

Oregon Ocean Science Trust Meeting Summary
January 22, 2016
Department of State Lands
Salem, Oregon

Members in attendance: Executive Director Louise Solliday, Laura Anderson, Emily Goodwin Martin, Jim Sumich, Krystyna Wolniakowski (call in), Senator Arnie Roblan & Representative David Gomberg.

Interested parties in attendance: Dave Fox, Doug Brusa, Ken Sexton, Shelby Walker, Ivan Kuletz, Jena Carter, Karen McLeod, Sarah Suru, Andy Lanier, Robert Bailey, Bridgette Lohrman, Ed Bowles, Gilly Lyons & John Serra.

Department of State Lands Administrative Support: Chris Castelli & Sabrina Forward.

Governor's Natural Resource Office: Gabriela Goldfarb & Kessina Lee.

Louise Solliday reported back from the question raised at the November meeting that an entity's 501(c)(3) status is not established in statute, but through a filing with the IRS.

The group agreed that OPAC will be a public forum for the OST. OPAC has identified four priorities for the next two years: ocean acidification, marine debris, rocky shores (updating the Rocky Shores Strategy) and resilience.

The summary of the November meeting was approved.

The bylaws drafted by Louise Solliday were reviewed and discussed. Jim Sumich had submitted some edits electronically, these were reviewed and discussed. The draft bylaws were [adopted](#) with some edits.

Three Oregon ocean and coastal experts gave a [presentation](#) on the State of the Ocean.

Dr. Jack Barth, College of Earth, Ocean, and Atmospheric Sciences, OSU:

- Sea level and wave heights have changed; over the last 20 years, the 100 year wave has gone from 10m to 14m
- In addition to upwelling which brings cold, salty, nutrient-rich water that is low in oxygen and high in CO₂ to Oregon's coastal waters, El Nino events and the warm water 'Blob' of 2014-2015 have effects that are not fully understood, particularly when they occur in combination.
- Key questions include:
 - What are the spatial patterns of ocean warming, hypoxia, and ocean acidification?
 - Are there refuges from these conditions?
 - How can we keep our fingers on the pulse of Oregon's ocean?

Dr. Selina Heppell, Department of Fisheries and Wildlife, OSU:

- Possible changes coming to Oregon's oceans include the presence of Humboldt squid. The species thrives in low oxygen environments and prey heavily on juvenile hake, also possibly on adult salmon.
- Was the sardine crash natural or man-made?

Dr. Caren Braby, Marine Resources Program, Oregon Department of Fish & Wildlife:

- Oregon's Territorial Sea (from the coastline to three nautical miles offshore) is where the state has authority and influence
- 50% of monitoring goes to counting fish on the docks
- Nearshore ecosystem is at greatest risk
- Offshore ecosystem receives greatest investment
- Measuring fish landings is not a complete population measure
- Federal entities do trawl counts, combined with fisheries catch data gives a more complete picture
- To build resilience:
 - Measure the ecosystem
 - Physical, chemical biological monitoring
 - Long-term data
 - Fishery-independent monitoring
- Adapt our approach
 - Research: grow survey methodology
 - Management: build "changing ocean" into framework

Discussion of research and monitoring investments:

The panel was asked by Trust members how much of an annual investment in research and monitoring priorities (emphasis on monitoring) would be needed to be relevant and to leverage other investments. There was agreement that leveraging existing funds is very important. The cost of monitoring depends on where the work is done. To increase sampling from Astoria to the California border, \$10k would make a huge difference, but the further offshore the monitoring is, the more it costs. Any investment is scalable—5 sensors are helpful, 30 are better. Biology is expensive because more than sensors, it requires people to deploy them and to analyze and interpret the data.

Costs of different monitoring assets:

- Sensors: \$10k + maintenance and people
 - \$100k per node (5 nodes)
 - The sensors have a lifespan of ~10 years
- Gliders: \$200k + tech staff
 - Can be used for biological data as well—hydrophones for tagged animals
 - Can possibly deploy cameras on gliders
- Drop cameras for rocky areas: \$2-\$3k
 - Fishermen can deploy for five minute intervals

We need to develop the methodology to analyze the data from the different technology-- how to calibrate the information from drop cameras, for example. Need staff for the statistical analysis.

Ken Sexton: We could deploy cameras/sensors on crab boats, fishermen could be trained to upload the data, providing real-time information.

Senator Roblan: We don't have data on non-catch species, such as life history, we don't know what the various indicators are of good and bad years and how to reduce fisheries pressure at key life history stages.

Selina Heppell: We need more data on juvenile recruitment of rockfish. We use copepods as a salmon indicator, and Bill Peterson (NOAA) monitors zooplankton.

Laura Anderson: Is there a model for doing this right?

Jack Barth: Pisces (lightweight pontoon platform that supports monitoring) technology, Korea and Japan have great monitoring but need analysis.

Selina Heppell: NMFS has put out no general call for proposals on the West Coast, yet when we ask NSF for funding their response is that NMFS should fund it.

Jack Barth: Need better access to the sea, possible program to certify fishing vessels as research vessels.

Selina Heppell: Need to pay fishermen for lost catch, time, as well as fuel and deckhands. (Alaska—possible model?)

Nearshore (deeper than intertidal) marine life studies are currently not funded. Need to map remaining rocky reefs and sandy bottoms, and build on knowledge of species-habitat relationships, essential fish habitat. The state could get the ball rolling to leverage federal funding.

Jack Barth: From 50m to shore is a critical area, and one of the least understood.

Gabriela Goldfarb, GNRO: Do we need to convene scientists to make a to-do list and frame the questions?

If the two broad categories are ocean acidification and species populations, how do we get at the appropriate questions?

Caren Braby: A workshop.

Selina Heppell: The workshop could address questions such as, "How does adaptation work on this coast? What species are good at it?"

Jack Barth: Even small investments in R&D are needed.

Caren Braby: We need more capacity to mine data. Funding grad students is one way to address this.

Social science: Change is inevitable, need to address human dimension and adaptability. Possible next steps—socioeconomic panel?

Socioeconomics are important, but may not be timely—there is a need to address research priorities first, in time for the Legislative session in September.

Jena Carter, TNC: TNC has \$15k that needs to be spent by May. Could possibly be used for a case study of Korea's and Japan's monitoring efforts.

Convene natural scientists for a workshop:

- Here's where the Trust is headed—if you could design a system, what would that look like?
- ~30 scientists, 2 day workshop

Senator Roblan: Need to look at foundations, etc., which would possibly give funding to OOST. Would be useful to get funding from the Legislature.

Jena Carter: Do we need a lit search of documents that have identified nearshore research priorities?

Laura Anderson: We don't need a consultant to establish priorities, scientists could generate that.

Caren Braby: West Coast OAH Science Panel products due in February—could focus and inform workshop.

Possible uses of \$15k from TNC:

- Search of foundation funding sources
- Lit search/review
- Convene workshop

\$15k not enough to do all three—consensus to convene science workshop. Oregon Sea Grant offered to help convene.

Louise Solliday will consult with Chris Castelli and Gabriela Goldfarb, and possibly OR Sea Grant and COMPASS. Workshop possibly to be held in April, possibly combine OOST meeting with the 2nd day of the workshop, to talk about next steps.