

**ATTACHMENT B. Annual Project Report Form (Revised 11.21.19)**

**1. Project Number:**

19120114-A & 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, 2019-January 31, 2020

**5. Date of Report:**

March 2020

**6. Project Website (if applicable):**

[www.gulfwatchalaska.org](http://www.gulfwatchalaska.org)

**7. Summary of Work Performed:**

**Science Coordination and 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 FY19 includes the following.

***Program Coordination***

The Program Management Team (PMT), consisting of the Program Lead, Administrative Lead, Science Coordinator, and Program Coordinator, met via teleconference on May 14, 2019 to discuss the status of the GWA program and goals for FY19. The Program Coordinator successfully transitioned to employment through the Prince William Sound Science Center (PWSSC).

The PMT facilitated quarterly GWA program team meetings during FY19 (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 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 principal investigators (PIs) engaged with GWA PIs during a portion of the November 2019 meeting to encourage cross-program communication, data sharing, and synthesis.

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

<b>Meeting Dates</b>	<b>Meeting Venue</b>
May 22, 2019	Teleconference
July 23, 2019	Teleconference
October 8-9, 2019	Alaska Islands and Ocean Visitor Center, Homer, AK
January 29, 2019	Hotel Captain Cook, Alaska Marine Science Symposium/Teleconference

The PMT coordinated submission of thirteen FY20 project work plans, a program work plan, and 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. Work plan submissions included a new project to conduct 5-year sampling for lingering oil.

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. Regularly occurring activities include data and metadata submissions, annual work plans and annual reports, and quarterly meetings. One-time activities include the 3<sup>rd</sup>-year science synthesis report, and 5<sup>th</sup>-year annual reports. The Program Coordinator shares each new update with the GWA program team.

The PMT compiled and reviewed all FY18 annual reports. We continue efforts to standardize format and content of reports and 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 annual reports and FY20 work plans.

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 12 poster and 2 oral presentations based on GWA monitoring data for the 2020 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.

The PMT distributed the *Quarterly Currents* newsletter to EVOSTC staff, science panel members, public advisory committee members; GWA outreach steering committee members; and sponsoring agency public relations personnel; HRM PIs; and Prince William Sound and Cook Inlet Regional Citizens' Advisory Council staff and board members. The newsletter provides highlights of GWA program activities each quarter. All *Quarterly Currents* newsletters are available publicly on the GWA website (<https://gulfwatchalaska.org/resources/quarterly-currents-newsletter/>).

Please see the **PM II – Outreach** section below for Program Coordinator, Program Lead, and PI outreach activities.

### ***Science Synthesis***

The main focus of science synthesis efforts in FY19 included: 1) completing the four synthesis manuscripts that integrate data across all three GWA components, HRM, and collaborators; 2) coordinating request for two additional funding requests in FY19 work plans; and 3) providing additional time series indicators to the National Oceanic and Atmospheric Administration's (NOAA's) annual Alaska Ecosystem Status report to support ecosystem-based fisheries management in the Gulf of Alaska (GOA).

The GWA PMT coordinated efforts to complete the four main synthesis manuscripts that comprised our science synthesis report for the FY17-21 funding cycle. Although this report was a deliverable for the current 5-year funding cycle, we synthesized data and accomplishments from the beginning of GWA. The origin of GWA in 2012 was fortuitous in occurring 2 years prior to the onset of the Pacific marine heatwave in 2014 and, therefore, formed the basis of our synthesis efforts. While the effect of the marine heatwave on the GOA ecosystem was a logical focus of our synthesis efforts, we consider these four manuscripts the foundation of continued future efforts that address mechanisms and longevity of this major ecosystem perturbation.

### **Science Synthesis Publications**

The four synthesis manuscripts that we produced included varying amounts of cross-component data integration.

- 1) *Suryan et al. "Ecosystem response to a prolonged marine heatwave in the Gulf of Alaska."*  
This manuscript is led by the GWA Science Coordinator and provides a broad perspective on ecosystem response for the northern GOA, from Prince William Sound to the Alaska Peninsula. GWA originated 2 years prior to the Pacific marine heatwave (2014-2016) and is uniquely positioned to address this topic. We used 113 biological time series in the initial

model runs, ranging from intertidal organisms and zooplankton to forage fishes and whales to assess response of the GOA ecosystem to the Pacific marine heatwave. Our final model run for publication will include about 78 additional time series (191 total) and be completed in early FY20. The 113 time series included: 74 from GWA, 23 from NOAA Alaska Fisheries Science Center, 10 from Alaska Department of Fish and Game, 2 from the Alaska SeaLife Center, 2 from the EVOSTC HRM program, and 2 from the EVOSTC Pigeon Guillemot Project.

This is the overarching synthesis to tie together a diverse array of GWA, HRM, and other datasets to address the following objectives:

- a. Identify which taxa exhibited negative, positive, or neutral responses to the heatwave.
- b. Determine whether taxa showed signs of recovery 4 years after the onset of the heatwave.
- c. Assess how the biological community responded as a whole.

General findings included:

- a. **Varied response** – Intertidal organisms, forage fish, and marine mammal metrics exhibited primarily negative responses. Zooplankton exhibited primarily positive responses. Marine birds (primarily at-sea distribution) exhibited primarily neutral responses. Groundfish responses were evenly distributed among positive, negative, and neutral (Fig. 1).
- b. **Returned to baseline** – For some metrics during a short cooling period in 2017 and 2018.
- c. **No return to baseline** – A variety of taxa from lower trophic level consumers to upper trophic level predators remained far from pre-heatwave values up to at least 4 years after the onset of the heatwave
- d. **Distinct community groupings** – Biological communities in years after the onset of the heatwave group strongly together and were distinct from years before the heatwave (Fig. 1).

The Science Coordinator also contributed as a co-author to the three other GWA science synthesis report manuscripts:

- Danielson et al. – “A study of marine temperature variations in the northern Gulf of Alaska across years of marine heatwaves and cold spells”
- Weitzman et al. – “Changes in rocky intertidal community structure during a marine heatwave in the northern Gulf of Alaska”
- Arimitsu et al. – “Synchronous collapse of forage species disrupts trophic transfer during a prolonged marine heatwave”

The Program Lead contributed as co-author to the Weitzman et al. synthesis report manuscript.

For additional details on these studies, please see the GWA 2019 science synthesis report, “The Pacific Marine Heatwave: Monitoring During a Major Perturbation in The Gulf of Alaska” (Suryan et al. 2019).

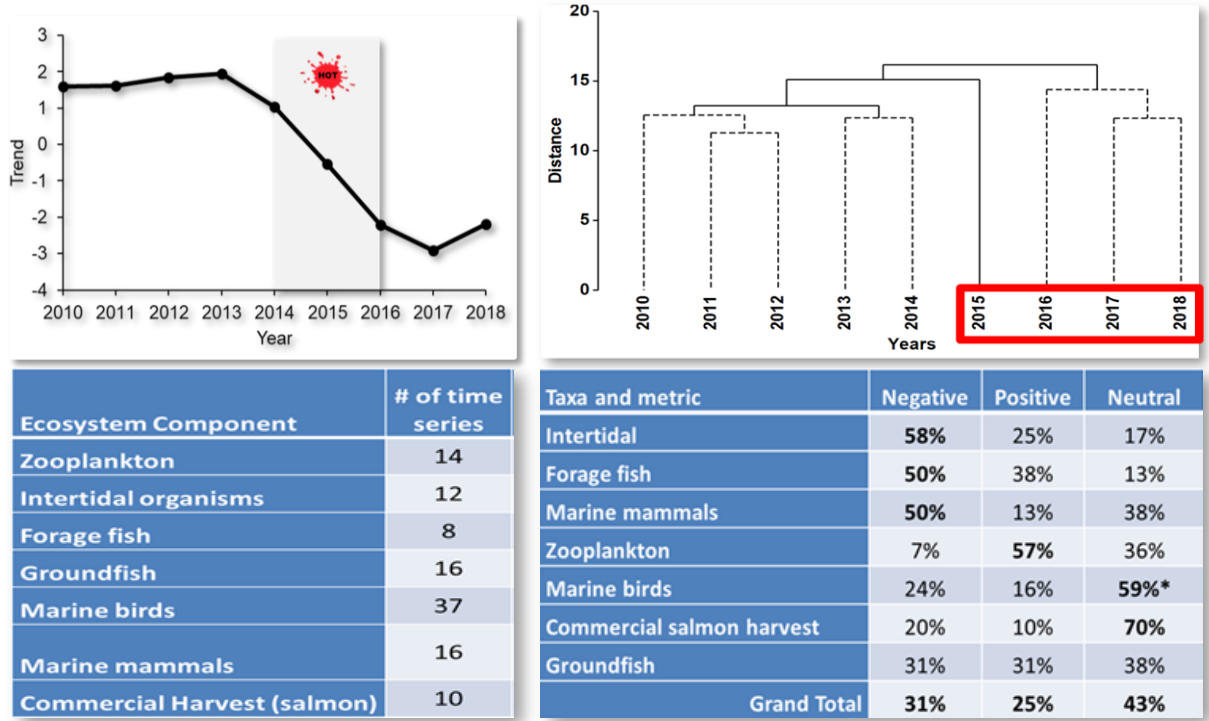


Figure 1. (upper left panel) Common trend from dynamic factor analysis of 113 biological time series that included years before and after the Pacific marine heatwave (grey rectangle). (lower left) Biological metrics included quantity (e.g., biomass), quality (e.g., energy density), and performance (e.g., fecundity). (upper right panel) Hierarchical cluster (community) analysis among years of the same time series showing that the recent heatwave years grouped strongly together (red rectangle) and separate from previous years. (lower right panel) Percentage of the time series by taxa and metric that exhibited negative, positive, and neutral responses during the heatwave.

The Science Coordinator is collaborating on one other manuscript with GWA and other investigators that is not included in the science synthesis report:

- Straley et al. – “Local collapse of a humpback whale population during a marine heatwave”

GOA 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 GOA each year. This follows similar efforts for large marine ecosystems throughout Alaska and elsewhere. GWA has greatly expanded its annual contributions to these efforts. Furthermore, GWA, along with the National Science Foundation Northern Gulf of Alaska Long-Term Ecological Research site, sample annually, whereas several other major programs in the GOA are no longer sampling (the North Pacific Research Board’s [NPRB’s] Gulf of Alaska Integrated Ecosystem Research Project [GOAIERP]) or sample every other year (some NOAA surveys). Therefore, GWA

is uniquely positioned to contribute to the annual ecosystem status reports to the North Pacific Fisheries Management Council.

For the 2019 Ecosystem Status Report (Zador et al. 2019), investigators from all three GWA components (Environmental Drivers, Pelagic Ecosystem, and Nearshore Ecosystem) contributed 18 metrics. Contributors included: Batten (18120114-D, 3 metrics), Danielson (19120114-I, 3 metrics), Hatch/Arimitsu (19120114-C, 3 metrics), Moran/Straley (19120114-O, 1 metric), Hopcroft (19120114-L, 2 metrics), Campbell/McKinstry (19120114-G, 2 metrics), and Coletti et al. (19120114-H, 4 metrics). We also facilitated contribution by HRM (Pegau et al. 19120111, 3 metrics).

Additionally, Arimitsu and Hatch (19120114-C) developed a juvenile sablefish growth index from fish collected when sampling diets of rhinoceros auklets nesting on Middleton Island. This juvenile growth index is being used in the ecosystem and socioeconomic profile of the sablefish stock assessment for Alaska (Shotwell et al. 2019).

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

### ***Administration***

The PWSSC extended contract amendments to all the non-Trustee Agency sub-awardees for the third year of this grant, FY19. The non-Trustee Agency portions of the GWA program that are administered by the PWSSC under this award include projects associated with coordination and oversight, outreach and community involvement, data management, oceanographic monitoring in PWS and the GOA, monitoring of zooplankton and oceanographic conditions in the GOA, monitoring of seabird abundance in PWS, monitoring of orca populations in PWS, and monitoring of intertidal communities in Kachemak Bay. For each of the aforementioned projects, PWSSC invoiced NOAA and subsequently remunerated sub-awardees based on demonstrated expenses. We ensured that cumulative spending levels were tracked for non-Trustee Agency project reporting. As required, we underwent field testing for our annual audit in the first week of December 2019 and submitted semi-annual reports to NOAA in both March and August 2019 for the work that was being conducted in the program.

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

The program held four quarterly PI meetings; two were held by phone; one was held in person at the annual PI meeting at the Alaska Islands and Ocean Visitor Center in Homer, October 8-9, 2019; and one included a mix of in-person and telephonic participation at the January 2020 Alaska Marine Science Symposium (Table 1).

PWSSC ensures all telephonic and Internet-based meeting needs are met for the PI meetings by providing conference lines and GoToMeeting portals as needed. We coordinated all logistics pertaining to the October 2019 PI meeting, including reserving the meeting location, arranging travel for all relevant PIs and Science Review Panel (SRP) members, and coordinated the meeting venue

for the winter PI meeting in Anchorage in January 2020. We submitted all federal financial SF425 reports to NOAA as required and in advance of deadlines. PWSSC booked and paid for travel, lodging, and per diem for participating SRP members (Klinger, Heintz, Brenner, Rice, and Batchelder) who provide program review oversight.

### ***Outreach***

We continue to make updates to the website [www.gulfwatchalaska.org](http://www.gulfwatchalaska.org). The changes include:

- Blog posts added with relevant program announcements
- Inclusion of FY19 Quarterly Currents newsletters
- Recent publications (with hyperlinks where possible) added at: <http://www.gulfwatchalaska.org/resources/publications-2/>
- Updated most project pages with current results and time series
- Posting of an updated team photo and updated PI photos where appropriate, as well as updated PI and SRP biographies where appropriate
- Revised and updated text and figures on most landing and project pages
- Access to the most current data portal link

Outreach contacts for Trustee Agencies are recipients of Quarterly Currents so they can remain apprised of program progress. The distribution for Quarterly Currents was expanded to include staff and board members of the Prince William Sound and Cook Inlet Regional Citizens' Advisory Councils.

The Program Lead presented to the North Pacific Fishery Management Council about the GWA program and the program's contributions to the Ecosystem Status Report for the Gulf of Alaska during the Council's meeting in October 2019 in Homer. PMT and GWA PIs also participated in North Pacific Fishery Management Council workshops and side meetings and attended an industry reception to talk with participants about the Gulf Watch Alaska program.

The Science Coordinator gave a presentation at the Sitka Whalefest on "Changing Climate, Changing Ecosystems" and was interviewed for a Conservation Connection podcast that aired in December 2019.

Each year the GWA program includes two pages of articles in PWSSC's annual outreach publication *Delta Sound Connections*. *Delta Sound Connections* is widely distributed throughout the PWS region, Anchorage, and beyond.

## **8. Coordination/Collaboration:**

### **A. Long-term Monitoring and Research Program Projects**

#### **1. Within the Program**

PM I and PM II are responsible, overall, for coordinating the GWA program. Program-level coordination is pursued for all activities. The four-member PMT (Lindeberg, Hoffman, Suryan, Aderhold) communicates by email, phone, and/or 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 fall 2019 HRM program PI meeting was held in Homer one day after, and at the same location as, the two-day GWA PI meeting to facilitate cross-program learning and synthesis, as well as economize on data management training opportunities with Axiom staff. The GWA PMT attended the fall 2019 HRM program meeting and the HRM science synthesis workshop, as did several GWA PIs and data management team members.

All non-Trustee Agency administrative functions are combined at PWSSC to serve both the GWA and HRM programs. The GWA Science Coordinator facilitated coordination and collaboration on the science synthesis report between GWA and HRM. HRM data were used and HRM PIs are included on two of the GWA science synthesis report chapters (see Reports under Section 9).

##### **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 consultations were incorporated into the fall meeting in Anchorage. 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.

### **B. Individual Projects**

GWA summer and winter marine bird surveys in PWS (19120114-H, 19120114-M, 19120114-E) provide information on population trends of species studied by EVOSTC-funded pigeon guillemot restoration project (19100853). In addition, the GWA Program Coordinator provides support to the pigeon guillemot restoration project as needed. Data from the pigeon guillemot restoration project were used in one chapter of the GWA science synthesis report.



### C. With Trustee or Management Agencies

GWA contributed to the 2019 NOAA Ecosystem Status Report to the North Pacific Fisheries Management Council (Zador et al. 2019) and in the ecosystem and socioeconomic profile of the sablefish stock assessment for Alaska (Shotwell et al. 2019). These reports are used to facilitate ecosystem-based fisheries management in the Gulf of Alaska.

The GWA Science Coordinator collaborated with multiple agencies and organizations to incorporate more than 100 time series in the synthesis manuscript of the Pacific marine heatwave. Trustee and management agencies included in the collaboration include NOAA Alaska Fisheries Science Center, Alaska Department of Fish and Game, and U.S. Fish and Wildlife Service.

## 9. Information and Data Transfer:

### A. Publications Produced During the Reporting Period

#### 1. Peer-reviewed Publications

Piatt, J. F., J. K. Parrish, H. M. Renner, S. K. Schoen, T. T. Jones, M. L. Arimitsu, K. J. Kuletz, B. Bodenstein, M. García-Reyes, R. S. Duerr, R. M. Corcoran, R. S. A. Kaler, G. J. McChesney, R. T. Golightly, H. A. Coletti, R. M. Suryan, H. K. Burgess, J. Lindsey, K. Lindquist, P. M. Warzybok, J. Jahncke, J. Roletto, and W. J. Sydeman. 2020. Extreme mortality and reproductive failure of common murrelets resulting from the northeast Pacific marine heatwave of 2014-2016. *PLoS ONE* 15:e0226087

#### 2. Reports

Arimitsu, M., J. Piatt, R.M. Suryan, S. Batten, M.A. Bishop, R.W. Campbell, H. Coletti, D. Cushing, K. Gorman, S. Hatch, S. Haught, R.R. Hopcroft, K.J. Kuletz, C. Marsteller, C. McKinstry, D. McGowan, J. Moran, R.S. Pegau, A. Schaefer, S. Schoen, J. Straley, and V.R. von Biela. 2019. Chapter 3 Synchronous collapse of forage species disrupts trophic transfer during a prolonged marine heatwave. *In* R.M. Suryan, M.R. Lindeberg, and D.R. Aderhold, eds. *The Pacific Marine Heatwave: Monitoring During a Major Perturbation in the Gulf of Alaska*. Gulf Watch Alaska Long-Term Monitoring Program Draft Synthesis Report (*Exxon Valdez* Oil Spill Trustee Council Program 19120114). *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

Danielson, S.L., T.D. Hennon, D.H. Monson, R.M. Suryan, R.W. Campbell, S.J. Baird, K. Holderied, and T.J. Weingartner. 2019. Chapter 1 A study of marine temperature variations in the northern Gulf of Alaska across years of marine heatwaves and cold spells. *In* R.M. Suryan, M.R. Lindeberg, and D.R. Aderhold, eds. *The Pacific Marine Heatwave: Monitoring During a Major Perturbation in the Gulf of Alaska*. Gulf Watch Alaska Long-Term Monitoring Program Draft Synthesis Report (*Exxon Valdez* Oil Spill Trustee Council Program 19120114). *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska.

Lindeberg, M., and K. Hoffman. 2019. Program Management I – Program coordination and science synthesis and Program Management II – Administration, science review panel, PI meeting logistics, outreach, and community involvement. *Exxon Valdez Oil Spill Long-Term Monitoring Program (Gulf Watch Alaska) Annual Report (Exxon Valdez Oil Spill Trustee Council Project: 18120114-A and B)*, Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.

Suryan, R.M., M. Arimitsu, H. Coletti, R.R. Hopcroft, M.R. Lindeberg, S. Batten, M.A. Bishop, R. Brenner, R. Campbell, D. Cushing, S. Danielson, D. Esler, T. Gelatt, S. Hatch, S. Haught, K. Holderied, K. Iken, D. Irons, D. Kimmel, B. Konar, K. Kuletz, B. Laurel, J.M. Maniscalco, C. Matkin, C. McKinstry, D. Monson, J. Moran, D. Olsen, S. Pegau, J. Piatt, L. Rogers, A. Schaefer, J. Straley, K. Seeney, M. Szymkowiak, B. Weitzman, J. Bodkin, and S. Zador. 2019. Chapter 4 Ecosystem response to a prolonged marine heatwave in the Gulf of Alaska. In R.M. Suryan, M.R. Lindeberg, and D.R. Aderhold, eds. *The Pacific Marine Heatwave: Monitoring During a Major Perturbation in the Gulf of Alaska*. Gulf Watch Alaska Long-Term Monitoring Program Draft Synthesis Report (Exxon Valdez Oil Spill Trustee Council Program 19120114). Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.

Suryan, R.M., M.R. Lindeberg, and D.R. Aderhold, eds. 2019. *The Pacific Marine Heatwave: Monitoring During a Major Perturbation in the Gulf of Alaska*. Gulf Watch Alaska Long-Term Monitoring Program Draft Synthesis Report (Exxon Valdez Oil Spill Trustee Council Program 19120114). Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.

Weitzman, B., B. Konar, K. Iken, H. Coletti, D. Monson, R.M. Suryan, T. Dean, D. Hondolero, and M.R. Lindeberg. Chapter 2 Changes in rocky intertidal community structure during a marine heatwave in the northern Gulf of Alaska. In R.M. Suryan, M.R. Lindeberg, and D.R. Aderhold, eds. *The Pacific Marine Heatwave: Monitoring During a Major Perturbation in the Gulf of Alaska*. Gulf Watch Alaska Long-Term Monitoring Program Draft Synthesis Report (Exxon Valdez Oil Spill Trustee Council Program 19120114). Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.

### **3. Popular articles**

Suryan, R., S. Batten, R. Campbell, and S. Danielson. 2019. What does the future hold for the Gulf of Alaska? Delta Sound Connections 2019-20. 16 pp. [http://pwssc.org/wp-content/uploads/2019/05/DSC-2019\\_WEB.pdf](http://pwssc.org/wp-content/uploads/2019/05/DSC-2019_WEB.pdf)

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

### **1. Conferences and Workshops**

Arimitsu, M., J. Piatt, R. Suryan, D. Cushing, S. Hatch, K. Kuletz, C. Marsteller, J. Moran, S. Pegau, M. Rogers, S. Schoen, J. Straley, V. von Biela. 2019. Reduced energy transfer

- through forage fish disrupted marine food webs during the North Pacific marine heatwave. Oral Presentation. PICES annual meeting. Victoria, BC, Canada. 16-27 October.
- Lindeberg, M.R. 2019. Long-term programs of the *Exxon Valdez* Oil Spill Trustee Council. Presentation. 2019 Alaska Forum on the Environment, Feb. 11-15, Anchorage, Alaska.
- Suryan, R.M. 2019. Gulf of Alaska ecosystem status for 2018 and early indicators for 2019. Oral Presentation. Alaska Groundfish and Halibut Seabird Working Group, NOAA Alaska regional office, Juneau.
- Suryan, R.M. 2019. Preview of Ecosystem and Economic Conditions, NOAA Integrated Ecosystem Assessment, Alaska Fisheries Science Center, Seattle, Washington.
- Suryan, R.M. 2019, Ecosystem and Socioeconomic Profile Data Workshop, Alaska Fisheries Science Center, Seattle, Washington.
- Suryan, R.M., M.R. Lindeberg, M. Arimitsu, H. Coletti, R. Hopcroft, D. Aderhold, and K. Hoffman. 2020. Ecosystem response to a prolonged marine heatwave in the Gulf of Alaska: Perspectives from Gulf Watch Alaska. Oral Presentation. Alaska Marine Science Symposium, Anchorage, Alaska, January 27-30.

## **2. Public presentations**

- Lindeberg, M.R. 2019. Gulf Watch Alaska: A long-term monitoring program of the *Exxon Valdez* Oil Spill Trustee Council. North Pacific Fishery Management Council, Homer, Alaska, October 3.
- Lindeberg, M.R. Gulf Watch Alaska: A long-term monitoring program of the *Exxon Valdez* Oil Spill Trustee Council. Evening public lecture series. Kachemak Bay Campus, Kenai Peninsula College, University of Alaska Anchorage. October.
- Suryan, R.M. 2019. Mixed signals of “recovery” from the Gulf of Alaska marine heatwave: Perspectives from Gulf Watch Alaska. University of Alaska Southeast, Juneau, Alaska.
- Suryan, R.M. 2019. Biological response to a marine heatwave in the Gulf of Alaska. Evening public lecture series. Kachemak Bay Campus, Kenai Peninsula College, University of Alaska Anchorage. October.

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

### ***Data***

Gulf of Alaska Data Portal. Gulf Watch Alaska Research Workspace. [https://portal.aos.org/gulf-of-alaska#search?type\\_group=all&query=gulf%20watch%20alaska&page=1](https://portal.aos.org/gulf-of-alaska#search?type_group=all&query=gulf%20watch%20alaska&page=1)

Specific datasets are listed in the individual project annual reports and the program annual report.

### ***Informational Products***

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2019. GWA Quarterly Currents. Newsletter. Volume 3.1-3.2: spring-summer quarters. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2019. GWA Quarterly Currents. Newsletter. Volume 3.3: fall quarter. Link on [gulfwatchalaska.org](http://gulfwatchalaska.org).

Lindeberg, M., K. Hoffman, R. Suryan, and D. Aderhold. 2019. GWA Quarterly Currents. Newsletter. Volume 3.4: 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>

Additional online resources are listed in the individual project annual reports and the program annual report.

### **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 Comment:** *The Science Panel continues to be impressed with the leadership of the PMT. The long list of publications and presentations is a reflection of the effective guidance applied by the PMT. Science Panel shares the Science Coordinator’s concern that the postdoc is not lead author on any of the synthesis papers and the scientific growth for the product. Synthesis is part of the GWA program as stated in the original proposal: Program Goal C-Assess monitoring data holistically in order to better understand the range of factors affecting individual species and the ecosystem. And Objective 2-Provide and document integration of monitoring results – this includes cross-program standardization of data collection, GWA science synthesis products, and publications. However, the Science Panel recognizes that this would be a good opportunity to inexpensively fund a program experienced postdoc.*

*The Science Panel is pleased that the graduate student will transition to a 60% postdoc in FY19 as this provides a career opportunity for him as well as synthesis opportunity. The Panel felt it was important that this is a true change in position from graduate student status and there was some concern expressed that the 40% portion of the position would remain in a "graduate student mode". It is important from a career perspective that the postdoc make independent contributions to synthesis efforts.*

**PI Response:** We appreciate the positive feedback regarding GWA PMT leadership and our attempts to continually improve the program. Regarding postdoc mentoring, we understand the

importance of providing opportunities for senior authored papers and professional development for a postdoc working with GWA. The immediate supervisors of the postdoc, D. Esler (19120114-H, Nearshore) and R. Suryan (19120114-A, this project), both formally held academic positions and have experience mentoring postdocs and graduate students. We have discussed and would develop the equivalent of a postdoc individual development plan, similar to what is required at academic institutions. As a 3-year postdoc position, there is ample time for contribution as both senior and co-author on publications currently in progress and yet to be identified, both synthesis-focused and otherwise. The student would transition to 100% postdoc following completion of degree requirements. This indeed would be a transition out of “graduate student mode” to an emphasis on career development and professional advancement.

**11. Budget:**

Please see provided program workbook. Cumulative spending for each project is listed below.

**PMI**

<b>Budget Category:</b>	Proposed FY 17	Proposed FY 18	Proposed FY 19	Proposed FY 20	Proposed FY 21	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$117.0	\$120.0	\$123.0	\$126.0	\$130.0	\$616.0	\$486.0
Travel	\$13.1	\$13.1	\$13.1	\$13.1	\$15.3	\$67.7	\$32.8
Contractual	\$67.0	\$70.0	\$0.0	\$0.0	\$0.0	\$137.0	\$137.0
Commodities	\$3.0	\$5.7	\$2.0	\$2.0	\$1.5	\$14.2	\$12.0
Equipment	\$8.0	\$0.0	\$0.0	\$0.0	\$0.0	\$8.0	\$2.0
<b>SUBTOTAL</b>	<b>\$208.1</b>	<b>\$208.8</b>	<b>\$138.1</b>	<b>\$141.1</b>	<b>\$146.8</b>	<b>\$842.9</b>	<b>\$669.8</b>
General Administration (9% of subtotal)	\$18.7	\$18.8	\$12.4	\$12.7	\$13.2	\$75.9	N/A
<b>PROJECT TOTAL</b>	<b>\$226.8</b>	<b>\$227.6</b>	<b>\$150.5</b>	<b>\$153.8</b>	<b>\$160.0</b>	<b>\$918.7</b>	
Other Resources (Cost Share Funds)	\$105.4	\$105.4	\$105.4	\$105.4	\$105.4	\$527.0	

Overall, the PMI project is \$18.3K underspent to date because project team members were unable to take planned travel during two federal government shutdowns.

**PMII**

<b>Budget Category:</b>	Proposed FY 17	Proposed FY 18	Proposed FY 19	Proposed FY 20	Proposed FY 21	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$128.4	\$134.4	\$207.7	\$213.8	\$220.4	\$904.8	\$436.3
Travel	\$32.3	\$31.8	\$18.0	\$0.0	\$19.8	\$101.8	\$27.1
Contractual	\$87.1	\$87.1	\$118.2	\$137.5	\$118.9	\$548.8	\$292.2
Commodities	\$6.4	\$5.9	\$7.0	\$7.5	\$10.0	\$36.8	\$13.4
Equipment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Indirect Costs ( <i>waived</i> )							
<b>SUBTOTAL</b>	\$254.2	\$259.1	\$350.9	\$358.8	\$369.1	\$1,592.1	\$769.0
General Administration (9% of	\$22.9	\$23.3	\$31.6	\$32.3	\$33.2	\$143.3	N/A
<b>PROJECT TOTAL</b>	\$277.1	\$282.4	\$382.5	\$391.1	\$402.3	\$1,735.4	
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	

PMII cumulative spending does not match expectations in several areas. In travel, SRP members have had less travel availability than originally anticipated and budgeted for. Additionally, in some years only a portion of the PMT has attended certain meetings, such as the EVOSTC Public Advisory Committee meeting. With the EVOSTC Executive Director’s approval, we shifted funds out of the travel category for the latter two years of the program to spend down travel funds remaining from previous fiscal years. In commodities, we are advancing planned computer hardware and software purchases. In contractual, we discovered an error in the FY20 formula totaling contractual expenses. The error is corrected, and we will adjust spending to stay within the approved maximum.

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