

**COLORADO RIVER RECOVERY PROGRAM
FY-2008–2009 PROPOSED SCOPE OF WORK**
Yampa diversion entrainment

Project No:146

Lead Agency: Colorado State University

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<u>Category:</u>	<u>Expected Funding Source:</u>
<input type="checkbox"/> Ongoing project	<input checked="" type="checkbox"/> Annual funds
<input checked="" type="checkbox"/> Ongoing-revised project	<input type="checkbox"/> Capital funds
<input type="checkbox"/> Requested new project	<input type="checkbox"/> Other (explain)
<input type="checkbox"/> Unsolicited proposal	

I. Title of Proposal:

Evaluation of entrainment of Colorado pikeminnow into Yampa River canals.

II. Relationship to RIPRAP (March 28, 2004 version @ <http://www.r6.fws.gov/crrip/rip.htm>)

Green River Action Plan: Yampa and Little Snake rivers

- II. Restore habitat
- II.A.2. Reduce /eliminate entrainment of Colorado pikeminnow at diversion structures.
 - II.A.2.a. Identify and evaluate existing structures for entrainment of Colorado pikeminnow.
 - II.A.2.b. Develop and implement remedial measures, as necessary, to reduce or eliminate entrainment.

¹ See last page for changes and dates of each revision.

III. Study Background/Rationale and Hypotheses

The Maybell Ditch is a gravity-fed diversion of the Yampa River, and receives water from habitat occupied by Colorado pikeminnow (*Ptychocheilus lucius*), a federally listed endangered fish. The objective of this study is to determine if Colorado pikeminnow or other fish are entrained in the Maybell Ditch. The ditch diverts water from the Yampa River within Juniper Canyon on Bureau of Land Management (BLM) lands. Colorado pikeminnow adults occupy the Yampa River in the vicinity of the head-gate inlet and upstream. The Maybell Ditch diversion is unscreened. Therefore, Maybell Ditch has the potential to entrain fish, including resident or migrating Colorado pikeminnow, especially when they move to downstream spawning areas in Dinosaur National Monument. These movements occur during or after peak runoff, typically beginning in late May to mid June.

In October 2007, we sampled the uppermost 1.4 miles (2.2 km) of the Maybell Ditch for fish with a bank electrofisher mounted in a canoe. Sampling occurred after the irrigation season when ditch flows were reduced. Our results showed that fish from the river were entrained into the Maybell Ditch at the end of the irrigation season, although no Colorado pikeminnow were captured (Hawkins 2008). We captured eight fish species and a total of 702 individuals or approximately 500 fish per mile of ditch sampled. Four nonnative species comprised 99% of the fish collected and included smallmouth bass (*Micropterus dolomieu*, 88%), white sucker (*Catostomus commersonii*, 8%), common carp (*Cyprinus carpio*, 2%), and creek chub (*Semotilus atromaculatus*, 1%). Only two native fish, both bluehead suckers (*Catostomus discobolus*), were captured. Most fish captured were less than 125-mm long and only one was over 250 mm long. One of the recommendations from the report suggested: "Sample the BLM section of the ditch for fish with electrofishing on several occasions in June and July during pikeminnow migration. Flows will need to be lowered for 8-hours during sampling. This will require cooperation and participation with the ditch association to insure no harm to ditch shareholders during irrigation season or to personnel conducting sampling."

Rationale/Problem Statement:

Identification of existing Yampa River diversion structures which may entrain Colorado pikeminnow is recommended in the Yampa Management Plan (Roehm 2004) and Yampa PBO (USFWS 2005). The Maybell Ditch is currently the largest diversion on the Yampa River in Critical Habitat and can divert up to 129 cfs. The purpose of this work is to determine if Colorado pikeminnow or other native fish are entrained in the Maybell Ditch.

IV. Study Goals, Objectives, End Product:

Determine if the Maybell Ditch entrains Colorado pikeminnow or other native fishes.

Objectives:

1. Coordinate with Maybell Ditch Association officers to determine the best method for access to the Maybell Ditch within BLM land for spring sampling.

2. Sample the Maybell Ditch for fish during post runoff flows in early summer when Colorado pikeminnow typically migrate past the head-gate structure.

End Product: A final report which identifies fishes collected in the Maybell Ditch in 2007 and 2008 sampling.

V. Study area:

The study area is the 19 km (12 mile) Maybell Ditch focusing on its inlet at river mile 90.3 on the Yampa River, in Moffat County, Colorado. Sampling will occur only on BLM land within Juniper Canyon.

Sampling Dates

Post-runoff sampling will occur in June or early July based on the estimated period of Colorado pikeminnow migration. Exact dates will be determined based on timing and duration of peak flow and presence/absence of Colorado pikeminnow detected when we sample upstream areas of the Yampa River for other projects.

VI. Study Methods/Approach

Most of the Maybell Ditch is located on private property, so contact and cooperation from the Ditch Association and private landowners is critical. Recovery Program representatives will sign a Memorandum of Understanding (MOU) with the Ditch Association that will describe the background, responsibilities, benefits, actions, and products of sampling the ditch for fish. All sampling activities will be conducted in accordance to the procedures described in that MOU. Sampling will occur only the portion of the ditch on BLM lands between the head gate and approximately 1 1/2 mile downstream in Juniper Canyon.

Post-runoff sampling: Based on timing of peak flow and water temperatures, we will estimate the approximate period of Colorado pikeminnow downstream migration and sample during that time. Ditch flow during that time is typically at maximum volume creating fast and potentially unsafe sampling conditions. In order to fulfill delivery obligations to ditch shareholders it is unlikely that ditch flows will be temporarily reduced during the sampling period. Therefore, in order to sample fish in the ditch safely and efficiently, we will attempt to sample fish with a variety of gear. These may include floating trammel nets in the main channel of the ditch and trap nets set in ditch channel margins or attached to ditch structures. Any activities will be coordinated with the Ditch Association officers and ditch rider. Nets will be checked frequently to reduce fish injury from impingement. Sampling with other gear such as wading electrofishing would be difficult and unsafe due to inability to wade in the deep and swift water currents. Therefore, we are also investigating use of a small Cataraft electrofisher for ditch sampling, but lack of adequate, safe access to launch or land a raft will likely prevent that.

All fish will be enumerated and native fish will be relocated to the Yampa River and released alive. Northern pike will be transported to Loudy Simpson pond and smallmouth bass ≥ 250 mm (≥ 10 inches) will be transported to Elkhead Reservoir. Other nonnative fishes will be handled

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X. Reviewers: Bob Muth, Tom Pitts

XI. References:

CDSS 2006 (Colorado Decision Support System website <http://cdss.state.co.us>)

Hawkins, J. A. 2008. Fish entrainment into the Maybell Canal on the Yampa River, Colorado, 2007. Report to the Upper Colorado River Endangered Fish Recovery Program, Project 146. Contribution 151 of the Larval Fish Laboratory, Colorado State University.

Hydrosphere (Hydrosphere Resource Consultants). 1995. Reconnaissance evaluation of Yampa River diversion structures. Final report to Colorado River Water Conservation District, Colorado Water Conservation Board, and Bureau of Reclamation.

Roehm, G.W. 2004. Management plan for endangered fishes in the Yampa River Basin and environmental assessment. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6). Denver.

U.S. Fish and Wildlife Service. 2005. Final programmatic biological opinion on the Management Plan for Endangered Fishes in the Yampa River Basin dated January 10, 2005. Mountain-Prairie Region (6). Denver.

Revision dates:

02/20/06: Initial 2006 SOW in response to RFP (JAH); 7/23/07 JH revised for 2007 sampling based on MOU with Maybell Ditch Association. 08/02/07 JH revised in response to P. Nelson request to closer match details in the MOU; 5/09/08 revised to add spring sampling during downstream Colorado pikeminnow migration.; 5/12/08 and 5/15/08 JH revised based on Program Director's office review.

Document Tracking information

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