

Puget Sound Floating Kelp Canopies Vital Sign Indicator
Summary of Comments Received in Response to the Initial Scoping Report and Workshop
March 21, 2022

I. Introduction

In 2020, the Puget Sound Partnership identified a new indicator to include in its Vital Signs, *floating kelp canopy area*. A diverse project team is collaborating to develop the indicator. The [Initial Scoping Report](#) provides detailed information on the project. The project will incrementally define the indicator in three linked phases. Each phase incorporates a formal call for external guidance and feedback (Table 1). This document summarizes comments received during initial scoping (Phase 1).

Table 1. Opportunities for public feedback in the indicator development process.

<p><u>Phase 1. Initial Scoping</u> <i>Identify indicator requirements, priorities, and candidate datasets</i></p>	<ul style="list-style-type: none"> • Report released: Jan. 11, 2022 • Online workshop: Jan. 13, 2022, 10 am – 12 pm • Public comments due: Mar. 1, 2022
<p><u>Phase 2. Indicator Options</u> <i>Explore indicator options through data visualization</i></p>	<ul style="list-style-type: none"> • Report released: May 30, 2022 • Online workshop: Jun. 7, 2022, 10 am – 12 pm • Public comments due: Aug. 1, 2022
<p><u>Phase 3. Finalize Indicator</u> <i>Select and refine indicator</i></p>	<ul style="list-style-type: none"> • Report released: December 20, 2022 • Online workshop: Jan. 4, 2023, 10 am – 12 pm • Public comments due: Feb. 15, 2023

II. Scoping Engagement Overview

The project team identified three key goals for engaging partners and stakeholders during indicator development: diverse participation, intentional outreach, and co-production of knowledge. These goals guided the project team’s outreach efforts to partners, stakeholders, and the broader kelp community as they shared initial information about the indicator development process and solicited input on both specific scoping questions and other ideas or concerns related to the development and use of the indicator. The team also identified that comments that were beyond the focused scope of the indicator would be captured and shared with partners working more broadly on implementation of the Puget Sound Kelp Conservation and Restoration Plan.

The project team defined five scoping questions and proposed key considerations for discussion (Table 2). Key considerations will be refined during Phase 2 based on stakeholder feedback received during Phase 1 (Table 1).

Table 2. Initial scoping questions and key considerations proposed by the Project Team.

Theme	Key Considerations
Indicator Use	<ul style="list-style-type: none"> - Diverse audiences. - Single simple figure for rapid communication. - Detailed metrics that drill down into the data.
Critical Linkages	<ul style="list-style-type: none"> - Linkages to stressors, management actions, ecosystem components, human well-being. - Additional conceptual model development may be useful as part of indicator development or broader Kelp Plan work: <ul style="list-style-type: none"> ● A ‘kelp canopy centric’ model may provide insight. ● A simple model could communicate common understanding. ● Advanced models could target additional actions.
Temporal Priorities	<ul style="list-style-type: none"> - Short-term (years). - Long-term (decades).
Geographic Priorities	<ul style="list-style-type: none"> - Sub-basins within Puget Sound. - Include the open coast
Relevant Metrics and Data	<ul style="list-style-type: none"> - Initial canopy area and bed perimeter area from DNR, MRC volunteers, Samish. What else? - Future: a plan for expanding metrics and data is needed. - Currently, resources for data collection and reporting are extremely limited. The program must be scaled to match available resources.

III. Outreach Activities

Outreach and information sharing occurred through multiple channels to reach a broad audience. Information about the project website and stakeholder workshop was emailed to 225 individuals with previous engagement in kelp conservation and management. Targeted letters were mailed to 31 tribes inviting participation in the development of the indicator through their preferred process. Brief updates and presentations were provided at various forums. Initial scoping comments were requested by March 1, 2022 for inclusion in the first round of review. However, continued comments and discussions throughout the process are encouraged and will be incorporated into two future compilations.

In total, the project team completed outreach discussions with:

- 77 individuals at a dedicated workshop
- ~150 individuals through presentations at other meetings
- ~35 individuals at 6 follow-up meetings or email discussions with various tribes, individuals, and organizations

Comments were provided by citizens and by representatives of federal and state agencies, tribal governments, local governments, NGOs, and scientists. Comments are summarized in section IV.

Puget Sound Floating Canopies Kelp Vital Sign Indicator Project Website and Email

The project website provides overview information regarding the process and timeline for development of the indicator, as well as links to additional resources. Contact information for the project team is listed on this website and viewers are encouraged to reach out with questions or comments. Stakeholders are also able to register for workshops through the website.

<https://kelp-canopy-vital-sign-for-puget-sound-wadnr.hub.arcgis.com/>

email – nearshore@dnr.wa.gov

Initial Scoping Report: Floating Kelp Canopies – A New Vital Sign Indicator in Puget Sound

The Scoping Report provides preliminary scoping information to support development of the indicator and help inform initial comments from interested parties. It can be viewed at the following link:

https://www.dnr.wa.gov/publications/aqr_nrsh_kelp_vital_sign_scop_report_2022.pdf

Stakeholder Workshop

The Puget Sound Floating Kelp Canopy Vital Sign Indicator workshop was convened over zoom on January 13, 2022 from 10:00 a.m. to 12:00 p.m. The purpose of this workshop was to share initial scoping information with interested parties and solicit input on the conceptual framework for the indicator, including candidate datasets, geographic and temporal priorities, indicator use, and engagement strategies. Information about the workshop was shared through the DNR Nearshore Program electronic mailing list and through various forums where kelp is a topic of interest. Individual letters were sent to tribal chairs and natural resource staff from all Washington State tribes, inviting them to engage in the process and register for the first workshop. Workshop materials, including a recording of the presentations, can be accessed from the project website.

There were 77 participants at the workshop representing a range of federal and state agencies, tribes, local governments, NGOs, and scientists from various organizations. The first half of the workshop involved brief presentations covering key aspects of the scoping report. Participants were then assigned to small groups to brainstorm and discuss considerations for the conceptual model.

Presentations

Members of the Kelp Vital Sign Indicator project team provided brief updates and short presentations to various groups who have interests related to kelp conservation and management. Opportunities to ask questions and provide comments were integrated into each presentation. The following is a list of updates and presentations:

- Puget Sound Kelp Research and Monitoring Network Meeting on January 12, 2022 (approximately 95 participants)
- MRC Kelp Kayak Survey Update Meeting on January 26, 2022 (approximately 40 participants)
- Whatcom MRC Meeting on February 3, 2022 (approximately 15 participants)

Direct Outreach

Members of the Kelp Vital Sign Indicator project team conducted direct outreach to both tribal representatives who have expressed interest in kelp management, as well as agency and non-profit partners. Outreach was conducted through email, phone, and in-person conversations.

IV. Summary of Comments

Comments are summarized and grouped thematically according to five broad scoping questions and associated sub-questions (below). For simplicity, similar comments were combined and listed only once.

A. Indicator target audience, use and data access

Question: Who is the indicator for and how could it be used?

- *General public:* Useful as an information source to communicate the importance of what we are doing (e.g. kelp restoration)
- *Funders:* Useful as an information source to communicate the importance of what we are doing (e.g. kelp restoration)
- *Restoration practitioners:* Useful to identify areas that may be suitable for restoration efforts
- *Land/Shoreline managers and planners:* High resolution data would be useful in identifying current kelp distribution and trends in relation to development. For planning, the indicator would be useful in looking at the impact of development on kelp beds (e.g. correlate the distribution and trends with existing development). Understanding and identifying factors that would affect the sensitivity of kelp would lead to more effective management and protection (e.g. areas of higher temps will be areas of greater concern where stronger habitat stewardship measures could be applied or development would not be approved)
- *Fishery managers:* Can be useful in identifying potential fishery issues (e.g. knowledge of kelp trends may be useful to monitor development of purple urchin barrens)
- *Researchers:* More granular data would be useful in identifying prioritized restoration areas
- *Local government:* Useful in understanding historic and contemporary kelp beds to assist in urban kelp work/restoration, to understand where and how to create conditions for kelp restoration, and to help in planning of port operations

- Other considerations:
 - It's critical for the information to be easily understandable to a wide audience.
 - The Puget Sound National Estuary Program's Strategic Communications Plan identifies key audiences, communication strategies and priority tools: <https://pspwa.app.box.com/s/xzkj83f0911alkmov2s0dn5vvsyfg517/file/64828696581>
 - The Puget Sound Partnership has guidance for communications strategies <https://pspwa.app.box.com/s/fokrjwy67fwsy7fqryo7xw2itbf4g3i>

Question: What should the indicator look like?

- Something similar to Chinook salmon indicator graph (i.e. sound wide data but also break it down into regions)
 - a. Difficult because of limited long-term data and because datasets are all so different (kayak sites vs strait surveys)
 - i. For first few years use a split graph with short and long-term data
 1. Short-term data can be of individual site/geographic region that show actual surveyed areas from year to year with error bars
 2. Long-term data may be used for more meaningful comparison by using rolling average to flatten out the noise. However, it may be more appropriate in first few years when data is lacking to simply state the general trend (e.g. increasing, stable, or decreasing) of a basin with the premise that this long-term data is limited but is the best available data
 - a. Displaying the short-term data and general basin-wide long-term trends could be used to show managers the basins or sub-basins that are in decline and specific high risk areas within these basins with physical characteristics that have been associated with kelp declines
 - b. Would be nice if a physical attribute like temperature could also be displayed on the graph (further discussion regarding what would be the most important physical characteristic to be displayed is needed)
- It would be useful to have the ability to drill down into the data in different ways and group spatially and by physical attributes
 - c. Looking at the short-term data this way can help us identify areas that may require more attention and can be useful in understanding why we are seeing some of the more long-term trends in an area
 - d. Useful physical attributes would be temperature, nutrients, currents, wave exposure, substrate composition, and outfall sedimentation
 - i. Might not need to include all of these, but would be useful to have a list of 'secondary' characteristics/stressors for people to consider

- Need to consider the high level of variation in kelp presence/abundance when presenting the indicator or when managers need to consider actions. When are trends established (i.e. how many years of data is needed to establish a trend when there is so much variation)?
 - e. Being open and honest of the resolution would be helpful

Questions: How would you like to access the data?

- Interactive map to locate and browse data. Also, data download.

Additional considerations

- It is important to look at urban kelp to understand kelp resilience

B. Framework for community engagement in indicator work

Questions: What is the best way to interact with the Tribes on a group level, and with Tribal members individually? Who is missing? What groups or individuals do we need to reach out to? How do we meaningfully incorporate non-numerical data into an indicator?

Question: What is the best way to interact with the Tribes on a group level, and with Tribal members individually?

- NWIFC is a great resource for some of the technical review, or for distilling information to commissioners, the Environmental Policy Group, or other tribal working groups.
- First Nations Ocean Guardian program is also a great model
- Identify a point of contact within the Natural Resources Department and coordinate directly with them
- Slow and steady trust building with the tribes is critical
- Utilize Puget Sound Partnership's tribal liaison resources
- MAPP and other B.C. programs offer good examples

Question: Tribes, non-profits, government agencies – these are the obvious groups to consider. Who is missing? What groups or individuals do we need to reach out to?

- AAPI community
- Washington Port Association
- Port of Seattle
- Kelp aquaculture community
- Swinomish Tribe in relation to their oyster restoration program

Questions: How do we meaningfully incorporate non-numerical data into an indicator? Types of non-numerical data?

- Assess utilization and efficacy of land use and environmental protection regulations and policies, both in the nearshore and the uplands
- Integrate multiple timelines to grasp longer-term changes
- Canoe runs and holds; Cultural access could be included
- Use of maps, particularly StoryMaps as tool to integrate multiple types of data

C. Data sets to consider for inclusion – now and in the future

Questions: What metrics and data should be included in the initial indicator? The future indicator?

- Measuring kelp abundance alone is not sufficient. Clear definitions on abundance metrics (i.e. beds vs canopy) are important. Additional considerations:
- Density
 - Are dense and sparse beds equal?
 - How can density measures be scaled up?
 - Density means different things, especially in different basins.
 - FYI: PSRF is in the process of establishing Index sites with density measures throughout the basin
- Environmental conditions (i.e. current, tidal stage) at time of sampling.
 - Surface data is often regarded as unreliable, data dependent on ideal sampling conditions. Different sites have different relationships with their environmental conditions. Develop site-specific models to better understand conditions.
- Utilize models as a correlation factor (for instance Parker McCreedy's LiveOcean model)
- Bed function
- Sub-metrics
 - Stipe density
 - Sargassum presence – negatively correlated with kelp extent. Could refer to DFW rake surveys to help establish baseline
 - Qualitative data is important! For instance, sites that are repeatedly sampled; conditions change y2y. Repeatedly sampled sites improve understanding of site dynamics (i.e. changes in substrate or shift in species composition). Challenge with qualitative data: these details can be tricky to incorporate into substantive analyses.
- Citizen science data, including imagery captured by drones

D. Spatial and temporal priorities for the indicator to report on

Questions: What time spans should the indicator consider? Why? What geographic assessment areas are important to consider? Why?

Question: What time spans should the indicator consider? Why?

- Need to identify the management goal and determine what time frame we want to return to. For example, 1911 versus 1980s. Use this as the baseline.
 - The general guidance we offer is that as a starting point, to report the full data, go as far back in time as possible. We know there may be logistical or capacity constraints to this though. The point is that we don't have a standard particular date/year whether policy or biologically driven to offer. It really is what makes sense for the indicator.
- Need to consider the interannual variations.
- Historical maps used to identify substrates could be informative.

- Alluvial substrate mapping by automated texture segmentation of recreational-grade side scan sonar imagery Daniel Hamill, Daniel Buscombe, Joseph M. Wheaton Published: March 14, 2018; <https://doi.org/10.1371/journal.pone.0194373>

Question: What geographic assessment areas are important to consider? Why?

- PSNERP's five sub-basins has been useful and can be scaled down using site specific data and information on stressors.
- The indicator is meant to be applied Sound-wide, but it would be beneficial to include additional information at the site level (ex. Cherry Point).
- Could use physical and biological parameters influencing kelp rather than basins
- One of the largest existing kelp populations near the San Juan Islands is to the west of Smith Island. Many of those described by Rigg in 1912 have not been present for a long period of time.

Additional Considerations

- Many stakeholders voiced interest in including the outer coast within the scope of the indicator.
- Upland activities must be taken into consideration, specifically those tied to explosive population growth within the region, when evaluating how to address stressors.
- While there is interest in the indicator from tribal partners broadly, there is currently no direct nexus to the project as they do not currently manage areas with existing kelp beds.

E. Linking trends in floating kelp canopy to stressors and management actions

Questions: The indicator is limited to describing status and trends in the kelp canopy area. What linkages are most important?

Important linkages to consider:

- The role of kelp to the survival of other species, such as fish, crab, killer whales, etc.
- Harvestable resources connected to kelp, including salmon, cucumbers, abalone, geoducks
- Potential impacts of biotic drivers/grazers, such as urchins and snails
 - An additional variable in kelp and urchin population stability is substrate rugosity ([Z Randall et al](#)) which may inform urchin harvesting and restoration efforts.
- Population growth and the amount of nutrient runoff into the Salish Sea
- Water quality impacts to kelp
- Vessel traffic
- Climate refugia
- Shoreline development; small/large overwater structures
- Aquaculture
- Temperature shifts
- Puget Sound Kelp Conservation and Recovery Plan

Other considerations:

- Public education on the importance of kelp and the stressors that impact kelp is going to be critical.