FY 2022-23 SCOPE OF WORK   PROJECT: 170

Project Title
Development of a Centralized PIT Tag Database for the San Juan and Upper Basin Recovery Programs

Bureau of Reclamation Agreement Number:
R20AP00027

Reclamation Agreement Term
Oct. 1, 2019 – Sep. 30, 2024

Note: Recovery Program FY22-23 scopes of work are drafted in May 2021. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead Agency:
Colorado Natural Heritage Program, Colorado State University

Principal Investigator:
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Category:
_X_ Ongoing project
__ Ongoing-revised project
__ Requested new project
__ Unsolicited proposal

Expected Funding Source:
_X_ Annual funds
__ Capital funds
__ Other *[explain]*

Relationship to RIPRAP:
V.A.1. Conduct interagency data management program to compile, manage, and maintain all research and monitoring data collected by the Recovery Program.

Study Background/Rationale and Hypotheses:
STReaMS, the central database of the Recovery Programs, creates a consolidated system to assist researchers and stakeholders with uploading, managing, editing, and accessing data. Data support the recovery of endangered species and removal of nonnative fishes, assessment of effects of non-native fish removal, effects of new flow and temperature regimes based on the fish community response, and effects of continued water development.

Study Goals, Objectives, End Product(s):
Investigators of the Recovery Programs have been collecting large quantities of data on stocked and wild endangered fishes. These data are stored in the STReaMS database, which makes it easy to identify individual fish and capture histories and integrate data from various active capture projects as well as Passive Interrogation Arrays (PIAs). The sharing of data between investigators and stakeholders is streamlined to improve efficiency of data entry and retrieval, and to prevent duplication of records and efforts between and among the various investigations. The master database standardizes content and provides convenient, easy access to all available data.

Study Area:
STReaMS will house data from the entire upper Colorado and San Juan River basins, including Lake Powell.

Study Methods/Approach:
CNHP and the data managers use standard data management and assessment techniques to ensure data are accurate and as complete as possible.

Task Description, Deliverables and Schedule:

CNHP will continue to maintain the STReaMS database and enhance existing features during the Federal FY20-24. Tasks are broken out below.

Task 1: Server Maintenance
- Maintain the server, server security, and perform regular database backups
- Maintain the test server and development environment
- Perform necessary software installs and upgrades including Windows operating system, Windows updates, MS SQL Server, MS TFS, and PHP. Ensure all code performs as expected following updates.
- Assess overall performance and optimize resources
- Maintain Database Manager credentials to access SQL Server
- Replace hardware (e.g. server, hard drives, RAM, etc.) as needed and configure new hardware

Task 2: Website Maintenance and Feature Enhancements
- Enhancements to existing tools as funding allows
- Batch uploads
- QC tools
- Calculated fields
- Work with key recovery program staff to ensure complete PIA data in STReaMS
- Shift units from Loggernet process to new Biologic FTPS upload process as they are upgraded
- Needs assessment and training with key staff
- Add and remove PIAs to the automatic upload system as needed
- Work with Database Managers to develop any necessary custom queries, including non-tagged fish queries
- Bug fixes
- Internal testing and stress tests
- Update online help, data dictionary, user manuals, Data Managers user guide, and system documentation
- Train Recovery Program participants on features and enhancements

- Other priorities identified by Recovery Program Database Managers

Task 3: Project Management
- Prepare annual reports
- Perform project management and CSU compliance
- Maintain regular communication with Database Managers
- Ensure CNHP staff are fully trained on database design and tasks

Task 4: Develop Direct Database Upload System for PIA Data to Enhance Security, Reliability, and Resiliency (FY22)
- Work with Biomark to determine the computer infrastructure needed for direct database access
- Create table (or bin) in STReaMS to receive raw data from PIAs
- Revise upload methodology
- Crosswalk unit names between organizations
- Record import tracking
- Problem records (stuck tags, etc.)
- Rejected records
- Data retention
- Write PIA upload code to import raw data bin into the main STReaMS database (Tags, Fish, Encounters)
- Maintain current code for data files (if needed for old files, units not on Biologic system, etc.)
- Gather existing PIA data files, format, and import to a bin so available raw data are in a central location
- Update web interface and email notifications to align with the new import process
- Testing
- Dismantle existing FTPS site

FY21 includes the purchase and installation of a new server to run the database and website.
FY22 includes Task 4 to develop the direct database upload system for PIA data.

Key Personnel:
Amy Greenwell (PI and GIS Program Manager) has been a Research Associate at CNHP for over 20 years and is an expert in GIS, data collection methods, and relational database management. Ms. Greenwell will be responsible for project management, communications, feature design, testing, training, online content, documentation, and help manuals.

David Anderson (Co-PI, Director and Chief Scientist) has been the Director of CNHP for over 10 years and has over 20 years of experience working on biodiversity conservation priority setting and management of natural resources. His role will be to oversee the project within the context of CNHP's mission, CSU regulations, and reporting requirements, and to ensure QA/QC is followed throughout the duration of the project.

Other Personnel:
TBD (Database and Web Developer) will be a new hire responsible for web coding, query development, and database administration.

Michael Menefee (Environmental Review Coordinator and IT Supervisor) has been a Research Associate at CNHP for almost 20 years. He leads CNHP's IT staff and oversees administration of

CNHP's IT network. His role is to lead server maintenance activities and assess overall infrastructure, assess hardware and software needs, and manage backups.

Other staff may be involved as needed in order to efficiently meet deadlines and balance workloads at CNHP.

Budget Summary:

Salary charges include costs for CNHP staff to review project parameters, provide supporting technological infrastructure, update and enhance web interface, update database schema and content, complete database documentation, provide training and satisfy reporting requirements. Salary charges for CNHP professional staff are billed under the "Other Direct" category. Materials and supplies include hardware for the server and back-ups, the cert for the website, and long-distance phone charges. The Colorado Natural Heritage Program (CNHP) is a specialized service center as defined by OMB 2 CFR 200, Subpart E, Section 200.468. The rate structure is carefully designed to recover the cost of operating the CNHP and represents direct costs in accordance with 200.468b, which states, "The costs of such services, when material, must be charged directly to applicable awards based on actual usage of the services on the basis of a schedule of rates or established methodology…". The established schedule/methodology is available. These costs are explicitly removed from F&A cost pools and are included in the MTDC base for purposes of F&A rate calculation.

FY	Total	San Juan Cost	Upper Colorado Cost
2022	$46,954.72	$15,651.57	$31,303.15
2023	$37,830.83	$12,610.28	$25,220.55
2024	$37,631.89	$12,543.96	$25,087.93
2025			
2026			
Total	$122,417.44	$40,805.81	$81,611.63

Reviewers:

Julie Stahli, Deputy Director, Upper Colorado Program
Scott Durst, Science Coordinator, SJRIP

References: