***Exxon Valdez* Oil Spill Trustee Council**

Long-Term Research and Monitoring, Mariculture, Education and Outreach

Annual Project Reporting Form

Project Number: 25160111-F

Project Title: Herring surveys and age, sex, and size collection and processing

Principal Investigator(s): Jennifer Morella, Alaska Department of Fish and Game

Reporting Period: February 1, 2025 – January 31, 2026

Submission Date: March 16, 2026

Project Website: https://gulfwatchalaska.org/

https://experience.arcgis.com/experience/53d54699cbf54e72aa1a4daf405076b7

Please check all the boxes that apply to the current reporting period.

☒ **Project progress is on schedule.**

☐ **Project progress is delayed**

☐ **Budget reallocation request.**

☐ **Personnel changes.**

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1. Summary of Work Performed:

The Alaska Department of Fish and Game (ADF&G) received funding for this project to conduct aerial herring surveys and collect samples for age, sex, size, and sexual maturity (ASL). In addition to these primary objectives, the project plays a central role in coordinating and collaborating on survey and sampling efforts across all Herring Research and Monitoring (HRM) projects. ADF&G provides the R/V *Solstice* as a research platform, collects herring samples for multiple projects, offers logistical support for fieldwork, travel, and sample shipment, and disseminates aerial and vessel survey observations in a timely manner.

Prince William Sound Area

Spring aerial herring surveys and ASL sampling have been conducted by ADF&G in Prince William Sound (PWS) since the early 1970s. These two datasets represent the longest continuous time-series records of herring in PWS and are critical inputs for age-structured modeling and

stock assessment. They provide a foundation for understanding population dynamics, biomass trends, and underlying biological processes. Funding from the *Exxon Valdez* Oil Spill Trustee Council (EVOSTC) ensures continuity of these long-term datasets, which are essential for HRM program objectives. Overall, this project serves as a cornerstone of the HRM program and directly assists, coordinates, or provides data and samples to every project within the program.

Data collected from aerial surveys include the location and linear extent of herring milt by flight, classification of milt intensity, and estimates of herring school biomass. Observations of other species include the distribution and abundance of birds, sea lions, and other marine mammals. In 2025, PWS herring aerial surveys were severely impacted by anomalously poor weather conditions (high winds and precipitation), which prevented flights during key spawning events. Consequently, the 2025 mile-days-of-milt estimate should be considered incomplete. We conducted 39.25 hours of aerial surveys over 15 flights between March 23 and May 20, 2025, and observed 10.5 mile-days-of-milt (Fig. 1). Both the number of flights and total flight hours were below the 2005–2024 averages. Observations from PWS communities and the commercial open pound fishery confirmed extensive missed spawning events while flights were grounded. For example, community members from Tatitlek provided drone footage of active spawning, and the commercial open pound fishery reported significant egg deposition on kelp blades during periods when flights could not occur due to weather. The 2025 spawn distribution and timing are shown in Fig. 2.

ADF&G met several times with the modeling and stock assessment project team to determine how best to handle incomplete mile-days-of-milt estimates in biomass calculations. BASA model estimates used by ADF&G were fit without an observation from the 2025 aerial milt survey. A sensitivity analysis was conducted with low (25 md) and high (30 md) aerial milt survey scenarios to ensure that model outputs were robust to missing a year of aerial survey milt data, results are presented in their report.

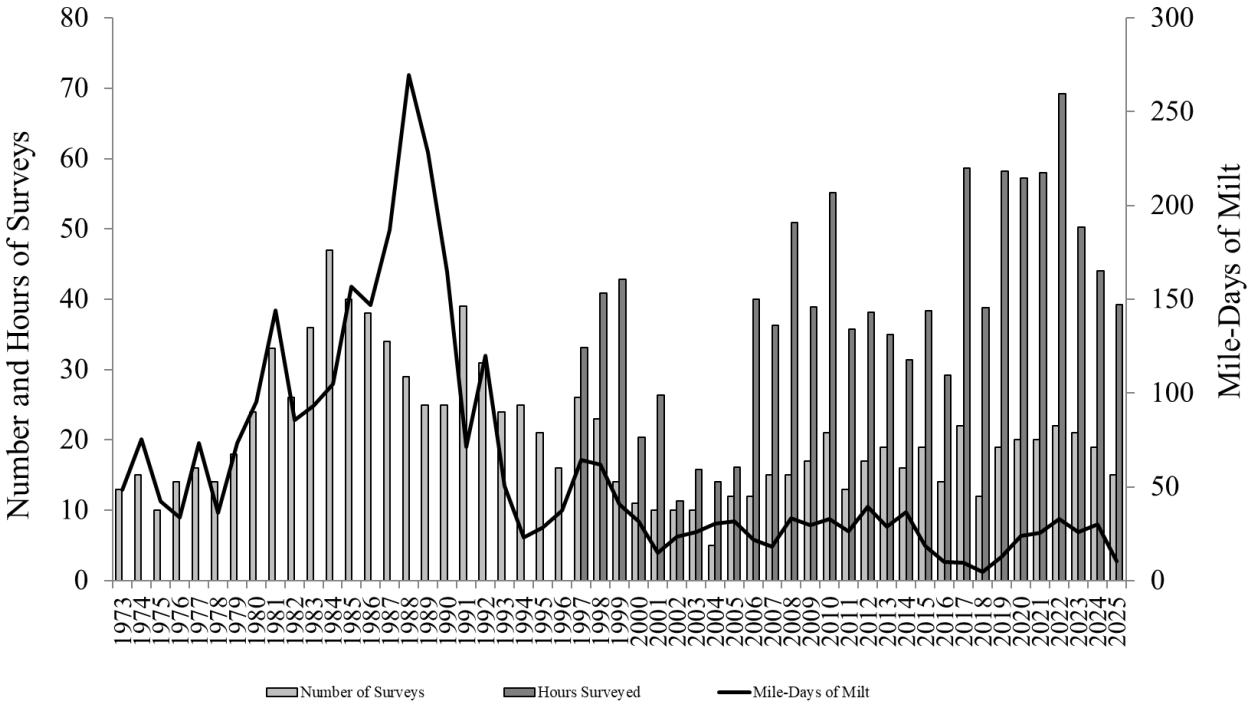

Figure 1. Prince William Sound herring aerial surveys, 1973-2025. Bars indicate the number and hours of surveys (left axis), and the line indicates mile-days of milt (right axis).

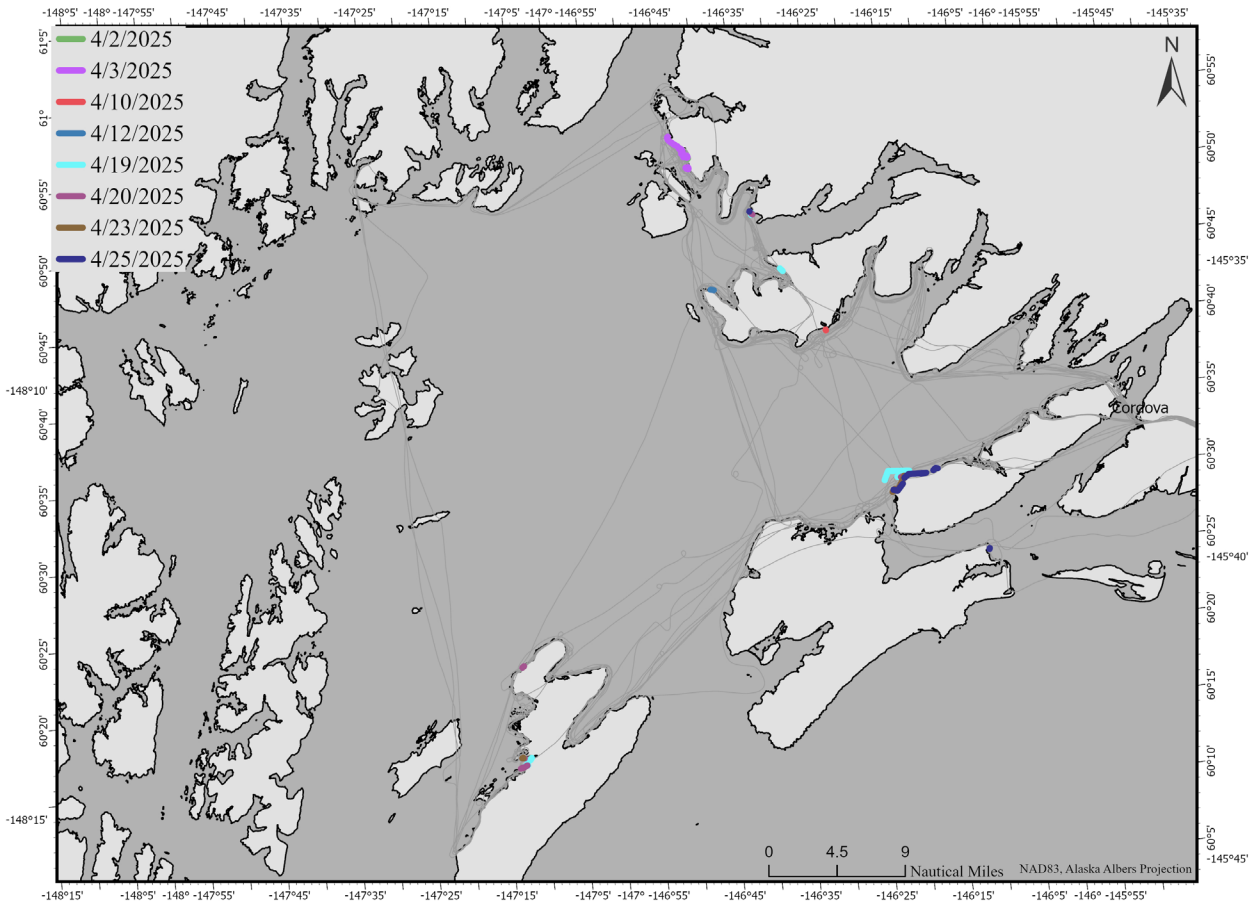

Figure 2. Prince William Sound herring spawn distribution by date for 2025.

We also conducted R/V *Solstice*-based herring sampling surveys in 2025 and collected ASL samples from Cedar Bay, Canoe Pass, Hell's Hole, and Port Etches. The age composition from 1,570 ageable samples for the 2025 PWS spawning biomass was 36% age-3, 19% age-4, 20% age-5, 13% age-6, 5% age-7, 5% age-8, and 2% age-9+ (Fig. 3). ASL sampling and associated U. S. Geological Survey disease sampling were largely unaffected by weather because sampling occurred prior to storms, using purse seines to target large pre-spawn aggregations.

This work is conducted by ADF&G commercial fisheries research and management personnel. Results from aerial surveys and age/size structure analyses are critical for managing herring

commercial fisheries in PWS. Biomass estimates and age-structured assessment model outputs are central to evaluating the population relative to regulatory thresholds set in the PWS Herring Management Plan (5 AAC 27.365). Survey results are disseminated to all relevant ADF&G commercial fisheries management and research staff.

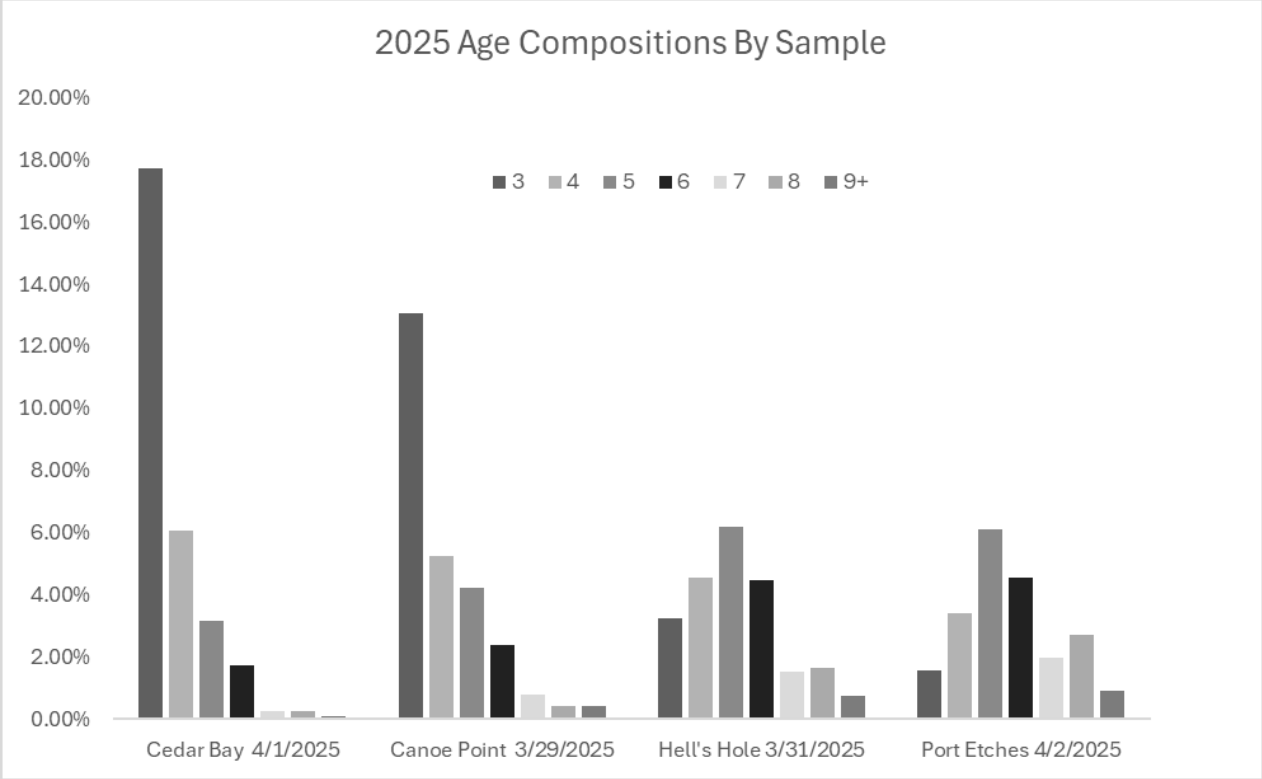

Figure 3. 2025 Prince William Sound herring spawning biomass age composition by sample location.

Kayak Island Area

Kayak Island herring monitoring and stock assessment are outside the scope and funding of this project's study area. However, aerial surveys from this region are included here due to their relevance to PWS herring and interest from the EVOSTC Science Panel. ASL and disease samples were not collected in 2025 due to lack of funds and volunteer vessels (previously used

for sample collection), although opportunistic efforts will continue in the future. Four aerial surveys totaling eight hours were flown, and 35.65 mile-days-of-milt were observed. Active spawning was documented on the last survey day (April 2) and likely continued after weather prevented further flights. Typically, small, isolated spawn events occur in late March, followed by a significantly larger event around April 12. In 2025, a major spawn event peaked approximately 10 days earlier than average (Fig. 4). Available satellite imagery and reports from pilots indicated that there was no evidence of a mid-April spawn event.

Figure 4. Prince William Sound (PWS) and Kayak Island area spawn timing, 1973-2025 by herring district (1- Northeast, 2-Northwest, 3- Naked Island, 4-Montague, 5- Southeast, 6-Kayak). Kayak Island has limited and intermittent historic survey coverage prior to 2021.

2. Products:

Peer-reviewed publications:

None to report.

Reports:

None to report.

Popular articles:

None to report.

Conferences and workshops:

None to report.

Public presentations:

None to report.

Data and/or information products developed during the reporting period:

ADF&G continues to update its ArGIS database of Prince William Sound herring surveys: https://experience.arcgis.com/experience/53d54699cbf54e72aa1a4daf405076b7. This provides in season reports of observations from the survey flights.

Data sets and associated metadata:

Morella, J. 2025. Aerial survey observations of Pacific herring biomass, marine birds, and marine mammals in Prince William Sound, Alaska, 2008-2021. Gulf of Alaska Data Portal: https://gulf-of-alaska.portal.aoos.org/#metadata/35fd35d8-f6f1-4762-9cf0-8e2e970755c4/project/folder_metadata/41851163.

Morella, J. 2025. Age-sex-length-weight data for Pacific herring in Prince William Sound, Alaska, 2014-2021. Gulf of Alaska Data Portal: https://gulf-of-alaska.portal.aoos.org/#metadata/35fd35d8-f6f1-4762-9cf0-8e2e970755c4/project/folder_metadata/41851174.

Morella, J. 2025. Herring: ADFG surveys—aerial survey routes, biomass, age sex length, and spawn. Gulf of Alaska Data Portal: https://gulf-of-alaska.portal.aoos.org/#metadata/35fd35d8-f6f1-4762-9cf0-8e2e970755c4/project.

Additional Products not listed above:

None to report.

3. Coordination and Collaboration:

The Alaska SeaLife Center or Prince William Sound Science Center

This project coordinates with Prince William Sound Science Center on a regular basis to attend meetings and hear updates from other projects and to coordinate with other HRM projects through the HRM component lead.

EVOSTC Long-Term Research and Monitoring Projects

This project coordinates and collaborates with all HRM component projects within the GWA-LTRM program. We provide daily aerial survey results and boat-based observations to all herring field programs. We provide the R/V *Solstice* (as well as ADF&G personnel) as a research platform for disease sampling (project 25120111-E). We age ~400 herring, collect organ samples, and provide transport logistics for the disease project (25120111-E). We provided 2025 herring ASL results and aerial survey and ASL results to the modeling and stock assessment project (project 25120111-C).

EVOSTC Mariculture Projects

This project does not interact with mariculture projects but will provide support to them as requested.

EVOSTC Education and Outreach Projects

This project contributes content to the Herring Watch Facebook page. Contributions include maps from each survey, photos and descriptions of ASL sampling efforts, and updates such as mile-days of milt season totals, etc. The project also maintains an interactive website showing fish and marine mammal observations during aerial surveys. ADF&G led herring dissections at the Ocean Sciences Festival as well as Discovery Room events.

Individual EVOSTC Projects

This project coordinates with the Data Management program to post data to the Gulf of Alaska data portal annually within required timeframes.

Trustee or Management Agencies

This work is performed by ADF&G commercial fisheries research and management personnel. The results of both the aerial surveys and age/size structure are critical to the management of herring commercial fisheries in PWS. The estimates of aerial biomass as well as age structured assessment model outputs are central in evaluating the population in relation to regulatory thresholds set in the PWS Herring Management Plan (5 AAC 27.365). Results of these surveys are disseminated to all relevant ADF&G commercial fisheries management and research staff.

Native and Local Communities

This project regularly engages native and local communities. The Native Village of Tatitlek receives herring survey maps after each survey and much of the community accesses survey maps through the ADF&G interactive map or the herring watch Facebook page. Herring are an important subsistence resource, and ADF&G's aerial observations are utilized by native and local communities to guide timing and location of subsistence harvest efforts. The Native Village of Tatitlek regularly shares their herring observations with us. Additionally, many PWS commercial herring permit holders live in Cordova and have an interest in PWS herring. PI Morella regularly meets with the local fishermen's organization to discuss herring; provide informational presentations at fishermen's meetings.

4. Response to EVOSTC Review, Recommendations and Comments:

No review, recommendations, or comments were provided in 2025. This project responded to comments in the FY24 annual report.

5. Budget:

This project is behind on spending in some categories, in part because the research vessel required maintenance in mid-April 2023, limiting vessel trips, and poor weather impacted aerial surveys. Also, spending in personnel was reduced because of vacant positions.

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
PROJECT BUDGET PROPOSAL AND REPORTING FORM

Budget Category:	Proposed FY 22	Proposed FY 23	Proposed FY 24	Proposed FY 25	Proposed FY 26	5- YR TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$72,526	$80,489	$82,397	$84,302	$80,055	$399,768	$272,376
Travel	$1,560	$1,599	$2,139	$2,180	$1,722	$9,200	$2,618
Contractual	$67,000	$85,063	$91,165	$94,093	$78,479	$415,800	$154,537
Commodities	$2,600	$2,665	$6,732	$2,800	$2,870	$17,666	$67,846
Equipment	$0	$38,775	$25,000	$0	$0	$63,775	$2,209
Indirect Costs Rate = 0%	$0	$0	$0	$0	$0	$0	$0
SUBTOTAL	$143,686	$208,590	$207,432	$183,375	$163,125	$906,209	$499,588
General Administration (9% of subtotal)	$12,932	$18,773	$18,669	$16,504	$14,681	$81,559	N/A
PROJECT TOTAL	$156,617	$227,363	$226,101	$199,879	$177,807	$987,768	
Other Resources (In-Kind Funds)	$55,030	$56,405	$57,815	$59,261	$60,742	$289,253	

COMMENTS:
ADF&G proposes the daily rate for the R/V Solstice as contractual, but the vessel daily rate is spent across all line items for the actual expense of operating the vessel, which is why commodities appears overspent.

This project is behind on spending in some categories, in part because the research vessel required maintenance in mid-April 2023, limiting vessel trips, and poor weather impacted aerial surveys. Also, spending in personnel was reduced because of vacant positions.

In-Kinds funds are from general fund payroll for permanent ADF&G staff associated with this project. This project leverages considerable existing ADF&G resources including R/V Solstice and other field and lab equiment as well as ADF&G long-term datasets.

FY22-26	Project Number: 25170111-F Project Title: Spawning Surveys & ASL Primary Investigator: Morella (ADF&G)	TRUSTEE AGENCY SUMMARY PAGE