

# UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2020 ANNUAL REPORT

PROJECT: 15

**Project Title:**

Identification and Curation of Larval and Juvenile Fish by Colorado State University Larval Fish Laboratory

**Bureau of Reclamation Agreement Number:**

R19AP00058

**Project/Grant Period:**

Start date: 10/01/18

End date: 09/30/23

Reporting period end date: 09/30/2020

Is this the final report? No

**Principal Investigator:**

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**Abstract:**

This ongoing project supports Larval Fish Laboratory (LFL) taxonomic, analytical, and curatorial services for specific Recovery Program projects, and as time allows, other incidentally requested taxonomic services and consultation (Task 1). It also provides for ongoing curation (maintenance and management) of the LFL Collection, including controlled access to and use of collection holdings and data by UCRB and other researchers (Task 2).

**Study Schedule:**

Ongoing since 1995. Collections from the following projects are identified, processed, and curated annually with the resultant data provided to the principal investigator as soon as logistically possible after the collections are received:

Project 22F, LFL—preliminarily identified drift-net and light-trap samples from the lower Yampa, Middle-Green, and White Rivers to assess the larval abundance of Colorado Pikeminnow and Razorback Sucker (Task 1a);

Project 138, Utah Division of Wildlife resources, Vernal and Moab offices— Interagency Standardized Monitoring Program sample identification/verification as needed;

Project 158, Utah Division of Wildlife Resources (UDWR) and U. S. Fish and Wildlife Service (USFWS), Vernal offices—drift and backwater samples from the Middle-Green River to assess factors contributing to the decline of age-0 Colorado Pikeminnow and simultaneously collected ISMP samples (Task 1b— backlog);

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Project 160, UDWR, Moab—light-trap samples for age-0 razorback sucker and seine samples from the lower Green River, plus lower Colorado, Matheson wetland, and Lake Powell samples as needed (Task 1c);

Project 163, USFWS, Grand Junction—samples associated with Gunnison and Colorado River fish community monitoring (Task 1e);

Project FR-164, USFWS, Vernal—samples associated with Green River Larval Trigger Study Plan monitoring in floodplain wetlands (Task 1f); and

Project FR-165, UDWR, Vernal— samples associated with Green River Larval Trigger Study Plan monitoring in Stewart Lake floodplain (Task 1g).

This project also supports incidental taxonomic services and consultation on early life-stage taxonomy, sampling techniques, and collection handling as needed and time allows (also Task 1). General collection maintenance activities (e.g., fluid level and container checks) are conducted annually; other maintenance and management concerns, including National Park Service inventory checks of cross-catalogued holdings are addressed as needed, and newly deposited and backlog collections are cataloged as time permits (Task 2). Responses to requests for loans, collection use, or information on collection holdings are provided as needed (also Task 2).

### **Relationship to RIPRAP:**

This project is related to General Recovery Program Support Action Plan V (monitor populations and habitat and conduct research to support recovery actions—research, monitoring, and data management). Identification and processing of collections for Projects 22F, 138, 158, 160, 163, FR-164, and FR-165 and otolith analyses for Project 161 contribute to Tasks V.A (measure and document population and habitat parameters to determine status and biological response to recovery actions) and V.B (conduct research to acquire needed life history information). An additional task added in 2018 was statistical analysis of PIT tag capture-recapture data, mainly for Grand Junction FWS and the Utah Division of Wildlife Resources, and was grouped under this project to streamline the process for transferring and receiving funding. The remainder of this project specifically addresses Task V.E (provide for long- term care, cataloging, and accessibility of preserved specimens) and, in that preserved specimens are the ultimate natural history database, contributes to Task V.A.1 (conduct interagency data management program to compile, manage, and maintain all research and monitoring data collected by the Recovery Program).

### **Accomplishment of FY 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

#### Task 1, Taxonomic Services

The following preserved collections were processed.

- Project 22F (Task 1a): in 2019, 213 Yampa River drift net samples (n = 3781 specimens) and additional 21 Green River drift net samples were processed (n = 5 specimens). Also processed in 2019, 415 razorback sucker light-trap samples (290 with fish-15,119 specimens) taken from the middle Green River.

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- Project 138: no samples were received.
- Project 158 (Task 1b): in 2019. No samples received. In 2018, 75 Split Mountain drift net samples (190 lots-635 specimens) were processed. Additionally, 121 middle Green River backwater seine samples (yet being processed) were taken.
- Project 160 (Task 1c): Processed in 2018: 106 light-trap (366 lots-21,040 specimens) and 3 seine (4 lots- 5 specimens) samples were taken in the lower Green River. There were 47 Colorado River light-trap (275 lots-10,261 specimens) and 9 seine (22 lots-192 specimens) samples taken. Additional 2 seine (4 lots-4 specimens) samples were taken at the Scott Matheson Wetlands Preserve. Lastly, 11 light-trap (69 lots-7,118 specimens) and 11 seine (35 lots-640 specimens) samples were taken in Lake Powell.

Processed in 2019: 106 light-trap (212 lots-9,614 specimens) and 34 seine (113 lots-1,302 specimens) samples were taken in the lower Green River. There were 105 Colorado River light-trap (79 lots-1,231 specimens) and 9 seine (19 lots-30 specimens) samples taken. An additional 55 light trap samples (87 lots, 684 specimens) and 5 seine (7 lots-14 specimens) samples were collected at the Scott Matheson Wetlands Preserve.

- Project 163 (Task 1e): in 2019, 124 Colorado River dip net and 169 Gunnison River dip net samples were processed.
- Project FR-165 (Task 1g): in 2019, 79 light-trap (131 lots) samples were taken in Stewart Lake.
- Task 1h: Statistical analysis assistance of data collected in the conduct of Projects 127, 131, 163, and new northern pike abundance estimation, Yampa River (FY2020 cost \$21,000, uncertain if these funds arrived). We are finalizing analysis of humpback chub capture-recapture data from the Colorado River at this time, including populations from Black Rocks and Westwater canyons.

All processed specimens have been cataloged and shelved as part of the LFL Collection and the collection data forwarded to the responsible principal investigators (PIs) for analysis and reporting except for Task 1b.

Shortcomings— Project 158 (Task 1b): 2018 middle Green River backwater seine samples are yet being identified but actively worked on. The samples were large with many very small fishes. We are behind on 2020 sample identification work because of COVID-related reductions in staff and resignation of personnel.

### Task 2, Ongoing Collection Maintenance and Management

We: (1) added, as of 30 September, 9,467 lots of fish from UCRB collections or investigations to the cataloged collection, (2) made collection holdings and selected data available to UCRB researchers and other interested parties, and inventory checks requested by the NPS, (3) responded to incidental requests from UCRB researchers for taxonomic assistance or consultation on larval-fish sampling and collection handling matters, (4) corrected incidentally found errors in our catalog database, (5) updated and tested the latest version of our collection database and management program software called Specify 6, and (6) conducted an annual fluid level and condition check of our holdings. As of 30 September 2019, we maintain and manage 1,153,824 lots of cataloged fish (>4,511,214 specimens) collected from the UCRB

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or used for UCRB Recovery Program investigations. These holdings represent almost 96% of all LFL cataloged lots (97% of all cataloged specimens).

No significant progress was made in FY 2020 towards plans for housing the LFL Collection and other natural history collections on campus together as a university natural history museum. The museum facility awaits adequate development-grant funding.

### **Recommendations:**

We recommend continued annual support of Project 15 with sufficient funds for processing newly preserved collections covered by this project, assistance with capture-recapture statistical analyses, incidental taxonomic services and consultation, and on-going maintenance and management (curation) of all UCRB specimens held by LFL.

### **Project Status:**

On track, and ongoing.

### **FY 2020 Budget Status:**

Funds Provided: \$264,200

Funds Expended: \$180,006

Difference: \$84,194

Percent of the FY 2020 work completed, and projected costs to complete: 50% complete, budget sufficient to finish tasks

Recovery Program funds spent for publication charges: 0

### **Status of Data Submission:**

Project 22F (Task 1a) collection data for 2019 was internally submitted to Kevin Bestgen.

Project 158 (Task 1b) Collection data for 2018 middle Green River backwater seine will be submitted to respective PI's as soon as it is completed.

Project 160 (Task 1c) collection data for 2019 was submitted to respective PI's.

Project 163 (Task 1e) collection data for 2019 was submitted to respective PI's.

Project FR-165 (Task 1g) collection data for 2019 was submitted to respective PI's.

Humpback chub abundance and vital rate estimates are completed and project reports are ongoing by other parties. Northern pike abundance estimates and report writing is completed and the report is written and submitted to the Recovery Program.

### **Signed:**

Kevin R. Bestgen

Principal Investigator

15 November 2020