

- I. Project Title: Identification and Curation of Larval and Juvenile Fish by Colorado State University Larval Fish Laboratory.
- II. Principal Investigator(s): Kevin R. Bestgen (Project Manager), Darrel E. Snyder, and Sean C. Seal
Mail — Larval Fish Laboratory, Colorado State University, 1474 Campus Delivery, Fort Collins, CO 80523-1474
E-mail — Kevin.Bestgen@ColoState.edu, Darrel.Snyder@ColoState.edu, and Sean.Seal@ColoState.edu
Phone — (970) 491-1848 (KRB), 491-5295 (DES), and 491-6412 (SCS)
Fax — (970) 491-5091
- III. Project Summary: This ongoing project provides for: (1) final identification and cataloging of preserved fish collections for Project 22F (Yampa and Middle-Green Colorado Pikeminnow and Razorback Sucker Larval Abundance), (2) incidental taxonomic services and consultation, and (3) ongoing maintenance and management (curation) of the growing Upper Colorado River Basin (UCRB) portion of the LFL Collection, including controlled access to and use of collection holdings and data by UCRB and other researchers. Additional tasks, added in spring 2009, include sample identification for Projects 158 and 160 and otolith analysis for additional smallmouth bass samples collected in the Colorado River in support of Project 161.
- IV. Study Schedule: Ongoing project since 1995. Specified project collections are identified and processed annually and the resultant data provided to the principal investigator as soon as logistically possible after the collections are received. These currently include collections for Projects 22F (Task 1a), 158 (Task 1b, sampling middle Green River drift and backwaters for Age-0 Colorado pikeminnow), and 160 (Task 1c, light-trap and seine sampling in lower Green River for age-0 razorback sucker), and otolith analyses in support of Project 161 (Task 1d, age-0 smallmouth bass from the Colorado River). General collection maintenance activities (e.g., fluid level and container checks) are conducted annually; other maintenance and management concerns are addressed as needed, and any backlog collections are cataloged as time permits. Responses to requests for loans, collection use, or information on collection holdings, sampling, sample preservation and handling, and taxonomy also are provided as needed.
- V. 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 Project 22F, 158, and 160 collections 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). The remainder of the 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).

VI. Accomplishments of FY 2010 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1, Taxonomic Services—For Task 1a, Project 22F, we processed 225 preserved 2009 drift-net collections from the Yampa and Green Rivers in Echo Park (506 lots, 2,183 specimens, and 24 lots, 49 specimens respectfully) and 132 preserved 2009 razorback sucker light-trap collections from the Green River (706 lots, 29,738 specimens). For Task 1b, we processed 53 preserved 2009 drift-net collections from the middle Green River at Split Mountain (106 lots, 194 specimens), and 74 preserved 2009 backwater collections also from the middle Green River (323 lots, 37,642 specimens). For Task 1c, we processed 81 preserved 2009 light-trap and seine collections from the lower Green River (231 lots, 6606 specimens). Otolith analyses were delayed because we only recently acquired historical samples (2004-2006) and recent (2008-2009) field samples. Results have been forwarded to the responsible investigators for analysis and reporting and all processed specimens have been catalogued and shelved as part of the LFL Collection except middle Green River backwater collections for which we await associated field data to be included in catalog records.

Shortcomings—Middle Green River backwater collections have not yet been properly cataloged and shelved as part of Task 1b. The requisite field data for those catalog records has not yet been forwarded by Project 160 researchers. Work on Task 1d will proceed in winter 2010-2011.

Task 2, Ongoing Collection Maintenance and Management—As of September 30th, we have: (1) added a total of 2,782 lots of fish (72,069 specimens) from UCRB collections or investigations to the catalogued collection (Appendix A), (2) submitted an updated *Access* database version of our catalog records through FY 2009 (selected fields, flat file) to the Interagency Database Management Program (IDMP) archive, (3) made collection holdings and selected data available to UCRB researchers and other interested parties, including specimens used for developmental study of cyprinid larvae for Project 149 and inventory checks requested by the NPS, (4) responded to incidental requests from UCRB researchers for taxonomic assistance or consultation on larval-fish sampling and collection handling matters, (5) corrected incidentally found errors in our catalog database, and (6) conducted an annual fluid level and condition check of our holdings. As of 30 September 2010, we maintain and manage 109,273 lots of cataloged fish (3,579,208 specimens) collected from the UCRB or used for UCRB Recovery Program investigations. These holdings represent about 96% of all LFL cataloged lots (97% of cataloged specimens).

In our continuing effort to pursue improved and more spacious facilities for the LFL Collection and better assure its permanency, we, and the curators of other Colorado State University natural history collections, continue to work with university Facilities Planning personnel and the Dean of the College of Agriculture on plans for a major addition to the university's Plant Sciences Building to house our various collections together as a university natural history museum. The project still awaits approval and adequate development-grant funding. When finally built and ready for occupancy our

collections and recently installed mobile shelving systems will be moved to these new museum-quality facilities.

Shortcomings—Preparations for and installation of the latest version of our collection database and management program, *Specify*, resolution of some data entry problems, and cataloguing of some back-logged collections have been deferred to FY 2011.

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

VIII. Project Status: On-track and ongoing.

IX. FY 2010 Budget Status

A. Funds Provided: \$210, 990 (\$116,679 for FY 2010 plus \$94,311 carried over from FY 2009)

B. Funds Expended: \$128,400

C. Difference: \$82,590

Explanation: See task shortcomings in Section VI. Also, a portion of the carried-over difference, is saved PI labor costs since November 2006 resulting from the retirement and subsequent part-time rehiring and voluntary services of Snyder at substantially lower costs—to be used for otherwise unfunded collection tasks and needs.

D. Percent of FY 2010 work completed and projected costs to complete: 39% of work completed; \$82,590 to complete.

E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission (Where applicable): Data for Project 22F 2009 collections were internally submitted to Kevin Bestgen. An updated *Access* database version of our catalog for UCRB holdings (selected fields, flat file) through FY 2009 was submitted to the IDMP archive on November 27, 2009.

XI. Signed: Darrel E. Snyder 13 November 2010
Principal Investigator Date

Signed: Sean C. Seal 13 November 2010
Principal Investigator Date

Signed: Kevin R. Bestgen 13 November 2010
Principal Investigator Date

APPENDIX A:

Study-year sets of Upper Colorado River Basin collection-species lots cataloged as part of the Colorado State University Larval Fish Laboratory Collection from October 1, 2009 through September 30, 2010 (2,782 lots; 72,069 specimens).

Catalog No.	Field Numbers	Description of Sample Sets
96971	FWS/GJ-05GU-087*	05 Larvae, RZ eval , SN, Gunnison R, CO
108994	LFL-08YA-809D3*	08 Larvae, DR, Yampa R, Echo Pk,DNM, CO
111098-203	FWS/V-09GR-DR01 to DR53	09 Larvae, CS eval, DR, Split Mountain, UT
111204-225	LFL-09YA-J101 to J810	09 EL, Yampa R, Juniper and Lily Park, CO
111226-394	LFL-09YA-SBF104 to SBF631	09 Small-bodied fish, EL/SN, Yampa R, CO
111395-418	LFL-09GR-7233 to 8193	09 Larvae, DR, Green R, Echo Pk,DNM, CO
111419-924	LFL-09YA-6091 to 8202	09 Larvae, DR, Yampa R, Echo Pk,DNM, CO
112689-3438	LFL-09GR-LW001 to LW066	09 SN, Green R, Lodore-Whirlpool, CO, UT
113508-609	LFL-09BS1-6161 to 8063**	09 Larvae, NF eval, DR, Big Sandy R, WY
113610-645	LFL-09BS2-7011 to 8032**	09 Larvae, NF eval, DR, Big Sandy R, WY
113646-688	LFL-09BS3-6251 to 8053**	09 Larvae, NF eval, DR, Big Sandy R, WY
113689-697	LFL-09BSX-7091 to 7142**	09 Larvae, NF eval, DR, Big Sandy R, WY
113698	LFL-09BSY-7141**	09 Larvae, NF eval, DR, Big Sandy R, WY
113699-773	LFL-09BSS-6251 to 10174**	09 Larvae, NF eval, SN, Big Sandy R, WY
113774-940	UDWR-09LRZ-L001 to L057	09 Larvae, Lower RZ LT, Green R, UT
113941-4004	UDWR-09LRZ-S006 to S112	09 Larvae, Lower RZ SN, Green R, UT
114072-777	FWS/V-09RZ-005 to 158	09 Larvae, RZ LT, Green R., Vernal, UT

* Separately cataloged portion of previously cataloged set of collections.

** Catalogued under the non-Recovery Program project for which the specimens were collected.