

FY16 PROJECT PROPOSAL SUMMARY PAGE
Continuing, Multi-Year Projects

Project Title: Supplemental Data Management Support for EVOSTC Monitoring Programs

Project Period: February 1, 2016 – January 31, 2017

Primary Investigator(s): Rob Bochenek, Axiom Consulting & Design

Study Location: EVOS Spill Affected Area

Project Website (if applicable): <http://www.Gulf Watchalaska.org/>

Abstract*: The EVOSTC Long Term Monitoring (LTM) and Prince William Sound Herring Research and Monitoring (PWS Herring) programs propose an ambitious monitoring and research agenda. These efforts could facilitate a more thorough understanding of the effects of the oil spill if the new data and information on the spill-affected ecosystems are effectively managed and collated along with historical data on these systems. Based on feedback acquired from the EVOSTC Science Panel and staff, we propose a supplemental data management effort to execute on major tasks that have been deemed of high importance but are not being addressed by existing data management projects supporting EVOSTC programs (Projects 1412011D and 1412011C). This project proposes to increase the data management support for both LTM and PWS Herring programs by establishing a data coordinator position to improve metadata quality and best practices. Furthermore, this project will develop mechanisms to transfer and integrate LTM and PWS Herring program data products into DataONE.

Estimated Budget:

EVOSTC Funding Requested* (must include 9% GA):

FY12	FY13	FY14	FY15	FY16	TOTAL
\$0	\$0	\$0	\$121.8	\$126.0	247.8

Non-EVOSTC Funds to be used:

FY12	FY13	FY14	FY15	FY16	TOTAL

**Funds expressed in \$1000 increments*

Date: September 1, 2015

I. EXECUTIVE SUMMARY

Three data management-related projects have been previously funded by EVOSTC. The first project, led by the Alaska Ocean Observing System (AOOS), was titled "Data Management Support for the EVOSTC Long Term Monitoring Program" (Project #14120114D). The second project, also led by the Alaska Ocean Observing System (AOOS), was titled "Data Management Support for the EVOSTC Prince William Sound Herring Research and Monitoring Program" (Project #1412011C). Together, they provided data management support for EVOSTC's Long Term Monitoring (LTM) and Prince William Sound Herring Research and Monitoring (PWS Herring) programs and had the following objectives: (1) provide data management oversight and services using the AOOS Ocean Workspace as a tool for sharing data within these research programs prior to publication, (2) consolidate, standardize, and provide access to study area datasets, (3) develop tools to help user groups access, analyze and visualize information produced by the LTM effort, and (4) integrate LTM and PWS Herring data, metadata and information products into the AOOS data management system for long term storage and public distribution and use.

A third project was led by the National Center for Ecological Analysis and Synthesis (NCEAS) titled "Collaborative Data Management and Holistic Synthesis of Impacts and Recovery Status Associated with the Exxon Valdez Oil Spill" (Project #114120120). That project's funded objectives included the following: (1) provide data management oversight and services, (2) consolidate, standardize and provide access to study area data sets, focusing on retrospective analyses, synthesis and model development, (3) develop user tools to access, analyze and visualize LTM and PWS Herring data, (4) organize, analyze and model historical datasets, (5) integrate data into the AOOS data management system, (6) augment AOOS/IOOS preservation and interoperability system with other data systems through integration of DataONE services, and (7) conduct additional broad synthesis activities on spill impacts and recovery as part of whole-ecosystem analysis through NCEAS working groups.

After the NCEAS-led project was initiated, it became clear that integrating DataONE services into the AOOS/IOOS interoperability services (Project #114120120, Objective 6) would require significant time and effort on the part of AOOS, which was serving as an unfunded partner. The funding-to-work disparity was noted in the EVOSTC Long Term Programs Data Management Meeting on January 29-30, 2014 (EVOS Data Meeting Summary, Pg 2). Notes from that meeting describe EVOSTC staff encouraging AOOS to become a DataONE Member node, a process that can be facilitated by NCEAS but requires technical development from AOOS staff. Becoming a DataONE member node will provide EVOSTC with replication beyond the redundancy provided by Axiom's data centers in Portland and Providence. As a member node, a copy of all of the LTM and PWS Herring data in the AOOS data system will be distributed across other nodes in the DataONE network.

In addition to EVOSTC data distribution and archiving needs, both ongoing data management projects observed the need for a dedicated data coordinator position. In the initial proposal, program researchers were thought of as being enabled to organize their own files, author their own metadata, and meet data input and processing milestones with minor supervision and oversight. However, the depth and breadth

of the EVOSTC programs along with the myriad of data formats, conventions and personalities required full-time attention, and the LTM program hired a full-time program coordinator (Dr. Tammy Neher). The leadership of that program coordinator in the program greatly improved the quality, organization and metadata throughout the program. However, notes from EVOS Data Meeting Summary suggest that more metadata detail is still needed. They give suggestions on specific issues (e.g., weather or instrument abnormalities, deviations from published standard operating procedures, etc.), and they note a position similar to the LTM program coordinator position should be identified for the PWS Herring program. (EVOS Data Meeting Summary, Pg 3). Furthermore, the current program coordinator will shift their focus away from data coordination tasks in FY15 and FY16 to more aggressively support the Gulf Watch synthesis effort. For these reasons, it is critical for the success of both EVOSTC programs that resources be dedicated to support data coordination.

Previous proposals for the EVOS LTM and PWS Herring program proposals outlined the relevance of the proposed monitoring, data management and syntheses efforts to the EVOSTC 1994 Restoration Plan goals. Management and dissemination of the monitoring data collected through these programs is critical in order to allowing outside researchers and the public to evaluate, share, and build upon measured outcomes of restoration for all of the scientific priorities described in the restoration plan.

II. COORDINATION AND COLLABORATION

A. Within a EVOTC-Funded Program

The Research Workspace technology being used for data management of the Gulf Watch Alaska program is designed to help facilitate the integration of datasets across disciplines and researchers within the Gulf Watch program. This technology is also being used by the EVOSTC sponsored herring program. Teams and investigators are able to access each other's datasets in a seamless fashion.

B. With Other EVOSTC-funded Projects

The Research Workspace is also being used to organize and centralize data and electronic resources for historic EVOS funded projects. NCEAS and AOOS data management teams have been working together over the span of the project to salvage and document as much information as possible for historic EVOS data that is in jeopardy of being lost to time.

C. With Trustee or Management Agencies

In September 2013 the data management team released the Alaska Ocean Observing System's Gulf of Alaska (GOA) Data Portal, which integrates data and project information produced by Gulf Watch Alaska researchers with a large number of additional GIS, numerical modeling and remote sensing data resources. The team was able to leverage the AOOS Ocean Data Explorer portal which has been developed using other funding (primarily NOAA) and has these additional features: an integrated search catalog which allows users to search by category or key word, ability to preview data before downloading files, and advanced visualization tools. The platform provides open access to a large array of valuable scientific information that can be accessed and used by managers and scientists with Trustee Council agencies. AOOS data management has worked with several data consumers within USGS, NPS, BOEM and NOAA in accessing and using data contained within this data portal. The Research Workspace is also being used by the North Pacific Research Board's Gulf of Alaska Integrated Ecosystem Research Program. Historic data acquired through that program is also being provided to Gulf Watch Alaska PIs.

III. PROJECT DESIGN – PLAN FOR FY15

A. Objectives for FY15

- 1) Provide additional, needed data management support for LTM and PWS Herring programs.
- 2) Implement technical mechanisms to transfer LTM and PWS Herring program data from the AOOS data system to DataONE.

B. Changes to Project Design

Small changes have been made to protocols within the Gulf Watch Alaska Data Management Plan to address concerns of the EVOSTC Science Panel and include clarification of QA/QC procedures and review of Standard Operating Procedures (SOPs) by the program's internal science advisory team.

IV. SCHEDULE

A. Project Milestones for FY 16

For each project objective listed (III.A), specify when critical project tasks will be completed, as submitted in your original proposal. Please identify any substantive changes and the reason for the changes. Please format your information as in the following example:

Objective 1. Provide additional, needed data management support for LTM and PWS Herring programs through a dedicated data coordinator position
Redevelop Herring Program Research Workspace – To be met by March 2016

Objective 2. Implement technical mechanisms to seamlessly transfer LTM and PWS Herring program data from the AOOS data system to systems maintained by Trustee Council agencies and national archives.
Data One enablement – To be met by June 2016

B. Measurable Project Tasks for FY 16

FY 16, 1st quarter (February 1, 2016 - April 30, 2016)

March Submission of 2015 field data to OBIS-USA complete

FY 16, 2nd quarter (May 1, 2016 - July 30, 2016)

May Participate in annual PI meeting

FY 16, 3rd quarter (August 1, 2016 – October 31, 2016)

August Initiate processing of 2016 field season data into preservation formats

September Testing of production level DataONE member node

FY 16, 4th quarter (November 1, 2016 - January 31, 2017)

January Gulf Watch data portal fully operation as DataONE member Node

January Attend Alaska Marine Science Symposium

V. PROJECT PERSONNEL – CHANGES AND UPDATES

None

VI. BUDGET

A. Budget Forms

Provided separately

B. Changes from Original Proposal

No Change

C. Sources of Additional Funding

AOOS brings a significant level of leveraged resources, infrastructure, regional data management projects and partnerships to this proposed effort. The data management effort for the LTM and herring projects could not be accomplished for the budgeted amount by a team without these leveraged resources.

1. AOOS – (540k to AOOS DM) Alaska oceanographic data management effort. Supports open source, standards based data system that serves up and archives real-time sensor feeds, models & remote sensing data, GIS data layers, and historical datasets. Data system developed on interoperability concepts and meets NOAA Integrated Ocean Observing System standards and protocols for streaming data feeds to national data assimilation centers. Data Management Committee chaired by Dr. Phil Mundy provides ongoing advice, prioritization and direction to the team at Axiom Consulting & Design. AOOS board is made up of federal and state agencies, and major marine research institutions in the state that have committed to data sharing. The AOOS board has committed to supporting a statewide data system for as long as AOOS exists. Federal funding is stable, although we would like to see it increase. In the event AOOS was to end, all data and data products would be transferred to the University of Alaska.
2. NPRB GOAIERP – (80K) During this project year, NPRB will be providing funding to the AOOS data management team to support the Gulf of Alaska Integrated Ecosystem Research Program, which is performing research in the same area as Gulf Watch.
3. USFWS Seabird Data System – (\$50K) Project involves the creation and population of a series of new seabird metric databases (diet and productivity) and integrating these new databases with legacy seabird databases (species distribution and abundance at seabird colonies, pelagic species distribution and abundance, USGS seabird monitoring databases and NPRB’s North Pacific Seabird Diet Database). Modern spatially explicit, web based data entry interfaces have and continue to be developed to assist researchers existing in distributed agencies to contribute their historic and current seabird metric data into standard data structures. Project will result in vastly increasing the amount and quality of seabird species distribution, diet and other seabird data available for use in retrospective analysis and management. Though data includes areas around all of Alaska, most available data is located in GOA and PWS.
4. AOOS – collaborator with Alaska Data Integration Working Group – an initiative with the Alaska Climate Change Executive Roundtable – to develop protocols for serving up project data to increase data sharing among federal and state agencies.
5. AOOS and NOAA – initiatives to develop data sharing agreements with private sector, including oil & gas companies.
6. Kenai Fish Habitat Partnership/Cook Inlet Regional Citizens Advisory Council (28K) – contract with Axiom to develop a data management system for their oceanographic and contaminants data in Cook Inlet.
7. NOAA – Project to Axiom to develop a Cook Inlet beluga sightings database.