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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2012–0101]

[4500030113]

RIN 1018–AY25

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Zuni Bluehead Sucker

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, propose to list the Zuni bluehead sucker as an endangered species under the Endangered Species Act and propose to

designate critical habitat for the species. If we finalize this rule as proposed, it would extend the Act's protections to this subspecies and its critical habitat. The effect of these regulations will be to conserve the Zuni bluehead sucker and protect its habitat under the Act.

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

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

(1) *Electronically*: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Search box, enter FWS–R2–ES–2012–0101, which is the docket number for this rulemaking. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on "Comment Now!"

(2) *By hard copy*: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R2–ES–2012–0101; 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 **Public Comments** section below for more information).

FOR FURTHER INFORMATION CONTACT: Wally "J" Murphy, Field Supervisor, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, 2105 Osuna NE, Albuquerque, NM 87113, by telephone 505–346–2525 or by facsimile 505–346–2542. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

EXECUTIVE SUMMARY

Why we need to publish a rule. Under the Act, if a species is determined to be an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the **Federal Register** and make a determination on our proposal within 1 year. Critical habitat shall be designated, to the maximum extent prudent and determinable, for any species determined to be an

endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designations and revisions of critical habitat can only be completed by issuing a rule. Elsewhere in today's **Federal Register**, we propose to designate critical habitat for the Zuni bluehead sucker under the Act.

This rule consists of: (1) A proposed rule to list the Zuni bluehead sucker (*Catostomus discobolus yarrowi*) as an endangered species; and (2) a proposed rule for designation of critical habitat for the Zuni bluehead sucker. The Zuni bluehead sucker is a candidate species for which we have on file sufficient information on biological vulnerability and threats to support preparation of a listing proposal, but for which development of a listing regulation has been precluded by other higher priority listing activities. This rule reassesses all available information regarding status of and threats to the Zuni bluehead sucker.

The basis for our action. Under the Act, we can determine that a species is an endangered or threatened species based on any of five factors: (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; or (E) Other natural or manmade factors affecting its continued existence.

We have determined that the Zuni bluehead sucker is threatened by Factors A, C, D, and E.

We will seek peer review. We are seeking comments from knowledgeable individuals with scientific expertise to review our analysis of the best available science and application of that science and to provide any additional scientific information to improve this proposed rule. Because we will consider all comments and information received during the comment period, our final determinations may differ from this proposal.

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 the public, other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) The Zuni bluehead sucker's biology, range, and population trends, including:

(a) Habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act (16 U.S.C. 1531 *et seq*.), 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; or

(e) Other natural or manmade factors affecting its continued existence.

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

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

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

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

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

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

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, 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, New Mexico Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Previous Federal Actions

We identified the Zuni bluehead sucker as a Category 2 species in the September 18, 1985, Review of Vertebrate Wildlife; Notice of Review (50 FR 37958). Category 2 Candidates were defined as species for which we had information that proposed listing was possibly appropriate, but conclusive data on biological vulnerability and threats were not available to support a proposed rule at the time. The species remained so designated in subsequent annual Candidate Notices of Review (CNOR) (54 FR 554, January 6, 1989; 56 FR 58804, November 21, 1991; and 59 FR 58982, November 15, 1994). In the February 28, 1996, CNOR (61 FR 7596), we discontinued the designation of Category 2 species as candidates; therefore, the Zuni bluehead sucker was no longer a candidate species.

Subsequently, in 2001, the Zuni bluehead sucker was added to the candidate list (66 FR 54807, October 30, 2001). Candidates are those fish, wildlife, and plants for which we have on file sufficient information on biological vulnerability and threats to support preparation of a listing proposal, but for which development of a listing

regulation is precluded by other higher priority listing activities. The Zuni bluehead sucker was included in all of our subsequent annual CNORs (67 FR 40657, June 13, 2002; 69 FR 24875, May 4, 2004; 70 FR 24869, May 11, 2005; 71 FR 53756, September 12, 2006; 72 FR 69033, December 6, 2007; 73 FR 75175, December 10, 2008; 74 FR 57803, November 9, 2009; 75 FR 69221, November 10, 2010; and 76 FR 66370, October 26, 2011). On May 11, 2004, we were petitioned to list Zuni bluehead sucker, although no new information was provided in the petition. Because we had already found the species warranted proposed listing, no further action was taken on the petition. Zuni bluehead sucker has a listing priority number of 3, which reflects a subspecies with threats that are both imminent and high in magnitude.

Elsewhere in today's Federal Register, we propose to designate critical habitat for the Zuni bluehead sucker under the Act.

STATUS ASSESSMENT FOR THE ZUNI BLUEHEAD SUCKER:

Background

Species Information

Species Information and Taxonomy

The Zuni bluehead sucker has a fusiform (torpedo-shaped), slender body with a subterminal mouth (mouth posterior to the tip of the snout) (Propst 1999, p. 49). Most individuals do not exceed 203 centimeters (cm) (8 inches (in)) in total length, although the species has been known to exceed 25 cm (9 in) in total length (Propst and Hobbes 1996, pp. 22–34). The Zuni bluehead sucker has a bluish head, silvery-tan to dark green back, and yellowish to silvery-white sides and abdomen. Adults are mottled slate-gray to almost black dorsally (upper part of the body) and cream-white ventrally (toward the abdomen). During the spawning season, males may be differentiated by coarse tubercles (wart-like projections) on the rear fins and the caudal peduncle (the narrow part of the fish's body to which the tail fin is attached). Males also have distinctive breeding coloration, becoming intensely black dorsally with a bright red horizontal band and a white abdomen (Propst 1999, p. 49; Propst *et al.* 2001, p. 163).

There is some ambiguity regarding early specimen collections of Zuni bluehead sucker; however, it is believed that the first specimen of the Zuni bluehead sucker was collected from the Zuni River near Zuni Pueblo in McKinley County, New Mexico in 1873 (Cope 1874, p. 138). The next collection was made in 1926 from the Zuni River, near Zuni Pueblo (Propst *et al*. 2001, p. 159). It was not subsequently collected in New Mexico until W. J. Koster (University of New Mexico, Museum of Southwestern Biology) collected the species in the Rio Pescado in 1948 and the Rio Nutria in 1960 (Propst 1999, p. 49; Propst *et al*. 2001, p. 159).

Smith (1966, pp. 87–90) and Smith *et al.* (1983, pp. 37–38) postulated that the Zuni bluehead sucker subspecies is a result of an event in which two species of sucker that were formerly geographically separated came into contact with one another in the late Pleistocene and exchanged genes. The Zuni bluehead sucker shares traits with the Rio Grande sucker (*Catostomus plebeius*) and the Little Colorado River bluehead sucker (bluehead sucker) (*C. discobolus*). Analysis of morphological (pertaining to the form and structure of the fish) and genetic information support the recognition of the Zuni bluehead sucker as distinct from both the Rio Grande sucker and the bluehead sucker (Smith 1966, pp. 87–90; Smith *et al.* 1983, pp. 37–38; Crabtree and Buth 1987, p. 843; Propst 1999, p. 49; Sublette *et al.* 1990, pp. 209, 211). Based on our review of the best available scientific information, we conclude that the Zuni bluehead sucker is a valid subspecies.

Habitat and Life History

Carman (2008, p. 2) described Zuni bluehead sucker habitat as stream reaches with clean, perennial water flowing over hard substrate (material on the stream bottom), such as bedrock. Silt-laden habitat, such as beaver ponds, is not suitable habitat for the species. Propst and Hobbes (1996, pp. 13, 16) reported that Zuni bluehead suckers were collected mainly in pool and pool-run habitats. These habitat areas were shaded with water velocities of less than 0.1 meter per second (m/s) (0.3 feet per second (ft/s)) (Propst and Hobbes 1996, p. 13). Most specimens were found in water that was 30 to 50 cm (12 to 20 in) deep, cobble, boulders, and bedrock substrate (Propst and Hobbes 1996, pp. 13,

16). Pools were often edged by emergent aquatic vascular plants and riparian vegetation (mainly willows (*Salix* spp.)) (Propst and Hobbes 1996, p. 16).

Zuni bluehead suckers feed primarily on algae scraped from rocks, rubble, and gravel substrates (Winter 1979, p. 4; Sublette *et al.* 1990, p. 211). Algae attached to rocks and plants are generally abundant in reaches where Zuni bluehead suckers are common (New Mexico Department of Game and Fish (NMDGF) 2004, p. 8). Bluehead suckers, including Zuni bluehead sucker, require clean gravel substrate with minimal silt for spawning (Maddux and Kepner 1988, p. 364) because silt covers eggs and leads to suffocation.

Distribution

The Zuni bluehead sucker has been found in the Zuni River watershed in New Mexico. Recent genetic testing of bluehead suckers in the Little Colorado River watershed in eastern Arizona and from streams in or near Canyon De Chelly in northeastern Arizona suggest that members of the Zuni bluehead sucker subspecies are located there as well. Zuni bluehead sucker were once common in the Little Colorado and Zuni River drainages, but its distribution rangewide has been reduced by over 90 percent in the last 20 years (Propst 1999, p. 51; NMDGF 2004, p. 15). The Zuni bluehead sucker is now found in low numbers in the Kinlichee Creek and Canyon de Chelly areas in Arizona (Hobbes 2000, pp. 9–16; Albert 2001, pp. 10–14; David 2006, p. 35) and is restricted to three isolated populations in the upper Rio Nutria drainage in the

Zuni River watershed in west-central New Mexico (Carman 2008, pp. 2–3). The Kinlichee Creek, Canyon de Chelly, and Rio Nutria areas are completely isolated and separate from one another.

New Mexico Distribution

The Zuni bluehead sucker was first found in the Zuni River watershed in west-central New Mexico (Smith 1966, p. 83; Smith *et al.* 1983, p. 37; Crabtree and Buth 1987, p. 843; Propst and Hobbes 1996, p. 7; Propst 1999, p. 49). The Zuni River watershed extends west from the continental divide, and across the Pueblo of Zuni tribal lands. The Zuni River then drains into the Little Colorado River in Arizona west of the Zuni reservation. Within the Zuni River watershed, Zuni bluehead sucker have been known to occur in the Zuni River, in the Rio Pescado and Rio Nutria (from the mouth of Rio Nutria Box Canyon near the eastern boundary of the Zuni Indian Reservation upstream), and in some of their tributaries (the headwaters in the Zuni mountains) that include Tampico Spring and Agua Remora (formerly known as Radosevich Creek) (Hanson 1980, p. 1; Propst *et al*. 2001, p. 161). Elsewhere in the Zuni River drainage, the Zuni bluehead sucker is rare or absent. Flow is intermittent in the Zuni River, Rio Pescado, and Rio Nutria.

Zuni bluehead sucker numbers have been starkly reduced in the Zuni River watershed in New Mexico, largely due to 27 chemical treatments during the 1960s to remove green sunfish *(Lepomis cyanellus*) and fathead minnow (*Pimephales promelas*)

from the Rio Nutria to aid in the establishment of a rainbow trout (*Oncorhynchus mykiss*) sport fishery in reservoirs on Zuni Pueblo (Winter 1979, p. 4). These treatments eliminated the Zuni bluehead sucker from most of the Zuni River drainage (Winter 1979, p. 4). As a result, by the late 1970s, the Zuni bluehead sucker's range in New Mexico had been reduced. While records are largely incomplete, it is known that a population of Zuni bluehead suckers near the mouth of the Rio Nutria Box Canyon was extirpated and that substantial numbers were also eliminated in other reaches of the Rio Nutria and Pescado drainages (NMDGF 2004, p. 16).

The Zuni bluehead sucker has not been collected from the mainstem Zuni River since 1978 or from the Rio Pescado since 1993. Currently, much of the lower portions of historical habitat in the Zuni River and Rio Pescado are dry during certain times of the year. Continued monitoring of these streams since 2004 has confirmed the extirpation of the Zuni bluehead sucker from these rivers (NMDGF 2004, p. 4; Carman 2007, p. 1; 2008, p. 1; 2009, p. 1). Additionally, Cebolla Creek, a Zuni River tributary, was surveyed in 1979, and no Zuni bluehead suckers were found, although habitat appeared suitable (Hanson 1980, pp. 29, 34).

The population of Zuni bluehead suckers in the Rio Nutria was maintained by dispersal of individuals from upstream untreated reaches, such as Agua Remora (Winter 1979, p. 4; Propst 1999, pp. 49–50), and so the Zuni bluehead sucker currently persists in three semi-isolated populations over 4.8 kilometers (km) (3 miles (mi)), mainly upstream of the mouth of the Rio Nutria Box Canyon (Propst 1999, pp. 49–50; Propst *et al.* 2001,

p. 168; Carman 2008, pp. 2–3). Within this area, it is most common near the Rio Nutria Box Canyon mouth, the confluence of the Rio Nutria and Tampico Draw, and headwater springs such as Agua Remora and Tampico Springs (Stroh and Propst 1993, p. 34; Propst and Hobbes 1996, p. 10; Propst 1999, p. 50; Propst *et al.* 2001, p. 162; Carman 2007, p. 1; 2008, p. 1; 2009, p. 2; 2010, p. 1; Gilbert and Carman 2011, p. 1). Within the 4.8-km (3-mi) occupied reach, the largest extent of perennial stream with limited levels of siltation is currently found in the Rio Nutria Box Canyon, from the confluence with Tampico Draw downstream to the canyon mouth.

Recently, bluehead suckers were found in Bowl Canyon Creek (also known as Asaayi Creek) in New Mexico (Sponholtz *et al*. 2003, p. 20; David 2006, p. 2), which were initially reported as *C. discobolus* (Sponholtz *et al.* 2003, pp. 18–22; Clarkson and Marsh 2006, pp. 1–3), but their proximity to Crystal Creek, part of the Canyon de Chelly National Monument complex, indicates they may also be members of the Zuni bluehead sucker subspecies. However, there are no direct stream connections and they have not yet been genetically analyzed (Service 2012a, pers. comm.). Therefore, at this time we are not currently considering bluehead suckers in Bowl Canyon Creek to be Zuni bluehead sucker.

Population Status of the Species in New Mexico

The results from numerous survey efforts confirm that Zuni bluehead sucker populations in New Mexico are fragmented and low in numbers. Fish surveys have been

conducted within the Zuni River watershed from 1977 to 1979, 1984, 1990 to 1993, 2000 to 2001, and every year since 2004 (Winter 1977, p. 1; Hanson 1980, p. 29; Stefferud 1985, p. 1; Propst and Hobbes 1996, p. 14, Carman 2010, pp. 13–15, Gilbert and Carman 2011, p. 23). No information on catch and effort is available prior to 1991; therefore, we may only make qualitative comparisons of the number of Zuni bluehead sucker collected over time for data prior to 1991. The number of fish over time is not a reliable method to evaluate population trends due to variability in sampling effort. Instead, catch per unit effort, or catch rates (i.e., number of fish per second of electrofishing) is a better metric for evaluating population trends and is how we assess the species' status after 1991 in this proposed rule. While catch per unit effort is valuable for assessing trends over time, it does not allow us to develop overall population estimates for the species.

In Tampico Draw, a tributary to Rio Nutria, Zuni bluehead sucker numbers declined dramatically, presumably due to beaver (*Castor canadensis*) dams (Gilbert and Carman 2011, p. 20), in 2006 from as high as 0.12 suckers per second (Carman 2006, p. 8) to 0.004 suckers per second (Carman 2007, p. 9) but appeared to rebound somewhat in 2009 (0.07 suckers per second) (Carman 2010, p. 15), after high spring flows washed out the beaver dams, creating more suitable habitat for Zuni bluehead sucker (Gilbert and Carman 2011, p. 5). Larval Zuni bluehead suckers have been confirmed in the Rio Nutria and its headwater springs, including Tampico Draw, each year between 2007 and 2010, indicating successful spawning (Carman 2008, p. 1; Carman 2009, p. 18; Carman 2010, p. 15; Gilbert and Carman 2011, p. 1).

Although we cannot make statistical comparisons due to the lack of quantitative data prior to 1991, the number of Zuni bluehead suckers collected from Agua Remora in the Rio Nutria drainage on the Cibola National Forest has declined since 1977. The number of Zuni bluehead suckers captured declined from 150 in 1977 (Winter 1977, p. 1) to 16 individuals in 2010 (Gilbert and Carman 2011, p. 23). Although the numbers are extremely low, Zuni bluehead suckers have persisted at Agua Remora, with fish catch rates ranging from 0.02 Zuni bluehead suckers per second to 0.12 fish per second (Carman 2010, p. 15). Young (less than 5 cm (2 in) total length) Zuni bluehead suckers have not been observed in the Agua Remora headwater spring habitat, and only mature adults were present there in 2005, 2006, and 2008 (Carman 2006, p. 8; Carman 2007, p. 13; Carman 2009, p. 14).

In 2007, permission to sample Tampico Springs, within the Rio Nutria drainage, was granted for the first time since 1994 (Carman 2008, p. 11); it has been sampled annually since. The spring consists of a series of semi-isolated pools occupied only by Zuni bluehead sucker. Zuni bluehead suckers at the headwater spring are smaller than at other sites, ranging 2.2–12.8 cm (0.9–5.0 in) total length (Carman 2009, p. 12). Tampico Springs catch rates have been declining consistently in recent years; while this site once exhibited the highest catch rates for the species, at 0.60 suckers per second in 2007 (Carman 2008, p. 10), numbers have since declined, with 0.22 fish caught per second in 2008 (Carman 2009, p. 12), 0.15 fish per second in 2009 (Carman 2010, p. 15), and 0.16 fish per second in 2010 (Gilbert and Carman 2011, p. 23). Despite the declines at

Tampico Spring, this site maintains the highest catch rates among sites within the Rio Nutria and its headwaters (Gilbert and Carman 2011, p. 20).

In summary, the Zuni bluehead sucker currently persists in three semi-isolated populations over 4.8 km (3 mi), and fish surveys from 1990 to 2009 show that Zuni bluehead sucker populations in headwater springs like Aqua Remora and upper Rio Nutria have declined significantly from numbers seen in the 1970s. In the 1990s, the population at the Zuni River confluence with Rio Nutria and Rio Pescado was declining, and the populations in the Rio Pescado and lower Zuni River were almost depleted (Stroh and Propst 1993, p. 1). The Zuni bluehead sucker has not been collected from the Zuni River or Rio Pescado since 1993 (Gilbert and Carman 2011, p. 1). In occupied areas, dispersal from upstream populations (i.e., Rio Nutria) may augment downstream populations, but both downstream and upstream movement is generally blocked by physical obstructions, such as natural waterfalls, irrigation diversions, and impoundments (Propst *et al.* 2001, p. 168). The irregular occurrence of the Zuni bluehead sucker in reaches downstream from the mouth of Rio Nutria Canyon (Rio Nutria, Zuni, and Pescado Rivers) indicates limited downstream dispersal from currently occupied stream reaches. No Zuni bluehead suckers were found in the Rio Nutria between the canyon mouth and the confluence of the Rio Pescado.

Arizona Distribution

In Arizona, Zuni bluehead suckers are found on the Navajo Indian Reservation in two areas. First we will discuss the Kinlichee Creek area, which includes an area of the Little Colorado watershed west of Ft. Defiance, Arizona, in several locations over a 47-km (29-mi) area (Smith *et al.* 1983, p. 39; Crabtree and Buth 1987, p. 843; Hobbes 2000, pp. 9–16) and which includes Kinlichee Creek, Red Clay Wash, Black Soil Wash, and Scattered Willow Wash. Next we will discuss the Canyon de Chelly area, which includes Wheatfields, Whiskey, Tsaile, Sonsela, and Crystal Creeks.

Results from genetic analyses of the bluehead sucker indicate that samples from Kinlichee Creek (Black Soil Wash) share genetic markers (markers identify the place of genes that are located at specific positions on specific chromosomes that are used in genetic analyses) with Zuni bluehead sucker from New Mexico (Service 2012a, pers. comm.). The available genetic information indicates that bluehead suckers from the Kinlichee Creek area (see further discussion below) are Zuni bluehead sucker (Dowling 2011, p. 1). Therefore, based on our review of the genetic information above, we consider the bluehead suckers in Kinlichee Creek and its tributaries to be Zuni bluehead suckers. We are aware that this information is being prepared for publication (Dowling 2012, p. 1). Because the genetic information has not yet been published, the Navajo Nation still considers these fish to be bluehead suckers (*C. discobolus*).

Zuni bluehead sucker survey efforts have been more irregular in Arizona than in New Mexico. Populations of Zuni bluehead sucker are currently found in several locations over approximately 47 km (29 mi) of Kinlichee Creek (Smith *et al.* 1983, p. 39;

Crabtree and Buth 1987, p. 843; Hobbes 2000, pp. 9–16). It is unlikely that the whole length of Kinlichee Creek is occupied, because the streams are susceptible to drying during drought. In addition, no comprehensive surveys have been done along this stream reach. Within the watershed, the species occurs in Kinlichee Creek, Black Soil Wash, Red Clay Wash, and Scattered Willow Wash based on collections made in 2000, 2001, 2004, and 2010 (Hobbes 2000, pp. 9–16; Hobbes 2001a, pp. 38, 43; Hobbes 2001b, entire; Carman 2004, pp. 1–8; Johnson 2010a, p. 1).

Near Canyon de Chelly in northeast Arizona and northwest New Mexico, Zuni bluehead sucker occur in the Chinle watershed, which flows into the San Juan River; we will refer to fish from this area as Canyon de Chelly fish. Zuni bluehead sucker occur in Coyote Wash, Sonsela (= Canyon de Chelly Creek), Crystal, Whiskey, and Wheatfields creeks on the Navajo Indian Reservation (Sponholtz *et al*. 2003, p. 4; David 2006, pp. 2–3, 12, 34), and in Tsaile Creek downstream of Tsaile Dam within Canyon de Chelly National Monument (Clarkson and Marsh 2006, p. 1; David 2006, p. 2). Sonsela and Whiskey Creek flow into Canyon de Chelly, and Wheatfields Creek flows into Wheatfields Lake (Sponholtz *et al*. 2003, p. 4). These streams originate along the western slope of the Chuska Mountains, New Mexico, and eventually drain into the San Juan River.

The presence of bluehead suckers in Tsaile and Wheatfields creeks in Canyon de Chelly National Monument was known prior to 1966, when Smith (1966, p. 77) included specimens from those creeks in his analysis of suckers, determining these suckers were

bluehead suckers. He called out the Zuni River specimens of bluehead suckers as being different from the standard *C. discobolus* that included the Canyon de Chelly specimens (Smith 1966, p. 83). Subsequently, Smith *et al.* (1983, pp. 38–39) looked more closely at the Zuni bluehead sucker and included specimens from Whiskey Creek in Canyon de Chelly. After evaluation, those specimens were not considered at the time to be Zuni bluehead suckers (Smith *et al*. 1983, p. 39). Outside of Canyon de Chelly but within close proximity, Wheatfields Creek is the only stream known to contain fish with Zuni bluehead sucker genes (Service 2012a, pers. comm.); however, because of habitat connectivity and potential for genetic interchange, it is likely that bluehead suckers within Tsaile, Sonsela, Crystal, and Whiskey creeks also contain Zuni bluehead sucker genes based on collections between 2001 and 2010 (see genetic discussion above) (Service 1982, pp. 2–3; Hobbes 2001a, pp. 24, 29, 31, 34; Sponholtz *et al.* 2003, pp. 18–22; Carman 2004, pp. 9–18; Clarkson and Marsh 2006, p. 3; David 2006, p. 3; Johnson 2010b, p. 1; Johnson 2010c, p. 1). Therefore, we consider bluehead suckers in these creeks also to be Zuni bluehead sucker because they are within reasonable distance of each other and are likely exchanging genes (Service 2012a, pers. comm.). We presume Zuni bluehead sucker once occurred in Palisades and Little Whiskey Creeks, both tributaries to Whiskey Creek, but impoundments and other barriers eliminated the entire fish community in both streams prior to 1980 (Service 1982, p. 4). Palisades Creek has been documented to be dry in recent years (Carman 2004, p. 9).

Population Status of the Species in Arizona

For several years (2000, 2001, and 2004), Zuni bluehead sucker surveys were conducted in the Kinlichee Creek watershed in Arizona on the Navajo Indian Reservation (Hobbes 2001a, entire; Carman 2004, entire). These were historical collection sites that had not been sampled since 1987 when the Zuni bluehead sucker was last documented by Crabtree and Buth (1987, p. 851). The species was collected in low numbers in Kinlichee Creek, Red Clay Wash, Black Soil Wash, and Scattered Willow Wash. More recently, collections occurred in Black Soil Wash and Kinlichee Creek, with 184 Zuni bluehead sucker collected from Black Soil Wash and 21 from Kinlichee Creek (Kitcheyan and Mata 2012, p. 6), indicating the species' continued presence in these streams. Additionally, in the Canyon de Chelly area, recent collections have occurred in Wheatfields, Whiskey, Tsaile, Sonsela, and Crystal Creeks. Because these were only presence/absence surveys, we have no population information for the Arizona stream reaches.

Summary of Zuni Bluehead Sucker Distribution

Zuni bluehead sucker rangewide distribution has been reduced by over 90 percent in the last 20 years (Propst 1999, p. 51, NMDGF 2004, p. 15). The Zuni bluehead sucker is now found in low numbers in the Kinlichee Creek and Canyon de Chelly areas in Arizona (Hobbes 2000, pp. 9–16; Albert 2001, pp. 10–14; David 2006, p. 35) and is restricted to three isolated populations in the upper Rio Nutria drainage in west-central New Mexico (Carman 2008, pp. 2–3).

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on any of the following five factors: (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.

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

The principal threats to Zuni bluehead sucker habitat include water withdrawal, sedimentation, impoundments, housing development, wildfire, and climate change. These threats are intensified by the species' small range. Severe degradation to watersheds occupied by Zuni bluehead sucker has occurred through excessive timber harvest, overgrazing, and road construction. Although most of these activities occurred in the late 1800s and early 1900s, the subsequent erosion, gullying, headcutting, and loss

of water have continued to degrade habitat for the Zuni bluehead sucker (NMDGF 2004, p. 18).

Water Withdrawal

Surface and groundwater withdrawal result in the direct loss of habitat as well as fragmentation of Zuni bluehead sucker habitat by reducing stream flow and/or water depth. Reduced stream velocities result in increased sedimentation, while overall loss of wetted habitat strands Zuni bluehead suckers in isolated shallow pools that may not provide suitable hard substrates for feeding and reproduction. Loss of appropriate habitat may decrease the reproductive success of Zuni bluehead sucker and result in mortality of individuals. Historically, water withdrawals led to the conversion of large portions of flowing streams to intermittent streams or dewatered channels, thus eliminating suitable Zuni bluehead sucker habitat in affected areas (NMDGF 2004, p. 12). Water withdrawals that lead to dewatering or reduced river flows or pool levels reduce the available habitat for the species.

Groundwater withdrawal can cause reduction or loss of spring flow (Brune 2002, p. 356). Currently, the Zuni River, the Rio Pescado, and the Rio Nutria flow intermittently, except for short reaches that flow perennially in response to discharge from springs. These streams are dependent on spring discharges, and the drainages contain various springs across the Zuni tribal lands (Orr 1987, p. 37; Drakos and Riesterer 2009, p. 96). Since spring ecosystems rely on water discharged to the surface

from underground aquifers, groundwater depletion can result in the destruction of riverine habitat through spring drying (Scudday 1977, pp. 515–516). Spring drying or flow reduction resulting from groundwater pumping has also been documented in the Roswell (August 9, 2005; 70 FR 46304) and Mimbres Basins (Summers 1976, pp. 62, 65) of New Mexico. In addition, there has been a general declining trend in spring flow found on Zuni Tribal lands between 1972 and 2009 (Drakos and Riesterer 2009, p. 96). The lowermost pool in Agua Remora had reduced water depths in 2005 and nearly dried in 2007 and 2009; Zuni bluehead suckers were salvaged from this area and moved upstream to the middle pool or taken to the Albuquerque BioPark for a rearing program (Carman 2008, p. 17; Carman 2009, p. 24).

Groundwater use in the range of the Zuni bluehead sucker is expected to increase due to human population expansion. In early 2007, a development company (Tampico Springs 3000, LLC), presented a preliminary plat to McKinley County, New Mexico, for Tampico Springs Ranch Subdivision. The subdivision is located just northeast of currently occupied Zuni bluehead sucker habitat. The subdivision would have a total of 490 lots, varying from 1.2 to 4.8 hectares (ha) (3 to 11.9 acres (ac)), each with an individual well and septic system. An increase in the number of wells would affect aquifer drawdowns, and individual septic tanks could potentially lead to water quality concerns. The geohydrologic investigation report, prepared for Phase I of the subdivision, states that water withdrawal is likely to affect flow at Brennan and Tampico Springs (MJDarrconsult, Inc. 2007, p. 26). In January 2008, the plat for Phase I of the subdivision was approved by McKinley County with conditions, including metering of

water wells to enforce the 0.3 acre-ft per year per household restriction (Carman 2008, p. 17). Construction of Phase I has begun, with 17 of 45 lots sold (First United Realty 2012, p. 1).

In Arizona, existing water withdrawals throughout the Navajo Indian Reservation are generally for water haulers (people who collect water in tanks and transport it to another location for use); domestic and municipal use; water storage facilities; commercial, agricultural, mining and industry uses;, recreation and wildlife; and wastewater management. Water withdrawals have been documented on the Navajo Indian Reservation for many years. Water levels in wells in the Black Mesa area have declined as much as 70 ft (21.3 m) since 1963 (Littin 1992, p. 1). As of 2003, there were 75 livestock wells on the Navajo Indian Reservation, in both alluvial (connected to the river) and deep water aquifers (Navajo Nation Department of Water Resources 2003, p. 40). Currently, near Tsaile Creek, over 600 ac (242 ha) are developed for irrigation, but only 100 ac (40 ha) are irrigated due to water shortages; most of this water is diverted from Tsaile Creek (Natural Resources Conservation Service (NRCS) 2000, p. 37). Additionally, water in Kinlichee Creek has been noted as very low in recent years (Kitcheyan and Mata 2012, p. 3), and Palisades Creek, Scattered Willow Wash, Black Soil Wash, and Kinlichee Creek have been intermittent several years in a row (Carman 2004, pp. 2, 8; Kitcheyan and Mata 2012, p. 3). These low water events are exacerbated by continued water withdrawal in the region. Given past groundwater use and the likelihood of continued drought (see *Climate Change*, below), groundwater declines will likely continue into the future.

In summary, water withdrawals have affected the Zuni bluehead sucker rangewide in the past, resulting in dry streambeds or very low water levels in the lower Rio Nutria, Rio Pescado, Zuni River, and Agua Remora in New Mexico and in Palisades Creek, Scattered Willow Wash, and Kinlichee Creek in Arizona. Based on our review of the available information, we conclude that the effects of water withdrawal are a continuing threat to the Zuni bluehead sucker habitat across its range and as a result are negatively impacting the species.

Sedimentation

Sedimentation occurs when particles suspended in the water column fall out of suspension and cover the streambed, filling in spaces between substrate particles. Sedimentation results in the loss of suitable habitat and available food resources for Zuni bluehead sucker. Fine sediments, in particular, reduce or prevent production of algae, the Zuni bluehead sucker's primary food. Research has shown that heavy sediment loads have the potential to limit algae production by restricting light penetration or smothering (Graham 1990, pp. 107–109, 113–114). If mobilized during the spawning season, fine sediments may also smother and suffocate recently spawned eggs (Propst and Hobbes 1996, p. 39). The reproductive successes of fishes that require clean gravel substrate have been reduced by increased sedimentation due to smothering of eggs, which may be the case for Zuni bluehead sucker (Berkman and Rabeni 1987, p. 285; Propst and Hobbes 1996, p. 38). Increasing sedimentation in Agua Remora and Rio Nutria has led to the

loss of optimal Zuni bluehead sucker habitat (permanent, clear flowing water over hard substrate). Sedimentation throughout the range of Zuni bluehead sucker is primarily caused by logging, livestock grazing, and road construction; these are discussed in detail below.

Logging

Logging activities in the early to mid-1800s likely caused major changes in watershed characteristics and stream morphology (Chamberlin *et al*. 1991, pp. 181–205; Ohmart 1996, p. 259). Early logging efforts were often concentrated along canyon bottoms with perennial streams. Tree removal along perennial streams within the historical range of Zuni bluehead sucker likely altered water temperature regimes, sediment loading, bank stability, and availability of large woody debris (Chamberlin *et al.* 1991, pp. 181–205). Soil surface erosion from logging or logging activities is directly related to the amount of bare compacted areas exposed to rainfall and runoff, which then contributes large quantities of fine sediments to stream channels (Chamberlin *et al.* 1991, p. 193). For example, in the early 1890s, logging and presence of logging railroads were widespread within the Zuni Mountains, which supported several lumber towns (NRCS) 1998, p. 17). Extensive clearcutting and overgrazing were the primary contributors to the reduction of the original riparian vegetation by 70 to 90 percent in the Zuni Mountains (Ohmart 1996, p. 259). Logging is actively practiced on both private and public lands within the Zuni watershed (NRCS 1998, p. 17). For example, in 2012, the Forest Service funded the Zuni Mountain Collaborative Forest Landscape Restoration project, which

will increase logging to reduce fire risk in the Rio Puerco and Rio Nutria watersheds over the next 10 years (Forest Service 2012, pp. 1–2). Ultimately, the reduction in fire risk in these watersheds is likely to benefit the Zuni bluehead sucker; however, the short-term increase in logging is likely to increase sedimentation in these watersheds.

In Arizona, on the Navajo Indian Reservation, timber operations began in the 1880s (Einbender-Velez 2010, p. 2). In the 1980s, cutting increased significantly to about 36 million board-feet per year (Atencio 1994, p. 2). In 1990, Tsaile Canyon, which encompasses a Zuni bluehead sucker population, was heavily logged, with all of the old growth forest and many of the saplings removed (Atencio 1994, p. 2). However, the Navajo Forest Products Industry shut down in 1994, and timber harvesting has been much reduced.

In summary, sedimentation from logging has historically affected Zuni bluehead sucker habitat rangewide, resulting in unsuitable habitat. Logging rates have reduced in recent years but will continue into the future, particularly in the Rio Puerco and Rio Nutria watersheds over the next decade, which will likely impact Zuni bluehead sucker habitat.

Livestock grazing

Livestock grazing has been one of the most widespread and long-term causes of adverse impacts to native fishes and their habitat (Miller 1961, pp. 394–395, 399; Armour

et al. 1991; pp. 7–10; Fleischner 1994, pp. 629–635; Larsen *et al*. 1998, pp. 161, 164). Widespread livestock grazing and logging likely contributed to habitat modifications, resulting in severe degradation of the Zuni watershed (Hanson 1982, p. 14; NRCS 1998, p. 1; NMDGF 2004, p. 12). Livestock grazing has been shown to increase soil compaction, decrease water infiltration rates, increase runoff, change vegetative species composition, decrease riparian vegetation, increase stream sedimentation, increase stream water temperature, decrease fish populations, and change channel form (Meehan and Platts 1978, pp. 275–276; Kauffman and Krueger 1984, pp. 430–435; Schulz and Leininger 1990, p. 295; Platts 1991, pp. 393–403; Fleischner 1994, pp. 629–635; Ohmart 1996, pp. 246–274). Although direct impacts to the riparian zone and stream can be the most obvious sign of livestock grazing, upland watershed condition influences the timing and amount of water delivered to stream channels (Ohmart 1996, pp. 260, 268). Increased soil compaction and decreased vegetative cover lead to faster delivery of water to stream channels, increased peak flows, and lower summer base flow (Platts 1991, p. 390; Ohmart 1996, p. 255; Belsky and Blumenthal 1997, pp. 321, 324). As a consequence, streams are more likely to experience flood events during monsoonlike weather in summer (water runs off quickly instead of soaking into the ground) that negatively affects the riparian and aquatic habitats. Therefore, heavily grazed streams are more likely to become intermittent or dry in September and October, when groundwater recharge is reduced because water runs off quickly, rather than being absorbed by the soil (Ohmart 1996, p. 268).

Improper livestock grazing increases sedimentation through trampling of the steam banks and compacting soil, both of which can result in a reduction or elimination of riparian vegetation, which can be detrimental to stream habitat. Riparian vegetation insulates streams from temperature extremes in both summer and winter. Further, it filters sediment so that it does not enter the stream; sediment can lead to reduction or prevention of algal growth and smothering of newly spawned eggs (Propst and Hobbes 1996, p. 38). Riparian vegetation also provides a source of nutrients to the stream from leaf litter, which increases stream productivity, and it contributes root wads and large and small woody debris to the stream, which provide cover for the fish (Kauffman and Krueger 1984, pp. 430–431; Platts 1991, pp. 395–400; Ohmart 1996, pp. 247–249).

The Cibola National Forest (Forest) commissioned the Zuni Mountain Sucker Habitat Management Plan "to protect, and to enhance, where possible, habitat of threatened and endangered species within the confines of the Forest" (Winter 1979, p. 3). In 1978 and 1979, the Forest fenced off Agua Remora from grazing, which resulted in marked regrowth of the riparian area (Merkel 1979, p. 15; Stefferud 1985, p. 1). In 1988, the NMDGF Share with Wildlife program partnered with the Forest to increase the fenced area, doubling the amount of protected habitat. However, the fence is occasionally in disrepair leading to unauthorized grazing in Agua Remora, and the fence is only checked if there is evidence of grazing within Agua Remora. A recent field trip to Agua Remora identified that the fence was in disrepair, and five cows were on the site; the riparian area had lost vegetative cover (Gilbert 2012, p. 1). Additionally, there are

several active grazing allotments north of Agua Remora, with the closest being 2.4 km (1.5 mi) away; livestock grazing also occurs on nearby private land.

During the 1930s, in Arizona, on the Navajo Indian Reservation, nearly one million livestock (sheep, goats, horses, or cattle) ranged across the landscape, exposing soil and increasing erosion (Weisiger 2007, p. 440). Grazing continues today throughout the entire Navajo Indian Reservation, although herd numbers are much lower than in the early 1900s. Although grazing has been reduced, the continuing drought has exacerbated effects of depleted forage, and the livestock numbers are considered to be overpopulated, (Davis 2012, p. 1). Additionally, cultural resistance to fencing on the Navajo Indian Reservation (Beatty Davis 1997, p. 49) creates a challenge for range management and stream protection. Direct access to streams and overgrazing by livestock on the Navajo Indian Reservation has been documented repeatedly (Sanchez 1975, p. 1, Service 1982, pp. 3–4; U.S. Army Corps of Engineers 1995, p. 3; Hobbes 2000, p. 14; NMDGF 2003, pp. 6, 13; Sponholtz *et al.* 2003, pp. 25–26; David 2006, pp. 4, 20; Kitcheyan and Mata 2012, p. 3). Overall, both historic and current livestock grazing within the riparian zone and upland slopes has reduced vegetative cover and accelerated storm runoff and sediment into reservoirs and increased erosion in areas such as Tsaile Creek (Bureau of Reclamation (BOR) 2011, p. 22).

In summary, Zuni bluehead sucker habitat near or adjacent to areas where livestock grazing occurs is significantly impacted. The resulting habitat degradation is a threat to the remaining Zuni bluehead sucker populations in New Mexico and Arizona.

The available information indicates that these activities likely contributed to the reduction in riparian habitat, channel incision, and increased soil compaction, which resulted in unfavorable habitat conditions for Zuni bluehead sucker foraging or reproduction. Such unfavorable habitat conditions affect populations by reducing their viability. Based on our review of the available information we conclude that the effects of livestock grazing are a threat to Zuni bluehead sucker habitat, and the species, throughout its entire range.

Road construction

Roads have adversely affected Zuni bluehead sucker habitat by increasing surface runoff and sedimentation, which can increase turbidity, reduce primary production, and reduce numbers of aquatic insects (Burns 1972, p. 1; Eaglin and Hubert 1993, pp. 844–845). Roads require instream structures, such as culverts and bridges that remove aquatic habitat and can act as barriers to fish movement (Warren and Pardew 1998, p. 637). All of these activities negatively impact Zuni bluehead suckers and their habitat by lowering water quality, reducing the quality and quantity of pools by filling them with sediments, reducing the quantity of large woody debris necessary to form pools, and by imposing barriers to movement. The end result is deterioration of habitat for the Zuni bluehead sucker (Burns 1972, p. 1; Eaglin and Hubert 1993, pp. 844–845).

Vehicular use of roads in creek bottoms can degrade Zuni bluehead sucker habitat. Such use inhibits riparian plant growth, breaks down banks, causes erosion, causes sedimentation, and increases turbidity in the stream, particularly where vehicles

drive through the stream (especially immediately downstream of the vehicular activity). These effects are likely to result in wider and shallower stream channels (Furniss *et al*. 1991, pp. 297–301). This change causes progressive adjustments in other variables of hydraulic geometry and results in changes to the configuration of pools, runs, riffles, and backwaters; levels of fine sediments and substrate embeddedness (the degree to which rocks and cobble are stuck in the streambed); availability of instream cover; and other fish habitat requirements in the vicinity of vehicle crossings (Sullivan *et al.* 1987, pp. 67, 69–70; Rosgen 1994, p. 185). It also changes the way in which flood flows interact with the stream channel and may exacerbate flood damage to banks, channel bottoms, and riparian vegetation.

Road construction activities may have direct adverse effects on the watershed from soil erosion and sedimentation to the streams. Aerial photographs from 1935 and 1991 showed road density in the Cebolla and Rio Nutria watersheds rose 138 and 47 percent, respectively (NMDGF 2004, p. 12). Forest Road 50, which is in the upper watershed of Zuni bluehead sucker habitat (approximately 5 km (3 mi) away from the closest occupied habitat), was upgraded in 1999, and several roads were developed in 2007 for the Tampico Springs Subdivision. Currently, the US Forest Service proposes to allow McKinley County to upgrade Forest Road 191D with gravel surface material (Forest Service 2011, p. i), which may increase vehicle traffic and surface runoff. This road is approximately 3 km (2 mi) from Agua Remora and 1.6 km (1 mi) from Tampico Springs (Forest Service 2011, p. 44).

On the Navajo Indian Reservation, past road construction continues to affect stream habitat. On Kinlichee Creek, for example, Bridge BR 280 constricts the channel considerably, which increases flow rates, channel scouring, and downstream deposition of sediment (U.S. Army Corps of Engineers 1995, p. 3). Sedimentation from road construction has occurred throughout the range of Zuni bluehead sucker in the past and is likely to continue in the future.

In summary, historical logging, overgrazing by livestock, and road construction have destroyed much of the groundcover across the Zuni bluehead sucker's range (Sanchez 1975, pp. 1, 4; Beatty Davis 1997, pp. 3, 7; NMDGF 2004, p. 12; BOR 2011, p. 22), resulting in increased erosion, increased stream flow fluctuation, and the accumulation of large quantities of sediment throughout Zuni bluehead sucker habitat (Merkel 1979, p. 4). Livestock grazing and road construction are likely to continue at present rates throughout the species' range, and logging is likely to continue at reduced rates. Sedimentation results in depressed reproductive rates and inhibition of algal growth for food. Therefore, based on our review of the available information, we conclude that the effects of sedimentation are a threat to the Zuni bluehead sucker and its habitat rangewide.

Dams/Impoundments

Much of the primary water use from the Zuni River watershed is for irrigation of agriculture, livestock grazing, and human consumption. Many small impoundments,

built primarily for watering livestock, partially prevent flows from reaching the mainstem rivers. According to Merkel (1979, p. 1), the lower Rio Nutria, Rio Pescado, and Zuni River drainages have been drastically altered by human activities, such as the construction of many small impoundments for livestock watering. Reservoirs and diversion dams for irrigation have depleted stream flows below the dams and inundated stream reaches above the dams (Merkel 1979, p. 1; Hanson 1982, p. 4). Degradation of the upper watershed has led to increased sedimentation and many of the reservoirs are now only shallow, eutrophic (nutrient rich) ponds or wetlands with little or no storage capacity (NMDGF 2004, p. 20). Sediment trapping by these impoundments has also changed the character of the streams by altering channel morphology and substrate composition. The lower Rio Nutria was once a perennial stream with wide meanders bordered by willow and cottonwood (*Populus* spp.). After construction of impoundments in the Rio Nutria below the box canyon meanders, the channel became deeply incised with predominantly silt or silt-sand substrate, which is unsuitable for Zuni bluehead sucker. Flow is intermittent between the ephemeral pools and impoundments. Current habitat conditions are not favorable for Zuni bluehead sucker in much of the watershed downstream from the mouth of Rio Nutria Box Canyon, primarily due to impoundments, dams, and sedimentation from logging and grazing.

On the Navajo Indian Reservation, many small impoundments exist throughout Zuni bluehead sucker historic habitat, primarily for irrigation (U.S. Army Corps of Engineers 1995, p. 3). Additionally, large impoundments have been built on Tsaile and Wheatfields Creeks (NRCS 2000, pp. 20, 23; BOR 2002, p. 12), which have largely

fragmented Zuni bluehead sucker habitat for miles up and downstream of the impoundments. Zuni bluehead suckers currently occur downstream of Tsaile Dam and upstream of Wheatfields Dam (Sponholtz *et al.* 2003, p. 4).

Additionally, beaver dams affect Zuni bluehead sucker habitat, particularly in New Mexico. In 2006, beaver activity in Tampico Draw and Rio Nutria increased greatly, fragmenting much Zuni bluehead sucker habitat (Carman 2007, p. 1). A marked decrease in captured Zuni bluehead sucker in Tampico Draw was attributed to increased siltation and water ponding due to beaver activity (Carman 2007, p. 1). In 2010, spring flows washed out the beaver dams in Tampico Draw, creating more suitable habitat for Zuni bluehead sucker (Gilbert and Carman 2011, p. 6). The best available information does not indicate beaver activity is affecting Zuni bluehead sucker populations in Arizona.

In summary, Zuni bluehead sucker habitat has been reduced rangewide due to impoundment construction. Impoundments have lasting effects on stream habitat both up and downstream, subsequently fragmenting fish populations and decreasing their resiliency and long-term persistence. Based on our review of the available information, we conclude that the effects of impoundments are a current threat to Zuni bluehead sucker and are having rangewide impacts on their habitat.

Housing Developments

Subdivision developments within the range of Zuni bluehead sucker would increase the amount of impervious surfaces in this watershed. Impervious surfaces include buildings, roads, and parking lots (Brabec *et al.* 2002, p. 499). An increase in the amount of impervious surfaces could increase the amount of runoff and decrease infiltration rates. Impacts of urbanization on stormwater runoff can cause changes in land or stream corridor use, land formations, hydrology, stream hydraulics, habitat, and sediment transport and storage. Urbanization can cause changes in fish population composition and distribution due to habitat changes and lower water table elevations due to groundwater use.

In 2007, the Forest granted an easement to McKinley County for access across Forest Service land via Forest Road 191D (Forest Service 2010 pp. 1–2). The granting of the right-of-way allows McKinley County to upgrade and assume maintenance of this road, which provides access to the upper Rio Nutria watershed. This road may facilitate the development of the Tampico Springs Ranch subdivision, resulting in additional sedimentation and potential groundwater loss in the watershed (Forest Service 2010, p. 17).

In summary, the increases in sedimentation and water withdrawals that could result from the development of additional phases of the subdivision are a threat to the Zuni bluehead sucker habitat in Rio Nutria and Tampico Springs, which constitutes the bulk of the species' distribution and habitat in New Mexico. As a result, these effects to habitat are negatively impacting the species.

Wildfires

Wildfires can destroy vegetation along slopes and stream channels altering the physical properties of the soil. The lack of ground cover increases the amount of potential runoff, thereby increasing the amount of woody debris, sedimentation, and ash entering the stream (Swanston 1991, pp. 141, 175–177). Indirect effects, such as ash flow events that follow wildfire during monsoonal seasons can inundate Zuni bluehead sucker habitat and smother and destroy eggs. Severe wildfires that extirpate fish populations are a relatively recent phenomenon and result from the cumulative effects of historical or ongoing overgrazing by domestic livestock, fire suppression, and climate change (Madany and West 1983, p. 666; Swetnam 1990, pp. 6–17; Touchan *et al.* 1995, p. 272 Swetnam and Baisan 1996, p. 28; Belsky and Blumenthal 1997, p. 318; Gresswell 1999, p. 212; Brown *et al.* 2004, p. 366; McKenzie *et al.* 2004, p. 898; Westerling *et al.* 2006, p. 943).

Historically, wildfires in the region were primarily cool-burning understory fires with fire return intervals of 4 to 8 years (Swetnam and Dieterich 1985, p. 395). Cooper (1960, p. 137) found that, prior to the 1950s, crown fires (intense fires that completely consume trees and move forward through tree canopies) were extremely rare or nonexistent in the region. Since the mid-1980s, wildfire frequency in western forests is nearly four times the average of 1970 to 1986, and the total area burned is more than 6.5 times the previous level (Westerling *et al.* 2006, p. 941). The average length of fire

season increased by 78 days from the 1970 to 1986 period to the 1987 to 2003 period, and the average time between discovery and control increased from 7.5 days to 37.1 days for the same timeframes (Westerling *et al.* 2006, p. 941). McKenzie *et al.* (2004, p. 893) suggested, based on models, that the length of the fire season will likely increase further and that fires in the western United States will be more frequent and more severe. In particular, they found that fire in New Mexico appears to be acutely sensitive to summer climate and temperature changes and may respond dramatically to climate warming.

Changes in relative humidity, especially drying over the western United States, are also projected to increase the number of days of high fire danger (Brown *et al.* 2004, p. 365). Because Zuni bluehead sucker are found primarily in isolated, small headwater streams, they are unable to swim away from ash flows, and opportunities for natural recolonization are unlikely, due to the highly fragmented nature of Zuni bluehead sucker populations. Persistence of Zuni bluehead sucker in streams affected by fire and subsequent ash flows is unlikely in the Zuni watershed. The recently funded Zuni Mountain Collaborative Forest Landscape Restoration project is expected to reduce wildfire risk over 22,662 ha (56,000 ac) in the Rio Puerco and Rio Nutria watersheds (Forest Service 2012, p. 1). Currently, wildfire risk in this area is considered high (class III), but over the next decade this risk is expected to be reduced. The available information does not indicate that wildfire is a threat to populations in Arizona. Therefore, based on the likelihood that fire risk will be reduced in New Mexico, we do not consider wildfire to be a threat to Zuni bluehead sucker habitat rangewide.

Climate Change

Our analyses under the Endangered Species Act include consideration of ongoing and projected changes in climate. The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). The term "climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007a, p. 78). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007a, p. 78).

Scientific measurements spanning several decades demonstrate that changes in climate are occurring, and that the rate of change has been faster since the 1950s. Examples include warming of the global climate system, and substantial increases in precipitation in some regions of the world and decreases in other regions. (For these and other examples, see IPCC 2007a, p. 30; and Solomon *et al*. 2007, pp. 35–54, 82–85). Results of scientific analyses presented by the IPCC show that most of the observed increase in global average temperature since the mid-20th century cannot be explained by natural variability in climate, and is "very likely" (defined by the IPCC as 90 percent or higher probability) due to the observed increase in greenhouse gas (GHG) concentrations in the atmosphere as a result of human activities, particularly carbon dioxide emissions from use of fossil fuels (IPCC 2007a, pp. 5–6 and figures SPM.3 and SPM.4; Solomon *et*

al. 2007, pp. 21–35). Further confirmation of the role of GHGs comes from analyses by Huber and Knutti (2011, p. 4), who concluded it is extremely likely that approximately 75 percent of global warming since 1950 has been caused by human activities.

Scientists use a variety of climate models, which include consideration of natural processes and variability, as well as various scenarios of potential levels and timing of GHG emissions, to evaluate the causes of changes already observed and to project future changes in temperature and other climate conditions (e.g., Meehl *et al*. 2007, entire; Ganguly *et al*. 2009, pp. 11555, 15558; Prinn *et al*. 2011, pp. 527, 529). All combinations of models and emissions scenarios yield very similar projections of increases in the most common measure of climate change, average global surface temperature (commonly known as global warming), until about 2030. Although projections of the magnitude and rate of warming differ after about 2030, the overall trajectory of all the projections is one of increased global warming through the end of this century, even for the projections based on scenarios that assume that GHG emissions will stabilize or decline. Thus, there is strong scientific support for projections that warming will continue through the 21st century, and that the magnitude and rate of change will be influenced substantially by the extent of GHG emissions (IPCC 2007a, pp. 44–45; Meehl *et al*. 2007, pp. 760–764 and 797–811; Ganguly *et al*. 2009, pp. 15555–15558; Prinn *et al*. 2011, pp. 527, 529). (See IPCC 2007b, p. 8, for a summary of other global projections of climate-related changes, such as frequency of heat waves and changes in precipitation. Also see IPCC 2011(entire) for a summary of observations and projections of extreme climate events.)

Various changes in climate may have direct or indirect effects on species. These effects may be positive, neutral, or negative, and they may change over time, depending on the species and other relevant considerations, such as interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007b, pp. 8–14, 18–19). Identifying likely effects often involves aspects of climate change vulnerability analysis. Vulnerability refers to the degree to which a species (or system) is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the type, magnitude, and rate of climate change and variation to which a species is exposed, its sensitivity, and its adaptive capacity (IPCC 2007a, p. 89; see also Glick *et al.* 2011, pp. 19–22). There is no single method for conducting such analyses that applies to all situations (Glick *et al.* 2011, p. 3). We use our expert judgment and appropriate analytical approaches to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

As is the case with all stressors that we assess, even if we conclude that a species is currently affected or is likely to be affected in a negative way by one or more climate-related impacts, it does not necessarily follow that the species meets the definition of an "endangered species" or a "threatened species" under the Act. If a species is listed as endangered or threatened, knowledge regarding the vulnerability of the species to, and known or anticipated impacts from, climate-associated changes in environmental conditions can be used to help devise appropriate strategies for its recovery.

Global climate projections are informative, and, in some cases, the only or the best scientific information available for us to use. However, projected changes in climate and related impacts can vary substantially across and within different regions of the world (e.g., IPCC 2007a, pp. 8–12). Therefore, we use "downscaled" projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species (see Glick *et al*. 2011, pp. 58–61, for a discussion of downscaling). With regard to our analysis for the Zuni bluehead sucker, downscaled projections are available.

Climate simulations of Palmer Drought Severity Index (PSDI) (a calculation of the cumulative effects of precipitation and temperature on surface moisture balance) for the Southwest for the periods of 2006–2030 and 2035–2060 predict an increase in drought severity with surface warming. Additionally, drought still increases during wetter simulations because of the effect of heat-related moisture loss (Hoerling and Eischeid 2007, p. 19). Annual mean precipitation is likely to decrease in the Southwest as well as the length of snow season and snow depth (IPCC 2007b, p. 887). Most models project a widespread decrease in snow depth in the Rocky Mountains and earlier snowmelt (IPCC 2007b, p. 891). Exactly how climate change will affect precipitation is less certain, because precipitation predictions are based on continental-scale general circulation models that do not yet account for land use and land cover change effects on climate or regional phenomena. Consistent with recent observations in changes from climate, the outlook presented for the Southwest predicts warmer, drier, drought-like

conditions (Seager *et al.* 2007, p. 1181; Hoerling and Eischeid 2007, p. 19). A decline in water resources will be a significant factor in the compromised watersheds of the desert southwest.

Climate change could affect the Zuni bluehead sucker through increased temperatures, evaporation, and probability of long-term drought. However, we are not able to predict with certainty how the indirect effects of climate change will affect Zuni bluehead sucker habitats due to a lack of information on the groundwater system that provides water to the species' spring-fed habitat and large-scale projections of precipitation that contribute to stream flow. We conclude that climate change may be a significant stressor that indirectly exacerbates existing threats by increasing the likelihood of prolonged drought that would reduce water availability for streamflow or spring flow and incur future habitat loss. The National Integrated Drought Information System (2012) classifies drought in increasing severity categories from abnormally dry, to moderate, severe, extreme, and, most severe, exceptional. The southwestern United States is currently experiencing drought conditions classified as moderate to exceptional. Drought conditions are reported as severe to extreme for areas occupied by Zuni bluehead sucker in Arizona and New Mexico (National Integrated Drought Information System 2012).

While Zuni bluehead sucker have survived many droughts in its evolutionary history, the present status of this species and its habitat is so degraded that the effects of the drought may be more difficult for the species to withstand. In some areas of Zuni

bluehead sucker habitat, drought results in lower streamflow or pool habitat, with consequently warmer water temperatures and more crowded habitats with potentially higher levels of predation and competition. In other areas drought reduces flooding, which would normally rejuvenate habitat and tend to reduce populations of some nonnative species, which are less adapted to the large floods of Southwest streams (Minckley and Meffe 1987, pp. 93–104; Stefferud and Rinne 1996, p. 93). As such, long-term and recurrent drought, as a result of climate change, may affect Zuni bluehead sucker habitat, but the severity of the threat and impacts remains uncertain. Therefore, we conclude that long-term drought, as a result of climate change, is currently a threat to the Zuni bluehead sucker, and will likely be a threat in the future. In addition, the impacts from climate change will likely exacerbate the current and ongoing threat of habitat loss caused by other factors, as discussed above.

Summary of Factor A

The Zuni bluehead sucker faces a variety of threats throughout its range in Arizona and New Mexico, including water withdrawals, logging, livestock grazing, water impoundments, road construction, subdivision development, and long-term drought. In New Mexico, water withdrawals, subdivision development, livestock grazing, road construction, logging, and drought threaten Zuni bluehead suckers and their habitat. In Arizona, water withdrawals, livestock grazing, road construction, and drought have affected the Zuni bluehead sucker. These activities, alone and in combination, contribute to the substantial loss and degradation of habitat in Arizona and New Mexico.

The changes in the flow regimes and loss of habitat from water withdrawals, sedimentation, and impoundments have reduced and eliminated populations of Zuni bluehead sucker in both New Mexico and Arizona. These conditions, in combination with the predicted worsening drought conditions due to climate change, will continue to degrade and eliminate Zuni bluehead sucker habitat.

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

The Zuni bluehead sucker is not a game fish and does not have recreational or commercial value. Both the Arizona Game and Fish Department (AGFD) and NMDGF prohibit collection of the species (NMDGF 1998, p. 11; AGFD 2011, p. 6), although collection of Zuni bluehead sucker may be authorized by either State by special permit. A limited amount of scientific collection occurs but does not pose a threat to Zuni bluehead sucker because it is regulated appropriately by the States. Recreational angling may occur within occupied Zuni bluehead sucker habitats, as nonnative crayfish are commonly fished for and used for bait. Zuni bluehead sucker may be incidentally caught by anglers targeting other fish, whereby Zuni bluehead suckers can be injured or killed. However, we do not have any evidence suggesting that the occasional removal of Zuni bluehead sucker in this manner is a threat to the species.

Factor C. Disease or Predation

Disease

In general, fish species are susceptible to a spectrum of diseases, and the Zuni bluehead sucker is no exception. Diseases could potentially impact the reproduction, growth, and survival of the Zuni bluehead sucker. In addition, drought conditions (discussed above) may cause physiological stress on Zuni bluehead sucker making them more susceptible to disease.

Black grub, also called black spot (*Neascus* spp.) is a parasitic larval fluke that appears as black spots on the body of a fish. Adult black grub trematodes live in a bird's mouth and produce eggs, which are swallowed unharmed and released into the water in the bird's feces. Eggs mature in the water, hatch, and infest mollusks as an intermediate host. They then migrate into the tissues of a second intermediate host, which is typically a fish. When the larvae penetrate and migrate into the tissues of a fish, they cause damage and possibly hemorrhaging. The larvae then become encapsulated by host tissue and appear as black spots. The damage caused by one individual black grub is negligible, but in great numbers they may kill a fish (Lane and Morris 2000, pp. 2–3; Quist *et al.* 2007, p. 130). Black grub was found on several Zuni bluehead suckers in 2005 in the Rio Nutria Box Canyon area (Carman 2006, p. 8). None were seen on fish caught in 2006 or 2007, but black grub was observed again in the Rio Nutria Box Canyon in 2008 and Agua Remora in 2008 through 2010 (Carman 2009, p. 9; Gilbert and Carman 2011, p. 17). Because surveys have been intermittent in recent years, there is no information on

whether black grub is present within occupied habitats of Zuni bluehead sucker in Arizona on the Navajo Indian Reservation, but black grub does occur within the Little Colorado River and San Juan River drainages (Hobbes 2001a, pp. 38–39). Results from investigations on the effects of black grub on other species of fish have varied; effects have ranged from none, to slowing growth, to mortality (Hunter and Hunter 1938, pp. 480–481; Vinikour 1977, pp. 83, 88; Lemly and Esch 1984, pp. 475, 488–490; Quist *et al.* 2007, p. 130). Vinikour (1977, pp. 83, 88) found no effect on longnose dace (*Rhinichthys cataractae*) between populations that were infested with black grub and noninfested population. However, Hunter and Hunter (1938, pp. 480–481) showed that young black bass (*Micropterus dolomieu*) with heavy infestation of black grub lost weight. Young bluegill (*Lepomis macrochirus*) died due to black grub infestation (Lemly and Esch 1984, pp. 475, 488–490). The effects of black grub on the Zuni bluehead sucker are unknown.

There is no published information on other diseases of the Zuni bluehead sucker, although information is available from the Little Colorado River and San Juan River watershed for similar species. Asian tapeworm (*Bothriocephalus acheilognathi*) and anchor worm (*Lernaea*) have been found in the San Juan River system, but neither was found to infest bluehead suckers (Landye *et al.* 1999, p. 6). In addition, Landye *et al.* (1999, p. 7) also detected the protozoan *Ichthyophthirius*, but it was not found to affect bluehead suckers.

The available information does not indicate disease is a threat to the Zuni bluehead sucker rangewide. However, black grub may be a threat to the species; this parasite has profound effects on many other species of fish and it has been detected in Zuni bluehead sucker. Currently, the best available information indicates that it could be a threat and additional sampling and studies are needed. We request information on any potential threat posed by black grub or other disease to the Zuni bluehead sucker.

Predation

The introduction and spread of nonnative species has been identified as one of the primary factors in the continuing decline of native fishes throughout North America and particularly in the southwestern United States (Miller 1961, pp. 365, 397–398; Lachner *et al.* 1970, p. 21; Ono *et al.* 1983, pp. 90–91; Carlson and Muth 1989, pp. 222, 234; Fuller *et al.* 1999, p. 1; Propst *et al.* 2008, pp. 1246–1251; Pilger *et al.* 2010, pp. 300, 311–312). Nonnative fish and crayfish are found throughout the range of the Zuni bluehead sucker.

Nonnative fishes known to occur within the historical range of the Zuni bluehead sucker include channel catfish (*Ictalurus punctatus*), fathead minnow, green sunfish, plains killifish (*Fundulus zebrinus*), largemouth bass (*Micropterus salmoides*), rainbow trout, cutthroat trout (*Oncorhynchus clarkii*), northern pike (*Esox lucius*) brown trout (*Salmo trutta*), grass carp (*Ctenopharyngodon idella*), and goldfish (*Carassius auratus*) (NMDGF 2003, pp. 2–14; NMDGF 2005, p. 10; David 2006, pp. 7–15). In particular, nonnative predatory fishes (primarily green sunfish) have contributed to the

displacement or elimination of the species from portions of its historical range (NMDGF 2004, p. 24). Predation by green sunfish upon native fishes with the Colorado River drainage has been well documented (Marsh and Langhorst 1988, p. 65; Lohr and Fausch 1996, p. 155; Dudley and Matter 2000, pp. 24, 27–28; Tyus and Saunders 2000, p. 19). Propst *et al.* (2001, p. 162) documented few or no Zuni bluehead suckers in areas occupied by green sunfish. The rarity of small Zuni bluehead suckers in Agua Remora may be due to green sunfish predation on young Zuni bluehead sucker, limiting recruitment (Marsh and Langhorst 1988, p. 65; Carman 2008, p. 17). In 2006, green sunfish dominated the catch in Agua Remora (Carman 2007, p. 7), but since that time, dedicated eradication efforts have led to a significant decline in green sunfish numbers, and larval Zuni bluehead suckers were observed in 2009 (Gilbert and Carman 2011, p. 17), indicating the population was responding positively to the reduced numbers of green sunfish. The Zuni bluehead sucker occurs only in stream habitats that are comparatively free of nonnative fishes (Propst and Hobbes 1996, p. 37; Carman 2009, p. 20). In Arizona, many of these nonnative predatory fishes occur on the Navajo Indian Reservation within occupied sites, including Whiskey Creek (Hobbes 2001a, p. 27; Carman 2004, p. 9), Wheatfields Creek (Hobbes 2001a, p. 32; Carman 2004, p. 15), and Tsaile Creek (Hobbes 2001a, pp. 35–37; Carman 2004, p. 17), and it is likely that predation of Zuni bluehead sucker is occurring at these sites.

Other nonnative predatory fish are found within the range of Zuni bluehead sucker, including fathead minnow, brown trout, rainbow trout, northern pike, and channel catfish. Predation by these species on native suckers has been documented in the San

Juan River, New Mexico, and Yampa and Green Rivers, Colorado (Marsh and Brooks 1989, pp. 188, 191; Johnson *et al.* 1993, p. 1139; Brooks *et al.* 2000, pp. 75–76, 80; Ward and Bonar 2003, p. 43).

Two species of nonnative crayfish have been documented in the lower Colorado River drainage: the northern crayfish (*Orconectes virilis*) and red swamp crayfish (*Procambarus clarkii*) (Childs 1999, p. 5). Crayfish can impact aquatic systems because they are opportunistic omnivores (eating both animals and plants) (Carpenter 2005, p. 335). Many studies have demonstrated that introduced crayfish prey upon native fishes and compete with them for shelter (Rahel and Stein 1988, p. 94; Rahel 1989, p. 301; Bryan *et al.* 2002, pp. 49, 55–56; Carpenter 2005, pp. 5, 339). Crayfish are known to eat fish eggs, especially those bound to the substrate (Dorn and Mittelbach 2004, p. 2135), like those of the Zuni bluehead sucker.

The northern crayfish was detected in the Zuni River confluence with the Rio Pescado, in the Rio Pescado itself, and in the lower end of Rio Nutria in 2000, 2001, and 2004, respectively (NMDGF 2004, p. 5; Carman 2009, p. 20). The northern crayfish is also present at occupied sites of Zuni bluehead sucker on the Navajo Indian Reservation in Arizona, including Whiskey Creek (Carman 2004, p. 9), Wheatfields Creek (Hobbes 2001a, p. 30; Carman 2004, p. 12), Black Soil Wash (Carman 2004, p. 4; Kitcheyan and Mata 2012, p. 2), Kinlichee Creek (Kitcheyan and Mata 2012, p. 2), and Tsaile Creek (Hobbes 2001a, p. 36; Carman 2004, p. 17). The northern crayfish is tolerant of a wide

range of habitats and may be a threat to Zuni bluehead sucker through competition or predation.

Nonnative fish and crayfish occur throughout the range of the Zuni bluehead sucker, and in Agua Remora the dominance of green sunfish appears to be the cause of limited recruitment and population decline. Given the widespread occurrence of green sunfish and other nonnative predators across the range of the Zuni bluehead sucker and the low Zuni bluehead sucker population numbers rangewide, we conclude that predation is a threat to the Zuni bluehead sucker.

Conservation Efforts to Reduce Disease or Predation

As stated above, NMDGF has begun a green sunfish eradication effort at Agua Remora, which has significantly lowered the green sunfish population there, such that larval Zuni bluehead sucker were observed after implementation of this program, after several years of absence.

Summary of Factor C

In summary, black grub has been documented throughout the range of the species and is known to adversely affect or kill fish. In addition, nonnative predatory fish, particularly green sunfish, have contributed to the displacement or elimination of the species throughout its range, and nonnative crayfish are likely preying upon Zuni

bluehead sucker eggs. Therefore, we conclude that disease may be a threat to the Zuni bluehead sucker and predation is a documented threat to the species. These threats are already occurring, they affect the species throughout its range, and they result in the reduced viability of the species because of the reduced range and low population numbers rangewide.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

Under this factor, we examine whether existing regulatory mechanisms are inadequate to address the threats to the Zuni bluehead sucker discussed under other factors. Section 4(b)(1)(A) of the Act requires the Service to take into account "those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species…." In relation to Factor D under the Act, we interpret this language to require the Service to consider relevant Federal, State, and Tribal laws, regulations, and other such mechanisms that may minimize any of the threats we describe in threat analyses under the other four factors, or otherwise enhance conservation of the species. We give strongest weight to statutes and their implementing regulations and to management direction that stems from those laws and regulations. An example would be State governmental actions enforced under a State statute or constitution, or Federal action under statute.

Having evaluated the significance of the threat as mitigated by any such conservation efforts, we analyze under Factor D the extent to which existing regulatory

mechanisms are inadequate to address the specific threats to the species. Regulatory mechanisms, if they exist, may reduce or eliminate the impacts from one or more identified threats. In this section, we review existing State and Federal regulatory mechanisms to determine whether they effectively reduce or remove threats to the Zuni bluehead sucker.

Existing regulatory mechanisms that could provide some protection for the Zuni bluehead sucker include: (1) New Mexico Wildlife Conservation Act; (2) Wildlife of Special Concern Act in Arizona; (3) National Environmental Policy Act (NEPA); (4) National Forest Management Act; and (5) Zuni Pueblo Law and Order Code.

State Regulations

New Mexico State law provides limited protection to the Zuni bluehead sucker. The species is listed in New Mexico as endangered, Group 2, which are those species "whose prospects of survival or recruitment within the state are likely to become jeopardized in the near future" (NMDGF 1988, p. 1; Bison-M 2012). This designation provides protection under the New Mexico Wildlife Conservation Act of 1974 (the State's endangered species act) (19 NMAC 33.6.8), but it only prohibits direct take of this species, except under issuance of a scientific collecting permit. A limited amount of scientific collection occurs but does not pose a threat to Zuni bluehead sucker because it is regulated appropriately by the State. The New Mexico Wildlife Conservation Act defines "take" or "taking" as "harass, hunt, capture, or kill any wildlife or attempt to do

so" (17 NMAC 17.2.38). In other words, New Mexico State status as an endangered species conveys protection from collection or intentional harm to the animals themselves but does not provide habitat protection. Penalties for violations may result in fines up to $1,000 and imprisonment up to 1 year.

The Wildlife of Special Concern Act in Arizona lists the Zuni bluehead sucker as a candidate species (AGFD 1996, p. 8). Candidate species are those species or subspecies for which threats are known or suspected but for which substantial population declines from historical levels have not been documented (though they appear likely to have occurred) (AGFD 1996, p. 8). The listing under the State of Arizona law does not provide protection to the species or their habitats. However, in 2007, AGFD identified the Zuni bluehead sucker in fishing regulations as a State-protected native fish that may not be possessed; however this status still lacks habitat protection (AGFD 2007, p. 1). Penalties for violations result in a fine.

In Arizona and New Mexico the Zuni bluehead sucker is classified as a Species of Greatest Conservation Need (SCGN) (AGFD 2006, p. 154; NMDGF 2006, p. 54). New Mexico's SGCN are associated with key habitats and include low and declining populations and species of high recreational, economic, or charismatic value (NMDGF 2006, p. 8). No regulatory protections are afforded based on this designation. Because there are no provisions for habitat conservation in either State's law, the existing New Mexico Wildlife Conservation Act and the Arizona Wildlife of Special Concern Act do not address the threat of nonnative species in the habitat of the Zuni bluehead sucker.

As discussed above (see Factor C. Disease or Predation), the introduction and spread of nonnative aquatic species is a threat to Zuni bluehead sucker. The existing regulatory mechanisms in Arizona and New Mexico do not protect the Zuni bluehead sucker from nonnative aquatic predators. Regulation of programs to introduce, augment, spread, or permit such actions do not address the spread of nonnative species, as many nonnative species introductions are conducted through incidental or unregulated actions.

We also searched for State laws or local ordinances that would include provisions for instream water rights to protect fish and wildlife and their habitat. New Mexico water rights are regulated by the Interstate Stream Commission and the Office of State Engineer for surface and groundwater; New Mexico State law does not allow for instream flows for fish and wildlife. Instream flows for fish and wildlife (*i.e.*, water is not diverted for irrigation but remains in the river to ensure permanent flows) are allowed under Arizona water law; however, this is a relatively recent provision, and instream water rights have low priority and are often overcome by more senior diversion rights. Arizona State law also allows groundwater pumping via a permit process administered by the Arizona Department of Water Resources. As discussed above (see the above discussion on water withdrawals under *Factor A*), despite this regulation, groundwater withdrawals have resulted in reduced surface flow in Zuni bluehead sucker habitat. Therefore, it seems that the Arizona State law does not adequately protect Zuni bluehead sucker habitat.

Federal Regulations

Many Federal statutes potentially afford protection to Zuni bluehead sucker. A few of these are the Federal Land Policy and Management Act (43 U.S.C. 1701–1782) the National Forest Management Act (16 U.S.C. 1600 *et seq.*), and the Clean Water Act (33 U.S.C. 1251 *et seq.*). However, in practice, the provisions of these statutes that require consideration of rare species have not been able to address the threats to the Zuni bluehead sucker.

The Federal Land Policy and Management Act and National Forest Management Act provide mechanisms for protection and enhancement of Zuni bluehead sucker and its habitat on Federal lands. The only Zuni bluehead sucker population on Federal land is in Agua Remora, on the Cibola National Forest. The National Forest Management Act requires the Forest Service to prepare management plans for each National Forest; a plan has been completed for the Cibola National Forest (Forest Service 1985, pp. 17–18). Forest plans must meet the requirements of the Natural Resources Multiple-Use Act to address such issues as recreation, range, timber, biological diversity, and economic and social factors in agency decision making. The 1985 Cibola National Forest Plan includes a discussion of protection of the Zuni bluehead sucker. The plan indicated that fencing would protect Zuni bluehead sucker riparian habitat, but improved range management was needed to restore the entire watershed. The Forest Service has made minor progress in protecting the habitat at Agua Remora by fencing the area to prevent grazing, but as discussed above, fencing has not been completely effective due to inadequate maintenance of the fences. Continued monitoring and maintenance of this fence is

necessary to provide sufficient protection to the Zuni bluehead sucker population in Agua Remora from the effects of livestock grazing.

In addition, the Zuni bluehead sucker is listed as a sensitive species for the Forest Service's Southwestern Region, which includes Arizona and New Mexico (USFS 2007, p. 22). The Forest Service intends to develop and implement management practices to ensure that designated sensitive species do not become threatened or endangered because of Forest Service actions. Essentially, sensitive species must receive special management considerations or protection by the Forest Service to ensure their viability to preclude trends toward endangerment that would result in the need for Federal listing. While the Forest Service has attempted fencing at Agua Remora to eliminate the threat of livestock grazing, there are a number of other threats to the population at Agua Remora that are beyond the Forest Service's control; namely, water levels have been extremely low in recent years, and in the absence of removals by NMDGF, green sunfish affect Zuni bluehead sucker recruitment.

Section 404 of the Clean Water Act regulates placement of fill into waters of the United States, including most of Zuni bluehead sucker habitat. However, many actions highly detrimental to Zuni bluehead sucker and its habitat, such as irrigation diversion, structure construction and maintenance, and livestock grazing are often exempted from the Clean Water Act or do not apply for protection under the Clean Water Act.. Other detrimental actions, such as bank stabilization and road crossings, are covered under nationwide permits that receive little or no Service review. A lack of thorough, site-

specific analyses for projects can allow substantial adverse effects to Zuni bluehead sucker and its habitat.

Tribal Regulations

Zuni Pueblo – The Zuni bluehead sucker, speckled dace, and grass carp are protected from fishing in Zuni Pueblo lakes (Zuni Pueblo Law and Order Code S7-5-3 paragraph 36). In addition, stream fishing is prohibited on the Pueblo. These regulations protect the species from take by fishing but do not protect Zuni bluehead sucker habitat or prevent take from sources other than fishing, such as water withdrawals and livestock grazing.

Navajo Nation – The Zuni bluehead sucker is currently not protected within the Navajo Indian Reservation. The Navajo Nation Endangered Species List classifies the bluehead sucker as a whole as a G4 species. G4 species are candidates and include those species or subspecies that may be endangered but for which they lack sufficient information to support listing (Navajo Nation Heritage Program 2008, pp. i, iv, vi, 84).

Summary of Factor D

In summary, the States' endangered species and water withdrawal regulations, as well as the Federal Land Policy and Management Act and the National Forest Management Act are not adequate to protect the Zuni bluehead sucker or its habitat.

State regulations prohibiting take of the species have been in place for decades; however, these regulations are not adequate to address the threats to habitat, particularly water withdrawals, impoundments, and the distribution and abundance of nonnative fishes. Because most of the threats to the Zuni bluehead sucker are from effects to its habitat and the introduction of nonnative, invasive species, in order to protect individuals and ensure the species' long-term conservation and survival, its habitat must be protected. Therefore, we conclude these existing regulations are inadequate to mitigate the impacts of identified threats to the species.

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

Other natural or manmade factors affecting the continued existence of the Zuni bluehead sucker include habitat fragmentation, which is intensified by the small sizes of the remaining populations.

Habitat Fragmentation

Zuni bluehead sucker populations appear to have always been relatively isolated from one another, as evidenced by the genetic lineages that have been observed (Service 2012a, pers. comm.). The further fragmentation of habitat and resulting increased isolation of Zuni bluehead sucker populations affects the species rangewide, by increasing the risk of population loss and subsequent loss of genetic lineages. Dewatering and drought conditions have resulted in fragmentation of Zuni bluehead sucker populations, and continued water demands are expected to further reduce habitat

available to the Zuni bluehead sucker and will likely further fragment and isolate populations. Fragmentation of Zuni bluehead sucker habitat increases the species' vulnerability from threats of further habitat loss and competition from nonnative fish because immigration and recolonization from adjacent populations is less likely. In-depth analyses of southwestern fish occurrence patterns (including Zuni bluehead sucker) led Fagan *et al.* (2002, p. 3254) to conclude that the number of occurrences or populations of a species is far less significant in determining extinction risk than is fragmentation of the species. Another source of habitat fragmentation is the construction of dams. Dams are known to change the hydraulics of the streams in the system, converting many formerly perennial streams into semiperennial or ephemeral streams that prevent movement of fish between populations and dramatically alter the flow regime of streams through the impoundment of water (Ligon *et al.* 1995, pp. 184–189).

Small, isolated populations are subject to genetic threats, such as inbreeding depression (reduced health due to elevated levels of inbreeding) and to genetic drift (a reduction in gene flow within the species that can increase the probability of unhealthy traits; Meffe and Carroll 1994). Facial deformities have been seen in approximately 5 percent of the populations at Agua Remora and Tampico Springs; these deformities have been attributed to the genetic effects of small populations (Carman 2009, p. 13), although the rate of deformity declined over time, such that no captured fish exhibited deformities in 2010 (Gilbert and Carman 2011, p. 17). External deformities such as these have been linked to a low survival rate in other small, isolated fish populations (Sato 2006, p. 598);

a lowered survival rate could reduce the Zuni bluehead sucker population sizes at Aqua Remora and Tampico Springs over time.

Due to the small reaches of remaining habitat where Zuni bluehead suckers occur in relatively low numbers, single populations of Zuni bluehead sucker are at high risk of extirpation due to stochastic events from other known threats, such as wildfire or episodic drought (see Factor A discussion). Zuni bluehead sucker have experienced and withstood a number of droughts over time, but given the anticipated increased frequency and duration of drought, combined with the reduced population size and occupied habitat, the species is at a higher risk of extirpation and the species has a reduced resiliency to stochastic events.

Summary of Factor E

Currently, Zuni bluehead sucker populations are highly fragmented within small, isolated springs and stream segments, causing them to be vulnerable to stochastic events, such as wildfire and episodic drought. In addition, detrimental genetic effects have already been observed within two populations. All known Zuni bluehead sucker populations are small and isolated, increasing their vulnerability. Due to the reduction in their range, and small population size, the remaining populations of Zuni bluehead experience reduced viability; therefore, we conclude that habitat fragmentation is a threat to Zuni bluehead sucker.

Cumulative Effects: Factors A through E

Many of the threats discussed above act in concert, and the resulting effects to Zuni bluehead sucker are amplified. For example, the reduction of water quantity restricts the geographic size of the population, which causes the species to be more vulnerable to other threats, such as beaver dams modifying habitat, an increase in nonnative predators, or ash flows from wildfire that may further reduce or eliminate the population. The ability of a population to be resilient to threats depends on the robustness of the population. For Zuni bluehead sucker, the remaining populations are likely not robust. They are reduced in size and their habitat has been reduced to a fraction of their historic range. Given these circumstances, the combined effects of current threats to the populations puts the species at risk rangewide. The combined effects of drought and nonnative predatory fish may reduce habitat, fragment the remaining habitat, and reduce reproductive potential, resulting in fewer fish. The remaining populations become less resilient and are not capable of recovering from the threats. Reproductive efforts from the Zuni bluehead sucker populations will be affected by the threats to their habitat, resulting in populations with reduced viabilities.

Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to Zuni bluehead suckers. Habitat loss from water withdrawals, sedimentation, and impoundments is occurring

rangewide, has resulted in extirpation of the species from all but headwater habitats, and is not likely to be reduced in the future (Factor A). The species' range has been reduced by 90 percent in New Mexico, and current distribution is limited to three populations in 4.8 km (3 mi) of streams. Drought frequency and water withdrawals are likely to increase, further restricting habitat and fragmenting or eliminating populations. Predation from nonnative fish is occurring rangewide and has been shown to reduce recruitment and population size at one location; this situation is likely impacting other populations, as well (Factor C). State wildlife laws and Federal regulations such as the National Forest Management Act are not adequate to address the threats to the species (Factor D). Additionally, the Zuni bluehead sucker is not able to naturally recolonize unoccupied areas (Factor E). There is virtually no redundancy of populations within each occupied watershed, further increasing the risk of loss of representation of existing genetic lineages and, ultimately, extinction. These threats have already resulted in the extirpation of Zuni bluehead sucker throughout an estimated 90 percent of its range and are only likely to increase in severity. Although there is less information available on threats occurring on the Navajo Indian Reservation, the information we do have is similar in kind and intensity to that for New Mexico. These threats are ongoing, are rangewide, are expected to increase in the future, and are significant because they further restrict limited available habitat and decrease the resiliency of the Zuni bluehead sucker within those habitats.

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 any species "that is likely to become endangered throughout all or a significant portion of

its range within the foreseeable future." We find that the Zuni bluehead sucker is presently in danger of extinction throughout its entire range based on the severity and immediacy of threats currently impacting the species. The overall range has been significantly reduced, the remaining habitat and populations are threatened by a variety of factors acting in combination to reduce the overall viability of the species. The risk of extinction is high because the remaining populations are small, isolated, and have limited potential for recolonization. Therefore, on the basis of the best available scientific and commercial information, we propose listing the Zuni bluehead sucker as endangered in accordance with sections 3(6) and 4(a)(1) of the Act. We find that a threatened species status is not appropriate for the Zuni bluehead sucker because of the contracted range (loss of 90 percent of its historic range), because the threats are occurring rangewide and are not localized, and because the threats are ongoing and expected to continue into the future.

Under the Act and our implementing regulations, a species may warrant listing if it is threatened or endangered throughout all or a significant portion of its range. The Zuni bluehead sucker proposed for listing in this rule is highly restricted in its range and the threats occur throughout its range. Therefore, we assessed the status of the species throughout its entire range. The threats to the survival of the species occur throughout the species' range and are not restricted to any particular significant portion of that range. Accordingly, our assessment and proposed determination applies to the species throughout its entire range.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation 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 required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

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

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline

guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or 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 (composed of species experts, Federal and State agencies, nongovernmental 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 New Mexico 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 occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions will be 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, pursuant to section 6 of the Act, the States of Arizona and New Mexico would be eligible for Federal funds to implement management actions that promote the protection or recovery of the Zuni bluehead sucker. Information on our grant programs that are available to aid species recovery can be found at: *http://www.fws.gov/grants*.

Although the Zuni bluehead sucker 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 an endangered or threatened species 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 management and any other landscape-altering activities on Federal lands administered by the U.S. Fish and Wildlife Service, U.S. Forest Service, and National Park Service (Canyon De Chelly National Monument); issuance of section 404 Clean Water Act permits by the Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

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)(2) of the Act, codified at 50 CFR 17.21 for endangered wildlife, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, 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. 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 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 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 nonnative species that compete with or prey upon the Zuni bluehead sucker, such as the introduction of nonnative green sunfish to the States of Arizona and New Mexico;

(3) The unauthorized release of biological control agents that attack any life stage of this species;

(4) Unauthorized modification of the channel or water flow of any stream or removal or destruction of emergent aquatic vegetation in any body of water in which the Zuni bluehead sucker is known to occur; and

(5) Unauthorized discharge of chemicals or fill material into any waters in which the Zuni bluehead sucker is known to occur.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the New Mexico Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

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 listing determination and critical habitat designation are based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment during this public comment period.

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

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register**. Such requests must be sent to the 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

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.

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

(NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

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

Authors

The primary authors of this proposed rule are the staff members of the New Mexico Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of

the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. In § 17.11(h), add an entry for "Sucker, Zuni bluehead" to the List of Endangered and Threatened Wildlife in alphabetical order under Fishes to read as set forth below:

§ 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							
* * * * * * *							
Sucker, Zuni bluehead	*Catostomus discobolus yarrowi*	U.S.A. (AZ, NM)	Entire	E		NA	NA
* * * * * * *							

* * * * *

Dated: January 14, 2013.

Signed: Daniel M Ashe

Director, U.S. Fish and Wildlife Service

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