

- I. Project Title: Identification and Curation of Larval Fish by Colorado State University Larval Fish Laboratory.
  
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- 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.
  
- IV. Study Schedule: Ongoing project since 1995. Specified project collections (currently Project 22F) are processed annually and the resultant data provided to the principal investigator as soon as logistically possible after the collections are received. General collection maintenance activities (e.g., fluid level and container checks) are conducted each fall or winter; other maintenance and management concerns are addressed as needed and remaining backlog collections 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 of Project 22F collections contributes to Task V.A (measure and document population and habitat parameters to determine status and biological response to recovery actions). 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 current 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 2008 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings: FY 2008 goals and objectives for this ongoing project are being met, but some work has been delayed and carried over to FY 2009.

Task 1, Taxonomic Services— For Project 22F, we processed 278 drift-net collections taken from the Yampa and Green Rivers in Echo Park in 2007 (666 lots, 3,366 specimens). Data have been forwarded for analysis and reporting and all specimens have been catalogued and shelved as part of the LFL Collection. Incidental requests from UCRB researchers for taxonomic assistance or consultation on larval-fish sampling and collection handling matters were addressed as received.

Task 2, Ongoing Collection Maintenance and Management—As of September 30<sup>th</sup>, we have (1) added a total of 2,758 lots of fish (87,664 specimens) from UCRB collections or investigations to the catalogued collection (Appendix A), (2) forwarded to the curator at Dinosaur National Monument data on 1,254 lots of fish that were collected in 2006 from within and cross-catalogued with the Monument for upload in the National Park Service (NPS) holdings catalog (also 3 lots from prior collections), (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) corrected incidentally found errors in our catalog database, (5) updated our collection catalog and management program (*Specify*) to its latest version, and (6) conducted part of our annual fluid level and condition check (remainder has been skipped and will be picked up as part of the FY 2009 effort). We now maintain and manage 101,254 lots of cataloged fish collected from the UCRB or used for UCRB Recovery Program investigations (3,401,465 specimens). These holdings represent about 98% of all LFL 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, have worked with university Facilities Planning personnel and the acting Dean of the College of Agriculture on plans for a major addition to the Plant Sciences Building to house our various collections as a university natural history museum. If approved and adequately funded within the next year or two, the building could be ready for our collections within 4-7 years. Meanwhile, to resolve LFL's urgent interim need for more collection shelving space, we have requested cost estimates for and sought funds to replace existing fixed shelving with a tracked compactor shelving system in our collection annex storage room. Estimated costs ranged from \$15,000 for a system that would increase supplanted shelf space by 63% to \$18,000 to \$26,000 for systems that would increase supplanted shelf space by 125%. The system would be moved to new museum facilities when they become available.

FY 2008 work is behind schedule but we should catch up early in FY 2009. Among shortcomings, we have yet to catalog some sets of 2006, 2007, and early 2008 collections (in part due to delays in processing those collections), complete annual fluid level and condition checks, prepare and submit a newly updated *Access* database version of our catalog records (selected fields, flat file) to the Interagency Database Management Program (IDMP) archive, and resolve some data entry problems with our collection catalog and management program, *Specify*.

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

VIII. Project Status: On-track and ongoing, but temporarily behind schedule.

IX. FY 2008 Budget Status

A. Funds Provided: \$87,765 (\$55,316 + \$32,449 carried over from FY 2007)

B. Funds Expended: \$37,513

C. Difference: \$50,252

Explanation: See paragraph on FY-2008 tasks yet to be completed at end of Section VI. Also, a large portion of the difference, about \$23,000, 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. With the approval of the Recovery Program and Bureau of Reclamation (granted in October 2008), most of this savings will be used to purchase and install an urgently needed compactor shelving system to increase available shelf storage space for additions to the collection in the next several years (see next-to-last paragraph in Section VI).

D. Percent of FY 2008 (and carried-over FY 2007) work completed and projected costs to complete: 58% of work completed; \$27,252 to complete (remaining difference above is saved PI labor costs from FY 2007-08 which will be used for other, but related, purposes).

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

X. Status of Data Submission (Where applicable): Data for Project 22F 2007 collections were internally submitted to Kevin Bestgen in April 2008. National Park Service cross-catalog data were submitted to the Dinosaur National Monument curator on November 20, 2007, and February 14 and March 20, 2008. An updated *Access* database version of our catalog for UCRB holdings (selected fields, flat file) through FY 2007 was submitted to the IDMP archive on November 26, 2007.

XI. Signed: Darrel E. Snyder November 11, 2008  
Principal Investigator Date

Signed: Sean C. Seal November 11, 2008  
Principal Investigator Date

Signed: Kevin R. Bestgen November 11, 2008  
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, 2007 through September 30, 2008 (2,758 lots; 87,664 specimens).

Catalog No.	Field Numbers	Description of Sample Sets
70757	UDWR-07FR-CAAR	07 Fremont R., UT
102014	LFL-06YA-709C1*	06 Larvae, DR, Yampa R, Echo Pk, DNM, CO
102375-2631 102633-2747	LFL-06GR-LW067 to 104	06 SN, Green R, Lodore-Whirlpool, CO, UT
102748-2749	LFL-06YA-LW003	06 SN, Yampa R., Lodore-Whirlpool, CO
102750-2752	LFL-06GR-LW064,078,MISC*	06 SN, Green R., Lodore-Whirlpool, CO, UT
102870-2897	FWS/V-05ET-5201 to 5315	05 RZ Entrainment Study, DR, Green R. UT
102957-2963	LFL-07YA-L101 to J104	07 EL, Yampa R., Juniper Reach, CO
102964-3033	LFL-07YA-SBF001 to 605	07 Small Bodied Fish, EL/SN, Yampa R, CO
103071-3102	DNFH-06GIEL-01 to 31	06 Cult., <i>Gila elegans</i> , Dexter NFHTC, NM
103122-3158	DNFH-06PTLU-01 to 34	06 Cult., <i>P. lucius</i> , Dexter NFHTC, NM
103193-3369	LFL-07GR-6071 to 8103	07 Larvae, DR, Green R, Echo Pk, DNM, CO
103370-3859	LFL-07YA-6191 to 8103	07 Larvae, DR, Yampa R, Echo Pk, DNM, CO
103864-3961	FWS/V-06ET-TH01 to 77, ST01, BZ01 to 15, UK01, UNKS	06 RZ Entrainment Study, DR, Green R. UT
104042-4556 104560-4571 104578-4808	LFL-07GR-LW001 to 057	07 SN, Green R, Lodore-Whirlpool, CO, UT
102004-2012	LFL-06YA-807SN	06 Larvae, SN, Yampa R, Echo Pk, DNM, CO
102013	LFL-06YA-711A3*	06 Larvae, DR, Yampa R, Echo Pk, DNM, CO
104809-5491	FWS/V-07RZ-001 to 144, UNK	07 Larvae, LT, Green R., Vernal, UT

\* Separately cataloged portion of a set of previously cataloged collections.