated with projections due to assumptions used, data available, and features of the models; with regard to climate change this includes factors such as assumptions related to emissions scenarios, internal climate variability, and differences among models. Despite this, however, under all global models and emissions scenarios, the overall projected trajectory of surface air temperature is one of increased warming compared to current conditions (Meehl *et al*. 2007, p. 762; Prinn *et al*. 2011, p. 527). Climate models, emissions scenarios, and associated assumptions, data, and analytical techniques will continue to be refined, as will interpretations of projections, as more information becomes available. For instance, some changes in conditions are occurring more rapidly than initially projected, such as melting of Arctic sea-ice (Comiso *et al*. 2008, p. 1; Polyak *et al*. 2010, p. 1797), and since 2000, the observed emissions of greenhouse gases, which are a key influence on climate change, have been occurring at the mid- to higher levels of the various emissions scenarios developed in the late 1990s and used by the IPCC for making projections (e.g., Raupach *et al*. 2007, Figure 1, p. 10289; Manning *et al*. 2010, Figure 1, p. 377; Pielke *et al.* 2008, entire). Also, the best scientific and

commercial data available indicate that average global surface air temperature is increasing and several climate-related changes are occurring and will continue for many decades even if emissions are stabilized soon (e.g., Meehl *et al*. 2007, pp. 822–829; Church *et al*. 2010, pp. 411–412; Gillett *et al*. 2011, entire).

Changes in climate can have a variety of direct and indirect impacts on species, and can exacerbate the effects of other threats. Rather than assessing "climate change" as a single threat in and of itself, we examine the potential consequences to species and their habitats that arise from changes in environmental conditions associated with various aspects of climate change. For example, climate-related changes to habitats, predator-prey relationships, disease and disease vectors, or conditions that exceed the physiological tolerances of a species, occurring individually or in combination, may affect the status of a species. Vulnerability to climate change impacts is a function of sensitivity to those changes, exposure to those changes, and adaptive capacity (IPCC 2007, p. 89; Glick *et al*. 2011, pp. 19-22). As described above, in evaluating the status of a species, the Service uses the best scientific and commercial data available, and this includes consideration of direct and indirect effects of climate change. As is the case with all potential threats, if a species is currently affected or is expected to be affected by one or more climate-related impacts, this does not necessarily mean the species is an endangered or threatened species as defined under the Act. If a species is listed as endangered or threatened, this knowledge regarding its vulnerability to, and impacts from, climate-associated changes in environmental conditions can be used to help devise appropriate strategies for its recovery.

While we do not have specific information concerning the effect of climate change on spring pygmy sunfish and its habitat, we do know that climate affects groundwater budgets (inflow and outflow) by influencing precipitation and evaporation and, therefore, the rates and distribution of recharge of the aquifer. Climate also affects human demands for groundwater and affects plant transpiration from shallow groundwater in response to solar energy and changing depths to the water table (Likens 2009, p. 91). Chronic regional drought between 2000 and 2005 within the Tennessee Valley decreased rates of surface water flow and aquifer recharge. Water extraction (of both groundwater and surface water) during drought periods exacerbated damage to the spring pygmy sunfish and its habitat (Sandel 2009, p. 15).

Long-term droughts have impacts on groundwater by increasing groundwater extraction for public consumption and agriculture, which in turn does not replenish surface waters (Likens 2009, p. 91). The prolonged drought within northern Alabama during 2006 to 2008 was exceptional (Jandebeur 2012, p. 13) and, along with the severe drought of 1950 to 1963 (Jandebeur 2012, p. 13), may have contributed to the demise of the Pryor Spring/Branch population of the spring pygmy sunfish by increasing toxic concentrations of herbicides and by increasing the desiccation of aquatic vegetation.

Conservation Efforts to Reduce or Eliminate Other Natural or Manmade Factors

The CCAA will likely reduce some of the threats to groundwater caused by climate change within the upper portion of the species' range by minimizing impacts and helping to maintain groundwater recharge of the aquifer, protecting surface water flow, and limiting groundwater extraction. Under the CCAA, the Service will provide technical assistance and groundwater management advice. Additionally, adaptive

management measures of the CCAA concern groundwater usage, including pumping from the aquifer and avoidance of temporary or permanent ground water removal installations. Also under the CCAA, the landowner will not engage in practices that may disturb water quality during low water levels in drought periods, such as pesticide and herbicide use, stock farm ponds, and aquaculture, within the designated protected area. These conservation measures will help protect the species on this property in the near term and also minimize any incidental take of the species that might occur as a result of conducting other covered activities, should the species become listed in our final determination. However, because of anthropogenic factors such as urbanization or intensive agriculture, these conservation measures may be inadequate during drought periods caused by climate change or other natural phenomena.

Summary of Factor E

In summary, habitat fragmentation and its resulting effects on gene flow and potential demographic impacts within the population is a substantial threat and is affecting the spring pygmy sunfish's continued existence. Climate change, in particular drought, affects groundwater budgets (inflow and outflow) by influencing the rates and distribution of recharge of the aquifer, affects human demands for groundwater, and affects plant transpiration from shallow groundwater reserves. Based on the best available information, we conclude that the spring pygmy sunfish faces threats from other natural or manmade factors affecting its continued existence. These threats continue despite the beneficial effects of the CCAA.

Finding

As required by the Act, we conducted a review of the status of the species and considered the five factors in assessing whether the spring pygmy sunfish is endangered or threatened throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the spring pygmy sunfish. We reviewed the petition, information available in our files, and other available published and unpublished information, and we consulted with recognized spring pygmy sunfish experts and other Federal and State agencies.

The identified threats to the spring pygmy sunfish are attributable to Factors A, D, and E, as described in more detail in the **Summary of Information Pertaining to the Five Factors** section above. The primary threat to the species is from habitat modification (Factor A) in the form of planned urban and industrial development of land adjacent to spring pygmy sunfish habitat and the resultant impacts to the surrounding aquifer recharge area, coupled with ongoing threats associated with ground and surface water withdrawal and water quality within the spring systems where this species currently occurs and historically occurred. We find that this threat of increased urban and industrial development and the associated infrastructure, along with the current human use of the area, is a threat to the spring pygmy sunfish, causing direct mortality as well as permanent loss, fragmentation, or alteration of its habitat.

The degradation of habitat throughout the species' range is ongoing despite the protections afforded by existing Federal and State laws and policies (Factor D). Habitat

fragmentation and its resulting effects on gene flow and potential demographic impacts within the population is a threat (Factor E) and is affecting the spring pygmy sunfish's continued existence. The recently established CCAA provides a measure of protection for the species in the upper reach of the population, with the implementation of conservation measures that increase or preserve water quantity and reduce water quality degradation and prohibit any potentially damaging land use actions in that area (Factor A). However, these conservation measures only extend to that portion of the population enrolled in the CCAA, which protects 24 percent of the total occupied habitat. Although this CCAA reduces some of the threats under Factors A and E, the CCAA is not able to ameliorate all of the threat factors to this species rangewide.

Based on our evaluation of the best scientific and commercial information available regarding the past, present, and future threats faced by the spring pygmy sunfish, we have determined the continued existence of the spring pygmy sunfish is under threat from: Ongoing and planned urban and industrial development and associated activities; ongoing agricultural practices, including water extraction from groundwater and surface water; the reduction of aquifer recharge, resulting in changes in hydrology; surface and groundwater pollution; past and present use of fertilizers and pesticides; climate change; inadequate regulatory mechanisms; and habitat fragmentation and resultant interruption in gene flow. These threats exist despite the beneficial effects of the CCAA. Because the species faces these threats throughout its extremely limited range, we find that the spring pygmy sunfish is warranted for listing throughout its range.

Status Evaluation

The Act defines an endangered species as any species that is in danger of extinction throughout all or a significant portion of its range, and a threatened species as one that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. In this proposal of the status of the spring pygmy sunfish, we take into account the protection afforded to the springhead and upper portion of the population through the established CCAA (helping to moderate threats under Factors A and E), and look carefully at future potential threats, especially the potential impact of residential and commercial development, which is currently only in the planning stage. Based on our evaluation of the best available scientific and commercial information related to the extremely restricted range of the species, threats to it and its habitat, future potential threats, and conservation measures currently underway through an established CCAA, we have determined that the species is threatened by multiple factors (Factors A, D, and E) throughout all of its range. Specifically, we have determined that the species is likely to become endangered in the foreseeable future, and therefore meets the definition of a threatened species. Threatened status was determined to be proposed for the spring pygmy sunfish because it is not considered to be in immediate danger of extinction primarily due to the ongoing conservation measures in the CCAA, which offers protection to the Beaverdam springhead and the most robust portion of the population. In addition, impacts to the species from large-scale industrial and residential development adjacent to the spring are not imminent, as developments are still in the planning stage. The species is not endangered, because it is not currently in immediate danger of

extinction, but as noted, we find that it is likely to become in danger of extinction throughout its range in the foreseeable future, which is the definition of a threatened species. Because the range of the species consists of a single occurrence location, and we have determined that the species is at risk of becoming endangered in that location, we do not need to further analyze whether there may be a significant portion of the range of the species that has a different status.

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 of a species through listing results in increased public awareness and more focused conservation efforts by Federal, State, Tribal, 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 measures required of Federal agencies and the prohibitions against certain activities involving listed wildlife are discussed, in part, below, and additionally in the **Effects of Critical Habitat Designation** section of this proposed rule 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, nongovernment 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 Mississippi Ecological Services 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 also occur on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands. The CCAA between the Service, Belle Mina Farms Ltd., and the Land Trust identifies several strategies that will support recovery efforts, including: (1) Maintenance of vegetation buffer zones along the springs; (2) prohibition of cattle within the spring; (3) prohibition of deforestation, land clearing, industrial development, residential development, aquaculture, temporary or permanent ground water removal installations, stocked farm ponds, pesticide and herbicide use, and impervious surface installation within the protected area of the CCAA; and (4) establishment of a biological monitoring program for the spring pygmy sunfish and its habitat.

If this species is listed, funding for recovery actions will become available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, under section 6 of the Act, the State of Alabama would be eligible for Federal funds to implement management actions that promote the protection and recovery of the spring pygmy sunfish. Information on our grant programs that are available to aid species recovery can be found at: *http://www.fws.gov/grants*.

Although the spring pygmy sunfish is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species

whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act 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. Section 7(a)(4) of the Act 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) of the Act 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 affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include Federal activities that may affect spring pygmy sunfish, including, but not limited to: The carrying out or the issuance of permits for discharging fill material on wetlands for road or highway construction; installation of utility easements; development of residential, industrial, and commercial facilities; unsustainable farming practices, including indiscriminate use of chemicals, and decreasing buffers around fields and drainage ditches and swales; channeling or other stream geomorphic changes; discharge of contaminated or sediment laden waters; wastewater facility development; and excessive groundwater and surface

water extraction. Additional actions that may require conference or consultation or both include.

(1) Actions that would significantly alter the structure and function of the spring system. Such actions or activities could include, but are not limited to, the filling or excavation of spring heads, spring pools, spring-fed wetlands, and spring runs. The filling or excavation of the spring system would alter the hydrology of the site and would destroy the vegetation, water quality, and water quantity where spring pygmy sunfish spends all of its life stages. The filling or excavation of the spring systems could result in the direct mortality of the species where the species is known to occur.

(2) Actions that would significantly alter the aquatic vegetation structure in and around the spring associated wetland. Such actions or activities could include, but are not limited to, vegetation cutting or herbicide usage for expanding or maintaining roads, construction of new roads, maintenance of agricultural fields, construction of new agricultural fields, development of new residences, development of new commercial establishments, or industrial development. Alteration of the vegetation structure would likely change the spring-fed wetland characteristics by changing the microhabitat (e.g., change in temperature and humidity levels) and could result in direct mortality of individuals and egg clutches through desiccation from sun exposure.

(3) Actions that may alter the natural outflow and quantity of water from the spring head and through the spring run into the stream channels. Such actions or activities could include, but are not limited to, changes in the hydrology of Beaverdam Spring/Creek and related recharge area and aquifer. These actions include, but are not

limited to, excessive water extraction for public, municipal, industrial, and agricultural usages.

(4) Actions that would significantly degrade water quality parameters such as pH, alkalinity, conductivity, turbidity, and others (i.e., contaminants, excess nutrients). Stormwater discharge laden with chemicals and sediments can enter groundwater and surface water systems. Decreasing water quantity concentrates chemicals and also encourages eutrophic (nutrient rich) conditions.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions of section 9(a)(1) of the Act, and its implementing regulations at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt any of these), import, 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. The regulations at 50 CFR 17.31 extend the prohibitions listed above to threatened species, with certain exceptions. Under the Lacey Act (18 U.S.C. 42-43; 16 U.S.C. 3371-3378), it is also illegal to possess, sell, deliver, carry, transport, or ship any such 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 and threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered species, and at 17.32 for

threatened species. With regard to endangered wildlife, a permit must be issued for take for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify, to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act;

(2) Introduction of species that compete with or prey upon the spring pygmy sunfish;

(3) The unauthorized release of biological control agents that attack this species' habitat or any of its life stages;

(4) Unauthorized modification of the vegetation composition or hydrology, or violation of any discharge or water withdrawal permit that results in harm or death to any individuals of this species or that results in degradation of its occupied habitat to an extent that essential behaviors such as breeding, feeding, and sheltering are impaired;

(5) Unauthorized destruction or alteration of their habitats (such as

channelization, dredging, sloping, removing of substrate, or discharge of fill material) that impairs essential behaviors, such as breeding, feeding, or sheltering, or that results in killing or injuring spring pygmy sunfish; and

(6) Unauthorized discharges or dumping of toxic chemicals or other pollutants into the aquifer directly through wells or into the spring system or indirectly into recharge areas supporting spring pygmy sunfish that kills or injures the species or that otherwise impairs essential life-sustaining requirements, such as breeding, feeding, or sheltering (destruction of vegetation and substrate).

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, 1875 Century Blvd., NE, Atlanta, GA 30345 (telephone 404–679–7313; facsimile 404–679–7081).

Critical Habitat

Background

It is our intent to discuss below only those topics directly relevant to the designation of critical habitat for the spring pygmy sunfish in this section of the proposed rule.

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

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

(a) Essential to the conservation of the species and

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

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

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

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

ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) 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 landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographic area occupied by the species at the time it is listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. In identifying those physical and biological features within an area, we focus on the principal biological or physical constituent elements (primary constituent elements (PCEs) such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. Primary constituent elements are the elements of physical or biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographic area occupied by the species at

the time it is listed, upon a determination that such areas are essential for the conservation of the species. We designate critical habitat in areas outside the geographic area occupied by a species only when a designation limited to occupied habitat would be inadequate to ensure the conservation of the species.

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

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

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include

all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. If we list the spring pygmy sunfish and designate critical habitat for the species, areas that are important to the conservation of the species, both inside and outside the critical habitat designation, would continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools would continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation would not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that the Secretary designate critical habitat at the time the species is

determined to be endangered or threatened to the maximum extent prudent and determinable. These 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.

As we have discussed above under the Factor B analysis, there is currently no imminent threat of take attributed to collection (for commercial, recreational, scientific, or educational purposes) of this species. Moreover, there is no information to indicate that identification of critical habitat is expected to create such a threat to the species. In the absence of a finding that the designation of critical habitat would increase threats to a species, then a prudent finding is warranted if there are any benefits to a critical habitat designation. Potential benefits of designation 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 or private entities; 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 modifies critical habitat. Lands proposed for designation as critical habitat would be subject to Federal actions that trigger section 7 consultation requirements. These include land management planning and Federal agency actions. There may also be educational or

outreach benefits to the designation of critical habitat. Critical habitat designation identifies those physical and biological features of the habitat essential to the conservation of spring pygmy sunfish and that may require special management and protection. Accordingly, this designation would provide information to individuals, local and State governments, and other entities engaged in activities or long-range planning in areas essential to the conservation of the species. Conservation of the spring pygmy sunfish and the essential features of its habitat requires habitat management, protection, and restoration, which would be facilitated by knowledge of habitat locations and the physical and biological features of the habitat. Based on this information, we believe critical habitat would be beneficial to this species. Therefore, we have determined that the designation of critical habitat for spring pygmy sunfish is prudent.

Determinability

Our regulations (50 CFR 424.12(a)(2)) state that critical habitat is not determinable when one or both of the following situations exist: (1) Information sufficient to perform required analysis of the impacts of the designation is lacking, or (2) the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

Delineation of critical habitat requires identification of the physical and biological habitat features that are essential to the conservation of the species. We have reviewed the available information pertaining to the known distribution of spring pygmy sunfish and the characteristics of the habitat currently occupied. This information represents the best scientific and commercial data available and leads us to conclude that, although

available information is limited, it is sufficient to identify specific areas that meet the definition of critical habitat. Therefore, we have found that critical habitat is determinable for spring pygmy sunfish.

Physical or Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

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

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

(3) Cover or shelter;

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

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

We derive the specific physical and biological features required for the spring pygmy sunfish from studies of this species' habitat, ecology, and life history as described in the **Background** section of this proposed rule and information presented below. There

is limited information on this species' specific habitat requirements, other than it requires springs and connecting spring-fed reaches and wetlands; an adequate groundwater and surface water hydrology; and clean, cool water and the associated vegetation and invertebrates. To identify the physical and biological needs of the species, we have relied on current conditions at the locations where the species exists today and the limited information we have on historical sites, limited information available on this species and its close relatives, and factors associated with the decline and extirpation of this and other spring-associated fish species.

Space for Individual and Population Growth and for Normal Behavior

Spring pygmy sunfish depend on geomorphically stable spring systems including the spring head, spring run, and spring pools. The spring systems used by the species also include transition zones between these features on moderately low-gradient topographic slopes that feather out into spring-fed wetland pools. The spring pygmy sunfish inhabits spring pools, spring runs, and spring-fed streams and pools with substrates of silt, sand, and gravel.

The current range of the spring pygmy sunfish is reduced to localized sites due to fragmentation of the spring systems on which it depends. Fragmentation of the species' habitat has isolated populations and reduced available space for spawning, rearing of young, concealment, and foraging. As a result, the spring pygmy sunfish's adaptive capability has been reduced, and the likelihood of local extinctions has increased (Burkhead *et al.* 1997, pp. 397–399; Hallerman 2003, pp. 363–364). Connectivity of

spring systems maintains spawning, foraging, and resting sites, and allows for gene flow throughout the population. Genetic variation and diversity within a species are essential for recovery, adaptation to environmental changes, and long-term viability (capability to live, reproduce, and develop) (Harris 1984, pp. 93–107; Noss and Cooperrider 1994, pp. 282–297; Fluker *et al*. 2007, p. 2). Long-term viability is founded on space for numerous interbreeding, local populations throughout the range (Harris 1984, pp. 93–107).

Therefore, based on the information above, we identify springs and connecting spring-fed reaches and wetlands of geomorphically stable, relatively low-gradient, headwater springs with spring heads, spring runs, and spring pools that filter into shallow vegetated wetlands to be an essential physical or biological feature for the spring pygmy sunfish. The connectivity of these habitats is essential in accommodating feeding, breeding, growth, and other normal behaviors of the spring pygmy sunfish and in promoting gene flow within the population.

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

Water Quality

Exceptional water quality at the spring heads and pools, and adequate water quality throughout the habitat, maintained by unobstructed water flow through connected spring habitats, are essential for normal behavior, growth, and viability during all life stages of the spring pygmy sunfish. Suitable habitat conditions for the spring pygmy

sunfish have not been investigated thoroughly; however, some data specific to the species are available for the following water quality parameters: pH, water temperature, specific conductivity (ability of water to conduct an electric current, based on dissolved solids in the water), and alkalinity (capacity of solutes in an aqueous system to neutralize acid as HCO_3). Spring pygmy sunfish males establish territories and spawn in late February through April, when water quality parameters are within a suitable pH range of 6.0 to 7.7, and water temperatures are between 57.2 and 68 °F (14 and 20 °C) (Mettee 2008, p. 36; Sandal, 2007, p. 2; Rakes *et al*. 2011, p. 4). A specific conductivity of 5.5 to 14.2 micro Siemens per centimeter at 61 °F (16 °C) and alkalinity of 20 to 66 milligrams per liter (mg/l) have been reported from habitat occupied by spring pygmy sunfish (Jandebeur 1997, p. 34).

Essential water quality attributes for the spring pygmy sunfish may be inferred from those of other fish species living in medium water flow streams along with baseline spring and subsurface water quality information obtained from systems within Limestone County, adjacent counties, and elsewhere. Based on yearly averages, these include: (1) Dissolved oxygen levels greater than 6 parts per million (ppm); (2) temperatures between 45 and 80 °F (7.2 and 26.7 °C), with spring egg incubation temperatures from 54 to 65 °F (12.2 to 18.3 °C); (3) specific conductivity of less than approximately 300 micro Siemens per centimeter at 80 °F (26.7 °C); and (4) concentrations of free or suspended solids (organic and inorganic sediments) less than 15 Nephelometric Turbidity Units (NTU; units used to measure sediment discharge) and 20 mg/L total suspended solids (TSS; measured as mg/L of sediment in water) (Teels *et al.* 1975, pp. 8-9; Ultschet *et al.* 1978, pp. 99-101; Ingersoll *et al.* 1984, pp. 131-138; Chandler *et al.* 1987. pp. 56-57; Kundell

and Rasmussen 1995, pp. 211-212; Henley *et al.* 2000, pp. 125-139; Meyer and Sutherland 2005, pp. 43-64; McGregor *et al.* 2008. pp. 7-9; Knight 2011, pp. 3-8).

Nonpoint and point sources of ammonia and chlorine from commercial water extraction facilities and agricultural fields may be primary factors in reducing the quality of spring run waters for spring pygmy sunfish. Agricultural withdrawals can reduce or eliminate the volume of groundwater that is being discharged into the species' habitat and affect water temperatures and other physical parameters.

Temperature greatly influences the form and toxicity of ammonia and chlorine. Higher temperatures result in a shift from the nontoxic ammonium ion (NH_4^+) to highly toxic ammonia (NH_3). Chlorine is also more toxic at higher temperatures (Hoffman *et al*. 2003, p. 681). Thus, higher temperatures during the summer, along with drought and reduced spring flows, may intensify impacts from these two chemicals on the life stages and habitats of the spring pygmy sunfish.

Therefore, we identify the following water quality parameters to be an essential physical or biological feature for the spring pygmy sunfish, based on yearly averages: Optimal temperatures of 57.2 to 68 °F (14 to 20 °C) and not exceeding 80 °F (26.7 °C); pH of 6.0 to 7.7; dissolved oxygen of 6.0 ppm or greater; specific conductivity no greater than 300 micro Siemens per centimeter at 80 °F (26.7 °C); and low concentrations of free or suspended solids with turbidity measuring less than 15 NTU and 20 mg/L TSS.

Water Quantity

Water flow and water quantity may also vary according to season, precipitation events, and human activities, such as groundwater and surface water extraction, within the recharge area of the spring system. Agriculture, industrial or human consumption, silviculture, maintenance of roadways and utilities, and urbanization and industrialization projects are activities that may use water that would otherwise recharge spring systems. Connectivity of spring systems is also important for maintaining water quality. Adequate groundwater and recharge rates, and spring water outflow, are important to the conservation of the spring pygmy sunfish.

Therefore, based on the information above, we identify a hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge overtime) necessary to maintain spring habitats to be an essential physical or biological feature for the spring pygmy sunfish. The instream flow from groundwater sources (spring and seep) maintains a velocity and a continuous daily discharge from the aquifer that allows for connectivity between habitats. Instream flow is stable and does not vary during water extraction, and the aquifer recharge maintains adequate levels to supply water flow to the spring head. The flow regime does not significantly change during storm events.

Food

All pygmy sunfish species stalk invertebrates by using the dense submergent vegetation within the spring system to conceal their foraging activity (Walsh and Burr

1984, pp. 45-46). The aquatic vegetation provides a ready source of food (Petty *et al.* 2011, p. 2) and habitat for invertebrates. Daphnia, amphipods, chironomid larvae, and small snails are the major components of the spring pygmy sunfish's diet (Slate 1993, p. 3; Sandel 2009, p. 9).

Cover or Shelter and Sites for Breeding, Reproduction, or Rearing

The spring pygmy sunfish relies heavily on aquatic and emergent vegetation in the shallow water along the margins of the runs and pools of the spring systems where the fish occurs. The vegetation provides cover and shelter necessary for breeding, reproduction and growth of offspring, concealment from predators, and foraging. Species of submergent and emergent vegetation providing important habitat for the spring pygmy sunfish include clumps and stands of *Sparganium* spp. (bur reed), *Ceratophyllum* spp. (coontail), *Nasturtium officinale* (watercress), *Juncus* spp. (rush), *Carex* spp. (sedges), *Nuphar luteum* (yellow pond lily), *Myriophyllum* spp. (parrot feather), *Utricularia* sp. (bladderwort), *Polygonum* spp. (smartweed), *Lythrum salicaria* (purple loosestrife), and *Callitriche* spp. (water starwort) (Mayden 1993, p. 11; Jandebeur 1997, pp. 42-44; Sandel 2011, pp. 3-5, 9-11). Sandel (2009, p. 14) suggested that concentration of spring pygmy sunfish may be associated with thick and abundant *Ceratophyllum echinatum* and that the species decreases as distances increase from spring pools.

Therefore, based on the information above, we identify aquatic, emergent and semi-emergent vegetation along the margins of spring runs and submergent vegetation that is adequate for breeding, reproducing, and rearing young; providing cover and shelter

from predators; and supporting the prey base of aquatic macroinvertebrates eaten by spring pygmy sunfish to be an essential physical or biological feature for the spring pygmy sunfish.

Primary Constituent Elements for the Spring Pygmy Sunfish

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of the spring pygmy sunfish in areas occupied at the time of listing (i.e., areas that are currently occupied), focusing on the features' primary constituent elements. We consider primary constituent elements (PCEs) to be the elements of physical and biological features that provide for a species' life-history processes and that are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, as discussed above, we determine that the PCEs specific to the spring pygmy sunfish are:

(1) *Spring system.* Springs and connecting spring-fed reaches and wetlands that are geomorphically stable and relatively low-gradient. This includes headwater springs with spring heads, spring runs, and spring pools that filter into shallow, vegetated wetlands.

(2) *Water quality.* Yearly averages of water quality with optimal temperatures of 57.2 to 68 °F (14 to 20 °C) and not exceeding 80 °F (26.7 °C); pH of 6.0 to 7.7; dissolved oxygen of 6.0 ppm or greater; specific conductivity no greater than 300 micro Siemens per centimeter at 80 °F (26.7 °C); and low concentrations of free or suspended solids with turbidity measuring less than 15 NTU and 20 mg/L TSS.

(3) *Hydrology.* A hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain spring habitats. The instream flow from groundwater sources (springs and seeps) maintains an adequate velocity and a continuous daily discharge from the aquifer that allows for connectivity between habitats. Instream flow is stable and does not vary during water extraction, and the aquifer recharge maintains adequate levels to supply water flow to the spring head. The flow regime does not significantly change during storm events.

(4) *Vegetation and Prey Base.* Aquatic, emergent and semi-emergent vegetation along the margins of spring runs and submergent vegetation that is adequate for breeding, reproducing, and rearing young; providing cover and shelter from predators; and supporting the prey base of aquatic macroinvertebrates eaten by spring pygmy sunfish. Important species of submergent and emergent vegetation include clumps and stands of *Sparganium* spp. (bur reed), *Ceratophyllum* spp. (coontail), *Nasturtium officinale* (watercress), *Juncus* spp. (rush), *Carex* spp. (sedges), *Nuphar luteum* (yellow pond lily), *Myriophyllum* spp. (parrot feather), *Utricularia* spp. (bladderwort),

Polygonum spp. (smartweed), *Lythrum salicaria* (purple loosestrife), and *Callitriche* spp. (water starwort).

Special Management Considerations or Protections

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

We find that the essential features within the area occupied at the time of listing may require special management consideration or protection due to threats to spring pygmy sunfish and or its habitat. The sole proposed unit that is occupied is adjacent to roads, homes, or other manmade structures in which various activities in or adjacent to the critical habitat unit may affect one or more of the physical and biological features. The features essential to the conservation of this species are the spring systems that may require special management considerations or protection to reduce the following threats or potential threats: reduction of water quantity of the groundwater/surface hydrology by water extraction from springs or the aquifer that provides water to the spring, and surface flow to Beaverdam Creek and Pryor Branch; changes in the composition and abundance of vegetation in the spring; alteration of the bottom substrate and normal sinuosity of the system from fill material within the spring systems and spring-fed wetlands for

development projects; degradation of water quality from uncontrolled discharge of stormwater draining agricultural fields, roads, bridges, and urban areas; careless agricultural practices including unmanaged livestock grazing; and road, bridge, and utility easement maintenance (e.g., use of herbicides and resurfacing or sealant materials).

Management activities that could ameliorate these threats or potential threats include, but are not limited to: Establishing permanent conservation easements or land acquisition to protect the species on private lands; establishing additional conservation agreements on private lands to identify and reduce threats to the species and its features; minimizing habitat disturbance, fragmentation, and destruction by maintaining suitable fish passage structures under roads; providing significant buffers around the spring components such as the spring head, spring pool, and spring run; monitoring and regulating the withdrawal and use of groundwater and surface water of the Beaverdam Spring/Creek system; preventing the diminishing of the aquifer recharge area by increasing the pervious area for percolation of rainfall back into the aquifer; limiting impervious substrates; and minimizing water quality degradation by stormwater runoff with catchment basins, vegetated bioswales, and other appropriate best management practices.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, in developing this proposed rule, we used the best scientific data available to propose critical habitat for the spring pygmy

sunfish. We reviewed available information that pertains to the habitat requirements of the species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we considered whether designating additional areas outside those currently occupied (which would mean occupied at the time of listing) is necessary to ensure the conservation of the species. We are proposing to designate critical habitat in areas within the geographic area currently occupied by the species (i.e., that would be considered occupied at the time of listing). We are also proposing to designate specific areas outside the geographic area currently occupied by the species but that were historically occupied, because such areas are essential for the conservation of the species.

We began our determination of which areas to propose for critical habitat with an assessment of the critical life-history components of the spring pygmy sunfish, as they relate to habitat. We then evaluated current and historical sites to establish what areas are currently occupied and contain the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection, as well as unoccupied sites that might be essential for the conservation of the species. We reviewed the available information pertaining to historic and current distributions, life histories, and habitat requirements of this species. Our sources included surveys, unpublished reports, and peer-reviewed scientific literature prepared by the Alabama Department of Conservation and Natural Resources, Alabama Geological Survey, Athens State University, University of Alabama, the Service, spring pygmy sunfish researchers and others, as well as Geographic Information System (GIS) data

(such as species occurrence data, habitat data, land use topography, digital aerial photography, and ownership maps).

Currently, occupied habitat is confined to a single population consisting of four spring pools within the upper Beaver Dam Spring/Creek complex in Limestone County, Alabama. We believe that this area contains all PCEs to support life-history functions essential to the conservation of the species. However, this single population is at risk of extirpation from stochastic events such as periodic droughts and from existing or potential human-induced events (i.e., development, excessive water extraction, chemical contamination). To reduce the risk of losing this single population through these processes, it is important to establish additional populations in areas where suitable habitat exists. Therefore, in identifying unoccupied spring/stream reaches that could be essential for the conservation of the spring pygmy sunfish, we first considered the availability of potential habitat throughout the historical range that may be suitable for the survival and persistence of the species. We eliminated from consideration spring/stream reaches without any historical records of spring pygmy sunfish occurrences. We identified two sites with recorded historical occurrences of the spring pygmy sunfish: one in Pryor Springs in Limestone County, Alabama, and a second in Cave Springs in Lauderdale County, Alabama. The Cave Spring site was excluded from consideration because it was inundated with the formation of Wheeler Reservoir in 1939. However, the Pryor Spring/Branch site, which supported a population of spring pygmy sunfish prior to 2007 west of Highway 31, was determined to have portions of the PCEs sufficient to support the life-history functions of the species. This currently unoccupied stream will provide habitat for population reintroduction into a separate stream system

and reduce the level of stochastic threats to the species' survival, decrease the risk of extinction for the species, and contribute to the species' eventual recovery. Accordingly, we determined that it is essential for the conservation of the species, and therefore propose to designate it as critical habitat.

We delineated the critical habitat unit boundaries by determining the appropriate length within these streams by identifying the upper spring head (water source), spring pool, spring run, spring-fed wetlands, seeps, and ephemeral streams draining into the spring systems. We digitized the area boundary based upon visual interpretation of wetland vegetation using ARCGIS. The high water line in springs indicates stable flow under normal conditions. As defined at 33 CFR 329.11, the ordinary high water line on nontidal rivers and streams is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural water line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. For the spring pools and associated spring-fed wetlands, the area was determined and delineated by the presence of emergent vegetation patterns and topography as noted on aerial photographs and topographical maps, and during field visits. In order to set the upstream and downstream limits of these critical habitat units, we used the spring head as the uppermost point, identified by topographic maps, field visits, and available landmarks (i.e., bridges and road crossings). Locations of the spring pygmy sunfish below or downstream of the spring head were included in order to ensure incorporation of all potential sites of occurrence. These stream reaches

were then digitized using 7.5' topographic maps and ARCGIS to produce the critical habitat maps.

When determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features for spring pygmy sunfish. The scale of the map we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger a section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document in the rule portion. We include more detailed information on the boundaries of the critical habitat designation in this preamble. We will make the coordinates or plot points or both on which each map is based available to the public on http://www.regulations.gov at Docket No. FWS–R4–ES–2012–0068, on our website http://www.fws.gov/mississippiES/, and at

the Mississippi Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** above).

Proposed Critical Habitat Designation

We are proposing two units as critical habitat for spring pygmy sunfish. The critical habitat areas described below constitute our current best assessment of the areas that meet the definition of critical habitat for spring pygmy sunfish. The two areas proposed as critical habitat are as follows: (1) Beaverdam Spring/Creek, which is currently occupied; and (2) Pryor Spring/Branch, which is currently unoccupied. Table 1 shows the occupancy of the units and ownership of the proposed critical habitat units for the spring pygmy sunfish.

TABLE 1. Occupancy and Ownership of the Proposed Critical Habitat Units for the Spring Pygmy Sunfish in Limestone County, Alabama.

Area estimates reflect all land within the critical habitat unit boundary.

Unit	**Location**	**Occupied**	**Private Ownership km (mi); ha (ac)**	**Federal, Ownership Km (mi); ha (ac)**	**Total Length km (mi)**	**Total Area ha (ac)**
1	Beaverdam Spring / Creek	Yes	5.9 (3.7); 237 (586)	3.5 (2.21); 344 (849)	9.5 (5.9)	580.7 (1,435)
2	Pryor Spring / Branch	No	0.2 (0.15); 8.1 (20)	3.1 (1.95); 65.6 (162)	3.4 (2.1)	73.6 (182)
Total			6.1 (3.8); 245 (606)	6.6 (4.16); 409.6 (1,011)	12.9 (8.0)	654.3 (1,617)

* Totals may not sum due to rounding

We present brief descriptions of each unit and reasons why they meet the definition of critical habitat below. The proposed critical habitat units include the spring systems, which are composed of the spring heads and the flooded spring pools and spring-fed wetlands within Beaverdam Spring/Creek and Pryor Spring/Branch.

Unit 1: Beaverdam Spring/Creek, Limestone County, Alabama

Unit 1 includes a total of 9.5 km (5.9 mi) of Beaverdam Spring/Creek, northeast of Greenbrier, Alabama, from the spring head, 5.6 km (3.5 mi) north of Interstate 565, to 3.9 km (2.4 mi) south of Interstate 565. Unit 1 encompasses Moss, Horton, and Thorsen springs. This includes a total of 580.7 hectares (1,435 acres).

Almost 5.9 km (3.7 mi), or 63 percent of the stream reach, and 237 ha (586 ac) (41 percent) of the area are privately owned. The remaining 3.5 km (2.21 mi), or 37 percent of the stream reach, and 344 ha (849 ac) of the area (59 percent) are owned by the Service as part of the Wheeler National Wildlife Refuge.

Unit 1 is currently occupied and contains the only known metapopulation of the species. Unit 1 contains all elements of the essential physical or biological features of the species needed for its eventual recovery. This unit provides habitat for the spring pygmy sunfish with adequate numbers of small pools, spring runs (PCE 1), and emergent vegetation (PCE 4). These geomorphic structures provide substrate for aquatic vegetation that is used by the species for spawning, foraging, and other processes of the species natural history (PCE 4) along with good water quality (PCE 2), quantity, and flow

(PCE 3), which supports the normal life stages and behavior of the spring pygmy sunfish, and the species' prey sources (PCE 4).

Threats to the spring pygmy sunfish and its habitat in Unit 1 that may require special management of the physical and biological features include the potential of increased agriculture, urbanization, and industrialization activities (such as channel modification for flood control, construction of impoundments, and water extraction) that could result in increased stormwater runoff and erosion; significant changes in the existing spring flow regime due to water extraction, inadequate stormwater management, and water diversion; significant alteration of water quality and quantity; and significant changes in streambed material composition and quality as a result of construction projects and maintenance activities, resulting in the destruction of emergent and aquatic vegetation; off-road vehicle use; sewer, gas, and water easements; bridge and road construction and maintenance; culvert and pipe installation; and other watershed and floodplain disturbances that release sediments or nutrients into the water.

There are three paved road crossings over this unit, one unpaved dirt road, and one railroad. Spring pygmy sunfish movement might be limited due to changes in flow regime and habitat including changes in emergent vegetation, water quality, and water quantity, and due to stochastic events such as drought. Populations of spring pygmy sunfish are small and isolated from one another due to the non-homogeneous habitats within Unit 1.

Unit 2: Pryor Spring/Pryor Branch, Limestone County, Alabama

Unit 2 includes 3.4 km (2.1 mi) of Pryor Spring and Pryor Branch from the spring head, about 3.7 mi (5.9 km) south of Tanner, Alabama, and just east of Highway 31, downstream to the bridge where it intersects with Harris Station/Thomas L. Hammons Road. This also includes a total of 73.6 ha (182 ac) in area.

Almost 3.1 km (1.95 mi), or 93 percent of the stream reach, and 65.6 ha (162 ac) of the land area (89 percent) are federally owned by the Tennessee Valley Authority and managed by the State as the Swan Creek Wildlife Management Area. The remaining 0.2 km (0.15 mi) of stream reach (7 percent) and 8.1 ha (20 ac) (11 percent) of the land area are privately owned.

Unit 2 is currently unoccupied but is a historical location for the spring pygmy sunfish, and is essential for its conservation and eventual recovery. The Pryor Spring/ Branch system contains scattered spring-influenced wetlands of aquatic and emergent vegetation in spring pools, spring runs, and shallow water wetlands on the margins of the small tributaries. Populations of spring pygmy sunfish were historically noted as small and isolated within specific habitat sites of Pryor Spring/Branch. An attempt to reintroduce the species back into Pryor Springs (east of Highway 31) was unsuccessful in the 1980s.

A portion of the spring head has been mechanically deepened and the banks steepened in order to promote water extraction for cropland irrigation. Nevertheless,

there is a significant seasonal flow of groundwater entering the system throughout the year from the springhead (portions of PCEs 1, 2, and 3). Adequate aquatic vegetation (PCE 4) occurs in areas throughout this spring system, providing potential habitat for the normal life stages and behavior of the spring pygmy sunfish and the species' prey sources. Water flow (PCE 3) from the main springhead, along with other unidentified springs and seeps within the system, provides sufficient water quantity to allow for connectivity between spawning, rearing, foraging, and resting sites, promoting gene flow throughout the spring system. While the existence of PCEs is not necessary for the designation of unoccupied habitat, their presence in Unit 2 only reinforces the value of the Pryor Spring/Branch to the conservation of the spring pygmy sunfish.

As this species is only known from a single population, it is important that additional populations be established to buffer against extirpation of the one known site from stochastic events, such as drought. Therefore, we have determined this unit is essential for the conservation of the species because it provides potential for the establishment of an additional population of the spring pygmy sunfish, thereby reducing this species' risk of extinction, and would contribute to the species' eventual recovery.

In summary, we propose designating critical habitat in two areas, one which is occupied and which contains sufficient primary constituent elements to support the life-history functions essential to the conservation of the species and that require special management, and one which is currently unoccupied, which historically supported the species and has been determined to be essential for the conservation of the species.

As discussed in the **Critical Habitat** section above, we recognize that designation of critical habitat may not include all habitat areas that we may eventually determine are necessary for the recovery of the species and that, for this reason, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not promote the recovery of the species.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of "destruction or adverse modification" (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir.

2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al*., 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

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

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

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

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

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action;

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction;

(3) Are economically and technologically feasible; and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

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

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiating of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the "Adverse Modification" Standard

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

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

authorized by a federal agency, should result in consultation for the spring pygmy sunfish. These activities include, but are not limited to:

(1) Actions that would alter the geomorphology of the spring system and its associated habitats. Such activities could include, but are not limited to, instream excavation or dredging, impoundment, channelization, and discharge of fill materials. These activities could cause aggradation or degradation of the channel bed elevation or significant bank erosion and result in entrainment or burial of this species, destruction of the associated aquatic vegetation, and other direct or cumulative adverse effects to this species and its life cycle.

(2) Actions that would significantly alter the existing flow regime, related aquifer, and recharge areas. Such activities could include, but are not limited to, impoundments, water diversion, channel constriction or widening, placement of pipes, culverts or bridges, and groundwater and surface water extraction. These activities could eliminate or reduce the habitat necessary for growth, reproduction, and connectivity of spring pygmy sunfish populations.

(3) Actions that would significantly alter water chemistry or water quality (for example, temperature, pH, contaminants, and excess nutrients). Such activities could include, but are not limited to, the unsustainable use or release of chemicals, such as pesticides and fertilizers and biological pollutants, into surface water or groundwater. These activities could alter water conditions that are beyond the tolerances of this species and result in direct or cumulative adverse effects to the species and its life cycle.

(4) Actions that would significantly alter streambed material composition and quality by increasing sediment deposition or filamentous algal growth. Such activities could include, but are not limited to, construction and maintenance projects of subdivisions, roads, bridges, stormwater systems and utility easements; unsustainable livestock grazing and timber harvest; off-road vehicle use; and other watershed and floodplain disturbances that release sediments or nutrients into the water through stormwater runoff. These activities could eliminate or reduce habitats necessary for the growth and reproduction of the spring pygmy sunfish by causing excessive sedimentation and a decrease in water quality for the species and associated vegetation and prey base by nitrification, leading to excessive filamentous algal growth, turbidity, and an increase in water temperatures.

Exemptions

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

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

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

(2) A statement of goals and priorities;

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

(4) A monitoring and adaptive management plan.

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

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: "The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation."

There are no Department of Defense lands with a completed INRMP within the proposed critical habitat designation. Therefore, we are not exempting any lands owned

or managed by the DOD from this designation of critical habitat for the spring pygmy sunfish under section 4(a)(3)(B)(i) of the Act.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate or make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, and any other relevant impacts. In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion

outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

Economic Impacts

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

During the development of our proposed rule, we have identified certain sectors and activities that may potentially be affected by a designation of critical habitat for spring pygmy sunfish. These sectors include commercial development and urbanization, along with the accompanying infrastructure associated with such projects such as road, storm water drainage, bridge, and culvert construction and maintenance. As part of our economic analysis, we are collecting information and initiating our analysis to determine (1) which of these sectors or activities are or involve small business entities and (2) to what extent the effects are related to the spring pygmy sunfish being listed as a threatened species under the Act (baseline effects) or are attributable to the designation of critical habitat (incremental effects). We believe that the potential incremental effects resulting from a designation would be small. However, one purpose of the economic analysis will be to determine if this is the case. Accordingly, we are requesting any specific economic

information related to small business entities that may be affected by this designation and how the designation may impact small businesses.

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

National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense (DOD) where a national security impact might exist. In preparing this proposal, we have determined that none of the lands within the proposed designation of critical habitat for the spring pygmy sunfish are lands owned or managed by the DOD, and, therefore, we anticipate no impact on national security. Consequently, the Secretary does not intend to exercise his discretion to exclude any areas from the final designation based on impacts on national security.

Other Relevant Impacts

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

In preparing this proposal, we have determined that there are currently no HCPs for the spring pygmy sunfish, and the proposed designation does not include any tribal lands or trust resources. The CCAA between the Service, the Land Trust, and Belle Mina Farms, Ltd., covers the upper 24 percent of the Beaverdam Spring/Creek complex (Unit 1). This management plan contains numerous conservation measures protective of the spring pygmy sunfish. It provides a measure of protection for the species in the upper portion of the only currently occupied site. However, although this CCAA reduces some of threats and is one of the reasons the species is proposed for listing as threatened rather than endangered, the magnitude of this threat reduction is not at the level to ameliorate threats to this species throughout its range (see **Finding** section, above, for additional discussion). Thus, the CCAA alone is not sufficient to preclude the need to list the species as threatened. We also anticipate no impact on tribal lands, partnerships, or HCPs from this proposed critical habitat designation. Accordingly, at this time the Secretary does not propose to exert his discretion to exclude any areas from the final designation based on other relevant impacts. However, we recognize that exclusion from

critical habitat of the area covered by the CCAA may encourage partnerships with other landowners in the spring complex that would help address additional threats under Factors A and E. Therefore, as indicated in the **Information Requested** section, we are requesting information on whether the benefits of the exclusion of lands covered by the CCAA may outweigh the benefits of inclusion under section 4(b)(2) of the Act, and the Secretary may reconsider exclusion in the final rule.

Peer Review

In accordance with our joint policy on peer review 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 peer review is to ensure that our determination of status for this species and critical habitat designation is based on scientifically sound data, assumptions, and analyses. We will invite these peer reviewers to comment during this public comment period on our specific assumptions and conclusions in this proposed listing determination and designation of critical habitat.

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

Public Hearings

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register**. Such requests must be sent to the address shown 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.

Required Determinations

Regulatory Planning and Review — Executive Order 12866 and 13563

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best

available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

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

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq*.) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 801 *et seq*.), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include such businesses as manufacturing and mining concerns with fewer than 500 employees,

wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and forestry and logging operations with fewer than 500 employees and annual business less than $7 million. To determine whether small entities may be affected, we will consider the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Importantly, the incremental impacts of a rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the proposed critical habitat designation, but the per-entity economic impact is not significant, the Service may certify. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify.

Under the RFA, as amended, and following recent court decisions, Federal agencies are only required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself, and not the potential impacts to indirectly affected entities. The regulatory mechanism through which critical habitat

protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried by the Agency is not likely to adversely modify critical habitat. Therefore, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Under these circumstances, it is our position that only Federal action agencies will be directly regulated by this designation. Therefore, because Federal agencies are not small entities, the Service may certify that the proposed critical habitat rule will not have a significant economic impact on a substantial number of small entities.

We acknowledge, however, that in some cases, third-party proponents of the action subject to permitting or funding may participate in a section 7 consultation, and thus may be indirectly affected. We believe it is good policy to assess these impacts if we have sufficient data before us to complete the necessary analysis, whether or not this analysis is strictly required by the RFA. While this regulation does not directly regulate these entities, in our draft economic analysis we will conduct a brief evaluation of the potential number of third parties participating in consultations on an annual basis in order to ensure a more complete examination of the incremental effects of this proposed rule in the context of the RFA.

In conclusion, we believe that, based on our interpretation of directly regulated entities under the RFA and relevant case law, this designation of critical habitat will only

directly regulate Federal agencies, which are not by definition small business entities. As such, we certify that, if promulgated, this designation of critical habitat would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required. However, although not necessarily required by the RFA, in our draft economic analysis for this proposal we will consider and evaluate the potential effects to third parties that may be involved with consultations with Federal action agencies related to this action.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. We do not expect the designation of critical habitat for the spring pygmy sunfish to significantly affect energy supplies, distribution, or use. The proposed critical habitat units are remote from energy supply, distribution, or use activities. We are not aware of any oil and gas exploration or development within the region to date, and the area has not been identified as a shale play for oil and gas extraction (hydraulic fracturing) (Satterfield 2011, p. 3) Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

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

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

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

Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, and critical habitat would not shift the costs of the large entitlement programs listed above on to State governments.

(2) We do not believe that this rule would significantly or uniquely affect small governments because it will not produce a Federal mandate of $100 million or greater in any year, that is, it is not a "significant regulatory action" under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments. In addition, adjacent upland properties are owned by private entities or State partners. Therefore, a Small Government Agency Plan is not required. However,

we will further evaluate this issue as we conduct our economic analysis and revise this assessment if appropriate.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for spring pygmy sunfish in a takings implications assessment. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. The takings implications assessment concludes that this proposed designation of critical habitat for the spring pygmy sunfish does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), the proposed rule does not have significant Federalism effects. A federalism impact summary statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed critical habitat designation with appropriate State resource agencies in Alabama. The

designation of critical habitat in areas currently occupied by the spring pygmy sunfish (i.e., Unit 1: Beaverdam Spring/Creek) would impose few if any additional restrictions to those put in place through listing, and, therefore, has would have little incremental impact on State and local governments and their activities. There may be a slight impact on State and local government and their activities if critical habitat is designated in Unit 2: Pryor Spring/ Pryor Branch, because this is unoccupied critical habitat. However, critical habitat designation may have some benefit for these governments because the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

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

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the elements of physical or biological features essential to the conservation of the spring pygmy sunfish within the designated areas to assist the public in understanding the habitat needs of the species.

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

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

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

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (NEPA), need not be prepared in connection with listing a species as endangered or

threatened under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

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

Clarity of the Rule

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

(1) Be logically organized;

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

(3) Use clear language rather than jargon;

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

(5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994, (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

The State of Alabama does contain tribal lands, however, none occur within the proposed critical habitat designation. Therefore, we are not proposing to designate critical habitat for spring pygmy sunfish on tribal lands.

References Cited

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

Authors

The primary authors of this package are the staff members of the Mississippi Ecological Services Field Office (see **FURTHER INFORMATION CONTACT)**.

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; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h) by adding an entry for "Sunfish, spring pygmy" to the List of Endangered and Threatened Wildlife in alphabetical order under FISHES to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* * * * * * *							
FISHES							
* * * * * * *							
Sunfish, spring pygmy	*Elassoma alabamae*	U.S.A. (AL)	Entire	T		17.95(e)	NA
* * * * * * *							

2. In § 17.95, amend paragraph (e) by adding an entry for "Spring Pygmy Sunfish *(Elassoma alabamae),*" in the same alphabetical order that the species appears in the table at § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes*.

* * * * *

Spring Pygmy Sunfish (*Elassoma alabamae*)

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

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of spring pygmy sunfish are:

(i) *Spring system.* Springs and connecting spring-fed reaches and wetlands that are geomorphically stable and relatively low-gradient. This includes headwater springs with spring heads, spring runs, and spring pools that filter into shallow, vegetated wetlands.

(ii) *Water quality.* Yearly averages of water quality with optimal temperatures of 57.2 to 68 °F (14 to 20 °C) and not exceeding 80 °F (26.7 °C); pH of 6.0 to 7.7; dissolved oxygen of 6.0 parts per million (ppm) or greater; specific conductivity no greater than 300 micro Siemens per centimeter at 80 °F (26.7 °C); low concentrations of free or suspended solids with turbidity measuring less than 15 Nephelometric Turbidity Units (NTU) and 20 milligrams per liter (mg/l) total suspended solids (TSS).

(iii) *Hydrology.* A hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain spring habitats. The instream flow from groundwater sources (springs and seeps) maintains an adequate velocity and a continuous daily discharge from the aquifer that allows for connectivity between habitats. Instream flow is stable and does not vary during water extraction, and the aquifer recharge maintains adequate levels to supply water flow to the spring head. The flow regime does not significantly change during storm events.

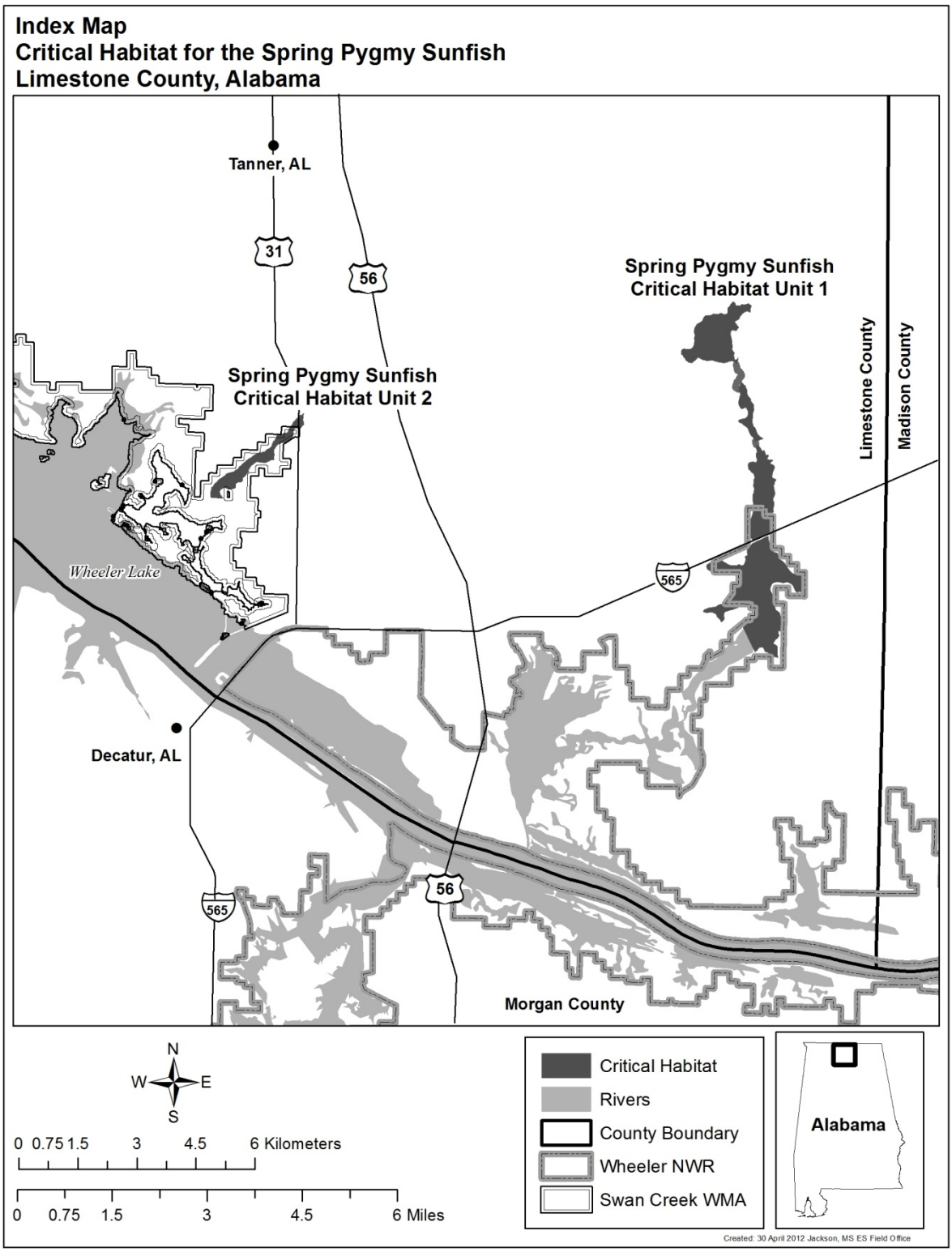
(iv) *Vegetation and Prey Base.* Aquatic, emergent and semi-emergent vegetation along the margins of spring runs and submergent vegetation that is adequate for breeding, reproducing, and rearing young; providing cover and shelter from predators; and supporting the prey base of aquatic macroinvertebrates eaten by spring pygmy sunfish. Important species of submergent and emergent vegetation include clumps and stands of *Sparganium* spp. (bur reed), *Ceratophyllum* spp. (coontail), *Nasturtium officinale* (watercress), *Juncus* spp. (rush), *Carex* spp. (sedges), *Nuphar luteum* (yellow pond lily), *Myriophyllum* spp. (parrot feather), *Utricularia* spp.

(bladderwort), *Polygonum* spp. (smartweed), *Lythrum salicaria* (purple loosestrife), and *Callitriche* spp. (water starwort).

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

(4) *Critical habitat unit maps*. Data layers defining the map unit were created by delineating habitats that contained at least one or more of the primary constituent elements defined in paragraph (2) of this entry, over a base of USGS digital topographic map quadrangle (Greenbrier and Mason Ridge) and a USDA 2007 digital ortho-photo mosaic, in addition to the National Wetland Inventory Maps. The resulting critical habitat unit was then mapped using State Plane North American Datum (NAD) 83 coordinates. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's internet site, http://www.fws.gov/mississippiES/; at http://www.regulations.gov at Docket No. FWS-R4-ES-2012-0068; and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

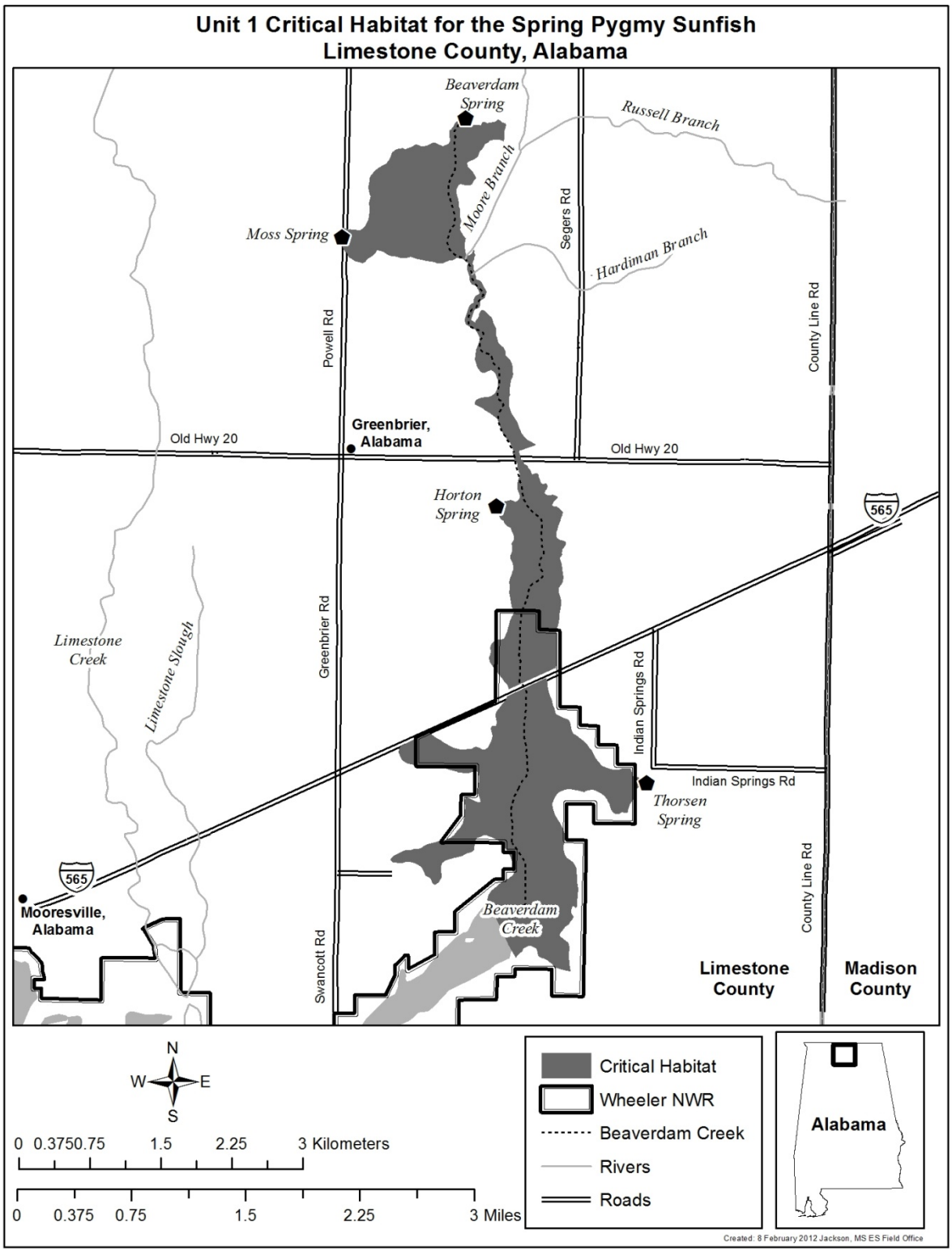
(5) Index map of critical habitat for the spring pygmy sunfish follows:



(6) Unit 1: Beaverdam Spring/Creek, Limestone County, Alabama.

(i) *General Description*: Unit 1 includes a total of 9.5 km (5.9 mi) of Beaverdam Spring/Creek, northeast of Greenbrier, Alabama, from the spring head, 5.6 km (3.5 mi) north of Interstate 565 (Lat. 34.703162, Long.-86.82899) to 3.9 km (2.4 mi) south of Interstate 565 (Lat. 34.625896, Long. -86.82505). Unit 1 encompasses Moss, Horton, and Thorsen springs. This includes a total of 580.7 hectares (1,435 acres).

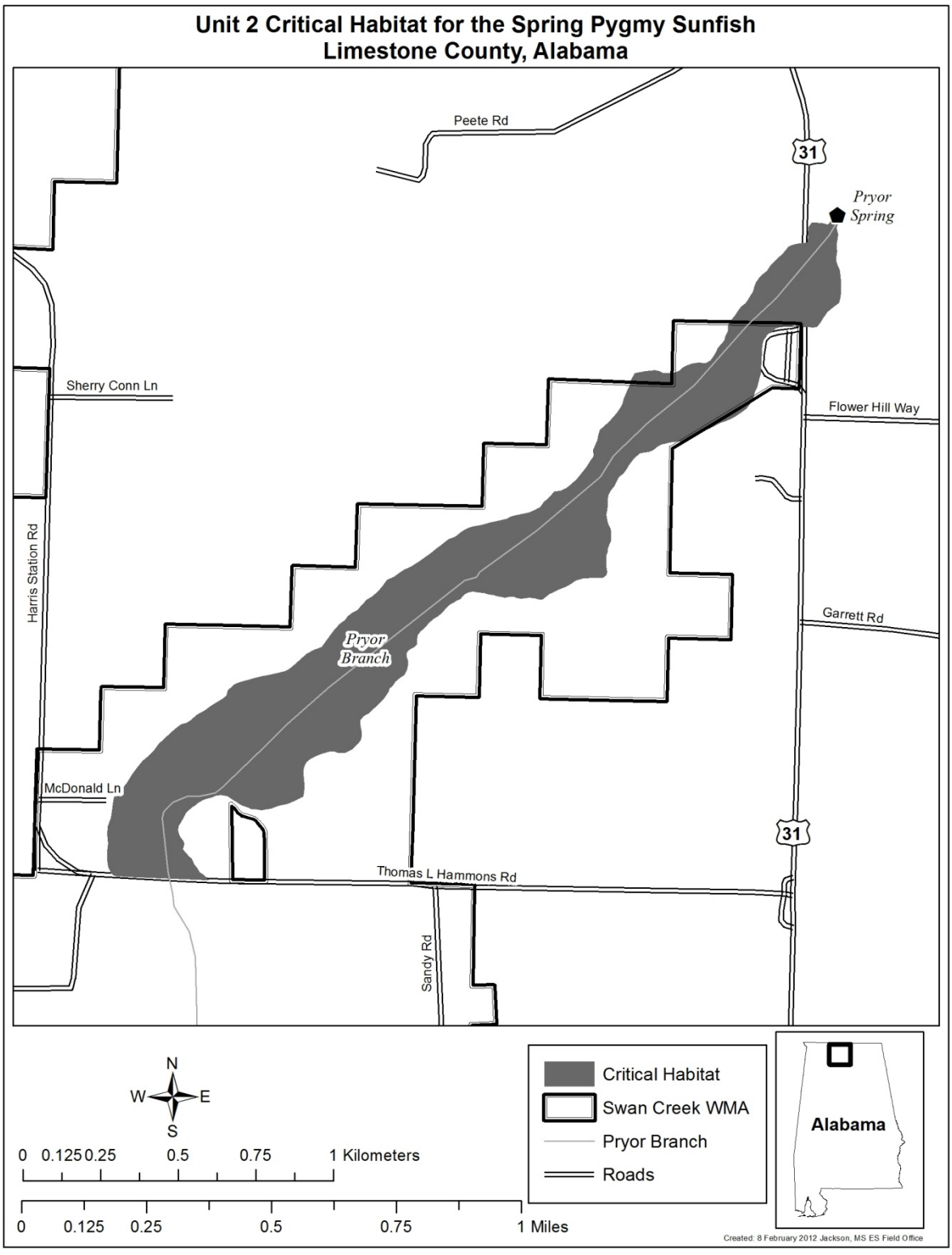
(ii) Map of Unit 1 follows:


Unit 1 Critical Habitat for the Spring Pygmy Sunfish
Limestone County, Alabama
Beaverdam Spring
Russell Branch
Moore Branch
Moss Spring
Segers Rd
Hardiman Branch
Powell Rd
County Line Rd
Old Hwy 20
Greenbrier, Alabama
Old Hwy 20
Horton Spring
565
Limestone Creek
Limestone Slough
Greenbrier Rd
Indian Springs Rd
Indian Springs Rd
Thorsen Spring
565
Mooresville, Alabama
Beaverdam Creek
County Line Rd
Swancott Rd
Limestone County
Madison County
N
W
E
S
0 0.3750.75 1.5 2.25 3 Kilometers
0 0.375 0.75 1.5 2.25 3 Miles
Critical Habitat
Wheeler NWR
Beaverdam Creek
Rivers
Roads
Alabama
Created: 8 February 2012 Jackson, MS ES Field Office

(7) Unit 2: Pryor Spring/Pryor Branch, Limestone County, Alabama.

(i) *General Description*. Unit 2 includes 3.4 km (2.1 mi) of Pryor Spring and Pryor Branch from the spring head, about 3.7 mi (5.9 km) south of Tanner, Alabama, and just east of Highway 31, downstream to the bridge where it intersects with Harris Station/Thomas L. Hammons Road. This also includes a total of 73.6 ha (182 ac) in area.

(ii) Map of Unit 2 follows:


Unit 2 Critical Habitat for the Spring Pygmy Sunfish
Limestone County, Alabama
Peete Rd
31
Pryor Spring
Sherry Conn Ln
Flower Hill Way
Harris Station Rd
Garrett Rd
Pryor Branch
McDonald Ln
31
Thomas L Hammons Rd
Sandy Rd
N
W
E
S
0 0.125 0.25 0.5 0.75 1 Kilometers
0 0.125 0.25 0.5 0.75 1 Miles
Critical Habitat
Swan Creek WMA
Pryor Branch
Roads
Alabama
Created: 8 February 2012 Jackson, MS ES Field Office

* * * * *

Dated: September 13, 2012

Michael J. Bean

Assistant Secretary for Fish and Wildlife and Parks

Billing Code 4310-55-P

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