COLORADO RIVER RECOVERY PROGRAM
FY 2015 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER:
UDWR portion - 138
FWS portion - C-29a

I. Project Title: Green River Canal Fish Salvage

II. Bureau of Reclamation Agreement Number(s):
USFWS Vernal: not yet specified
UDWR Moab: not yet specified

III. Principal Investigator(s):

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IV. Abstract: During November 2014 electrofishing of the Green River canal system, Utah Division of Wildlife Resources and United States Fish and Wildlife Service biologists salvaged one endangered Colorado pikeminnow (*Ptychocheilus lucius*), three age-zero native chubs of the genus *Gila*, one bluehead sucker (*Catostomus discobolus*) and seventeen flannelmouth suckers (*Catostomus latipinnis*). These native fish were released alive into the Green River mainstem immediately near the canal location. We also collected individuals of 12 nonnative fish species, which were returned to canal alive.

V. Study Schedule: 2014-ongoing

VI. Relationship to RIPRAP:

GREEN RIVER ACTION PLAN: MAINSTEM

II.B Restore native fish passage at instream barriers.

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VII. Accomplishment of FY 2015 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

The Green River canal extends approximately 7.5 miles from the Tusher diversion raceway to Saleratus Wash in the town of Green River, Utah. Check dams with adjustable gates provide control of water levels and divide the canal system into discrete sections of approximately 600-2000 meters. Within these sections, seven sluice gates allow direct return paths for canal water to the Green River mainstem (see Photo 1) and are used by Green River Canal Company staff to flush excess sediment from the canal during seasonal de-watering. November 2014 sampling was timed to coincide with annual de-watering, when flows decrease canal depth to levels suitable for wading.

With permission from landowners and assistance from canal company staff, UDWR Moab and USFWS Vernal crews accessed the canal via the canal company right-of-way on either side of the canal. Sampling was conducted from 10-18 November 2014 using a combination of backpack and barge electrofishing gear (total effort=11.2 hours).

Endangered fish captures:

- One Colorado pikeminnow with total length of 524 mm, previously marked with a 134 kHz PIT tag.
- Four age-zero chubs (*Gila spp.*) with total lengths ranging from 47 to 68 mm.

All native species were translocated to the mainstem Green River with the exception of one chub (mortality, preserved) and three speckled dace. Speckled dace could not be legally translocated, so all individuals were released alive in the canal. A USFWS stock truck accompanied crews via the right-of-way when possible and was used to translocate the single pikeminnow. Eighteen individual native suckers with total lengths ranging from 56 to 212 mm were also collected in the canal and returned to the Green River.

To document possible return of fish to the river from the canal, flat plate PIT transceivers were placed at select locations between canal sluice gates and the Green River during de-watering. No tags were detected. It was not possible to place antennas in all sluice returns, so the extent to which fish may escape the canal using these features is unknown. Some sluice returns are configured in a manner that may allow fish to survive the return trip. Others empty into steep piles of riprap, reducing the chances of fish surviving. Three PIT tags were detected at the top of the canal by an antenna array during the time canal salvage took place (Kevin McAbee, pers. comm.), but none of these fish were encountered during our sampling.

Subsequent to de-watering of each reach, crews visually surveyed the small isolated pools remaining in the canal. No native fishes were encountered. There were two deep siphons where the canal travels through pipes under wash crossings. It was not possible to sample these features, and water can remain in these locations after dewatering of the canal.

VIII. Additional noteworthy observations:

Twelve non-native species were encountered during sampling. Individuals were tallied by species and returned to the canal alive. Ancillary fish captures are summarized in Table 1. The majority of these fish were small, age-0 individuals, similar to most of the native fish captured. The relative paucity of adult fish captured of any species suggests that fish are either returning to the river through sluice gates, returning to the raceway through the canal headgate, dying in the canal from scavengers or poor water quality, or moving into secondary canals and irrigation systems (i.e.pumps) connected to the canal. We did not observe evidence of mortality in the canal, and water depths during salvage were not likely to trap fish where predation would be likely.

Field observations and satellite imagery indicate that an extensive private canal system on the Thayn property may pose additional risk of entrainment for endangered fishes. The

pipe through which water is pumped from the raceway to the elevated canal appears to be unscreened and large enough to transport fish (Photo 2). However, the pump itself is not visible and it remains unclear whether fish could survive transport through this apparatus.

IX. Recommendations:

- Continue to salvage native fish from the Green River Canal until a permanent fish exclusion system is in place. Consider salvaging fish after the fish exclusion system is in place to compare results prior and post fish exclusion installation.

- Coordinate operation of sluice gates and other flow control structures to reduce canal water levels prior to sampling. Lower water levels may eliminate the need for cumbersome barge electrofishing systems and reduce likelihood of fish escape during electrofishing.

- Investigate potential for endangered fish entrainment in private canal systems.

- Investigate potential for sluice return improvement and private canal improvement as part of larger fish exclusion solution. These improvements could benefit any individuals that are entrained into the canal after the fish exclusion solution is in place.

X. Project Status: Ongoing

XI. FY 2015 Budget Status
A. Funds Provided:
B. Funds Expended: $9,955 (UDWR)
C. Difference:
D. Percent of the FY 2015 work completed: 100%
E. Recovery Program funds spent for publication charges: $0

XII. Status of Data Submission:
USFWS data were compiled and submitted to database manager in January 2015.

XIII. Signed: *Zach Ahrens, Katherine Creighton & M. Tildon Jones* Feb. 2015
Principal Investigator Date

Photo 1. Example of sluice gate returning canal water to mainstem.

Table 1. Green River canal ancillary fish captures, November 2014.

Species	Number Captured
bluegill (*Lepomis macrochirus*)	1
bluehead sucker (*Catostomus discobolus*)*	1
channel catfish (*Ictalurus punctatus*)	37
common carp (*Cyprinus carpio*)	643
fathead minnow (*Pimephales promelas*)	19
flannelmouth sucker (*Catostomus latipinnis)**	17
gizzard shad (*Dorosoma cepedianum*)	6
green sunfish (*Lepomis cyanellus*)	1
red shiner (*Cyprinella lutrensis*)	122
sand shiner (*Notropis stramineus*)	6
speckled dace (*Rhinicthys osculus)*	3
splake (*Salvelinus namaycush* x *S. fontinalis*)	1
unidentified shiner	1
white sucker (*Catostomus commersonii*)	1

* translocated to Green River mainstem

Photo 2. Discharge pipe which provides water from the raceway to the Thayn canal.

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: not yet specified

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: not yet specified

Project Title: Green River Canal Fish Salvage
Principal Investigator:

Project/Grant Period: Start date (Mo/Day/Yr):
End date: (Mo/Day/Yr):
Reporting period end date (Mo/Day/Yr):
Is this the final report? Yes _____ No __X__

Performance: During November 2014 electrofishing (total effort=11.2 hours) of the Green River canal system, Utah Division of Wildlife Resources and United States Fish and Wildlife biologists salvaged one endangered Colorado pikeminnow (*Ptychocheilus lucius*), three age-zero native chubs of the genus *Gila*, one bluehead sucker (*Catostomus discobolus*) and seventeen flannelmouth suckers (*Catostomus latipinnis*). These fish were released alive into the Green River mainstem. Data was submitted to the database manager in January 2015 and a final report was provided in February 2015.