

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2023 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: 09/30/2023

Is this the final report? No

Principal Investigator:

Kevin R. Bestgen (Project Manager)

Larval Fish Laboratory, Colorado State University, 1474 Campus Delivery, Fort Collins, CO 80523-1474

Kbestgen@ColoState.edu

Phone (970) 491-1848 (KRB)

Fax (970) 491-5091

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 after the collections are received:

Project 22F, LFL—preliminarily identified drift net and light trap samples from the lower Yampa, Middle-Green, and White (no White River samples this year) rivers to assess abundance of early life stages 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—backwater samples from the Middle-Green River to assess effects of modified summer flows and factors contributing to the decline of age-0 Colorado Pikeminnow (Task 1b);

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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 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 2023 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1, Taxonomic Services

The following preserved collections were processed.

- Project 22F (Task 1a): 273 Yampa River drift net samples (n = 1,871 specimens) and an additional 132 Green River drift net samples collected in 2021 were sorted, identified, counted, and measured (n = 10 specimens); all were cataloged. We have also finalized identification of 2022 Yampa River drift samples. Those 272 samples were collected from 14 June to 15 August. An additional 117 samples were collected from the Green

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River Echo Park drift station from 26 June to 14 August. Verification of all those samples is complete and cataloging is ongoing. In 2023, Yampa River drift net samples were collected from 20 June to 14 August (56 days of sampling, n = 231 total samples). The first verified Colorado Pikeminnow captured in 2023 was on 10 July; early samples have not been verified so that date may be revised. Preliminary identification and verification of specimen identities has started.

- Also under Project 22f, we sorted, identified, counted, and measured specimens from 415 Razorback Sucker light-trap samples (290 with fish-15,119 specimens) taken from the middle Green River in 2021 and 2022 (results in annual report for Project 22f). An additional 17 samples (13 with sucker larvae) were collected from the Stirrup wetland and preliminary identification is complete; verification of all those samples is complete. In 2023, light trap sampling began on 16 May and ended on 29 June; first Razorback Sucker larvae were captured 31 May. A total of 255 samples was collected. The preliminary sorting and identification of 2023 samples has been completed. These sample identifications need to be verified and that activity is underway.
- Project 138: no samples were received.
- Project 158 (Task 1b): Samples from 2022 are being identified. Samples from 2021 were identified and verification is complete. The 2023 samples have been received and identification is underway.
- Project 160 (Task 1c): Samples from 2020 and 2021 are identified and cataloged. Specimens from 2022 need to be verified but primary identification is complete. Matheson wetland sample identification from 2020 and 2021 is complete. Samples from 2022 are being verified. The 2023 samples have been received and identification is underway.
- Project 163 (Task 1e): The 2020 and 2021 Colorado and Gunnison River samples are identified and verified. Identification and verification of 2022 samples is nearly complete. The 2023 samples have been received and identification is underway.
- Project FR-164 (Task 1g): The 2021 and 2022 samples are identified and verified.
- Task 1h: Statistical analysis assistance of data collected in the conduct of Projects 127, 131, 163. In 2023, we are working on Humpback Chub capture-recapture data collected in Westwater Canyon to obtain estimates.

Most 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. All told, the 1,554 samples from 2020, 2021, and a portion of 2022 work constituted over 234,000 specimens.

Shortcomings— Project 158 (Task 1b): Identification of 2018 middle Green River backwater seine samples are now completed and verification of endangered fish is nearly complete. These include a few Colorado Pikeminnow and Razorback Suckers. The samples were extremely large with many small fishes.

Task 2, Ongoing Collection Maintenance and Management

We: (1) added most samples identified and reported on above to the collections of fish from UCRB collections or investigations to the cataloged collection, (2) made collection holdings and selected data

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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. We maintain and manage 1,153,824 lots of cataloged fish (>4,511,214 specimens) collected from the UCRB 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 2023 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. We made significant progress on our backlog of sample identification and are making good progress on 2023 samples at this time.

Project Status:

On track, and ongoing.

FY 2023 Budget Status:

Funds Provided: \$255,531

Funds Expended: \$212,769

Difference: \$42,762

Percent of the FY 2023 work completed, and projected costs to complete: 75% complete, budget sufficient to finish tasks

Recovery Program funds spent for publication charges: 0

Status of Data Submission:

Signed:

Kevin R. Bestgen

Principal Investigator

10 December 2023