COLORADO RIVER RECOVERY PROGRAM   RECOVERY PROGRAM
FY 2015 ANNUAL PROJECT REPORT   PROJECT NUMBER: _170_

Development of a Centralized PIT tag Database for the San Juan and Upper Basin Recovery Programs

CSU cooperative agreement number R14AC00084

Period of performance Oct 1 2014– Sept 30, 2015.

Lead Agency: Colorado Natural Heritage Program, Colorado State University

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I: Abstract:

The Colorado Natural Heritage Program (CNHP) at Colorado State University is developing an online data system for the Upper Colorado and San Juan River Recovery Programs. CNHP is currently beginning the second full year of the project. In January 2015, CNHP presented an overview of the basic structure and function of the database at the 36th annual researchers meeting. A beta version of the database was presented to Recovery Program end users at an interactive workshop held in March 2015. At the workshop, instruction on the basic operation and organization of the database was presented and feedback was gathered from end users. Subsequent to that meeting, monthly conference calls with a core group of end-users were conducted to continually brief users on development, to discuss accessibility issues, to solicit additional feedback on the database as it evolves, and to investigate other developmental issues. Throughout the course of the year, data managers and other participants in the Upper Basin and San Juan Programs provided CNHP with the majority of available data on PIT-tagged endangered fish for incorporation into the database. The database is now known as Species Tracking, Research and Monitoring System (STReaMS) and, while still under construction in some regards, is functional and can be accessed at streamsystem.org (registration is required).

II.   Study schedule: FY14-FY18

III.   Relationship to RIPRAP:

        Green River Action Plan

        V1. Conduct interagency data management program to compile, manage, and
        maintain all research and monitoring data collected by the Recovery Program.

IV.   Accomplishments during FY 2015: Tasks and Deliverables, Discussion of Initial
        Findings and Shortcomings:

        Completed tasks are listed below. Deliverables thus far include the release of the
        basic version of the website at streamsystem.org which is updated monthly. Website
        deliverables include monthly release notes, meeting minutes, and presentations (all
        accessible on the website). Major components include 1) development of the SQL
        Server database, 2) development of the web pages, and 3) the reformatting and
        importing the majority of the PIT tag data from the Upper Colorado and San Juan
        basins (over 900,000 records). The website is online and functional, and offers a
        variety of filters to search and download data. These are interim functions for
        providing data to users until a more sophisticated query tool is developed.

        One current limitation is public access to the site. We are developing a new role with
        limited data access to accommodate public use, but right now the site is restricted to
        recovery program personnel, partners, and stakeholders. The limited access role is a
        year 2 priority.

        Another limitation is the ability to load remotely detected data into the system. We
        are working with staff at Utah State University to update complete datasets for each
        PIA, but this is dependent on their availability to provide the data files and is not yet
        complete.

        Throughout this entire time period monthly webinars and bug fixes were ongoing.
        More detailed tasks are listed below.

        List of Completed Tasks (2/1/2015-12/1/2015):
        •   February-March, 2015: Developed beta version of the website showing core
            features (development of SQL Server database and core web pages to browse
            Individual Fish and Encounters). Presented beta website Recovery Program
            users at an interactive workshop in Grand Junction.
        •   April, 2015: Switched to secure protocol (https), added a new web page for
            Development Documents (webinar minutes, presentations, and release notes),
            added tool tips with inline help, added security features to registration, added
            wild card feature to PIT tag search tool, and added a Database Manager role
            for users to view test data and investigate the website (at this point in time,
            new users had no access until CNHP approved their registration and gave
            them Database Manager permissions).

- May, 2015: 1,000 record limit for Individual Fish and Encounters was removed, added web page for Studies, built tables to support one-to-many relationships between critical habitats and species, streams@colostate.edu email activated to facilitate communications, password reset button activated, and error checking and validation added to Hydro Areas and Organizations.
- June, 2015: new icons and headers were added to web pages to help with navigation, enhancements were made to the Studies page including the addition of a Sampling Events page and the ability to view Encounters in your study, revised the way new records are added to streamline data entry work flow, added the ability to drill down through the Encounters page to see all relevant details and related data, and further developed Hydro Areas to support related Studies and Encounters.
- July, 2015: developed web pages and new data tables for all data related to PIA Locations, reordered all dropdown lists more logically (usually alphabetically), solicited PIT tag data from both recovery programs, and developed final data lists for the look-up tables Hydro Areas, Gear Types, Species, and Habitat Types.
- August, 2015: added the ability to download data from both the Browse Fish and Encounters pages, added breadcrumbs to link previous pages viewed by the user to aid navigation, quality controlled and reformatted PIT tag data, and imported PIT tag data to STReaMS.
- September, 2015: hosted pre-release workshop for core users to review site and give feedback, fixed data import errors in Year Class and River Miles and reimported data, imported PIT tag distribution data, added a "popular downloads" feature to download cross-basin or cross-study encounters, added new styles and formatting including color coding with "sticky" table of contents, improved editing with additional fields and calendar pickers, expanded list of filters for both the Browse Fish and Encounters pages, created a Terms & Conditions page with Terms of Use and our Privacy Policy, added a look-up table for PIA Locations Types, reformatted and imported detection data for Price-Stubb, White River and Green River Canal.
- October, 2015: finalized Data Administrator and Researcher roles, reviewed user list and assigned organizations and roles to all users, added a Home Page, added a look-up table for Grow Out Ponds, added more hatchery details to the Individual Fish page, linked Individuals to Studies and added a Study filter, added the ability to enter detections by hand, added a new encounter type for transfers, developed a Getting Started guide, and added metadata to website. Released on 10/15/2015.
- November, 2015: added all committee members and their organizations to the system, compiled all users and permission levels and sent out to core group for review, drafted details for a fourth role in STReaMS with limited privileges, added Encounters to PIA Locations, and added PIA filters to Encounters.

V.   Recommendations:

Key priorities for the second year of development include (in order of importance)

1) Develop tab for PIT tag distribution list
2) Develop batch upload capabilities for field stations;
3) Refine accessibility criteria for user roles, including adding a public access role with limited privileges;
4) Develop QA/AC features for Database Managers and Data Administrators;
5) Increase online help capabilities for end users;
6) Develop and refine query building capabilities;
7) Obtain all available sample effort data accompanying mark/recapture surveys and incorporate into STReaMS;
8) Develop a process and scheme to incorporate non-native fish data into STReaMS.

We recommend adhering to the aforementioned priorities and following the schedule proposed in Appendix 2.

We also recommend the Upper Basin Recovery Program office hire a database manager as soon as possible. We recommend that person interact closely with CNHP and the STReaMS core user group to familiarize themselves with database structure, operation, accessibility, content, and to some extent maintenance requirements. This person will be responsible for managing data submissions in the winter of 2016.

VI.   Project Status: Ongoing

VII.   FY 2015 Budget Status

   A.   Funds Provided in FY 2015: $120,461
   B.   Funds Expended as of October 1, 2015: $120,461
   C.   Difference: $0
   D.   Percent of the FY 2015 work completed, and projected costs to complete: 100%
   E.   Recovery Program funds spent for publication charges: $0

VIII. Status of Data Submission (where applicable): Not Applicable

        Signed: /s/ Dave Speas   Jan 22, 2015
        Principal Investigator

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R14AC00084

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: (new)

Project Title: Development of a centralized recovery program database

Principal Investigator: Kirstin Holfelder
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Project/Grant Period: Start date (Mo/Day/Yr): 10/01/2014
End date: (Mo/Day/Yr): 6/30/2019

Reporting period end date (Mo/Day/Yr): 10/1/2014 through 9/30/2015

Is this the final report? Yes _____ No __X__

Performance :
Overall, goals have been met and performance thus far has been satisfactory. See Appendix 1 for the proposed schedule compared to actual work completed for year 1 and Appendix 2 for the proposed schedule compared to actual work through November 2015 for year 2.

Appendix 1. Proposed schedule for year 1 and status of actual work accomplished. Shaded boxes indicate the proposed start of tasks.

YEAR 1	Sept-14 - Nov-14	Dec-14 - Feb-15	Mar-15 - May-15	Jun-15 - Aug-15
Work closely with investigators to assess database needs and design	Ongoing	Ongoing	Ongoing	Ongoing
Purchase and set up server to host database	Complete			
Server security, database backups and server maintenance		Ongoing	Ongoing	Ongoing
Prepare database mockups		Complete		
Develop SQL server database		In Progress	Complete	
QA/QC existing MS Excel and MS Access databases and reformat as needed				Complete
Import existing fishes data into MS SQL Server				Complete
Code web interface for entering and retrieving data				Complete
Code management system for managing users and permissions		In Progress	In Progress	Complete
Develop canned queries for basic downloads				Complete
Create online help, user manual and system documentation			In Progress	In Progress
Internal testing and stress tests		Ongoing	Ongoing	Ongoing
Post basic version of database online				Complete
Train USFWS and BOR personnel to use the database				Ongoing
Prepare quarterly, semi-annual and **annual** reports		Complete		
Project Management and CSU Compliance	Ongoing	Ongoing	Ongoing	Ongoing

Appendix 2. Proposed schedule for year 2 and status of actual work accomplished through November 2015.

YEAR 2	Sept-15 - Nov-15	Dec-15 - Feb-16	Mar-16 - May-16	Jun-16 - Aug-16
Work closely with investigators to assess database needs and design	Ongoing			
Update online help, user manual and system documentation	In Progress			
Server security, database backups and server maintenance	Ongoing			
Develop online Data Management System for quality control and database administration	Ongoing			
Develop online Query Builder for customizing data downloads				
Develop upload capabilities for batch files and data recorded by PIAs	In Progress			
Develop revision tracking component				
Set up GitHub defect tracking				
Set up tracking system using Google Analytics to track public use of the site				
Internal testing and stress tests	Ongoing			
Post advanced version of the database online				
Train USFWS and BOR personnel on using and managing the database	Ongoing			
Prepare quarterly, semi-annual and annual reports	Complete			
Project Management and CSU Compliance	Ongoing			