

# Puget Sound Kelp Conservation and Recovery Plan Workshop # 3

February 28, 2019

Attendees:

Jamey Selleck	NOAA, NRC, Skagit MRC
Phyllis Bravinder	Skagit MRC
Max Calloway	Puget Sound Restoration Fund
Jenna Judge	Puget Sound Partnership
Franchesca Perez	Stillaguamish Tribe, Snohomish MRC
Emily Buckner	University of Washington
Kelly Andrews	NOAA
Linda Rhodes	Island MRC
Tina Whitman	Friends of San Juans
Lindy Hunter	Swinomish Indian Tribal Community
Kimberle Stark	King County DNR
Dan Tonnes	NOAA
Judy D'Amore	Jefferson MRC
Tom Mumford	Marine Agronomics
Todd Woodard	Samish Indian Nation
Sherryl Bisgrove	Simon Fraser University
Jodie Toft	Puget Sound Restoration Fund
Rich Childers	WDFW
Stephen Schreck	Puget Sound Restoration Fund
Austin Rose	Whatcom MRC
Camille Speck	WDFW
Helen Berry	WA DNR
Steve Copps	NOAA
Tom Doerge	Snohomish MRC
Brian Allen	Puget Sound Restoration Fund
Suzanne Shull	Padilla Bay Reserve, Northwest Straits Commission
Casey Palmer-McGee	Samish Indian Nation
George Stearns	Puyallup Tribe
Braeden Schiltroth	Simon Fraser University
Steve Rubin	USGS
Nam Siu	WDFW, Jefferson MRC
Terrie Klinger	University of Washington
Betsy Peabody	Puget Sound Restoration Fund
Cathy Stanley	Tulalip Tribes
Cinde Donoghue	WA DNR
Laurel Jennings	NOAA

Bob Cecil  
Katie Conroy  
Emily Bishop  
Lucas Hart  
Dana Oster  
Jason Morgan  
Nicole Jordan  
Todd Zackey  
Jude Apple

Whatcom MRC  
  
Port Gamble S'Klallam, Jefferson MRC  
Northwest Straits Commission  
Northwest Straits Commission  
Northwest Straits Foundation  
Northwest Straits Commission  
Tulalip Tribes  
Padilla Bay Reserve



# Kelp Conservation and Recovery Plan

## Data Gaps and Actions

*Objective: Identify and coordinate actions to create a strategy in addressing critical data gaps for Puget Sound kelp conservation and recovery.*

**Location:** Padilla Bay Reserve, 10441 Bayview-Edison Rd, Mount Vernon

**Date/Time:** Thursday, February 28, 2019 10:00 am – 4:30 pm

*The meeting space will be open for check-in, coffee, and chatting starting at 9:30 am*

10:00-10:40	<b>Welcome and Introductions</b> Meeting goals and agenda review Group introductions Goal of Kelp Conservation and Recovery Plan	Dana Oster, NW Straits Commission Dan Tonnes, NOAA
10:40-11:10	<b>Review of Puget Sound Kelp Data Gaps</b> What is known and what isn't known: reviewing high priority data gaps and needs	Max Calloway, Puget Sound Restoration Fund
11:10-11:20	<b>Break</b>	
11:20-12:05	<b>Breakout Discussions – Data Gaps</b> In groups discuss actions, needs, and strategy around data gaps	Data gaps to be discussed: 1. Kelp physical stressors 2. Kelp biological stressors 3. Human impacts
12:05-1:00	<b>Lunch (provided)</b>	
1:00-1:30	<b>Group Reporting</b> Review breakout group discussions	
1:30-2:15	<b>Breakout Discussions – Data Gaps</b> In groups discuss actions, needs, and strategy around data gaps	Data gaps to be discussed: 4. Kelp distributions and trends 5. Kelp priority areas- protection and restoration 6. Restoration
2:15-2:45	<b>Group Reporting</b> Review breakout group discussions	
2:45-3:10	<b>Break</b> Facilitators and core team organize actions	
3:10-4:15	<b>Prioritize Actions</b> Identify key actions essential for next steps and building a strategy	
4:15-4:30	<b>Meeting wrap up/ Next steps</b>	



### **Links to presentation slides and flip chart notes:**

Introduction PowerPoint Slides:

[http://www.nwstraits.org/media/2751/intro\\_kelpworkshop2\\_28\\_2019.pdf](http://www.nwstraits.org/media/2751/intro_kelpworkshop2_28_2019.pdf)

Max Calloway PowerPoint Slides:

[http://www.nwstraits.org/media/2752/calloway\\_kelpworkshop2\\_28\\_2019.pdf](http://www.nwstraits.org/media/2752/calloway_kelpworkshop2_28_2019.pdf)

Flip chart photos: [http://www.nwstraits.org/media/2753/kelpflipchartnotes\\_2\\_28\\_2019.pdf](http://www.nwstraits.org/media/2753/kelpflipchartnotes_2_28_2019.pdf)

Additional Puget Sound Kelp Conservation and Recovery Plan materials:

<http://www.nwstraits.org/our-work/kelp/>

### **Puget Sound Kelp Conservation and Recovery plan Intro (Dana):**

- Meeting Objective: Identify and coordinate actions to create a strategy in addressing critical data gaps for Puget Sound kelp conservation and recovery
- Kelp Problem Statement: full statement available in link above
  - the 24 species of kelp in the Puget Sound provide important habitat & ecosystem services.
  - bull kelp appears to be in decline, particularly in the central and south sound. But data is sparse.
  - the precise functions, trends and distributions of the other 23 species of understory and mid-story kelp are poorly understood.
  - we are taking the precautionary approach, with the goal of improving monitoring, conservation, and restoration actions (particularly for bull kelp).
- Timeline:
  - year 1 focused on understanding the science available on Puget Sound kelp, creating literature review, and data gaps summarizing all unknowns about Puget Sound Kelp
  - year 2 is focused on prioritizing the data gaps and outlining actions to address data gaps.
    - Draft plan will be available for review July 2019 and project is complete by September 2019
- Survey sent out in December 2018 to gather kelp communities priority data gaps to address kelp conservation and recovery strategy. The top 6 of 7 high priorities were used to focus the February workshop actions discussion. Management as the 7<sup>th</sup> priority data gap will be the focus of a second workshop soon to be scheduled in Spring 2019.

### **Kelp 101 and data gaps (Max):**

Slides available in link above.

### **Questions (Q)**

#### **Response (R):**

Q: In South Puget Sound where bull kelp is declining, is it being replaced?

R: Don't know...perennial species may push out bull kelp/canopy (cite Alaska). Understory succession. See Duggins, 1980, *Ecology*, Kelp Beds and Sea Otters: An Experimental Approach

R: Invasives (like sargassum) may be replacing it

Q: Is there good evidence for negative nutrients impacts and links to turf species presence?  
R: Adding more Nitrogen and Carbon to system, depending on species, can have an impact  
R: Turf with more Carbon can take up more Nitrogen  
R: Kelp can only take so much Nitrogen

Q: What is the % of adults that produce sporophytes, was that presented as 10%?  
R: Clarified that percentage (~20-30%) was about kelp making it to canopy

Q: Are temperature and ability to utilize nutrients related?  
R: Plant needs to photosynthesize/respirate more when temperature increases, will thus need more nutrients

Q: Where are we at with our understanding of other kelp species both in distribution and in habitat value/role in food web?  
R: Understanding limited to bull kelp distributions in Puget Sound  
R: Invert abundance much higher in kelp habitat than eelgrass/etc., regardless of floating canopy leads to increase in forage fish

Q: Is there Evidence of genetic differences between South Sound kelp beds and other parts of Puget Sound?  
R: South Sound bull kelp has lowest allelic diversity, most likely from inbreeding or adaptation

Q: Potential repercussions for that lack of allelic diversity  
R: Population genetically isolated or specially adapted? Still up in the air. No conclusions can be drawn at this time

Q: Southern California long-term study about kelp decline, do we have something similar?  
R: Global trends show 1/3 of kelp is declining, 1/3 of kelp is increasing, 1/3 of kelp show no change  
R: Means we need better monitoring to investigate this more  
R: Warm ocean blob/urchin barren/sea star wasting/harmful algal bloom led to significant declines in Northern California. Not just the cause of 1 thing, but all factors played in to declines and loss.  
R: Do we have something like urchin barrens here?  
R: urchins are in Puget Sound, but there are not documented cases of urchin barrens fully replacing kelp forest.

Q: So there are local changes in Puget Sound but overall is kelp staying relatively the same?  
R: Historical data interviews can be used to get at ways to really figure out if these changes are significant

Q: Do we really need a recovery plan if these are just micro changes?  
R: Confident in loss of canopy forming species, should focus on local conditions to try and mitigate loss in specific sites

Q: Can we define urchin barren?  
R: No min./max. size, otter recovery led to increase in bull kelp.  
R: Role of disturbance in canopy/understory interactions relatively unknown.

R: Density less important -> outcome more so, urchins preventing future recruitment of kelp, we shouldn't focus on urchins as a 'bad thing' necessarily.

R: Does an urchin barren work the same way here as other places? Are they a healthy disturbance regime?

Q: Temperature effects on kelp crab?

R: Temperature effect on blade growth more significant than crab density. Kelp crabs may still have a significant impact (Calloway thesis research)

Q: Some kelp beds that never make it the surface, affects our understanding of the distribution, what does it mean when they don't make it to the surface?

R: Possibly symptom of beds on their last leg?

R: Bull kelp stripes persist in red-light blue-light, perhaps it is an indication of changes in water quality?

### **Breakout Session #1 & 2:**

Discussion question: What are possible short term and long-term actions/strategies that can help address the data gaps (physical stressors, biological stressors, human impacts, distributions and trends, priority areas, restoration)?

The workshop participants were split into 4 breakout groups (photos of flip chart notes are available in links provided section above)

#### Comments following breakout session:

- Dive videos and underwater towed videos from rockfish surveys? How can it be applied to kelp?
  - Data (videos) are there, just needs to be analyzed for kelp species and fish presence
- Scale of monitoring study?
  - Unsure, how do we select sites?
- Need to figure out correlation between kelp declines and fish declines by region
- Identifying data/research that's already in place is key
- Study of remote sensing monitoring methods at UVic currently underway, focus is primarily narrow fringing kelp beds. Possibly a collaborative opportunity?
  - Methods might be expensive
- International understory kelp survey protocol, NaGISA.
- Continue monitoring using a protocol for no net loss - Use protocols from other areas (Norway, California, PISCO, etc.)
- Incorporate historical data and historical survey methods including outreach to non-traditional sources to identify historical kelp distribution (NOAA and NWSC Hollings scholar project is one example)
- Need a strategy to implement/enforce current protection plans. Some regulations currently exist for protection
- Identifying key fish use data as a way to prioritize areas
- Standardize monitoring efforts through timing and long-term monitoring at Index sites
- Identify a criteria for priority areas

**Prioritize Actions:**

The facilitators and kelp core team simplified the actions discussed in breakout groups for a prioritization exercise. The workshop participants were given 4 stickers to vote for the action or actions that are most important next steps in kelp conservation and recovery. The voting flip chart results can be viewed in the linked pdf of all the flip charts.

**Actions which scored above 10 votes:**

- Fish use of kelp habitat
- Expand monitoring of existing beds and exposure
- Trophic interactions (food web)
- Identify distribution/trends of understory species
- Historic/Traditional Ecologic Knowledge (TEK)
- Water quality
- Population genetics/strain development
- Best Management Practices (BMP) for restoration methods

Results are summarized in the table below:

Priority Areas for Restoration	vote	Priority Areas for Conservation	vote	Distribution & Trends	vote	Human Impacts	vote	Physical stressors	vote	Biological Stressors	vote
Best management practices for restoration methods	10	Fish use of kelp habitat	14	Develop protocols (diving, drones, kayaks, use Norways methods, understory (multibeam))	15	Water quality	12	Nutrient monitoring in water and kelp tissue (implications to kelp)	8	Trophic interactions (food web)	10
Population genetics/strain development (tolerant kelp seeds)	10	Expand monitoring of existing beds and exposure to stress	13	Identify distribution/trends of understory species (long-term/short-term)	12	Connections with land use	7	Temporal temperature (seasonal vs multiyear)	5	Life stage vulnerability	4
Criteria for restoration sites (substrate, historical presence, WQ)	6	Develop criteria for priority areas	7	Historic/ Traditional ecologic knowledge	11	Kelp harvest	3	Water column temperature	3	Competitive interactions btw kelp species	3
Remove sargassum	1	<b>total</b>	<b>34</b>	Aerial photography/ground truthing	2	fish harvest	1	Sediment (turbidity vs substrate variance)	2	grazer impacts	1
<b>total</b>	<b>27</b>			Data repository	0	boating impacts	0	Light	1	microbial communities (beneficial, harmful...)	0
				<b>total</b>	<b>40</b>	trash/derelict gear/other marine debris impacts to kelp	0	Spatial temperature data	0	pathogens and disease	0
						<b>total</b>	<b>23</b>	<b>total</b>	<b>19</b>	<b>total</b>	<b>18</b>

### Group reflection on voting results:

- Land use-water quality are connected, as are fish use of kelp habitat and trophic interactions
- Distribution and Priority Areas for Conservation were the two areas that had the most votes overall
- Combine water quality and general physical stressors
- Importance of monitoring design, which stressors are the most important?
- Funding from NOAA Rockfish team for Kelp Recovery? How do we balance conservation vs. recovery?
  - We shouldn't just think of kelp when considering rockfish recovery, they may not be the whole picture...what other vegetative structures are there? We should think about habitat generally for Rockfish Recovery.
  - System and biological recovery is the goal, not linking salmon to kelp because of data gaps, it seems like kelp are important to rockfish so lets ride that train while we get more info
- Habitat benefits and food web function not considered a priority from the data gaps prioritization survey, worried they are going to fall through the cracks
  - But they scored high today as primary data gaps and actions to take, so optimistic outlook
- First address questions of habitat benefits and food webs and then move to recovery
- Telling the story vs. implementing a management plan...need the evidence that kelp is important to other organisms for funding, support, etc. (intermediate step)
  - Including salmon and forage fish
- Prioritize actions (data gaps) here and then bring to Management workshop to see what managers think about our list, may make two lists: research actions and management actions
- Language already there about kelp being critical habitat, but we need best available science to determine regulatory enforcement and protocols (need quantification, the nitty gritty details)
- Eelgrass world has been effectively knit into the regulatory framework...we need to do the same
- That may change how we prioritize areas for conservation, there's just not enough information for regulators to make decisions
- Language only discusses critical habitat nothing on food web support
- What is our strategy for moving our action items to managers?
  - For more targeted implementation need to include managers in the conversation earlier
  - How can no net loss can be applied?-from the perspective of a regulator. How do you use best available science to put monetary value for mitigation?
  - How do we assign value to natural resources?...should explore ecosystem services more in order to make those value judgements
- What about in Canada?
  - Not much is going on connecting kelp habitat and regulation, some pockets around Vancouver island, some money in trying to put some kelp beds back in...DFO may be interested
  - Puget Sound Partnership is interested in coordinated monitoring on both sides of the border
- Eventually the goal will be to have one list of prioritized actions for research and another list for recovery and conservation efforts