COMMITTEE STAFF SUMMARY FOR NOVEMBER 9, 2021 MRC

7. STAFF AND AGENCY UPDATES

Today's Item **Information ☒** **Action ☐**

Receive written updates from staff and other agencies.

(A) California Ocean Protection Council (OPC)

(B) DFW

I. Law Enforcement Division (LED)

II. Marine Region

a. Kelp restoration and recovery efforts, including initial outcomes of urchin removal projects and status of sunflower star (*Pycnopodia*)
b. Red abalone fishery management plan (FMP) development
c. Market squid management review
d. Aquaculture lease planning

(C) FGC staff

Summary of Previous/Future Actions (N/A)

Background

This is a standing item for staff and agencies to provide an update on marine-related activities of interest.

(A) ***OPC***

OPC staff has provided an update on topics of interest to the committee in Exhibit 1.

(B) ***DFW***

I. *LED*

An update on marine enforcement items of interest is provided as Exhibit 2.

II. *Marine Region*

Marine Region has provided updates on three topics in the MRC work plan.

- *Kelp restoration and recovery efforts:* DFW's update includes a report of initial outcomes of urchin removal projects and status of sunflower star (*Pycnopodia)*. See Exhibit 3.
- *Red abalone FMP development:* DFW provides an outline of its progress and anticipated timing for steps leading to completion of a draft FMP (Exhibit 4). DFW would like to present management options for MRC feedback at the Mar 2022 meeting.
- *Market squid management review*: DFW has received funding to support Phase 1 of a two-phase squid fishery advisory committee process. Phase 1 will entail interviews to inform establishment of the advisory committee and a process roadmap. DFW also has secured funding to support a post-doctoral

researcher to synthesize long-term monitoring data at applicable temporal and regional geographic scales, which will complement the projected year-long Phase 2 portion. While DFW still seeks full funding for Phase 2, it expects to begin Phase 2 in summer 2022, with commencement of advisory committee meetings.

III. *Aquaculture Lease Planning*

DFW's State Aquaculture Coordinator has highlighted progress in advancing pending aquaculture lease requests with Marine Region and FGC staff (Exhibit 5).

(C) ***FGC staff***

FGC has been matched with its 2022 Sea Grant Fellow. Kimberly Rogers recently received her master's degree from Scripps Institution of Oceanography at the University of California, San Diego, and will start her tenure with FGC in early 2022. Corinna Hong will remain in her fellowship position through Feb 2022.

Significant Public Comments

Kelp restoration and recovery efforts – sea urchin removals:

- A project lead and a volunteer/organizer with the Giant Giant Kelp Restoration Project each sent presentations summarizing volunteer diver efforts and initial measured project outcomes at the Tanker Reef project site in Monterey, California since efforts began in Apr 2021 (exhibits 6 and 7).

  The project team believes that the project has met the two "criteria for success" specified by DFW, OPC, and Monterey Bay National Marine Sanctuary staff. The project team proposes to expand efforts into marine protected areas and is informally requesting a rulemaking change to sanction restoration inside of marine protected areas (Exhibit 7).

Red abalone FMP development:

- A recreational abalone diver and member of the previous FMP Administrative Team is concerned that the FMP has not been completed despite a long process undertaken by stakeholders, FGC, and DFW to replace the existing Abalone Recovery and Management Plan sections governing the recreational fishery. FMP completion could allow the fishery to reopen before the end of the current closure in 2026 if DFW integrates the de-minimis or biological fishery option recommended in 2020 by the Administrative Team. The commenter asks FGC and DFW to commit to a firm timing for FMP completion, and requests that the DFW Director's Red Abalone Advisory Committee (RAAC) resume holding regular public meetings, publish meeting notes, and have RAAC officers selected from appointed members only (Exhibit 8).
- The Nature Conservancy (TNC) restates its commitment to science-based, collaborative solutions as demonstrated through its leadership role in the red abalone FMP management strategy integration process and Administrative Team facilitation (Exhibit 9). The process served as a new model for public-private partnerships to leverage additional funding and capacity to advance state fisheries management objectives.

  TNC has continued to invest in this effort: (1) TNC funded Reef Check to conduct a study to assess the feasibility of gathering abalone length data in Humboldt and Del Norte

counties to manage the fishery in these counties as proposed in the FMP integrated harvest control rule. TNC reports on results and prospects for generating the data required for the harvest control rule. (2) TNC has completed and transmits a report titled *Lessons Learned from a Unique Fisheries Management Planning Process* (Exhibit 10). Developed through interviews with participants in the integration process, the report offers findings and recommendations for improvement should the state consider a similar stakeholder-led model in the future.

Recommendation (N/A)

Exhibits

1. OPC update, received Nov 2, 2021
2. DFW LED update (will be provided in supplemental meeting materials)
3. DFW update on kelp restoration and recovery efforts, received Oct 26, 2021
4. DFW update on red abalone FMP development, received Oct 26, 2021
5. DFW update on current and future aquaculture lease planning, received Oct 29, 2021
6. Email and presentation from Marc Shargel, received Oct 27, 2021
7. Email and presentation from Keith Rootsaert, received Oct 27, 2021
8. Email from Jack Likins, received Oct 22, 2021
9. Email from Alexis Jackson, TNC, received Oct 27, 2021
10. TNC lessons learned report, received Oct 27, 2021

Committee Direction/Recommendation (N/A)

Marine Resources Committee meeting – Ocean Protection Council update
November 9, 2021

30x30

- OPC leadership and staff continue to work closely with Dr. Jennifer Norris, CNRA's Deputy Secretary for Biodiversity and Habitat, on the coastal and ocean components of California's 30x30 initiative.
- Recommendations from the Conservation of Coastal Waters Advisory panel report have been integrated into a draft "Pathways to 30x30" document, which will detail opportunities and strategies to achieve 30x30 in California.
- The pathway to conserving 30% of California's coastal waters will include the state waters currently protected within marine protected areas (MPAs) and a prioritized focus on working with federal resource managers to strengthen biodiversity conservation measures in California's National Marine Sanctuaries.
    - Examples of such measures could include mandatory vessel speed reductions, phasing out the use of particularly harmful fishing gear or making existing gear restrictions permanent, strengthening water quality protections, restoring degraded habitats, and banning single-use plastics within Sanctuary watersheds.
- Additionally, restoring and revitalizing Tribal stewardship is a critical step toward conserving coastal and ocean biodiversity and achieving the 30x30 target.
- Finally, the pathway will also include an evaluation of other strategies with potential for increasing biodiversity benefits, including Areas of Special Biological Significance, National Estuarine Research Reserves, and fisheries management measures.
- A draft of the Pathways document will be released in December 2021, with the final released in 2022.

Offshore Wind

- The Bureau of Ocean and Energy Management released two announcements for a Morro Bay Call for Information and Nominations and Humboldt Wind Energy Area Environmental Assessment.
- Public comments for these two announcements will inform the process and evaluation of offshore wind (OSW) development moving forward.
- The California Coastal Commission (CCC) held an informational hearing on offshore wind and the federal consistency determination (CD) process at their Thursday, September 9 meeting. CCC is preparing for potential CD hearings for the North Coast in April 2022 and the Central Coast in June 2022.
- OPC is supporting the CD process through funding a series of projects that have been identified as key environmental and cultural information gaps. Recently funded and planned projects include: support for spatial environmental and ocean use mapping and

modeling projects; synthesis of existing data; and an inventory of Tribal cultural resources.

- California State Lands Commission also released its draft Preliminary Environmental Assessment for Vandenberg Offshore Wind Energy projects located in state waters.

Tribal Engagement Strategy and Listening Sessions

- OPC is seeking to consult and collaborate with California Native American Tribes on the development of a Tribal Engagement Strategy, which will provide a framework for enhanced partnership between OPC and Tribes on ocean and coastal matters.
- OPC will be holding listening sessions this month to hear and discuss Tribes' perspectives on two key issues:
    - Best practices for conducting outreach and engaging with Tribes in a respectful and effective manner (Tuesday November 9)
    - Tribes' priorities for coastal and ocean conservation and management (Tuesday November 16)
- Outcomes of these listening sessions will inform the development of a draft Tribal Engagement Strategy. There will be additional opportunities for consultation once the draft strategy is developed.

Kelp Research and Restoration

- OPC and CDFW continue to support pilot research and restoration projects aimed at understanding the drivers of recent kelp declines in California and exploring potential restoration approaches (please refer to CDFW's written update for a more detailed summary of these projects, including results of urchin removal efforts).
- In the coming months, OPC will be working to develop its Interim Kelp Action Plan into a final Kelp Action Plan with priorities for collaborative, partnership-based action based on results of pilot projects as well as scientific, Tribal, and public input.

Aquaculture Principles and Action Plan

- The development of the statewide Aquaculture Action Plan is underway and proceeding on schedule with planned completion by 2023.
    - The National Center for Ecological Analysis and Synthesis (NCEAS) and California Sea Grant, in close partnership with OPC staff, finalized membership of both the community and scientific listening groups as well as held initial meetings of both (on 7/19 and 8/23 respectively). This was a major milestone in the process to develop a working draft of the Action Plan, with completion of the full draft expected by December 2021.
- In addition to moving forward on the Aquaculture Action Plan, OPC publicly released the Guiding Principles for Sustainable Marine Aquaculture in CA at the June OPC meeting.
    - The Guiding Principles were cooperatively developed by the Aquaculture Leadership Team (led by Secretary Crowfoot and composed of programmatic

staff of all state agencies involved in the regulation, permitting and development of aquaculture in California (the California Department of Fish and Wildlife, California Fish and Game Commission, California Coastal Commission, State Lands Commission, OPC, California Department of Food and Agriculture, California Department of Public Health and the State Water Resources Control Board)).

- Most recently, the Aquaculture Leadership Team met on September 29 to continue to coordinate a cohesive strategy for implementation of the Guiding Principles across all member agencies.

<u>Upcoming Council meeting</u>

- The next OPC meeting will be held on December 7, 2021, from 11:00am-3:00pm. The meeting will be held remotely by teleconference.
- Agenda will be posted on OPC's website in the coming days. Meeting materials will be posted ten days prior to the meeting.

Department of Fish and Wildlife update on kelp restoration and recovery efforts, including initial outcomes of urchin removal projects and status of sunflower star (*Pycnopodia helianthoides*)

Marine Resources Committee Meeting
California Fish and Game Commission
November 9, 2021

North Coast Urchin Control: removal by commercial urchin divers.

In 2020, the Ocean Protection Council (OPC), California Department of Fish and Wildlife (CDFW), and Reef Check California (RCCA) initiated a partnership with north coast commercial sea urchin divers to evaluate the feasibility and efficacy of removing urchins at key locations as a kelp restoration tool. Restoration and control sites (~10 acres ea.) have been established at Noyo Bay and Albion Cove in Mendocino County and changes in ecological metrics, including urchin density, kelp density/canopy area, and community composition are being monitored. Removed urchins are donated for use as a soil amendment in compost. This project will help inform the development of restoration best practices and the potential development of a broader restoration strategy.

Table 1: Summary of commercial diver urchin removal effort by site as of September 24, 2021.

Site	Start Date	Diver Days	Urchins Removed (lbs)
Noyo Bay	August 2020	121	31,192
Albion Cove	July 2021	62	9,931

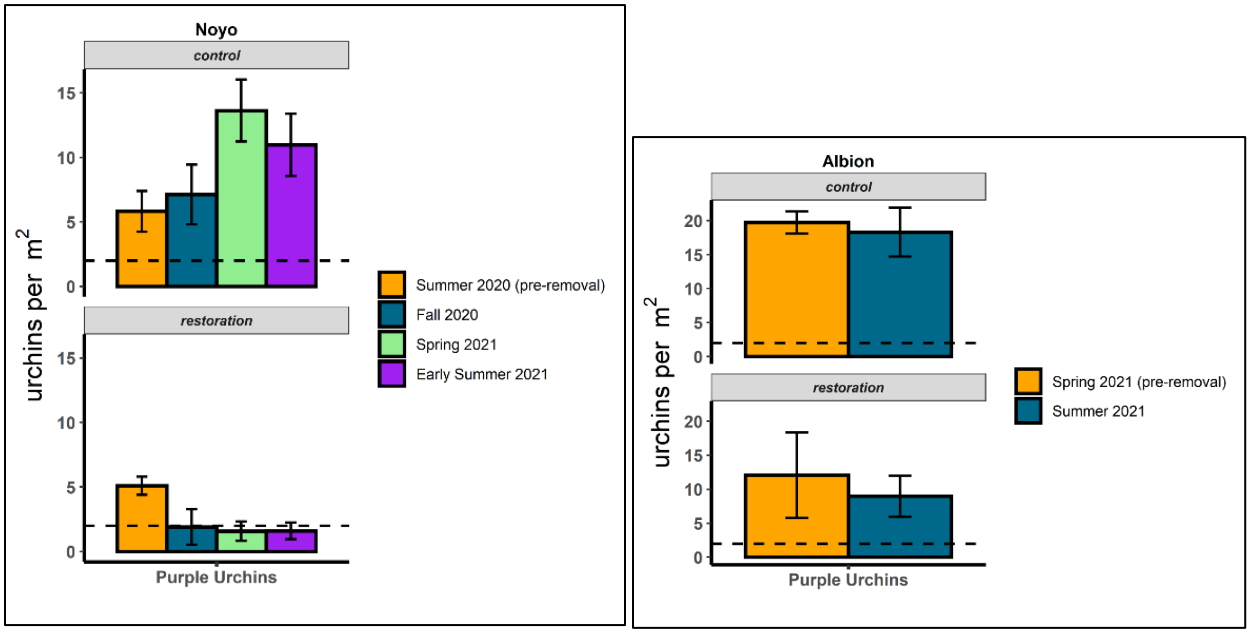


Figure 1: Purple urchin density over time at Noyo Bay (left) and Albion Cove (right) showing urchin control (no removals) and restoration (commercial removal) sites (bars indicate mean density +/- standard error; dotted line - target threshold density of 2 purple urchins per m^2. Data source: Reef Check California).

Dive operations on the north coast are seasonally restricted because of poor winter conditions. At Noyo Bay, commercial divers worked on the restoration site from August until November in 2020, during which time they completed the initial clearance of the site to the target threshold density of ≤ 2 purple urchins per m^2 (Figure 1 – Noyo). Work resumed in March 2021 and the purple urchin target density has been maintained through the early-Summer 2021 sampling period. Fall 2021 surveys are currently being conducted so results are not yet available; however, anecdotally purple urchin density appears to be below the target density and kelp regrowth has been observed in the restoration site. In comparison, urchin density in the control site was observed to be variable, but consistently higher than the threshold density of 2 urchin per m^2 from Summer 2020 through the early-Summer 2021 sampling period. As noted above, Fall 2021 surveys are not yet available; however anecdotally, purple urchin density in the control site appears to be above the threshold density, and while some kelp has also regrown, it appears to be less than in the restoration site. This will be confirmed when the survey results are available and analyzed.

At Albion Cove, commercial divers began working on the restoration site in July 2021. As such, results from the Summer 2021 sampling period were not expected to show a significant reduction in urchin density from the Spring 2021 sampling period (Figure 1 – Albion). This reef is more complex with higher abundance of smaller urchins making clearing more difficult than at Noyo Bay; however, Fall 2021 sampling results are expected to reflect the removal efforts.

North Coast and Central Coast Urchin Control: in-water culling by recreational divers.

The recreational diver community is highly engaged with the issue of kelp loss and have spearheaded several grass roots efforts to promote localized kelp recovery by controlling urchin density. In 2020, the Fish and Game Commission approved an amendment to the recreational urchin harvest regulations allowing unlimited take of purple and red urchins at Tanker Reef (Monterey County) and the unlimited take of purple urchins at Caspar Cove (Mendocino County) including via in-water culling. The purpose of the regulatory amendment is to evaluate: 1) the efficacy of this approach at reducing and maintaining urchin densities at or below the threshold level that may support kelp regrowth; and 2) environmental impacts, including potential negative impacts to other organisms or damage to underlying reef structure.

<u>Tanker Reef – Monterey County</u>

This is a recreational diver community effort, led by Mr. Keith Rootsaert of the Giant-Giant Kelp Restoration Project. Divers have established a training program to facilitate responsible participation and diver effort is self-reported via a standardized mobile app datasheet. Project monitoring by a partnership of CDFW, Monterey Bay National Marine Sanctuary (MBNMS), and Reef Check California occurs at 2.5 acre restoration and control sites, although urchin culling also occurs outside of these monitored areas within the broader Tanker Reef regulatory boundary.

Self-reported diver effort:

Culling efforts were initiated in April 2021 with 365 dives (277 diver hours) logged and a self-estimated 229,312 urchins culled (for context, approximately 700,000 purple urchins have been estimated removed at Noyo Bay by commercial divers as of 09.24.21).

Monitoring effort:

Urchin density on the 2.5 acre restoration site at Tanker Reef was reduced below the target threshold of ≤ 2 urchins per m^2 between the Spring and Fall 2021 sampling events by volunteers (Figure 2). In comparison, urchin density at the control site was observed to remain higher than the threshold density of 2 urchin per m^2, with little change between the Spring and Fall sampling periods. Continuing monitoring will track the level of maintenance required to sustain target urchin densities over time, if kelp and other algal species colonize the site in the spring, and the effectiveness of expanding the project to other areas on Tanker Reef.

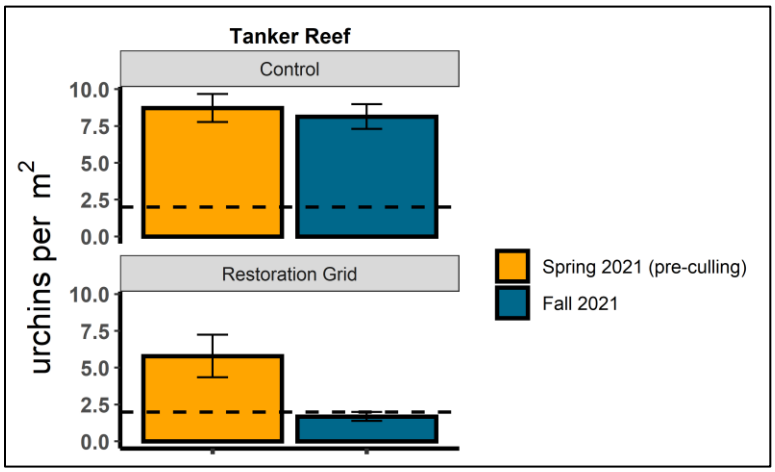


Figure 2: Purple and red urchin density pre- and post-culling at the Tanker Reef control and restoration sites (bars indicate mean density +/- standard error; dotted line - target threshold density of 2 purple urchins per m^2. Data source: CDFW/MBNMS).

Experiments by CDFW and MBNMS divers demonstrated that the mudstone substrate at Tanker Reef is friable, and errant strikes can directly damage the soft substrate. However, training on responsible culling practices being implemented by the dive community may mitigate these impacts in the field. Similar impacts are not anticipated on granite reefs, although analysis is ongoing. In addition, analyses are in progress to assess vulnerability and damage to non-target organisms.

<u>Caspar Cove – Mendocino County</u>

This is a recreational diver community effort. Diver effort is self-reported via a standardized mobile app datasheet. Project monitoring occurs via a partnership of RCCA and CDFW staff.

Self-reported diver effort:

Culling efforts by the public were initiated in July 2020 with 77 dives logged for a self-estimated 57,225 purple urchins culled.

Monitoring effort:

Due to the COVID -19 pandemic, recreational effort was lower at this site than anticipated, and monitoring efforts were disrupted. Figure 3 shows purple urchin density at the north and south sides of Caspar Cove in the Summer of 2020, when culling efforts were initiated, and in the Summer of 2021. Most culling has occurred on the south side of the cove but has

been highly patchy both spatially and temporally. Monitoring has not detected a measurable difference in urchin density between the sampling periods. However, the current monitoring strategy is being adapted to be better aligned with effort at this site.

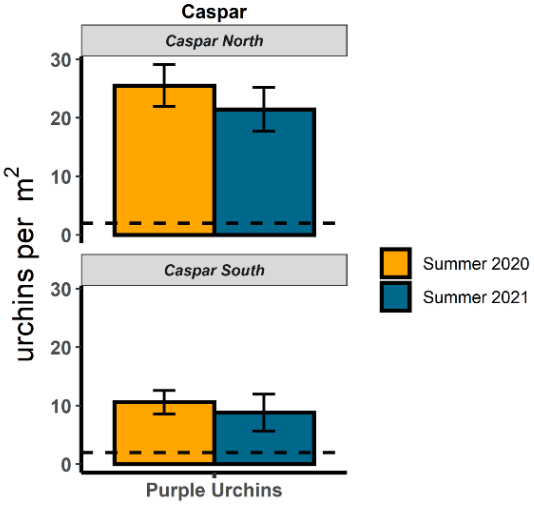


Figure 3: Purple and red urchin density pre- and post-culling at the Caspar Cove control and restoration sites (bars indicate mean density +/- standard error; dotted line - target threshold density of 2 purple urchins per m^2. Data source: Reef Check California).

Pycnopodia helianthoides –status update

Beginning in 2013, Sunflower sea star (*Pycnopodia helianthoides*) populations along the West Coast were decimated by Sea Star Wasting Disease (SSWD) resulting in the functional extinction of this species throughout California. A petition for U.S. Endangered Species Act listing was filed on August 18, 2021. Numerous entities are working on various aspects of the ecology and potential recovery of this species. The Nature Conservancy (TNC) is funding and coordinating many efforts. The following list represents the main bodies of work TNC is sponsoring:

- Development of peer-reviewed journal article (including CDFW staff): Hamilton SL et al. 2021 Disease-driven mass mortality event leads to widespread extirpation and variable recovery potential of a marine predator across the eastern Pacific. Proc. R. Soc. B 288:20211195.
- Working with Dr. Jason Hodin at the University of Washington (UW) exploring laboratory culturing and early life history stage biology of *Pycnopodia* to maintain broodstock and support recovery efforts.
- Working with Dr. Drew Harvell at UW to determine the causative agent of SSWD.
- Working with Dr. Aaron Galloway at Oregon State University evaluating *Pycnopodia* food preferences and feeding rates on purple sea urchins.
- Convening and coordinating a working group of West Coast experts and managers (including CDFW staff) to develop a Road Map to Recovery for *Pycnopodia* - identifying key steps necessary for recovery, fostering partnerships, catalyzing action, and securing funding.

Department of Fish and Wildlife update on Red Abalone FMP

Marine Resources Committee Meeting
of the California Fish and Game Commission
November 9, 2021

- Work has been completed on a draft Management chapter that contains six elements listed below:

    1. Management Framework

    2. Environmental Conditions Supporting Abalone

    3. Abalone Productivity Indicators

    4. Uniform Fishing Regulations

    5. Egg Production Indicator and Reference Points

    6. Adaptive Management and Total Allowable Catch

- The Department request a comprehensive discussion at an upcoming MRC meeting to inform the final development of the management chapter. The Department would then host a meeting of the Recreational Abalone Advisory Committee (RAAC) (likely spring 2022) to discuss the draft Management chapter for additional input.

- After the RAAC meeting the Department will complete drafting and submit the draft FMP to the MRC/FGC (anticipated summer 2022) for input before submitting the document for peer review. Once the peer review has been completed and incorporated into the FMP, the Department will submit the final draft FMP to the FGC to start the formal approval process.

California Department of Fish and Wildlife
Update on Aquaculture – Current and Future Lease Planning

Marine Resources Committee Meeting
California Fish and Game Commission
November 9, 2021

- Department and Commission staff continue to address lease amendment requests, coordinating priorities and progress on a bi-weekly basis.
- Staff is working through backlog of requests, including:
    1. Confirmed authorization in lease terms regarding work platform with letter to Coastal Commission (M-614-01 p1).
    2. Confirmed authorization in lease terms regarding culture method with letter to leaseholder (M-430-04)
    3. Executed lease amendment reconciling lease boundary descriptions and authorized species (M-430-05).
- Additional lease boundary reconciliations ahead, relying on survey work and coordination among leaseholders.
- Providing CEQA support to three current leaseholders where applicable for change requests, in addition to same for two new lease applicants.
- Lease site inspection conducted this month concerning lease transfer request, to inform Department recommendations to Commission.
- Department and Commission staff have participated in joint calls with select lease holders with pending requests or applicants for new leases, which has improved shared understanding and creative problem-solving. Department and Commission staff plan to initiate calls with lease holders/applicants when future requests are received to clarify where needed and to coordinate moving the requests forward for review without administrative delay.
- Staff capacity is a significant constraint to effective aquaculture management.

FGC@FGC

From: Marc Shargel <[redacted]>
Sent: Wednesday, October 27, 2021 4:43 PM
To: FGC
Cc: Ashcraft, Susan@FGC
Subject: Visual material (written comments) for MRC meeting of Nov 9, 2021, Agenda Item 7
Attachments: G2KR MRC Meeting 21_11_09 Shargel.pdf

Dear Commissioners and Staff,

As a volunteer and organizer for the Giant Giant Kelp Restoration Project (G2KR) in Monterey, I would like to make some comments to Agenda item #7 at the MRC meeting on November 9. To be completely specific, that's Item 7 B II a. I'll be able to communicate more clearly if I can present some visuals at the same time. I've prepared a PowerPoint stack for that purpose. Attached to this email is a PDF version of that PowerPoint.

Please let me know how we can arrange the mechanics of showing these visuals in the meeting. For example, do I send the PowerPoint to an address at FGC, so one of the staff can show it? Can you enable me to share my screen with the meeting? If you need me to send the PowerPoint to you, when do you need it?

Thanks for allowing me to participate!

Marc Shargel

Sea Life Photographer, Author, Speaker and
Volunteer organizer for the

Giant Giant Kelp
Restoration Project

Giant Giant Kelp
Restoration Project

Registered Volunteers:	**356**
Trained Divers:	**55**
Divers Reporting Data:	**67**
Dives Logged:	**407**
Injuries & Mishaps:	**0**

Results

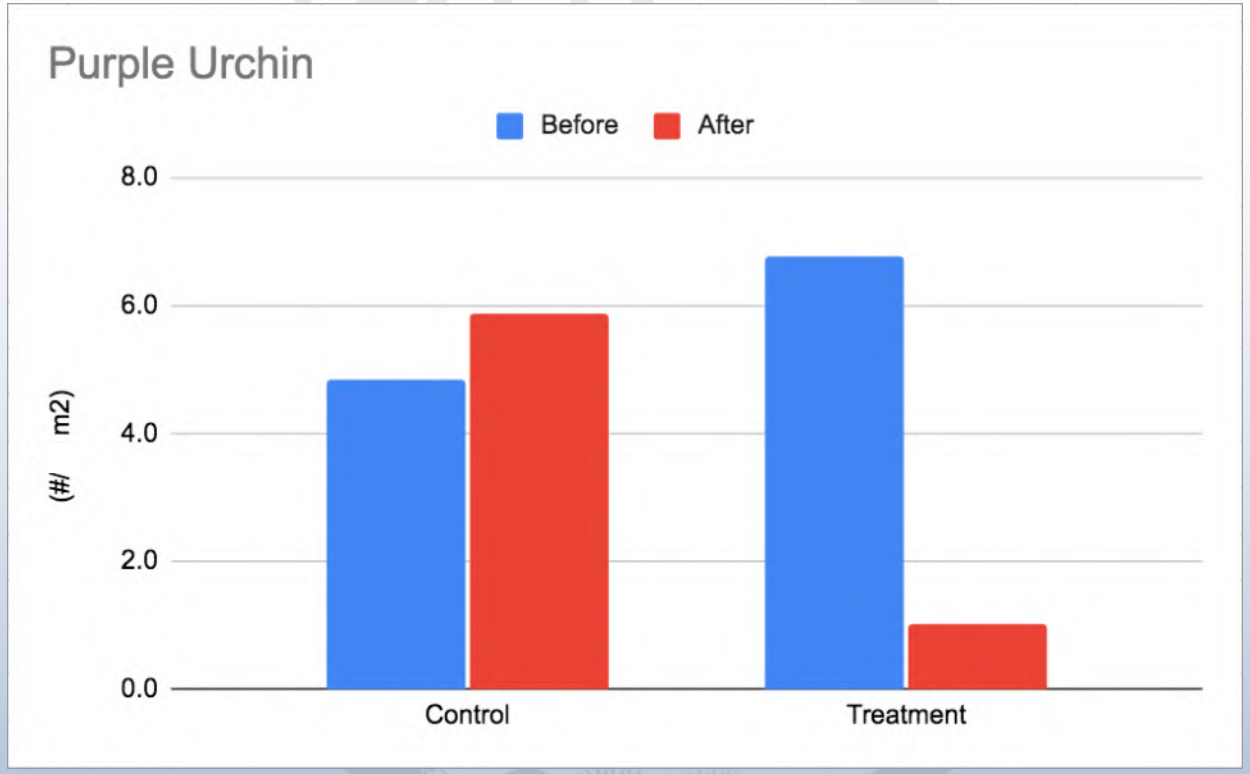
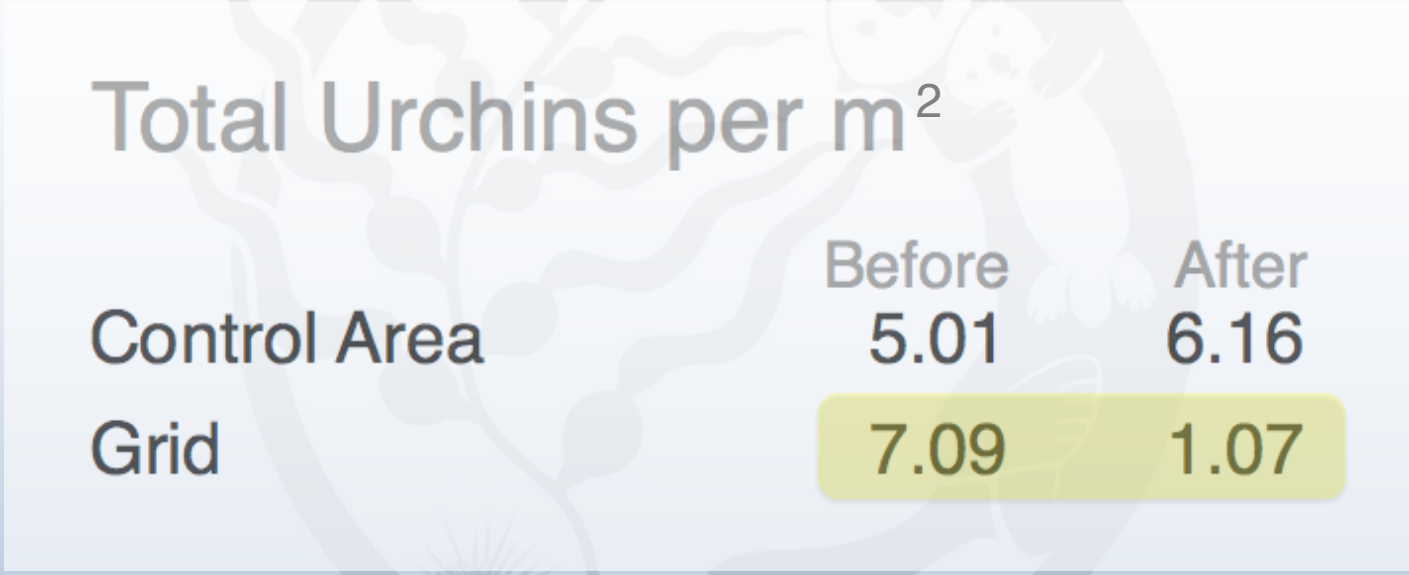


Chart and data directly from Reef Check California. “Before” = March 26, “After” = October 9.

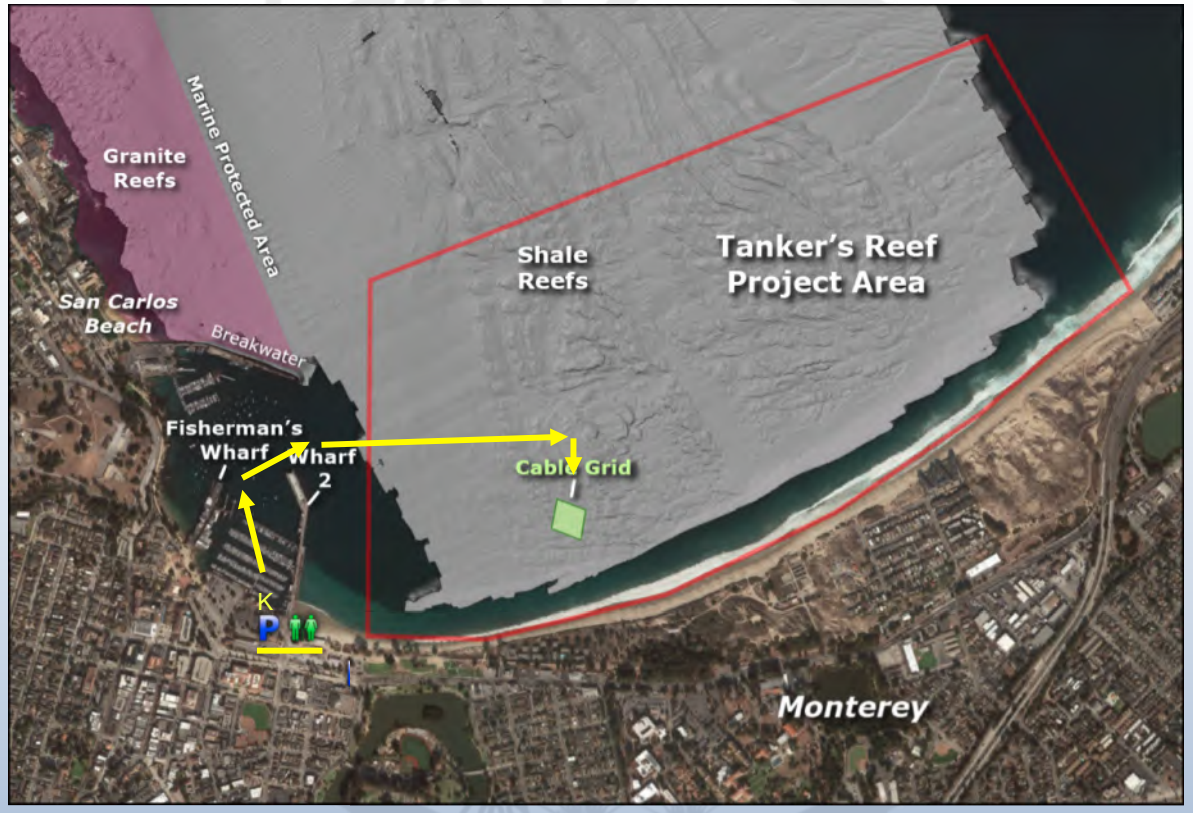
Results

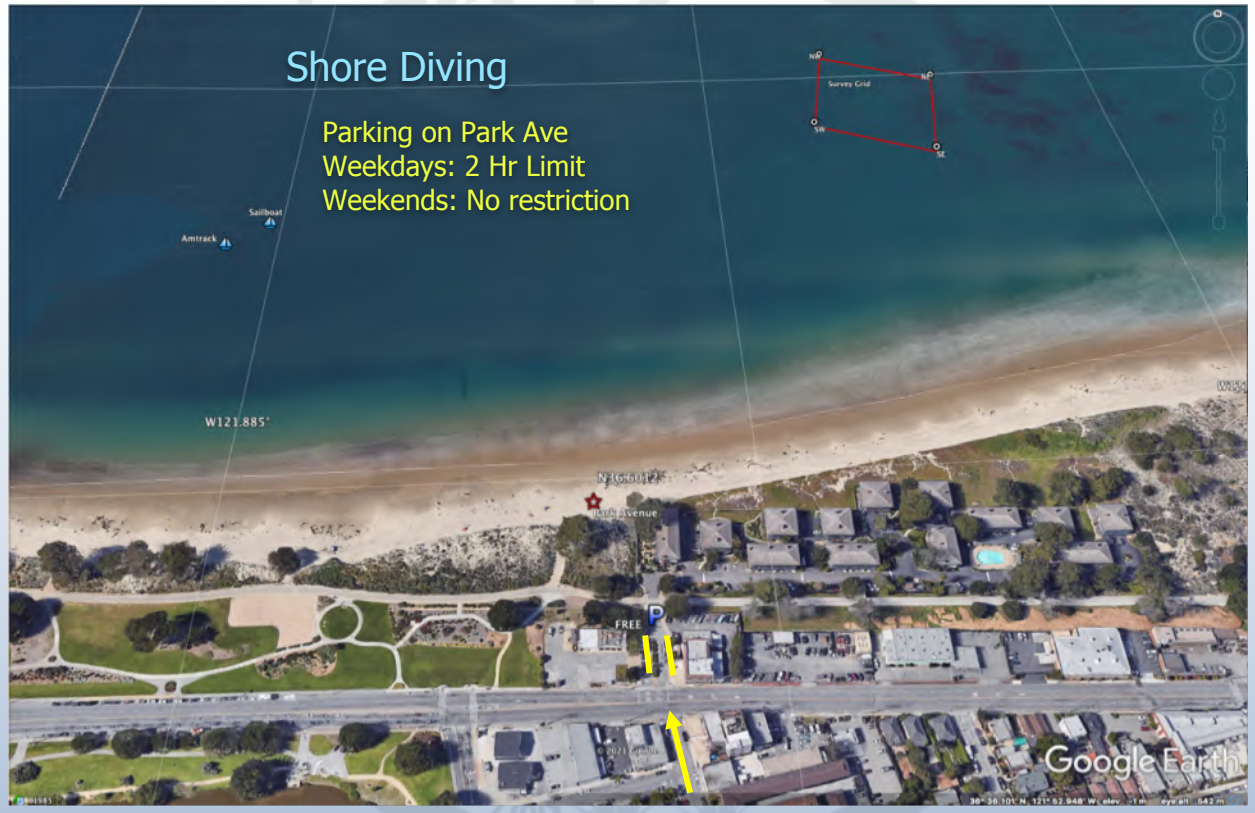


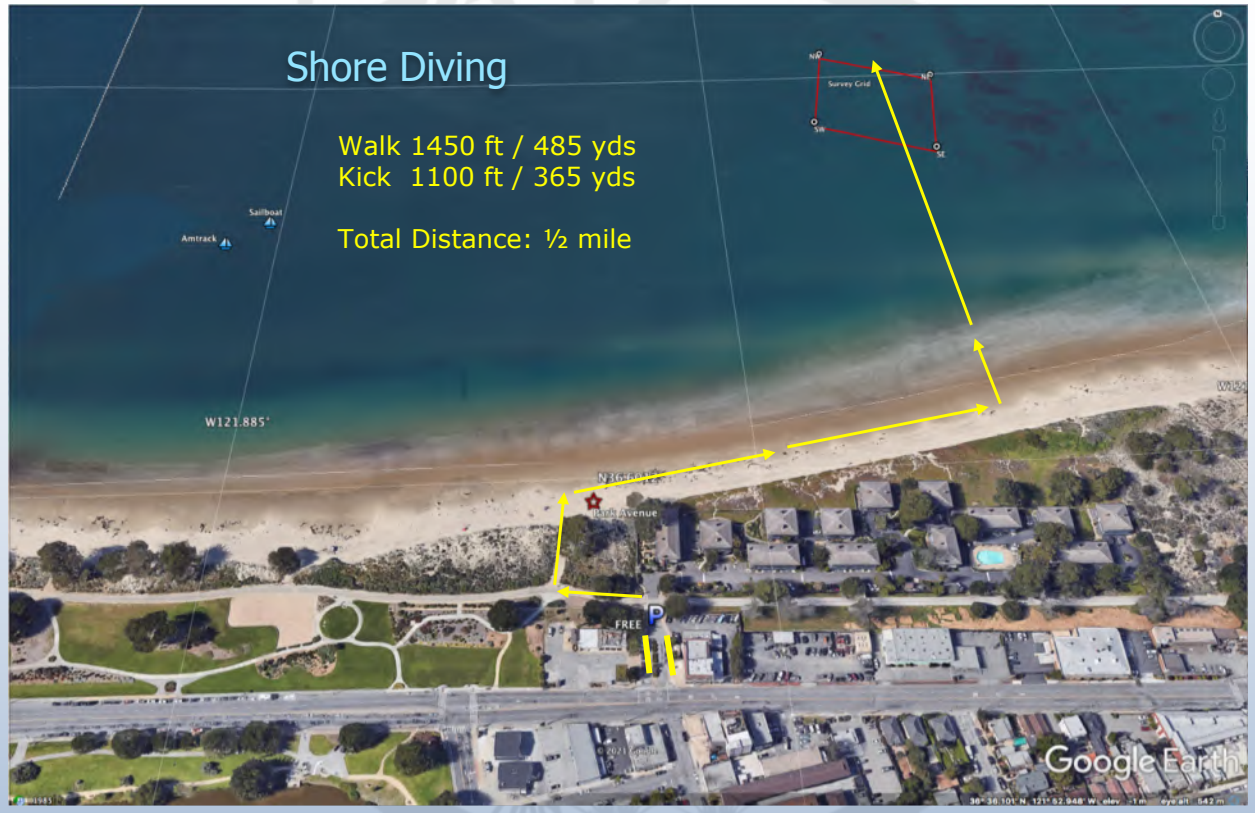
Data directly from Reef Check California. “Before” = April 19, “After” = October 9

Registered Volunteers:	**356**
Trained Divers:	**55**
Divers Reporting Data:	**67**
Dives Logged:	**407**
Injuries & Mishaps:	**0**


BEACH
HOPPER II


Granite Reefs
Marine Protected Area
Shale Reefs
Tanker's Reef Project Area
San Carlos Beach
Breakwater
Fisherman's Wharf
Wharf 2
Cable Grid
K
Monterey


Shore Diving
Parking on Park Ave
Weekdays: 2 Hr Limit
Weekends: No restriction
Survey Grid
NW
NE
SW
SE
Sailboat
Amtrack
W121.885°
Park Avenue
FREE
P
Google Earth


Shore Diving
Walk 1450 ft / 485 yds
Kick 1100 ft / 365 yds
Total Distance: ½ mile
Sailboat
Amtrack
W121.885°
Survey Grid
FREE
Google Earth

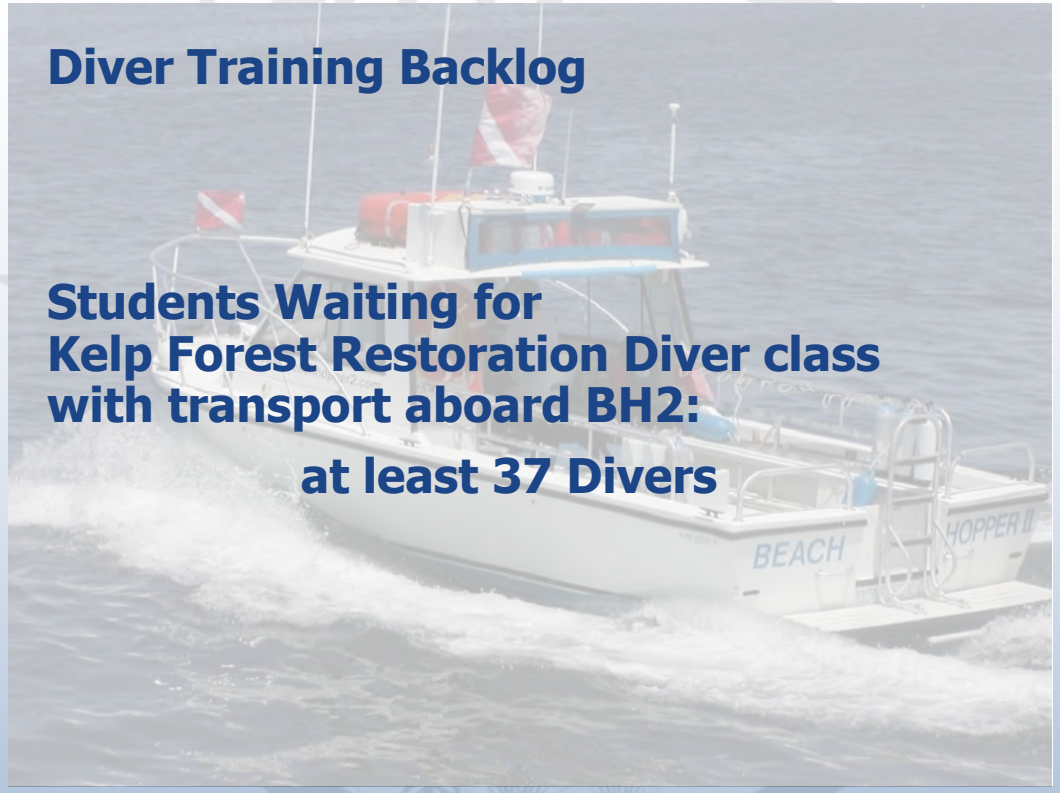

BEACH
HOPPER II

Beach Hopper II Dive Boat

Capacity:	**11 Divers**
Cost:	**All expenses except fuel and crew donated**
CPFV License:	**$790**
Application Made:	**June 5**
License Issued:	**Oct 23**

License numbers being applied to hull now, first trip to Tankers' Reef early November

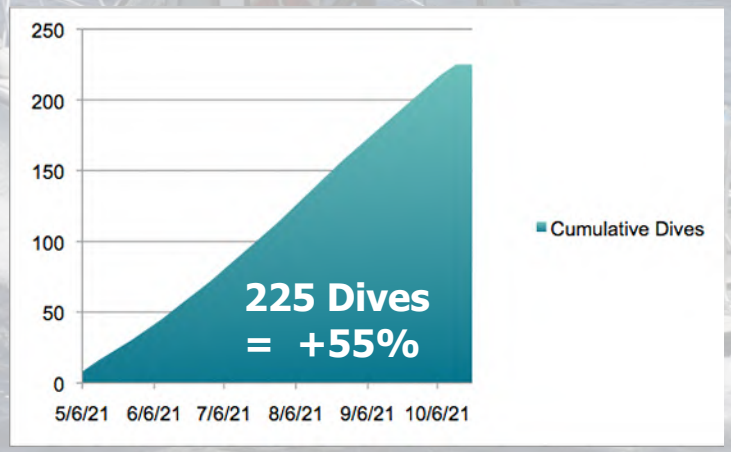
Diver Training Backlog



Students Waiting for
Kelp Forest Restoration Diver class
with transport aboard BH2:

at least 37 Divers

Estimated Dives That Didn't Happen



State of California Revenue Windfall

Sport Fishing Licenses for 67 to 356 divers	$3423 to $18,747
CPFV License for BH2	$790
Total	$4213 to $19,537
Compare to G2KR Budget to Date	$10,116

FGC@FGC

From: Keith Rootsaert <keith@g2kr.com>
Sent: Wednesday, October 27, 2021 9:12 AM
To: FGC
Cc: Ashcraft, Susan@FGC; Ray, James@Wildlife
Subject: G2KR - MRC Meeting Nov. 9, 2021
Attachments: G2KR MRC Meeting 21.1109 Agenda Item 7 B II. a.pdf

Dear FGC,

Attached are my written comments referencing Agenda Item 7 (B) II. a. - Kelp restoration and recovery efforts, including initial outcomes of urchin removal projects and status of sunflower star (Pycnopodia)

I ask to speak before the commission for 3 minutes so that I may present an abridged version of the attached document which I will submit before the Supplemental Comment Deadline of noon on Thursday, November 4, 2021.

Thank you,

Keith Rootsaert
G2KR.com

Giant Giant Kelp
Restoration Project

Good morning, my name is Keith Rootsaert and I'm with the Giant Giant Kelp Restoration Project in Monterey, California.

Tanker's Reef Project

This is the first year of the Tanker's Reef Kelp Restoration Project. The red line shows the perimeter of the project boundary and the grid where certified Kelp Restoration Divers have been working.
The mustard color shows where kelp forests have grown in the past, before urchin barrens began to take over.
The star is the easiest shore access point for the grid.

Tanker's Reef Project

When we began in April, there was very little kelp on the site - indicated by the little green patches.

Criteria for Success

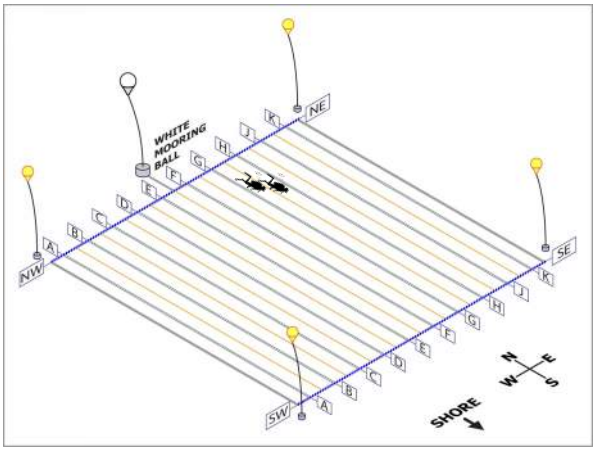
1. **Recreational divers are able to clear 1-2 acres of reef at the treatment site (i.e. reduce urchin densities to <2 total urchins/m^2 along fixed transects within the first year of the amendment, and keep that area cleared for the duration of the amendment, with no significant bycatch, damage to reef structure, or disturbance to marine mammals).**

2. **Recreational divers are able to self-organize, develop and implement biological monitoring protocols, and adequately collect and report biological data to state and federal agencies to assess effectiveness of their efforts.**

CDFW, OPC and Monterey Bay National Marine Sanctuary staff defined the objectives of the project and determined the specific Criteria for Success. They determined the project would be a success if: Recreational divers are able to clear 1-2 acres of reef at the treatment site. For example, reduce urchin densities to <2 total urchins per square meter along fixed transects within the first year of the amendment, and keep that area cleared for the duration of the amendment, with no significant bycatch, damage to reef structure, or disturbance to marine mammals.

Tanker's Reef Project Key Accomplishments: Criterion #1

1. **Reduced urchin densities on a 2.5 acre cable grid below 2/m^2 to 1.07/m^2.**
2. **Required density achieved in 5 months.**
3. **Divers trained to avoid and report accidental bycatch and damage to reef.**
4. **Divers trained to avoid disturbing marine mammals.**
5. **In addition to requirements, divers were trained to be safe, pick up trash, report invasive species, report damaged equipment, and document changes.**



To achieve these objectives we reduced urchin densities on a 2.5 acre cable grid below 2 per square meter from 7/m2 to 1.07/m2. We achieved this density in only 5 months. Divers were trained to avoid and report accidental bycatch and damage to the reef. They were also trained to avoid disturbing marine mammals. In addition to requirements, divers were trained to be safe, pick up trash, report invasive species, report damaged equipment, and document changes.

Criteria for Success

1. Recreational divers are able to clear 1-2 acres of reef at the treatment site (i.e. reduce urchin densities to <2 total urchins/m^2 along fixed transects within the first year of the amendment, and keep that area cleared for the duration of the amendment, with no significant bycatch, damage to reef structure, or disturbance to marine mammals).

2. **Recreational divers are able to self-organize, develop and implement biological monitoring protocols, and adequately collect and report biological data to state and federal agencies to assess effectiveness of their efforts.**

The second criteria is focused on recreational divers ability to self-organize, develop and implement biological monitoring protocols, and adequately collect and report biological data to state and federal agencies to assess effectiveness of their efforts.

Tanker's Reef Project Key Accomplishments: Criterion #2

1. **Established the Giant Giant Kelp Restoration Project; 356 registered divers, 65 Certified Kelp Restoration Divers.**

2. **Self-organized, 2 international dive certifications, local dive shops, instructors, students, dive clubs, fundraising, 6 Dive Meetups, webinars and newsletter to inform volunteers about project updates.**

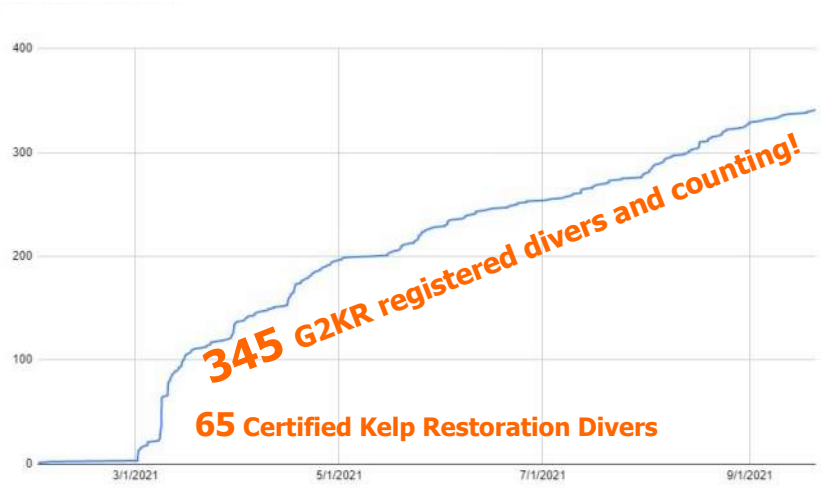
3. **Biological Monitoring Protocols coordinated with Reef Check, CDFW, and MBNMS, our joint agency partners.**

4. **Divers reported data for 406 dives in detailed online dive logs to inform marine resource managers.**

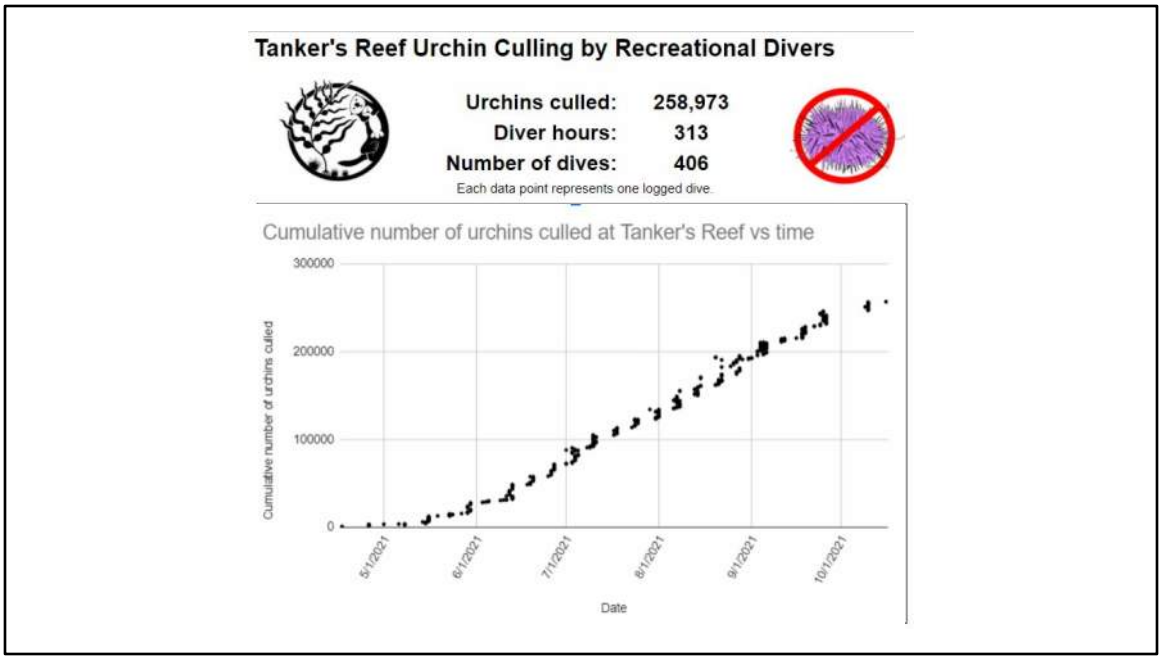
To achieve these objectives we established the Giant Giant Kelp Restoration Project, which has 345 registered divers and 65 Certified Kelp Restoration Divers. We organized and developed two internationally-recognized scuba certifications which are now being taught by trained dive instructors through local dive shops. We engaged dive clubs, conducted grassroots fundraising, held 6 Dive Meetups, hosted webinars and sent out newsletters to inform volunteers about project updates.

Biological Monitoring Protocols were coordinated with Reef Check, CDFW, and MBNMS, our joint agency partners.

Divers reported data for 387 dives in detailed online dive logs which informs marine resource managers about urchin culling workrates and efficiency.

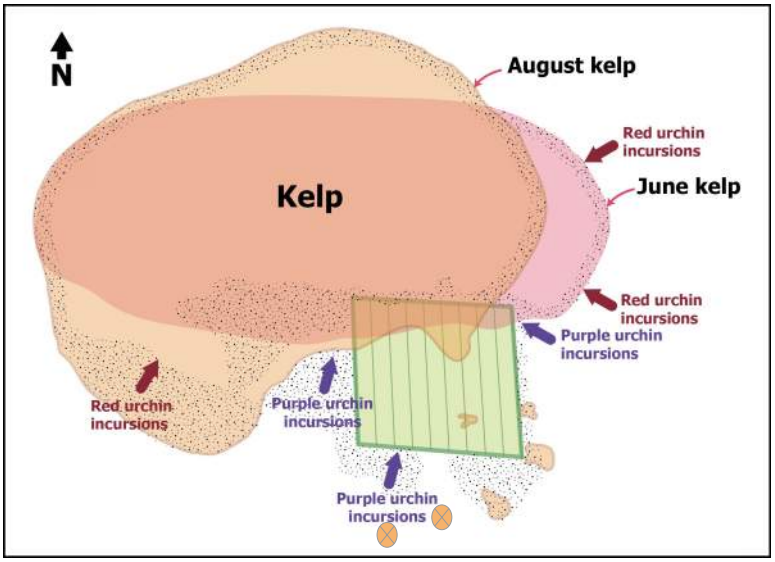


This success was possible because of the work of 65 Certified Kelp Restoration Divers.
81% of registered divers are waiting to be trained, many of whom were waiting for the Beachhopper II dive boat to receive the required license from CDFW.



This graph shows the project progress so far.
The Fish and Game Commission allowed work to begin on April 1, 2021. Reef Check surveys estimated there were 84,000 urchins on the grid. As of September 6, we have culled over 127,000 urchins on the grid. Additional urchins were culled outside of the grid and in kelp forest areas.

6 acre kelp forest



By June, a sparse 6-acre kelp forest had grown northwest of the survey grid. The stipple pattern is where we culled urchins outside of the grid in order to defend the newly established kelp. We lost some kelp to urchin predation on the east side of the kelp forest while we worked on the grid but we were able to increase the kelp to the north and the south. We protected kelp south of the grid by targeted culling. We are hoping that the low urchin density on the grid will allow kelp to infill between the new kelp beds.

Otters return to Tanker's Reef! Photo by Dan Schwartz

With the return of some areas of healthy kelp, southern sea otters, a threatened species, have been able to return to Tanker's Reef to forage and rest.

Obstacles

Commercial fishing license approval from CDFW took 4 months, restricting commercial dive charters to the site.

April 28th State Parks issued a cease and desist order and required concessionaires permit for divers to cross the beach.

Commercial fisherman harvested traps on the grid, cutting kelp.

Recreational fishing increased significantly.

Monterey Fire Department sped through the site, endangering divers.

Naval Postgraduate School sped through the site and installed yellow buoys just like ours.

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We encountered many obstacles in doing the project. Captain Mary Jo Nelson donated her time and the use of her dive boat, but we waited four months for approval of the CDFW commercial fishing license required. Since the dive boat is putting recreational divers in the water who cull urchins, this is considered as a fishing activity. Right at the beginning of the season, State Parks issued a cease and desist order and required a concessionaires permit for divers to cross the beach! We had commercial fishermen dropping traps on the grid to catch snails that the otters are eating. By culling so many urchins we attracted fish which attracted recreational fishermen. The Monterey Fire Department drove through our site, spraying their water cannon up in the air. Just to add to the confusion, the Naval Postgraduate School installed yellow buoys on the site just like ours.

Natural challenges: Unreliable kelp forest. Sand littoral plain. Large storms. Marine Heat (hobo data)

Opportunities

- Commercial divers
- Urchin ranching
- Urchin accumulator and trapping
- Sunflower Star reintroduction
- Desmarestia (acid weed)
- Scalable diver effort
- Science
- Education
- HR 4458 funding through NOAA
- Grants
- Carbon Credits

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We also found many opportunities: Commercial divers should be allowed to size select large urchins and deliver them for local urchin ranching. We are developing additional tools like an urchin accumulator and urchin trapping. We are supporting startup efforts to reintroduce Sunflower Stars as urchin predators. We are considering Desmarestia harvesting for suppressing urchins. This is a scalable diver effort that encompasses science, education and climate change mitigation, all while being inclusive in the diving community and fostering ocean stewardship. We are not waiting on state funding, we will do this through private donations and HR 4458 funding through NOAA, grants and international carbon credits.

Natural Benefits: Kelp forest spore bank. Coastal armoring/prevention of beach erosion. Biodiversity.

Next Steps

Proposed kelp restoration sites

Ed Ricketts SMCA

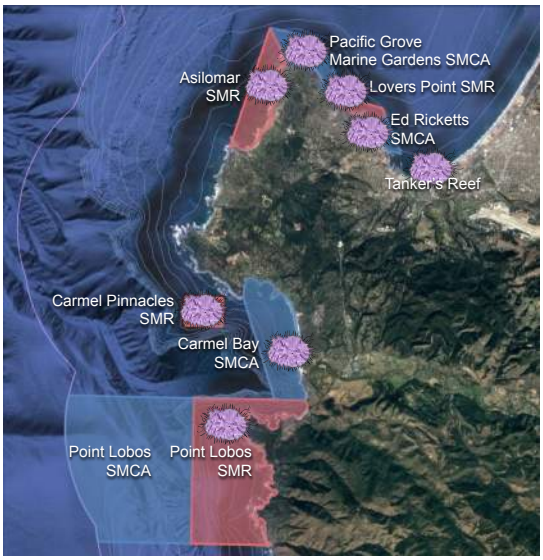
Pacific Grove Marine Gardens SMCA

Carmel Bay SMCA

Proposed control sites

Lovers Point SMR

Point Lobos SMR



Our team is ready for expansion into persistent urchin barrens in Marine Protected Areas in the spring of 2022. We propose to scale kelp restoration into three Monterey State Marine Conservation Areas. The State Marine Reserves have long term data sets and can be controls for monitoring purposes. We are requesting rulemaking changes to sanction our community effort.

Here are our collaborators and allies that we present at all of our presentations and we consider the Fish and Game Commission one of our partners in this venture. We need the commission's continued support for our mission to be successful and restore kelp on the Central Coast.

Thank you. I'm happy to answer any questions.

From: Jack Likins <[redacted]>
Sent: Friday, October 22, 2021 1:56 PM
To: Shuman, Craig@Wildlife <Craig.Shuman@wildlife.ca.gov>
Cc: FGC <FGC@fgc.ca.gov>; Wildlife DIRECTOR <DIRECTOR@wildlife.ca.gov>; Mastrup, Sonke@Wildlife <Sonke.Mastrup@wildlife.ca.gov>; Weseloh, Tom <tom.weseloh@sen.ca.gov>; Alexis Jackson <alexis.jackson@tnc.org>; dennis <dennis@20fathoms.com>; wmfbernard1 <[redacted]>; [redacted]; jdbeallo <[redacted]>; Riske, Steve@Wildlife <Steve.Riske@wildlife.ca.gov>; Kashiwada, Jerry@Wildlife <Jerry.Kashiwada@wildlife.ca.gov>; [redacted]; [redacted]; Taniguchi, Ian@Wildlife <Ian.Taniguchi@wildlife.ca.gov>; phaaker <[redacted]>; BenabvidesSteve <[redacted]>; DanielsRocky <[redacted]>; Rogers-Bennett, Laura@Wildlife <Laura.Rogers-Bennett@wildlife.ca.gov>; Catton, Cynthia@Wildlife <Cynthia.Catton@wildlife.ca.gov>; Mastrup, Sonke@Wildlife <Sonke.Mastrup@wildlife.ca.gov>; kelplady <[redacted]>; Hendricks, Joel@Wildlife <Joel.Hendricks@wildlife.ca.gov>; douglaughlin3 <[redacted]>; edwardschulze <[redacted]>; urquhartk <[redacted]>; Puccinelli, Robert@Wildlife <Robert.Puccinelli@wildlife.ca.gov>; TheGWTC@yahoo.com; Brooke Halsey <brooke@brookehalseylaw.com>
Subject: Abalone Management - Oct. 16, 2021 F&GC Meeting

Hi Craig,
As you well know, your department has been working on a revised recreational abalone fishery management plan to replace the outdated Abalone Recovery and Management Plan (ARMP) for over 7 years. I was a member of the 2019 Administrative Team which was directed by the Commission to integrate the two proposed North Coast recreational abalone management plans: one proposed by your Department of Fish and Wildlife (CDFW), and the other by The Nature Conservancy (TNC). In addition to representatives from the CDFW and TNC, other members of the Admin Team included representatives from the Ocean Protection Council (OPC), the Ocean Science Trust (OST) and the Tribes. The Admin Team worked diligently to integrate the two proposed plans and to make them adaptive to newer science, new data and the current rapidly changing environmental conditions. As you also know, a Scientific Peer Review funded by the OPC recommended integration of the two plans and the Commission directed it to be done. In addition, the Commission directed that the integrated plan include a de-minimis fishery (a fishery that could be implemented on a limited basis before what was deemed "full recovery"). Furthermore, the Admin Team recommended the integrated plan consider a biological fishery which was to be used during closure *"…as a means of allowing for near-term recreational harvest opportunities, that also helps support the state's data collection needs* ". My recollection is that Sonke, your Invertebrate Manager, was the member of the Admin Team who first proposed the idea of a biological fishery. He was also instrumental in developing a "strawman proposal" for how the biological fishery would work. For your edification, both of these pre-full-recovery fisheries were included in the integrated plan and recommended by the Admin Team.

As you know, the Department spent 5 years (beginning in 2014) working on a revised FMP to replace the outdated ARMP. In 2019, the Admin Team took one year to complete the integrated recommendation, which was presented to the Commission in early 2020. Because of chronic delays by the Department to complete the revised FMP, to this day the outdated ARMP continues to be used to manage the abalone fishery state-wide. Under the ARMP the Commission had little choice and closed the North Coast recreational abalone fishery in 2018.

In my limited 2 minutes at the last Commission meeting (Oct 16, 2021), I tried to explain that there is a path forward for a limited abalone fishery, if only the Department would complete its responsibility and turn the recommended integrated plan into a formal FMP. You countered my comments, calling them "untrue" and that there was no path forward. With all due respect, your statement is correct only if your department does not fulfill its responsibility to draft an integrated FMP and continues to rely on the outdated ARMP.

When the Commission (on recommendation of the Department) changed the sunset date for the expiration of the current emergency closure from 2021 to 2026, it seems the department dropped the ball drafting the integrated FMP. The extension of the sunset date was not meant to be an excuse to delay work on the FMP. It was to allow more time for the environment to improve and to collect more data so that the Commission could make a more informed decision about re-opening of the fishery.

The Commission can reopen the fishery before 2026, if environmental conditions improve and/or your Department allows for a de-minimis or biological fishery in the integrated FMP as recommended by the Admin Team. Even though the environment seems to be improving over the last couple of years, we are almost 7 years into a revised abalone FMP with little or no published progress since the presentation of the integrated plan by the Admin Team. According to the current CDFW website (Red Abalone Fishery Management Plan (ca.gov), a final draft of the abalone management plan and CEQD was to be presented to the Commission in the fall of 2020 with adoption by the Commission in 2021. Obviously, these dates have been missed, again.

It's been 27 frustrating years since the southern fishery was closed, 16 years since the adoption of the ARMP, 7 years since beginning a revised FMP, 4 years since the closure of the northern fishery and 2 years since the integration recommendation was presented to the Department and the Commission.

By this letter I ask both you and the Commission to please make a firm commitment to the public as to when you will complete and implement the revised abalone FMP.

What's even more frustrating is that fishermen have lost their main communication channel with the Department. With the closure of the abalone fishery south of San Francisco in 1997, SB463, among other things, created the Recreational Abalone Advisory Committee (RAAC), which by law is supposed to hold public meetings at least once per year. Historically, the RAAC

has met more often when there were matters of importance to fishermen and the public. There is nothing more important to abalone fishermen than their fishery. In 2017, at the height of the fishery's environmental problems, Sonke appointed himself chairman of the RAAC, even though he is not a member of the Committee. Before Sonke's chairmanship, meetings had been well-attended and gave fishermen a good channel of communication directly with the scientists and decision-makers in the Department. For those on the distribution of this letter who may not be familiar with the RAAC, members are nominated by areas within the State and appointed by the Director of the Department of Fish and Wildlife (Chuck Bonham). Since Sonke appointed himself chairman, the group has met only 3 times. There were no meetings in 2019 or 2021, and one sparsely attended webinar in 2020, with no record of discussions held or attendees. This lapse of responsibility has effectively eliminated one of fishermen's and the public's main channels of communication with the Department.

Also, by this letter, I request that the RAAC resume holding regular public meetings, publish notes from their meetings and that the officers of the Committee be selected from the appointed members. Not holding meetings is a failure of responsibility by the Chairman, and moreover seems to be a violation of the law.

Sincerely,

Jack Likins
Abalone Fisherman, Administrative Team Member – Abalone Integration Project.

CC (by email):
Chuck Bonham, Director, CDFW
Sonke Mastrup, Invertebrate Manager, CDFW
Alexis Jackson, Chairwoman, Abalone Integration Admin Team (TNC).
Tom Weseloh, Chief Consultant for the Joint Committee on Fisheries and Aquaculture, Senator McGuire's Office.
F&G Commissioners: President Silva, Vice President Murray, Members: Sklar, Hostler-Carmesin, and Zavaleta.
RAAC members: Ian Taniguchi (CDFW), Peter Haaker (ex-CDFW), Joel Hendricks (warden), Josh Russo (northern area), Brooke Halsey (northern area), Doug Laughlin (central area), Dennis Haussler (central area) Nancy Caruso (southern area), Chris Voss (southern area)

The Nature Conservancy
Protecting nature. Preserving life.™

CA Oceans Program
830 S Street
Sacramento, CA 95811

tel [916] 449-2850
fax [916] 448-3469
nature.org
nature.org/california

October 27, 2021

Peter Silva, President
Samantha Murray, Vice President
California Fish and Game Commission
715 P Street, 16th Floor
Sacramento, CA 95814

RE: Agenda Item 7(B)(b) – Red abalone fishery management plan development

Dear President Silva and Vice President Murray,

Across the state, The Nature Conservancy (TNC) is exploring science-based, collaborative solutions to promote healthy ocean ecosystems and thriving marine fisheries. This is even more critical under changing ocean conditions. The North Coast recreational red abalone fishery is one of many fisheries vulnerable to climate change that requires more effective and immediate management action.

Since the California Department of Fish and Wildlife (CDFW) initiated the development of a fishery management plan (FMP) for the recreational red abalone fishery in late 2014, TNC has been a highly engaged stakeholder. We have worked closely with recreational divers, world-class fishery scientists, and state fishery managers and policy makers to explore more cost-effective, data driven management solutions that balance the needs of the state, harvesters, conservation interests, and Tribes and Tribal communities. This was most recently demonstrated as TNC took on a leadership role in the management strategy integration process from January 2019 through March 2020. This process piloted a new model for public-private partnership to leverage additional funding and capacity to advance state fisheries management objectives. At the conclusion of the process in March 2020, the Administrative Team delivered an extensive final report[1] that included a set of management recommendations to inform the development of the red abalone FMP by CDFW. In addition to encouraging the adoption of one of the management strategies evaluated, some recommendations of note were related to streamlining data collection efforts, exploration of a citizen science driven data collection program for Humboldt and Del Norte Counties, instituting a biological fishery as a means of allowing near-term harvest opportunities and supporting data collection, as well as a creating a tribal allocation for subsistence fishing.

Since the final Administrative Team report and recommendations were submitted in March 2020, TNC has advanced two efforts that will help to inform the development of the red abalone FMP. As such, we would like to share the following two updates with the Marine Resources Committee:

[1] Jackson, A., Berube, P., Taniguchi, I., Likins, J., Silva, J., Pope, E., and S. Mastrup. 2020. *Summary of the Management Strategy Integration Process for the North Coast Recreational Red Abalone Fishery*. Administrative Team Report to the California Fish and Game Commission. 115 pp.

(1) Lessons Learned from the Management Strategy Integration Process

TNC collaborated with members of the Administrative Team to document lessons learned from the multi-year management strategy integration process (*see attached*). TNC conducted interviews with participants in the integration process to gather insights from their experiences as managers, scientists, policymakers, stakeholders, and members of Tribes and Tribal communities. The attached document highlights key enabling conditions and actions that supported an effective and productive process. Recommendations were also included to improve the process if and when the state considers another stakeholder-led model.

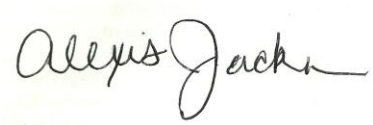
(2) Feasibility Study for Data Collection in Humboldt and Del Norte Counties

To address Recommendation #2 from the Administrative Team final report, TNC funded Reef Check to conduct a study in Humboldt and Del Norte Counties (identified as Zone 3 during the integration process). The study was aimed at assessing the feasibility to gather abalone length data that could inform use of the spawning potential ratio (SPR) indicator to manage a fishery in Zone 3. Over the course of the two-year study, Reef Check conducted size frequency surveys across nine sites near Pyramid Point, Crescent City, Trinidad, and Shelter Cove. A total of 900 abalone were measured. While abalone were notably absent in many of the more popular dive sites, they were found in high abundances in a few survey sites.

Findings from the Reef Check surveys suggest it is possible to generate the data required to inform an SPR-based harvest control rule (HCR). During the integration process, an analysis was conducted to examine whether limited collection of length frequency data could theoretically support an SPR-based HCR in Zone 3. Simulation results suggested that an HCR could be designed relying upon 60 to 300 observations every three years. From these initial surveys, Shelter Cove and Trinidad Bay seem most promising as potential index sites. Reef Check has presented findings from this study and shared raw data with CDFW to guide FMP development.

In closing, TNC continues to encourage and support the transition to more climate-ready fisheries management in California. Completion of the red abalone FMP is an important step towards demonstrating these principles and delivering more transparent, science-based, and responsive decision-making in this fishery. Thank you for the opportunity to provide public comment.

Sincerely,



Alexis M. Jackson, PhD
Associate Director – Ocean Policy and Plastics Lead
California Oceans Program
The Nature Conservancy

Lessons Learned from a Unique Fisheries Management Planning Process

DEVELOPING AN FMP FOR THE NORTH COAST RECREATIONAL RED ABALONE FISHERY

Fishery management plans (FMPs) as outlined in the Marine Life Management Act (MLMA) are intended to conserve the health and diversity of marine ecosystems and resources while allowing for sustainable harvest opportunities. MLMA guidelines require collaboration and the best available science when developing FMPs, and also create room for stakeholders to put forth proposals. These guidelines are general to allow the state more flexibility based on each fishery's needs, but they do not provide specific guidance for stakeholder-led processes.

FMP development is a complex, time-intensive process. While every FMP process is unique to the species and the participants involved, development of an FMP for the recreational red abalone (*Haliotis rufescens*) fishery on the North Coast faced two special circumstances:

1. **It was the first-ever FMP process where the CA Fish and Game Commission (the Commission) mandated integration of a management strategy proposal from a non-state entity (i.e., a stakeholder-led proposal) with that of the CA Department of Fish and Wildlife (CDFW).**
2. **At the time of FMP development, the red abalone fishery was in the midst of an unprecedented environmental crisis.**

BRIEF HISTORY

Until recently, red abalone supported a $40 million recreational fishery on California's North Coast between San Francisco and the Oregon border. It was the only remaining abalone fishery open in California, and important to the heritage of local communities and Tribes—for generations, people had harvested abalone for food and for their iridescent, mother-of-pearl shells. But data about the health of red abalone populations were limited, and recent changing ocean conditions posed a threat to the species' future.

In 2014, CDFW—with support of the Commission—began engaging with stakeholders on the creation of an FMP for the recreational red abalone fishery. As one of those stakeholders, The Nature Conservancy (TNC) was interested in supporting the development of a more inclusive and transparent management process that would utilize current science and technology for data-limited fisheries, ultimately resulting in a cost-effective, adaptive management strategy.

In 2017, the onset of dramatic, climate-induced change in the kelp forest ecosystem and abalone population health led the Commission to temporarily close the recreational red abalone fishery to all harvest. This closure has since been extended at least through 2026, with the ability to re-evaluate upon completion of the FMP.

In 2018, CDFW and a stakeholder-led group organized by TNC each submitted management strategies for potential inclusion in the FMP. The Commission supported having both management strategies go through scientific review. Following the review, both the peer review team and the Commission recommended the two strategies be integrated, to inform the final FMP.

In 2019, the process of integrating these two management strategies began. This unique effort brought together a diverse group of stakeholders seeking to fill data gaps in the fishery and collaboratively develop a management strategy that would protect the ecological, economic and cultural values of the red abalone fishery.

The integration process was completed in April 2020 with the submission of a report guiding development of the final FMP. The integrated FMP was scheduled to be adopted in the spring of 2021, although that timeline has since changed.

About This Report

Following completion of the management strategy integration process, TNC conducted interviews with participants to gather insights and lessons learned. A total of eight interviewees shared their feedback in hour-long phone calls. From these interviews, a picture emerged of the successes and areas for improvement of this integration process, as well as recommendations to consider for future processes.

This report summarizes these findings and is organized into the following sections:

The findings shared in this document represent meaningful insights and observations from a unique FMP development process. This document is intended to guide similar stakeholder-led FMP processes in the future and potentially inform revisions to the Fish and Game Code to clarify key aspects of such stakeholder-initiated management processes. Also available is a shorter version of this report that highlights the recommendations for future processes—see "Insights on Developing a Stakeholder-Led Fisheries Management Plan (FMP)." Together, these documents can serve as complements to the July 2020 Kearns & West report developed for CDFW to assess lessons learned across all California FMP processes.

PARTICIPANTS

Representatives from the following groups participated in the integration process:

- **CA Department of Fish and Wildlife (CDFW)** [Administrative Team, Modeling Team, Project Team]
- **CA Fish and Game Commission (Commission)** [Administrative Team, Project Team]
- **CA Ocean Protection Council (OPC)** [Administrative Team, Project Team]
- **Tribes and Tribal communities** [Administrative Team, Project Team]
- **The Nature Conservancy (TNC)** [Administrative Team (Chair), Modeling Team, Project Team]
- **Recreational fishing and diving community** [Administrative Team, Project Team]
- **Other local, state and federal government representatives and a diverse group of academic, industry and nonprofit stakeholders** [Project Team]

I. Framework For Success

As stated in the introduction, MLMA guidelines for state-led FMP development efforts are general, allowing for flexibility according to fishery needs, but do not provide specific procedures for a stakeholder-led process. Because the red abalone FMP integration process was a unique effort that involved stakeholder leadership and integration of two management strategies, interviews with participants focused largely on gathering lessons learned about the administrative structures and procedures that served as the framework for this process.

Teams. Participation was structured across three distinct teams—the Administrative Team, Project Team and the Modeling Team (see Table 1). The roles and responsibilities of each were outlined in charters and can be explored further in Section II of the Administrative Team Final Report (see Appendix). As one interviewee said, the team structure was "an important part that we got right." Having the Modeling Team operate separately from the other teams was helpful for the science to be conducted away from administrative details and public influence. Many interviewees called out the effective project management and leadership skills of the Administrative Team chair as integral to the success of the process.

Table 1: Teams for integration process

	Administrative Team	Project Team	Modeling Team
Team Role	This core team oversaw the process and made consensus-based decisions to ensure the process proceeded in a collaborative, efficient and timely manner.	An advisory group for user groups, stakeholders and the general public to engage with the process, provide input and stay informed on all aspects, from scientific recommendations to policy procedures.	This core team, with input from the Administrative Team and Project Team, led all data integration and scientific modeling associated with the management strategy evaluation.
Team Composition	Team members included one representative each from CDFW, OPC, the Commission, TNC (chair person), the recreational red abalone fishing community, a Tribal representative. This team included a designated alternate for each group.	This team was open to all members of the public, including members of the fishing community, Tribes and Tribal communities, NGOs, scientists, resource managers, the Recreational Abalone Advisory Committee, as well as staff of state agencies (i.e., CDFW, OPC, the Commission). Members of the Administrative Team and Modeling were also present	This team consisted of staff scientists from TNC and CDFW, as well as a quantitative fisheries modeler (under contract).

Charters. At the outset of the process, the Administrative Team established charters (see Appendix) to outline team goals and guidelines for participant engagement. This process served to set expectations around objectives and behavior, ensuring that everyone was on the same page. Interviewees considered the charters "essential tools" that helped "in laying out roles and responsibilities for the group," but also noted that fulfilling and enforcing the charters was sometimes a challenge (see Areas for Improvement).

Timeline. The integration process took approximately 18 months from January 2019-April 2020, based on a timeline set by the Administrative Team. The Administrative and Modeling Teams were engaged for the duration of this time period, while the Project Team was engaged over a period of six months (May-December 2019). Project Team meetings involved members of the Administrative Team, plus voluntary participation of members of the general public, through six meetings that were held both in-person and remotely.

Facilitation. Given the diversity of state agency staff and stakeholders involved, an external facilitation group (Strategic Earth Consulting) was brought in to ensure neutrality and support a more productive and collaborative integration process. Some interviewees observed that facilitation can be tricky to get right, noting past FMP processes in which external facilitation had not worked well due to a mix of unclear expectations or personality conflicts. One interviewee commented on the potential for "mistrust of an independent group coming in without any history or credibility." While external facilitation does not always guarantee effectiveness, the majority of feedback from interviewees in this process was positive. Said one interviewee, "The way they [the facilitators] ran the meetings really produced results and got the most bang for the buck."

Communication And Documentation. Information—such as meeting summaries, upcoming agendas, presentations, reports and other relevant documents—was made available to stakeholders via timely updates to the website. To keep decision-makers informed, presentations and opportunities for discussion were integrated into existing policy processes, including at meetings of the Commission's Marine Resource Committee (MRC). The Administrative Team made use of existing mechanisms (such as regularly scheduled meetings) to provide high-level updates on the status of the integration process. One interviewee noted that having "regular updates back to the MRC helped keep the Commission engaged and kept this on their radar." The Contracted Fisheries Modeler Communicated Scientific Findings To The Project Team.

Funding And Staff Capacity. Partners contributed project management capacity, funding, stakeholder engagement support, and policy and scientific expertise. Costs associated with this process were shared among the partner organizations and included facilitation, scientific modeling and staff time to attend all meetings—OPC funded the external facilitators and TNC funded the fisheries modeler, in addition to state agencies and TNC contributing staff time to the process. Recreational fishermen and Tribal representatives generously volunteered their time to participate in the process, with some stipend funding available to cover travel expenses to meetings.

"This process provided a collaborative structure that formalized accountability and created shared expectations and responsiveness, which were all necessary compared to where we had been a year before. It was a very creative strategy for moving the process forward."

— SUSAN ASHCRAFT,
MARINE ADVISOR,
CA FISH AND GAME COMMISSION

"The final report and executive summary resulting from the integration process were incredibly comprehensive. Documenting the process and being able to share synthesized, inclusive perspectives from the integration process with the Fish and Game Commission to inform their decision-making was invaluable."

— PAIGE BERUBE,
FORMER PROGRAM MANAGER AT CA OCEAN PROTECTION COUNCIL (CURRENTLY OCEAN PROGRAMS ASSOCIATE, THE NATURE CONSERVANCY)

II. Areas For Improvement

While interviewees overwhelmingly agreed that the integration process was effective and an improvement over other FMP processes, some key areas of growth were identified:

Better Clarity On Staff Time And Commitment Up Front. A few participants noted that having an explicit understanding of staff capacity (in number of hours per week) up front would have been helpful to ensure that project planning and project timelines accounted for staff time constraints and established realistic expectations.

Road Map Of Expected Outputs. Spending time early in the process to develop an outline of the expected products the team was working toward would have helped provide clarity and direction, especially in a new process such as this one. The outline shouldn't be so specific as to constrain the creative process, but simply serve as a road map when the process inevitably gets murky.

Reconsider Alternates. Having designated alternates for each team member is intended to provide flexibility and ensure representation when a team member can't attend a scheduled meeting or event. However, in practice the use of alternates did not always work and sometimes created confusion and difficulty. Interviewees recommended that the alternate system either be dropped—one option is to instead have two primary representatives, rather than one primary and one alternate—or improved through better understanding and guidance of the role and expectations of an alternate.

Charter Enforcement. Charters need to be realistic and enforceable, particularly when it comes to the rules of engagement for participants. Interviewees noted, for instance, that while the charters did establish roles for primary and alternate team members, those roles were challenging to enforce. In addition, ground rules are helpful for situations when conflicts or tensions arise. One suggestion was to make sure the facilitators—as neutral parties—are empowered to enforce the charters, and all participants should be encouraged to hold other members accountable to the codes of conduct.

Team Nomenclature And Relationships. While everyone agreed the structure of having three teams—Administrative, Project and Modeling—was useful, some interviewees noted there was confusion about the distinct roles of each team and how they related to one another. It was suggested that better names for each team might have helped, as well as better guidance around the function of each team and their relationships to one another, particularly for participants new to the process or who wore multiple hats as members of more than one team.

More Streamlined Final Product. Some interviewees found the final product to be overwhelming and would have preferred a more streamlined document with fewer layers of recommendations. At the same time, interviewees commented that the final product was very comprehensive and an accurate reflection of the unique process of integrating two plans during a situation of environmental crisis. Many interviewees noted that the Executive Summary was a valuable component of the final product. The nature of the final report may be a function of lack of clarity as to the level of decision-making power the Administrative Team possessed.

Science Process. This management strategy integration process required a unique level of data collection and integration, producing more robust science (see Positive Outcomes). Establishing methods for data sharing (i.e., tools such as shared folders, guidelines for data formatting) and clear expectations around what data would be shared at the beginning could have made this process more smooth and less time-consuming.

Public Engagement. Numerous interviewees noted that public input and support of FMPs is critical, but also challenging to fulfill adequately considering the limitations of time, budget and staff resources. Participants from user groups noted they would have preferred more insight into scientific discussions of the modeling team, and suggested that meetings could be recorded or that high-level notes could be shared. In addition, despite the more collaborative nature of this process, some interviewees expressed concern that the state would not be accountable to the recommended timeline and goals set forth by the integration process. There is an inherent tension around public engagement that requires ongoing consideration.

Tribal Relations. All participants noted that Tribal relations were improved from this collaborative process over previous FMPs, but there is still much work to be done. Some specific suggestions are listed here, but each of these would benefit from deeper reflection:

- Better outreach and follow-up on those outreach efforts to help ensure broader Tribal participation;
- Recognition of Tribal participants as representatives of sovereign nations rather than as members of the general public;
- Opportunities for and recognition of how Tribal knowledge can inform and be integrated into the science process;
- Better understanding of the landscape of Tribal capacity, such as which Tribes and Tribal communities may have environmental scientists and which may not have the capacity to attend meetings but would like to receive report-outs or summary information; and
- Better ways to engage Tribal communities through the Commission's Tribal Advisory Committee, which currently has limited representation.

> *"There were growing pains and bumps along the way, opportunities to improve for future projects. But it was a great pilot project and the experience was positive."*
>
> **— ELIZABETH POPE,** FORMER ACTING MARINE ADVISOR, CA FISH AND GAME COMMISSION (CURRENTLY ENVIRONMENTAL SCIENTIST)

III. Positive Outcomes From This Unique Process

Past FMP processes have been almost entirely coordinated and facilitated by CDFW. The process discussed in this report represents a new consensus-based approach for partnership between resource managers, scientists, members of the fishing community, Tribes and NGOs to develop an adaptive management strategy for the recreational red abalone fishery.

This process was unique because it involved the integration of two proposed management strategies, rather than the development of one from scratch. It also combined public and private resources to leverage existing funds and staff capacity.

There were many positive outcomes of this unique approach, beyond the expected delivery of management measures for an FMP, that have the potential to benefit other collaborative efforts, now and into the future.

Increased Trust From Stakeholders. Government-led management processes are often plagued by mistrust—resource users are wary of the motivations of state agencies and can be fearful of additional regulatory oversight. In this integrated process, interviewees reported that having NGO leadership helped "overcome a long relationship of mistrust" between the state and non-state entities, as well as bring more scientific credibility to the management strategy of the FMP process.

Many of the administrative structures and procedures outlined in Section I contributed to building trust. For example, interviewees called out the value of communication tools, such as the website, to keep stakeholders informed and to document the process. "Having the website was helpful," said one interviewee, and another noted that, "all the documentation was online, what was discussed at meetings." Consistent communication and availability of documentation made the process more transparent, promoting greater trust from stakeholder groups.

Effective communication about the science is also important for building trust and support among stakeholders. While science education has often been "an uphill battle" in past FMP processes, interviewees of the red abalone integration processes agreed that the contracted fisheries modeler was very effective at gaining the trust of user groups and translating the scientific findings to the wider, non-science group.

Finally, striking the right balance for a timeline is important—too long of a process and there is risk of losing participants' interest and faith in the process, but too short and there isn't enough time to achieve the engagement and review necessary for a solid outcome. Interviewees felt the 18-month timeline of this process was "fair and reasonable" to meet the goals of the project. Staying accountable to the timeline and goals also contributed to increased trust in the process.

Improved Cost-sharing And Capacity. The public-private partnership of this process was touted as "hugely helpful" and a "value-add" for leveraging resources and staff capacity. Staff from CDFW and the Commission both indicated that this partnership allowed everyone "to accomplish a high level of work that wouldn't have been attainable" otherwise.

One interviewee noted that the structure of distinct teams "allowed us to divide and conquer so we could meet deadlines and maximize everyone's different areas of expertise." Having external facilitation helped free up the Administrative Team to be more engaged in the process and removed that burden from staff capacity.

One area of potential concern going into the process was how to integrate different organizational procedures without making additional work for people. However, interviewees noted that the process "dovetailed nicely" with existing state management procedures. Said one interviewee, the public-private partnership was "definitely positive in terms of leveraging resources" and helped the process to "get where it needed to go in the time we had."

"The length of the process was a good amount of time—it gave everyone a chance to participate and created something that's not finished but a very solid place to start. I think what happened was really great. We had the right people, the right groups involved. Overall it was an improvement on past practices."

— JOSH RUSSO,
RECREATIONAL DIVER

"This was a unique situation—we went in expecting to draft a management plan and instead found a collapsed fishery in need of recovery. This was hard for all of us, but especially for the user groups. Having a transparent, collaborative process [led by a third party] was integral in getting everyone on the same page in terms of understanding the situation and building trust to move forward."

— SONKE MASTRUP,
INVERTEBRATE PROGRAM MANAGER, CA DEPT. OF FISH AND WILDLIFE

"Overall the process was very good, very productive. In comparison to prior processes I've had experience with, not only abalone but other fisheries, this particular process was an improvement over past processes. I think this process could probably transfer to other similar projects, depending on what constituencies are involved and their relationships."

— IAN TANIGUCHI,
SENIOR ENVIRONMENTAL SCIENTIST, CA DEPT. OF FISH AND WILDLIFE

Progress On Tribal Relations. While there is still much work to be done to foster better collaboration with Tribal communities, there were many bright spots in this process. In particular, having a Tribal representative sit on the Administrative Team—the first time this was done in an FMP process—was a success, with many participants noting that the process was made better because of Tribal engagement. In addition, the final Administrative Team report includes a recommendation specifically related to subsistence fishing for Tribal communities. Together these steps helped improve Tribal relations and sparked more conversation among state and NGO partners about how to continue developing these relationships (see Areas for Improvement and Recommendations for the Future). Many participants expressed hope that this progress would set a precedent for future Tribal engagement.

More Robust Science. The integrated process produced solid, sound science—interviewees were pleased with the level of modeling and data integration that took place. As was frequently noted, there can always be more science, more data analysis and more modeling, but these are necessarily limited by time and budget.

A unique aspect of this process was the integration of state and non-state data sets for use in the integrated management strategy, and compiling an extensive list of a variety of state, academic and NGO data streams. This led to a better understanding of the red abalone resource as well as the entire ecosystem, and can help to reduce future data collection and monitoring costs to the state. While some recommendations were identified to improve the science/data process—such as engagement of an independent panel of scientists—the science process as a whole was viewed as very successful. One scientist noted that the dire environmental conditions of the fishery "might not have come to light without the extensive data and science involved in this process."

IV. Recommendations For The Future

Stakeholders have a long history with red abalone, and their deep connections to and passion for the resource were clear throughout the integration process. In addition, the environmental crisis presented a curveball for all involved—participants went in expecting to establish sustainable harvest guidelines and instead discovered the fishery was "in dire straits," as one interviewee said. All of this resulted in a process that, at times, was tense and charged.

However, as revealed in the interviews, this stakeholder-led process succeeded at bringing greater trust, representation and cooperation to a difficult situation. While each fishery is unique, the recommendations below could help inform future efforts to develop integrated FMP processes.

Emphasize Communication And Reporting Out. Many participants commented on the value of the communication tools used to document and report on the process, highlighting specifically the website where current information and resources were regularly made available. For stakeholders who represent broad groups—such as fishermen—having the ability to point their constituents to a website to find meeting notes, agendas, presentations, reports and more is extremely useful. In addition, reporting out to various levels of stakeholders was crucial, such as through emails and sharing of information at meetings of internal stakeholder groups. Identify early the tools or mechanisms through which each group or agency can best communicate to leadership and other stakeholders, as well as a timeline for those communications.

"Abalone is a very sensitive and important topic among Tribal people. This plan established a specific recommendation for Tribal subsistence fishing and that was a step in the right direction. Hopefully, this will be a model for the future, or at least open the door for more discussion about Tribal engagement in other areas. We need to continue the conversation. It was great to be part of this and I look forward to continuing and being part of whatever comes next."

— JAVIER SILVA,
TRIBAL REPRESENTATIVE
FROM THE SHERWOOD VALLEY
BAND OF POMO INDIANS

"Without a doubt the science was improved by this process. I think each of our respective groups was set in our ways to some extent, and being pushed to acknowledge alternative interpretations of the value of particular data sets was helpful in developing a more robust strategy."

— JONO WILSON,
LEAD FISHERIES SCIENTIST,
THE NATURE CONSERVANCY

Develop Policy And Scientific Education Resources For Stakeholders New To Management Processes. Multiple interviewees noted that for participants unfamiliar with the state FMP process, or regulatory proceedings in general, there was confusion and difficulty in navigating the process. This can slow progress down as well as introduce mistrust or disinterest in the process. Briefing documents or webinars that outline and explain the process, including timelines and resources, could help participants feel informed and more confident in engaging effectively in any management process. One interviewee proposed an amendment to the MLMA that would provide public stakeholders with an assigned state representative or clerk who could regularly answer questions as needed, similar to a helpline.

In addition, science education should be recognized as a crucial component for success and planned for at the outset of the process. In this case, having an independent contractor translate and communicate science findings was useful, but in other processes there could be different tools or methods.

Build In Adaptability. As climate impacts continue, there is an increased risk of dramatic environmental events causing rapid declines in or unexpected impacts to fishery resources. Considering these changing environmental conditions, it is necessary to have multiple sources of information available, as well as to build in flexibility to decision-making and adaptive precautionary measures as part of a climate-ready management strategy. This process highlighted the value of leveraging resources—through public-private partnerships, stakeholder engagement and citizen science opportunities—to increase adaptability in the face of climate crises.

Engage An Independent Panel Of Scientists. Although the recommendations put forth in the integrated management strategy are based on a rigorous scientific process undertaken by staff scientists (from TNC, CDFW and one contracted quantitative fisheries modeler), there is still potential for the scientists to not be viewed as neutral or impartial. Having a panel of independent scientists—either contractors or a formalized committee of non-government academics—available throughout the FMP development process could reduce any perception of institutional bias and increase validation of the science behind the FMP. Such a panel could also contribute more diverse perspectives and ensure integrity of the final products.

Consider Establishing A Team Of Tribal Representatives. While having a Tribal member sit on the Administrative Team was highlighted as an improvement over past processes, creating a Tribal team, and establishing their clear charge, would acknowledge the unique role of Tribal entities and provide an opportunity for Tribal representatives to engage in a safe space to discuss different perspectives and needs, including how to contribute Indigenous knowledge to the science process. Such a team would provide high-level recommendations that the Administrative Team could incorporate into the process and decision-making.

Invest In Citizen Science. An emerging strategy for streamlining data collection is the use of tools and technologies that allow fishermen and other public user groups to collect and log data while they are out on the water. This can help save time and money in the quest to better understand rapidly changing ocean conditions and their impacts on resources. It can also help build relationships with fishing communities, fostering trust and support of management strategies.

But adoption of citizen science approaches takes planning and preparation. As one interviewee noted, citizen science efforts have a “huge value-add, but it takes work” to cultivate relationships, train citizen scientists and manage the data collection process. State and federal agencies should consider what types of expertise and tools to prioritize so non-state entities can invest or align existing programs to ensure successful citizen science approaches in the future. One interviewee noted that the use of citizen science-based technology in the red abalone FMP process might help pave the way for more ready incorporation in future processes.

V. Appendix

Interviewees

Susan Ashcraft	Marine Advisor, CA Fish and Game Commission
Paige Berube	Former Program Manager at CA Ocean Protection Council (currently Ocean Programs Associate, The Nature Conservancy)
Sonke Mastrup	Invertebrate Program Manager, CA Department of Fish and Wildlife
Elizabeth Pope	Former Acting Marine Advisor, CA Fish and Game Commission (currently Environmental Scientist, CA Department of Fish and Wildlife)
Josh Russo	Recreational diver
Javier Silva	Tribal representative from the Sherwood Valley Band of Pomo Indians
Ian Taniguchi	Senior Environmental Scientist, CA Department of Fish and Wildlife
Jono Wilson	Lead Fisheries Scientist, The Nature Conservancy

Interview Questions

Interviews took place over phone or video calls and lasted approximately one hour. Interviews were conducted by Alexis Jackson, Administrative Team Chair and Fisheries Project Director at The Nature Conservancy, and a strategic communications contractor. A list of general questions was asked of all participants, and then more specialized questions were asked depending on each individual's role in the process.

General Questions:

- What made this process unique? What challenges had to be overcome?
- Was the overall experience for you a positive one? What could be improved next time?
- Did the process feel clear and transparent? What components helped to achieve this?
- Was the length of the process too long, too short, or just right?
- Did the core structure of the process, facilitation, and working groups (i.e. Admin Team, Project Team, modeler) meet your individual or organizational needs?
- Did the process deliver the management products you expected and/or needed?
- Has this process led to any unexpected outcomes, either positive or negative?
- What advice or guidance would you offer to other groups embarking on a similar process?
- Do you feel you had adequate time to synthesize or reflect on lessons learned from the process?
- Is there anything we haven't asked about that stands out as transformative or critical to the success of the process?

RESOURCES

Project Team Charter:

https://opc.ca.gov/webmaster/_media_library/2019/05/Red-Abalone_-FINAL-Draft-Project-Team-Charter-Updated-June-2019.pdf

Administrative Team Charter:

https://opc.ca.gov/webmaster/_media_library/2019/05/FINAL-Admin-Team-Charter-2.pdf

OPC Website:

https://www.opc.ca.gov/2019/05/red-abalone-management-strategies-integration/

CDFW Website:

https://wildlife.ca.gov/Conservation/Marine/Red-Abalone-FMP

Report: "Summary of the Management Strategy Integration Process for the North Coast Recreational Red Abalone Fishery Management Plan" (April 17, 2020) prepared by the Administrative Team.

Report: "Assessment Summary Report: Lessons Learned from Past Fishery Management Plans in California" Prepared by Kearns & West (July 2020) for the California Department of Fish & Wildlife

Interview Questions (Continued)

For Scientists:

- How was collaboration within the modeling group? What could be improved or codified in the scientific aspects of the process?
- Was there sufficient time between public meetings (i.e. project team meetings) to update data and advance modeling work?
- Did any aspects of data review, data integration, or modeling reveal anything that you would want to highlight for a future stakeholder process?
- Did you feel you had enough or too much public input to deliver adequate modeling results?
- TNC only: Did the final outcome provide an opportunity to use Poseidon or other technology tools to improve the data collection process?
- Was there sufficient time and access to information to complete the necessary modeling work?

For Policymakers & State Managers:

- Was the process effective at leveraging private and/or public resources for management?
- Did this process yield any management solutions that could save money or time? Which aspects?
- Did the process integrate well with your organization's typical management process and/or approach? If not, what changes could be made to do so?
- Is this process something that can be replicated in other fisheries? Which core components would you keep?

For Divers/Fishermen:

- Why did you get involved in this process? Have you been involved in other similar efforts before?
- Was outreach effective at reaching the recreational and/or commercial community? If not, how could it be improved?
- What was the general reaction to the process?
- What would you say is the unique contribution that divers/ fishermen brought to this process?
- What was the reaction to an NGO helping to lead the management process?
- Did you feel divers had enough time or understanding of the MSE to digest the results?
- Did you feel you had enough opportunity for input on the science and management options?

For Tribal Representatives:

- What is your connection with the red abalone fishery?
- Did the process incorporate enough flexibility to meet the needs of Tribes and Tribal communities?
- Was the process respectful and sensitive to Tribes' unique relationship to the resource?
- Was there enough outreach, or the right types of outreach, to reach enough voices?
- Do you feel that the process provided an opportunity for the interests of Tribes and Tribal communities to be engaged and heard? Do you feel that Tribes and Tribal communities had agency in the process?
- Was this process different than past ones you've been involved in? How so? Better/worse?