

# **Data Management Support for the Integrated Herring Research Program**

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## **Summary**

This project supports the EVOS Integrated Herring Research Program with critical data management support to assist study teams in efficiently meeting their objectives and ensuring data produced or consolidated through the effort is organized, documented and available to be utilized by a wide array of technical and non technical users. This effort leverages, coordinates and cost shares with a series of existing data management projects which are parallel in scope to the data management needs of the program. During year one and two, this project would initially focus on providing informatics support to streamline the transfer of information between various study teams and isolate and standardize historic data sets in the general spill affected area for use in retrospective analysis, synthesis and model development. This work would scale down in year three thru five to provide support for data preparation and archival.

An EVOS sponsored workshop was held in April 2006 tasked with identifying Prince William Sound herring data gaps and developing restoration or research projects to help herring recovery. Participants indicated that knowledge of spatial and temporal aspects of herring related data sets, e.g., herring spawn, lingering oil, predators, oceanographic conditions and shore zone habitat was necessary to understand how restoration activities might affect herring abundance trajectories. Many herring related data sets not easily accessible to restoration researchers and managers have been standardized and made available through the actions of the PWS Herring Portal (EVOS Project 070822, 080822 and 090822). This proposed project would expand the geographic scope of this work to include datasets in Lower Cook Inlet and potentially Kodiak regions. Additional data for the PWS area will be acquired from the Prince William Sound Science Center. Several restoration options proposed at the Integrated Herring Restoration Program meetings will require spatial and temporal knowledge of herring related data as tools for planning, inputs to models, or to measure the success of restoration actions.

Many of the restoration project ideas from the April 2006 workshop and more recent Integrated Herring Restoration Plan (IHRP) workshops require knowledge of the temporal and spatial relationships of past herring related data to assess possible future restoration actions. For example, updating the circulation and larval drift model requires spatial and temporal herring spawn data as an input. ADF&G has been estimating the linear extent of herring shoreline spawning and spawning biomass in PWS since 1973 (e.g., Brady 1987 and Biggs et al. 1992). ADF&G in Homer also has observations of herring abundance and distribution along the Outer Kenai coast, which is “downstream” of PWS along the Alaska Coastal Current (ACC) and may represent a rearing area for larval/juvenile herring advected from PWS. The ADF&G-Homer data include observations of spawning events and periodic age, sex, length (ASL) composition samples. Other rich datasets available for synthesis in the herring portal include: PWS herring biomass from spawn deposition and acoustics surveys (e.g., Willette et al. 1999); herring disease data from PWS (Marty et al. 2004), Kodiak, and Kamishak; and temporally/spatially explicit herring abundance, distribution, spawn, marine mammal, and fishery performance data from the Kodiak and Lower Cook Inlet management areas. Data sets available from the Prince William Sound Science Center (PWSSC) will contribute herring nursery bay, energetics, and diet data, as well as seabird predation and temporally/spatially explicit PWS oceanographic and zooplankton abundance data. Other data sets

which describe lingering oil, oil spill affects and general coastal morphology and biological habitat will make the herring ecosystem portal an indispensable tool for all herring restoration activities. Fishery managers will also be able to use the portal's powerful query tools to compare current "on-the-grounds" herring observations to historical observations (e.g., ASL, spawn timing and distribution, and temporal biomass trajectories) to better anticipate and manage fishery dynamics in-season.

### **Objectives and Methods**

**Objective 1.** Provide data management oversight and services for EVOS IHRP project team data centric activities which include data structure optimization, metadata generation, and transfer of data between project teams.

AOOS data management staff will work with EVOS IHRP investigators to document the types of data which will be collected during sampling efforts in addition to document Standard Operating Procedures (SOPs) for data collection to create metadata templates in addition to gauging general data management needs of PIs. This assessment is critical to identify the data management needs and the types of tools needed by researchers to increase their abilities to manage their data in an automated, standard fashion. The assessment will also isolate reporting requirements and specific data transfer needs. Based on the assessment results investigators will develop a data management plan for each logical data collection effort. This plan will address metadata creation and data delivery for investigators.

**Objective 2.** Consolidate, standardize and provide access to study area data sets that are critical for retrospective analysis, synthesis and model development.

This task will involve isolating and standardizing historic data sets deemed necessary for retrospective analysis by EVOS IHRP synthesis efforts. Early in the effort the EVOS IHRP researcher team will be engaged to prioritize sources of relevant data deemed of high value for the synthesis effort. Data will be prioritized by several metrics including length of time series, scientific importance, and quality and precision of the data storage format. All data acquired through efforts of this project will be merged into the AOOS data system for long term archival and access.

**Objective 3.** Integrate all data, metadata and information products produced from this effort into the AOOS data management system for long term storage and public use.

The ultimate goal of this project is to provide services to assist in the organization, documentation and structuring of data collected and made available via EVOS IHRP project activities so that it can be transferred efficiently to long term data archive and storage centers and made available for future use by researchers and other user groups. This task will leverage the AOOS cyber infrastructure and other active data management projects being undertaken by that organization.