

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Catostomus discobolus yarrowi*

COMMON NAME: Zuni Bluehead Sucker

LEAD REGION: Region 2

INFORMATION CURRENT AS OF: Feb. 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: ____

90-day positive - FR date: ____

12-month warranted but precluded - FR date: ____

Listing priority change

Former LP: ____

New LP: ____

Latest date species first became a candidate: _____

Candidate removal: Former LP: ____ (Check only one reason)

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of species.

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Fish: *Catostomidae*

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Arizona; New Mexico

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

Arizona; New Mexico

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BIOLOGICAL INFORMATION

Description

Propst (1999) describes the Zuni bluehead sucker as fusiform (torpedo shaped), slender, with a terminal mouth. They have a bluish head with a silvery tan to dark green back with sides and

abdomen yellowish to silvery white. Adults are mottled slate-gray, almost black, dorsally and cream white ventrally. Males during the spawning season may be differentiated by coarse tubercles on the anal and caudal fins and the caudal peduncle, and distinctive breeding coloration; dorsally they are intense black with a bright red lateral band and a white abdomen (Smith 1966; Propst and Hobbes 1996). Propst and Hobbes (1996) reported most suckers did not exceed 20.3 centimeters (cm) (8 inches (in)), however, some individuals exceeded 25 cm (9 in) total length.

Taxonomy

Smith (1966) and Smith *et al.* (1983) postulated that the Zuni bluehead sucker subspecies was from a hybrid origin whereby a headwater stream of the Rio Grande was captured by upstream erosion of a headwater stream of the Zuni River during the late-Pleistocene (Propst 1999). This event brought the Rio Grande sucker (*Catostomus plebeius*) into contact with a resident bluehead sucker. Based on shared physical traits, Smith (1966) and Smith *et al.* (1983) believed this contact area was in the upper reaches of the Rio Nutria. Crabtree and Buth (1987) provided allozymic data supporting subspecific differentiation of upper Little Colorado River *Catostomus discobolus* from its conspecifics prior to introgression of *Catostomus discobolus* and *Catostomus plebeius* in the upper Rio Nutria. Regardless of the mechanism for differentiation of *Catostomus discobolus yarrowi*, it is a recognized subspecies (Propst 1999).

Habitat

Hanson (1980) described Zuni bluehead sucker habitat as stream reaches having shade and pool and riffle habitats with coarse substrates; stream reaches with fine substrates (sand and silt) had few or no Zuni bluehead suckers. Propst and Hobbes (1996) reported that Zuni bluehead suckers were collected mainly in pool and pool-run habitats. Such habitat areas were typically shaded, and water velocity was less than 0.1 meter per second (0.3 feet per second). Most specimens were found in water that was 30 to 50 cm (12 to 20 in) deep, where the substrate ranged from cobble and boulders to bedrock. Pools were often edged by emergent aquatic vascular plants (mainly willows). Periphytic and perolithic algae were generally abundant in reaches where Zuni bluehead suckers were common. The sucker feeds primarily on algae that it scrapes from rocks, rubble, and gravel substrates (Winter 1979; Sublette *et al.* 1990).

Distribution

Historical Range

The Zuni bluehead sucker is endemic to the headwaters of the Little Colorado River in east-central Arizona and west-central New Mexico (Smith 1966; Smith *et al.* 1983; Crabtree and Buth 1987; Propst and Hobbes 1996; Propst 1999). The Zuni bluehead sucker was once common in the Little Colorado and Zuni river drainages, but its range has been reduced by over 90 percent (Propst 1999); and its numbers by about 90 percent (Table 1) in the last 20 years. The sucker is now found in low numbers in Kin Li Chee Creek in Arizona (New Mexico Department of Game and Fish (NMDGF) *in litt.* 2000), and is now restricted to five semi-isolated populations in the upper Rio Nutria drainage in west-central New Mexico (Propst 1999).

New Mexico

The type specimen of the Zuni bluehead sucker was collected from the Zuni River near the Zuni

Pueblo, New Mexico in 1873 (Cope 1874). 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 Nutria in 1948 and the Rio Pescado in 1960 (Propst 1999). Several chemical treatments were made in the Zuni River drainage in New Mexico during the 1960's to remove green sunfish, fathead minnow, and suckers from the Rio Nutria, to aid in the establishment of a rainbow trout sport fishery in reservoirs on the Zuni Pueblo (Winter 1979). These treatments eliminated the Zuni bluehead sucker from most of the Zuni River drainage. However, the population of suckers in the Rio Nutria was maintained by dispersal of individuals from upstream, untreated reaches, such as Aqua Remora (Winter 1979; Propst 1999).

In New Mexico, Hanson (1980) documented the primary areas of occurrence to be Radosevich Creek (renamed Agua Remora), upper Rio Nutria (from the mouth of Nutria Box Canyon near the eastern boundary of the Zuni Indian Reservation upstream), and the confluence of the Rio Pescado and Rio Nutria. Elsewhere in the Zuni River drainage, the sucker was rare or absent. By the late 1970's the Zuni bluehead sucker's range had been reduced by at least 50 percent and the species was limited to the upper Zuni River drainage and Kin Li Chee Creek (Hanson 1980; Smith *et al.* 1983).

Arizona

In Arizona, Smith (1966) reported the subspecies in four small streams (Propst 1999). Smith *et al.* (1979) collected Zuni bluehead suckers in Arizona from East Clear Creek and Kin Li Chee Creek for genetic analysis. By the early 1980's, the range in Arizona was apparently reduced to only Kin Li Chee Creek (Smith *et al.* 1983). Crabtree and Buth (1987) confirmed that the sucker still persisted in Kin Li Chee Creek in 1987.

Current Range

The Zuni bluehead sucker was once common in the Little Colorado and Zuni River drainages, but its range has been reduced by over 90 percent in the last 20 years (Propst 1999).

New Mexico

The sucker currently persists mainly as five semi-isolated populations in a small fraction (9 miles, 15 kilometers) of its former range, and occurs mainly upstream of the mouth of the Rio Nutria Box Canyon (Propst 1999; Propst *et al.* 2001). Within this area, it is most common near the Rio Nutria Box Canyon mouth; the confluence of the Rio Nutria and Tampico Draw; Agua Remora), and the uppermost Rio Nutria (Stroh and Propst 1993; Propst and Hobbes 1996; Propst 1999; Propst *et al.* 2001). The sucker was very rare or absent elsewhere in the Zuni River drainage in New Mexico (Hanson 1980; Stroh and Propst 1993). Fish surveys from 1990 - 1993 found that the sucker populations in Agua Remora and upper Rio Nutria were stable. The population at the Zuni River confluence with the Rio Nutria and Rio Pescado was declining, and the populations in the Rio Pescado and lower Zuni River almost depleted (Stroh and Propst 1993).

Propst *et al.* (2001) stated that dispersal of the sucker from upstream populations may augment downstream populations, but upstream movement is generally blocked by physical obstructions, such as irrigation diversions and impoundments. The irregular occurrence of the sucker in reaches downstream from the mouth of Nutria Canyon indicates limited downstream dispersal from currently occupied stream reaches. No suckers were found in the Rio Nutria between the

canyon mouth and the confluence of the Rio Pescado. In the confluence area, a few large individuals were occasionally collected. The absence of smaller individuals suggests that it is the dispersal of larger individuals from upstream reaches that maintains the sucker in this area (Propst *et al.* 2001).

Arizona

In year 2000, Zuni bluehead suckers have been collected again from Kin Li Chee Creek. A genetic evaluation confirmed that these specimens are the Zuni bluehead sucker subspecies.

Population Estimates

Table 1 shows a general decline in sucker numbers from 1978 (475 suckers) to 1993 (55 suckers). This is about a 90 percent decrease in numbers in the last 20 years. A majority of the suckers were collected from the upper Rio Nutria and Agua Remora. Fish surveys were not conducted in Agua Remora in 1990, 1992, and 1993. This lack of fish survey data hinders the population trend analysis of the fish, but the overall trend is downward. After 1978, the sucker was not collected from the Zuni River and is presumed to be extirpated from this water course. In addition, there has been a significant decrease in sucker numbers in the Rio Pescado from 1978 (93 suckers) to 1993 (4 suckers). Based on this fish collection information, and the biology of the species, there are likely only a few hundred suckers remaining.

Table 1. Zuni Bluehead Suckers Collected in New Mexico in 1978-1979 (Hanson 1980) 1990-1993 (Propst and Hobbes 1996), and 2000 (collected by Zuni Pueblo and NMDGF personnel).

<u>Stream</u>	<u>1978</u>	<u>1979</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>2000</u>	<u>Total</u>
Zuni River	1	0	0	0	0	0	**	1
Zuni River 5*	0	7	0	7	0	2	0	16
Rio Pescado	93	67	2	0	0	4	0	166
Rio Nutria	180	50	38	55	170	49	205	747
Tampico Draw Creek	0	1	0	11	0	0	49	61
Agua Remora	200	92	**	189	**	**	***	481
Dean Creek	1	1	0	0	0	0	**	2
Total	475	218	40	262	170	55	254****	1,474

*Zuni River 5 is near the confluence of Rio Nurtria and Rio Pescado.

**No fish collections.

***No fish collection. Access denied on private property.

****does not include 182 Zuni bluehead suckers collected in Arizona in 2000.

To confirm the population trend for the sucker, an additional monitoring effort was conducted in April 2000. The inventory confirmed the extirpation of the sucker from the Zuni River and Rio Pescado. Sucker populations have persisted in the Rio Nutria and Tampico Draw. A sucker survey was conducted in Kin Li Chee Creek in Arizona on the Navajo Reservation. This is a historical collection site that had not been sampled since 1987 when the sucker was last

documented (Crabtree and Buth 1987). One hundred and ninety suckers were collected from the creek and were confirmed to be Zuni bluehead suckers. This is an important remnant population. The sucker is most likely still present in Aqua Remora, but the landowners would not allow access in April 2000 for a survey.

THREATS

The species has become imperiled in the last 100 years due to adverse affects of human activities in the watershed including: logging, road construction, over-grazing by livestock, reservoir construction, irrigation withdrawals, and stocking of exotic fishes (Hanson 1980; NMDGF 1988, 1994; Propst and Hobbes 1996; Propst 1999). The NMDGF (1988; 1994) and Propst (1999) reported that the quality of the Zuni River drainage fish habitat has declined in the last 20 years to a point that sucker populations are now highly disjunct and greatly reduced in numbers and distribution.

In New Mexico, the documented historic fish fauna of the Zuni River drainage consists of three species: roundtail chub, speckled dace, and Zuni bluehead sucker (Propst 1999). Roundtail chub no longer occur in the Zuni River and speckled dace may be extirpated from the Zuni River drainage (Propst 1999). Zuni bluehead sucker survives in New Mexico only in the Rio Nutria and its small tributaries (Propst 1999).

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

The sucker is a stream obligate and does not live in lentic waters (lakes and ponds). It currently occupies 9 river miles (15 km) in 4 areas (Rio Nutria-Nutria Box, Rio Nutria at Tampico Draw confluence, uppermost Rio Nutria, and Agua Remora) (Propst *et al.* 2001). Sucker range reduction and fragmentation was caused by discontinuous surface water flow, separation of inhabited reaches by reservoirs, and habitat degradation from fine sediment deposition (Propst and Hobbes 1996). Fine sediments reduce or prevent production of periphyton (algae), the primary food of the species. Fine sediments, if mobilized during the spawning season, may smother recently spawned eggs (Propst and Hobbes 1996).

According to Merkel (1979), both the Rio Nutria and Rio Pescado drainages have been drastically altered by man=s activities. Many small impoundments, built primarily for watering livestock, occur in the headwaters, preventing some flows from reaching the main streams. Logging, road construction, and over-grazing by livestock have destroyed much of the ground cover. This has caused serious erosion problems, stream flows to fluctuate widely, and the reservoirs to accumulate large quantities of sediment (Merkel 1979). Reservoirs and diversion dams for irrigation not only have depleted stream flows but also have inundated a number of reaches of stream (Merkel 1979; Hanson 1982). The Rio Nutria and Rio Pescado drainages are dry much of the year except for those reaches that are fed by perennial springs (Merkel 1979).

Forest Road 50, which is in the upper watershed of sucker habitat, is in the process of being upgraded in 1999. Road construction activities may have direct adverse effects on the watershed from soil erosion and sedimentation to the streams. Indirect adverse effects from fine sediment input will be caused by interrelated actions, such as ranchette development, logging, grazing, off-road vehicles, and other activities.

Livestock grazing is another imminent threat to the suckers residing in Agua Remora. Agua Remora on the Cibola National Forest was fenced to exclude livestock in 1978 (Merkel 1979),

and the riparian habitat and stream morphology have shown considerable improvement since livestock were excluded (Stefferd 1985). However, the private landowner is apparently continuing to graze livestock in the riparian zone of the creek despite the riparian areas being fenced. Livestock grazing in riparian zones has been found to negatively affect water quality and seasonal quantity, stream channel morphology, hydrology, riparian zone soils, instream and streambank vegetation, and aquatic and riparian wildlife (Belsky, *et al.* 1999). In addition, the Forest Service has not had access to Agua Remora on the Cibola National Forest lands since 1992, when the same private property owner would no longer allow them to cross his private property. The U. S. Forest Service (FS) is attempting to exchange FS land for the private land where the Zuni bluehead sucker occurs in Agua Remora.

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. In addition, the sucker is listed as Endangered by the State of New Mexico (NMDGF 1999), and the State fishing regulations (NMDGF 1998) prohibit take of endangered species. The Service has no information to indicate that overcollection for any purpose is a contributing factor to its imperiled status.

C. Disease or predation.

Non-native predatory fishes (primarily green sunfish, *Lepomis cyanellus*) have contributed to the displacement or elimination of the species from much of its historic range. Seventy-six species of non-native fishes have been introduced into New Mexico waters since about 1850 that compete with or prey upon native fishes (Nico and Fuller 1999). Propst and Hobbes (1996) reported that several non-native fish species had been established in the Zuni River drainage by the late 1970's. Fathead minnow (*Pimephales promelas*), plains killifish (*Fundulus zebrinus*), and green sunfish were all common in the Zuni River drainage. In addition, non-native predator fishes (green sunfish, northern pike (*Esox lucius*), largemouth bass (*Micropterus salmoides*) enter the Zuni River drainage from several impoundments connected to the river (Hanson 1980); and the Zuni bluehead sucker occurs only in stream habitats that are comparatively free of non-native fishes (Propst and Hobbes 1996).

D. The inadequacy of existing regulatory mechanisms.

Regulatory mechanisms currently in effect do not provide adequate protection for the Zuni bluehead sucker and its habitat. Existing regulatory mechanisms that could provide some protection for the sucker include: (1) New Mexico Wildlife Conservation Act; (2) Arizona Non-Game and Endangered Species Program; (3) National Environmental Policy Act; (4) National Forest Management Act; and (5) Federal Endangered Species Act; and (6) Zuni Pueblo Law and Order Code.

State

The Zuni bluehead sucker is listed as endangered in New Mexico (NMDGF 1999). Under the New Mexico Wildlife Conservation Act of 1974, take of these species is prohibited, but the statute does not provide additional habitat protection or designation of critical habitat (NMDGF 1988, 1998). The sucker is listed as a species of special concern by the State of Arizona (Arizona Game and Fish Department 1996), but this statute does not prohibit take and also lacks habitat protection. Therefore, the effectiveness of the New Mexico and Arizona statutes to

protect listed species and their habitats is problematic.

Federal

Agua Remora provides the only stream habitat (0.25 miles, 0.4 km) for the Zuni bluehead sucker on public land (Cibola National Forest). The U.S. Forest Service (1985) classifies the sucker as sensitive in Arizona and New Mexico, which provides some limited protection. The National Forest Management Act requires the Forest Service to prepare management plans for each National Forest; and a plan has been completed for the Cibola National Forest (U. S. Forest Service 1985). 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 for protection of the sucker. The Plan indicated that fencing would protect sucker riparian habitat, but improved range management was needed to restore the entire watershed.

In 1980, the U.S. Fish and Wildlife Service and the NMDGF explored the possible listing of the sucker as an endangered species, but Federal listing did not occur (U.S. Fish and Wildlife Service 1980a, 1980b; NMDGF1980). Furthermore, this species was previously designated as a Category 2 candidate species in 1991 (U.S. Fish and Wildlife Service 1991), a species for which we had data indicating that listing was possibly appropriate, but for which we lacked substantial data on biological vulnerability and threats to support a proposed rule; we discontinued designation of category 2 species in the February 28, 1996, Notice of Review (61 FR 7956)). The ESA may incidentally afford protection to a species if it coexists with species already listed as threatened or endangered under the Act. No other listed species are known to occur in the remaining Zuni bluehead sucker habitats.

Zuni Pueblo

The Zuni bluehead sucker, speckled dace, and grass carp are protected from fishing in Pueblo lakes (Zuni Pueblo Law and Order Code S7-5-3 par. 36). In addition, stream fishing is prohibited on the Pueblo. These regulations protect the species from take by fishing, but do not include regulations to protect sucker habitats.

E. Other natural or manmade factors affecting its continued existence.

Hanson (1980) noted that the sucker habitat within the Zuni River drainage is vulnerable to habitat deterioration from poor water quality, low flows, flood flows, and poor watershed management. These factors taken singly or in combination could eliminate one or more of the remaining sucker populations. Furthermore, additional proposed impoundments in the Zuni River drainage potentially threaten the species remaining stream habitat (Stroh and Propst 1993).

Fish toxicants were used repeatedly in the Nutria and Pescado Rivers in the 1960's and 1970's to eradicate green sunfish and fathead minnows (Merkel 1979). One of these treatments inadvertently killed substantial numbers of Zuni bluehead suckers in the upper Rio Nutria in 1967, and another sucker kill occurred in 1962 in Cebolla Creek in the Rio Pescado drainage (Merkel 1979).

Vandalism to endangered species and their habitats may be a serious threat to the Zuni bluehead sucker in New Mexico. During dry periods, the Zuni bluehead sucker is restricted to a few shallow pools, which make the species extremely vulnerable to poisoning or other forms of

vandalism.

BRIEF SUMMARY OF REASONS FOR REMOVAL OR LISTING PRIORITY CHANGE:

n/a

FOR RECYCLED PETITIONS: n/a

- a. Is listing still warranted? ___
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ___
- c. Is a proposal to list the species as threatened or endangered in preparation? ___
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP

The Zuni bluehead sucker habitat remaining is estimated at 9 stream miles (15 km). The last remnant of sucker stream habitat is located on the Cibola National Forest (3 percent), Zuni Indian Reservation (26 percent), and private lands (71 percent). Currently, most of the suckers reside in the upper Rio Nutria and Agua Remora.

Rio Nutria: Private: The Nature Conservancy: 5 miles, 8.1 km (56 percent). Tribal: Zuni Pueblo: 1.2 miles, 2 km (13 percent).

Tampico Draw: Private: 0.1 miles, 0.2 km (less than 1 percent).

Agua Remora: Federal: Cibola National Forest: 0.25 miles, 0.4 km (3 percent). Private: 1.3 miles, 2.1 km (15 percent).

Rio Pescado: Tribal: Zuni Pueblo: 1.2 miles, 2 km (13 percent).

PRELISTING ACTIVITIES: CONSERVATION AGREEMENTS AND OTHER CONSERVATION ACTIVITIES

For several years, the NMDGF has been the lead agency to develop a conservation plan for Zuni bluehead sucker (Propst and Hobbes 1996). A new study funded through ESA section 6 funds with the Service and NMDGF was initiated in year 2000 and will continue through 2005. The grant includes the development and implementation of a Zuni Bluehead Sucker Conservation Plan, and acquiring additional information on distribution, life history, and species associations with the Zuni bluehead sucker. A draft conservation plan was completed in 2002. At this time, the potential cooperators for the conservation effort appear to be the Silva Family, Zuni Pueblo, U.S. Forest Service, The Nature Conservancy, NMDGF, and U.S. Fish and Wildlife Service. In April 2000, 182 bluehead suckers were collected (57 retained for genetic analysis and 125 released) from Kin Li Chee Creek on the Navajo Reservation. These bluehead suckers were confirmed to be the Zuni subspecies through genetic analysis, so the Navajo Nation is also a potential cooperator in the plan.

In addition, Zuni Pueblo personnel conducted Zuni bluehead sucker surveys of the Pueblo and other historic habitats in cooperation with the Service, Navajo Nation, and the NMGF in year 2000, and was funded by the Service for surveys again in 2001. Zuni Pueblo personnel did attempt to survey East Clear Creek in cooperation with the Arizona Game and Fish Department

in 2001. East Clear Creek is the only historic Zuni bluehead sucker locality that was not resurveyed in 2000. No surveys were conducted in New Mexico in 2002, because of the drought and the additional stress it would put on the fish.

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LISTING PRIORITY

THREAT

Magnitude	Immediacy	Taxonomy	Priority	
High	Imminent	Monotypic genus	1	
		Species	2	
		Subspecies/population	3*	
	Non-imminent	Non-imminent	Monotypic genus	4
			Species	5
			Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7	
		Species	8	
		Subspecies/population	9	
	Non-imminent	Non-imminent	Monotypic genus	10
			Species	11
			Subspecies/population	12

Rationale for listing priority number:

Magnitude: The range of Zuni bluehead sucker has been reduced by over 90 percent. The subspecies exists in about 15 km of headwater tributaries of the Rio Nutria, New Mexico and within approximately 10 km of the Kin Li Chee Creek drainage, Arizona. There is limited connectivity among populations and most are restricted to short (< 1 km) reaches with permanent water (Propst 2001). There has been a significant decrease in the number of Zuni bluehead sucker since 1978 and the trend continues downward. The subspecies no longer occurs in the Zuni River, Rio Pescado, and Dean Creek.

Imminence: Land management practices continue to degrade the habitat of Zuni bluehead sucker by contributing sediment to the streams. Dams and natural barriers block movement of fish and isolate the populations. Natural events, in particular drought or scouring floods after a fire, are very real threats. If the current drought continues or worsens, extirpation of Zuni bluehead sucker could be imminent.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Tom Bauer March 14, 2003
Acting Regional Director, Fish and Wildlife Service Date

Concur: _____
Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Director's Remarks:

-

-

Date of annual review: Feb. 2003

Conducted by: Marilyn Myers

Comments:

-

-