



LOWER DOLORES RIVER

IMPLEMENTATION, MONITORING & EVALUATION PLAN OVERVIEW

Improving the Health of Native Fish and Protecting Water Supplies: An Action Plan





Photo: John Fielder



Photo: Sam Green, Cortez Journal



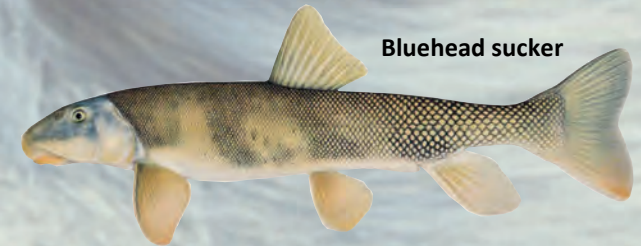
Photo: Sam Green, Cortez Journal

Why do native fish matter and why are we concerned about them?

The flannelmouth sucker, bluehead sucker, and roundtail chub were once plentiful in the lower Dolores River, but are now in danger of disappearing from their former habitat and are threatened across the West.

There are several reasons why we should be concerned about these fish:

- **Declining numbers of native fish:** Current monitoring shows declining populations of native fish since McPhee Dam went into full operation in the late 1990's.
- **Water rights protection:** If any of the three native fish species are listed in the future as "threatened" or "endangered" by the U.S. Fish and Wildlife Service, under the provisions of the Endangered Species Act, the lower Dolores River could be subject to legal requirements or restrictions. In other regions with listed species, implementation of a science-based approach with broad institutional support to address the needs of the at-risk species has proven effective at minimizing federal intervention. Should any of the three native fish in the Dolores be listed, the implementation of the voluntary conservation actions described in the *Lower Dolores Implementation, Monitoring, and Evaluation Plan* would reduce the risk that federal restrictions could adversely affect irrigation deliveries from the Dolores Project.
- **The intrinsic value of native species:** These rare and unique fish have inhabited the Colorado River Basin for millions of years and are found nowhere else in the world.
- **Preserving a natural environment:** Native fish are an integral part of the river ecosystem, and providing sufficient habitat for them will benefit other plant and animal species.





Why are native fish in danger?

Native fish seemed to be surviving before the dam was built, even though the river periodically dried up with only pools left below the Montezuma Valley Irrigation Company (MVIC) diversion. Why do they need more water now that there are year-round flows from McPhee Reservoir?

Native fish are adapted to the highly variable conditions of Southwestern rivers, including the snowmelt-driven timing and quantity of runoff, and low flows in late summer. The life cycle and reproductive strategies of native fish evolved to take advantage of the unique conditions presented by these rivers. Water development has altered these conditions.

Before McPhee Dam was built, the MVIC diversion did not divert a significant portion of the spring runoff. High flows downstream of the diversion cleaned silt and mud from pools and riffles, and maintained diverse instream habitats that native fish need to find food, escape predators, and reproduce. Additionally, the reproductive success of native fish is closely linked to natural cycles of springtime runoff and warming water temperatures. Despite changes to lower Dolores River flows in the pre-McPhee era, largely natural spring flows allowed native fish to reproduce, then survive in the sizable pools of water remaining in late summer and through the winter.

After the dam was built, small spills, as well as consecutive non-spill years (e.g., 2001-2004), began reducing the quality and amount of habitat required to meet the needs of native fish. Also, spring releases from the dam are now later in the season, which has reduced the chances for successful spawning and survival of native fish.

Another factor currently affecting native fish populations is smallmouth bass. These non-native warmwater fish were introduced into the river accidentally during a managed spill through the spillway in 1993 while the gates were under repair. Smallmouth bass are voracious predators. When flows are low, all the fish concentrate in available pools, and native species have less room to escape from smallmouth bass.

Changing Conditions: Pre and Post McPhee Reservoir

Subject	Pre-McPhee	Post-McPhee
Water Diverted from the Dolores Basin into the McElmo and San Juan Drainages	Approximately 134,000 AF Average (66,000 -155,000 AF)	Approximately 235,000 AF Average (113,000 - 240,000 AF)
Number of Acres Irrigated and Duration of Irrigation Season	37,500 acres With reduced deliveries most years by early August	73,600 acres 28,500 acres from Yellow Jacket to Dove Creek; 7,600 acres on the Ute Mountain Tribal Farm; 37,500 acres in the Montezuma Valley with a full supply for MVIC that is available through early October in most years
Fishing	Seasonal trout fishery in the reach that was inundated by McPhee Reservoir (shortened late season by MVIC Main Canal diversions).	New tail water trout fishery from below McPhee to Bradfield Bridge of variable quality, primarily due to impacts from low flow years. Added ~3800 surface acres of flat-water sport fishing on McPhee Reservoir.
Whitewater Boating	Whitewater Boating opportunities, defined as number of days at or above 500 cfs, averaged 54.6 days/year between April 25 -July 1. During the 46-year period of record for the 1975 Wild & Scenic River Study, "boating opportunities occurred in nearly every year" (only two years had none).	From 1991-2010, whitewater boating opportunities at or above 500 cfs have averaged 26.8 days/year between April 25-July 1. From 1991-2010, boating opportunities have not been available 30% of the years, or one out of 3.3 years.
Flushing Flows and Impact on Native Fish	High flows cleaned riffles, preserved deep pools, and opened side channels. Appropriately timed peak flows that occurred every year were conducive to successful native fish spawning.	Reduced spill frequency impacts spawning areas and pool habitat, and decreases instream habitat diversity. Modified timing of spills has led to fewer opportunities for native fish to spawn successfully.
Baseflows and Impact on Native Fish	Baseflow tapering to near zero confined native fish to deep pools; zero riffle habitat availability for 1-3 month period every year.	Year-round flow benefits to trout (cold water reach), natives (warm water reaches) and other introduced, non-native species.
Non-native Fish Predators and Competitors	No significant warmwater non-native fish populations present. Predatory (piscivorous) fish impacts negligible - trout and native species occupied different habitats, trout above MVIC diversion and natives below, during summer months. May have been some competition from sunfish, catfish, carp, bullheads, and crayfish.	New non-native fish populations in McPhee are now a threat to the downstream native fish if they escape (e.g. walleye). Escaped smallmouth bass, green sunfish, and other competitors (catfish, carp, bullheads) are occupying the same habitats as warmwater native species. Brown trout that occupy the transitional reach from Bradfield Bridge to the Dove Creek pumps potentially affect natives.
Barriers to Fish Movement	The MVIC diversion dam and low water in the river below the diversion dam during the height of the irrigation season (July-Sept.) impacted the ability of native fish to find suitable habitat until after diversions ceased in the fall.	McPhee Dam created 12 miles of coldwater river below the dam that is undesirable to warmwater native fish. The dam is a barrier to native fish access to Plateau, Beaver, and House creeks, and creates 10 miles of flat-water habitat unusable by native fish.

What actions are being taken to address these challenges?

These nine opportunities identified by the *A Way Forward* report are being evaluated and pursued in an attempt to improve native fish populations and monitor progress toward that goal.

- 1. Spill Management**
- 2. Baseflow Management**
- 3. Geomorphic Processes - Sediment Flushing Flows**
- 4. Geomorphic Processes - Habitat Maintenance Flows**
- 5. Thermal Regime Modification**
- 6. Reduce Coldwater Invasive Effects - Discontinue Stocking**
- 7. Reduce Coldwater Invasive Effects - Reduce Brown Trout Reproductive Success**
- 8. Reduce Warmwater Invasive Effects - Disadvantage Smallmouth Bass Reproductive Success**
- 9. Supplement Adult Native Fish**

In response to these challenges, the Legislative Subcommittee of the Lower Dolores Working Group hired independent fisheries scientists to evaluate the status of the fishery and identify opportunities to help native fish. The Implementation Team was then formed, which created the *Lower Dolores River Implementation, Monitoring, and Evaluation Plan*.

The scientists studied all the available science and data about native fish in the lower Dolores River. In August 2011, they released a report titled *A Way Forward* summarizing that information and suggesting opportunities to benefit the native fish. Their conclusions formed the basis for the recommendations in the Implementation Plan.

The Implementation Plan describes opportunities for improving the viability of native fish in the Dolores River below McPhee Dam. The plan takes the information in the *A Way Forward* report and creates a collaborative framework to prioritize, act on, monitor, and evolve management actions to benefit native fish.



Smallmouth bass captured in the Dolores River

Who hired the researchers and why?

In December 2008, a diverse group of stakeholders known as the Lower Dolores River Working Group began meeting regularly to provide input to the Dolores Public Lands Office (Forest Service and Bureau of Land Management) on how the lower Dolores River corridor should be managed. In addition, the group considered the finding of the lower Dolores River as “preliminarily suitable” as a Wild and Scenic River in the San Juan Public Lands Draft Land Management Plan. If determined to be suitable, the lower Dolores could be legislatively designated as a Wild and Scenic River, a designation that may carry with it a federal reserved water right.

In March 2010, the Lower Dolores Working Group decided to seek legislation that would protect the values that are the basis for Wild and Scenic River designation in a manner that does not involve a federal reserved water right and protects existing water rights, property rights, and Dolores Project allocations. A Legislative Subcommittee was formed and is working on legislative principles for a National Conservation Area along the river corridor from McPhee Dam to Bedrock as a more flexible, locally crafted alternative to a Wild and Scenic River designation.

A major issue for the Legislative Subcommittee was what to do about fish and flows in the lower Dolores. The subcommittee could not decide how the legislation should handle these issues, so it launched an effort to gather all available scientific information about the native fish in the river to help inform the discussion. They hired three recognized and respected independent native fisheries experts to assemble and interpret existing data. The resulting inquiry was called *A Way Forward*. Their findings were published in a report that listed nine opportunities for helping native fish.

These nine opportunities were evaluated by the Implementation Team and have been integrated into an Implementation Plan that will attempt to improve native fish populations and monitor progress toward that goal.

Who makes up the Implementation Team?

Local managers and representatives from state, federal, and conservation organizations agreed that it would be best to begin implementing these opportunities prior to the NCA legislation. They formed an Implementation Team, which consists of representatives of these key entities:

- **Dolores Water Conservancy District**
- **Montezuma Valley Irrigation Company**
- **Bureau of Reclamation**
- **Bureau of Land Management**
- **US Forest Service**
- **Colorado Parks and Wildlife**
- **American Whitewater**
- **The Nature Conservancy**
- **San Juan Citizens Alliance**
- **Trout Unlimited**

The Implementation Team has been meeting regularly since July 2011 and has prepared the Implementation Plan.

Timeline

- 1885:** Appropriation of first significant Trans-Basin Diversion out of the Dolores River
- 1975:** Wild and Scenic River Suitability designation and Instream Flow Appropriation
- 1984:** McPhee Dam completed
- 1996:** Baseflow allocation changed from Indexed Flows to Managed Fish Pool
- 2000:** Dolores Project fully operational
- 2004:** Dolores River Dialogue formed
- 2006:** Range Wide Conservation Agreement – 3 Native Fish Species
- 2007:** Draft San Juan Forest/BLM Plan finds lower Dolores Preliminarily Suitable with native Roundtail Chub as an Outstandingly Remarkable Value
- 2008 :** Lower Dolores Working Group convened by the Dolores River Dialogue at the request of the Dolores Public Lands Office (Forest Service and BLM)
- 2010 (March):** LDWG appoints Legislative Subcommittee to explore NCA legislation
- 2010 (Fall):** Legislative Subcommittee launches “A Way Forward” native fish science evaluation
- 2011 (June):** Legislative Subcommittee and A Way Forward Oversight Panel rank 9 opportunities identified by scientists to improve native fish status
- 2011 (July):** A Way Forward Implementation Team formed
- 2011 (August):** A Way Forward scientists issue final report
- 2012 (July):** The first *Implementation, Monitoring & Evaluation Plan* completed





SAN MIGUEL RIVER

REACH 6
BEDROCK

REACH 5

LITTLE GYPSUM BRIDGE

LOWER DOLORES RIVER

REACH 4

DOLORES RIVER

JOE DAVIS HILL

REACH 3

DISAPPOINTMENT CREEK

GRAZING

DOVE CREEK PLUMES

FLOWERS SINIS

REACH 2

BRADFIELD BRIDGE

REACH 1

MCPHEE DAM

GROUNDING RES

WEST FORK
LITTLE DOLORES RIVER

MONTAZUMA CREEK

CROSS CANYON

MC ELMO CREEK

LITTLE MOUNTAINITES FARM & RANCH

SAN JUAN RIVER

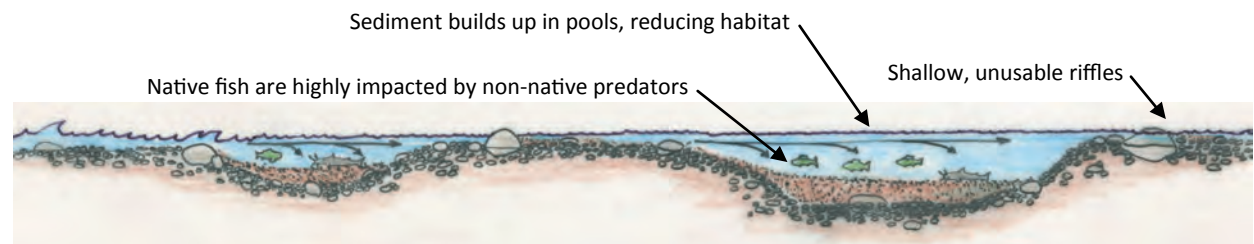
MANCOS RIVER



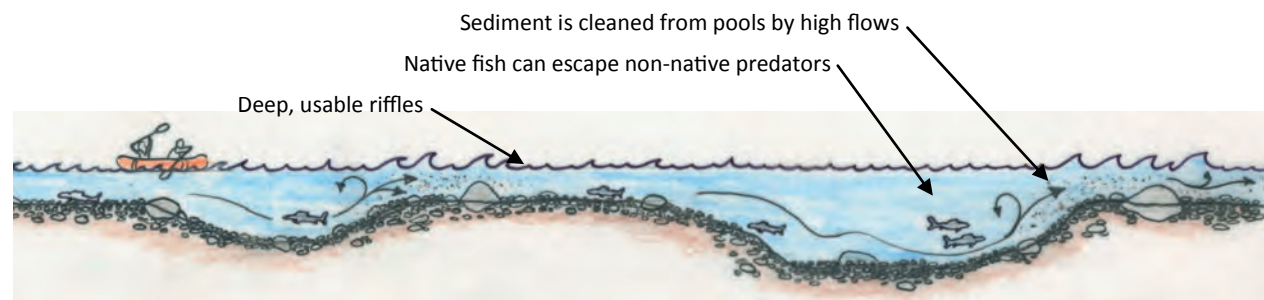
What measures are recommended to improve native fish survival?

The researchers' report listed nine opportunities that are likely to help the native fish. They can be condensed to four primary management opportunities:

- Altering the timing and flow rates of the annual managed boating release (spill) to improve opportunities for native fish spawning and recruitment
- Enhancing habitat and spawning sites by providing periodic flushing and habitat maintenance flows
- Improving baseflows below McPhee Reservoir, which would provide more water in the river during periods critical for growth and survival
- Reducing non-native predatory fish, particularly smallmouth bass



Prolonged Low Flows



Adequate, Properly Timed Flows

Where are we going from here?

Water managers, state and federal entities, and conservation organizations will continue to work together to implement management opportunities identified by scientists to protect native fish. Current efforts include:

- Changing the managed release of surplus spring water unable to be captured in the reservoir to improve habitat and spawning conditions for native fish while providing diverse flows for recreational boating
- Identifying and working on activities that improve the reliability of water supplies, increase the efficiency of water use and maximize water availability for all water interests in the Dolores River
- Implementing water management strategies that disadvantage non-native predators to native fish, and pursuing other opportunities to reduce predation



Dolores roundtail chub captured in Slickrock Canyon





Key Questions

When you talk about enhancing baseflows, does that mean taking water away from current water-users?

No. Honoring existing water rights is a key principle behind the creation of the Dolores River Dialogue, Lower Dolores Working Group, Legislative Subcommittee, and Implementation Team. If baseflows are going to be increased, it will have to be done through a method that increases water availability, such as building additional storage, making efficiency improvements, and/or leasing or purchasing water from a willing lessor or seller.

How much water is needed?

4,000 to 5,000 acre-feet has been identified in previous Dolores Project documents and continues to be an important goal.

Is this enough water to make a difference?

Yes. For example, an additional 4,500 acre-feet of water would provide about a 33% increase to average summer flows over the course of three months. Increasing baseflows by one-third during critical periods would improve habitat and increase the likelihood of native fish survival and growth. Better habitat increases access to food and diminishes the pressures from non-native, invasive predators like the smallmouth bass.

Are native fish in competition with trout? If native fish increase in numbers, does that mean there will be fewer trout?

No. Flow conditions that support trout are very similar to those that support native fish. The difference is that trout thrive in cold water, while the three

native species inhabit warm water. Their habitats overlap in the river reach between Bradfield Bridge and the Dove Creek pumping station, a transitional reach where cold water released from McPhee warms up. While brown trout will eat native fish, the small area of overlap limits their interactions.

Are native fish in competition with whitewater boating?

No. Flows that provide acceptable to optimal whitewater boating can also fulfill a range of critical ecosystem needs. These include cleaning spawning beds, creating deep pools for fish, and introducing nutrients into the river system from the surrounding floodplain. Biologists, whitewater enthusiasts, and water managers have recently found ways to meet the flow needs of fish and boaters in complementary ways. This means that managed releases from McPhee can improve the health of fish populations while also creating high-quality rafting, kayaking, and canoeing opportunities.

What is the current status of the National Conservation Area proposal?

It is still being developed. Legislation has not been written as of summer 2012, but the Legislative Subcommittee continues to work on the NCA proposal. The subcommittee is identifying an appropriate boundary and set of management directives that provide protection for the Dolores River and its unique cultural, geologic, scenic, recreational and ecological values, while protecting current land and water rights. This is a long-standing, community-wide process designed to ensure that broadly acceptable solutions for our communities are reached. In accordance with this principle, once drafted, legislation will be thoroughly discussed and vetted by the local community before moving forward.



How can I learn more?

Please see the *A Way Forward* report and the full *Lower Dolores River Implementation, Monitoring and Evaluation Plan* for complete details and further explanation of all of the above questions. These are available on the DRD website at <http://ocs.fortlewis.edu/drd/>

If you would like to schedule a presentation about the Implementation Plan, please contact the Dolores Water Conservancy District office at 970-565-7562.





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