

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022 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: 09/30/2022

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 (no samples this year) 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—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 2022 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). We have also finished preliminary identification of 2022 Yampa River drift samples. Those 272 samples were collected

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from 14 June to 15 August. An additional 117 samples were collected from the Green River Echo Park drift station from 26 June to 14 August. Verification of all those samples is ongoing.

- Also sorted, identified, counted, and measured were 415 razorback sucker light-trap samples (290 with fish-15,119 specimens) taken from the middle Green River in 2021 and 2022. We have also completed preliminary identification of 2022 Green River razorback light trap samples (n = 149 samples collected; 98 with sucker larvae). 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 ongoing.
- Project 138: no samples were received.
- Project 158 (Task 1b): Samples from 2022 are being identified. Samples from 2021 were preliminarily identified and verification is nearly complete.
- Project 160 (Task 1c): Samples from 2022 remain to be identified, but we started on the Matheson wetland samples and will endeavor to finish those soon.
- Project 163 (Task 1e): The 2020 Colorado and Gunnison River samples are yet to be identified. The 2021 samples are not yet delivered.
- Project FR-164 (Task 1g): The 2021 samples are preliminarily identified and need verification. 2022 samples have been received and will be identified soon.
- Task 1h: Statistical analysis assistance of data collected in the conduct of Projects 127, 131, 163. Humpback chub data analysis and reports (Black Rocks) were finalized in 2022.

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): 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. We are behind on 2021 and 2022 sample identification or verification work, in general, because of COVID-related reductions in staff and resignation of key personnel. We have refilled some positions and training time has reduced productivity but processing speed should increase in the coming year.

Task 2, Ongoing Collection Maintenance and Management

We: (1) added, as of 30 September 2021, 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 2021, 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).

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No significant progress was made in FY 2022 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 will endeavor to reduce the backlog of sample processing in the coming year and are making good progress at this time.

Project Status:

On track, and ongoing.

FY 2022 Budget Status:

Funds Provided: \$255,267

Funds Expended: \$216,460

Difference: \$38,807

Percent of the FY 2022 work completed, and projected costs to complete: 60% 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 2021 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. Preliminary identification is completed and verification of endangered fishes is nearly complete. 2021 data will be submitted when it is ready.

Project 160 (Task 1c) collection data for 2021 will be submitted to respective PI's when it is ready.

Project 163 (Task 1e) collection data for 2021 will be submitted to respective PI's when it is ready.

Project FR-165 (Task 1g) collection data for 2021 will be submitted to respective PI's when it is ready.

Humpback chub abundance and vital rate estimates are completed, and project reports are ongoing or completed by other parties, with interpretive assistance from us.

Signed:

Kevin R. Bestgen
Principal Investigator
20 November 2022