

MEMO 11/04/2022
FROM Paul Cereghino, NOAA Restoration Center
TO Max Lambert (WDFW), Josh Chamberlin (NOAA), Stephanie Ehinger (NOAA)
RE SCIENCE SPRINTS TO SUPPORT REGULATION WORKSHOP 11/4

Attendance varied with 28 people reporting attendance. Attendees were well distributed among regulators, field scientists and others. The following notes are adapted from handwritten conversation notes, Jamboard™ sticky notes, and the chat record. Where inputs were cryptic I created whole sentences based on my best professional judgment and remembrance of conversations. All groupings are my own. Numbers in parentheses show where multiple comments were condensed into a single item during grouping.

BARRIERS TO COLLABORATION AT THE SCIENCE/REGULATORY INTERFACE

CROSS CULTURAL ISSUES

- We lack good communication channels between scientists and regulators (2)
- Scientists judge and describe regulation as a failure reducing trust. (1)
- It's difficult to know what science team can actually help (1)
- Regulatory staff may lack expertise in relevant areas of study (1)
- Scientists may not be able to translate how science fits into the regulatory framework (1)

TEMPORAL CHALLENGES

- The time frame for science synthesis does not match regulatory needs. (2)
- Updates to regulations or rules move very slowly and the legal costs are high
- (2)Science synthesis quickly becomes out of date. (1)

FUNDING/CAPACITY ISSUES

- We lack the capacity to spend the time on science synthesis (4)
- We lack sustained funding to do this work. (2)
- Staff turnover (at regulators) can undermine collaboration (1)

INSTITUTIONAL DIFFERENCES

- The differences among regulatory authorities undermines shared work (2)
- Institutional silos keeps us apart and increase the cost of collaboration (1)
- Regulatory departments in local government are siloed from science in local governments (1)
- The regulatory objectives (baseline) among authorities differs (1)

POLITICAL BARRIERS

- Agencies might not be following BAS creating risk (1)
- Political power to allow development overrides BAS (1)
- Leadership may not support needed work to allocate resources (1)
- Agencies may have different goals or legislative strategies (1)
- We've become enamored with restoration and have forgotten that regulation is the backbone. (1)

ECOLOGICAL ISSUES

- Project sites are specific where best available science is so general and thus difficult to apply (2)

- Regulatory questions may not be answerable with existing evidence, or even possible to answer (1)

SCIENCE SYNTHESIS ATTRIBUTES

FRAMING THE PROJECT

- Clear and transparent process that can be repeated and updated over time with new evidence.
- Clearly define the question (e.g. beach nourishment as mitigation for armoring, not beach nourishment in general). Organize around answering specific specific questions. Don't conduct synthesis without addressing a relevant management question. Offer ways to apply analysis in likely situations.
- Recognize and honor scientific integrity when a regulatory question cannot be answered due to complexity and lack of data.
- Engage regulatory staff early in the structure of the synthesis.

EVIDENCE DISCOVERY AND CLAIMS

- Don't hide behind uncertainty. Develop an informed opinion based on the available evidence and what we know about ecosystems. Tell the story we know. (3)
- Possibly organize information into what we do know, what we think we know, and what we don't know. Clearly document levels of certainty in understanding, and where we have gaps in knowledge. Potentially consider the IPCC framework of certainty.
- Include both qualitative and quantitative evidence into an analytical framework that can be updated.
- Don't presume that a model is best available science. Models are just representations of their underlying assumptions, which may or may not be BAS.
- Be careful not to misrepresent precision or accuracy from small replicates or a small sample size.
- Don't ignore local science because it is different from a well-studied area of Puget Sound (for example, how heavy study of the Skagit informs opinions about the rest of Puget Sound without considering the range of observations).
- Describe the bounds of the literature review and what was left out and why.
- Describe the limitations of the evidence and the limitations of specific publications.
- Take extra care in summarizing and presenting data and where those data can be found.
- Avoid directing specific regulatory changes, as how a regulation responds to evidence will vary.
- Gather and apply knowledge from other ecosystems that can appropriately inform Puget Sound decisions.

REVIEW AND DISTRIBUTION PROCESSES

- Minimize jargon and technical terms.
- Get to the point of the story in an executive summary, and then point ot where in the document to go for more detailed information.

- Involve field scientists in reviewing science synthesis findings.
- Include syntheses in Ecology (SMA) and Commercials (GMA) periodic update guidance information so they are easy to find by local teams.

NEXT TOPICS FOR SCIENCE SPRINTS

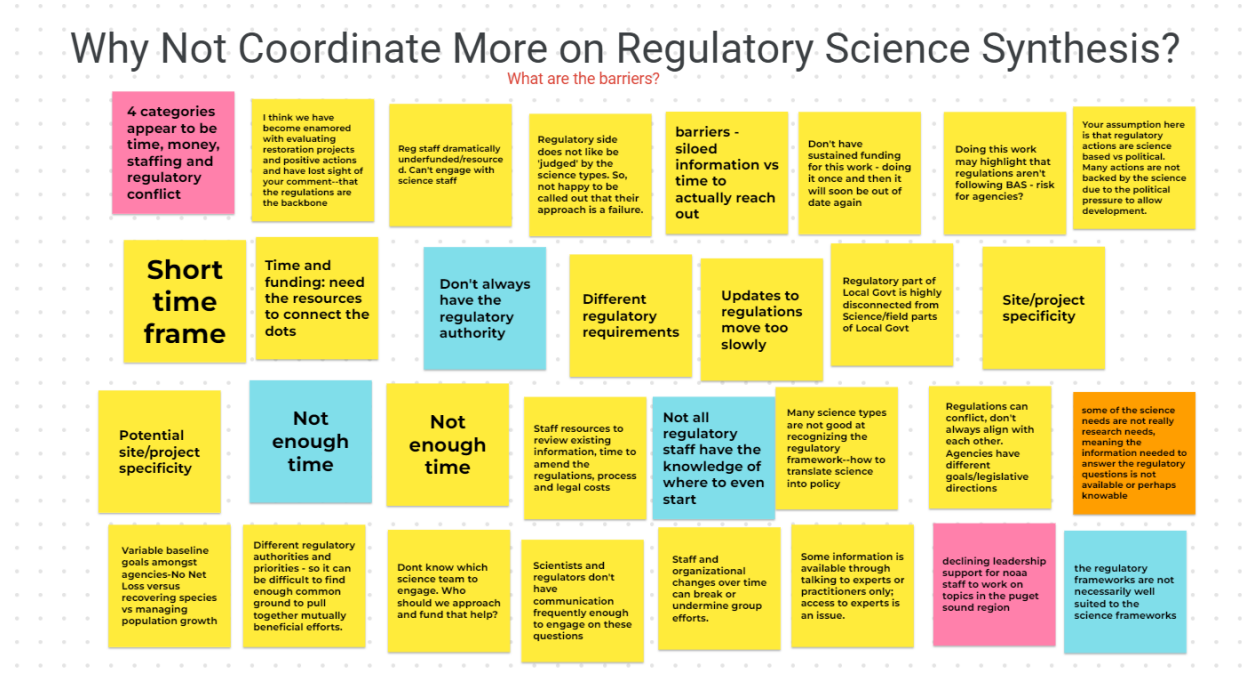
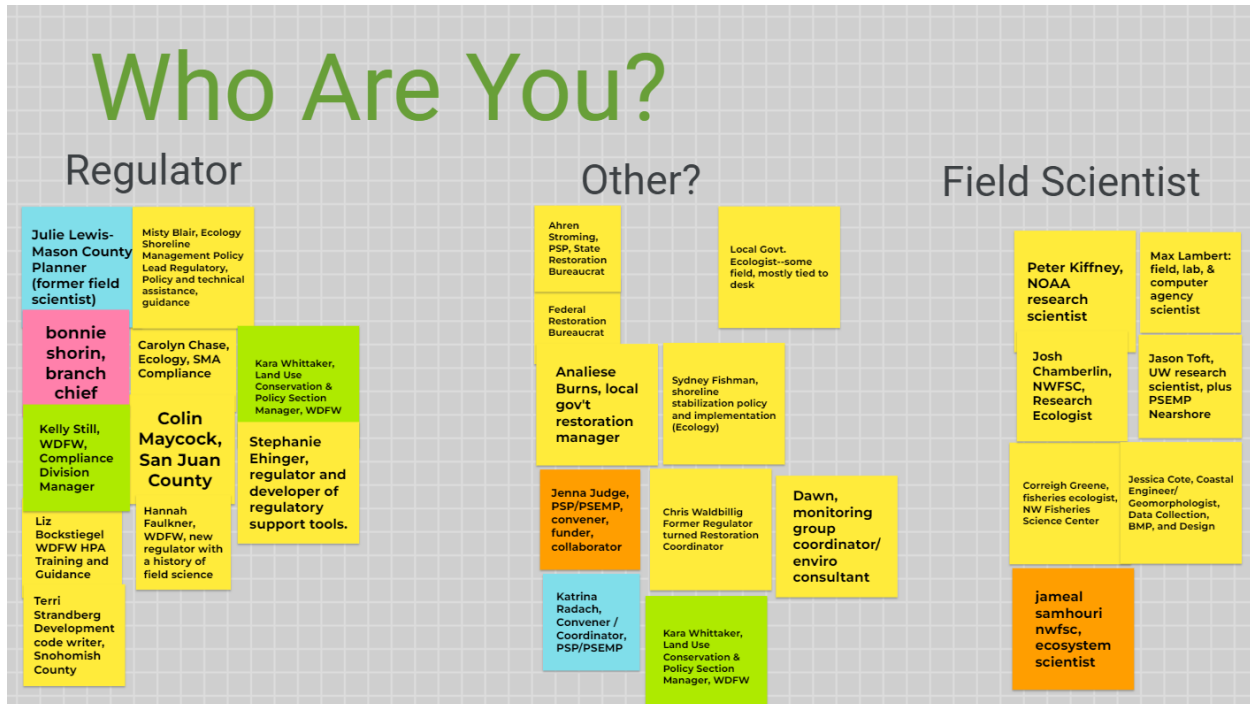
- COASTAL STREAM MOUTH RESTORATION - What is the mitigation value of reconnecting fish passage at coastal stream mouths that are blocked (by transportation infrastructure?)
- WOODY WRACK - What is the value of large wood on upper beaches (restoration of drift log wrack).
- MACROALGAE/KELP - What are the effects of development on macroalgae, where does it live, what impacts it. It is unclear if there is evidence to synthesize?
- SHELLFISH AQUACULTURE - What are the benefits or impacts of shellfish aquaculture practices to juvenile salmon.
- TIRE REEFS - What are the impacts of tire reefs, particularly from leaching of toxins such as 6PPD.
- CREOSOTE REMOVAL - How do we quantify the effects of removing creosote, particularly in mitigation banking associated with the calculator.
- MICRO RESTORATION - To what extent can eco-engineering and small restored shorelines in developed shorelands contribute to restoration goals under sea level rise.
- NEARSHORE REARING VALUE - How should nearshore projects be assessed for their benefits to multiple salmon stocks across the region.
- BANKING - How effective are mitigation banks and what is needed to establish a mitigation bank.
- POCKET ESTUARY (COMMENT) - there are insufficient data in south and central puget sound to augment extensive high quality north puget sound data.
- ARMOR REMOVAL BENEFITS - How is the value of armor removal affected by shore form and other shoreline attributes. How do we develop a more nuanced metric to describe the value gained by armor removal.
- REQUIRED HARD ARMOR - When is hard armoring actually necessary to meet requirements under the law? When is soft armoring a feasible alternative.
- OFFSETS FOR DOCKS - What kinds of mitigation are effective at offsetting the impacts to docks. How can overwater structure be sited and designed to avoid and minimize the impacts of docks.

ISSUES THAT EMERGED IN CHAT

- There is specific guidance for use of BAS in GMA implementation that limits local governments, and that does not currently include TEK:
<https://apps.leg.wa.gov/wac/default.aspx?cite=365-195>
- It could be that the generalized world of scientific evidence does not match the messy project-scale decisions happening in permitting. What would support this kind of decision making?

- The Commerce Critical Areas Handbook provides description of BAS in the GMA context starting on page 16: <https://www.commerce.wa.gov/serving-communities/growth-management/growth-management-topics/critical-areas/>
- The approach we are describing matches how NMFS conducts status reviews when a species is petitioned for listing.
- Agencies are struggling to develop language around Indigenous Science or Traditional Ecological Knowledge, Multiple Knowledge Systems.
- Restoration practitioners and their monitoring work provides valuable insight into how to do mitigation effectively. The right kind of mitigation plan may still not result in effective mitigation.
- How will "scientific" work that is not peer reviewed (or peer-reviewed but not for journal publication) fit into our shared methods? This material is often a large portion of our scientific understanding and includes relevant data sets.
- The Nearshore Calculator offers credits for beach nourishment to avoid putting applicants in a situation of having to provide double mitigation, one kind for WDFW another for NOAA.
- One of the challenges has been to provide guidance on how to incorporate climate change into project designs. What information, what is the standard for incorporation and presentation?
- Mason County struggles with GeoTech reports for armoring as well as we have to trust what the geo engineer is saying that this is needed. All we have is a checklist of topics they have to cover including why softer armoring won't work.
- With the crazy amount of planner turnover in local gov'ts. We can't rely on the innate planner knowledge to review permits with this knowledge.
- I believe it would be very helpful to provide information about wiki. I am not sure how many regulators and practitioners know about this resource.
- <https://www.coastaltraining-wa.org/> Coastal training program provides a variety of resources to support professional development. (Can the wiki be used to archive information and evidence used in these programs?)
- The State Academy of Sciences' report was pretty clear that No Let Loss "has not been an effective approach for ecosystem or habitat management and protection nor for the maintenance of ecosystem services."
- <https://washacad.org/portfolio-items/net-ecological-gain/?portfolioCats=61%2C60%2C65>
- Helping regulators determine if a particular development or restoration treatment is appropriate in a particular location is a critical task. Often science guidance is so generalized. Applying information to specific circumstances is difficult.
- Local development advocates provide regular professional support training to local jurisdictional staff. Agencies instead provide a barrage of guidance and provide no coordinated or integrated professional support in a way that supports and serves the needs of local teams.
- In local permitting the primary goal is not to protect ecosystems, but to follow the regulations to avoid getting into trouble. This means that the slow turnover of ordinances may have more effect than improving the capabilities of permit staff.
- Ecology is increasing local staffing to support implementation of SMA.

IMAGES OF BOARDS



Attributes of a Science Synthesis

Things That Help?

Ensure Ecology (SMA) and Commerce (CMA) include these BAS syntheses in their "Periodic Update Guidance" documents so they are easily found	"Bucket" neatly fits regulatory needs / answers specific regulatory questions.	a recent synthesis that I like—broke information on each topic into what do we know, what do we think we know (logic chains, etc.) and what don't we know.	Clearly defined question (e.g., for beach nourishment it's about BN as mitigation, not BN for any purpose)
Documenting assumptions and certainty around current science understanding of a topic. Identifying where there are gaps in understanding.	Identification of science gaps	Having the time and resources to have the scientists engage and review	Bounds of the literature search are clearly defined. Obvious what was included and what was left out, and why
Clear and transparent process that can be repeated/augmented with new/emerging BAS over time	Clear ways to apply the synthesis	"Pluggability" of quantitative syntheses	Wonder if the IPCC framework of certainty would be helpful (way to document how sure we are about the conclusions and strength of the evidence)
Including regulatory folks in the early stages to review proposed organization and synthesis structure to ensure it is helpful and won't be problematic.	Needs to be targeted towards answering a question/topic vs. something good, or what do we know about X?	as much as is possible bring qualitative and quantitative data into an analytical framework that is transparent, repeatable, and updatable	Reviews that highlight limitations of some publications
			Clear summary / presentation of data and info about where to find the data.

Things That Frustrate?

Analysis/synthesis that doesn't directly address relevant management questions.	Lots of jargon and technical terms	Overemphasis/"hiding behind" uncertainty	Having to answer questions for regulatory application that are challenging to be answered based on complexity and limited relevant available research.
An analysis that calls out/directs regulatory change. Change will depend on each regulation and comfort with certainty of science.	Unrealistic expectations of regulatory authority	Having the synthesis be limited to Puget Sound material. There's knowledge from elsewhere that can apply	
not explaining what we think we know, even if the evidence is not entirely strong. So, being willing to step out of our comfort zone around certainty	Ignoring local science because one watershed (i.e. Skagit) has been studied over and over and thus has lots of data. It ignores the variability in systems	Not clearly stating when conclusions are being based on limited evidence, one location, etc. That should be made clear, and then regulators can decide if they want to use it	
Assuming a model, like NOAA's life cycle model, is BAS or a synthesis, vs a model	When a small sample size is not clearly stated, and then conclusions based on percentages are presented as findings (e.g., 50% of a sample size of 10 may not be meaningful)	Document being very long and dense, without an executive summary for folks who need to get right to the point	

What's Next?

What is the mitigation value of reconnected passage/access to currently blocked coastal stream mouths, pocket estuaries, etc.	Impacts of tire reefs, particularly toxic impacts/potential leaching of 6PPD, etc.	Pocket estuary topic—currently not enough data/info for central/south sound and you have to base it on high quality North Sound data that may not be applicable in rest of PS	Research on where kelp lives, what impacts it, whether we can mitigate for impacts. It's unclear whether kelp topics meet Criteria 1 for being a science sprint candidate	Kelp status
Development impacts on macroalgae.	Quantifying the effects of removing crosstie - thinking in the contexts of site-specific mitigation, and the mitigation bank associated with the calculator.	KC/NR/As 8 and 9 would like to work with various South Sound LEAs/groups to replicate north PS study in the Central/South Sound.		
What is the value of large wood on upper beaches	Restoration actions along urban Puget Sound shorelines: to what extent can eco-engineering and small restored shorelines contribute to restoration goals, SLR, management +?!	so agree and needs to happen!		
Summary document on benefits/impacts of shellfish practices (including structure and filtration provided by shellfish and impacts from piles, floats, racks,...) to juvenile salmon.	How should projects address "credits" of nearshore restoration to multiple possible salmon stocks across the region?	Science sprint on mitigation banks - how effective are they, what is needed to set up a mitigation bank on other ecosystems or project types	Armor removal value - the value of armor removal is greatly dependent on the shore form and function landward. Need diff metric of ft armor removed Vs ft new armor.	What types of mitigation are effective at offsetting impacts of docks?
			How do you value/evaluate the amount of sediment sources needed by drift cell—so a regulator can weigh in on impact of bulkheading of a feeder bluff	Overwater structure siting, design, whether and how we can mitigate for impacts
			Better information on when hard armoring is necessary	
			How to justify soft armor is appropriate/sufficient to address erosion concerns of landowner. Need a practical how to guide for planners/bios	