



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 346-2525 Fax: (505) 346-2542

September 17, 2001

Cons. # 2-22-00-F-412

Memorandum

To: San Juan Basin Recovery Implementation Program

Through: Technical Services Division Manager, Bureau of Reclamation, Upper Colorado Region, Western Colorado Area Office (Attn: Brent Uilenberg)

From: Field Supervisor, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, Albuquerque, New Mexico

Subject: Biological Opinion for the Public Service Company of New Mexico Fish Passage

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed Public Service of New Mexico Fish Passage located in San Juan County, New Mexico and its effects on the Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*), in accordance with section 7 of the Endangered Species Act (Act) of 1973 as amended (16 U.S.C. 1531 et seq.). Your letter dated May 14, 2001, requesting formal consultation was received on May 29, 2001.

This biological opinion is based on information provided in the biological assessment dated May 14, 2001, and other sources of information. A complete administrative record of this consultation is on file at the Service's New Mexico Ecological Services Field Office.

You have submitted with your request the *Biological Assessment for Native Fish Passage at Public Service Company of New Mexico Diversion Dam, San Juan County, N.M.* (BA) dated May 2001. This BA evaluates the anticipated effects on federally listed threatened and endangered species and their habitats resulting from the construction of fish passage facilities at the Public Service Company of New Mexico (PNM) Diversion Dam, San Juan County, New Mexico. The project is located about 1 mile west of Fruitland, New Mexico. The facility will consist of a fish passage structure to allow native fish to move upstream of the diversion dam. The facility will include selective passage components that will allow the structure to prevent movement of non-native species upstream of the diversion dam.

The fish passage project is included in the San Juan River Basin Recovery Implementation Program's (Recovery Program) Long Range Plan. The goal of the Recovery Program is to recover native Colorado pikeminnow and razorback sucker populations in the San Juan River Basin. Water developments will proceed in compliance with all applicable Federal and State

laws, including fulfillment of Federal trust responsibilities to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Jicarilla Apache Nation, and the Navajo Nation.

You have determined for the proposed PNM project will not affect the southwestern willow flycatcher (*Empidonax traillii extimus*), bald eagle (*Haliaeetus leucocephalus*), Mancos milkvech (*Astagalus humillimus*), and the Mesa Verde cactus (*Sclerocactus mesae-verdae*). You have determined for the Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) that the proposed action "may affect, not likely to adversely affect."

This biological opinion is based on information provided in the May 2001 BA and other information available to the Service. A complete administrative record of this consultation and conference is on file in the Service's New Mexico Ecological Field Office.

Consultation History

On July 12, 2000, the Service received a letter dated July 10, 2000, from the Bureau of Reclamation (Reclamation) requesting initiation of informal consultation and an updated list for federally listed species that may occur in the action area. The Service responded on August 2, 2000, with a list of threatened and endangered species in San Juan County, New Mexico (consultation number 2-22-00-I-412). The proposed project will be located in the SE1/4SE1/4, Sec. 4, T29N, R15W, San Juan County, New Mexico. Reclamation also requested consultation and coordination for fish and wildlife resources that may be impacted by the proposed project. The Service received a Draft Environmental Assessment (EA) for the PNM Fish Passage project on May 2, 2001. The draft EA was reviewed and no response was drafted. The Service received a final BA on the fish passage on May 29, 2001. In that document Reclamation determined the proposed PNM project will not affect the southwestern willow flycatcher, bald eagle, Mancos milkvech, and the Mesa Verde cactus. The BA made a determination of "may affect, not likely to adversely affect" the Colorado pikeminnow and razorback sucker. Reclamation requested an incidental take statement to cover the fish passage construction, fish passage operations, and PNM facility's operation activities for razorback sucker and Colorado pikeminnow. Service's policy requires that incidental take statement be included only in formal consultations. In June 2001, the Service and Reclamation determined, through numerous telephone conversations, that formal consultation would be initiated and a likely to adversely affect determination was appropriate, if take may occur.

BIOLOGICAL OPINION

I. Description of the Proposed Action

The fish passage project will be located about 12 miles downstream of Farmington, New Mexico near the town of Fruitland on River Mile 166.6. The Metes and Bounds are SE1/4SE1/4, Sec. 4, T29N, R15W, San Juan County, New Mexico. The proposed project was designed based on the behavior of the endangered fish, their swimming abilities, dam operations and maintenance needs, and to limit impacts to fish by diversions.

Access to the project area will be via U.S. Highway 550. Construction staging and material storage will be within the fenced PNM property. Cofferdams will be used to direct the river around the work areas during construction. Reclamation will request Clean Water Act, Section 404 approval from the U.S. Army Corps of Engineers. The contractor or Reclamation will request water quality certification under Section 401 from the New Mexico Environment Department. If discharging water from dewatering is needed, the contractor will obtain a Section 402 permit. Construction will be scheduled during low water conditions in the fall and winter of 2001 or 2002.

The Recovery Program will operate the fish passage structure from April through October of each year. The Service will monitor native and endangered fish use of the ladder. Non-native fish will be removed, while native fish will be returned alive to the river upstream of the diversion dam via a return pipe. The fish passage will operate at a range of 26 to 100 cubic feet per second (cfs). The fish passage will not be operational if flows in the San Juan River drop below 500 cfs. No new net depletions will occur from the proposed project.

PNM has participated in the design process to ensure the facility does not conflict with the operations and maintenance of the diversion dam and intake system. Temporary construction easements and permits will also be acquired from affected landowners prior to construction. Following construction, all disturbed areas will be restored, as near as possible to natural conditions.

The fish passage will be constructed on the south bank using rock and boulder material to create a riffle and pool sequence. The boulder drops will create the baffle sections between each pool. A typical boulder baffle will include several large boulders, about 4 feet (ft) in diameter placed in the center of the channel section with about 12 inch (in) spaces in between. Smaller boulders will be placed to the sides of the larger center boulders. Upstream of each boulder baffle a pool with a depth of 2 to 4 ft will be placed. These pools will have about 0.25 foot drop, which results in maximum velocities of 2.7 to 2.9 cfs between the baffles.

A "Texas Crossing" (approximately 2 ft concrete apron) will be constructed across a low-lying area of the river bank on the south side of the river just upstream of the PNM diversion. PNM leases this property from the Navajo Nation and maintains a road to perform dam

maintenance activities. Over bank flooding typically occurs when flows in the main river channel reach approximately 7,000 cfs. The San Juan River flow recommendations at the Shiprock gage include flows of 10,000 cfs for 5 days with durations of 20 days possible. Flows will exceed 8,000 cfs for 10 days per year with durations as long as 40 days. Currently, discharges in excess of 7,000 cfs allow non-native fish to move upstream of the diversion dam. Construction of the concrete apron will prevent non-native fish from moving upstream during high flow events.

II. Status of the Species/critical habitat

A. Razorback sucker

The razorback sucker was listed as endangered by the Service on October 23, 1991, (56 FR 54957-549567). Critical habitat was designated for the razorback sucker by the Service on March 21, 1994, (59 FR 13374-13400). The Service completed a Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (RIP) on October 15, 1993, (U.S. Fish and Wildlife Service 1993).

The razorback sucker is endemic to the Colorado River drainage. Historically, these fish occupied the major tributaries of the Colorado River Basin between southwestern Wyoming and northern Mexico (Minckley et al. 1991). The razorback sucker prefers rivers with strong, uniform currents over sandy bottoms. It is also found in eddies and backwaters adjacent to river channels, concentrating in deep places near cut banks. In the lower Colorado River Basin, razorback sucker are found primarily in large impoundments including Lake Mohave, Lake Mead, and Lake Havasu. Razorback suckers were reintroduced into the Gila, Verde, and Salt Rivers of the lower Colorado River Basin between 1981 and 1984, but there is little evidence that the fish have successfully reestablished in these tributaries (Minckley et al. 1991). In the upper Colorado River Basin, razorback sucker are found in the Green River, primarily between the confluence of the Duchenne and Yama Rivers (Tyus 1987). Razorback sucker have also been collected in the Lower Green River and the Upper Colorado River (McAda et al. 1994).

The greatest number of razorback sucker exist in Lake Mohave, Arizona (Minckley et al. 1991). Smaller numbers of fish are found in other Lower Basin Colorado River impoundments (Bestgen 1990). These populations consist of old fish believed to have spawned during the filling of the reservoirs. Because there is little or no recruitment population numbers are declining. Populations of razorback sucker have been observed to increase during the filling of several Lower Colorado River Basin reservoirs (Minckley 1983) and subsequently disappeared after these early cohorts died. Marsh (1993) estimated the razorback sucker population in Lake Mohave at 73,000 between 1980 and 1993, 60,000 between 1988 and 1993, and 20,000 between 1991 and 1993.

Life History

Xyrauchen is one of three monotypic genera in the family Catostomidae. The morphology of the razorback sucker is distinguishable from other catostomids by the dorsal keel rising posterior from the head. The razorback sucker mouth is inferior, the upper lip is separate and fleshy with two rows of papillae, the lower lip has two thick, fleshy separate lobes with eight rows of papillae on each lobe. Razorback suckers are robust in size and slightly compressed laterally. The upper body is dark brown to olivaceous and white or yellow on the lower ventro-lateral surfaces. Adults often exceed 3 kilograms (kg) (6.6 pounds [lbs]) and 600 millimeters (mm) (2 ft) in length.

The ventral mouth and the keel immediately behind the head differentiate the adult of the razorback sucker from all other fish in New Mexico. The higher number of gill rakers (44 or more) on the first gill arch will separate young razorback suckers from juvenile flannelmouth suckers (about 35). During the spawning season males often have lighter coloration and have well-developed tubercles on the anal and caudal fins. Razorback sucker will hybridize with *Catostomus latipinnis* and *Catostomus insignis* (Buth et al. 1987).

Growth rates vary considerably between the upper and lower Colorado River Basins, with age 0 fish reaching lengths of up to 400 mm (16 in) in the latter, whereas, average first year growth of wild fish in the middle Green River was closer to 100 mm (4 in) (T. Moddle, U.S. Fish and Wildlife, unpublished data). In riverine habitats, razorback sucker mature after three to six growing seasons (McAda and Wydoski 1980). Razorback sucker are long-lived fish, reaching ages in excess of 40 years (McCarthy and Minckley 1987).

Males are smaller and slimmer with larger fins and a more exaggerated keel than females. In late winter to spring, both sexes exhibit breeding colors of dark brown to black dorsally and yellow ventrally with a lateral band that can be orange, reddish, or violet. Riverine spawning is linked to the ascending limb of the hydrograph, generally during May or June in the upper Colorado River Basin (Minckley et al. 1991). Spawning appears to be ritual.

Population dynamics

Razorback suckers occupy a variety of habitats during their lives. In general, razorback suckers prefer calmer, flat water reaches over higher velocity white water or canyon reaches (Minckley et al. 1991). Adults occupy shoreline and main channel habitats including slow runs, shallow to deep pools, backwaters, eddies, and other slow velocity habitats associated with sand substrates (Tyus and Karp, 1990; Osmundson and Kaeding 1991). During spawning, they appear to prefer gravel and cobble substrates with little or no embeddedness. All documented spawning in rivers occurs in broad, flat water areas (Minckley et al. 1991). Young fish remain along shorelines in embayments and tributaries, and then disperse into channels or larger backwaters. Juveniles appear to drift downstream into these habitat types (Minckley et al. 1991).

Status and Distribution

Historically, razorback suckers were found in the main stem of the Colorado River and major tributaries in Wyoming, Colorado, Utah, New Mexico, Arizona, Nevada, California, and in Mexico (Minckley 1983). Population declines can be attributed to construction of dams and reservoirs, introduction of non-native fishes, and water development of the Colorado River system (U.S. Fish and Wildlife Service 1993).

The historic distribution and abundance of razorback sucker in the San Juan River are not well known. It is speculated that razorback sucker used the main stem of the San Juan River from its confluence with the Colorado upstream to the Colorado/New Mexico state line (Koster 1960). In the upper Colorado River Basin, razorback sucker populations are the largest in the Green River and lower Yampa River. In the Colorado River, most razorbacks are found in the Grand Valley near Grand Junction, Colorado (U.S. Fish and Wildlife Service 1993). In 1991 and 1992, 28 adults were collected from isolated ponds adjacent to the Colorado River near DeBeque, Colorado (Burdick 1992).

Razorback sucker distribution in the San Juan River, including introduced fish, is from the San Juan arm of Lake Powell to the vicinity of the Hogback (river mile 158.6). The Hogback is located about 8 river miles downstream of the PNM Diversion between Shiprock and Waterflow, New Mexico. Wild razorback sucker have not been collected from the San Juan River in Colorado or New Mexico during recent sampling programs (Ryden 2000).

In 1994, the Service stocked 695 razorback sucker in the San Juan River near the Hogback (Ryden and Pfeifer 1995). The Recovery Program plans to continue stocking razorback sucker below PNM Diversion. In August 1999, unmarked razorback suckers were being reared in a "grow-out" pond on the Navajo Indian Irrigation Project (NIIP) upstream of the PNM Diversion. During a flash flood event, an unknown number escaped from the "grow-out" pond. In an October 2000 survey, three unmarked razorback sucker were collected at river mile 169.0 above the PNM Diversion. They were believed to be razorback sucker that escaped from the NIIP "grow-out" pond (Ryden 2000). No other razorbacks have been collected above the PNM Diversion.

Analysis of species/critical habitat likely to be affected

The lower San Juan River is designated as critical habitat in San Juan County, New Mexico and San Juan County, Utah. The designation reads as follows:

New Mexico, San Juan County, and Utah, San Juan County. The San Juan River and its 100-year flood plain from the Hogback Diversion in T.29N., R.16W., section 9 (New Mexico Meridian) to the full pool elevation at the mouth of Neskahai Canyon on the San Juan arm of Lake Powell in T.41S., R.11E., section 26 (Salt Lake Meridian).

Construction of the fish passage and the installation of cofferdams to direct water around the construction site will not impact the designated critical habitat for razorback sucker or any potential razorback sucker found upstream.

When razorback sucker spawn in the upper San Juan River, their young are expected to be carried downstream by the current and may spill over the PNM Diversion. Currently, razorback sucker are blocked from returning to upstream spawning sites. With the fish passage in place, the fish will be able to move freely up and down the river, creating a more natural river ecosystem.

B. Colorado pikeminnow

The Colorado pikeminnow was listed as endangered by the Service on March 11, 1967, under the Endangered Species Preservation Act of 1966 (32 FR 4001) and given full protection under the Act in 1973. A revised recovery plan for the Colorado pikeminnow (formerly Colorado squawfish) was published in 1991 (U.S. Fish and Wildlife Service 1991). Critical habitat was designated on March 21, 1994 (59 FR13374-13400). Segments of six rivers were designated as critical habitat. They are: 1) Yampa River, 2) Green River, 3) White River, 4) Gunnison River, 5) Colorado River, and 6) San Juan River.

The Colorado pikeminnow is a torpedo-shaped fish with olive-green and gold back, silver sides and white belly. These fish spawn between late June and early September when they are 5-6 years old and at least 16 in long. Similar to salmon, Colorado pikeminnow can migrate more than 200 miles to spawn.

The largest minnow in North America and one of the largest in the world, the Colorado pikeminnow at one time may have lived 50 or more years, growing to nearly 1.8 meters (6 ft) and weights of up to 36 kg (80 lbs). Colorado pikeminnow are thought to have evolved more than 3 million years ago. Colorado pikeminnow was the Colorado River's top predator in the early 1900s.

Colorado pikeminnow were once abundant in the main stem of the Colorado River and most of its major tributaries in Colorado, Utah, Wyoming, New Mexico, Arizona, Nevada, California, and Mexico. Now, they exist primarily in the Green River below the confluence with the Yampa River, the lower Duchesne River in Utah, the Yampa River below Craig, Colorado, the White River from Taylor Draw Dam near Rangely downstream to the confluence with the Green River, the Gunnison River in Colorado, and the Colorado River from Palisade, Colorado, downstream to Lake Powell. The Colorado pikeminnow in the upper Colorado River Basin are relatively stable and in some areas may even be increasing their number (U.S. Fish and Wildlife Service 2000). In the Green River, research indicates Colorado pikeminnow populations may be increasing their numbers. The primary reason may be changes in the operation of Flaming Gorge Dam. In March 1994, the Service designated 1,148 miles of Colorado River as critical habitat for the Colorado pikeminnow, which is 29 percent of its historic range.

The construction of the fish passage will allow Colorado pikeminnow to migrate around the PNM Diversion. Giving the fish that ability to reach upstream spawning areas in the San Juan River is expected to speed their recovery.

Life History

The Colorado pikeminnow is an endemic species unique to the Colorado River Basin. It is the largest cyprinid fish native to North America. It is a streamlined riverine fish that can reach lengths of 1.8 meters (6 ft) and weights of 45 kg (99 lbs) (Minckley 1973). The Colorado pikeminnow is a long-lived (greater than 50 years), large, elongated fish with a large, nearly horizontal mouth and long, slender pharyngeal teeth adapted for grasping and holding prey (Minckley 1973, Osmundson et al. 1997).

Once Colorado pikeminnow reaches a size of 100.0 mm (4 in), their diet consists almost exclusively of other fish. Males become sexually mature earlier and at a smaller size than females. Most fish mature by age 7 and 500 mm (20 in) in length (Vanicek and Kramer 1969).

Spawning is linked to the descending limb of a natural hydrograph as waters reach or exceed 20 degrees centigrade (U.S. Fish and Wildlife Service 1993). Spawning generally occurs between late June and late August.

Population dynamics

Spawning sites are comprised of clean-cobble substrate with deep interstitial voids (U.S. Fish and Wildlife Service 1993). Colorado pikeminnow are believed to migrate to pool/riffle areas near the spawning sites. The fish appear to use deep pools, eddies, or mixing zones as resting areas near the spawning sites (Holden 1999). Warm water temperature, discharge, and photo-period are possible spawning and/or spawning migration cues (Holden 1999).

In the Colorado and Green Rivers, young of year Colorado pikeminnow are found most frequently in backwaters. These waters appear to be important nursery habitat until pikeminnow reach approximately 100 mm (4 in) total length (Holden 1999). However, there are very few backwaters in the San Juan River, so young of year Colorado pikeminnow utilize other low velocity habitat types such as side channels, isolated pools, embayments, and shorelines.

Adult Colorado pikeminnow have been collected from all habitat types but most frequently in runs, eddies, backwaters, and pooled canyon mouths. Before and during spring, adults tend to use backwaters, flooded mouths of washes, and other low-velocity habitats that are warmer than main channel habitats. As warm waters and flows recede, pikeminnow use eddies, runs, and other habitats associated with the main channel. During the fall and winter, pikeminnow use lower-velocity shoreline habitats (Holden 1999).

By the 1970s, the Colorado pikeminnow was extirpated from the lower Colorado River Basin below Glen Canyon Dam and from portions of the upper basin. Colorado pikeminnow are currently restricted to the Upper Colorado River Basin and inhabit warm water reaches in the Colorado, Green, San Juan Rivers, and their associated tributaries.

Status and Distribution

Historically, Colorado pikeminnow were distributed throughout warm water reaches of the Colorado River Basin from Wyoming to Mexico. By the 1970s, the Colorado pikeminnow was extirpated from the lower basin below Glen Canyon Dam and from portions of the upper basin. Colorado pikeminnow are currently restricted to the Upper Colorado River Basin and inhabit warm water reaches in the Colorado, Green, San Juan Rivers, and their associated tributaries. Population declines can be attributed to constructions of dams and reservoirs, introduction of non-native fishes, water development of the Colorado River system and the loss of natural hydrology (U.S. Fish and Wildlife Service 1993).

In the San Juan River, Colorado pikeminnow are found in low numbers. In 1998, 49 adult Colorado pikeminnow were stocked in the San Juan River above the PNM Diversion Dam (Ryden 2001). These fish were fitted with radio-transmitters to monitor movements. Fish have been documented as moving downstream past the PNM Diversion Dam. The most recent Colorado pikeminnow collection was at river mile 138.9 about 27 miles downstream of the PNM Diversion Dam (Ryden 2000).

Habitat evaluations conducted by the Recovery Program have identified gravel bar habitats that are likely suitable for Colorado pikeminnow above the PNM Diversion Dam. It is believed that if passage is restored at PNM Diversion, Colorado pikeminnow may use these sites (U.S. Bureau of Reclamation 2001).

Analysis of the species/critical habitat likely to be affected

The project area is within the critical habitat designation for San Juan County, New Mexico, and reads as follows:

New Mexico, San Juan County, and Utah, San Juan County. The San Juan River and its 100-year flood plain from the State Route 371 Bridge in T.29N., R.13W., section 17 (New Mexico Meridian) to Neskahai Canyon in the San Juan arm of Lake Powell in T.41S., R.11E., section 26 (Salt Lake Meridian) up to the full pool elevation.

Designated critical habitat in New Mexico is located upstream and downstream from the PNM Diversion. Colorado pikeminnow distribution in the San Juan River, including introduced fish, is from the San Juan arm of Lake Powell to the vicinity of Shiprock, New Mexico. In 1987, Colorado pikeminnow were taken 25.0 km and 45.0 km downstream from Shiprock in the San Juan River. Since 1965, all other specimens collected in New Mexico

were taken downstream from Shiprock (Sublette et al. 1990). Olsen (1962) collected 4 Colorado pikeminnow in the vicinity of Navajo Dam. There are other unconfirmed reports from anglers of the species from the San Juan River upstream from Bloomfield, New Mexico, including one report as recent as 1987. Colorado pikeminnow may still exist above the PNM Diversion.

Construction of the fish passage and the installation of cofferdams to direct water around the construction site will not impact the designated critical habitat for Colorado pikeminnow or any Colorado pikeminnow found upstream of the PNM Diversion.

When Colorado pikeminnow spawn in the upper San Juan River, their young are expected to be carried downstream by the current and may spill over the PNM Diversion. Currently, Colorado pikeminnow are blocked from returning to upstream spawning sites. With the fish passage in place the fish will be able to move freely up and down the river, recreating a more natural river ecosystem.

III. Environmental Baseline

Status of the species within the Action Area

Razorback sucker

Razorback sucker have not been collected recently in the proposed action area. Razorback sucker were accidentally released into the San Juan River, approximately 26 river miles downstream of the action area. Sampling of the accidental release area has yielded few individuals that may be a result of the flash flood event and subsequent escape of razorback from the "grow-out" pond.

Colorado pikeminnow have not been collected in the proposed action area of the fish passage. The most recent collection of Colorado pikeminnow in this reach was in 1997, just above the PNM Diversion structure (Ryden 2000). To date only one Colorado pikeminnow has been collected in this reach of the San Juan River (Ryden 2000). In April 2001, 148 Colorado pikeminnow were stocked approximately 15 river miles downstream of the action area. Fish sampling has not occurred. Success and distribution of those fish are unknown.

The proposed action will not affect critical habitat for the Colorado pikeminnow.

Factors affecting species environment within the Action Area

The PNM Diversion blocks razorback sucker and Colorado pikeminnow from returning upstream to spawning sites. With the fish passage in place the fish will be able to move freely up and down the river.

IV. Effects of the Action

Razorback sucker

It is anticipated that the proposed project will have a positive effect on the distribution and abundance of razorback sucker. There is potential for impacts to individual fish that may occur as a result of the construction and operation of the fish passage facilities. Impacts could occur: 1) during project construction. Razorback sucker could be trapped behind the cofferdam. Capture and handling could cause stress and/or death to individual fish, 2) at the river passage, fish caught in the trap will result in mortality of individual fish caused by stress, 3) endangered fish may become trapped on the intake grate of the inlet channel or pump intake screen of the existing PNM facilities causing death to individual fish, and 4) after being released from the fish trap, endangered fishes, in exhausted condition, may swim downstream over the dam. Because the proposed project will not require additional depletions from the San Juan River, and is designed to restore endangered fish passage and control non-native species, the PNM Fish Passage Facilities is projected to be beneficial to the recovery of the razorback sucker. The Recovery Program identified three diversion structures on the San Juan River, including the PNM Diversion, as barriers to endangered fish movement. The other two barriers are the Hogback and Cudei Diversion Dams (U.S. Bureau of Indian Affairs 2000) (BIA). Both structures were evaluated in an earlier environmental assessment prepared for the BIA. The Arizona Public Service Diversion Dam, about 1 mile downstream of the PNM Diversion, is considered to be a temporary impediment to fish movement (Ryden 2000), depending upon how it is operated. At river mile 178.5, the Fruitland Diversion could also become a barrier to fish movement when rebuilt.

The Recovery Program believes there is suitable spawning habitat in the San Juan River as far upstream as the confluence with the Animas River, and that if fish passage is restored, razorback sucker will use the river above the PNM Diversion Dam. Construction of the fish passage facility would also allow razorback sucker to move upstream and downstream past the PNM Diversion Dam (Bureau of Reclamation 2000).

Razorback sucker distribution and critical habitat are located 8.3 km (8 mi) downstream from the proposed action area. The construction of the fish passage will not have an effect on critical habitat and is expected to allow razorback sucker to migrate upstream to spawning sites. Razorback sucker are expected to spawn upstream and their young to drift downstream as a result of the construction of this fish passage.

Colorado pikeminnow

Colorado pikeminnow distribution and critical habitat are located upstream and downstream of the proposed action area. The construction of the fish passage will not have an effect on critical habitat but is expected to allow Colorado pikeminnow to migrate upstream to

spawning sites. Colorado pikeminnow are expected to spawn upstream and their young to drift downstream as a result of the construction of this fish passage.

It is anticipated that the proposed project will have a positive effect on the distribution and abundance of Colorado pikeminnow. There is a potential for impacts to individual fish that may occur as a result of the construction and operation of the fish passage facilities. Impacts could occur: 1) during project construction pikeminnow could be trapped behind the cofferdam, capture and handling could cause stress and/or death to individual fish, 2) at the river passage, fish caught in the trap will result in mortality of individual fish caused by stress, 3) endangered fish may become trapped on the intake grate of the inlet channel or pump intake screen of the existing PNM facilities, and 4) if exhausted endangered fish may swim downstream over the dam after being released from the fish trap. Because the proposed project will not require additional depletions from the San Juan River, and is designed to restore endangered fish passage and control non-native species, the PNM Fish Passage Facilities is projected to be beneficial to the recovery of the Colorado pikeminnow. The Recovery Program identified three diversion structures on the San Juan River, including the PNM structure, as barriers to endangered fish movement. The other two barriers to fish movement are the Hogback and Cudci Diversion Dams. The two structures were evaluated in an earlier environmental assessment prepared for the Bureau of Indian Affairs (2000). The Arizona Public Service Diversion, about 1 mile downstream of the PNM Diversion, is considered to be a temporary impediment to fish movement depending upon how it is operated. At river mile 178.5 the Fruitland Diversion could also be a barrier to fish movement when rebuilt.

The State of Utah has been stocking larval and juvenile Colorado pikeminnow in the lower San Juan River since 1996. The Recovery Program stocked 49 adult Colorado pikeminnow upstream of the PNM Diversion Dam in 1998, but those fish are not believed to be upstream of the structure any longer. The Recovery Program believes there is suitable spawning habitat in the San Juan River upstream to the confluence with the Animas River, and that if fish passage is restored, Colorado pikeminnow will use the river above the PNM Diversion (Ryden 2000). Construction of the fish passage facility would also allow Colorado pikeminnow to move upstream and downstream past the PNM Diversion Dam.

V. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects include, but are not limited to, the following: increased urbanization within the historic flood plain, land use activities that degrade water quality, entrainment of fish into irrigation canals, increased water withdrawal by municipalities, reconstruction of Fruitland Diversion, and discharge of mine tailings into the San Juan River.

VI. Conclusion

After reviewing the current status of the Colorado pikeminnow and the razorback sucker, the environmental baseline for the action area, the effects of the proposed fish passage and the cumulative effects, it is the Service's biological opinion that the fish passage structure at the PNM Diversion, as proposed, is not likely to jeopardize the continued existence of the Colorado pikeminnow and razorback sucker, and is not likely to destroy or adversely modify designated critical habitat. Critical habitat has been designated for both the Colorado pikeminnow and razorback sucker, downstream from the confluence of the Animas River for Colorado pikeminnow and from Hogback, NM for the razorback sucker, however, this action does not affect that area and destruction or adverse modification of that critical habitat is not anticipated.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Recovery Program so that they become binding conditions of any grant or permit issued to the Recovery Program, as appropriate, for the exemption in section 7(o)(2) to apply. The Recovery Program has a continuing duty to regulate the activity covered by this incidental take statement. If the Recovery Program (1) fails to assume and implement the terms and conditions or (2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant documents, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Recovery Program must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

Amount or Extent of Take Anticipated

The Service believes that incidental take will be limited to no more than five razorback suckers and five Colorado pikeminnow, per year for the life of the project through injury or death as a result of the proposed actions.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat. Reasonable and prudent alternatives were not developed.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of razorback sucker and Colorado pikeminnow:

1. The facility will be fenced using chain-link hardware cloth equal to or greater than 7 feet in height.
2. All entrance/exits will be locked at all times when not attended by an official agent.
3. The facility will be equipped with security lighting triggered by a motion detection device during night time hours.
4. Fish traps will be checked daily during fish passage operations, which is expected to be from April through October.
5. Only locking fish traps and head gates will be used.
6. A daily log of activities will be kept by the official agent checking the fish trap during operations.
7. A report will be submitted each month during operation on fish passage activities.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Recovery Program must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

- 1.1 The Recovery Program or their agent will inspect the facility fencing daily and repair any damages that may exist. These repairs must be made within 12 hours of discovery. If the fence does not provide the necessary security the height will be increased or other protective measures taken.
- 2.1 The Recovery Program or their agent will insure that the facility is locked at all times when not attended by an official agent and that all locks are in working order.
- 3.1 The Recovery Program or their agent will insure that all security lighting and electrical generating equipment are in working order. Defective lighting, sensors, battery systems, and electrical generating equipment must be replaced within 12 hours of discovery. A test of the security lighting service must be performed biweekly and included in the report for Terms and Conditions 7.1.
- 4.1 Only trained individuals will check fish traps. The Recovery Program will be responsible for the training and the selection of individuals who will check traps. The New Mexico Ecological Services Field Office will have final approval of individuals selected.
- 4.2 Fish traps will be checked every 24 hours. Operating criteria will be evaluated each year by the SJRIP Biology Committee and the New Mexico Ecological Services Field Office to determine if changes in daily trap inspection are warranted.
- 5.1 The Recovery Program or their agent will insure that fish traps are secured and locked. Locks will be inspected every 24 hours and repaired within 12 hours if defects are found.
- 6.1 A daily log will be kept by the official agent checking the fish traps. This log will contain the name of the agent checking the trap, the date and time the trap was checked, the number and species of each trapped fish, and any other significant findings. The daily log will be signed and dated by the agent checking the trap on that day. A photocopy of the daily log must be submitted with each monthly report as set in Terms and Conditions element 7.1.
- 7.1 A report will be submitted by the tenth day of each month during operation. This report will include any mortality of threatened or endangered fish and will be submitted to the Service's New Mexico Ecological Services Field Office and Grand Junction Colorado River Fishery Project. This report will also include a summary of threatened or endangered fish found in the fish passage for that reporting period.
- 8.1 Dead specimens will be preserved according to protocols set forth by the Recovery Program and deposited in the Museum of Southwestern Biology at the University of New Mexico.

The Service believes that no more than five razorback suckers and five Colorado pikeminnow per year for the life of the project will be incidental take as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designated to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Recovery Program must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Coordination of incidental take statements with other laws, regulations, and policies

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations were not developed for this biological opinion because the SJRIP already contains recommendations and implementation actions for the recovery of razorback sucker and Colorado pikeminnow.

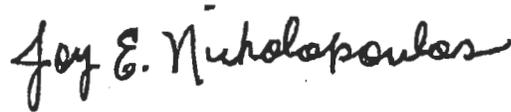
In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any SJRIP conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

17

In future communications regarding this project, please refer to consultation #2-22-00-F-412. Please contact Jude R. Smith or Santiago R. Gonzales at the letterhead address or at (505) 346-2525 ext. 104 and ext. 154 respectively, if you have any questions.



Joy E. Nicholopoulos

cc:

Area Manger, Bureau of Reclamation, Albuquerque Area Office, Albuquerque, NM
District Engineer, U.S. Army Corps of Engineers, Albuquerque, NM
Project Leader, U.S. Fish and Wildlife Service, New Mexico Fishery Resources Office,
Albuquerque, NM
Ecological Services, U.S. Fish and Wildlife Service, Region 2, Section 7 Coordinator,
Albuquerque, NM
Ecological Services, U.S. Fish and Wildlife Service, Region 2, Recovery Coordinator,
Albuquerque, NM

LITERATURE CITED

- Bestgen, K.R. 1990. Status review of the razorback sucker, *Xyrauchen texanus*. *Larval Fish Laboratory Contribution 44*, Colorado State University, Fort Collins, Colorado.
- Burdick, B.D. 1992. A plan to evaluate stocking to augment or restore razorback suckers in the Upper Colorado River. U.S. Fish and Wildlife Service, Final Report, Grand Junction, Colorado.
- Buth, D.G., R.W. Murphy, and L. Ulmer. 1987. Population differentiation and introgressive hybridization of the funneledmouth sucker and of hatchery and native stocks of the razorback sucker. *Transactions of the American Fisheries Society*. 116: 103-110.
- Holden, P.B. (Ed.). 1999. Flow recommendations for the San Juan River. San Juan River Basin Recovery Implementation Program, USFWS, Albuquerque, N.M..
- Koster, W.J. 1960. *Ptychocheilus lucius* (Cyprinidae) in the San Juan River, New Mexico. *Southwestern Naturalist*. 5(3):174-75.
- Marsh, P.C. 1993. Abundance, movements, and status of adult razorback sucker, *Xyrauchen texanus*, in Lake Mohave, Arizona and Nevada. *Proceedings of the Desert Fishes Council*, Volume 25: 35-36 (Abstract).
- McAda, C.W. and R.S. Wydoski. 1980. The razorback sucker, *Xyrauchen texanus*, in the upper Colorado River basin, 1974-76. Technical paper, U.S. Fish and Wildlife Service, Washington, D.C. 15 pp.
- McAda, C.W., B. Bates, S. Cranney, T. Chart, B. Elmblad, and T. Nester. 1994. Interagency standardized monitoring program: Summary of results, 1986 through 1992. Final Report. *Recovery Program for the Endangered Fishes of the Upper Colorado River Basin*. U.S. Fish and Wildlife Service, Denver, CO.
- McCarthy, M.S., and W.L. Minckley. 1987. Age estimation for razorback sucker (Pisces: Catostomidae) from Lake Mohave, Arizona-Nevada. *Journal of the Arizona Nevada Academy of Sciences* 21:87-97.
- Minckley, W.L. 1973. *Fishes of Arizona*. Arizona Game and Fish Department, Phoenix.
- Minckley, W.L. 1983. Status of the razorback sucker, *Xyrauchen texanus* (Abbott), in the lower Colorado River Basin. *Southwest Naturalist* 28(2):165-187.

- Minckley, W.L., P.C. Marsh, J.E. Brooks, J.E. Johnson, and B.L. Jensen. 1991. Management toward recovery of razorback sucker (*Xyrauchen texanus*). In W.L. Minckley and J.E. Deacon, Eds. *Battle Against Extinction*. University of Arizona Press, Tucson.
- Modde, T., E.J. Wick. 1995. Spring habitat use and availability to razorback sucker in the middle Green River. Draft Final Report. Recovery Program for Endangered Fishes of the Upper Colorado River Basin. U.S. Fish and Wildlife Service, Denver, CO.
- Olsen, H. F. 1962. A pre-impoundment study of Navajo Reservoir, New Mexico. Federal Aid Project F-22-R-3 D(Job-1). New Mexico Department of Game and Fish, Santa Fe, pp29.
- Osmundson, D.B. and L.R. Kaeding. 1991. Flow recommendations for maintenance and enhancement of rare fish habitat in the 15-Mile Reach during October-June. Final Report. U.S. Fish and Wildlife Service, Grand Junction, Colorado.
- Osmundson, D.B., R.J. Ryel and T.E. Mourning. 1997. Growth and survival of Colorado Squawfish in the upper Colorado River. *Transactions of the American Fisheries Society* 136-687-698.
- Ryden, D.W., F.K. Pfeifer. 1995. Monitoring of Experimentally Stocked Razorback Sucker in the San Juan River, 1994 Annual Progress Report, June 15, 1995. U.S. Fish and Wildlife Service, Colorado River Fishery Project, Denver, Colorado.
- Ryden, Dale. 2000. Personal Communication on November 16, 2000. In U.S. Bureau of Reclamation. 2001. Biological Assessment for Native Fish Passage at Public Service Company of New Mexico Diversion Dam, San Juan County, N.M. Grand Junction, Colorado.
- Ryden, Dale. 2001. Personal Communication on August 9, 2001. In U.S. Bureau of Reclamation. 2001. Biological Assessment for Native Fish Passage at Public Service Company of New Mexico Diversion Dam, San Juan County, N.M. Grand Junction, Colorado.
- Sublette, J.E., M.D. Hatch, M. Sublette. 1990. *The Fishes of New Mexico*. University of New Mexico Press, Albuquerque, New Mexico.
- Tyus, H.M. 1987. Distribution, reproduction, and habitat use of the razorback sucker in the Green River, Utah, 1979-1986. *Transactions of the American Fisheries Society* 116:111-116.

- Tyus, H.M. and C.A. Karp. 1990. Spawning and movements of razorback sucker, *Xyrauchen texanus*, in the Green River basin of Colorado and Utah. *Southwestern Naturalist* 35:427-433.
- U.S. Bureau of Indian Affairs. 2000. Final Environmental Assessment, Hogback Diversion Dam and Cudei Diversion Dam, Navajo Area Office, Bureau of Indian Affairs, Gallup, New Mexico.
- U.S. Bureau of Reclamation. 2001. Biological Assessment for Native Fish Passage at Public Service Company of New Mexico Diversion Dam, San Juan County, N.M. Grand Junction, Colorado.
- U.S. Fish and Wildlife Service. 1967. Native fish and wildlife: endangered species. Federal Register 32-4001.
- U.S. Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; The Razorback Sucker (*Xyrauchen texanus*) determined to be an Endangered Species; Federal Register Vol. 56-54957-54567.
- U.S. Fish and Wildlife Service. 1991. Colorado squawfish (*Ptychocheilus lucius*) revised recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado.
- U.S. Fish and Wildlife Service. 1993. R.I.P. Section 7 Consultation, Sufficient Progress, and Historic Projects Agreement and Recovery Action Plan. Denver, Colorado, U.S. Fish and Wildlife Service, Recovery Implementation Program: 50.
- U.S. Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for Four Colorado River Endangered Fishes; Final Rule. Federal Register 59-13374-13400.
- U.S. Fish and Wildlife Service. 2000. Upper Colorado River Endangered Fish Recovery Program. Endangered Colorado River basin fish: Colorado pikeminnow (*Ptychocheilus lucius*) [<http://www.r6.fws.gov/coloradoriver/Crcsq.htm>].
- Vanicek, C.D. and R.H. Kramer. 1969. Life history of the Colorado squawfish *Ptychocheilus lucius* and the Colorado chub *Gila robusta* in the Green River in Dinosaur National Monument, 1964-1966. *Transactions of the American Fisheries Society* 98(2):193.