

Greetings,

The third quarter of year 6 for the GWA program has been a busy one. This issue presents a “somewhat” brief summary of our program activities and accomplishments.

### **Science Update:**

The following lists some of the highlights discussed about the marine heat wave at the annual PI meeting. Observations are preliminary and should not be interpreted as results:

- *The 2013-2016 marine heat wave seems to have mostly dissipated by summer of 2017.*
- *However, the Gulf of Alaska is still showing residual biological effects (“hangover”) of the heatwave. Food webs of inner shelf and inland waters still appear to reflect warmer low energy systems compared to benchmarks.*
- *Lower trophics –*
  - Neocalanus from Seward Line – winters of 2016 & 2017 had only half the egg production (zooplankton had very low lipid content going into diapause therefore little energy reserve to produce eggs and survive).
  - Warm water zooplankton species still prevalent in Prince William Sound (PWS); high abundance of pteropods in Gulf of Alaska.
- *Mid trophics –*
  - Based on the diets of seabirds nesting on Middleton Island, there was low availability of forage fish in spring and summer, with very little capelin (which are abundant in cold years). During pre-laying and incubation, seabirds ate invertebrates, including copepods, which is very unusual.
- *Upper trophics –*
  - Humpback Whales: order of magnitude fewer whales seen during fall 2017 survey in PWS and SE Alaska, 4 individuals found dead in PWS this spring, skinny whales with visible increase in cyamids (ectoparasites). No large schools of adult herring. Whales feeding in small groups on young-of-the-year herring chasing feeding flocks and consuming most of small fish schools encountered. Calf production is down. Whales “working harder” for lower quality food. Only increase in whales is Sitka Sound where feeding on herring. Whales in novel locations (e.g. out on the Gulf shelf).
  - Killer whales: feeding in more, smaller groups. Reduced sightings of even larger AB pod that is growing at 5.8%/year. Fall 2016 & 2017 killer whales feeding deep in Montague Strait.
  - Kittiwake productivity on Middleton Island was as low as you see in warm years and birds were making very long foraging trips.
- *Nearshore Ecosystem -*
  - Decline in large algal cover 2015-2017 coincident with heat wave.
  - Sea star wasting disease and declines in abundance remain were coincident with the heat wave.
  - Heat wave impacts appear are less obvious in the nearshore because species are tolerant to temperature change.

### **Program Management Team:**

- FY18 GWA Work Plans (14) were reviewed, compiled, and submitted on time to the EVOSTC,

- August 23<sup>rd</sup>. The Work Plans were all approved for funding by the EVOSTC November 27<sup>th</sup>.
- A NOAA semi-annual report was completed for non-trustee agency funded projects and submitted on time August 30<sup>th</sup>.
  - The GWA program management plan from the FY17-21 5-year proposal was updated to include more detail and list current Principle Investigators (PIs). All PIs provided signatures agreeing to the conditions of the 5-year program management plan at our annual meeting. The plan and signatures will be posted for EVOSTC staff on the Research Workspace.

**Meetings:**

- On September 7<sup>th</sup> GWA’s Program Lead and Science Coordinator (Mandy Lindeberg and Rob Suryan) were on hand to address questions by the EVOSTC Science Review Panel for their review of FY18 Work Plans.
- On September 28<sup>th</sup> GWA’s Program Lead was on hand to address the EVOSTC’s Public Advisory Committee in Anchorage.
- October 30<sup>th</sup> through November 1<sup>st</sup> the Nearshore Component held a planning meeting in Fairbanks. Goals were to discuss data summaries, data management, reporting strategies, potential publications, and plans looking forward for the next 5-years. GWA Program Lead and Science Coordinator also attended.
- November 14<sup>th</sup> GWA’s Program Lead presented GWA progress to the EVOSTC Trustees.
- November 14<sup>th</sup> GWA’s Science Coordinator held a workshop in Cordova to discuss marine birds: cross component data compilation and analysis, identifying data gaps and sampling needs, identifying key time series and annual indicators of the marine bird community, and cross-component objectives and hypotheses.
- November 15<sup>th</sup> through the 17<sup>th</sup> GWA held their annual PI meeting at the Cordova Community Center hosted by the PWS Science Center. Highlights included:
  - We had a packed agenda and great attendance (see group photo below) during this week (~50 scientists including Herring Research and Monitoring program). Meeting agenda and notes will be posted on Research Workspace.
  - The two guest lecturers (Sam McClatchie and Stephani Zador, NOAA) were very informative to the program and provided great lead-ins to group discussions. Sam gave an overview of the California Cooperative Oceanic Fisheries Investigations (CalCOLFI; a 68-year sampling program) and Stephani on using long-term indicators for the Ecosystems Considerations Annual report.
  - The inaugural GWA photo and haiku contests were a great success!

Winning Photo – Best in Show	Winning Haiku
 <p>Band on the Run</p> <p>Jan Straley Univ. Alaska Southeast, Sitka</p>	<p style="text-align: center;"><i>Tiny but mighty Plankton feed whales, birds and fish Warmth disrupts it all</i></p> <p style="text-align: right;">Sonia Batten Sir Alister Hardy Foundation for Ocean Science Director Pacific Continuous Plankton Recorder Survey</p>

### **Data Management:**

- AOO's Dr. Janzen and the project data coordinators from Axiom Data Science (Chris Turner and Stacey Buckelew) participated in the GWA and HRM PI meeting in Cordova, November 15-17, 2017 and convened one-on-one data scoping sessions with project PIs.
- Axiom's Will Koeppen gave a demonstration of a new tool in the Research Workspace known as Jupyter Notebook. This is an open-source application that allows you to embed live code and explanatory text, create plots, and save results and images that encapsulate a data processing workflow. GWA PIs will be taking advantage of this tool in the future.
- FY17 data continue to be submitted and published along with relevant documents through the AOO's Gulf of Alaska Data Portal, and on schedule to be complete by February 2018.

### **Outreach:**

- GWA's program management team has been working on the program's public website. The website has been refined and updated with fresh photos and content (e.g. listing of current program PIs, publications and reports, news feeds, and resources). The website will be frequently updated as program news and activities are achieved.
- Planning is in progress for an opportunity for community outreach and exchange of traditional ecological knowledge in March 2018.
- Program Coordinator, Donna Aderhold, gave a talk about GWA at the Cook Inlet Regional Citizens Advisory Council Board of Directors fall meeting (Sept. 8<sup>th</sup>) in Homer, Alaska.

### **Relevant Media:**

- Herring Research & Monitoring Program - [Boom and Busted](#). Julia Rosen, bioGraphic, 9/26/17.

### **3<sup>rd</sup> Quarter Products:**

**Deep Sea Research II Special Issue update** – The final 10 papers were accepted and are in press for a total of 19 papers available online. We hope the journal will have the issue volume compiled and completed in early 2018:

1. [Spatial and temporal ecological variability in the northern Gulf of Alaska: What have we learned since the Exxon Valdez oil spill? Aderhold et al.](#)
2. [Seasonal distribution of Dall's porpoise in Prince William Sound, Alaska, Moran et al.](#)
3. [Spatial and temporal variation in winter condition of juvenile Pacific herring \(\*Clupea pallasii\*\) in Prince William Sound, Alaska: Oceanographic exchange with the Gulf of Alaska, Gorman et al.](#)
4. [Seasonal and pod-specific differences in core use areas by resident killer whales in the Northern Gulf of Alaska, Olsen et al.](#)
5. [Seasonal variation of zooplankton abundance and community structure in Prince William Sound, Alaska, 2009–2016, McKinstry et al.](#)
6. [Spatio-temporal distributions of piscivorous birds in a subarctic sound during the nonbreeding season, Stocking et al.](#)
7. [Hydrographic trends in Prince William Sound, Alaska, 1960–2016, Campbell.](#)
8. [Gene transcription patterns in response to low level petroleum contaminants in \*Mytilus trossulus\* from field sites and harbors in southcentral Alaska, Bowen et al.](#)
9. [Seasonal presence and potential influence of humpback whales on wintering Pacific herring populations in the Gulf of Alaska, Straley et al.](#)
10. [Distribution of juvenile Pacific herring relative to environmental and geospatial factors in Prince William Sound, Alaska, Lewandoski and Bishop.](#)

**Important Upcoming Dates (2017 & 2018):**

- Nov. 14 EVOSTC meeting, Anchorage
- Nov. 15-17 GWA Annual PI meeting, Cordova
- Jan. 22-26 Alaska Marine Science Symposium, Anchorage
- Jan. 23 GWA Meeting, Anchorage
- Feb. 11-16 Ocean Sciences Meeting, Portland, Oregon; GOA Workshop and Special Session
- March 1 Annual Reports due to EVOSTC

**GWA quarterly photo:**

*Group photo of GWA PIs at the 2017 Annual PI meeting, November 15-17. The meeting was held at the Cordova Community Center and hosted by the PWS Science Center.*

