

**Puget Sound Floating Kelp Canopies Vital Sign Indicator
Comments Received in Response to the Phase 2 Report and Workshop
October 11, 2022**

Compiled by the Project Team



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Executive Summary

In 2020, the Puget Sound Partnership identified a new indicator to include in its Vital Signs Program: *floating kelp canopy area*. A diverse project team is collaborating to develop the indicator, which will be released in May, 2023. The project will incrementally define the indicator in three linked [phases](#). Each phase incorporates a formal call for external guidance and feedback. The project team identified three key goals for engaging partners and stakeholders throughout the indicator development project: diverse participation, intentional outreach, and co-production of knowledge.

This report summarizes comments received during Phase 2: the exploration of indicator options. The [Indicator Options Report](#) was released on May 30, 2022. A workshop and small meetings followed to provide multiple forums to gather feedback. Comments were welcomed on all aspects of the project, with five themes: indicator audience and use; temporal priorities; geographical assessment priorities; metrics and data; and critical linkages. Phase 2 also presented two visualization options as a framework for exploring data presentation on [PS Info](#), the Partnership's Vital Sign web site.

More than 100 individuals, representing diverse organizations and individuals, provided comments during Phase 2. The project team appreciates all of the time and consideration provided. The project team will use this report as a working reference to guide work during Phase 3.

Participants confirmed that scientists, managers and communities need the information that the indicator project will produce. They expressed strong support for the project approach, which integrates information from diverse sources and knowledge types. They also identified important improvements to the proposed indicator that will be implemented in Phase 3. Highlights of feedback include:

- [Polls](#) conducted at the public workshop recorded strong positive responses overall to the indicator presented in Phase 2. For all questions, 71% of responses fell within the highest two rankings, (*pretty close, great*), and 18% of the responses were the next level (*getting there*). Only 2% fell within the lowest two rankings (*terrible, meh*). *I don't know* responses totaled 10%. The workshop polls asked the same questions twice, once at the beginning and again at the end, after presentations and discussion. The positive rankings increased in the second poll regarding *our approach to meaningfully engage with communities*. We believe this change reflects greater understanding gained through discussion. In contrast, rankings dropped slightly for polls related to indicator classification. We believe that this pattern reflects a more nuanced understanding of the complexities related to classification and the cost of simplification.
- There was broad support for including the Open Coast in the geographical extent of the indicator from scientists, managers, and communities.
- Multiple individuals expressed confusion over the long project name (the *Puget Sound Floating Kelp Canopies Vital Sign Indicator*). While the name makes sense within the context of the Partnership program, the project could benefit from a simpler name that identifies the alliance and the state-wide scope of its work.
- Two organizations who are not members of the project team expressed interest in monitoring floating kelp beds in their locales for potential inclusion in the indicator. The project team does not currently have sufficient capacity to incorporate other datasets. Future funding could make it possible to include other organizations. In the near term, the project team proposes to include references to observations such as these in the indicator sub-basin reports.
- Comments from individual managerial programs identified specific applications of the indicator (ie., the Habitat Strategic Initiative and the Kelp and Eelgrass Health and Conservation Plan). These programs provide additional valuable connections to management actions that will be informed by indicator results.
- [Appendix 1](#) includes the detailed information template for the PS Info indicator. Information will be packaged according to this template during Phase 3 of the project. The Partnership does not plan to set new targets for any indicators in the near term, including the floating kelp indicator.
- Most comments were fairly general in nature. The indicator project could benefit from detailed technical review, and could consider convening a technical advisory group. The BC/WA Kelp Node could provide a technical review opportunity.
- A central project objective is to meaningfully engage with diverse communities. The project team will further explore opportunities in Phase 3.

The topic with the most diverse feedback was the project team's call for a *single simple figure for rapid communication*. Participants identified needs for multiple types of information that ranged from intuitive summaries to more nuanced and detailed results. They also expressed the need for information at multiple geographical scales, from statewide to ~ 1km sites. In support of this request from participants, Partnership staff suggested ways to incorporate multiple levels of the indicator presentation into *PS Info*. The project team will also strive to meet this request on the indicator website.

Taken together, the Phase 2 comments strongly suggest that *PS Info* and the Partnership's Vital Sign Program represent a subset of all of the uses of the floating kelp indicator. In Phase 3 of the project, the team will develop the indicator for *PS Info* and also strive to meet the other distinct purposes that were identified by participants.

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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 project will incrementally define the indicator in three linked phases. Each phase incorporates a formal call for external guidance and feedback (Table 1).

The [Initial Scoping Report](#) (Phase 1) provides detailed information on the project. Feedback from the initial scoping is recorded in the [Summary of Comments Report](#).

This report summarizes comments received during Phase 2: the exploration of indicator options. The [Indicator Options Report](#) was released on May 30, 2022. A workshop and small meetings followed to provide multiple forums to discuss the options and gather feedback.

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

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

Scoping Engagement Overview

The project team identified three key goals for engaging partners and stakeholders throughout the indicator development project: 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. The project team 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, so would be captured and shared with partners working more broadly on implementation of the Puget Sound Kelp Conservation and Restoration Plan.

In Phase 2, the project team presented five central themes for the indicator and related considerations (Table 2). This list had been identified and refined during initial scoping in Phase 1.

Table 2. Five priority themes and related key considerations reviewed in Phase 2

Theme	Key Considerations
Indicator audience and use	<ul style="list-style-type: none"> ● Diverse audiences. ● Single simple figure for rapid communication. ● Detailed products that drill down into the data.
Temporal priorities	<ul style="list-style-type: none"> ● Short-term (years). ● Long-term (decades).
Geographical assessment priorities	<ul style="list-style-type: none"> ● Sub-basins within Puget Sound. ● Smaller assessment units to capture finer scale dynamics. ● Include the open coast.
Metrics and Data	<ul style="list-style-type: none"> ● Maximize use of available data, while also considering data limitations. ● Initial datasets will include canopy and bed perimeter from DNR, MRC volunteers and the Samish Indian Nation. Other available data will also be included. ● The program must be scalable to match available resources. ● A strategic plan is needed to identify future expansion.
Critical linkages	<ul style="list-style-type: none"> ● The indicator is limited to describing status and trends. ● Linkages are needed to stressors, management actions, ecosystem components, and human well-being.

Phase 2 Workshop (June 7, 2022)

Workshop Overview

On Tuesday, June 7, 2022, the second public workshop for the development of the *Puget Sound Floating Kelp Canopy Vital Sign Indicator* was convened over Zoom. More than 50 people attended. The objectives for this workshop were to present the proposed indicator and discuss and solicit feedback on various aspects of the prototype, including geographic assessment areas, classification categories, time periods, communication products, and info-map options. Presentations from the Vital Sign Indicator project team were recorded and can be viewed on the [project website](#). Polling to assess the current level of support for each component was conducted throughout the workshop.

Participants were divided into six breakout groups and invited to ask questions and provide feedback on the components of the proposed indicator that were of most interest to them. The following is a summary of the questions and comments provided throughout the workshop.

Participant Poll

We assessed overall response to the proposed indicator through a series of polls. Participants voted on each question at the beginning and end of the workshop, to allow assessment of how the workshop discussion changed their perceptions. Poll questions:

1. *How well do our proposed classification categories and color-coding meet our goal to rapidly communicate the essential scientific and management relevant information?*
2. *Our long-term goal is to meaningfully engage with diverse communities and link to other kelp science and management. Are we approaching this goal in the right way?*
3. *How well does the linked set of communication products meet our goal to deliver a basic summary and additional detail?*
4. *We are proposing 10 sub-basins with the ability to drill down to smaller units. How well does this proposal meet our ecological, cultural, and management goals?*
5. *How well do our proposed time periods and division of information types address information needs of scientists, managers and communities?*
6. *Which info-map option is better?*

For questions 1 - 5, respondents chose between 5 levels, from *terrible* to *great*, or *I don't know*:

1. *Great*
2. *Pretty close*
3. *Getting there*
4. *Meh*
5. *Terrible*
6. *I don't know*

For question 6, respondents chose between 3 options:

1. *2-Level*
2. *3-Level*
3. *I don't know*

Themes in Poll Responses

Poll results showed generally positive overall responses (Figure 1 and Table 3). For all questions, 71% of responses fell within the highest two rankings, (*pretty close, great*), while only 2% fell within the lowest two rankings (*terrible, meh*). The middle category (*getting there*) received 18% of responses, and *I don't know* responses totaled 10%.

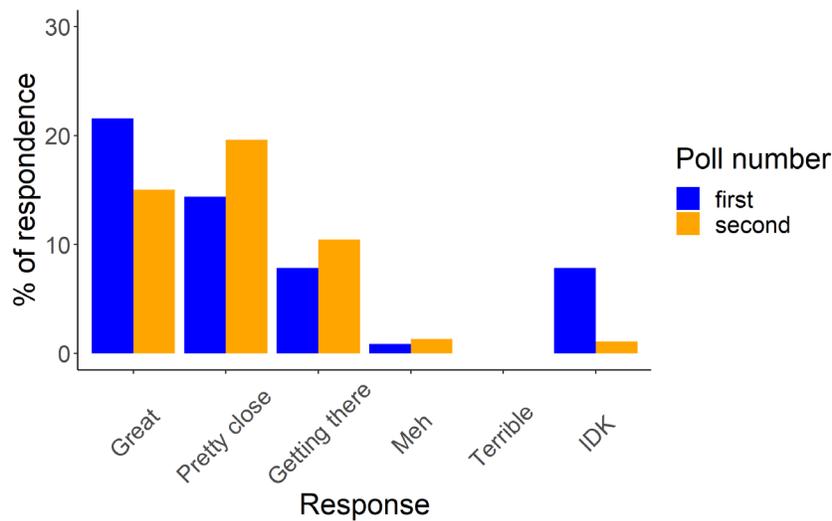


Figure 1. Participant responses to all poll questions, grouped according to the order that the two polls were administered.

Shifts in results were minor between the first and second poll. Overall, the category *I don't know* decreased substantially from 15% to 2%, which suggests that the workshop provided useful background information. Between poll 1 and poll 2, the category with the majority of votes shifted down a level, from *great* to *pretty close*. We believe this change reflects the respondents' enhanced understanding of the nuances of the data and the strengths and weaknesses of various approaches. In contrast, the positive rankings increased in the second poll regarding *our approach to meaningfully engage with communities*. We believe this reflects greater understanding gained through discussion. While the poll results provide valuable guidance for project development, minor differences among poll results could be attributed to slight changes in the group of respondents among polls (some participants joined the meeting late or left early).

Table3. Participant responses to Questions 1-5 in two polls.

Response	Poll number	Total number	frequency
Great	first	99	0.22
Great	second	69	0.15
Pretty close	first	66	0.14
Pretty close	second	90	0.20
Getting there	first	36	0.08
Getting there	second	48	0.10
Meh	first	4	0.02
Meh	second	6	0.01
Terrible	first	0	0
Terrible	second	0	0
IDK	first	36	0.08
IDK	second	5	0.01

Individual Poll Questions and Responses

Question: How well do our proposed classification categories and color-coding meet our goal to rapidly communicate the essential scientific and management relevant information?

Overall responses were strongly positive (Figure 2). In poll 1, the majority (40%) responded *great*. In poll 2, the majority (44%) chose the lower category *getting there*. This slight drop in the rating could reflect a more nuanced understanding of the complexities of the classification following discussion in the workshop. There were few *I don't know* responses in poll 1 and none in poll 2, which suggests participants reached a basic understanding of the proposed classification system.

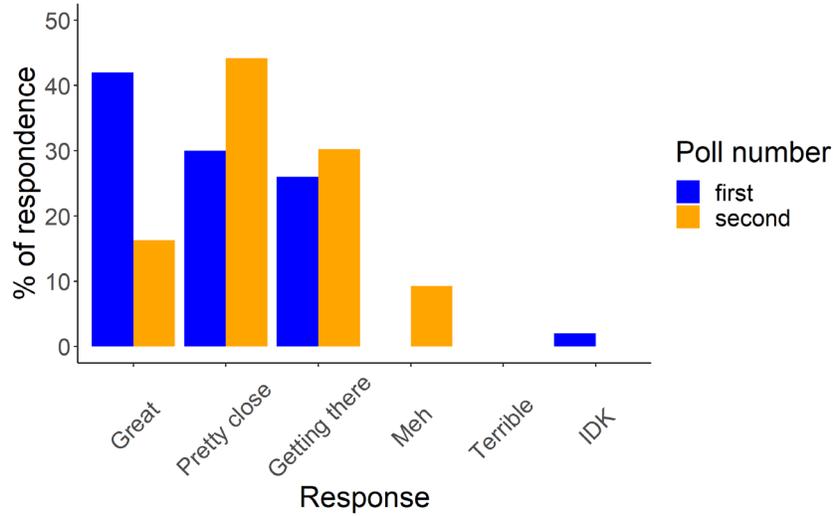


Figure 2. Participant responses to poll question: ‘How well do our proposed classification categories and color-coding meet our goal to rapidly communicate the essential scientific and management relevant information?’

Question: Our long-term goal is to meaningfully engage with diverse communities and link to other kelp science and management. Are we approaching this goal in the right way?

Both polls reflected positive responses, with a consistent relative order of *great*, *pretty close*, and *getting there* (Figure 3). The biggest shift between the first and second polls was the shift from the category *I don’t know* to higher numbers in *pretty close* and *getting there*. This change suggests participants gained a substantially greater understanding of the project’s proposed approach to engagement following workshop discussion.

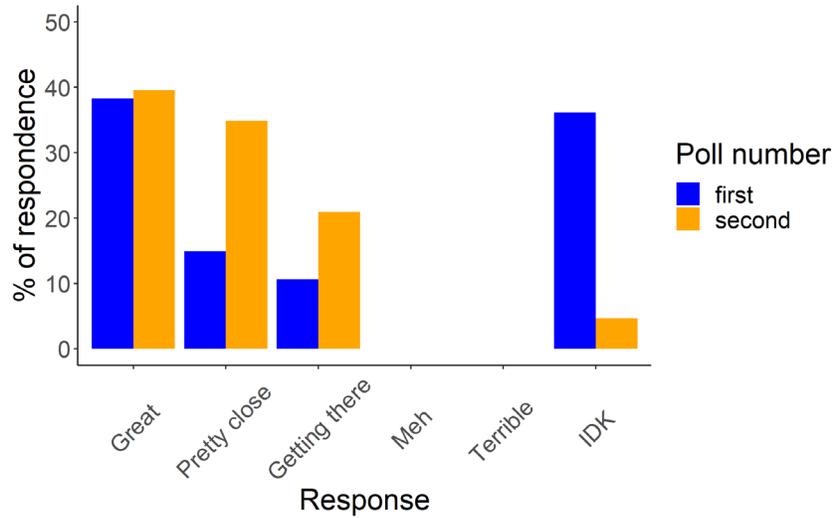


Figure 3. Participant responses to poll question: ‘Our long-term goal is to meaningfully engage with diverse communities and link to other help science and management. Are we approaching this goal in the right way?’

Question: How well does the linked set of communication products meet our goal to deliver a basic summary and additional detail?

In both polls, the vast majority of responses were positive (Figure 4). In the second poll, the percentages generally shifted slightly to lower categories but remained positive, and the number of *I don’t know* responses decreased. Similar to other responses, the slight shift could reflect greater understanding of the nuances and complexities following workshop discussion.

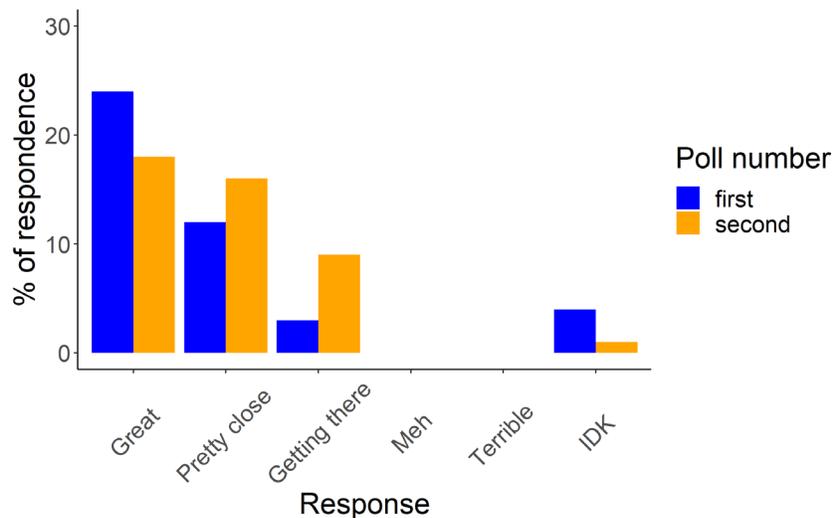


Figure 4. Participant responses to poll question: ‘How well does the linked set of communication products meet our goal to deliver a basic summary and additional detail?’

Question: We are proposing 10 sub-basins with the ability to drill down to smaller units. How well does this proposal meet our ecological, cultural, and management goals?

In both polls, the vast majority of responses were positive (Figure 5). In the second poll, the percentages shifted slightly to lower categories but remained positive, and the number of *I don't know* responses decreased. In the workshop and in subsequent discussions, participants emphasized the importance of including the open coast sub-basin and dividing the study area into sub-basins in order to capture known differences in floating kelp trends over time. Participants also expressed the need to explore local trends using smaller geographical units.

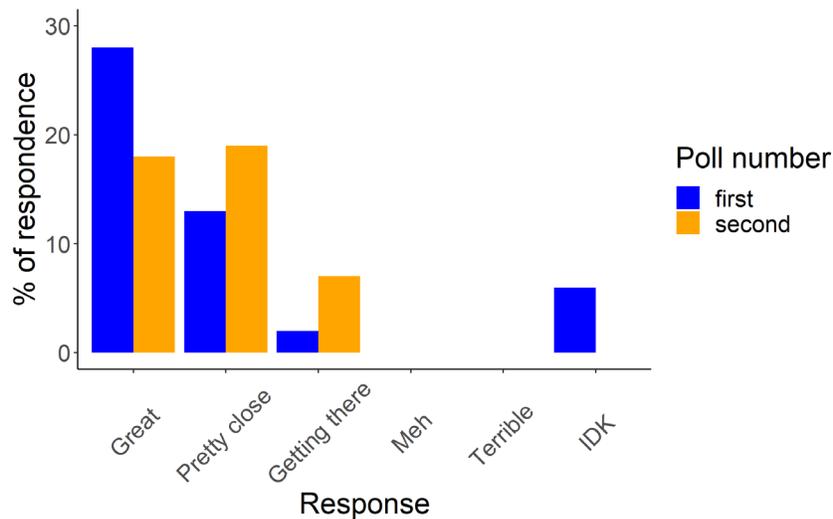


Figure 5. Participant responses to poll question: ‘We are proposing 10 sub-basins with the ability to drill down to smaller units. How well does this proposal meet our ecological, cultural, and management goals?’

Question: How well do our proposed time periods and division of information types address information needs of scientists, managers and communities?

While overall positive (Figure 6), this was only poll that received any low rankings (*meh*). In poll 2, the number of *I don't know responses* decreased, but the overall pattern in responses did not change. There was substantial discussion at the workshop related to the challenge of including diverse types of information beyond western scientific data. This is one of the greatest challenges faced in indicator development.

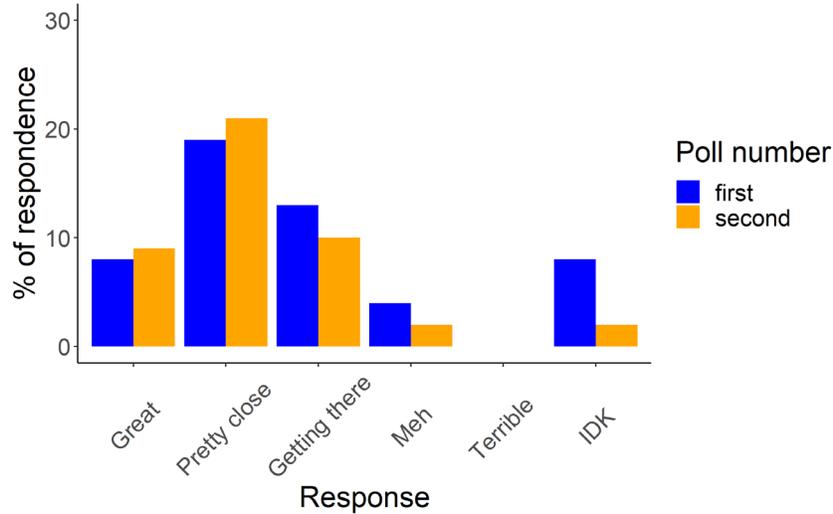


Figure 6. Participant responses to poll question: ‘How well do our proposed time periods and division of information types address information needs of scientists, managers and communities?’

Question: Which info-map option is better?

Respondents expressed a consistent preference for the two-level visualization, which was simpler (Figure 7). In poll 2, the number of *I don't know responses* decreased, but the overall pattern in responses did not change. While the overall preference was for the simpler visualization, many respondents expressed a desire for more nuanced information in their comments. So, the preference for the simpler visualization may, in part, reflect a lack of clarity in the more nuanced three-level option that was presented in the workshop. Ultimately, respondents expressed a strong preference for multiple visualizations.

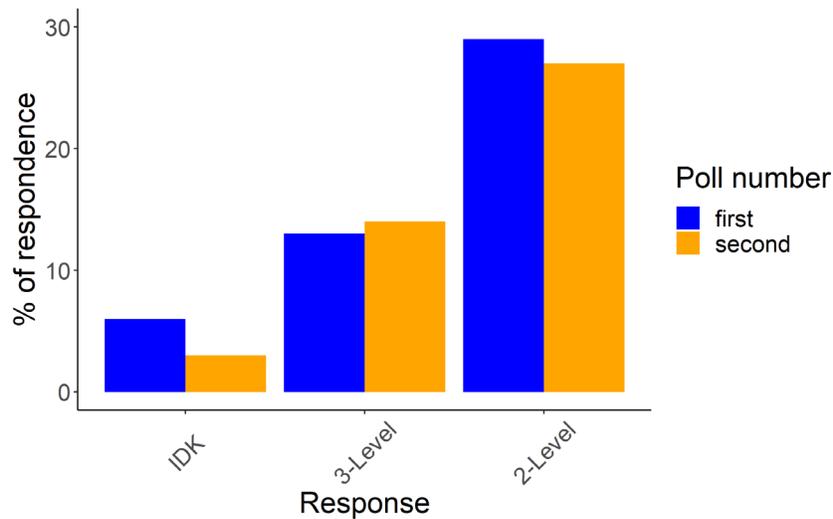


Figure 7. Participant responses to poll question: ‘Which info-map option is better?’

Presentation Questions and Comments

Questions and comments received during the workshop are logged below. There was not sufficient time to address all questions and comments. All comments will be considered during development of Phase 3 project documentation. The following questions were logged during the plenary presentations:

- What is meant by “sub-basin?” A geographic region? A hydrologic unit?
 - Sub-basins as defined according to oceanographic convention. So, they are an hydrologic unit defined by oceanographic considerations, specifically the location of sills in fjord systems and inland seas. See the Phase 1 and Phase 2 reports for different sub-basin designations and the proposed designation. They are often considered in defining ‘regions’.
- How do reaches relate to drift cells, if at all?
 - They are defined geomorphologically, in most cases they are larger than drift cells. We can do a comparison of drift cells and reaches. I wonder how directly drift cells apply to subtidal habitats... I know they are very important to intertidal habitats
 - Drift cells are very important sub-tidally, at least in some cases. Ex: In coastal California where submarine canyons are primary sediment sinks. Megan's question definitely has me thinking about kelp propagule movement.
- What are the metrics to decide kelp canopy presence?
 - Bed area or canopy area or linear extent (depending on what is available in the particular dataset)
- What constitutes a bed?
 - A bed includes BOTH the floating canopy and gaps between plants (while the canopy excludes the gaps). The spatial threshold varies by monitoring protocol, but is generally in the scale of meters. All of the data included is described in dataset descriptions, which are appendices 7-11.
- How is an overall assessment determined when there is insufficient data for the other two categories? Might that not confuse those not familiar with the process?
- How many years of data are required to establish a meaningful trend?
- In the future, if kayak-sites are chosen *randomly* within a reach or larger area, they could perhaps be assumed to have a larger scale of inference.
- I'm a little confused why "concern" and "insufficient data" are treated so differently in the Visual summary? I understand why that can be helpful to a researcher or scientist but to the general public I think that may unintentionally convey a lack of concern for areas with insufficient data This distinction between "quantitative data", "robust statistical analysis" vs "qualitative data" has no meaning to most of the general public. This information seems more important in the Sub-basin Summary page, but seems a little confusing when incorporated into the visual summary. It's also way more likely that a researcher or scientist is going to drill down into a sub-basin of concern, especially if "concern" is communicated to mean "general downward trends, due to differences in survey methods or lack of data."
- The Whidbey basin is sort of missing from the 200-page report.
 - We currently have examples of sub-basin reports for 4 sub-basins: San Juan Islands, Western Strait, Eastern Strait, and South Puget Sound. We are currently working on

developing sub-basin summaries for the remaining 6 sub-basins. They will be incorporated in the next report.

- You are absolutely right that there's very little data on the Saratoga-Whidbey sub-basin. We decided that the icon would be easiest to assess if every sub-basin was classified. But the sad truth is there's simply very limited data from that area.
- As Pete would say, that 2-level version seems to have more POW than 3-level.
- Regarding the icon -- I see where this icon may make sense after the explanation, but I will advocate for a more intuitive icon for a wide audience. I'm wondering if a side by side icon may help convey the message more clearly, such as a bar chart that's filled to the degree of knowledge known (a bar for if the data exists, with a rating of how much knowledge is available)
- Maybe "lack of quantitative data" can be conveyed in the 2-level version but by outlining the circles in bold?

Breakout Group Summaries

The following are key themes and discussion topics addressed in each breakout group, centered around geographic assessment areas, classification categories, time periods, communication products, info-map options, and priority next steps.

Group 1:

General Impressions

- The indicator needs to be intuitive for a wide audience, both in how it visually describes trends but also the user experience in navigating the sub-basin reports and sources of data. Redundancy and centrally located resources will limit the amount of navigation needed to access relevant information.
 - Consider locating the overall summary and sub-basin summary at the top of the report rather than directing viewers to multiple places to access information.
- Star-shape may confuse viewers, as it looks similar to a compass rose.
- Utilizing two tiers to indicate different TIME PERIODS is better than indicating TYPES of DATA. Team should avoid communicating a hierarchy of data.

Info-map Options

- Accessibility and ease in interpreting indicator is the most important consideration for many. It may be impossible to convey all the data in one visual. Provide a quick snapshot, and then make it easy for a viewer to find more detailed information. Consider NOAA's Integrated Ecosystem Assessment visual as an example.
- Ongoing challenge of communicating where there is limited data.
- Consider each of the targeted stakeholder groups and their differing needs and uses for the data, including scientists, the legislature, the general public, etc. Can track web analytics to better understand who is accessing the information.

Group 2:

General Impressions

- First impressions are that the vital sign indicators are a gigantic target. Admirable effort of trying to approach this huge canvas.

Geographic Assessment Areas

- Like the idea of coloring whole sub-basin to leave room to add all the sites to map in order to give people an idea of how many sites are within each sub-basin.

Classification Categories

- Concerned that the gray color may be overlooked. Category names communicate enough. Unsure what the categories are trying to convey. How is insufficient data defined?
- Don't want Admiralty Inlet and the San Juans to get lost in data gaps. Gray doesn't draw the eye enough to those regions. Instead of a gray color, maybe use a cross hatching to indicate insufficient data. The green colors of stable and increasing categories are not different enough. Not enough differentiation between 'concern' and 'declining' categories. Needs to be more descriptive.
- We could include a text summary page to start separating quantitative and qualitative. Also it would be valuable to have a way to illustrate whether the entire record is 150 years or 5 years, and how that varies within a region.
- Suggest 'limited data' in place of 'insufficient data'. For example, the Saratoga-Whidbey sub-basin, you know you have limited number of sites. Insufficient data has a broader meaning.

Time Periods

- What does "entire record" mean?
- One feature of this study is that it's dependent on time and change over time. One constraint is the need for consistent and regular updating so it'll never be completely done.
- A single-level indicator would be okay, but the nuance you lose is the story of variability.
- As a general citizen, recent data are of great interest. However, one concern is that when you start requiring up-to-date data are we going to start seeing a lot more gray, insufficient data as opposed to those long-term trends that we've assembled over many years, which are fairly robust. Are we risking exposing the need for more data which we don't have the resources to obtain?
- Why are we picking 5 years? What are we aiming to answer? We need to nail this down before we can pick a time period. Personal preference is 10 years. If you're trying to do conservation or mitigate impacts, 5 -10 years is good to see, but if it's in the context of the impacts of climate change, then you want to see ~50 years.

Communication Products

- Huge engagement opportunity when this launches. Use as a step for engagement for broader community. Reach out to media outlets like The Seattle Times. Want Seattle Times to be able to quickly look at this and understand where we have problems and where we don't so they pass that on to their audience and keep the momentum going.

Info-map Options

- Like 2-level better than 3-level. Concerned that gray colors don't stand out enough and will be overlooked.
- Fan of 2-level because an 11 year-old could look at this map and point out where kelp is in trouble.
- Like 2-level because having a recent time frame is useful to compare with long-term timeframe. 2-level is much easier to understand.
- The entire polygon should be color coded and then add solid or hashed lines and/or arrows. Arrows would help make graphic more straightforward.

Group 3:

General Impressions

- This is the opportunity to tell the story and what you are trying to do. Monitoring data is important, but the language can intimidate people and they don't engage. Use easily accessible language and help people see how to get involved.

Geographic Assessment Areas

- Is there a way potential management borders can be linked in simple summaries? Use text to list out different jurisdictional boundaries that fall within each sub-basin as an example.
- When you developed assessment areas- did you take into consideration the watershed planning? Impacts on aquatic systems are linked to upland uses- important perspective to capture and important for planners, can show more conservation measures are needed upland.
- Within these geographic divisions - I cannot determine where Smith and Minor Islands are. Seems like it is in the void between San Juan Island and Eastern Strait.

Classification Categories

- What is the most important part of the story- is it the data gaps and how sure we are, or are we concerned, are there declines, what is the trend!
- Replace symbols with emojis

Info-map Options

- 2-levels is less visually cluttered and communicates the story best of what is happening with kelp in that sub-basin.
- The way insufficient data is represented is less intuitive. Grey is less worrying. The 2-level conveys more concern and POW factor. A 4th level with a bold line around the circle can indicate general concern with less quantifiable data, or dashed lines.
- Is there a way to better flesh out language for overall and entire? I like 3-level and including interdisciplinary data.

Communication Products

- I work with a lot of local planners under GMA and SMA- when it comes to communication they don't have a lot of time to deep dive. Need specific info (what is it they need to protect) and buffers to protect resources. Is it possible to create a more concise summary to direct planners on where to protect kelp?
- Local jurisdictions and planners- how we message what we are doing with this indicator and in-water industry. We need to bring industry who are developing in these areas and how to communicate with them. We need to show reasons and communications with in-water contractors and industry and how to message with them on why protections are needed/justified.

Group 4:

Geographic Assessment Areas

- Not sure how these specific divisions meet cultural goals.
- Topographically these make sense, each sub-basin has unique geomorphology. Sub-basins also make sense.

Classification Categories

- Dark green vs light green is too close to each other - more contrast needed!
- Simplify to avoid creating confusion.

Time Periods

- While five years is a short time period for kelp, timeline also has to be consistent with real world observations. Can we use historic data as our baseline?

Info-Map Options

- One symbol over two or three sends a stronger, simpler message.
- Does one communication tool fit all audiences?
- Avoid sharing a correct yet confusing indicator to the public and elected officials.
- Sub-basins include a lot of habitat that will never contain kelp. Hard to communicate trends across sub-basins.

Priority Next Steps

- There is not enough data to call this a 60% or 90% design. Not enough data to come to conclusions based on this data; too limited.

Group 5:

Geographic Assessment Areas

- Sub-basins make sense ecologically, and at the state level. However, county boundaries may be important to consider, particularly with respect to county-level policies and actions. It's important that counties see themselves in the assessment areas. This will also help with securing funding to continue doing the work

that contributes to the indicator. Also must consider the varying degrees of data collection conducted by each county.

Classification

- While the desire to summarize at a basin-scale is understandable, the status at that scale can be different than at the site-level. It may be difficult to reconcile discrepancies between site level understanding and the region.

Info-Map Options

- The 3-level suggests we understand the regions well but there is no differentiation between the two inner levels. Do we even have the data to get to that level? If not, perhaps stick with two to preserve the fidelity of the data.
- Would like to see 3 maps: one for status, one for area, and one for recent status.
- Easier at 2-level to assess sound-wide condition/understanding.

Group 6:

General Impressions:

- What I've seen so far has been pretty audience-agnostic. Who are you ultimately trying to inform with this various products?
- It's nice to have access to the data, access to this information to justify data gaps or areas of concern in grants. Also helpful for more detailed project planning to have synthesized as well as individual data sources.
- It's really exciting to see all of this monitoring data compiled into a single space. I think that the categories totally make sense, the colors make sense. I like the idea of having a centralized hub. In addition to having a data portal where data is accessible, it would also be helpful to have contacts for project leads for sub-basins, so that people can reach out with additional questions.
- Appreciate the hierarchy of spatial levels.

Geographic Assessment Areas

- The proposed areas are recognized by and used by a large number of groups. I feel comfortable with them.
- Consider renaming sub-basins "basins," and reaches "sub-basins"? This more clearly conveys that one thing is smaller than the other.

Info-Map Options

- While the star shape is a bit confusing, the 3-level is a simpler way to convey general trend.
- Data gaps are easier to understand in the 3-level.

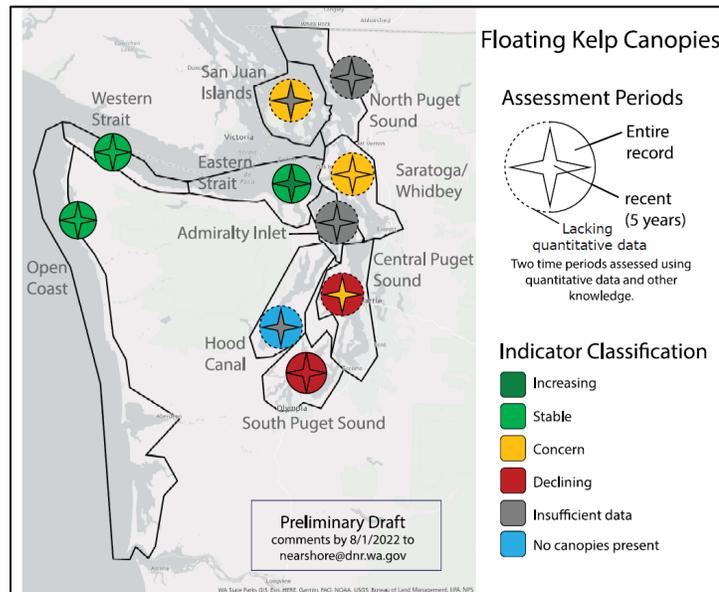
Comments gathered via individual meetings and written submissions

In addition to the workshop, input was gathered through a series of individual meetings and written comments. Comments are attributed to a person or organization in cases where the organization's work. These notes were compiled by the project team, any recording errors are the fault of the project team.

Miscellaneous comments – Emails and verbal comments from diverse sources include:

- Multiple respondents expressed confusion over the long project name (the *Puget Sound Floating Kelp Canopy Area Vital Sign Indicator*). While the name makes sense in the context of Partnership work, the project might benefit from a simpler name that identifies the alliance and the state-wide scope of its work.
- Multiple respondents expressed confusion that the term 'canopy' is in the indicator name yet the primary metric is 'bed'.
- Two organizations who are not members of the project team expressed interest in monitoring floating kelp beds in their locales for potential inclusion in the indicator. The project team does not currently have sufficient capacity to incorporate other datasets. Future funding could make it possible to include other groups. In the near term, the project team proposes to include references to observations such as these in the indicator sub-basin reports. However, these organizations would not receive technical support and the data would not be incorporated into the online maps and other projects.
- The Northwest Straits Commission is interviewing planners as part of a project to explore implementation of kelp regulations and policies. Some planners have identified that they use webmaps with kelp data when reviewing applications. Floating kelp data could be made available to planners via their web maps, through data distribution or direct access to the rest end points within web maps produced for the indicator.
- In fall 2022, The Nature Conservancy will release an updated version of its online map KelpWatch that includes data for shorelines along the exposed coast of Washington State. In discussions with TNC, the kelp indicator project team agreed to evaluate the data for potential inclusion in the indicator.
- The global Kelp Forest Alliance is working to develop a Global Kelp Restoration Target to galvanize broader scale support and cohesive action around kelp recovery. The target will be formally announced at the International Seaweed Symposium in Hobart Australia in February, 2023. In preparation, a team is bringing together leading scientists, governments and industries involved in kelp forest restoration and working to set a scientifically grounded target for kelp forest restoration. The indicator work could support this effort.
- Olympic Coast National Marine Sanctuary staff request exclusion of "the" in references to Olympic Coast NMS.

- Max Calloway submitted a mock-up of an alternate way to show a lack of quantitative data using the border of the circle icons (dotted or solid):



The Habitat Strategic Initiative –Elizabeth Spaulding, the Marine Vegetation Implementation Strategy Lead, provided the following comments on program linkages:

- As the Marine Vegetation Implementation Strategy Lead, I would like to submit the following comments for consideration in the development of the Puget Sound Floating Kelp Canopy Vital Sign Indicator. The Marine Vegetation Implementation Strategy has not yet been developed. While a strong foundation has been established through the regional eelgrass and kelp recovery plans, there is still a critical need to develop Marine Vegetation IS results chains. According to PSP’s *Guidelines for Developing an Implementation Strategy*, “Implementation Strategies (ISs) document the overall recovery strategies for Puget Sound Vital Sign Indicators. Each strategy describes the current context, rationale, logic, and proposed mechanisms **by which recovery targets for a given Vital Sign Indicator or set of indicators are expected to be met**. They also identify key uncertainties and associated research and monitoring needed to track progress toward recovery and determine the most effective approaches.” In order to develop precise, effective results chains that achieve the outlined goals, it will be important to have a clear recovery target that can guide decision-making regarding monitoring, management and restoration priorities and actions. A recovery target will also deeply inform IS progress indicators and the future IS adaptive management assessment, allowing us to determine how well our strategies are working and where adjustments need to be made.
- A primary purpose for an Implementation Strategy identified in PSP’s *Guidelines for Developing an Implementation Strategy* is “**to identify and emphasize key geographic areas** associated with the recovery target”. In order to accomplish this for the Marine Vegetation IS, it will be important to understand the specific sub basins within Puget Sound where kelp is most vulnerable and in need of prioritized monitoring, management and restoration actions. As such,

the indicator will best serve the development and implementation of the Marine Vegetation IS if it able to demonstrate status and trends within the 10 geographic sub basin assessment areas.

The BC/WA Kelp Node - Representatives from British Columbia and Washington State are establishing a network of workgroups collaborating on kelp science and management. A recent abstract led by Jasmin Schuster (Hakai Institute and University of Victoria) summarized the effort: “Understanding, protecting and restoring kelp ecosystems requires collaboration and a common framework. Building on other international initiatives, a cross-boundary (US – Canada) network of kelp practitioners (First Nations stewards, researchers, managers, policy makers, educators, and citizen scientists) is emerging in the Pacific Northwest. Our network aims to: (1) advance kelp conservation, management, and recovery in the transboundary waters of British Columbia (Canada) and Washington (USA) through implementing and expanding collective actions for kelp; and (2) serve as a forum for communicating about and organizing relevant research activities. Working groups are structured as clusters of actions that will form a basis for knowledge exchange, data collation, and novel research. Our emerging network can provide a roadmap for expanding kelp ecosystem planning and conservation in the Pacific Northwest.”

Preliminary discussions have identified multiple direct connections to the floating kelp indicator, including:

- Develop and share floating kelp canopy monitoring standards, methodologies and remote sensing tools.
- Plan and coordinate sentinel sites for strategic canopy kelp monitoring (with link to subtidal monitoring).
- Update and improve organization and access to canopy kelp data information and metadata, including historical information and Indigenous Science (TEK).
- Review and expand cross-boundary data to examine spatial patterns in declines, recovery and stability at regional and sub-regional scales.
- Develop, improve and share methods to group and segment management/monitoring units for kelp habitats in WA and BC.
- Link research and monitoring to drivers and consider gradients in environmental condition.
- Link MPA network planning to kelp outputs.
- Provide a technical forum for reviewing the indicator.

DNR Kelp Forest and Eelgrass Meadow Health and Conservation Plan – In spring 2023, the Washington State Legislature passed Senate Bill 5619 (SB5619), which mandated a series of collaborative habitat conservation and restoration actions:

- DNR is directed to:
 - Collaboratively create a framework for prioritizing areas of conservation and restoration.
 - Create a community engagement plan.
 - Identify 10,000 acres of priority habitat for conservation and restoration.
 - Identify current and future stressors impacting health in prioritized areas.
 - Identify current and future tools to support conservation.
 - Monitor distribution and trends

- SB5619 milestones include:
 - 2022 – community engagement plan, schedule of plan development
 - 2023 – finalized plan, monitoring plan
 - 2024-38 - ongoing biennial reporting
 - 2040 – 10,000 acres of kelp and eelgrass habitat conserved and restored
- Engagement plan timeline for 2022 and 2023:
 - Fall 2022 – finalize plan
 - Dec 2022 – submit engagement plan to legislature
 - Winter 2023 – kickoff workshop
 - Mid-spring 2023 – regional workshops
 - Summer 2023 – review draft plan
 - Dec 2023 – submit final plan to legislature
- Products identified to inform prioritization framework
 - Synthesis of what we know about distribution and trends
 - Brief overview of the methods for monitoring used
 - Data gaps in knowledge of current, past, and future state
- Some big questions
 - By region and (maybe) sub basin, where are kelp and eelgrass populations growing, stable, declining, over what period, and by how much?
 - What data do we have that could inform prioritization?
 - How will we present this data (what layers do we need, how do we share it, etc.)
 - Do we need/want to create any new tools for communicating data?

Puget Sound Partnership - A series of meetings with Partnership staff provided valuable information about the details and logistics of indicator reporting. Appendix 1 contains the template for submitting indicator information to the PS Info web site. Additional notes (below) were recorded by project team staff during discussion.

Other information that the Partnership requests for each indicator includes:

- Vital Sign name
- Indicator name
- Indicator type (indicator, potential future indicator)
- Existing indicator (true/false)
- Common indicator (true/false)
- Target
- Primary affiliated PSEMP workgroup
- Reporting lead
- Affiliation
- Potential Lead Agency
- What product do we expect by end of the biennium
- State of indicator development ('Not developed at all' to 'lead confirmed and indicator reported routinely').
- Resources/ capacity needed (funding, staffing)
- Barriers to reporting (how well is VS reporting integrated into your work plan; supported by managers)
- Description of data availability (timing, source)

- Product expected next after this 2021-23 biennium
- Resources needed after this biennium?
- What resources?
- 2022 WorkPlan Qrt1 (Jan-Mar)
- 2022 WorkPlan Qrt2 (Apr-Jun)
- 2022 WorkPlan Qrt3 (Jul-Sept)
- 2022 WorkPlan Qrt4 (Oct-Dec)
- 2023 WorkPlan Qrt1 (Jan-Mar)
- 2023 WorkPlan Qrt2 (Apr-Jun)
- Temporal Scope and Resolution
- Spatial Scope and Resolution
- Spatial Scope and Resolution - LIO geography
- Baseline Year(s)
- Threshold as reference for condition

Other comments that inform indicator development:

- Ideally the primary figure in PS Info gives us a good overview of indicator status and trends, it likely can't tell us everything and that's okay. We can use the detailed indicator page to go deeper into the data.
- You will see on our web site that we have a trends assessment and a 'status' category which is usually interpreted wrt to the target. We use the term *Status* to evaluate how the indicator is doing relative to the target. We are working to be more clear and consistent in how we use those terms. In this context, *condition* is a similar term to *status*.
- We need reference points and thresholds and data on the PS Info site to show what led to the indicator classification.
- The Partnership does not have the capacity to create more targets in the near term, so there is no plan or schedule to set a floating kelp target.
- The [bivalve harvest for personal use](#) indicator shows an example of what a web map looks like on the page – it's a small space (though viewers can expand the window) so best to keep the design simple.
- Indicator progress – inclination may be 'mixed results' if different parts of the sound show different patterns. However, for clarity, the Partnership tries to push indicators toward other categories. So, using eelgrass as an example, the findings in the San Juans sub-region, could lead to a 'getting worse' conclusion. In this way, it could be similar to the *Dungeness Crab for Personal Use* indicator, which is classified as 'getting worse' to reflect the losses in SPS while many other areas remain stable.
- I would encourage you to think about function before form. What are the 1-2 take homes that you want people to take home? Is it a short-term trend or a longer term trend? Is it sound-wide or at a subregional level.
- In response to the Phase 2 3-level figure, I think that is a little bit too much for the single figure. Also because long-term and 5 year were often the same by subregion.
- Consider using polygons themselves and coloring them in, in addition to an arrow.
- With respect to reporting schedules: aligning VS updates with DNR's monitoring reports makes sense and we can see how that works in regards to timing of the State of the Sound report. The SOS report comes out in odd years (next one will be in 2023); having indicators updated with the latest data by the end of the prior year (e.g., end of 2022) helps us prepare content for the report.

Appendix 1. The Template for Indicator Reporting on the PS Partnership's Puget Sound Info System

Please consider the following guidance when reporting on your indicator:

- Bring the bottom line to the top! Don't bury important messages at the end.
- Use active voice as much as you can.
- Try to keep your sentence lengths under 18 words on average.
- You can consult the Fog Index calculator ([Gunning Fog Index \(gunning-fog-index.com\)](http://gunning-fog-index.com)). It often flags issues with long words and long sentences. Content for general audiences should generally have a Fog Index score of less than 12. The calculator isn't perfect, but it's a good way to gauge parts of a document that might need more work.

You can now select whether to show a map or the VS indicator chart as the primary figure on the overview indicator page. Chart is the default option, but VS admins can change the display to the map.

Indicator Basics

Ecosystem Recovery Goal:

Vital Sign:

Indicator:

Indicator Progress/Target Status:

Target:

Vital Sign Indicator Reporter [formerly called *Indicator Lead*]:

Contributing Partners [agency or organization responsible for collecting data]:

Description [general description of the indicator, 300 character limit]:

Importance

Methods

Monitoring Program:

Data Source:

Methods [an overview of how the indicator is measured, including what, where, and when it is measured.]:

Results

Vital Sign Indicator Chart *[one chart to best summarize results, typically shows a time series; consider using online charting tool]:*

Key Vital Sign Indicator Results *[key messages; around 5 bullets, up to about 35 words each]:*

-

More Results and Interpretation *[option to include additional figures, tables, and narrative to interpret results]:*

Causes for Indicator Change *[overview of the drivers/causes that explain patterns in the data. These could be natural drivers, restoration and protection activities, or human activities that stress the ecosystem but may benefit humans.]:*

Additional Information

[links to external sites and documents that provide additional information and where our users can to for more details]:

Map

[either a static image or embedded web map. The map frame on the page is small (though the window can be expanded) so a simple design is best for web maps. See [Bivalve harvest for personal use](#) for an example of an embedded web map.]