

Form Rev. 9.14.17

**1. Project Number:**

17120114-A &amp; B

**2. Project Title:****Program Management I** – Program Coordination and Science Synthesis**Program Management II** – Administration, Science Review Panel, PI Meeting Logistics, Outreach, and Community Involvement**3. Principal Investigator(s) Names:**

Mandy Lindeberg, NOAA Auke Bay Laboratories (PM I)

Katrina Hoffman, Prince William Sound Science Center (PM II)

**4. Time Period Covered by the Report:**

February 1, 2017-January 31, 2018

**5. Date of Report:**

March 2018

**6. Project Website (if applicable):**[www.gulfwatchalaska.org](http://www.gulfwatchalaska.org)**7. Summary of Work Performed:****Science Coordination and Science Synthesis (PM I)**

The science coordination and synthesis project provides communication and data sharing, synthesis and integration of monitoring results, and communication of monitoring information for the scientific projects within the Gulf Watch Alaska (GWA) program. This is accomplished through program coordination and science synthesis efforts. Work performed under this project during FY17 includes the following.

***Program Coordination***

Donna Aderhold, a National Oceanic and Atmospheric Administration (NOAA) Affiliate, transitioned from the Science Coordinator position during the first five years of the GWA program to the Program Coordinator position at the beginning of FY17.

The Program Management Team (PMT), consisting of the Program Lead, Administrative Lead, Science Coordinator, and Program Coordinator, met in Juneau April 5-7, 2017 to discuss the approach to overseeing the GWA program, roles and responsibilities of each PMT member, and the tools available for oversight, and establish a schedule of activities for the first year of the program.

The PMT coordinated internal and peer reviews of draft FY12-16 final reports. The Program Coordinator established a schedule and tracked the progress of all reports. The GWA science coordinating committee (leads for each of the components) conducted internal reviews of final reports within their area of expertise. Following revision by principal investigators (PIs), the PMT coordinated with GWA’s Science Review Panel (SRP) to conduct peer reviews. Internal and peer reviews were documented via comments in Word documents and peer review forms. Non-scientific projects (program; administration, logistics, and outreach; data management; science coordination and synthesis; and collaborative data management and holistic synthesis) received internal review but not peer review. Eighteen final reports were submitted to EVOSTC on June 1, 2017. During the fourth quarter of FY17 (November 2017 – January 2018), based on the EVOSTC Science Coordinator’s schedule, the Program Coordinator facilitated completion of FY12-16 final reports based on EVOSTC comments.

The PMT facilitated quarterly GWA program team meetings during FY17 (Table 1). The Program Coordinator scheduled, developed agendas based on input from PMT and Science Coordinating Committee members, and facilitated the meetings. The purpose of the meetings was to provide the GWA program team with updates on programmatic and scientific activities and allow for collaboration among team members. All meetings were coordinated in communication with the Herring Research and Monitoring (HRM) program lead, and HRM PIs engaged with GWA PIs during a portion of the November 2017 meeting to encourage and enable cross-program communication, data sharing, and synthesis.

Table 1. Gulf Watch Alaska program team quarterly meeting dates and venues.

<b>Meeting Date(s)</b>	<b>Meeting Venue</b>
April 27, 2017	Teleconference
July 19, 2017	Teleconference
November 15-17, 2017	Cordova Center, Cordova, AK
January 23, 2017	Alaska Ocean Observing System Office, Alaska Marine Science Symposium, Anchorage, AK

The PMT coordinated submission of fifteen FY18 work plans including a comprehensive program budget workbook. The Program Coordinator established a schedule, tracked progress, reviewed work plans for consistency, and oversaw the submission of work plans. The Program Lead, Science Coordinator, and Science Coordinating Committee conducted internal scientific reviews.

The culminating scientific effort of the GWA and HRM programs for FY12-16 was the publication of a special issue in the journal *Deep-Sea Research Part II* titled “Spatial and Temporal Ecological Variability in the Northern Gulf of Alaska: What Have We Learned Since the *Exxon Valdez* Oil Spill?” During FY17, the Program Coordinator served as the corresponding guest editor for the special issue, coordinated with Stanley Rice and Charles Peterson to write a foreword for the special issue, co-authored an introductory paper, served as a journal editor and guest editor on peer reviews, tracked acceptance of submitted

manuscripts, and coordinated with the journal publication team on publication logistics. The special issue is Volume 147 of the journal, the first issue of 2018.

The GWA program tracks multiple recurring and one-time activities throughout each year. The Program Coordinator developed a comprehensive list of dates and activities, and updates the list on a regular basis to monitor each of these activities. The list includes regularly occurring activities such as due dates for data and metadata, annual work plans and annual reports, quarterly meetings, one-time activities such as 5-year annual reports, and the recent special issue journal publication. The Program Coordinator shares each new update with the GWA program team.

The PMT compiled and reviewed all FY12-16 final reports. They also worked to standardize format and content of FY18 work plans to help improve efficiencies in GWA PI reporting efforts and EVOSTC review. We also compiled and edited replies to EVOSTC and science panel review comments on the FY18 work plan.

In addition, the Program Coordinator tracks publications and reports published by PIs and coordinates with the Outreach Coordinator on outreach activities and website updates.

The Alaska Marine Science Symposium (AMSS) accepted 17 poster and 6 oral presentations based on GWA monitoring data for the 2018 conference. The PMT provided templates to PIs to use so that GWA presentations would have a similar look. The Program Coordinator maintained a list of oral and poster presentations.

### ***Science Synthesis***

Dr. Robert Suryan was hired by NOAA Auke Bay Laboratories as Science Coordinator for the FY17-21 funding period. During FY17 Rob transitioned from his Associate Professor – Senior Research position at Oregon State University to Science Coordinator for GWA and Research Ecologist at the Alaska Fisheries Science Center (AFSC). The GWA Program Lead and Science Coordinator are both stationed at the NOAA Auke Bay Laboratories and are able to effectively coordinate GWA efforts with other NOAA sampling programs in the Gulf of Alaska (GOA).

In consultation with GWA project PIs and the GWA SRP, the PMT is proposing four main science synthesis projects for FY17-21. All of these projects require dedicated multi-year efforts to develop and refine, with some to be maintained throughout the life of the GWA program.

#### ***5-yr Projects (FY17-21) - Science Synthesis Publications***

We proposed two possible cross-component synthetic publications to pursue for the science synthesis workshop in 2019. The first received unanimous support from GWA PIs and the GWA SRP and has a green light for moving forward. The second received mixed reviews and is currently on hold.

##### ***1) Biological Responses to the Marine Heatwave in the Gulf of Alaska (Suryan - lead author)***

All agreed that GWA and HRM can provide unique perspectives and analyses of physical conditions and biological responses from the nearshore intertidal to offshore oceanic domains. Both programs will have collected data before, during, and “after” (depending on when “after”

occurs) this large scale ecosystem perturbation. We anticipate including data through 2018. If we do not observe a clear post event (“after”) indicator for some metrics by 2018, we will propose testable hypotheses for how the system will respond. This is intended to be a GOA-wide effort and the lead author is reaching out to all groups to collaborate, including non-*Exxon Valdez* Oil Spill Trustee Council (EVOSTC) programs (e.g., the North Pacific Research Board’s [NPRB’s] GOA Integrated Ecosystem Research Program [GOAIERP], NOAA, Alaska Department of Fish and Game [ADF&G], etc.).

There will be at least two GWA cross-component publications that contribute to this overarching synthetic manuscript:

- Environmental drivers and declines in prey abundance and condition leading up to the 2015-16 murre die-off in the GOA (Arimitsu – lead author)
- Coherence in sea surface temperatures from the intertidal to oceanic domains in the northern GOA (Monson – lead author)

The Science Coordinator (Suryan) has begun contributing to data integration and analyses for both of these manuscripts.

*2) Identifying Natural vs. Anthropogenic Impacts in the Gulf of Alaska: Lessons learned 30 years after the Exxon Valdez Oil Spill (Suryan – lead author if continued)*

This proposed manuscript received mixed support and has not moved forward since the PI meeting in November 2017. While some felt that there was still much to be published on this important topic, others felt that publications by the National Center for Ecological Analysis and Synthesis (NCEAS) working groups and the recent joint GWA and HRM special issue effectively covered this topic. This Science Coordinator is working with PIs to determine if a need still exists for such a synthesis.

#### *Legacy Projects (FY17-21) – Indicators and Modeling*

*3) Time Series Indicators for the Gulf of Alaska Ecosystem and Stakeholder Interests*

Our goal is for each GWA project to have at least one signature time series that best indicates the state of their part of the GOA ecosystem. Collectively, these would provide GWA’s best assessment of the state of the GOA each year. This follows similar efforts for large marine ecosystems throughout Alaska and elsewhere. Several GWA time series already contribute to these efforts, but we would like to increase our participation. Moreover, unlike GWA, which samples annually, several other major programs in the GOA are no longer sampling (NPRB’s GOAIERP) or sample every other year (some NOAA surveys). Therefore, GWA is uniquely positioned to contribute to an annual ecosystem status assessment.

Time series indicators can also be used to inform Trustee and non-Trustee Agencies by providing timely assessments of stakeholder-specific metrics. For example, GWA could generate an annual spatially explicit marbled murrelet abundance and trend index that would likely be of interest to the U.S. Forest Service.

#### 4) *Ecosystem Modeling*

Discussion between PMT and GWA SRP identified the importance of including a modeling component within GWA. Two perspectives emerged, one suggesting a modeler was needed immediately, the other that the current 5-year focus should be on identifying key processes and time series development to better inform a modeling effort that would occur during the second 10-years of GWA. We are currently considering a hybrid approach, where during the current 5-year period we design the content and integration of a GWA modeling component and, if funding is available, begin customizing existing physical models for GWA from which other modeling efforts will build upon in years 10-20. The PMT needs to continue discussions with GWA PIs, the SRP, EVOSTC staff, and others before moving forward.

#### *Miscellaneous Activities*

The PMT invited two speakers to the annual PI meeting whose work addresses the science synthesis efforts of GWA. Dr. Sam McClatchie addressed maintaining relevance of long-term monitoring programs with insights from his involvement in the California Cooperative Oceanic Fisheries Investigations (CalCOFI, established in 1949) and California Current Ecosystem Long-term Ecological Research site. Dr. Stephanie Zador addressed her efforts in developing ecosystem indicators for Alaska that are used by the North Pacific Fisheries Management Council when setting fishing quotas.

The GWA PMT and GOA IERP investigators co-convened a GOA workshop at Ocean Sciences Meeting in Portland, Oregon February 11, 2018, titled “To unpathed waters, undreamed shores: Current and future marine research in the Gulf of Alaska”. The workshop included three interrelated sessions: new findings from the GOA, climate variability and ecosystem responses, and future directions for GOA research. Half of the 20 presenters were from GWA, signifying the breadth of GWA investigations and its important contribution to GOA monitoring going forward.

## **Administration, Science Review Panel, PI Meeting Logistics, Outreach, and Community Involvement (PM II)**

### ***Administration***

Since FY17 is the beginning of five years of anticipated funding, Prince William Sound Science Center (PWSSC) worked with NOAA to establish the second five-year grant within this series (the first grant covered FY12-16). This process included restructuring a grant proposal to NOAA that was inclusive of all non-Trustee Agency projects within GWA and HRM, and submitting budget spreadsheets in the format required by the SF424a document. This necessitated negotiation with NOAA grants management staff as the standard federal documents are not set up to accommodate programs that are five years in duration. The combined GWA and HRM proposal was submitted to NOAA in January 2017 and then had to go through legal review at NOAA. Due to the administrative review time required by NOAA staff, the non-Trustee Agency funded projects did not receive approval or funding via NOAA until May 2017, one quarter into the EVOSTC fiscal year. As such, some projects are slightly behind on their spending.

PWSSC issued and managed sub-award contracts for all non-Trustee Agency FY17 projects, executing said contracts as soon as the grant funds were approved by NOAA in May 2017. We invoiced NOAA and subsequently remunerated sub-awardees based on demonstrated expenses; tracked spending for non-Trustee Agency projects; and initiated our annual audit in January 2018. We established a contract with Axiom Data Science for Stacey Buckelew's support of outreach programming and coordination. We submitted a semi-annual report to NOAA for the work that was being conducted under the no-cost extension for FY12-16, which was largely related to the special issue of *Deep-Sea Research II*. We submitted a final report to EVOSTC for the work completed in FY12-16.

PWSSC communicated with the publisher, Elsevier, on a frequent and regular basis about all billing activities associated with the manuscripts being published in the special issue of *Deep-Sea Research II* and coordinated these communications with the HRM program, as well.

### ***PI Meeting and Science Review Panel Logistics***

The program held two quarterly PI meetings by phone; the other two were held in person at the annual PI meeting in Cordova from November 15-17, 2017 and AMSS on January 23, 2018. PWSSC booked and paid for travel, lodging, and per diem for participating SRP members (Klinger, Holland-Bartels, Brenner, Rice, and Batchelder). PWSSC provided all telephonic and Internet-based meeting capabilities for all four PI meetings. We coordinated all logistics pertaining to the November 2017 PI meeting, including reserving and renting the meeting location and providing ground transportation for all visiting PIs and SRP members in Cordova, and coordinated the meeting venue and catering for the winter PI meeting in Anchorage in January 2018. We submitted all financial (SF425a) reports to NOAA as required and on deadline.

## ***Outreach***

For the new five-year effort, we made significant (albeit subtle) updates to the website: [www.gulfwatchalaska.org](http://www.gulfwatchalaska.org). The changes include:

- Addition of the FY12-16 final reports
- Updated links to educational resources
- Blog posts added with relevant program announcements
- Inclusion of FY17 Quarterly Currents newsletters
- Incorporation of nearshore resource briefs
- Hyperlinks added to all publication citations where possible at: <http://www.gulfwatchalaska.org/resources/publications-2/>
- Hyperlinks added to all DSR II special issue citations, once available, at: <http://www.gulfwatchalaska.org/resources/publications-2/special-issue/>
- Posting of an updated team photo and updated PI photos where appropriate, as well as updated PI and SRP biographies where appropriate
- Revised text on most landing pages, including current text on the “home” page as well as inclusion of “latest news” links to make the home page content more dynamic
- Access to the most current data portal link
- Addition of the Middleton Island/Hatch project information to the forage fish project overview page
- Attachment of PI-written haikus to project pages
- Making links to the relevant published data available on each project page (see “Download Project Data” button, such as the one viewed here: <http://www.gulfwatchalaska.org/monitoring/environmental-drivers/continuous-plankton-recorder/>)
- Adding and updating a “Completed Projects” page from projects that are not continuous in the program (e.g., conceptual modeling, historical data compilation, and lingering oil)

We reviewed the list of all outreach contacts for Trustee Agencies and included them in circulation of Quarterly Currents so they can be apprised of program progress. We revisited the Outreach Steering Committee membership and reviewed our outreach responsibilities for FY17-21. We began planning the ecological knowledge exchange with native villages as required in the invitation for proposals for FY17-21 of this program. The ecological knowledge exchange planning engaged local education coordinators from Chugachmiut, an organization that provides education and technical assistance to native people in the Chugach region, as well as representatives of the Kachemak Bay National Estuarine Research Reserve and the U.S. Fish and Wildlife Service. The exchange will occur in collaboration with both the GWA and HRM programs and communities in the Kachemak Bay area in FY18 as proposed.

Some members of the program gave invited public presentations to audiences. These included:

- An overview of GWA to Cook Inlet Regional Citizens’ Advisory Council board of directors (Aderhold)

- A presentation on the 2015 lingering oil survey to the Prince William Sound Regional Citizens' Advisory Council (Lindeberg)
- A community presentation on the 2015-2016 murre die-off in the Gulf of Alaska at the PWSSC Tuesday Night Lecture Series talk in Cordova (Kaler)

A complete listing of posters and presentations given within the scientific community is listed in section 9B.

## 8. Coordination/Collaboration:

### A. Projects Within a Trustee Council-funded program

#### 1. Within the Program

PM I and PM II have the ultimate responsibility for coordinating within the GWA program. All activities are performed to ensure program-level coordination. The PMT communicates by email, phone, and in person on a weekly basis to ensure effective program management.

#### 2. Across Programs

##### a. Herring Research and Monitoring

The GWA PMT coordinated regularly with the HRM program. The HRM Lead was invited to all GWA meetings and teleconferences. The two programs chose to schedule an overlapping fall meeting in Cordova to enable cross-program learning and synthesis, as well as economize on data management training opportunities with Axiom staff.

All non-Trustee Agency administrative functions are combined at PWSSC to serve both the GWA and HRM programs. The *Deep-Sea Research II* special issue publication included manuscripts written by PIs of both the HRM and GWA programs. The PMT coordinated with the HRM Lead on all special issue publication needs.

The GWA Science Coordinator served on the review committee for selecting two postdoctoral scholars to work with the HRM program and enhance collaboration between HRM and GWA.

##### b. Data Management

GWA coordinates closely with the data management program. Data management staff are invited to all GWA meetings and teleconferences. Data management one-on-one training consultations were incorporated into the fall meeting in Cordova. A data management team member (Buckelew) is active on the Outreach Steering Committee. Data management is also a part of the NOAA grant through which PWSSC manages all project funds for non-Trustee Agencies. As such, PM II coordinates with the data management team on all reporting requirements to NOAA.

##### c. Lingering Oil

While GWA projects do not collaborate with the EVOSTC Lingering Oil program, some (e.g., Nearshore 17120114-H, PWS summer bird surveys 17120114-M, PWS winter bird surveys 17120114-E) contribute to population trends and long-term assessment of previously injured resources in nearshore ecosystems.



## **B. Projects not Within a Trustee Council-funded program**

GWA summer and winter marine bird surveys in PWS (17120114-H, 17120114-M, 17120114-E) provide information on population trends of species studied by EVOSTC funded Pigeon Guillemot Restoration Program (17100853).

## **C. With Trustee or Management Agencies**

GWA PIs contributed four time series reports to NOAA's Ecosystems Considerations Report to the North Pacific Fisheries Management Council and the same reports to the North Pacific Marine Sciences Organization's (PICES) North Pacific Ecosystem Status Report, 2009-2016. GWA investigators and field crews also worked with the NOAA NMFS Marine Mammal Stranding Network to report and sample large whale carcasses. GWA personnel with NPRB, NOAA, and various universities organized a GOA workshop (described above) and a special paper session at the Ocean Sciences Meeting in Portland, Oregon.

## **9. Information and Data Transfer:**

### **A. Publications Produced During the Reporting Period**

Aderhold, D. R., D. Esler, R. A. Heintz, R. R. Hopcroft, M. R. Lindeberg, W. W. Pegau. Editors. Spatial and Temporal Ecological Variability in the Northern Gulf of Alaska: What have we learned since the *Exxon Valdez* Oil Spill? Deep Sea Research Part II: Topical Studies in Oceanography, Volume 147, Pages 1-202, ISSN 0967-0645. January 2017.  
<https://www.sciencedirect.com/journal/deep-sea-research-part-ii-topical-studies-in-oceanography/vol/147/suppl/C>.

Holderied, K., and D. Aderhold. 2018. Science coordination and synthesis for the long-term monitoring program. *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 16120114-H). *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

Hoffman, K. C., and M. E. McCammon. 2018. Long term monitoring: program coordination and logistics & outreach. *Exxon Valdez* Oil Spill Trustee Council Restoration Project Final Report (Restoration Project 16120014-B). *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

Additional publications are listed in the individual project annual reports.

### **B. Dates and Locations of any Conference or Workshop Presentations where EVOSTC-funded Work was Presented**

Below is a list of oral and poster presentations by GWA program scientists. These may also be found in the individual project annual reports.

Aderhold, D. 2017. Gulf Watch Alaska monitors ecosystem health. **Article**. Delta Sound Connections 2017-18. 16 pp. <http://pwssc.org/wp-content/uploads/2017/06/DSC-2017-web2.pdf>.

Arimitsu, M., M. A. Bishop, d. Cushing, S. Hatch, B. Heflin, R. Kaler, K. Kuletz, C. Matkin, J. Moran, D. Olsen, J. Piatt, A. Schaefer, and J. Straley. 2018. Changes in marine predator and prey populations in the aftermath of the North Pacific Heat Wave: Gulf Watch Alaska Pelagic

- update 2017. **Poster presentation.** Alaska Marine Science Symposium, Jan 23-26, 2018, Anchorage, AK.
- Arimitsu, M., J. Piatt, B. Heflin, and S. Schoen. 2017. Jellyfish blooms in warm water may signal trouble for forage fish in a warming climate. **Poster presentation.** ICES/PICES Drivers of Dynamics of Small Pelagic Fish Resources, Mar 6-11, 2017, Victoria, BC.
- Arimitsu, M.L., J.F. Piatt, S.K. Schoen, and B. Heflin. 2017. Forage fish in hot water contribute to seabird die-off. **Article.** Delta Sound Connections. <http://pwssc.org/wp-content/uploads/2017/06/DSC-2017-web2.pdf>.
- Arimitsu, M., J. Piatt, S. Schoen, B. Heflin, V. von Biela, and S. Hatch. 2018. Changes in forage fish during the winter 2015-16 seabird die-off and the North Pacific marine heat wave. **Oral presentation.** Alaska Marine Science Symposium, Jan 23-26, 2018, Anchorage, AK.
- Campbell, R. 2018. A profiling observatory for high resolution oceanographic, biogeochemical, and plankton observations in Prince William Sound. Alaska Marine Science Symposium, Anchorage. **Oral Presentation.**
- Bodkin, J.L., B.E. Ballachey, G.E. Esslinger, B.P. Weitzman, A.M. Burdin, L. Nichol and H.A. Coletti. 2017. A century of sea otter science and conservation in National Parks. X Sea Otter Conservation Workshop, 17-19 March 2017, Seattle Aquarium. Seattle WA. **Oral Presentation.**
- Bodkin, J., H. Coletti, B. Ballachey, D. Monson, T. Dean, D. Esler, G. Esslinger, K. Iken, K. Kloecker, B. Konar, M. Lindeberg, and B. Weitzman. Detecting and inferring cause of change in Alaska nearshore marine ecosystem: An approach using sea otters as a component of the nearshore benthic food web. **Oral Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.
- Coletti, H., D. Esler, B. Ballachey, J. Bodkin, T. Dean, G. Esslinger, K. Iken, K. Kloecker, B. Konar, M. Lindeberg, D. Monson, B. Robinson, and B. Weitzman. 2018. A decade's worth of data: Key metrics from a large-scale, trophic web based long term monitoring program in the northern Gulf of Alaska. **Poster Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.
- Cushing, D., K. Kuletz, R. Hopcroft, S. Danielson, and E. Labunski. 2017. Shifts in cross-shelf distribution of seabirds in the northern Gulf of Alaska under different temperature regimes, 2007-2015. **Poster Presentation.** The 44<sup>th</sup> Meeting of the Pacific Seabird Group, Tacoma, WA. 21-25 February 2017.
- Danielson, S. 2017. UAF-IMS seminar: Marine heatwaves in the North Pacific and Arctic, 2013-2017, Fairbanks AK, 22 November 2017. **Oral Presentation.**
- Danielson, S. 2017. UAF Site Review: Northern Gulf of Alaska Marine Ecosystem Monitoring, M.J. Murdock Charitable Trust, 10 August 2017. **Oral Presentation.**
- Esler, D. 2017. Sea ducks as indicators of nearshore marine conditions. 6th International Sea Duck Conference, San Francisco. **Oral Presentation.**

- Esler, D. 2017. Sea Duck Traits: Their Influence on Oil Spill Vulnerability and Restoration Potential. 6th International Sea Duck Conference, San Francisco. **Oral Presentation.**
- Esslinger, G.G., H.A. Coletti, J.L. Bodkin, D.H. Monson, B.E. Ballachey, T.A. Dean, and D. Esler. 2017. Contrasting demography and behavior among sea otter populations in the northern Gulf of Alaska. Alaska Chapter of The Wildlife Society Annual Meeting, Fairbanks. **Oral Presentation.**
- Esslinger, G.G., H.A. Coletti, J.L. Bodkin, D.H. Monson, B.E. Ballachey, T.A. Dean, and D. Esler. 2017. Trends and equilibrium density vary among sea otter populations in the northern Gulf of Alaska. Sea Otter Conservation Workshop, Seattle. **Oral Presentation.**
- Holderied, K., D. Hondolero, S. Kibler, M. Vandersea, A. Doroff, J. Schloemer, and S. Buckelew. 2017. Using coastal Alaska marine responses to the 2014-2016 Pacific Warm Anomaly to improve risk assessment for climate-driven increases in paralytic shellfish poisoning events. **Oral presentation** at Climate Predictions Applications Science Workshop. Anchorage AK. May 2017.
- Holderied, K. and E. Ammann. 2017. Improving shellfish restoration and habitat assessment in coastal Alaska: Kachemak Bay Habitat Focus Area. **Oral presentation** at Coastal and Estuarine Research Federation conference. Providence, RI. Nov 2017.
- Holderied, K., K. Powell, S. Baird, and J. Schloemer. 2018. Variability in estuarine salinity and stratification in Kachemak Bay, Alaska from 2012-2017. **Poster presentation** at Alaska Marine Science Symposium, Anchorage AK. Jan 2018.
- Hopcroft. 2017. Latest observations and collections made along the Seward Line, Alaska. **Oral presentation.** International Conference on Copepoda, Los Angeles. June.
- Hopcroft, Coyle, Danielson, Danielson. The Seward Line - 2017. **Poster Presentation.** AMSS January 2018
- Hopcroft, Coyle, Danielson & Strom. Twenty Years of Observations Along the Gulf of Alaska's Seward Line: Impact of Continued Warm Conditions. **Oral Presentation.** Kodiak Marine Science Symposium, Kodiak, April 2017
- Hopcroft et al. Oceanography in the Northern Gulf of Alaska: the Seward Line. **Public Presentation** for Osher Lifelong Learning Institute, Fairbanks, December 2017.
- Hopcroft, Strom, Coyle & Danielson: Three in a row: continued warm conditions along the Gulf of Alaska's Seward Line. **Oral Presentation.** ASLO, Honolulu - March 2017
- Kaler, R., K. Kuletz, D. Dragoo, and H. Renner. 2017. Unusual observations of seabirds in the Gulf of Alaska following the 2015-2016 mass die-off. **Article.** Delta Sound Connections. <http://pwssc.org/wp-content/uploads/2017/06/DSC-2017-web2.pdf>.
- Iken, K. and B. Konar. 2018. Freezing in a warming climate? Poster Presentation the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.

- Kloecker, K.A., D. H. Monson, B. Robinson, H. A. Coletti, B. E. Ballachey, and D. Esler. 2017. Correlates between sea otter diet and prey energetics in a mussel-specialist population. Sea Otter Conservation Workshop, Seattle. **Oral Presentation.**
- Konar, B., K. Iken, H. Coletti, T. Dean, D. Esler, K. Kloecker, M. Lindeberg, B. Pister, and B. Weitzman. 2018. Trends in intertidal sea star abundance and diversity across the Gulf of Alaska: effects of sea star wasting. **Poster Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.
- Lenz, Roncalli, Hartline, Germano, Cieslak, Strom, & Hopcroft. The physiological ecology of the calanid copepod, *Neocalanus flemingeri* in the northern Gulf of Alaska. **Oral Presentation.** AMSS January 2018
- Lindeberg, M. 2017. The Long-Term Monitoring Program of the *Exxon Valdez* Trustee Council. **Oral Presentation.** Briefing to the EVOSTC Trustees, Nov. 14, 2017.
- Lindeberg, M. 2017. We are Watching – the long-term monitoring program of the *Exxon Valdez* Oil Spill Trustee Council. **Oral Presentation.** PWS RCAC Science Night. December.
- Lindeberg, M., K. Holderied, D. Aderhold, K. Hoffman, M. Arimitsu, H. Coletti, and R. Hopcroft. 2017. Gulf Watch Alaska: Results from five years of ecosystem monitoring in the northern GOA. **Oral Presentation.** 2017 NMFS Alaska Fisheries Science Center mini symposium.
- Martyn, P., D. Monson, H. Coletti, A. Miller, and D Esler. Using Small Unmanned Aircraft Systems (sUAS) to map intertidal topography in Katmai National Park and Preserve, Alaska. **Poster Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.
- Matkin, C. O. 2017. Kenai Fjords National Park Interpretive guide training. **Oral Presentation.** May 5, 2017.
- Matkin, C. O. 2017. Killer whales. **Oral Presentation.** Seward public science night, Resurrect Art Coffee House. May 16, 2017.
- Matkin, C. O. 2017. Tracking whales with hydrophones. **Article.** Delta Sound Connections, PWS Science Center. March 10, 2017.
- Matkin, C.O. et al. 2018. Southern Alaska resident killer whales may be dependent on more than Alaska salmon: some initial stream of origin genetic data from prey samples. **Poster** Alaska Marine Science Symposium, Anchorage Alaska. January 2018.
- McKinstry, C., and R. Campbell. 2018. Zooplankton community structure and seasonal abundance in Prince William Sound. Alaska Marine Science Symposium, Anchorage. **Poster Presentation.**
- Mearns, A, D. Janka, P. Marloff, R. Campbell, S. Pegau, and D. Esler. 2018. Twenty-eight years of intertidal biological variability based on volunteer visits to photo sites in Western Prince William Sound. Alaska Marine Science Symposium, Anchorage. **Poster Presentation.**

- Monson, D., K. Holderied, R. Campbell, S. Danielson, R. Hopcroft, B. Ballachey, J. Bodkin, H. Coletti, T. Dean, K. Iken, K. Kloecker, B. Konar, M. Lindeberg, B. Robinson, B. Weitzman, and R. Suryan. 2018. Congruence of intertidal and pelagic water and air temperatures during an anomalously warm period in the northern Gulf of Alaska; the “Blob” washes ashore. Alaska Marine Science Symposium, Anchorage. **Poster Presentation.**
- Monson, D.H., B.P. Weitzman, K.A. Kloecker, D. Esler, L.A. Sztukowski, S.A. Sethi, H.A. Coletti, and T. Hollmen. 2017. Understanding Trophic Relationships of Sea Otters and Their Effects on Demographic Attributes. Sea Otter Conservation Workshop, Seattle. **Oral Presentation.**
- Moran, J., K. Boswell, and J. Straley. 2017. Humpback whales ruin a perfectly good overwintering strategy for Pacific herring in Alaska. ICES/PICES Victoria BC, February. **Poster Presentation.**
- Olsen et al. 2017. Behavioral Changes During Multi-pod Aggregations of Southern Alaska Resident Killer Whales (*Orcinus orca*). **Oral Presentation.** Society of Marine Mammalogy Conference, Halifax, Nova Scotia, November 2017.
- Piatt, J., T. Jones, K. Kuletz, H. Renner, J. Parrish, R. Corcoran, S. Schoen, B. Bodenstein, R. Kaler, M. Garcia-Reyes, H. Coletti, M. Arimitsu, R. Duerr, K. Lindquist, J. Lindsey, and W. Sydeman. 2018. Unprecedented scale of seabird mortality in the NE Pacific during the 2015-2016 marine heat wave. **Oral Presentation.** Alaska Marine Science Symposium, Anchorage, AK. 22-26 January 2018.
- Powell, K., J. Schloemer, K. Holderied and A. Doroff. 2018. Oceanographic characteristics associated with spring zooplankton community structure in Kachemak Bay, Alaska from 2012 to 2016. **Poster presentation** at Alaska Marine Science Symposium, Anchorage AK. Jan 2018.
- Renner, M., K. Holderied, K. Powell, D. Hondolero, J. Schloemer, A. Doroff, and K. Kuletz. 2018. Ecosystem variability in lower Cook Inlet across trophic levels, space, seasons, and climate regimes. **Oral presentation** at Alaska Marine Science Symposium, Anchorage, AK. Jan 2018.
- Roncalli, Mathews, Cieslark, Hopcroft, Hopcroft, & Lenz. Physiological changes in *Neocalanus flemingeri* females during the transition from diapause to reproduction. **Oral Presentation.** ASLO - Feb 2017
- Schaefer, A. L., M. A. Bishop, and R. Thorne. 2018. Non-breeding marine bird response to forage fish schools in Prince William Sound, Alaska. **Poster Presentation.** Alaska Marine Science Symposium, January 2018, Anchorage, AK.
- Sethi, S., K. Iken, B. Konar, and H. Coletti. 2018. Regional and local drivers combine to structure mussel growth and mortality. **Poster Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.

- Siegert, D., K. Iken, B. Konar, S. Saupe, and M. Lindeberg. 2018. Nearshore food web structure in two contrasting regions of Cook Inlet. **Poster Presentation** the Alaska Marine Science Symposium, Anchorage Alaska. January 21-25 2018.
- Straley, J., and J. Moran. 2018. Have Gulf Of Alaska Humpback Whales Reached Carrying Capacity or has the Blob made the Food Web Screwy? Alaska Marine Science Symposium, Anchorage, January. **Oral Presentation.**
- Suryan, R., M. Lindeberg, D. Aderhold, K. Hoffman, M. Arimitsu, H. Coletti, and R. Hopcroft. 2018. Gulf Watch Alaska: taking the pulse of the northern Gulf of Alaska. **Poster presentation.** Alaska Marine Science Symposium, Jan 23-26, 2018, Anchorage, AK.
- Vandersea, M., P. Tester, K. Holderied, D. Hondolero, S. Kibler, K. Powell, S. Baird, A. Doroff and W. Litaker. 2018. Distribution and abundance of *Alexandrium catenella* in Kachemak Bay and lower Cook Inlet, Alaska. **Poster presentation** at Alaska Marine Science Symposium, Anchorage, AK. Jan 2018.
- Weiss, C., J. Moran, T. Miller, and M. Rogers. 2018. Fine-scale trophic ecology and bioenergetics of euphausiids in Prince William Sound, Alaska. Alaska Marine Science Symposium, Anchorage, January. **Poster Presentation.**
- Weitzman, B. 2017. Unhappy as a clam? **Article.** Delta Sound Connections. <http://pwssc.org/wp-content/uploads/2017/06/DSC-2017-web2.pdf>.
- YouTube Video highlighting the common murre die-off. 2017. Cooperative efforts between NPS, USFWS, USGS and GWA. <https://www.youtube.com/watch?v=Nhji4H5u65M>

### **C. Data and/or Information Products Developed During the Reporting Period, if Applicable**

#### *Data:*

- DataONE published datasets. Gulf Watch Alaska Research Workspace. Doi: 10.24431/rw1k113.
- Batten, S. D. 2017. Data contributed to the NOAA Ecosystem Considerations Report 2017 for the Gulf of Alaska region. Full reports may be found at the following link: <https://access.afsc.noaa.gov/reem/ecoweb/Index.php>.
- Danielson, S. 2017. Data contributed to the NOAA Ecosystem Considerations Report 2017 for the Gulf of Alaska region. Full reports may be found at the following link: <https://access.afsc.noaa.gov/reem/ecoweb/Index.php>.
- Hatch, S. 2017. Data contributed to the NOAA Ecosystem Considerations Report 2017 for the Gulf of Alaska region. Full reports may be found at the following link: <https://access.afsc.noaa.gov/reem/ecoweb/Index.php>.
- Moran, J. and J. Straley. 2017. Data contributed to the NOAA Ecosystem Considerations Report 2017 for the Gulf of Alaska region. Full reports may be found at the following link: <https://access.afsc.noaa.gov/reem/ecoweb/Index.php>.

*Information Products:*

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2017. GWA Quarterly Currents. Newsletter. Volume 1.1: spring quarter. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2017. GWA Quarterly Currents. Newsletter. Volume 1.2: summer quarter. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2017. GWA Quarterly Currents. Newsletter. Volume 1.3: fall quarter. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2017. GWA Quarterly Currents. Newsletter. Volume 1.4: winter quarter. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

*Online Resources:*

Gulf Watch Alaska – <http://www.gulfwatchalaska.org/>

AOOS Gulf Watch Alaska Data Portal – <http://portal.aos.org/gulf-of-alaska.php>

**D. Data Sets and Associated Metadata that have been Uploaded to the Program’s Data Portal**

PM I and PM II projects do not currently collect or generate original data or post data to the data portal. All other published data sets are reported on in the relevant project annual report.

**10. Response to EVOSTC Review, Recommendations and Comments:**

**Science Panel Comments and Responses on Revised FY17-21 Proposal, September 2016**

*In September 2016, the Science Panel commented:* (PM1) The Science Panel was pleased with the proposal and organizational structure. The structure of the coordinating committee and science review Panel sets the mechanisms for evaluation and adaptive management of the project. We also appreciated the responsiveness to Panel requests to streamline the budget. (PM2) The Panel appreciated the responsiveness to Panel requests to streamline the budget.

*PI Response:* Thank you for your comments.

**Science Panel Comments and Responses on FY18 Work Plans, September 2017**

*In September 2017, the Science Panel commented:* (PM1) As stated above, the Panel is pleased with Mandy’s leadership skills and very pleased with the proposal and organizational structure. The Panel appreciates the different management aspects of this proposal and proposal 18120114-B and suggests consolidating these two proposals into one Program management proposal. This would help to clarify how the two program management components relate to one another and to demonstrate lack of duplication. (PM2) The Panel appreciates the PI’s coordination activities. The Panel suggests combining this proposal with 18120114-A into one Program management proposal.

*PI Response:* The Program Management Team appreciates the Science Panel’s suggestion to consolidate the management proposals: 1) 18120114-A or Program Management I and 2) 18120114-B or Program Management II projects. We are willing to consolidate the program management proposals and reports; however, the budgets for PMI and PMII need to remain

separate, and would be reported on separately. We will work with EVOSTC staff to develop a reasonable format for consolidation and tracking.

#### **11. Budget:**

Please see provided program budget workbook and associated PMI and PMII spreadsheets.

The PM II budget is underspent for FY17 for several reasons:

- Overall: Delays in establishing the NOAA grant contract until May 2017 reduced the ability to spend funds on the project for more than 3 months.
- Travel: No SRP members attended 2018 AMSS on behalf of the GWA program and Hoffman did not travel to Anchorage for the PAC or Trustee Council meetings. The PAC meeting was attended by other PMT members and the Trustee Council meeting was scheduled for the same week as the annual GWA PI meeting. Hoffman also was unable to travel to Juneau for a PMT meeting in April 2017, and attended by video conference.
- Contractual: There has been a delay in invoicing by our subawardee responsible for webmaster and outreach coordination, and we expect those invoices to catch up in early 2018. Our annual audit occurred in January 2018, 4-6 weeks later than usual, and the audit agency did not invoice until the new fiscal year began. However, those expenses have been incurred, as have those for insurance, for which billing needs to be posted to this project.
- Commodities: The computer hardware and software that we expected to purchase in FY17 have not yet been purchased, but decisions on those expenses will be made by staff in the near future.