

Puget Sound Kelp Research and Monitoring Workgroup
May 11, 2022
Meeting Summary

On Wednesday, May 11, 2022, the Puget Sound Kelp Research and Monitoring Workgroup convened to share programmatic and project updates and to discuss upcoming field work scheduled across the Salish Sea. The purpose of this workgroup is to share relevant information with the kelp research and monitoring community, as well as provide a forum for connecting around new ideas and needs. Of note, members will be asked to discuss the continuation of the work group at the October meeting, as the two-year pilot program will be coming to an end. The following is a summary of the May meeting topics and discussion. Please refer to the meeting agenda and recording located on the Workgroup webpage for more information.

Meeting Summary

Welcome and Introductions

Helen Berry, DNR, welcomed participants to the meeting and reviewed the goals and objectives for the workgroup. Helen asked all participants to introduce themselves in the chat and share any updates they would like to have posted in the meeting summary. A list of attendees is located at the end of the meeting summary.

Brief Updates

- Wendel Raymond, University of Washington, provided an update on the development of the Floating Kelp Canopy Vital Sign Indicator. The objective of this phase is to develop several indicator visualization options and solicit feedback. A report describing these options will be released on May 30. A public workshop designed to share information on the indicator options and allow for small group discussion and feedback will be convened on Tuesday, June 7, from 10:00 a.m. to 12:00 p.m.
- Elizabeth Spaulding, Habitat Strategic Initiative, provided an update on SB 5619, which was recently signed by the Governor and directs development of the Kelp Forest and Eelgrass Meadow Health and Conservation Plan. This plan will identify and prioritize areas of vulnerable kelp and eelgrass populations in an effort to protect 10,000 acres by 2040. A community engagement plan will be submitted to the Legislature by December 2022, and the Health Plan will be submitted by December 2023. Questions can be directed to Max Showalter, DNR Executive Policy Team, at max.showalter@dnr.wa.gov.
- Jeff Whitty, Northwest Straits Commission, provided a brief update on efforts to advance the Kelp Plan. Of note, an Advisory Committee has been formed and their first meeting was convened in April. This committee will identify and prioritize activities to advance the implementation of the Kelp Plan and will support several future workshops designed at soliciting additional feedback.
- Dana Oster, Northwest Straits Commission, provided an update on a project funded by Pew Charitable Trusts to strengthen linkages between kelp science and policy implementation. This

project originated from a goal identified in the Kelp Plan to better understand and strengthen the regulatory framework surrounding kelp management. A workshop to explore specific agency regulations and identify critical data gaps will be held on May 18, 2022 from 9:00 a.m. to 3:00 p.m.

Presentations

Multiple Stressors and Kelp in the Salish Sea

Jordan Hollarsmith, NOAA Alaska Fisheries Science Center, presented findings from a case study she conducted with many local partners to develop a conceptual framework for managing and conserving marine habitats. This project was in response to the wide-scale loss of kelp in the Salish Sea and a recognition that there are significant data gaps in the causes of this decline, complicating management responses. Multiple stressors likely contribute to declines broadly, and this case study attempted to determine if management decisions can be made in the face of these data gaps. Jordan explained her approach to developing a diagram of stressors on bull kelp canopy area and comparing against the findings from a literature review. While ample global data is available, studies conducted within the Salish Sea is limited. However, there was still high consensus in directional relationships between the Salish Sea and global literature.

Jordan's paper describing the findings can be accessed here:

<https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/eap.1615>

Comments and questions:

- Has anyone done a marine area analysis to determine what each watershed has regarding threats to kelp?
- You noted that there is very little research on the impacts on kelp from development. How can we better understand these impacts and is there work occurring in other regions that we should look to?
- An additional and critical need is to break down these stressors on a sub-regional scale.
- There are several salmon-related efforts on that spatial question that we could draw from - Blake Feist is one name that comes to mind.
- Blake and I (Eliza Heary) are about to publish a paper using his PPI index as a predictor of understory kelp densities across 22 sites in Puget Sound. I think PPI is a great place to start-we found it challenging to tease apart different signals of development regionally because there's so much collinearity in its various components
 - Another cool example...<https://www.nature.com/articles/s41598-020-79258-2>
 - Can you point to particular urban stressors? Heat, imperviousness, nutrients, toxics, shoreline impacts...?
 - On Helen's "actionable" thoughts...just understanding what people want could help the management actions...this paper comes to mind as an example:
<https://www.ecologyandsociety.org/vol20/iss4/art6/>

Summer Field Work Round Table

Members of the Research and Monitoring Work Group provided brief updates on scheduled summer field work. Please see recording for more information regarding the details of each update.

Updates:

- Dan Abbott and Jackie Selbitschka, Reef Check, shared information about their current and upcoming volunteer trainings, as well as the planned transect surveys they will be conducting for fish, invertebrates, macroalgae, and UPC. Here is the link to the Reef Check site with training requirements: <https://www.reefcheck.org/california-program/training-schedule/>
- Robin Fales, University of Washington, shared information on her research on bull kelp thermotolerance across the Salish Sea, which she is conducting with support from Emily Carrington and Helen Berry.
 - It's so important to co-locate your research with our monitoring. It will allow us to better understand the trends that we're seeing.
- Brooke Weigel and Sadie Small, University of Washington Friday Harbor Labs, shared information on their ongoing project to understand the effects of ocean warming and nitrogen limitation across the life cycle of bull kelp. Lab research is being conducted on both kelp gametophytes and sporophytes collected from multiple Salish Sea populations to identify thermal tolerance limits and nitrogen requirements for successful growth and reproduction.
 - Anything known about temperature effects on spore production?
 - Could productivity threshold data being collected here be applied to data in Snohomish Basin for Whidbey Basin modeling?
 - Cascadia Seaweed (<https://www.cascadiaseaweed.com/>) is growing kelp commercially in the southern Gulf Islands and has about 5 moored CTDs along their growing area. Might be a good resource to extend the northern end of your sites.
- Hilary Hayford and Gray McKenna, Puget Sound Restoration Fund, shared information on PSRF's plans for monitoring at the kelp enhancement sites and through the underwater kelp community monitoring network. There are also several place-based projects PSRF will be supporting with the Jamestown S'Klallam Tribe and Port of Seattle.
- Helen Berry, Department of Natural Resources, shared information on DNR's upcoming aerial photography surveys, as well as ongoing kayak and drone monitoring at sites in south Puget Sound.
- Ian Miller, Washington Sea Grant, and Steve Rubin, USGS, shared information on their ongoing subtidal monitoring at sites in the central Strait of Juan de Fuca.
 - For those interested in more information, see Steve Rubin's SSEC talk - an analysis of long-term understory kelp dynamics. Amazing stuff!
 - Question to Paul: What is the source of the drawing you posted?
 - One of our elders who passed away about 5 years ago. These are local kelp beds he mapped for us when he used to fish so about 50 to 60 years ago.
 - This is a nice program for coastal biodiversity, needs lots of partners for WA coastal waters. We did one sample years ago near Hood Head...
 - https://meetings.pices.int/publications/presentations/PICES_14/W4/W4_Rigby.pdf

- Maybe something like this is already in the works, but all of this great coordination on data collection monitoring makes me think about this database that Jason Toft's group has put together for shoreline work, maybe it could be expanded or adapted/used as a model to receive kelp data? <https://shoreline-monitoring.herokuapp.com/>
 - Thanks, Tish! Reef Check has an established database designed for the underwater kelp community data and we plan to archive kelp biological data there. PSRF will be archiving instrument data in the near term, with high hopes for a collaborative long-term solution. PSRF is working with Jason Toft's Shoreline Monitoring program to add oyster population data and assessment protocols. It seems likely that other types of data, e.g. our surface kelp morphometrics, may also fit well there.
- Zachary Randell, Seattle Aquarium, shared information on the Seattle Aquarium's efforts to develop ROV methodology for surveying nearshore benthic habitat. Port of Seattle and North Pacific Coast MRC are key partners in this work within their geographies. This project will also have a strong education and outreach component. More info / video links will be posted in the coming weeks. https://github.com/zhrandell/Seattle_Aquarium_ROV_development
- Dana Oster, Northwest Straits Commission, provided an update on the MRC Volunteer Kayak monitoring efforts that have been occurring since 2016 from June to September. You can learn more here about volunteer-led kelp monitoring: <https://nwstraits.org/our-work/kelp-recovery/>
 - The protocol the volunteers follow is here: <https://nwstraits.org/media/2937/kelp-protocol-may-2020-revised.pdf>
 - Same question to everyone: Is there an app you prefer (or dislike) for devices used in the field for recording observations? We're trying to choose one for use with citizen scientists.
 - We are using kobotoolbox as an online webform.

Attendance

Allie Simpson, Northwest Straits Commission
 Bob Pacunski, Department of Fish and Wildlife
 Brooke Weigel, University of Washington
 Casey Palmer-McGee, Samish Nation
 Chris Neufeld, Bamfield Marine Sciences Centre
 Cinyd Wright, DFO
 Dan Abbott, Reef Check
 Dana Oster, Northwest Straits Commission
 Devin Robinson, Tulalip Tribes
 Dustin Bilhimer, Dept. of Ecology
 Erica Bleke, Department of Natural Resources
 Helen Berry, Department of Natural Resources
 Hilary Hayford, Puget Sound Restoration Fund
 Hugo Flores, Dept of Natural Resources
 Jane Watson, Vancouver Island University

Jackie Selbitschka, Reef Check Foundation
 Jamey Selleck, NOAA/NRC
 Jeff Whitty, Northwest Straits Commission
 Jodi Toft, Puget Sound Restoration Fund
 Kelly Andrews, NOAA NW Fisheries Science Center
 Leah Robison, Northwest Straits Commission
 Liam Coleman, Simon Fraser University
 Lindy Hunter, Swinomish Fisheries
 Margaret Homerding, Nisqually Indian Tribe
 Mike McHugh, Tulalip Tribes
 Miranda Roethler, University of Washington
 Paul Williams, Suquamish Tribe
 Robin Fales, UW Friday Harbor Labs
 Ross Whippo, University of Oregon

Sadie Small, UW Friday Harbor Labs
Sherryl Bisgrove, Simon Fraser University
Silven Read, Simon Fraser University
Solenne Walker, Department of Natural
Resources
Staci McMahon, University of Washington
Steve Rubin, USGS Western Fisheries Research
Center
Tish Conway-Cranos, Department of Fish and
Wildlife
Tom Mumford, UW Friday Harbor Labs
Max Showalter, Dept. of Natural Resources
Wendel Raymond, University of Washington
Wendy Buffett, Department of Ecology
Zachary Randell, Seattle Aquarium