BIOLOGICAL ASSESSMENT

FOR RESTORING FISH PASSAGE

AT THE PRICE-STUBB DIVERSION DAM

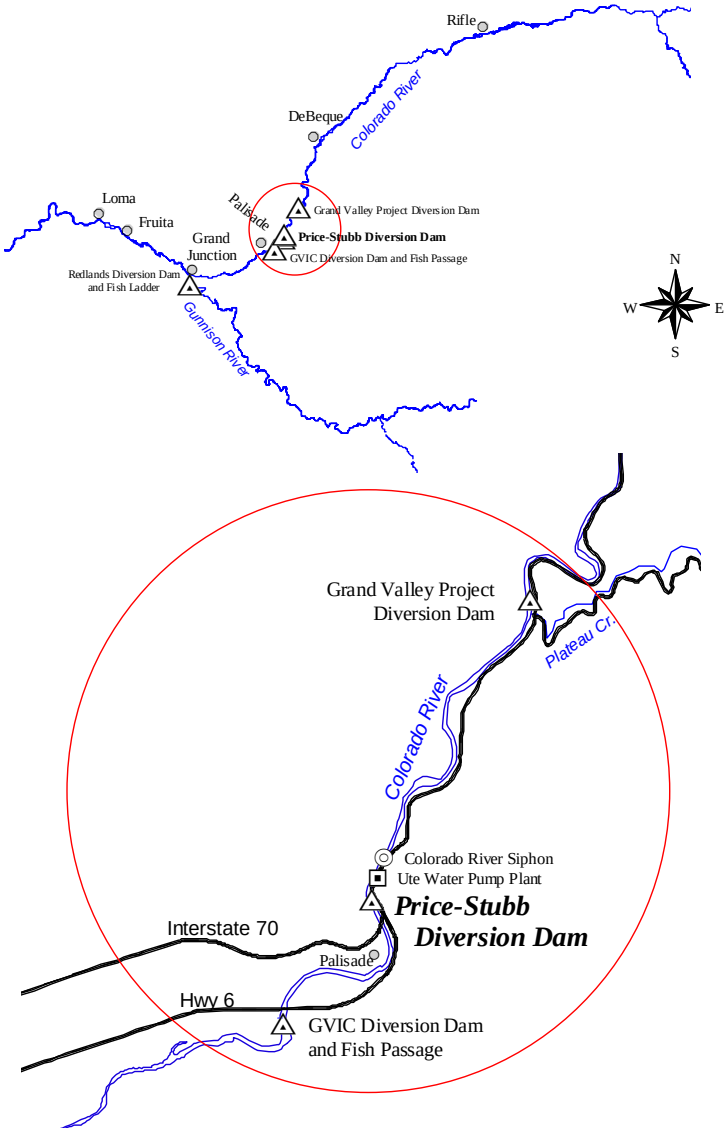
ON THE COLORADO RIVER

NEAR PALISADE, COLORADO

Bureau of Reclamation
Western Colorado Area Office
Upper Colorado Region
Grand Junction, Colorado

June 2003

Price-Stubb Diversion Dam
Vicinity Map



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1.1 Purpose

The Price-Stubb Diversion Dam (see Figure 1) constructed in 1911, represents a barrier to all upstream fish movement. The Dam was constructed by the Palisade and Mesa County Irrigation Districts to provide irrigation water to lands around Palisade, Colorado. In 1919, the dam was no longer used following the completion of the Bureau of Reclamation's (Reclamation) Grand Valley Project Diversion Dam and the Government Highline Canal.

Reclamation, on behalf of the Upper Colorado River Endangered Fishes Recovery Program, would construct a rock fish passage at the Price-Stubb Diversion Dam to allow fish access above the Dam. The purpose of this biological assessment is to evaluate affects of the proposed action of restoring fish passage at the Price-Stubb Diversion Dam to species listed under the Endangered Species Act of 1973.

Figure 1.1-Price-Stubb Diversion Dam

1.2 Recovery Program

The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) was established in 1987 to recover four endangered Colorado River fishes: Colorado pikeminnow (*Ptychocheilus lucius*), formerly known as the Colorado squawfish; razorback sucker (*Xyrauchen texanus*); bonytail (*Gila elegans*); and humpback chub (*Gila cypha*).

The Recovery Program consists of Federal and State agencies, water users and environmental interests with a goal of establishing self-sustaining populations of the four endangered fish species in the Upper Colorado River Basin while allowing for continued use and future development of Colorado River water supplies. The Recovery Program has five major elements (USFWS 1987a, 1987b), which are:

1) provision for instream flows for habitat;
2) habitat development and maintenance;
3) native fish stocking;
4) management of non-native species and sport fishing; and
5) research, monitoring and data management.

In the Upper Colorado River Basin, endangered fish access to upstream habitat has been blocked by three irrigation diversions dams on the Colorado River (Frontispiece Map). These diversion dams are:

1) the Grand Valley Irrigation Company (GVIC) Diversion Dam, about 3 miles downstream of the Price-Stubb Diversion Dam;
2) the Price-Stubb Diversion Dam (discussed in this biological assessment); and
3) the Grand Valley Project Diversion Dam, about 5.3 miles upstream of the Price-Stubb Diversion Dam.

In March of 1998, a notch was completed in the GVIC Diversion Dam and a fish passageway was constructed below it. The passageway consists of rocks placed in the Colorado River channel to form a series of riffles and pools. Restored fish passage at the Grand Valley Project Diversion Dam is scheduled for 2003-2004 and Reclamation would construct a conventional concrete fish passage through the river left roller bay. Fish passage at the Price-Stubb Diversion Dam is discussed in this biological assessment and would be completed in 2005.

2.1 Project Description

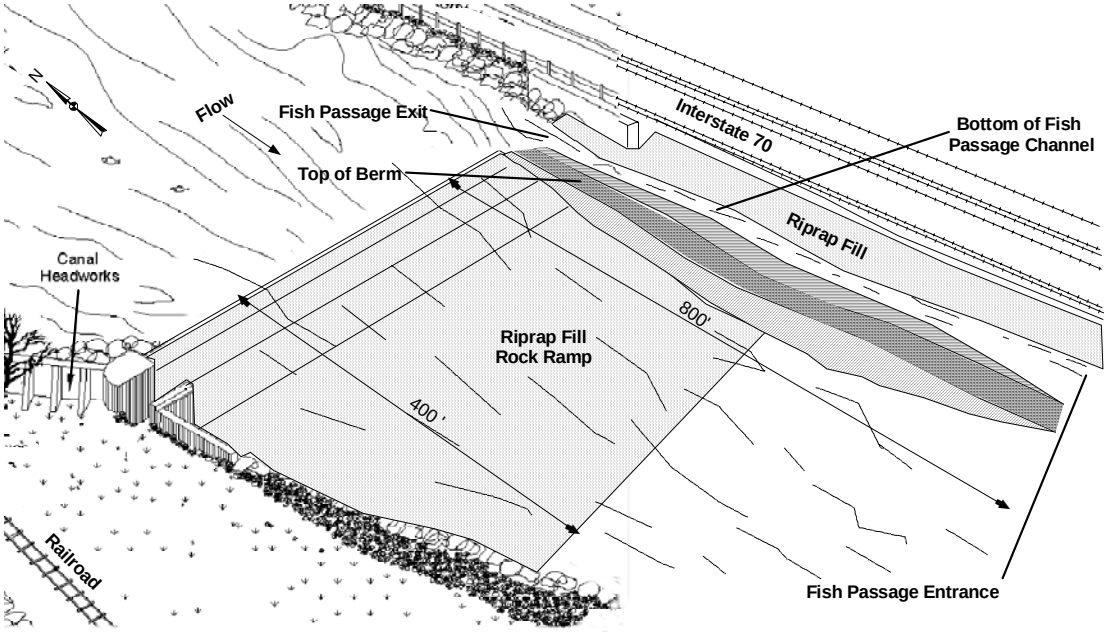
The proposed fish passage at the Price-Stubb Diversion Dam was designed based on the behavior of the endangered fish, their swimming abilities, dam design and maintenance needs, and the need to limit impacts associated with upstream uses (i.e. Ute Water's Pumping Plant, Landslide Areas, Colorado River Siphon, Palisade and Mesa County Irrigation Districts Water Rights, and Union Pacific Railroad and Interstate 70 foundations).

The fish passage would be built along the left[1] riverbank below the Price-Stubb Diversion Dam (Figure 2). An 800-ft. riprap lined channel along the riverbank would comprise the fish passage channel. A notch would be made in the dam to allow the first 100 cfs of the river to pass through the fish passage channel. An 800-ft. berm sloping downstream would be constructed to keep flows in the channel at a slope of 2.0 percent. Boulders

[1] Refers to the left side of the river when facing downstream.

would be placed in the fish passage channel as needed to maintain the desired fish passage velocities and create low flow resting areas. The remaining portion of the dam face would also be riprapped at a slope of 4.0 percent for a length of 400 ft. The riprap would provide stability to the passage channel and address safety issues with recreational boating. Reclamation is also incorporating a boat passage in its designs. The boat passage would be constructed with non-federal funds during fish passage construction if are available.

Figure 2.1-Price-Stubb Fish Passage Conceptual Drawing



As river flows increase, the length of the fish passage channel would decrease. Flows greater than 100 cfs would begin to spill over the remaining portion of the dam.

The fish passage at the Price-Stubb Diversion Dam would allow unrestricted fish movement upstream of the Diversion Dam. A selective passage device (fish trap) is incorporated in the designs for the Grand Valley Project Diversion Dam and would prevent non-native fish movement upstream of the Grand Valley Project Diversion Dam. The Biology Committee requested that Reclamation evaluate the feasibility of installing selective fish passage using the rock ramp design at the Price-Stubb Diversion Dam to prevent non-native species from entering the 4.4 miles of critical habitat between the Price-Stubb Diversion Dam and the Grand Valley Project Diversion Dam. To provide access to the fish trap, about 0.3 miles of road along the Colorado River would need to be

built at a cost of about $1,500,000. The cost of including selective fish passage was determined to be prohibitive.

The fish passage would be a run of the river type passage and require minimal operation and maintenance activities. The fish passage would operate year-round.

The proposed Jacobson Hydro No. 1 Project (FERC, 2001) with modifications would not impact the fish passage structure. Modifications would require that the Hydro Project pipe its return flows under the river and return them to the fish passage entrance. Because the Jacobson Hydro No. 1 Project license has been terminated, no additional discussion of this project is provided (FERC, 2002).

2.2 Construction

The fish passage would be completed under construction contract. The Dam owners (Palisade and Mesa County Irrigation Districts) would participate in the design process. Temporary construction easements and permits would also be acquired from all affected landowners prior to construction. Following construction, any damaged areas would be restored, as near as possible, to its original condition.

The project area would be accessed from an existing railroad service road under Interstate 70. Construction staging and material storage would be on the right riverbank. A cofferdam would likely be necessary to divert river flows while the 640 cfs notch was cut in the Dam. Reclamation would request Clean Water Act, Section 404 authorization under Regional General Permit No. 057 for projects that benefit the recovery of endangered fish. If discharging water for dewatering the construction site is needed, the contractor would obtain a Section 402 permit.

Construction would begin during low water during the fall of 2004 with completion prior to the spring of 2005. Total project costs are estimated at $3,100,000.

2.3 Operations, Maintenance and Replacement Measures

The fish passage would operate year-round. Because the fish passage is designed as a "run-of-the-river" type passage, no manual operation activities are necessary. Fish passage maintenance would be limited to removing large debris and sediment from the fish passage channel and "fine tuning" boulder placements in the fish passage channel. This is expected to be infrequent and would be conducted on an "as needed" basis and at low river flows.

3.0 Federally Listed Species

The U.S. Fish and Wildlife Service identified six federally listed threatened or endangered species that could potentially occur within the project area. These species are listed in Table 1. The know distribution and status of these species in the project area are discussed individually.

Inventories conducted by Reclamation biologists as part of the present investigation were performed in 2001 and 2002. Inventories included visual surveys for bald eagle nesting and Southwestern willow flycatcher habitats. Literature searches were conducted for the four endangered Colorado River fishes.

Table 3.1-Federally Threatened and Endangered Species That May Occur Within the Project Area.

Species	Status	Project Effect
Colorado Pikeminnow	Endangered	May affect, not likely to adversely affect (Beneficial)
Razorback Sucker	Endangered	May affect, not likely to adversely affect (Beneficial)
Bonytail	Endangered	May affect, not likely to adversely affect (Beneficial)
Humpback Chub	Endangered	No effect
Southwestern Willow Flycatcher	Threatened	No effect
Bald Eagle	Threatened	No effect

3.1 Colorado River Endangered Fishes

3.1.1 Colorado Pikeminnow

Colorado pikeminnow (formerly known as Colorado squawfish) is a large piscivorus cyprinid endemic to the Colorado River Basin (Minckley 1973) and is one of four large cyprinids of the genus *Ptychocheilus* native to the western United States (Robins et al., 1991).

Colorado pikeminnow is the largest of the four and reportedly reached lengths approaching 1.8 m and weights of 45 kg (Minckley, 1973) during European settlement of the west. The largest Colorado pikeminnow captured in recent years was 960 mm long and exceeded 5-kg (McAda, 2000). In 2002, an adult female Colorado pikeminnow 940 mm long and 7.6 kg was captured at the Redlands fish passageway.

Colorado pikeminnow was once widespread in the large river of the Colorado River Basin, but it was eliminated from the basin downstream of Lake Powell by the late 1960s (Minckley, 1973). Although it still exists in the upper basin, its range has been reduced by construction of large reservoirs that eliminated habitat and changed downstream water quality (e.g. Vanicek et al. 1970) and construction of instream barriers that blocked access to historic range (Burdick and Kaeding, 1990). The reduced habitat and declining number of fish occupying the remaining habitat prompted the species to be included as endangered when a list of endangered species was published in 1967 (USFWS, 1967).

3.1.2 Colorado Pikeminnow Distribution-Colorado River

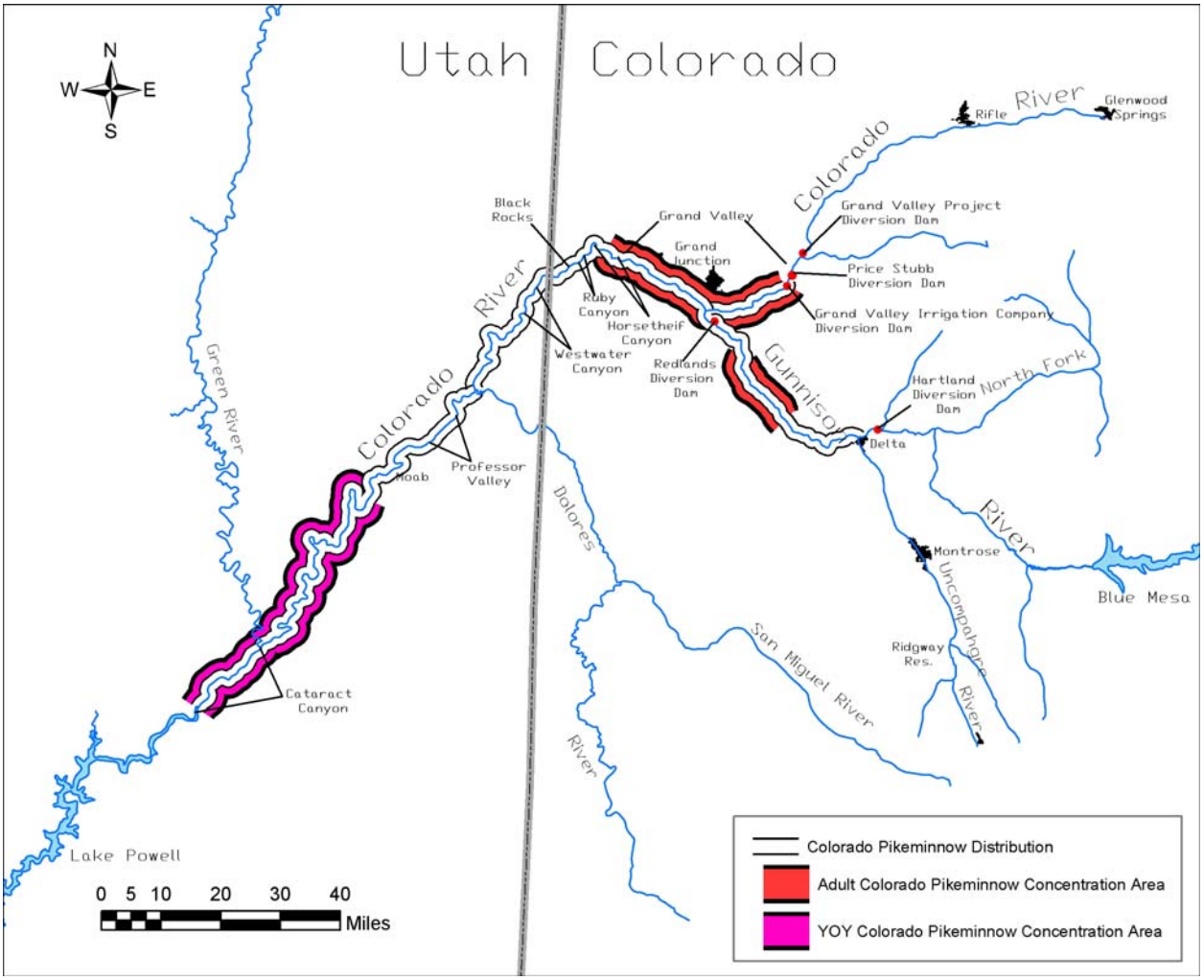
Colorado pikeminnow are distributed throughout the Colorado River from Price Stubb Dam, an impassible barrier at the upper end of the Grand Valley (RM 188.3), downstream to Lake Powell (***Figure 3.1***, Osmundson and Burnham 1988). Construction of fish passageways at the Price Stubb Diversion Dam in 2005 and the Grand Valley Project Diversion Dam in 2004 will remove barriers and will allow Colorado pikeminnow access to about 50 miles of critical habitat upstream to Rifle, Colorado. Burdick (1999), conducted intensive inventories in 1998 and 1999 to evaluate restored fish passage at the Grand Valley Irrigation Company Diversion Dam. Colorado pikeminnow captures are shown in ***Figure 3.2***.

Although pikeminnow use the entire river, there are distinct differences in distribution among age classes. In general, most adults are found in the upper reaches of the river and most sub-adults, juveniles, and young-of-year (YOY) are found in the lower reaches (McAda, 2000; Valdez et al. 1982b; Archer et al. 1985; McAda and Kaeding 1991; Osmundson et al. 1997). Osmundson and Burnham (1998) conducted an intensive river-wide study using mark recapture to estimate the population size of sub adult (250-500 mm long) and adult Colorado pikeminnow (>500 mm long) in the Colorado River. The river was divided into two sub reaches —Westwater Canyon upstream to Price Stubb Diversion Dam (RM 125-188) and confluence with the Green River upstream to Westwater Canyon (RM 0-113). They estimated that the average population size in 1991—1994 was 253 (95% CI, 161-440) for the upper reach and 334 (95% CI, 196-604) for the lower reach.

Although most adults were captured from the upper river, they were not distributed equally throughout the reach. Catch rates in two segments of the upper reach—known as the 18-mile reach (RM 154-171) and the 15-mile reach (RM171-185)—where five to six times higher than in the lower third of the reach (McAda, 2000).

Density and distribution of YOY Colorado pikeminnow have been monitored in the Colorado River since 1982 (McAda and Ryel, 1999). Density has been highly variable over that period, but YOY have been captured every year since monitoring began (McAda, 2000). YOY Colorado pikeminnow were found throughout the Colorado River downstream from the confluence with the Gunnison River, but were most abundant in the 65 miles between Moab, Utah and the mouth of the Green River (McAda, 2000). McAda et al. (1998) attributed this to recruitment of a large group of individuals from 1985-1987 year-classes recruiting to young adulthood and moving into the upper reach. The strong year-classes of young adults corresponded to high density of YOY Colorado pikeminnow in 1985-1986. An increasing population in the Colorado River during the mid 1990s was also implied by a constant increase in catch per unit effort during spring Interagency Standardized Monitoring Program (ISMP) electrofishing (McAda et al. 1998).

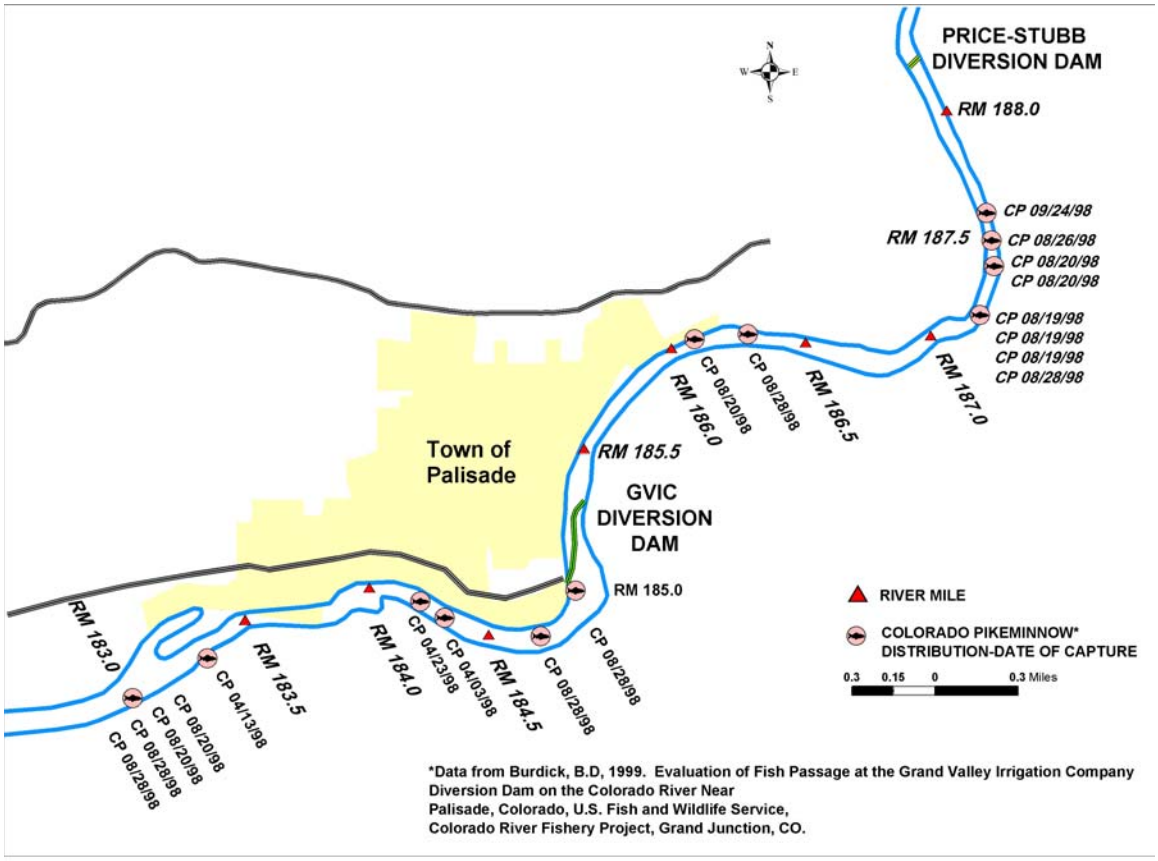
Figure 3. 1- Distribution of Colorado Pikeminnow in the Colorado and Gunnison Rivers.



Osmundson (2002) investigated population dynamics of the Colorado River population of Colorado pikeminnow. Two multi-year data collection efforts were made: 1991 to 1994, and 1998 to 2000. Annual estimates of whole-river population size (all fish $\geq$ 250 mm TL) averaged 582 during the early study period and 742 during the more recent study period, a 27 % increase. Annual estimates of adults ($\geq$ 500 mm TL) averaged 362 during the early study period and 490 during the recent study period, representing a 35% increase in adults. Backwater-netting catch rates supported this trend with an increase in rates between 1994 and 1998.

In both 1999 and 2000, males comprised 51% of the population: females, 49% (Osmundson, 2002). Average body condition for almost all length-classes of pikeminnow significantly declined between the early and recent study periods (Osmundson, 2002).

Figure 3.2- Colorado Pikeminnow Distribution Between GVIC and Price-Stubb Diversion Dams.



3.1.3 Colorado Pikeminnow Distribution-Gunnison River

Although isolated from the Colorado River population by construction of the Redlands Diversion Dam in 1917, a small, remnant population of Colorado pikeminnow persisted upstream of the dam (***Figure 3.1)***. Burdick (1995) captured five adult Colorado pikeminnow (ranging from 497-847 mm total length) in the Gunnison River upstream from the dam during an intensive study from 1992-1994. Four fish were positively identified while electrofishing but were not captured. Two of the captured fish were ripe males found together in a large eddy at RM 33.7 on July 14, 1993. Of the remaining pikeminnows, one was captured at RM 33.5, one in the flooded mouth of Kannah Creek (RM 18.2) on May 5, 1993 and another at RM 16.7 on the same day. Fish that were observed, but not captured were seen at RM 7.7, 30.8 and 32.9 in 1992 and at RM 48.4 in October of 1993 (***Figure 3.3)***. In earlier investigations, Valdez et al. (1982a) captured four adult Colorado pikeminnow between RM 26.7 and RM 33 and observed, but did not collect, four more between RM 22.1 and 31.4 (***Figure 3.3)***. The upstream limit of Colorado pikeminnow in the Gunnison River is Hartland Diversion Dam, an impassible barrier at RM 59.9, about 57 miles upstream from Redlands Diversion Dam (Burdick, 1995).

In addition, 51 Colorado pikeminnow used the Redlands Fish Passageway from 1996 to 2000 (Burdick, 2001a). Eight additional Colorado pikeminnow ascended the passageway in 2001 and 2002. All pikeminnow used the passageway in July and August. There is some movement back and forth between the Colorado and Gunnison Rivers: two pikeminnow that ascended the passageway in 1997, were recaptured in 1998. In addition, one other Colorado pikeminnow that ascended the passageway in 1997 was recaptured in 1998 from the Colorado River upstream of its confluence with the Gunnison River (Burdick, 2000). It is not know when these fish moved back downstream over the Redlands Diversion Dam or how many other fish have returned to the Colorado River and not have been recaptured.

Colorado pikeminnow movements in the Gunnison River were monitored during 1993 and 1994 (Burdick, 1995). Seven adult Colorado pikeminnow were implanted with radio transmitters. The radio-tagged fish used most of the Gunnison River between Redlands and Hartland Diversion Dams and one pikeminnow moved back downstream of the Redlands Diversion Dam after 78 days. Forty-eight percent of the radio contacts were made between RM 30—40.9, and thirty-two percent were made between RM 15—29. Colorado pikeminnow congregated in a short reach between RM 30—33 during the estimated spawning period in 1993, with four fish between RM 32—33. The reach contained numerous riffles with cobble and gravel substrates similar to reaches in other rivers identified as Colorado pikeminnow spawning areas (Lamarra et al., 1985; Harvey et al., 1993; Miller and Ptacek, 2000). Occurrence of a congregation at the same location for 2 consecutive years during the estimated spawning period suggests that Colorado pikeminnow were spawning there (McAda, 2000).

Larval Colorado pikeminnow have also been collected from the Gunnison River in 1995 and 1996(Anderson, 1999), but downstream locations do not help locate specific spawning sites because the larvae may have drifted downstream for an unknown distance.

3.1.4 Colorado Pikeminnow Augmentation

The Recovery Program has identified Colorado Pikeminnow augmentation as a third priority behind razorback sucker and bonytail (Nesler et al., 2003). The integrated stocking plan for the Colorado River is presented in Table 3.2 (Nesler et al., 2003).

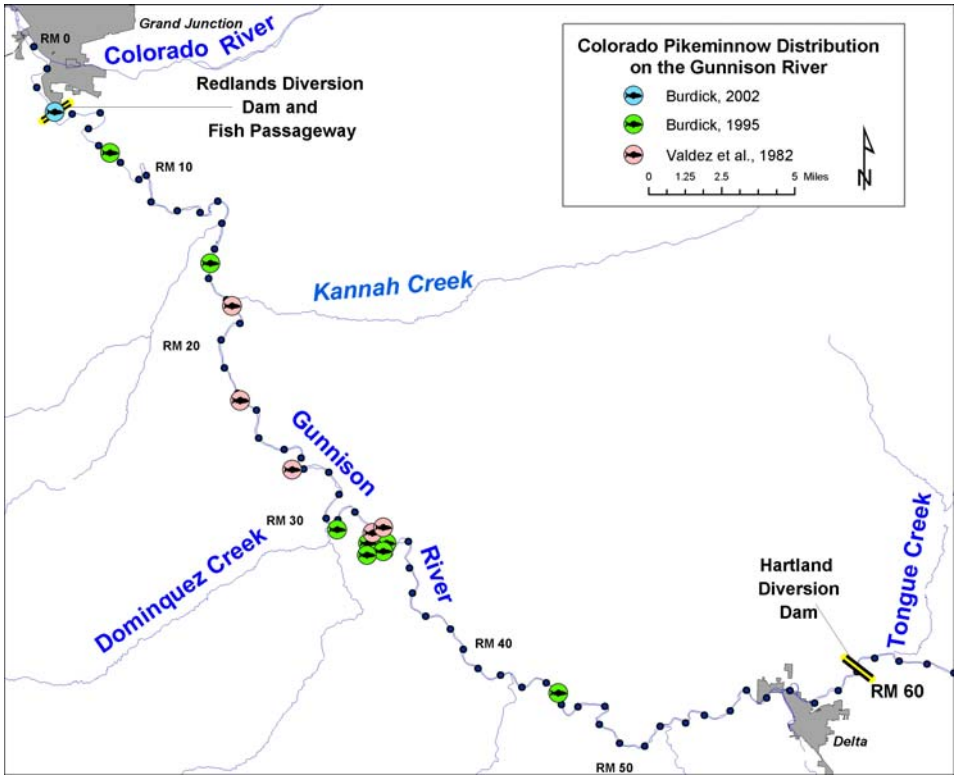
Table 3.2. Integrated stocking plan for Colorado pikeminnow, third priority species.

Priority by State and River Reaches	Fish age and Size (mm TL)	Season Stocked[1]	Numbers of fish stocked per year	Number of years stocked
Colorado:				
Colorado River: Rifle to DeBeque Canyon	Age 3+ 150	1^o Fall 2^o Spring-Summer	1,125[2]	6
Gunnison River: Hartland to Redlands dams	Age 3+ 150	1^o Fall 2^o Spring-Summer	1,125[2]	6

[1] 1^o refers to the primary season; 2^o refers to secondary season to cull fish and allow smaller individuals to achieve stocking size by the next fall.

[2] Represents one population in the Upper Colorado and Gunnison rivers.

Figure 3. 3 - Gunnison River Colorado Pikeminnow Distribution



3.1.5 Colorado Pikeminnow Habitat Use

Adult and Sub-Adults—Adult Colorado pikeminnow use a variety of habitats, but exhibit preferences for specific habitats during different periods of the year (Tyus and McAda, 1984; Osmundson et al., 1995). In the Colorado River near Grand Junction, pools and slow runs (<2.0 ft/sec) accounted for 77 to 95% of all habitats used by Colorado pikeminnow from November through February (Osmundson et al., 1995). More than 74% of all observations during this period had mid-column velocities <1.0 ft/sec. Eddies and backwaters were the only other habitats used by Colorado pikeminnow in the winter.

During April—June, river discharge and velocities increased and Colorado pikeminnow sought off-channel habitats with reduced water velocities and warmer water temperatures than the main river channel (Osmundson et al., 1995). In the Colorado River, Osmundson et al. (1995) found that backwaters and flooded gravel pits (combined) comprised 45% of radio tagged Colorado pikeminnow locations in April, 49% in May, and 47% in June. These quiet, warm water areas allow Colorado pikeminnow to minimize energy expenditures and begin somatic growth or gonad maturation sooner than would be possible if they were unable to escape swift, cold water of the main river channel (Valdez and Wick, 1983). Other habitats such as eddies and shorelines were also used to a lesser degree (Osmundson et al., 1995). Use of main-channel habitats increased at summer base flows with slow and fast runs accounting for 49 to 52% of habitats

selected during July—September (Osmundson et al., 1995). Eddies were used 9 to 16%, pools 13 to 16%, and riffles 3 to 10% of the time.

Osmundson and Kaeding (1991) determined that radio-tagged Colorado pikeminnow preferred river segments with complex channels (i.e. areas with islands, backwaters, and side channels) over simple channels with no side channels or islands. These braided areas provide a greater diversity of habitats for Colorado pikeminnow to exploit for resting or foraging and were preferred during all seasons.

Young-of-Year and Yearlings—Small Colorado pikeminnow are highly dependent upon backwaters or shallow embayments for nursery habitat (Tyus and Haines 1991; Trammel and Chart, 1999a,b). Archer et al. (1985) concentrated sampling efforts on backwaters in the Colorado River. More than 98% of the small Colorado pikeminnow collected were found in backwaters. Although backwaters are preferred habitat, young Colorado pikeminnow move between backwaters and the main channel in response to environmental variables, including changes in water temperatures (McAda and Tyus, 1984; Tyus 1991). Trammel and Chart (1999b) divided backwaters into six categories, but two backwater types were found in greatest abundance in the lower Colorado River—scour channels and migrating sand waves. Scour channels are formed by the erosion of small channels behind large sandbars during spring runoff and are revealed by receding water levels and typically deep and permanent. Migrating sand wave backwaters are formed by the movement of migrating sand waves adjacent to sandbars and are relatively shallow and ephemeral. Density of Colorado pikeminnow was highest in scour channels and Colorado pikeminnow exhibited a significant preference for scour channels (Trammel and Chart, 1991a,b). Winter habitat use by YOY Colorado pikeminnow has not been studied.

3.1.6 Colorado Pikeminnow Reproduction

Colorado pikeminnow spawn as spring flows decrease and water temperatures increase (Haynes et al., 1984; Nesler et al., 1988; Tyus 1990, 1991; McAda and Kaeding, 1991; Bestgen et al. 1998; Anderson, 1999; Trammel and Chart, 1999a,b). In the Colorado River, Colorado pikeminnow do not migrate to the extent that they do in the Green River, but migration occurs with movement beginning in response to declining runoff and increasing water temperature (McAda and Kaeding, 1991). Although some spawning may occur at cooler temperatures, most spawning in the Colorado, Green and Yampa rivers occurs at water temperatures between 18—22 ^{o}C (McAda and Kaeding, 1991; Tyus, 1991, Bestgen et al., 1998; Anderson, 1999, Trammel and Chart, 1999a,b).

Specific spawning sites in the Colorado River are not as well documented as those in the Green River sub-basin, although successful spawning occurs every year (Anderson, 1999; McAda and Ryel, 1999; Trammel and Chart, 1999a). McAda and Kaeding (1991) concluded that spawning in the Gunnison River is generally done by smaller groups and in more locations than the Green River sub-basin. McAda and Kaeding (1991) reported a presumed spawning aggregation of radio-tagged Colorado pikeminnow upstream from the mouth of the Gunnison River, but the aggregation was not repeated in subsequent

years. Recent efforts have identified five more possible spawning sites based on aggregation of Colorado pikeminnow during the presumed spawning season (***Figure 3.4***) (McAda, 2000).

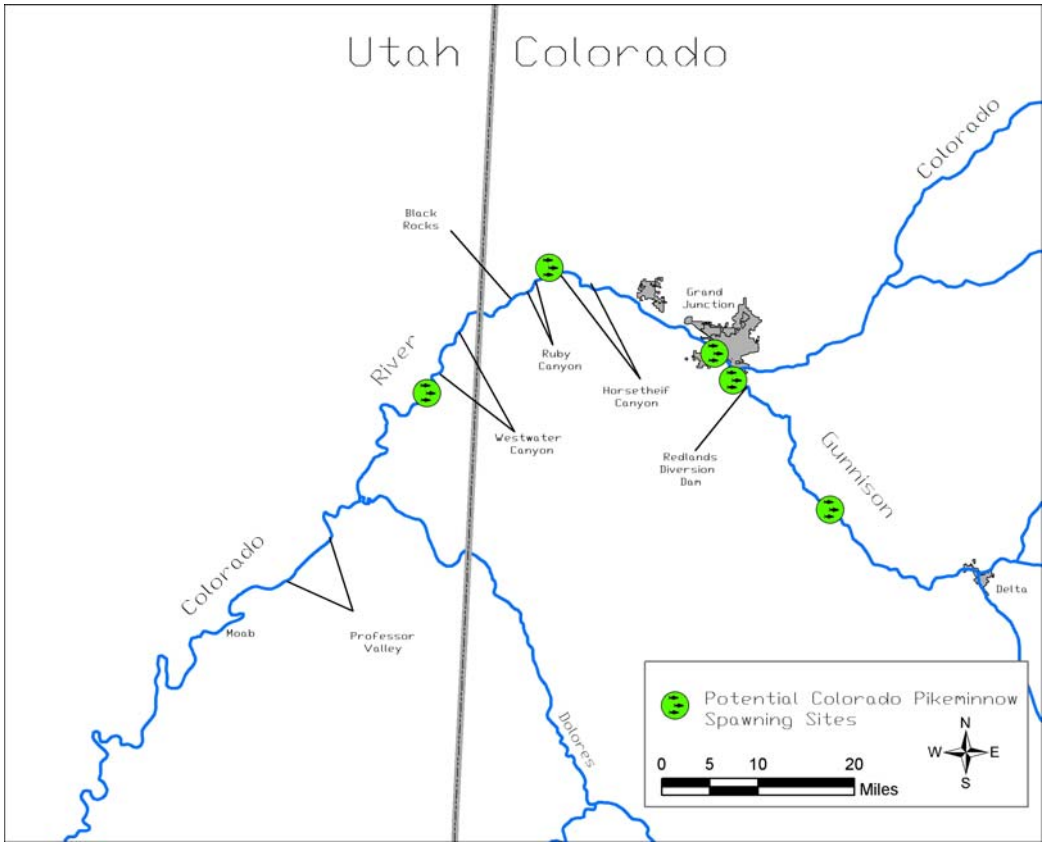
Aggregations of pikeminnow at one of the sites downstream of the mouth of the Gunnison River were documented in 3 different years. A total of 18 fish were collected from a pool-rifle complex in 1994 during the spawning period (D. Osmundson, unpublished data). Ten of these fish were ripe males and five others appeared to be females, but no eggs were emitted (sex of three other could not be determined). The area was sampled again during the presumed spawning period in 1998 and 12 fish were collected, including 7 ripe males and 4 apparent females (D. Osmundson, unpublished data). About 25 additional Colorado pikeminnow were observed during electrofishing, but could not be captured by the sampling crew. In 1999, nine Colorado pikeminnow were captured at this site, including five ripe males and one ripe female (gentle pressure extruded eggs when the fish was captured and it was spawned in the hatchery later that day without hormone injections [McAda, 2000]).

Colorado pikeminnow are broadcast spawners that deposit their eggs on cobble substrates in riffles and runs (Tyus, 1991). Lamarra et al. (1985) described a known spawning site on the Yampa River as being composed of cobble substrate with large interstitial spaces. Hamman (1981) documented that Colorado pikeminnow embryos adhered to clean cobble substrate in hatchery raceways, so it is likely that a similar process occurs in rivers. After deposition and fertilization, the embryos incubate in the cobble for 4-7 days depending on water temperature (Hamman, 1981; Marsh, 1985; Bestgen and Williams, 1994). The larvae remain in the gravel for another 6-7 days after hatching before emerging from the substrate and becoming entrained in the river current (Bestgen et al., 1998). Colorado pikeminnow larvae may drift downstream for many miles before settling in low-gradient reaches with abundant backwaters and other quiet-water habitats (Tyus and Haines, 1991, Bestgen et al., 1998; Anderson, 1999; Trammell and Chart, 1999a).

3.2.1 Razorback Sucker

The razorback sucker is a large catostomid, endemic to the Colorado River Basin of the western United States (Minckley, 1973). The species belongs to a monotypic genus that is distinguished by a prominent dorsal keel that rises immediately posterior to the occiput (Minckley, 1973). Large individuals may reach a meter in length and weights of 5 or 6 kg (Minckley, 1973), but most individuals captured in the upper basin are less than 650 mm long and weigh less than 3 kg (McAda and Wydoski, 1980; Tyus, 1987; Tyus and Karp, 1990). It is long-lived and individuals may exceed 40 years of age (McCarthy and Minckley, 1987). The historic distribution of razorback sucker has been reduced by 75% (Minckley et al., 1991) and its extremely low abundance within remaining habitat caused it to be listed as endangered under the Endangered Species Act of 1973, as amended (USFWS 1991).

Figure 3. 4 - Potential Colorado Pikeminnow Spawning Sites on the Upper Colorado River



3.2.2 Razorback Sucker Distribution-Colorado River

In the Colorado River upstream of Lake Powell, most razorback suckers have been captured in the Grand Valley (Loma to Palisade) near the confluence of the Gunnison and Colorado rivers (***Figure 3.5***). However, their abundance has decreased to the point that they were only infrequently captured there. During intensive efforts that were specifically targeted at known concentration areas of razorback sucker, Kidd (1977) and McAda and Wydoski (1980) captured a combined total of 54 razorback suckers in 1974 and 204 in 1975 from two gravel-pit ponds connected to the Colorado River near Grand Junction. These numbers reflect the combined total of independent collections, but probably include some recaptures of the same fish since sampling was done in the same area and Kidd (1977) did not mark fish before release. All of these fish exhibited signs of old age (i.e. large size, missing eyes, heavy scarring) (McAda, 2000). The high numbers of razorback suckers captured in 1975 were not repeated in subsequent years (summarized by Osmundson and Kaeding, 1991). The highest number captured in later years was 30 fish that were collected in 1982 from the same gravel-pit pond sampled by Kidd (1977) and McAda and Wydoski (1980). Only 11 razorback suckers have been collected from the Grand Valley since 1990 despite intensive sampling in some years (Osmundson and Kaeding, 1991; McAda, 2000). All of these fish have been removed

from the river to support propagation activities for the Recovery Program (McAda, 2000).

Although most razorbacks have been collected from the Grand Valley, they have also been collected both up and downstream of the area. Kidd (1997) reported 22 razorbacks from the Colorado River near DeBeque (RM 209.7) in 1974-1975. No razorbacks have been collected from that reach since then (Valdez et al., 1982; Burdick, 1992). Burdick (1992) captured one razorback sucker from a gravel-pit pond along the river at RM 243.8 and discovered a small population in another gravel-pit pond at RM 204.5. About 75 razorback suckers were captured from the second pond, but DNA analysis revealed that they were siblings. They were probably offspring from two or three razorback suckers trapped in the pond during the high water year of 1983 or 1984. Three razorbacks were incorporated into the propagation program, but their close relationship precluded extensive use in the brood stock program. Forty-five razorback suckers stocked in the Gunnison River as part of an experimental stocking; six of those fish were confirmed alive at the end of the 2-year study (Burdick and Bonar 1997).

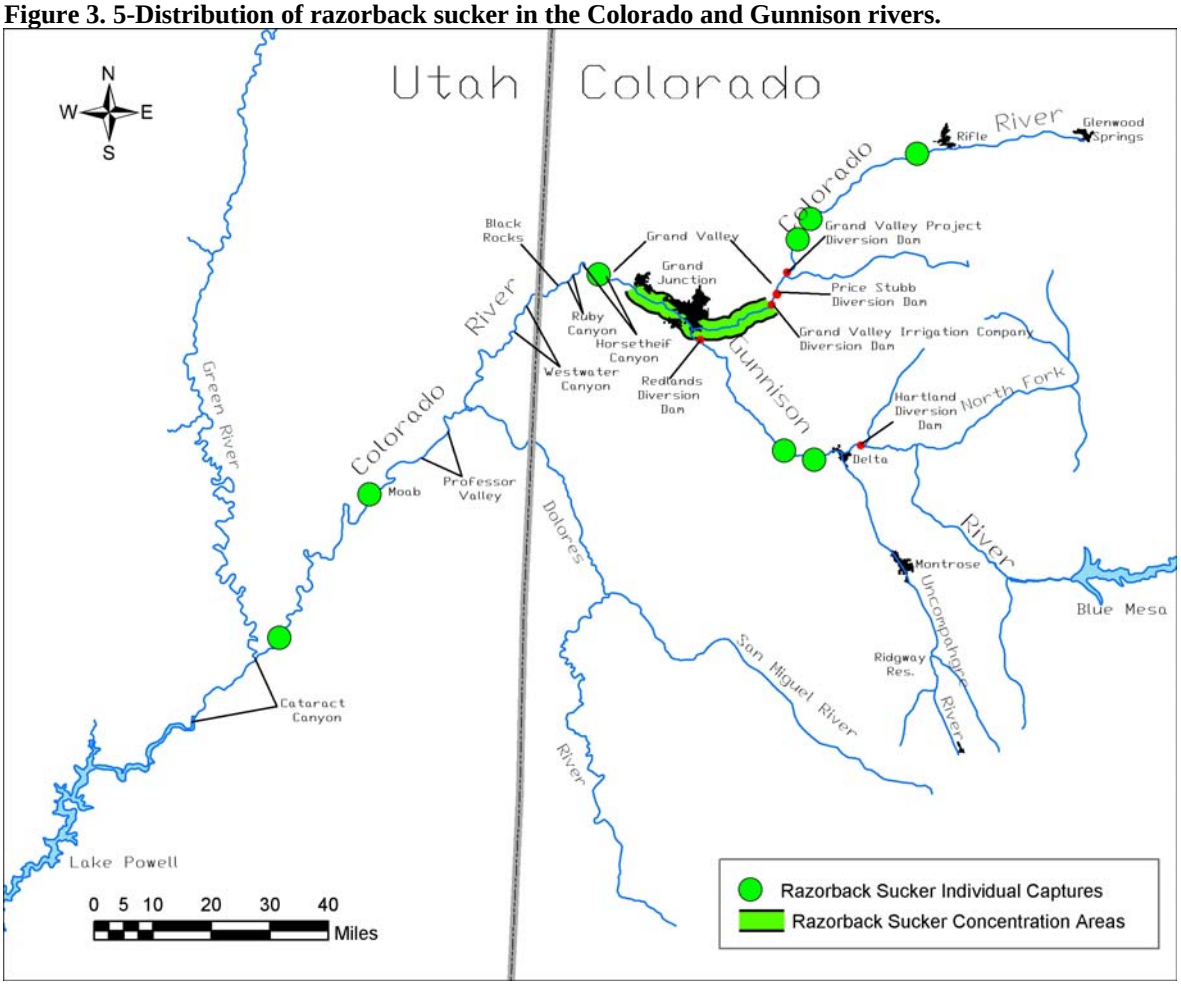
Few razorback suckers have been captured downstream from the Grand Valley, between Loma and Lake Powell. Taba et al. (1965) captured eight juveniles in backwaters of the Colorado River downstream of Moab, Utah. One adult was captured near Salt Wash (RM 144.2 in 1988 (McAda et al. 1994). Further downstream, Valdez et al. (1982) captured two razorback suckers within 2 miles of the confluence with the Green River, and Valdez (1990) captured one more in the same area.

3.2.2 **Razorback Sucker Distribution-Gunnison River**

Anecdotal accounts indicate that razorback sucker were common in the Gunnison River near Delta in the early and middle portions of the 20th Century (Kidd, 1997; Quartrone, 1993).
Razorback suckers in the Gunnison River recorded from knowledgeable collectors are rare. Two specimens from the 1940s are in the University of Michigan Museum of Zoology (reported by Wiltzius, 1978). Wiltzius (1978) captured one razorback sucker near Delta in 1975 and Holden et al. (1981) captured three razorbacks in the same general area in 1981 (***Figure 3.5)***.

Extensive sampling by Valdez et al. (1982a) and Burdick (1995) failed to capture any razorback suckers from the Gunnison River. Sampling efforts in 2002 collected the first larval razorback suckers at two locations on the Gunnison River at a site near Roubideau Creek and a site near Whitewater (***Figure 3.6***) (C. McAda, unpublished data). These were the first collection of larval razorback suckers from the Colorado or Gunnison rivers. In addition, Taba et al. (1965) collected the only record of juvenile razorback sucker from the Colorado or Gunnison rivers.

Figure 3. 5-Distribution of razorback sucker in the Colorado and Gunnison rivers.



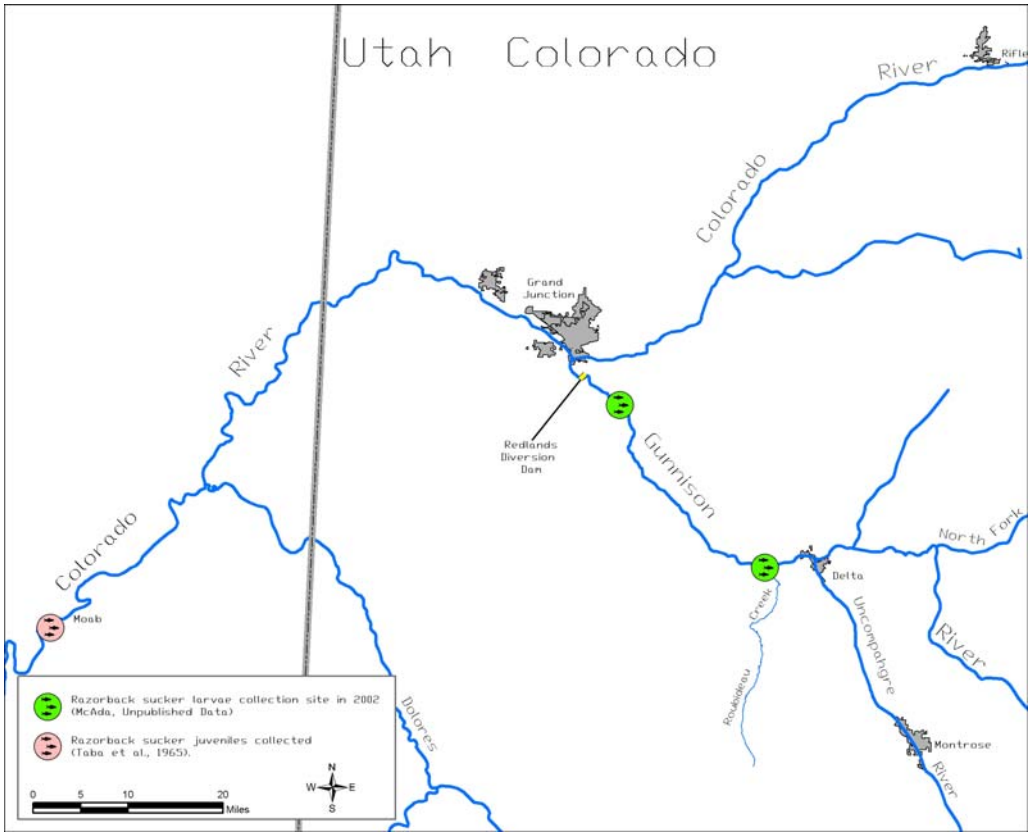
In 2001 and 2002, six razorback suckers ascended the Redlands fish passageway (B. Burdick, unpublished data). The fish passageway was constructed in 1996; however, razorback suckers did not begin using the passageway until 2001.

3.2.3 Razorback Sucker Population Augmentation

Although razorback sucker populations have dramatically declined in abundance in recent years, the Recovery Program considers the Colorado and Gunnison rivers to be suitable habitat for razorback suckers and has begun a reintroduction program to restore populations in the two rivers (Burdick, 1992). The Recovery Program developed a broodstock to supplement razorback sucker populations in the Colorado and Gunnison Rivers. The Recovery Program in 1996 initiated a five-year stocking program with the stocking of 7,700 young razorback suckers into the Gunnison River near Delta, Colorado (Burdick, 1999). The stocking program has continued with the fish stocking of 18,423 juvenile, sub-adult, and adult razorback sucker in the Gunnison River and 31,531 juvenile, sub-adult, and adult razorback sucker in the Upper Colorado River between April 1994 and October 2001 (Burdick, 2001b). ***Table 3.3*** presents the sizes, number and locations of razorback stocking from 1996—2001 (Burdick, 2001b). The goal of the

stocking plan is to establish a self-sustaining population of 600 individuals in the 57 miles of usable habitat between Harland and Redlands diversion dams.

Figure 3.6-Larval and Junvenile Razorback Sucker Collections from the Colorado and Gunnison Rivers.



The Recovery Program also approved a stocking plan by the Colorado Division of Wildlife (***CDOW***) (Nesler, 1998) for the Colorado and Gunnison rivers that includes and expands on Burdick's (1992) plan. The goal of CDOW's plan is to establish populations of 475 razorbacks per mile in suitable habitat within Colorado. An equivalent plan has been developed for the Colorado River within Utah (Hudson et al., 1999) which recommends a population of about 3,190 or an average of about 30 fish per mile in the section of river razorback suckers are expected to inhabit. An integrated stocking plan for Colorado and Utah was developed in 2002 to address inconsistencies between the states stocking plans (Nesler et al., 2003). ***Table 3.4*** on the following page presents priority by State and river reaches as well as fish size, seasons to stock, number of fish per year, and number of years to stock razorback sucker.

Table 3.3. Recovery Program Razorback Sucker Stocked in the Gunnison and Colorado Rivers 1996—2001.

Year	*Stocking Location*	*Mean Size of Fish*	*Actual Number of Fish Stocked*
Prior to 1996	Gunnison River Colorado River	18”-21” 18”-21”	25 20
1996	Gunnison River near Delta	8”	316
1997	Gunnison River near Delta	8” 12”	3,732 282
1998	Gunnison River near Delta	12”	608
1999	Gunnison River near Delta	8” 12”	2,742 30
1999	Colorado River near Parachute	8”	3,498
2000	Gunnison River near Delta	8”	6,587
2000	Colorado River near Parachute and Price Stubb Diversion Dam to the confluence with the Gunnison River	8”	25,859
2001	Gunnison River near Delta	8”	4,101
2001	Colorado River near Parachute and Price Stubb Diversion Dam to the confluence with the Gunnison River	8”	2,154

Burdick (2001b) reported that 235 razorback suckers stocked in the Gunnison and Colorado river were either captured (226) from sampling or were found dead (9) during other research sampling efforts. This represented about 0.5% of all razorback suckers stocked prior to 2002 (50,254). Additional 93-razorback suckers were found dead on the trash grates at the Redlands fish passageway in 1999 and 2001 (Burdick, 2001b).

7.2.5 Razorback Sucker Habitat Use

Adults and Sub-adult—Because few razorback suckers remain in the Colorado River, little habitat use data are available. Early collections by Kidd (1977) and McAda and Wydoski (1980) concentrated in gravel-pit ponds connected to the river. The most heavily used pond was in Walker State Wildlife Area (near Grand Junction, Colorado) where razorback sucker were collected year-round even though there was access to the Colorado River at all times. This site was highly altered by high spring run-off in 1983 and 1984, and razorback sucker use was reduced.

Osmundson and Kaeding (1989) monitored radio telemetered razorback sucker in the Colorado River and found that the river main channel, pools and slow runs were the most commonly used habitats on a year-round basis, with highest use occurring from early autumn through late winter. Backwaters were also used year round, but were most heavily used during spring runoff when use of flooded gravel-pit ponds was also high. The greatest variety of habitats were used in summer when eddies, riffles, fast runs, and shorelines were occupied; however, slow runs were still the most heavily used habitats during that period. Burdick and Bonar (1997) also monitored radio-tagged razorback sucker habitat use by fish stocked into the Colorado and Gunnison rivers after rearing in

riverside gravel-pit ponds. These fish primarily used the main river channel (47%), backwaters (23%), and eddy/pools (16%). Fish movements were monitored from March—October, however the data was not partitioned by season.

Table 3.4 Integrated Stocking Plan for Razorback Sucker, First Priority Species.

Priority by State and River Reaches	Fish age and Size (mm TL)	Season Stocked[1]	Numbers of fish stocked per year	Number of years stocked
Colorado				
1C: Colorado River: Rifle to DeBeque Canyon	Age 2+ 300	1° Fall 2° Spring-Summer	3,310[2]	6
2C: Gunnison River: Hartland to Redlands Dams	Age 2+ 300	1° Fall 2° Spring-Summer	3,310[2]	6
3C: Colorado River: Palisade to Stateline	Age 2+ 300	1° Fall 2° Spring-Summer	3,310[2]	6
Utah				
1U: Middle Green River: (RM 302-249)	Age 2+ 300	1° Fall 2° Spring-Summer	9,930	6
2U: Lower Green River: (RM 120-249)	Age 2+ 300	1° Fall 2° Spring-Summer	9,930[3]	6

[1] 1° refers to the primary season; 2° refers to secondary season to cull fish and allow smaller individuals to achieve stocking size by the next fall.
[2] Represents one population in the Upper Colorado and Gunnison rivers.
[3] Represents an additional population in case of catastrophic event.

Larvae and Juveniles—Prior to 2002, no razorback sucker larvae had been collected from the Colorado or Gunnison rivers. In 2002, razorback sucker larvae were collect from the Gunnison River. Larval razorback sucker were collect downstream of the mouth of Roubideau Creek and downstream of Whitewater, Colorado providing evidence that stocked razorback sucker have successfully spawned in the Gunnison River. Habitats were consistent with those reported by Muth et al. (1998) from the middle Green River where 95% of razorback sucker larvae were collected from the flooded mouths of tributaries or other floodplain-type habitats. It is presumed that swim up larvae emerge from the gravel and are carried by the rising river into floodplain habitats where they remain during the runoff period (McAda, 2000).
The only juvenile razorback suckers reported from the Colorado River were captured by Taba et al. (1965), who found eight juveniles (90-115 mm TL) in a "quiet backwater area" of the river between Moab and Dead Horse Point. This observation was consistent with juvenile razorback sucker collected from backwater habitats on the Green River (Modde, 1996).

3.2.6 Razorback Sucker Reproduction

Because of the limited number of razorback suckers found in the upper Colorado River, most information comes from other parts of the basin. Ripe female razorback sucker have been found in Lake Mohave from December through early June (Minckley et al. 1991), but most spawning occurs in January—April (Minckley, 1983; Langhorst and Marsh, 1986; Mueller, 1989). Based upon capture of ripe fish and subsequent capture of larvae, riverine razorback suckers in the upper basin spawn in spring during increasing

and peak snow-melt flows (McAda and Wydoski, 1980; Tyus, 1987; Tyus and Karp, 1990; Muth et al., 1998; Modde and Irving, 1998).

Osmundson and Kaeding (1991) summarized data collected from the Colorado River near Grand Junction and reported that 42 of 157 razorback suckers captured were in spawning condition when handled. Of the 42 ripe fish, 40 (95%) were captured between May 24 and June 17.

Riverine razorback suckers spawn in riffles or shallow runs over gravel or cobble bars (McAda and Wydoski, 1980; Tyus, 1987; Tyus and Karp, 1990). Water depths and water velocities vary, but are generally relatively shallow (<1 m) and swift (>1 ft/s). In the upper Colorado River basin, most ripe fish have been captured from main-channel habitats, but a few were found in floodplain habitats (Tyus and Karp, 1990.). In most cases, floodplain habitats were near known spawning bars and the fish were probably staging in preparation for spawning (Tyus and Karp, 1990). McAda and Wydoski (1980) captured two ripe females with a single trammel net along a shoreline with gravel and cobble substrate at Walter Walker State Wildlife Area. Also, 38 of the 42 razorbacks sucker in spawning condition collected in the Grand Valley during 1974—1991 were found in flooded gravel pits (Osmundson and Kaeding, 1991).

No specific spawning sites have been identified in the Colorado, but the presence of ripe adults and presence of mid-channel cobble bars similar to those used in the Yampa and middle Green rivers suggests that most spawning in the Colorado River occurs near Grand Junction, Colorado (McAda, 2000). The collection of razorback sucker larvae at two locations on the Gunnison River (C. McAda, unpublished data), confirms that suitable spawning habitat occurs in the Gunnison River, however, no spawning locations have been identified.

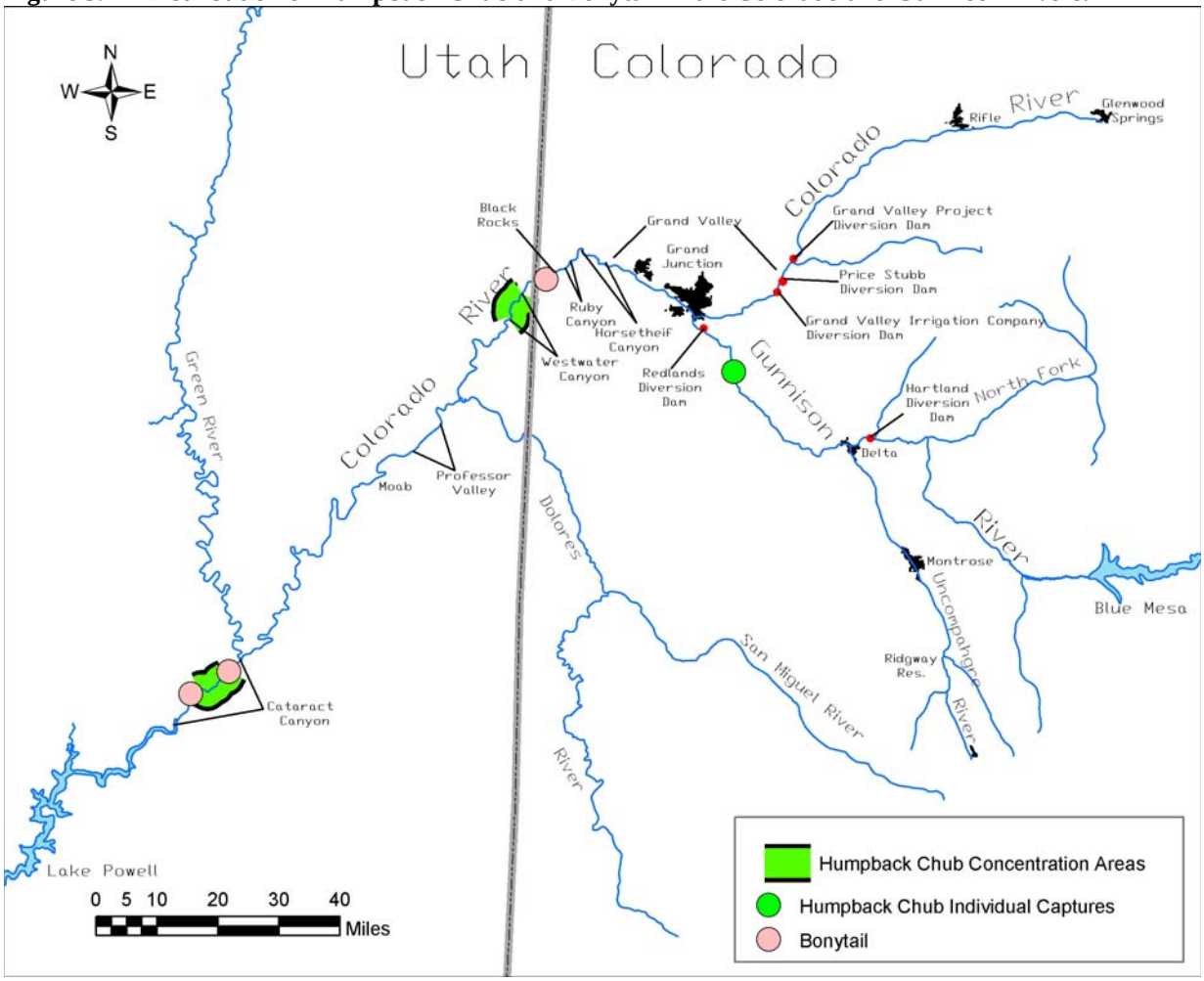
In rivers, razorback sucker larvae emerge from the gravel after swim up and are entrained in the current, which carries many of the young fish into floodplains, backwaters, flooded tributary mouths or other quiet-water habitats for rearing (Tyus and Karp, 1990). Timing of spawning (at or approaching the peak of runoff) ensures that these habitats are available to the larvae when they emerge from the substrate. Floodplains, backwaters, and other quiet-water areas are the most productive habitats of the river (Wydoski and Wick, 1998) and provide important nursery habitat for young razorback suckers during the first few months of their lives (Tyus, 1987; Tyus and Karp, 1980; Modde, 1996, 1997;Wydoski and Wick, 1998; Muth et al., 1998). These habitats are temporary and, with the exception of main channel backwaters, usually do not last through a fish growing season. Reduced spring flows caused by water development, and construction of dikes and levees reduced the availability of flooded bottomlands (McAda, 2000).

3.3.1 Humpback Chub and Bonytail

The humpback chub and bonytail are mid-sized cyprinid endemic to the Colorado River Basin (Minckley 1973). Both species are closely related to the roundtail chub (*Gila robusta*).

Humpback chub are currently found in discrete populations, within canyon-bound reaches or other areas of similar habitat (Valdez and Clemmer, 1982). Bonytail is the most imperiled of the four endangered fishes (Maddux et al., 1993) and its distribution in recent years is limited to scattered individuals. Most recently collected individuals were from reservoirs in the lower basin where remnant populations remain (***Figure 3.7***). One individual humpback chub was found during an intensive survey of the Gunnison River from Delta, Colorado to its mouth (Burdick, 1995). It was captured in a deep eddy-pool complex within a canyon-bound reach at RM 22.0 and is the only record of a humpback chub from the Gunnison River. The Black Canyon of the Gunnison contains habitat typical of other canyon-bound areas where humpback chubs are currently found. It is possible that they were eliminated from the Black Canyon after water temperature was reduced by Blue Mesa Reservoir, but the only *Gila* spp. reported during pre-impoundment surveys were roundtail chub (summarized by Wiltzius, 1978). The humpback chub and bonytail, except for the one humpback chub record as noted, do not occur within the Gunnison River and are not discussed in further detail in this BA. Because all four of the endangered fish evolved together in the Colorado River ecosystem, flow recommendations are based on habitat requirements of the more common species. Basic river restoration principals (sensu Stanford et al., 1996)

Figure 3. 7 - Distribution of Humpback Chub and Bonytail in the Colorado and Gunnison Rivers.



should also benefit humpback chub and bonytail (McAda, 2000). The Recovery Program has plans to stock bonytail in the Colorado River from Palisade to Loma including the its confluence with the Gunnison River as presented in the next section.

3.3.2 Bonytail Population Augmentation

Because of its extreme rarity, the Recovery Program began a reintroduction program in 1997 and has stocked about 35,000 bonytail into the Colorado River near Moab to reestablish populations (McAda, 2000). Nesler et al. (2003) in the Colorado/Utah integrated stocking plan, identified bonytail stocking in the Colorado River between Palisade and Loma as a secondary priority species behind razorback sucker. The integrated stocking plan for the Colorado River is as follows in ***Table 3.5*** (Nesler et al., 2003).

Table 3.5. Integrated Stocking Plan for Bonytail, Second Priority Species.

Priority by State and River Reaches	Fish age and Size (mm TL)	Season Stocked[1]	Numbers of fish stocked per year	Number of years stocked
Colorado:				
Colorado River: Palisade to Loma	Age 2+ 200	1^o Fall 2^o Spring-Summer	2,665[2]	6
Utah				
Colorado River: (RM 110.5)	Age 2+ 200	1^o Fall 2^o Spring-Summer	2.665[2]	6

[1] 1^o refers to the primary season; 2^o refers to secondary season to cull fish and allow smaller individuals to achieve stocking size by the next fall.
[2] Represents one population in the Upper Colorado River.

3.4 Effect on Colorado River Endangered Fishes

The proposed project may affect, but is not likely to adversely affect (beneficial), Colorado pikeminnow, razorback sucker, and bonytail. Restoring fish passage at Price-Stubb Diversion Dam in conjunction with restored passage at Grand Valley Project Diversion Dam would allow endangered fish access to upstream habitats including 50+ miles of designated critical habitat.

As described in the **Section 3.1,** Colorado pikeminnow occupy habitats downstream of the Price-Stubb Diversion Dam and 31,531 razorback suckers have been stocked in the Colorado River both upstream and downstream of the dam between 1994 and 2001. Colorado's stocking plan as previously described includes additional stockings of Colorado pikeminnow, razorback sucker and bonytail at sites upstream and downstream of the Price-Stubb Diversion Dam. It is anticipated that some of these stocked fish will use the fish passage. Fish stocked in the Gunnison River may also travel downstream, enter the Colorado River and move upstream to occupy suitable habitats.

The proposed project is predicted to have no effect on humpback chub. Humpback chub have not been documented in the Colorado River upstream of Westwater Canyon and the state does not plan to stock humpback chub.

Unrestricted fish passage at the Price-Stubb Diversion Dam could allow non-native fish species access to about 3 miles of designated critical habitat between Price-Stubb and Grand Valley Project Diversion Dams, which has been blocked since 1911. Non-natives, primarily channel catfish and largemouth bass, are of concern because they predate and compete with adult Colorado pikeminnow and razorback sucker. Non-native fish movements upstream would be controlled with selective passage at the Grand Valley Project Diversion Dam.

The proposed action is not likely to result in incidental take of Colorado pikeminnow, razorback sucker or bonytail. The Price-Stubb fish passage would be constructed during the late-fall/winter months at low river flows when endangered fish movements are minimal. Because there is no selective fish passage (fish trap) proposed at the Price-Stubb Diversion Dam and the fish passage would have the run of the river, it is unlikely that incidental take would occur at the fish passage.

3.5 Endangered Fishes Critical Habitat

The Colorado River and its 100-year flood plain within the project area are designated as critical habitat for the Colorado pikeminnow and razorback sucker (USFWS, 1994). The Price-Stubb Diversion Dam is within designated critical habitat and restored fish passage will allow endangered fish access to 50+ miles of critical habitat upstream. The proposed project would not adversely modify critical habitat designated for Colorado pikeminnow and razorback sucker. The proposed project is not within designed critical habitat for the humpback chub and bonytail.

3.6 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was classified as endangered in 43 of the 48 contiguous states on February 14, 1978. The species was reclassified as threatened by the U.S. Fish and Wildlife Service August 11, 1995 (USFWS, 1995b).

The bald eagle is distinctive by it white head, white tail plumage, dark brown to charcoal black wing and body plumage, and massive yellow bill. The bald eagle ranges from 30-43 inches (75-108 cm) in height and has a wingspan between 7-8 ft. Males often appear darker than females. Females are larger than males. Immature bald eagles (6 months to 2 years old) have a dusky head and tail plumage (Peterson, 1990; USBR, 1994).

Feeding habitats are eclectic, reflecting the opportunistic behavior of large raptors. Prey include fishes, ground dwelling scuirids, waterfowl, ungulate carrion and lagomorphs (USBR, 1994).

Age of first breeding is commonly assumed to be coincident with acquisition of definitive adult plumage. Breeding commonly occurs between ages 6 and 7 years old. Nest building and repair occur every year. Both male and females build stick nests used over many years. Nests can be as large as 3 m (10 ft.) high and 2.1 m (7 ft.) wide. Alternate nests may be present in the breeding area, but pairs usually use one nest until it either falls from the tree or the tree is lost (USBR, 1994).

Egg laying normally occurs in early February to mid-April depending on elevation. Average clutch size is two eggs. Incubation averages 31 to 35 days. Eggs hatch in mid-March to mid-May and the nesting period lasts 11 to 14 weeks. Both genders incubate, brood and feed young but the female performs most of the tasks. Fledglings are dependent on adults for 6 to 10 weeks and adults will feed juveniles other than their own (USBR, 1994).

3.6.1 Bald Eagle Habitat Preference

Bald eagles occupy riparian or lacustrine habitats almost exclusively during the breeding season, but occasionally exploit upland areas for food and roost sites, especially during the winter. Nests sites are mostly commonly distributed around the periphery of lakes and reservoirs larger than 80 acres in size. Nesting also occurs linearly along forested corridors of major rivers, usually within 1 mile of shore, however cases have been reported of birds nesting as far as 9.3 miles from water while exploiting locally abundant prey such as prairie dogs (USBR, 1994).

3.6.2 Bald Eagle Distribution and Abundance

The bald eagle is the only species of *Haliaeetus* occurring in and restricted to North America. Historic bald eagle distribution included every state (except Hawaii) and Canadian province and portions of northern and eastern Mexico (Brown, 1976). Populations became depressed in the 1960's from effects of use of the pesticide DDT.

The Colorado Division of Wildlife considers the Colorado River to be bald eagle winter range. Eagles have been observed in concentrations at the mouth of DeBeque Canyon and usage observed throughout the riparian corridor. The closest known nest site is Westwater (CDOW, 2000). A major roosting site was recorded on the south side of Plateau Creek (UTM 750850, 4341250) approximately 14 miles southeast of the project site (BLM, 1996).

3.6.2 Effects on Bald Eagle

No roosting or nesting habitat was found within the project area, however bald eagles may use the area during winter for foraging. One large cottonwood tree is found on river right near the Price-Stubb Diversion Dam. Larger stands of cottonwood trees occur further north of this site, approximately 2 mile upstream of the Price-Stubb Diversion Dam. No cottonwood trees would be removed during construction.

Construction activities during the winter season may result in the birds avoiding the area during the construction period, however the project is not expected to affect wintering bald eagle habitat. No known wintering concentrations of bald eagle are known within 1 mile of the project area; therefore, the project is not expected to impact bald eagles.

3.7 Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) was listed by the U.S. Fish and Wildlife Service as endangered on February 27, 1995 (USFWS, 1995a). Critical habitat was designated on July 22, 1997 (USFWS, 1997).

The southwestern willow flycatcher is a small riparian obligate neotropical migrant, approximately 15 cm (5.75 inches) long. It has a grayish green back and wings, whitish throat, light gray-olive breast, and pale yellowish belly. Two wingbars are visible; the eye ring is faint or absent. The upper mandible is dark, the lower is light. The Southwestern willow flycatcher is an insectivore and feeds in dense riparian vegetation (USFWS, 1995a).

The southwestern willow flycatcher normally nests in late May or early June and fledges young in early to mid-July. Birds typically arrive onsite in May, build nests in late May to June, lay eggs and incubate in June and July, and fledge in late June to early August (Sogge et al., 1997). The presence and status is often confused by the presence of migrating individuals of the northern subspecies passing through southwestern willow flycatcher breeding habitat. The nests are a compact cup of fiber, bark and grass, typically rimmed with feathers and lined with layers of grass or other fine, silky material. Material dangling from the bottom of the nest is often seen (USFWS, 1995a).

3.7.1 Southwestern Willow Flycatcher Habitat Preference

The Southwestern willow flycatcher occurs in riparian habitats along water bodies, wetlands and streams, where dense vegetation growths of willows (*Salix sp.*), *Baccharis*, arrowweed (*Plucea sp.*), buttonbush (*Cephalanthus sp.*), tamarisk (*Tamarix sp.*), Russian olive (*Eleagnus sp.*) or other plants are present. Scattered overstory of cottonwood (*Populus sp.*) are often also present Flycatchers use these riparian communities for both nesting and foraging (USFWS, 1995a). Nesting habitat is described in detail in Sogge et al. (1997).

3.7.2 Southwestern Willow Flycatcher Distribution

The breeding range of the Southwestern willow flycatcher includes southern California, Arizona, New Mexico, southwestern Colorado, extreme southern portions of Nevada and Utah and Western Texas. The Southwestern willow flycatcher is currently known to breed in only about 75 sites in riparian habitats in the southwest. The known breeding population is estimated between 300 and 500 pairs (Sogge et al., 1997).

Population decline is believed to be contributed primarily from habitat loss and modification, however Black-headed cowbird parasitism is also believed to make a significant contribution.

Two territorial males were documented in Plateau Creek approximately 14 miles southeast of the project area. These birds were documented in 1995 by WestWater Engineering. Both sites were described as a thick, narrow band of willows with one or more tall trees or shrubs adjoining with open country on each side of the band (BLM, 1996).

3.7.3 Effects on Southwestern Willow Flycatcher

No habitat described in Sogge et al. (1997) occurs within the proposed fish passage project area. The Colorado River is riprapped along both banks to protect Interstate 70 and the Union Pacific Railroad. The bank is nearly vertical with large boulders. The proposed action is predicted to have no effect on southwestern willow flycatcher.

4.0 Conclusions

Restored fish passage at the Price-Stubb Diversion Dam would benefit the Colorado pikeminnow, razorback sucker and bonytail. The fish passage in conjunction with restored passage at the Grand Valley Project Diversion Dam would allow endangered fish access to an additional 50+ miles of designated critical habitat. Non-selective passage at the Price-Stubb Diversion Dam would allow endangered, native and non-native species access to the Colorado River between the two diversion dams. Therefore, the proposed fish passage may affect, but is not likely to adversely affect Colorado pikeminnow, razorback sucker, and bonytail and would not result in adverse modification of designated critical habitat for Colorado pikeminnow and razorback sucker. The proposed action would have no effect on humpback chub. Incidental take of Colorado pikeminnow, razorback sucker, and bonytail as a result of construction, operation, and maintenance is not predicted.

The proposed project would have no effect on bald eagle or southwestern willow flycatcher.

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