

COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC

5. GIANT AND BULL KELP – RECOVERY AND RESTORATION

- | Today's Item | Information <input checked="" type="checkbox"/> | Action <input type="checkbox"/> |
|--|--|--|
| (A) <i>Kelp recovery tracking and restoration efforts</i> : Receive Department update on kelp coverage trends along California and progress in kelp restoration strategies and collaborative projects. | | |
| (B) <i>Kelp restoration and management plan (KRMP) development efforts</i> : Receive Department update and discuss development, timeline, and public engagement opportunities for a KRMP for giant and bull kelp. | | |

Summary of Previous/Future Actions

- | | | |
|--|--|----------------------------|
| (A) <i>Kelp Recovery</i> | | |
| • Commission referred kelp recovery and restoration tracking to MRC | | Oct 9-10, 2019 |
| • MRC received overview of collaborative kelp recovery and restoration efforts | | Nov 5, 2019 |
| • Update on kelp recovery and restoration | | Mar 16, 2021 |
| • Today's update on kelp recovery and restoration efforts | | Mar 14 and 16, 2023 |
| (B) <i>KRMP Development Efforts</i> | | |
| • Commission referred KRMP development to MRC | | Feb 16-17, 2022 |
| • MRC received Department overview of plans and process for KRMP development | | March 24, 2022 |
| • Today's update on KRMP development from Department | | Mar 14 and 16, 2023 |

Background**(A) *Kelp Recovery Tracking and Restoration Efforts***

In October 2019, the Commission discussed concerns regarding dramatic kelp declines across the northern California coastline and referred a discussion on kelp recovery and restoration strategies and efforts to MRC. In Nov 2019, the Department provided an overview of collaborative kelp recovery and restoration efforts that have been undertaken or planned by partners and the Department (see Exhibit 1 for more background).

At the March 2021 MRC meeting, the Department and California Ocean Protection Council (OPC) provided a joint update on efforts to track, coordinate on, and plan for kelp recovery, and provided updates on current conditions for MRC discussion. Additionally, OPC provided *Interim Action Plan for Protecting and Restoring California's Kelp Forests*, dated February 2021, that was developed in partnership with the Department to broadly

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serve as a starting point for discussion among natural resource managers, the academic community, Native American tribes, coastal stakeholders, and members of the public.

For today's meeting, the Department will present an update on kelp canopy coverage trends across California and share progress in kelp restoration strategies being explored through collaborative projects, including select projects conducted in collaboration with agency partners and stakeholders (Exhibit 2).

(B) KRMP Development Efforts

The Department is developing a statewide, ecosystem-based, adaptive KRMP for giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*), with the ultimate goal to draft a proposed KRMP for Commission adoption. In February 2022, the Commission referred KRMP development to MRC as a work plan topic.

At the March 2022 MRC meeting, the Department shared an overview of a proposed approach developed in partnership with OPC (see Exhibit 3 for more background).

The Department's presentation today will highlight the core components of a KRMP, a proposed timeline, and opportunities for tribal and public engagement in its development (Exhibit 2).

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. [Staff summary from March 16, 2021 MRC meeting \(for background purposes only\)](#)
2. [Department presentation](#)
3. [Staff summary from from March 24, 2022 MRC meeting \(for background purposes only\)](#)

Committee Direction/Recommendation (N/A)

**COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC
FOR BACKGROUND PURPOSES ONLY**

3. KELP RESTORATION AND RECOVERY

Today's Item

Information

Action

Receive and discuss an update on collaborative kelp restoration and recovery efforts, including an interim kelp action plan prepared by the California Ocean Protection Council (OPC).

Summary of Previous/Future Actions

- | | |
|--|--|
| <ul style="list-style-type: none"> • FGC referred kelp recovery and restoration tracking to MRC | <p>Oct 9-10, 2019; FGC, Valley Center</p> |
| <ul style="list-style-type: none"> • MRC received overview of collaborative kelp recovery and restoration efforts | <p>Nov 5, 2019; Sacramento</p> |
| <ul style="list-style-type: none"> • Today's update and discussion | <p>Mar 16, 2021; Webinar/Teleconference</p> |

Background

Kelp is an ecologically and economically important biogenic habitat managed by DFW. Managers have observed significant declines in the statewide kelp forest canopy since 2014. The declines have largely been driven by changing oceanographic conditions, such as warmer temperatures, and ecological stressors, including a decline in sea star populations and significant increases in purple urchin populations. Losses in kelp also contributed to declining abalone populations weakened by the same changing oceanographic conditions and outcompeted by purple urchins for its primary food source (kelp).

In Oct 2019, FGC discussed concerns regarding dramatic kelp declines and referred a discussion on kelp recovery and restoration strategies and efforts to MRC (see Exhibit 1 for more background). In Nov 2019, DFW presented to MRC a proposal to develop a kelp restoration strategy with potential policy options to aid in promoting kelp recovery, and discussed potential projects planned for spring 2020 on the north coast. Representatives from OPC, Greater Farallones National Marine Sanctuary, and partner stakeholders highlighted efforts their respective agencies/groups were coordinating and/or funding to contribute to kelp restoration. Throughout 2020, MRC received updates on collaborative efforts to restore and recover kelp, including OPC allocation of funding for kelp restoration, DFW engagement in collaborative urchin removal studies, and kelp canopy surveys conducted by The Nature Conservancy using drones.

Additionally, in Feb 2021, OPC released an interim draft kelp action plan (Exhibit 2). As explained in an OPC staff memo (Exhibit 3), the draft action plan provides a snapshot of kelp ecosystem health statewide, summarizes current state-supported efforts on kelp resilience, highlights knowledge gaps, and identifies priorities for collaborative action; it is intended as an interim plan to serve for engaging tribes, stakeholders, and agencies, ultimately leading to developing a final action plan.

Today, DFW and OPC staff will provide a joint update on efforts to track, coordinate on, and plan for kelp recovery, and provide updates on current conditions for MRC discussion.

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Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Background document: Staff summary for Nov 2019 MRC meeting, Agenda Item 8
2. OPC *Interim Action Plan for Protecting and Restoring California's Kelp Forests*, dated Feb 2021
3. OPC staff memo regarding interim kelp action plan, dated Feb 16, 2021

Committee Direction/Recommendation (N/A)



Agenda Item 5: Giant and Bull Kelp

14 March 2023

Presented to:

Fish and Game Commission

Presented by:

Dr. Kristen Elsmore

**Senior Environmental Scientist Specialist
Marine Region**






Overview

- Kelp Canopy Coverage Trends
- Select Research and Restoration Efforts
- Development of Kelp Restoration and Management Plan (KRMP)





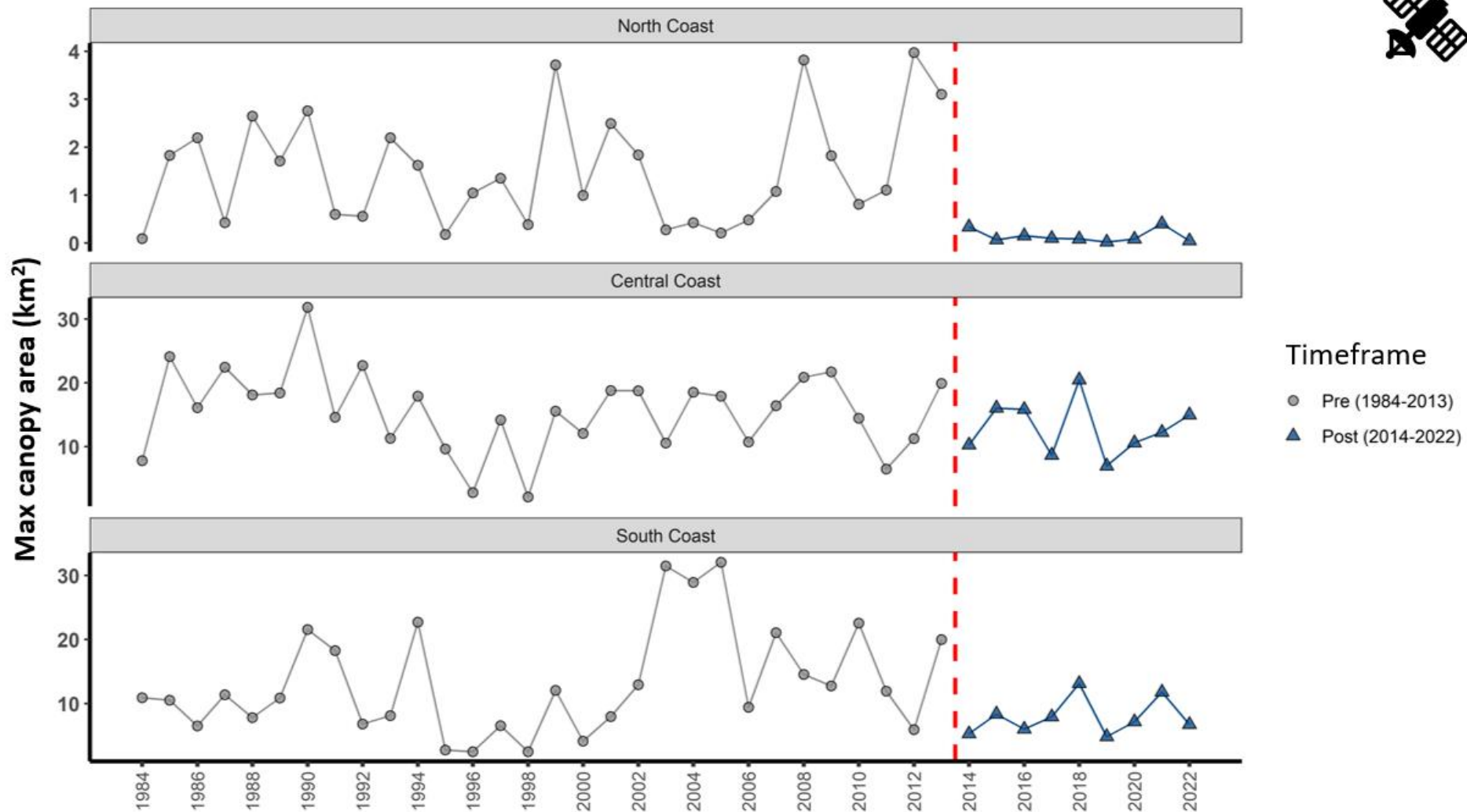
Kelp Canopy Data Types

Kelp canopy data sourcing to date				
Survey Type		Primary Data Source	Spatial Resolution	Timeframe
	Piloted Aerial Survey	CDFW	2-meter	1989; 1999-2016
	Satellite Remote Sensing	PlanetScope	3-meter	2016-present
		*Landsat	30-meter	1984-present
	Unoccupied Aerial Systems (drones)	Variable	centimeters	Sporadic; Project-specific

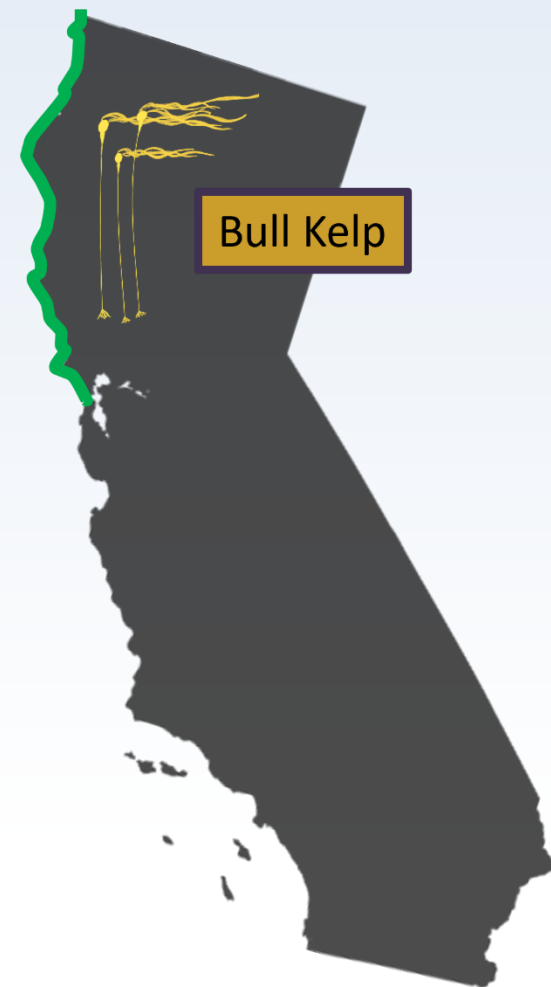
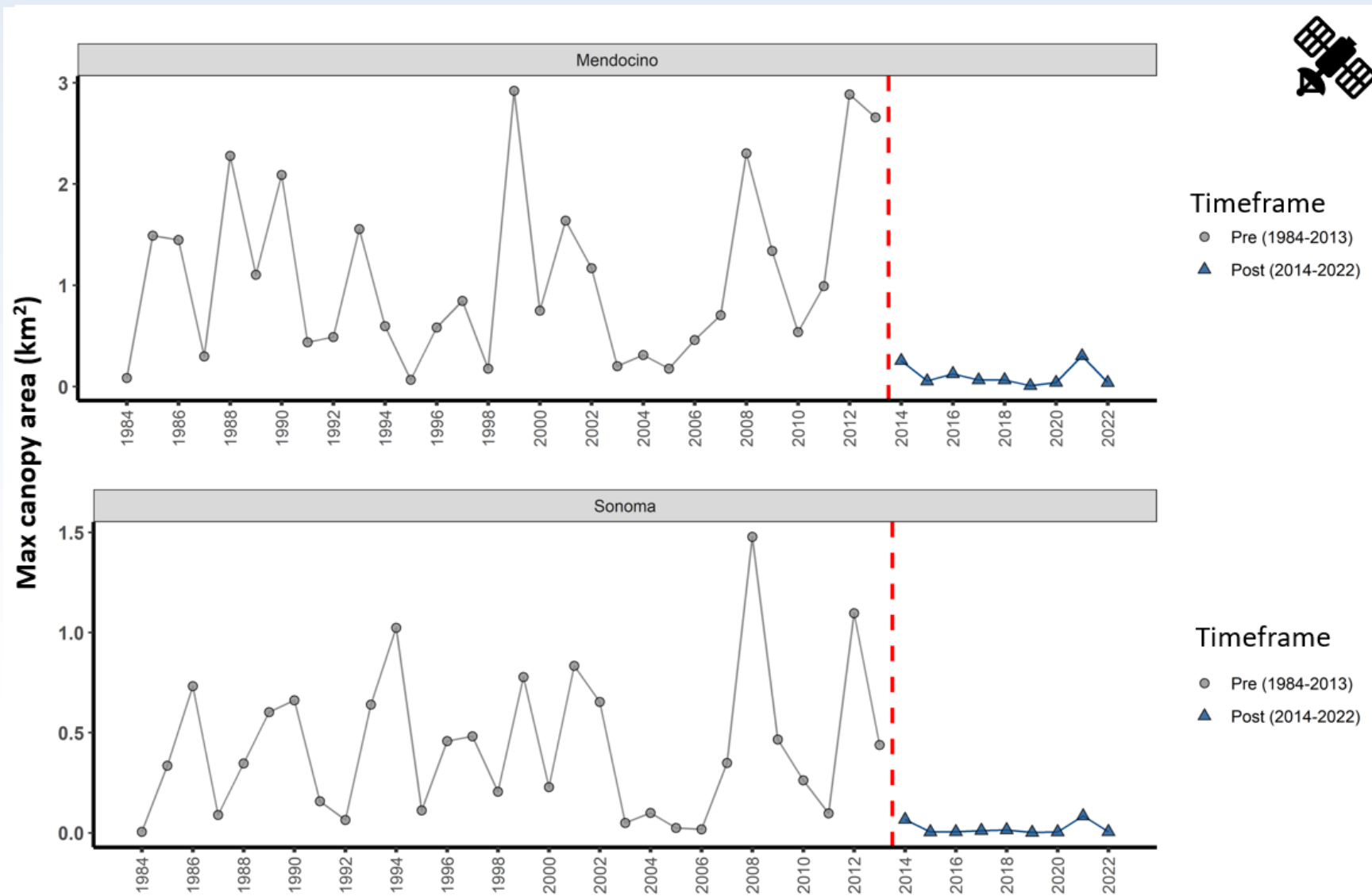
* Santa Barbara Coastal Long-term Ecological Research (LTER)



Kelp Canopy Area by Region



Mendocino and Sonoma Counties





Select North Coast Research and Recovery Efforts

- Exploring efficacy of urchin grazer suppression techniques
 - Commercial urchin divers
 - Recreational divers (Caspar Cove)
 - Experimental traps



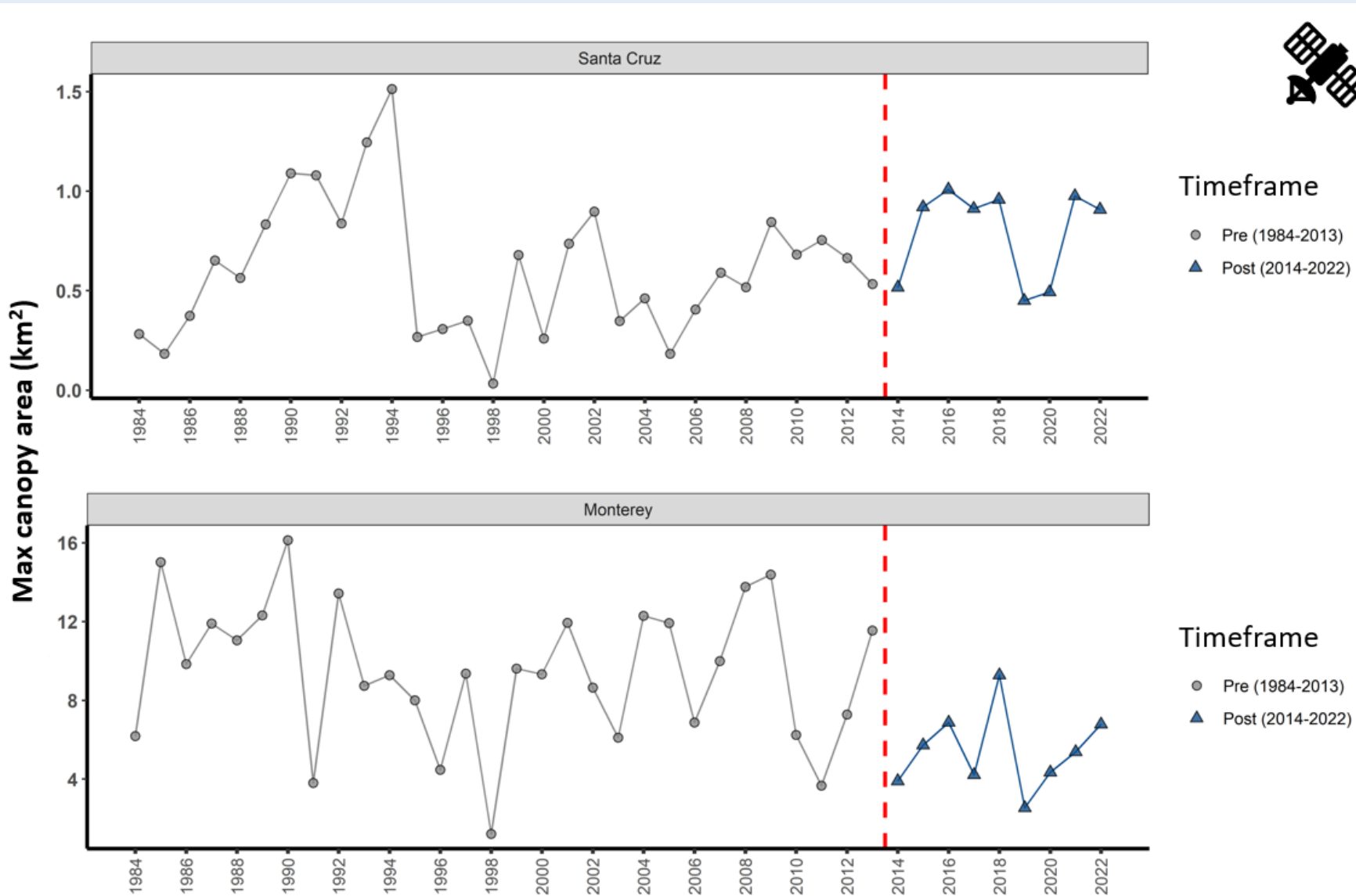


Select North Coast Research & Recovery Efforts cont.

- Exploring efficacy of kelp enhancement techniques
 - Green gravel
 - Spore bags
 - Seeded lines
 - Concentrated spore solution
- Bull kelp genetics
- Bull kelp spore dispersal model



Santa Cruz and Monterey Counties





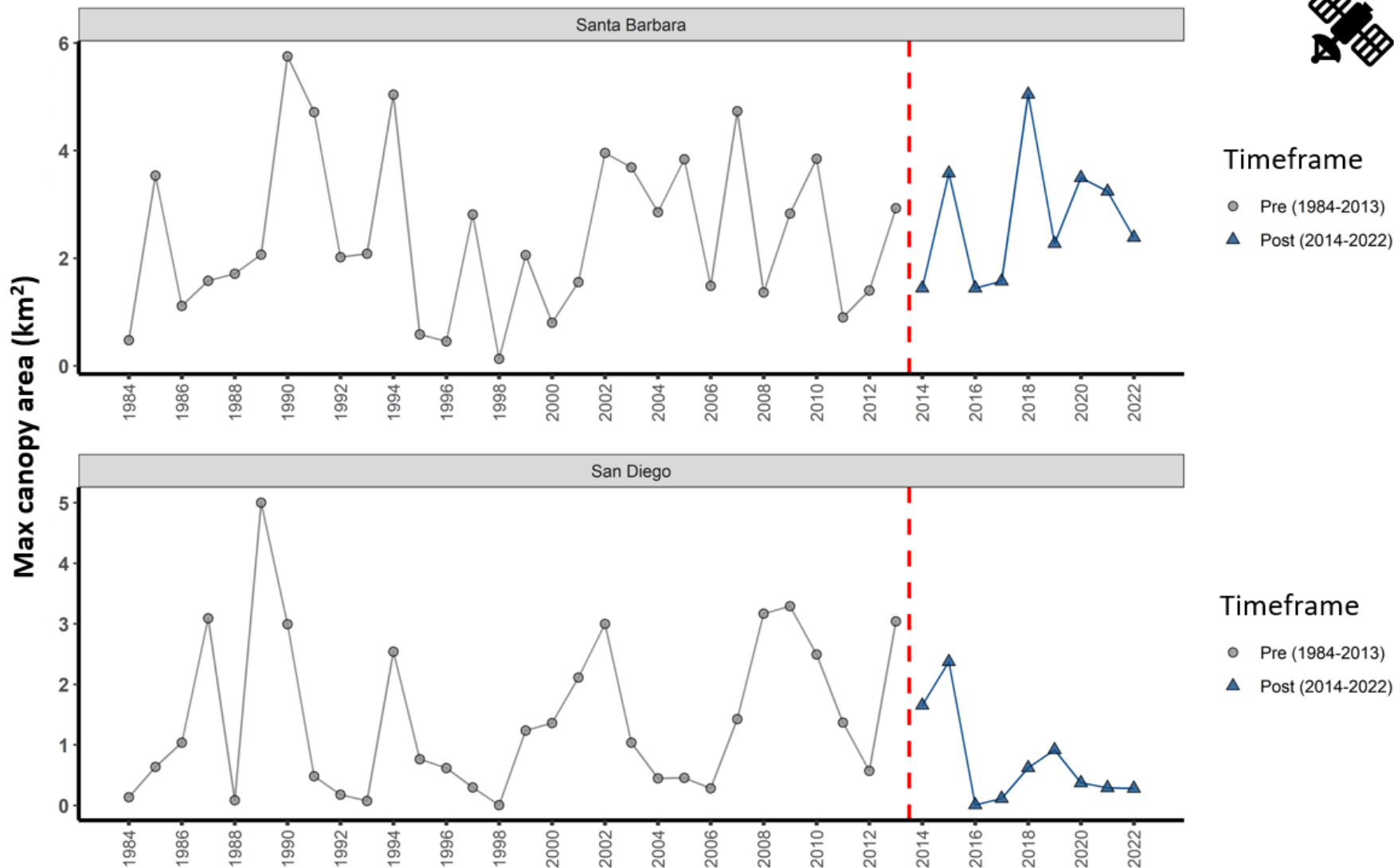
Select Central Coast Research and Recovery Efforts



- Urchin grazer suppression
 - Efficacy of culling by recreational divers
 - Impact to reef structure due to culling
- Kelp outplanting techniques
- Kelp forest monitoring, recovery, and restoration research

Santa Barbara* and San Diego Counties

*excludes Channel Islands





Select South Coast Research and Recovery Efforts



- Palos Verdes Kelp Restoration Project
 - Ongoing for 10+ years, across 58 acres
 - Documented increase in:
 - Algal and benthic invertebrate diversity
 - Fish biomass
 - California spiny lobster density
 - Red and purple urchin gonad production
- Kelp restoration guide



Broad, Collaborative Efforts Across the State



*Please note: this is not an exhaustive list



Kelp Restoration and Management Plan



- **Goal:**
 - To develop a robust, adaptive, climate-ready approach to managing giant and bull kelp forest ecosystems statewide
- **Core Components:**
 - Adaptive kelp harvest framework
 - Ecosystem-based management
 - Restoration toolkit

- **Proposed Timeline:**

2022	<ul style="list-style-type: none"> • Funding approved
2023 to 2026	<ul style="list-style-type: none"> • Conduct scientific, tribal, and stakeholder engagement • Synthesize state of the science • Identify and address key knowledge gaps
2025	<ul style="list-style-type: none"> • Begin KRMP drafting
2026	<ul style="list-style-type: none"> • Finalize KRMP drafting • CEQA • Peer review
2027	<ul style="list-style-type: none"> • Begin implementation





Summary

- Kelp Canopy Data
 - Persistent kelp loss in the north coast
 - Different patterns of loss and recovery across the state
- Research and Recovery Efforts
 - Broad suite of collaborative efforts across the state
 - Will inform KRMP development
- Kelp Restoration and Management Plan
 - Plan development funded by OPC
 - Initiating science, tribal, and stakeholder engagement

Thank You

- kelp@wildlife.ca.gov
- <https://wildlife.ca.gov/Conservation/Marine/Kelp>
- <https://marinespecies.wildlife.ca.gov/kelp/true/>
- https://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20210216/Item7_KelpActionPlan_ExhibitA_FINAL.pdf

**COMMITTEE STAFF SUMMARY FOR MARCH 24, 2022 MRC
(FOR BACKGROUND PURPOSES ONLY)**

6. KELP RECOVERY AND MANAGEMENT PLAN

Today's Item

Information

Action

Receive DFW overview of plans and process to develop a kelp recovery and management plan (KRMP) for giant and bull kelp, and discuss next steps.

Summary of Previous/Future Actions (N/A)

Background

DFW is in the early planning stages of developing a statewide, ecosystem-based, adaptive KRMP for giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*). In Feb 2022, FGC referred KRMP development to MRC as a work plan topic.

In preparation for this effort, DFW has developed a proposed approach – in partnership with the California Ocean Protection Council – to create the KRMP (Exhibit 1). DFW proposes developing the KRMP using strategies similar to those used for developing fishery management plans under the Marine Life Management Act. The KRMP will provide a framework for ecosystem-based management and a kelp restoration toolkit. The process to develop the KRMP will encompass:

1. Hiring a project manager
2. Assembling a management team
3. Assembling a science advisory committee
4. Promoting Tribal engagement
5. Engaging stakeholders, possibly via separate work groups for giant kelp and bull kelp

The ultimate goal is to advance a draft proposed KRMP to FGC for adoption.

At today's meeting, DFW will provide an overview of its proposed approach for MRC discussion.

Significant Public Comments (N/A)

Recommendation

Discuss DFW's proposed approach to develop a KRMP for giant and bull kelp, and schedule updates at future MRC meetings to track progress.

Exhibits

1. DFW overview of proposed process to develop a statewide kelp restoration and management plan for MRC meeting, Mar 24, 2022

Committee Direction/Recommendation (N/A)