

Climate-Smart Adaptation Working Group of the North-Central California Coast and Ocean - Meeting Notes

April 22, 2015

Oakland, CA

Overview Presentation (Sara)

Working group scope – what can we do to limit or reduce the vulnerability of our resources?

Goal: Develop and prioritize climate-smart adaptive management recommendations that can be feasibly implemented by managers to reduce vulnerability of focal resources, while considering a range of potential future scenarios

Meeting 1 Objectives:

- Determine which focal resources should be the focus of adaptive management recommendations
- Select 2-3 most uncertain and impactful drivers of change in the region
- Develop plausible future scenarios for the region (roughly 4)
- Build storyline for each scenario, evaluate implications of scenarios on resources
- Develop criteria/considerations for adaptive management recommendations
- Determine future meeting schedule, location, and work plan

Questions:

- What peer-review went into the reports?
 - Individual resource assessments were reviewed by identified experts
 - Report body (methods, overview, etc.) reviewed by project advisory committee, which include members of working group
- Does the vulnerability report serve as a record of decision for the sanctuary?
 - Yes. Vulnerability assessments are generally used in this manner for federal and state agencies. This vulnerability assessment will also help working group and sanctuary prioritize where to apply funding.
- Can parts of report be shared before publication with groups that are working on resource issues within the region?
 - Report should be finalized by the end of the month, so please wait. Once finalized, share far and wide!
- How to deal with the fact that down the line, people will question why working group didn't address certain species.
 - Most vulnerable species are in the most vulnerable habitats (coastal). While there is value in looking at offshore areas, the purpose of the assessment was to facilitate prioritization.
 - Resources outnumber human capacity
 - CADFW might be able to do a sub-group effort for critical species that weren't a part of this group/assessment (e.g., southern sea otters)

- Partner agency working groups would be very beneficial
 - Can maybe incorporate into scope of working group
 - May help to enhance linkage language, that focal resources represent more than just an individual species – they represent a whole suite of species who would have similar vulnerability/act as a corollary
- How much info will working group have on how resources fit into broader processes (managing for these broader processes is of high priority).
 - Will vary depending on resources selected. Working group and workshops were intended to gather best professional judgement, but also identify research gaps

Vulnerability Assessment Results and Resource Prioritization for Adaptation Planning

Propositions from Sanctuary Staff

- Focus on habitats, hopefully the highest ranked
- Develop list of vitally important species that may not be addressed by habitats

Discussion:

- Habitats
 - **WG selected beaches/dunes, estuaries, and rocky intertidal as habitats to focus on.**
 - These areas span jurisdictional boundaries – would it be beneficial to use a focal species (e.g., coho salmon) to explore how to develop cross-jurisdictional adaptation strategies?
 - Result: they should be (somewhat) covered by chosen habitats. Later, if necessary, can create a partner agency focal species working group
 - Keep in mind Vulnerability Assessments and Adaptation Planning efforts are advisory documents, not prescriptive. They create the context that can then be used by experts/staff to develop species-specific strategies
 - **Nearshore and cliffs should also be included as a part of habitat planning**
 - Cliffs/rock islands have specific management implications, and would also cover sea bird species
 - Nearshore needs better definition – soft bottom?
 - What does management authority look like? Should group prioritize areas where sanctuary has most opportunity?
 - Answer: Shouldn't limit – keep in mind that recommendations from the working group will be used for both internal (sanctuary) and external (other regional agencies) recommendations/processes.
- Species

- If a species is important, try to capture it within habitat recommendations rather than doing own assessment (e.g., within “estuaries” recommendations, make a few targeted recommendations about salmon). Focus other species work on those that aren’t covered by habitats.
- **Sardines, anchovies – form base of food web, not part of habitats, important to consider**

Questions:

- Recreation and tourism – what does that include?
 - Spans the full gamut of opportunities in the study region. Has high adaptive capacity because people willing to change behavior to maintain livelihoods.
- Clapper rail – what’s the nearest corollary?
 - Black rail? Clapper rail excluded because it isn’t in coastal areas as much.
- Coho salmon – why aren’t they in the assessment, or why were they excluded?
 - Will have to review methods to see why they weren’t covered – key life history stages were either inland or out at sea, outside range of sanctuary. Eliminated at 2nd workshop.
 - **May be beneficial to address coho climate resilience through recovery plan**
- Should we prioritize things that can be managed?
 - Good to focus on things with human capacity to manage, but also to identify those factors that are most important (regardless of ability to manage)
- Important to consider stochastic events and to design management to have plasticity in response

Scenario Driver Selection

Goals: Focus on drivers with most impacts, and drivers with most uncertainty

Discussion

- Driver placement (impact) – why movements were made
 - Removed anchovy/sardines from influencing choices because they complicated decision making
 - Removed PDO/El Nino because they have more to do with amplitude of other stressors
 - Removed coastal erosion because it is result of other factors
 - Consider how climate drivers cluster/change in parallel – led to grouping of factors into final groups

- **Important to consider what these terms/scenarios mean for management and public – are they accessible, understandable? With explanation, they can be.**
 - **Can also be a good education opportunity to link with issues of public concern (e.g., mass sea lion strandings)**
- Discussion around uncertainty
 - How are we defining uncertainty?
 - Uncertain on a scientific level (trends) or uncertainty about how people will react or act
 - Uncertainty rankings didn't necessarily do a good job of capturing importance of magnitude changes (e.g., magnitude of sea level rise)
- **Final decisions**
 - **Assume sea level rise and ocean acidification will increase across all scenarios**
 - **Key drivers (but acknowledging that these factors encompass many other factors of concern)**
 - **Precipitation (+/-)**
 - **Influences runoff, fog, sediment transport, turbidity**
 - **Waves (+/-)**
 - **Influences storms, inundation, sediment transport, incorporates wind**
 - **Upwelling (+/-)**
 - **Influences SST, salinity, currents/mixing/stratification, pH, incorporates wind**

Comments:

- Be careful with language (stressors v. drivers; invasive/problematic) – can limit discussion and scope of opportunity

Scenario Planning Report Back

Group 1: Upwelling and Waves

- Group members: Lisa, John, Daphne, Andy O., Mary
- More thinking of episodic/storm related wave action
- Waves (+) and Upwelling (-) would have greatest impact on estuaries; Waves (-) would have greatest impact on beaches
- Chosen scenario (increase wave action, decrease upwelling) → “Seals: homeless and hungry”
 - Impacts:
 - Loss of habitat, loss of primary productivity, lose iconic wildlife, salt water intrusion, loss of carbon storage, loss of salt march, increase dangerous conditions
- Questions: how does stronger upwelling affect wave action?
 - Not related when considering storm waves; daily wave action may be more linked

		upwelling (+)	
Mellow/Mild			SFs Deadlist Catch
Impacts	Management Options	Impacts	Management Options
Decreased recruitment	Intertidal restoration	Productive but dangerous conditions	Fishing regulations
Decrease nursery/habitat due to decreased circulation	Land/nursery management	Reduced beach/intertidal habitat	
Abalone bonanza (?)	Fishing regulations	Increased flooding	
		Increase eelgrass (estuaries)	
		Increased saltwater intrusion	
			waves (+)
Impacts		Management Options	
Reduced water quality	Water quality management	Impacts	Management Options
Impacts to estuary/intertidal habitat		Reduced beach/intertidal habitat, potential wildlife declines	Mitigate wildlife disturbance
		Increased flooding	
		Increased saltwater intrusion	
		Reduced marsh carbon storage	
Great weather but skip the beach			Seals: homeless and hungry

Group 2: Waves and Precipitation

- Group Members: Gerry, Karen, Andy G., Jack, Joel
- Soggy and serene, wet and wild, big ocean/clear skies, sunny and stagnant
- Chosen scenario: Big ocean/clear skies
 - Headlines: Pier closes, imperiled coastal fisherman, no beach/water/tourism, waves new desalination plant, sunny skies at mavericks,
 - Impacts: more erosion/beach loss, reduced habitat energy/lower tidal (plover reductions due to mass wash out) RI diversity loss, increased salinity to lagoons = loss of riparian
- Sunny and stagnant
 - Headlines: Recreation dries up, beach season all year long, water bird disturbance skyrockets, stand up paddleboard to farallons – think twice
 - Impacts: More wildlife disturbance from increased recreation, increased aquaculture, increased bird and fish disease, reduced forage quality

		precipitation (+)	
Soggy & serene			Wet & wild
Impacts	Management Options	Impacts	Management Options
More stable marsh accretion	Land use planning	SLR/Coastal Flooding	Sediment input
Increased HABs	Water quality management	Increased turbidity	Land use planning
	Flood plan/management plan	Beach loss, localized marsh erosion	
			waves (+)
Impacts		Management Options	
Changes in recreation = increased wildlife disturbance	Mitigate wildlife disturbance	Impacts	Management Options
Change in aquaculture	Nutrient and water quality management	Increased destruction of coast/ocean infrastructure	
Increased bird and fish disease		Increased erosion/decreased habitat	Sediment management
Decrease foraging quality in small estuaries		Decreased intertidal diversity	
		Increased salinity in coastal lagoons	
Sunny & stagnant			Big ocean/clear skies

Group 3: Precipitation and Upwelling

- Group members: Sarah, Tim, Jaime, Eric, Jim, Bibit
- Coastal lagoon contamination (low/low – no connectivity lagoon to ocean), wet/calm (rock slide Hwy 1); bumper year for fish (high/high); Mass die off (dry and windy)
- Selected scenario: Low/Low scenario (Coastal contamination)
 - Dunes/Beaches:
 - Change in habitat and quality
 - Change in access and public health (related to water quality)
 - Change in processes
 - Estuarine: change in water quality, processes, habitat food webs, species diet, public access/health
 - Intertidal: change habitat, processes, species distributions
 - Headlines: Smelly beach, warm water, fish kill, worst red tide on record, starving seals, Audobon membership crashes
 - Didn't define magnitude or direction of change in impacts due to uncertainty

				precipitation (+)			
Wet & Calm				Wet & Windy			
Impacts				Impacts			
Management Options				Management Options			
Rocky intertidal dieoff				Seaweed collapse			
Water quality management				Increase fish productivity			
Rock slides				Red tide			
Estuary and beach expansion							
				upwelling (+)			
Impacts				Impacts			
Management Options				Management Options			
Reduced seals				Estuary die off			
Mitigate wildlife disturbance				Fishing management			
Shorebird population declines				Kelp increase			
Nutrient and water quality management				Dune buildup			
Increased coastal tourism							
Bait fish dieoff							
Maintain instream flow							
Reduced mussel beds							
Manage upstream activities							
Dry & Calm				Dry & Windy			

Discussion re: management options

- Common management options (see charts)
 - Sediment management
 - Mitigating wildlife disturbance from recreation
 - Managing upland activities
 - Need to manage nutrient input in various scenarios for different reasons
 - Also need to manage instream flows for various reasons
 - Fisheries regulation
 - Area protection
 - Land use planning
- Important to define whether you are managing to get through a variable period (short-term changes) or managing for a novel or changed system

- Example application area: food web shifts. Managing for period of flux or for new state of conditions?

Process Evaluation

- Lots of uncertainty when considering so many factors, and hard to generalize impacts, especially when impacts/processes can be localized
- Lack of expertise on system impacts in response to chosen drivers limited thinking
 - Response: Even if all top experts were present, there would still be uncertainty. Purpose of scenario planning is to brainstorm a range of potential futures and identify management options that are present in all futures.
- Trying to lump impacts (create headlines) causes loss of specificity; also hard to look at net effects and impacts over time due to uncertainty
 - Response: a high level of detail on ecosystem impacts isn't necessarily necessary. Creating "headlines" is a way to think about human responses to potential changes (actual or perceived), which is where management opportunities are nested
- Upland processes are critical for managing these ecosystems; as a convening agency, sanctuaries role will be critical for engaging multiple groups
 - Will be important to map the political landscape (including geographical boundaries, management prerogatives, mandates related to climate change, and planning horizons) to create effective adaptation options that cross jurisdictional boundaries
- Jim (?) volunteered to write up technical implications of scenarios, with specific focus on what the habitat impacts would be for the 3 focal habitats + definitions of the drivers (e.g., what's included in the broad category of "upwelling")
 - Having these summaries would be helpful moving forward and for external communication, BUT, please borrow from vulnerability assessment! Don't create new terms, definitions, etc.
- Impacts might be local vs. widespread; important to consider in planning for adaptation
 - Scale and place matter
 - Are there local/historic analogs that can be added to enhance understanding? Or are past analogs not relevant for future change?
- Dynamism of ocean environment is added layer of complexity for scenario planning; may be helpful to know which components of system are most resistant to change
 - Response: please review the vulnerability assessment for resistance discussions
- Also need to integrate the following info into scenarios:
 - Invasive species
 - Stochastic events
 - Carbon storage

- Will we assign probabilities to different scenarios?
 - Response: No – hard to do, and its important to consider even the improbable scenarios for contingency planning

Reflections on the Vulnerability Assessment

- Tim – Was a pioneering piece of work; will be foundational content for all groups moving forward
- Good comparison to spatial modeling efforts; looking forward to comparing results, will be interesting to see if there are differences/similarities in results
- Appreciated the initial attempts to identify management interactions/opportunities
- Should have high value to policy groups.
 - Hopefully vulnerabilities will be incorporated into decision making (e.g., development proposals, community plans)
 - Can it inform criteria for groups reviewing funding/development proposals?
- VA had a similar process as what communities are doing in coastal commission efforts; hopefully the VA information can be used to inform updates of regional plans

Thoughts about group role moving forward

- Identify management responses that occur across a range of scenarios
 - These responses can be linked with funding suite for projects amongst regional agencies
- Focus on proactive opportunities rather than reactive
 - Develop contingency plans for flexibility
 - Business as usual scenarios lead to reactive solutions (e.g., grey infrastructure) that can perpetuate problems; encourage no-regrets options and think about recommendations in a climate-smart way (e.g., promote green infrastructure)
 - Can develop and utilize timelines: what we need to do now vs. what we can wait on and develop strategies for later
- Would be good to identify major uncertainties and approach the academic community about developing projects to decrease uncertainty
- Working group scenario planning process can be used to document and demonstrate how management has to deal with uncertainty/why management choices are complex
 - Can use to increase discussion with public, etc.

Next Steps:

- Identify where there are similarities in scenarios (internal analysis, bring back to working group)
- What type of products will working group create?
 - Will there be a report from this workshop that participants can edit?

- Fast turn around on meeting notes would be beneficial, so it's fresh in everyone's mind
- Future meetings
 - Schedule: Late May/Early June, August/September, October
 - Send out doodle poll ASAP
- For next meetings:
 - Bring strawman to group rather than blank whiteboard
 - Guidance for adaptation strategy development would be helpful: what are established strategies, what's their effectiveness?