

Scientific and Technical Advisory Committee (STAC) Meeting
Lincoln County Extension, 1211 SE Bay Boulevard, Newport, OR
November 9, 2018
1:00 PM-5:00 PM

STAC members attending: Jack Barth, Veronica Dujon, Elise Granek (virtual), Selina Heppell (virtual), Jan Hodder, Gil Sylvia (virtual), Shelby Walker, Craig Young, Bill Jaeger

STAC members absent:

Other invited participants: Cristen Don (ODFW), Tommy Swearingen (ODFW), Dave Fox (ODFW), Jessica Watson (ODFW), Patricia Rincón Diaz (ODFW), Andy Lanier (DLCD)

Information from previous meetings:

STAC meeting notes – [October 2017](#)

STAC meeting notes – [March 2018](#)

STAC meeting notes – [June 2018](#)

[Oregon Ocean Information - STAC](#)

Link to the audio recording of the meeting [here](#).

AGENDA

1:00 PM

Welcome and introductions – *Walker (5 min)*

Updates – *Walker (10 min)*

- Reminder that next OPAC meeting is 12/7/18; 20 minutes will be devoted to STAC updates
 - *Think about:* What is OPAC's place in the assessment?
- Updates from other STAC members and ODFW
 - Science technician is going to be leaving ODFW – new hire will be occurring
 - The Oregon Coordinating Council on Ocean Acidification and Hypoxia (OAH) recommendations from 9/15/18 Report to the Legislature and OPAC are being publicly presented – possible bill to be introduced by Arnie Roblan
 - State of the Coast update - record number of attendees this year at the 2018 Coos Bay conference

[ODFW Updates](#) – *Jessica Watson, ODFW*

- Brief updates from ODFW's 2018 ecological monitoring
 - Cascade Head and Cape Perpetua – core monitoring for 2018
 - But data collected at all MR sites with ongoing and new research collaborations
 - Slice of science – outreach events in Depoe Bay and Newport to discuss MR science with community stakeholders (particularly fishing community)
 - Advancing ecological monitoring: Biodiversity (ARMS and genetic biodiversity); ROMS model

- Reminder of the broad definitions of biodiversity from OPAC (species, ecological, genetic, functional), and how ODFW is addressing them, where possible
 - **Species:** comments at the March 2018 meeting indicated a need for more invertebrate biodiversity data – ODFW started a pilot program with Craig Young’s (OIMB) invertebrate class using ROV data (will be presented later)
 - **Ecological:** A new ODFW-OSU Science Integration Fellow, Cori Kain, is involved with w-coast-wide intertidal collaborators Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) and Multi-Agency Rocky Intertidal Network (MARINe). She is examining ecosystem biodiversity in the rocky intertidal at Cascade Head and Otter Rock MRs. A forthcoming report will address how MRs fit into larger picture of intertidal ecosystem biodiversity.
 - **Genetic:** Pilot project: ARMS (Autonomous Reef Monitoring Structures, aka invertebrate hotels) deployed in 4 marine reserves and associated comparison areas for 1-3 years; sessile and motile organisms collected; these will be used to build a DNA reference library for OR nearshore using metabarcoding
 - Some STAC members raised methodology concerns (community composition is time dependent; won’t necessarily be comparable) – ODFW is aware of limitations but funding and personnel limitations mean that only this “snapshot” comparison can be performed.
 - Plan is 3 ARMS/location, but ODFW is working to identify partners and build capacity
 - West Coast Marine Labs and Smithsonian (Chris Meyer) recommended as potential collaborators. Smithsonian received a grant for a west coast reference library and may be seeking samples to process. Chris Meyer will be doing a workshop at OIMB in June (may need/want samples to process for metabarcoding)
 - Lindsay has been in contact with them and Aaron Galloway at OIMB
 - **Functional:** Patricia Rincón Díaz hired by ODFW to help address this issue. *Goal:* develop a scoping document regarding functional biodiversity – literature synthesis, and how can it be added to current monitoring tools?
 - When listening to Patricia’s talk, STAC members asked to keep in mind what functions would be most important to look at for OR; what might be limited factors?
- Regional Oceanographic Modeling System (ROMS) collaboration with CDFW in preliminary stages (CDFW is running models in exchange for OR habitat data)

- 4-dimensional general circulation model used to examine connectivity using simulated tracking of passive particles (used in CA Current Large Marine Ecosystem)
 - Can explore 30-60 day pelagic larval sources and sinks
 - No budget currently, opportunistic at this point but may look to expand to OR at a later point
 - STAC members note possible issues, is there a potential for OR partners on this effort?
 - Possibly Will White, OSU (fisheries stock management)
 - Need to id larval species of interest
- 2019 preview
 - Currently planning 2019 field work (focus on Redfish Rocks, Cape Falcon)
 - Student volunteers needed for upcoming field season sampling
 - ODFW goal is to have an outline of the synthesis report by June 2019 – so criteria discussion helpful to:
 - finalize focal species; documentation of initial conditions
- Presentation: Functional Diversity: A tool to track spatiotemporal changes in the functional organization of biotic communities - *Patricia Rincón Díaz, ODFW (20 minutes)*
 - Hired to assist MR Team in exploring the possibility of starting a functional diversity component in the OMR monitoring
 - **Intro** –understanding of species’ functional traits (morphological, behavioral, physiological attributes) and how they contribute to ecosystem complexity and functioning. Traditional species metrics do not consider functional roles/niches that taxa fill. Functional metrics may be more informative than species richness in determining resilience/recovery of ecological systems. Important consideration: which functions most important to measure in MR? The species you choose to study make a difference.
 - **Caveats and solutions** – Need a good understanding of your system. FD metrics are sensitive to tools used to ID species, habitat complexity, connectivity, disturbance, trait selection, timeline of monitoring and recovery, data gaps, and baseline data. Design of monitoring program is important.
 - Applications briefly discussed
 - Use FD metrics as tools to monitor ecological performance of MR
 - Importance of FD to track spatiotemporal changes in ecosystem functioning
 - Feedback and discussion – *group (20 minutes)*
 - Need to obtain a lot of information from individual species and the ecological system in order to build models
 - Feasibility to implement FD in OR – the scoping document will help determine this; need to understand current tools and monitoring to see what, if anything, needs to be added to use this new analysis method. Also, what functions are most important to understand? Very few region-specific studies exist; and even fewer that focus on management. ODFW wants to do due diligence to

determine if functional metrics can be included/are they viable because OPAC specifically mentioned functional diversity

- Report will be finished by the end of this year – so will be able to revisit whether such an approach is realistic.
- Results of Patricia's work indicate response over time to disturbance can be useful application of these methods

- Advancing Invertebrate Biodiversity with ROV data - *Craig Young, OIMB (10 minutes)*
 - Using ROV data from ODFW, an OIMB undergraduate class developed a fairly easy/quick method to determine invert diversity
 - analyses limited only to what can be seen; limited to rocky habitats
 - development of sampling rules and protocol to come up with morphotype master list
 - Method can be used to calculate standard indices (diversity, evenness) and to create rarefaction curves to compare diversity across transects
 - Preliminary results indicate (1) good reference site selection, and (2) downward versus forward-looking camera doesn't make a difference
 - Feedback and discussion – *group (10 minutes)*
 - Useful, low-cost way for obtaining statistically-valid diversity data (beyond fish) using data already collected by ODFW. At least gets at a portion of the invert fauna (ultimately other methods to complement given limitations of ROV-collected data would be valuable)
 - Too slow to do in classes alone – paid internships? Usually easy to find interested students – 1000s of hours of video footage to be analyzed that includes MR and associated reference sites.
 - Is there a potential for citizen science? Possibly, but need a trained invert expert to facilitate

2:35 PM

- Break

2:50 PM

- Criteria for the marine reserves evaluation – development of measurable questions and indicators (*90 minutes*)
 - Continue on evaluation where left off after June meeting ([Draft document](#))
 - Building on OPAC general recommendations to develop *specific, measurable questions* to use as baseline for assessment
 - There is an "Indicators" column, but **focus** is on measurable questions; want to potentially streamline duplication
 - Need to move into **Implementation Principles & Guidelines (P&Gs)**
 - OPAC Objectives 1-5 were discussed last time – there is some redundancy/overlap, but P&Gs should be included unless there's a solid reason not to.

- **P&G 1 - Marine reserves as a system and each individual marine reserve will have a plan that includes clearly defined objectives, monitoring protocols, compliance and enforcement provisions, effective management measures, and a commitment of long-term funding necessary to achieve its goals** (lead: Shelby Walker)
 - ODFW question regarding commitment to long-term funding – led to discussion regarding probable intent of language: don't want a "paper park;" but the long-term funding is essentially up to the legislature (these guidelines were established before SB 1510)
 - SMART objectives? Suggestion – refer to the objectives above in the question: Are the Objectives 1-5 reflected in the management plans mentioned in P&G1?
 - Need to be clear about the definition **adaptive management**. Can take out AM from P&G 1 most likely as it appears to be adequately covered elsewhere
 - The questions do not address marine reserves as a SYSTEM – how to manage as opposed to individual sites – difficult to evaluate at system level, but need to show that we're thinking of them as a system. Have a separate plan that addresses the "system idea"? What would be the components?
 - Semantic difference of system versus network. The word system refers to administrative/socioeconomic units (OPAC specifically stated that MRs not intended to function as a scientific network)
 - But as a system, what are the goals (may differ from individual sites); should system be the same –scale will differ
 - Discussion of how much information to include in measurable questions. Should the evaluators decide/use their professional judgment, or can STAC provide additional guidance? Evaluators aren't going to be paid. Specifics (but with flexibility) are helpful for ODFW as they work on report. What is the level of specificity needed for P&Gs?
 - Some P&Gs are very vague and need some fleshing out – but does this one (1) need any further specificity?
 - **Summary of changes to measurable questions:**
 - Added MR as a system to Q1
 - Point d (regarding adaptive management) deleted
- **P&G 2 - Marine reserves will be adequately enforced** (lead: Selina Heppell)
 - Need an idea of treatment effect. There needs to be use monitoring of some sort. OSP records could be obtained regarding #s of citations. Need pre and post conditions regarding who is using it (for extractive activities only). How to make this a measureable question
 - Compliance (not fishing) versus enforcement. Having a plan does not equal monitoring. Monitoring has to be included in some way. Is there a quantifiable measure of compliance – ongoing with OSP to determine.
 - Surveillance hours and # of violations are the possible data available/ need some ratio of hours monitored to violations.
 - The guideline only mentions enforcement

- Compliance could be included in another P&G– e.g. P&G#3 deals with monitoring (doesn't have to just be ecological monitoring); discussion that it's important and should be included somewhere
 - Concern – don't want to set up a standard that's impossible to comply with. But the report can explain why the needs can't be met. What you can't answer is also extremely important information.
 - Reminder: reason for detail not just for reviewers but it informs ODFW and gives an opportunity to say point out limitations.
 - **Summary of changes to measurable questions:**
 - Compliance terminology dropped here
 - Question 3 added (are there clearly defined enforcement procedures, including use monitoring)
- **P&G 3 – Marine reserves will be adequately monitored and evaluated in support of adaptive management. Cooperative and collaborative research will be encouraged as well as utilization of fishing vessels as research platforms. These activities will be compatible with the goal of conserving marine habitats and biodiversity** (lead: Jan Hodder)
- Original question 6 included as economic opportunity for possibly displaced members of fishing community
 - ODFW tries to track publications, but it can be difficult (even if not specifically ODFW collaborators)
 - Q #2– standardized meaning – do we mean specific OR-developed standards (standardized within the system), or more widely accepted standards in the literature. Is consistent a better word, appropriate, rigorous? Need to avoid jargon and provide information.
 - ODFW makes adaptations to ecological monitoring plans. Each plan has an adaptive component – so this should be reworded. ADAPTIVE MANAGEMENT is a term that means different things to different people. Potential for confusion if it's not **clearly defined**.
 - OPAC did provide a definition of adaptive management (a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs), so that is the definition that should be used throughout the process
 - Clear and transparent are not included in the wording of P&G 3 (but inherent in adaptive mgmt.)
 - ODFW can only make changes to strategies – the responsibility of ODFW is to provide data. ODFW provides the data to inform adaptive management but makes NO recommendations. It is the evaluators job to make recommendations per legislation
 - Science plays a role in adaptive management. Are data being provided that will allow evaluators to ask and answer those questions (questions regarding what, if anything, should be changed with regard to MR management (including size,

placement, etc.), keeping in mind that the timeframe is likely too short to detect ecological change.

- Regarding non-ODFW researchers accessing MRs; modify to ask if *collaborative* and *cooperative* research being conducted?

- **Summary of changes to measurable questions:**

- Wording of Q2 changed to ask whether monitoring protocols support adaptive management (OPAC definition)
- Other Qs (original Qs 3 and 4) dealing with adaptive management deleted here
- New Q3 (original Q5) modified to ask if cooperative and collaborative research being conducted in MRs
- New Q4 (originally Q6) wording slightly modified

- **P&G 4 – Education and economic development opportunities that are compatible with the goal of conserving marine habitats and biodiversity will be encouraged** (lead: Bill Jaeger)

- No budget to support any of these issues.
- **Education:** What data exists to help answer this? There has been a lot of outreach and education. So can ask, what has been done/how have educational opportunities been encouraged. Also, can ask about public engagement, both formal and informal (record keeping on social media, actual events, etc.).
- **Economic:** How to deal with economic development opportunities – who's supposed to be doing the encouragement to do economic development activities around MR (e.g. ecotourism)? ODFW? Local communities? Private companies? Suggestion: ODFW responsibility is to ensure this information is provided and properly documented (regardless of who is responsible for the efforts), with the understanding that they may not have all pertinent information regarding such activities.
- **Summary of changes to measurable questions:**
 - Three questions added to examine whether educational and economic opportunities associated with MRs have been encouraged; and whether these opportunities are compatible with conserving marine habitats and biodiversity.

- **P&G 5 – Marine reserves are not intended to prevent marine transit, safe harbor, and beach access** (lead: Gil Sylvia)

- The double negative here probably exists for a reason (intentional nuance)
- Is there too much detail in the questions for a short guideline? The group consensus is that 1 and 3 most important; the others are either duplicative to some degree or need some simplification
- **Summary of changes to measurable questions:**
 - Original questions 2, 4, and 5 deleted

- **P&G 6 – Significant adverse social and economic impacts of marine reserves on ocean users and coastal communities will be avoided and positive social and economic effects will be sought** (lead: Veronica Dujon)
 - Catch and commercial income issues seem very difficult to address (e.g. CPUE won't be measured at correct resolution); could be changing for many reasons other than MR implementation
 - Questions need to be understood to be in *response to the marine reserves implementation specifically*, not other factors
 - Could simplify substantially by asking something to the effect of: Is there evidence for adverse impacts due to MR establishment and management; is there evidence for positive social and economic effects due to MR establishment and management?
 - Discussion of significance meaning (statistical versus economic significance). But statistical significance is a very high bar with limited data for both the economic and the ecological data. Perceived adverse impacts also matter, but STAC's job is to use science to inform this particular part of the process. At this point in the process, there is likely not enough data (qualitative or quantitative) to insist on statistical significance. Discussion of statistical power – may have enough power to predict change, but not necessarily attribute it to MRs.
 - ODFW has some quantitative and qualitative data on fishing community displacement - Beth Marino's studies on perception
 - **Summary of changes to measurable questions:**
 - Longer list of 9 example questions pared down to two questions – one focused on evidence of adverse social and economic impacts due to MR establishment/management, and one focused on evidence for positive effects due to MR establishment/management
- **P&G 7 - Adequate baseline data will be collected at each site prior to excluding extractive activities. The types and adequacy of baseline data, and the timing and methods of data collection will be driven by the research and monitoring objectives and sampling designs employed at each site** (lead: Craig Young)
 - Not discussed due to time limitations
- Discussion of university selection process, STAC/OPAC/public role in assessment process, and review overall timeline (*30 minutes*)
 - Not discussed due to time limitations
- Topics for next meeting and tentatively schedule (*10 minutes*)
 - Will be scheduled for spring 2019

5:00 PM

- Adjourn