



July 31, 2026

California Fish and Game Commission
715 P Street, 16th Floor
Sacramento, CA 95814
Transmitted via email: fgc@fgc.ca.gov

Re: OPC Staff Recommendations - Petitions to Adaptively Manage California's Marine Protected Area Network

Dear President Sklar, Vice President Anderson, and Members of the California Fish and Game Commission,

Thank you for your leadership in managing California's Marine Protected Area (MPA) Network – the global gold standard for marine conservation. Building on our public letter transmitted to the California Fish and Game Commission (CFGF) on March 20¹, which outlined the role of the California Ocean Protection Council (OPC) in MPA management and highlighted major OPC policy priorities for MPAs, we are pleased to provide specific input and OPC staff's recommendations on submitted petitions for changes to the MPA Network currently under consideration by CFGF. As noted in our March 20 letter, this input is intended to complement the comprehensive evaluations of MPA petitions conducted by the California Department of Fish and Wildlife (CDFW) under a separate set of questions and criteria established by CFGF.

The first-ever Decadal Management Review of the MPA Network, released in 2023, clearly demonstrated that MPAs are working to improve California's ocean health. However, the Decadal Management Review did not specifically explore opportunities to strengthen the existing MPA Network. As noted in our March 20 letter, OPC believes that evaluating MPA petitions with this question in mind is essential for ensuring the continued success of California's MPAs, especially as a changing climate increasingly threatens coastal and marine

¹ https://opc.ca.gov/wp-content/uploads/2026/03/OPC-letter-on-MPA-petitions_3.20.26-508.pdf

ecosystems and ecosystem services. Therefore, this input provided by OPC staff is explicitly focused on whether proposed actions hold promise to strengthen the performance and durability of the MPA Network. This is consistent with OPC's Strategic Plan² and key recommendations from the Decadal Management Review³.

Overall, **OPC's petition recommendations are rooted in a precautionary approach.** The 2026 California Coast and Ocean Report⁴, released earlier this year, indicates that climate change is increasingly threatening coastal and marine ecosystems, as well as benefits provided by those ecosystems to coastal communities and California Native American tribes. In the face of warming oceans, sea level rise, the devastation of our state's kelp forests, severe shocks to fishing communities, and other climate-driven impacts, California's MPA Network is one of our most effective conservation tools for safeguarding biodiversity, building climate resilience, and ensuring the continued delivery of important ecosystem services that drive our state's multi-billion dollar ocean economy.

It is through this lens that we assessed petitions. Specifically, we looked for opportunities to bolster the types of MPA benefits anticipated to serve as an "insurance policy" against changing ocean conditions, such as increased population sizes, higher genetic diversity, strengthened ecological connectivity, and intact food webs. In doing so, we acknowledge that the effects of climate change are uncertain and that MPAs are not a panacea for the threats facing our ocean. We strongly support continued research and monitoring to assess the impacts of climate change on coastal and marine ecosystems and how MPAs may mitigate these impacts. In particular, California's robust MPA monitoring program, which is actively tracking the effects of MPAs across key ecosystems and coastal communities statewide, will continue to be a crucial tool in evaluating the overall success of the Network and any adaptive management changes made through the petition process. OPC is committed to continuing our support for the development and application of best available science to adaptively manage the Network into the future.

Given this precautionary approach, **we do not recommend that CFGC approve any petition that would weaken the existing MPA Network** (Petitions 2023-14MPA, 2023-15MPA_AM, 2023-

2 OPC 2026-2030 Strategic Plan Objective 3.1: Strengthen the performance and durability of California's Marine Protected Area Network.

3 Decadal Management Review recommendations #4 (Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program); #23 (Expand and target monitoring and research efforts to examine the design attributes of the MPA Network more effectively); #28 (Further integrate influencing factors into ecological and human study designs and interpretations of MPA performance).

4 <https://opc.ca.gov/wp-content/uploads/2026/03/California-Coast-and-Ocean-Report-2026.pdf>

16MPA, 2023-18MPA⁵, and 2023-23MPA_AM⁶). These petitions include several proposed actions that would open no-take State Marine Reserves or limited-take State Marine Conservation Areas to certain new types of fishing. OPC appreciates the thoughtfulness of petitioners in developing these proposals; however, we find that any actions that would roll back existing protections pose an unacceptable risk to the integrity of the existing Network. Such actions, while well-intentioned, have the potential to compromise existing conservation benefits and degrade the ability of the Network to meet the goals of the Marine Life Protection Act.

As a first step in assessing petitions with potential to strengthen the MPA Network (i.e. proposals for new MPAs, expanded MPAs, or stricter regulations), OPC staff first considered **whether petitions would improve MPA Network design**. Importantly, neither the Decadal Management Review nor CDFW's recently released Science Guide to California's MPA Network⁷ identify significant design deficiencies in the MPA Network. Indeed, the Network is largely compliant with science guidance from the MPA planning process, with most MPAs meeting minimum size guidelines and all MPAs meeting minimum spacing guidelines. However, from a precautionary standpoint, some petitions have clear potential to improve MPA Network design, for example by reducing large distances between MPAs or increasing the representation of vulnerable habitats within the Network. OPC finds clear Network design benefits for three petitions: Petition 2023-29MPA_AM2, Petition 2023-32MPA, and two actions within Petition 2023-33MPA_AM1.

As a next step, OPC considered **whether petitions would result in meaningful additional biodiversity protection beyond what the current MPA Network already provides**. This could include actions such as: bolstering protections for important geological or biological features; protecting additional sensitive habitat, such as eelgrass, kelp forests, or rocky shores; protecting ecosystems that are important larval sources, sinks, or retention zones; strengthening ecological

5 Petition 2023-18MPA includes an action that would open Vandenberg State Marine Reserve to certain types of shore fishing. A petition submitted in 2022 by the City of Lompoc (Petition 2022-04) proposes a similar action and will be considered by CFGC alongside the other petitions discussed here. While we recognize that Petition 2022-04 is intended to improve equitable coastal access for local residents, it would weaken protections provided by Vandenberg State Marine Reserve, which serves as a critical backbone MPA in the region. We recommend that CFGC deny Petition 2022-04.

6 One action in 2023-23MPA_AM (Action 20) has potential to strengthen the MPA Network: designation of a new MPA at Tanker's Reef. However, as proposed, this new MPA falls far below the minimum area required to function as a replicate in the MPA Network and is unlikely to provide meaningful additional conservation benefits beyond those already achieved by the existing Network, especially in the highly protected Monterey Bay region.

7 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=246940&inline>

connectivity; reducing fishing pressure on populations in decline; promoting improved ecosystem structure and function; or enhancing the resilience of the MPA Network to current or predicted climate impacts. Importantly, in exploring this consideration, OPC gave equal weight to petitions that would address current specific threats to biodiversity, such as the impacts of fishing gear on sensitive habitats, and petitions that would improve the Network’s ability to withstand larger-scale and more diffuse impacts, such as marine heat waves. OPC finds compelling biodiversity benefits for several petitions: Petition 2023-21MPA_AM1, Petition 2023-27MPA_AM1, Petition 2023-28MPA_AM1, Petition 2023-29MPA_AM2, Petition 2023-32MPA, and two actions within Petition 2023-33MPA_AM1.

Finally, OPC considered **whether petitions would help support and revitalize tribally-led stewardship**. OPC is highly supportive of MPA adaptive management actions that advance co-governance, co-management, and collaborative stewardship with tribes. Such actions, which include protecting places with high biocultural significance, are essential not only for righting historical wrongs, but also for reconnecting tribes to traditional stewardship practices that can directly benefit biodiversity. Increased support for tribal stewardship is a top priority in both OPC’s 2026-2030 Strategic Plan⁸ and the California Natural Resources Agency’s recently released Tribal Stewardship Policy⁹, which aims to expand tribal stewardship of at least 7.5 million acres of California’s lands and coastal waters. OPC finds that the following petitions have strong potential to advance tribally-led stewardship: Petition 2023-20MPA_AM1, Petition 2023-21MPA_AM1, Petition 2023-28MPA_AM2, and Petition 2023-29MPA_AM2.

Based on these considerations, OPC recommends approval of the following petitions, with some modifications. In developing these recommendations, OPC staff evaluated the most recent versions of petitions, including any amendments or clarifications received from petitioners after CFGC’s March 2025 deadline for petition amendments.

8 OPC 2026-2030 Strategic Plan Objective 2.1: Strengthen partnerships with California Native American tribes.

9 <https://resources.ca.gov/Initiatives/Tribalaffairs/TribalStewardshipPolicyAndToolkit>

Table 1. OPC's recommended petitions.

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-20MPA_AM1 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Point Buchon SMCA and Point Buchon SMR (existing)	Santa Ynez Band of Chumash Indians	Add a tribal take exemption at Point Buchon SMCA, rename Point Buchon SMCA, and adjust northern boundary of Point Buchon SMR	Approve tribal take exemption and renaming; deny proposed boundary change
2023-21MPA_AM1 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Pyramid Point SMCA (existing)	Tolowa Dee-ni' Nation	Remove recreational take of true smelt in Pyramid Point SMCA and adjust northern boundary of Pyramid Point SMCA	Approve proposed removal of recreational take of true smelt; deny proposed boundary change
2023-27MPA_AM1 (as clarified at the May 6, 2026 CFGC regional meeting)	Anacapa Island SMCA (existing)	Environmental Defense Center	Modify regulations at Anacapa Island SMCA to protect sensitive eelgrass habitats (with several options proposed)	Modify SMCA regulations to prohibit the deployment of lobster traps shallower than 50 feet
2023-28MPA_AM2 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Point Sal SMCA (new)	Northern Chumash Tribal Council and Natural Resources Defense Council	Add a new MPA near Point Sal	Approve the proposed new Point Sal SMCA

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-29MPA_AM2 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Mishopshno SMCA (new)	Santa Ynez Band of Chumash Indians and Natural Resources Defense Council	Add a new MPA near Carpinteria	Approve the proposed new Mishopshno SMCA
2023-32MPA (as clarified at the April 21, 2026 CFGC regional meeting)	Duxbury Reef SMCA (existing)	Environmental Action Committee of West Marin	Expand Duxbury Reef SMCA and modify regulations to strengthen protections for intertidal species	Designate two new SMCAs to protect the northern and southern portions of Duxbury Reef, each with take regulations that protect intertidal seaweed and invertebrates while allowing for continuation of other existing shore- and boat-based fishing
2023-33MPA_AM1	Various existing MPAs and one proposed new MPA	Environment California and Azul	Expand six existing MPAs statewide and add a new MPA in Santa Cruz	Approve proposed expansion of Point Dume SMCA, but deny proposed additional take allowance in Point Dume SMCA. Approve a smaller expansion of Point Conception SMR. Deny proposed expansion of Natural Bridges SMR, Cabrillo SMR, South Point SMR, or Gull Island SMR. Deny proposed designation of a new SMCA at Pleasure Point.

Detailed narratives providing justification for these recommendations are provided in the “Recommendation Narratives” section below, starting on page 10.

We recognize that our recommendations do not include three petitions intended to strengthen the MPA Network: Petition 2023-19MPA, Petition 2023-24MPA and Petition 2023-34MPA.

- Petition 2023-19MPA, submitted by the Santa Ynez Band of Chumash Indians, would designate a new SMCA, to be named Chitqawi in honor of a nearby Chumash coastal

village, offshore and to the north of Morro Bay in San Luis Obispo County. The proposed Chitqawi SMCA would protect waters adjacent to Morro Rock. However, the proposed SMCA would be located immediately adjacent to Morro Bay Harbor, a critical regional port, potentially presenting significant challenges. OPC also recognizes that many California Native American tribes, including non-federally recognized tribes, have significant cultural ties to Morro Rock. Given that the original petition focused on co-management of the area as its main goal, OPC recommends that CFGC work with the Santa Ynez Band of Chumash Indians to identify alternative pathways for strengthening protection of Morro Rock and establishing meaningful co-management agreements here and in the broader region. The petition process may have been an irregular fit for the Tribe's goals with this petition and OPC is committed to working with the Tribe going forward to protect this area through meaningful co-management.

- Petition 2023-24MPA, submitted by the Laguna Bluebelt Coalition, would extend the southern boundary of the Laguna Beach No-Take SMCA into the northern portion of Dana Point SMCA, expanding the No-Take SMCA and aligning its southern boundary with the southern border of the City of Laguna Beach. While this would increase overall protection in the area and potentially benefit fished species (e.g. finfish, lobster, and urchin) within the Dana Point SMCA, OPC notes that the existing boundary of the Laguna Beach No-Take SMCA currently aligns with both a clear latitude line as well as prominent rocky outcroppings, which serve as a helpful landmark for both boat-based and shore-based anglers. Changing this well-established and clear boundary has the potential to result in increased confusion and potential enforcement challenges.
- Petition 2023-34MPA, submitted by Environment California and Azul, would reclassify Point Buchon SMCA to an SMR and strengthen protections in Farnsworth Onshore and Offshore SMCAs by removing all take except for recreational spearfishing. Petitioners argue that these changes are necessary to address issues regarding compliance with MPA regulations; however, neither Point Buchon SMCA nor Farnsworth Onshore or Offshore SMCAs appear to have an unusually high number of MPA-related citations and, in fact, citation data demonstrate an overall trend of improved compliance with MPA regulations at Point Buchon SMCA.

For reference, our recommendations on each of the fifteen MPA petitions currently under consideration by CFGC are summarized in the “Recommendations At-a-Glance” table below, starting on page 28.

In closing, OPC appreciates the robust conversation around MPA petitions to date and recognizes that the many Californians who have engaged in this process hold a diversity of

perspectives, interests, and viewpoints related to these petitions. OPC staff attended all three in-person regional meetings of CFGC held earlier this year, which were intended to provide a venue for public feedback on petitions. At those meetings, we heard tribal members, conservation advocates, and students voice strong and passionate support for a strengthened MPA Network that can help protect our vulnerable coast and ocean in a time of rapid environmental change. However, we were also compelled by the serious concerns of many members of local communities, including commercial and recreational fishermen, whose lives and livelihoods have the potential to be significantly impacted by new or expanded MPAs. We deeply value California’s commercial and recreational fishing communities and recognize their critical role in supporting a thriving blue economy. To that end, where possible, we have endeavored to provide creative recommendations on petitions that add conservation value to the existing MPA Network while limiting impacts to commercial and recreational fishing. More broadly, as highlighted in Goal 4 of our 2026-2023 Strategic Plan, OPC is committed to advancing a sustainable blue economy by investing in healthy marine ecosystems and resilient coastal communities that can continue to support fishing livelihoods for generations to come.

Additionally, the regional meetings made it abundantly clear that many communities, especially communities entitled to environmental justice, can face significant systemic barriers to accessing the coast and ocean and to participating in MPA management and decision-making processes. Millions of Californians visit the coast each year to access the ocean in different ways, including to engage in both consumptive and non-consumptive uses. Because of this, assessing benefits related to equitable access for individual petitions is a complex undertaking. Impacts of individual petitions on equitable access¹⁰ and on advancing CFGC’s Justice, Equity, Diversity, and Inclusion Policy¹¹ have been initially assessed via a joint effort between OPC and CDFW¹²; OPC is committed to expanding equitable access to the coast and ocean and supporting improved inclusion in coastal and ocean management, consistent with the goal of OPC’s 2026-2030 Strategic Plan to maximize community benefits and stewardship, as well as OPC’s Equity Plan¹³.

10 Specifically Question 14 in CDFW’s Evaluation Framework: Does the proposed change provide more equitable access opportunities (e.g., fishing, educational, and/or other recreational opportunities) for traditionally underserved or marginalized communities?

11 Specifically Question 16 in CDFW’s Evaluation Framework: Is the proposed change consistent with the CFGC Justice, Equity, Diversity and Inclusion Policy (<https://fgc.ca.gov/About/JEDI/>)?

12 Available here: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=246997&inline>

13 https://www.opc.ca.gov/webmaster/_media_library/2022/11/OPC-Equity-Plan-508.pdf

Thank you for considering our recommendations. We look forward to the work ahead and to continued meaningful engagement with California's diverse coastal communities as the petition process unfolds.

Sincerely,

A handwritten signature in dark ink, reading "Jenn Eckerle". The signature is written in a cursive, flowing style.

Jenn Eckerle

Deputy Secretary for Oceans and Coastal Policy, California Natural Resources Agency
Executive Director, Ocean Protection Council

Recommendation Narratives

Petition 2023-20MPA_AM1: Add a tribal take exemption at Point Buchon SMCA, rename Point Buchon SMCA, and change northern boundary of Point Buchon SMR

The Santa Ynez Band of Chumash Indians (SYBCI) has proposed several changes to Point Buchon SMCA¹⁴ and Point Buchon SMR¹⁵. As amended by the tribe at the April 14, 2026 meeting of CFGC's Tribal Committee¹⁶, these proposed changes are: add a tribal take exemption at Point Buchon SMCA for the Santa Ynez Band of Chumash Indians, rename Point Buchon SMCA, and change the northern boundary of Point Buchon SMR. Located approximately eight miles south of Morro Bay in San Luis Obispo County, Point Buchon SMCA and Point Buchon SMR together protect nearly 19 square miles of rocky reefs, sandy seafloor, beaches, kelp forests, rocky intertidal habitat, offshore pinnacles, and some of the shallowest cold-water corals in California (SeaSketch California 2026). Point Buchon SMR spans approximately 2.5 miles of coastline between Coon Creek and Diablo Canyon and protects 6.7 square miles of coastal waters between shore and approximately 200 feet deep (SeaSketch California 2026). Point Buchon SMCA protects more than 12 square miles of coastal waters offshore of the SMR, ranging from approximately 200 to 400 feet deep (SeaSketch California 2026).

Adding a tribal take exemption to Point Buchon SMCA and renaming Point Buchon SMCA to better reflect Chumash cultural heritage both represent significant opportunities to advance tribal sovereignty, collaborative governance, and tribal stewardship within the Central Coast¹⁷ bioregion of the MPA Network. Similar to other tribal take exemptions currently granted to SYBCI for MPAs in the South Coast bioregion of the MPA Network, such as Kashtayit SMCA, the proposed tribal take exemption for Point Buchon SMCA would exempt SYBCI members from MPA-specific take restrictions and thus allow SYBCI members to harvest living marine resources

14 SMCA = State Marine Conservation Area. In this type of MPA, certain recreational or commercial fishing activities may be allowed, while other types of take are prohibited.

<https://wildlife.ca.gov/Conservation/Marine/MPAs/Definitions#mpa>

15 SMR = State Marine Reserve. In this type of MPA, all take is prohibited.

<https://wildlife.ca.gov/Conservation/Marine/MPAs/Definitions#mpa>

16 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=245526&inline>

17 As defined in the 2018 MPA Monitoring Action Plan

(<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161748&inline>), the bioregions of the MPA Network are: North Coast (California/Oregon border to San Francisco Bay, including the Farallon Islands), Central Coast (San Francisco Bay to Point Conception), and South Coast (Point Conception to U.S./Mexico border, including the Channel Islands).

for cultural, subsistence, and stewardship purposes. Regulations in the adjacent Point Buchon SMR would remain unchanged.

Point Buchon is also culturally significant. The petition identifies Buchon as a historical Chumash village site and describes the area as having special spiritual significance to Chumash maritime peoples. Establishing a tribal take exemption at Point Buchon SMCA and renaming the SMCA would recognize this significance and advance progress toward tribal co-management of this MPA, which the tribe has requested to pursue through a non-regulatory pathway. **OPC recommends that CFGC approve the proposed tribal take exemption and name change for Point Buchon SMCA.**

Petitioners have also requested to adjust Point Buchon SMR's northern boundary further to the north, arguing that doing so would better capture the full marine area offshore of Point Buchon. However, OPC notes that the existing northern boundary aligns with a readily determinable line of latitude (35° 15.250' N) and prominent onshore landmarks; changing the boundary could cause confusion and enforcement challenges and would also result in a misalignment of the northern boundaries of Point Buchon SMR and SMCA. **OPC recommends that CFGC deny the requested boundary adjustment for Point Buchon SMR.**

Petition 2023-21MPA_AM1: Remove recreational take of true smelt in Pyramid Point SMCA and adjust northern boundary of Pyramid Point SMCA

The Tolowa Dee-ni' Nation has proposed two changes to Pyramid Point SMCA, located at Pyramid Point in Del Norte County near the California-Oregon border: removal of the current recreational take allowance for true smelt, and adjustment of the SMCA's northern boundary. Pyramid Point SMCA is the northernmost MPA in California's MPA Network and covers approximately 14 square miles of sandy beaches, offshore rocks, and soft seafloor; currently the only type of take allowed in this MPA is recreational take of surf smelt (*Hypomesus pretiosus*, known as *lhvmsr* in the Tolowa language)¹⁸ by dip net or Hawaiian-type throw net, as well as tribal take of all species, consistent with applicable state fishing regulations, by the Tolowa Dee-ni' Nation through a tribal take exemption. The proposal is intended to protect a culturally and ecologically important forage fish species while maintaining tribal take of that species,

18 Technically, Pyramid Point SMCA allows take of a three-species "true smelt" group: surf smelt, night smelt, and whitebait smelt. To achieve the requested removal of the recreational take allowance for surf smelt, it is necessary to remove the recreational take allowance for the species group. At the April 14, 2026 meeting of CFGC's Tribal Committee, the Tolowa Dee-ni' Nation amended this petition to change its request from removal of the take allowance for surf smelt to removal of the take allowance for true smelt.

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=245526&inline>

particularly take associated with traditional Tolowa Dee-ni' Nation "fish camps" – annual events where members of the Nation travel to the coast to fish, camp, and traditionally process surf smelt during its spawning months from July to October.

Petitioners argue that removal of the existing recreational take allowance is needed because, according to the Tolowa Dee-ni' Nation's Traditional Knowledges – particularly the observations of traditional surf smelt fishermen – surf smelt populations have declined substantially since the late 1990s. OPC respects and affirms the importance of tribal science and Traditional Knowledges and also notes that this trend has been documented through non-indigenous science. Though no formal stock assessments have been completed for surf smelt, CDFW's 2020 Enhanced Status Report for the species shows that commercial landings statewide (95% of which occur in Humboldt and Del Norte County ports) regularly exceeded 500,000 pounds per year in the mid-1990s but dropped precipitously in 1998-1999 and have not exceeded 250,000 pounds per year in the last twenty years (CDFW 2020). Commercial surf smelt landings declined to record lows of approximately 700-1,000 pounds annually between 2017 and 2019 before showing a modest rebound beginning in 2020, although catches remained well below historical levels (CDFW 2025). California Recreational Fisheries Surveys (CRFS) data summarized in CDFW's Enhanced Status Report that recreational surf smelt landings were negligible from 2005 through 2017, apart from an anomalous spike to approximately 110,000 pounds in 2011; the CRFS program that produced these estimates was discontinued in 2018 (CDFW 2020, CDFW 2025).

The decline of surf smelt populations concerns OPC for several reasons. First, forage fishes such as surf smelt play critical roles in nearshore food webs because they transfer energy from plankton-rich coastal waters to higher trophic levels, supporting fish, seabird, and marine mammal populations (Pikitch et al. 2014, Essington et al. 2015). Surf smelt in particular play a foundational role in Northern California coastal ecosystems by serving as prey for species such as salmon, seabirds, marine mammals, and other predators. As an important forage fish, their abundance can reflect broader ecosystem condition and food web dynamics (Santora et al. 2021, NOAA Fisheries 2022). Second, Native American tribes on California's North Coast have relied on surf smelt since time immemorial for subsistence and cultural heritage. As described in the petition, Tolowa families return to the coast each year for "fish camps" that involve the harvest of surf smelt using traditional A-frame nets, with associated prayers, protocols, and ceremonies. Maintaining access to a healthy surf smelt population is essential to the continuation of tribes' cultural practice, food sovereignty, spiritual relationships, and community well-being (Turner et al. 2008, Charles & Wilson 2009).

Surf smelt are a sensitive species and their population trends can be heavily influenced by a number of factors. This includes not only fishing pressure – heavy fishing can cause surf smelt populations to decline quickly given their short life cycles and the fact that most fishing occurs

during spawning – but also environmental stressors, including warming waters, pollution, and physical impacts to beaches where they spawn (Russell et al. 2022, Tomlin et al. 2021). OPC recognizes that MPAs have limited ability to mitigate these larger-scale threats. However, given the population declines noted above and the ecological and cultural importance of surf smelt, OPC supports stricter MPA regulations to strengthen protections for this vulnerable species. OPC notes that approval of this petition would allow continued tribal harvest of surf smelt, but this traditional take is unlikely to have population-level impacts.

To support the recovery of surf smelt, the integrity of nearshore food webs, and the continuation of tribal stewardship and cultural use of this species into the future, **OPC recommends that CFGC approve removal of the allowance for recreational take of true smelt in Pyramid Point SMCA.** The Tolowa Dee-ni' Nation would retain its existing tribal take exemption for this SMCA.

Petitioners have also requested a boundary adjustment to align the northern boundary of Pyramid Point SMCA with the terrestrial California-Oregon border. California's terrestrial northern boundary was intended to run along the 42° N latitude line, but initial surveys with primitive equipment in 1868 resulted in a zigzag border that deviates up to a half mile north or south of that latitude line. In contrast, the offshore northern boundary is an arc that projects seaward from the 42° N latitude line and connects the outermost headlands of the mainland coast to offshore rocks. For this reason, California's offshore and terrestrial borders are slightly misaligned; the offshore boundary is consistent with California's legally recognized northern border at 42° N latitude and is used in all ocean-based regulations. Changing the northern boundary of Pyramid Point SMCA so that it no longer aligns with this recognized offshore boundary would likely result in regulatory confusion and enforcement challenges. **OPC recommends that CFGC deny the request to modify Pyramid Point SMCA's northern boundary.**

Petition 2023-27MPA_AM1: Modify regulations at Anacapa Island SMCA to protect sensitive eelgrass habitats

Environmental Defense Center has submitted a petition with three options intended to better protect sensitive eelgrass meadows inside the Anacapa Island SMCA from the impacts of lobster traps and other hard-bottomed fishing gear. As clarified by the petitioner at the May 6, 2026 CFGC regional meeting¹⁹, the proposed options are 1) Change regulations to disallow commercial lobster fishing year-round within the Anacapa Island SMCA; 2) Change regulations

19 Video available at https://cal-span.org/meeting/cfg_20260506/. Discussion of Petition 2023-27MPA_AM1 begins at 01:05:13.

to disallow hard bottomed fishing gear (including anchoring if applicable) near eelgrass meadows within the Anacapa Island SMCA, or 3) Change the border of the Anacapa Island Special Closure to prohibit the deployment of lobster traps from 0-50 feet deep, instead of the existing 0-20 feet deep.

Pacific eelgrass (*Zostera pacifica*) is a foundational species that is found along California's open coast and provides vital habitat, food, and shelter for a variety of marine fishes and invertebrates. Eelgrass also supports sediment stabilization and erosion protection, plays an important role in nutrient cycling, and helps mitigate climate change by sequestering carbon (Waycott et al. 2009, Fourqurean et al. 2012, Duarte et al. 2013). Eelgrass beds are inherently dynamic and naturally fluctuate from year to year; eelgrass persistence is influenced by a variety of environmental factors including temperature, currents, sediment dynamics, water quality, and availability of suitable substrate (Grech et al. 2012, Rock & Daru 2021, Zabarte-Maeztu et al. 2021, Herrera et al. 2022). At the same time, numerous studies have demonstrated that hard-bottomed fishing gear, including traps and pots, can negatively impact eelgrass (Stevens 2021, Rees et al. 2021). Traps can crush eelgrass shoots and rhizomes upon impact, and they may smother eelgrass if left in place. The setting and retrieval of traps, dragging of trap lines, and movement of traps while in the water often leaves bare scouring marks or "haloes" of damage in eelgrass meadows (Abadie et al. 2016, Stevens 2021, Rees et al. 2021).

Eelgrass meadows were once abundant along the north sides of all three islets that make up Anacapa Island, generally found from approximately 0-20 feet deep but sometimes extending to 45 feet deep (Altstatt 2021). Although eelgrass virtually disappeared around Anacapa Island during the late 1980s following the 1982-1983 El Niño and subsequent overgrazing by white sea urchins, it has recovered in many places thanks in part to a successful eelgrass restoration effort initiated in 2002 at Frenchy's Cove on the north side of West Anacapa Island (Altstatt et al. 2014).

Frenchy's Cove is situated within both the island-wide nearshore Anacapa Island Special Closure, which prohibits the use of nets and traps from 0-20 feet deep, as well as the much larger Anacapa Island SMCA, which extends to the three nautical mile state water boundary and prohibits most forms of take except for recreational take of lobster and pelagic finfish, as well as commercial take of lobster. Offshore of Frenchy's Cove, a Brown Pelican Fledgling Area – an extension of the Special Closure across approximately 4,000 feet of coastline – prohibits all boating activity and access from 0-120 feet deep from January 1 - October 31. Together, these regulations protect eelgrass meadows located in 0-20 feet of depth year-round, and meadows located deeper than 20 feet for 10 months out of the year.

These existing regulations already provide eelgrass meadows at Frenchy's Cove with substantial protection from fishing gear impacts. However, eelgrass meadows deeper than 20 feet at Frenchy's Cove are still vulnerable to fishing gear impacts for two months out of the year. Subtidal surveys conducted by the Channel Islands monitoring program show that these deeper meadows represent a substantial proportion of the eelgrass inside the Anacapa Island SMCA (SeaSketch California 2026) and, because eelgrass is a delicate ecosystem that can take years to recover from fragmentation or scarring (Altstatt et al., 2014; Reed & Hovel, 2006), damage accrued during the two months that the Brown Pelican Fledgling Area is open is likely to have lasting and outsized impacts on the integrity and function of these eelgrass meadows.

OPC recognizes that some data gaps exist regarding the distribution of eelgrass at Frenchy's Cove and Anacapa Island more broadly, as well as the drivers contributing to its persistence and loss. However, in the context of substantial declines of eelgrass statewide since the 1950s (Waycott et al. 2009, Harris et al. 2026), and the critical importance of eelgrass meadows for marine biodiversity (Kindeberg et al. 2022), OPC finds that regulatory action to protect the full extent of eelgrass meadows inside Anacapa Island SMCA, i.e. providing new protections for meadows that occur from 20-45 feet, is warranted. In assessing the petitioner's proposed options, OPC finds that Option 1 (prohibiting lobster fishing within the entire Anacapa Island SMCA, which extends three nautical miles offshore to a depth of nearly 500 feet) is unnecessary to protect eelgrass meadows, which are a nearshore ecosystem. Further, OPC notes that Option 2 (prohibiting lobster fishing "near eelgrass meadows") would be difficult to enforce given the inherently dynamic nature of these ecosystems. Finally, OPC is concerned that Option 3 (extending the boundary of the Anacapa Island Special Closure from 20 feet deep to 50 feet deep) could be problematic for multiple reasons: first, the specific intent of the Special Closure is to decrease entanglement risk for birds feeding near roosting grounds on the island; second, changing the boundary could add to existing significant regulatory confusion between the Anacapa Island SMCA, SMR, and Special Closure/Brown Pelican Fledgling Area; and third, this option would unnecessarily restrict lobster fishing opportunities outside of the Anacapa Island SMCA. Therefore, **OPC recommends that CFGC modify the regulations at Anacapa Island SMCA to prohibit the deployment of lobster traps shallower than 50 feet.** This simplified alternative pathway would strengthen protections for eelgrass meadows within their full depth range inside the SMCA, while maintaining lobster fishing opportunities outside the SMCA.

OPC also recognizes that non-consumptive activities, such as anchoring, may have similar impacts on eelgrass meadows as lobster trapping. OPC recommends exploration of non-regulatory management solutions, potentially including installation of moorings within the SMCA, to mitigate other activities that can damage the seafloor.

Petition 2023-28MPA_AM2: Add a new MPA near Point Sal (Point Sal SMCA)

The Northern Chumash Tribal Council and the Natural Resources Defense Council have proposed the designation of a new State Marine Conservation Area at Point Sal, California, situated at the northern end of Vandenberg Space Force Base near the City of Guadalupe in northern Santa Barbara County. As amended by petitioners at the April 14, 2026 meeting of CFGC's Tribal Committee²⁰, the proposed new Point Sal SMCA, which would eventually be given a name in a Chumash language to honor the importance of the area to local Chumash peoples, would span close to 7 miles of coastline and encompass nearly 15 square miles, from shore to a maximum depth of 187 feet (SeaSketch California 2026). It would prohibit all forms of take except for recreational take of finfish from shore using hook and line.

The proposed new Point Sal SMCA is located roughly 50 miles to the north of Point Conception, at the northern end of a major biogeographic transition zone within the California Current Large Marine Ecosystem, where warmer waters from the south meet colder, nutrient-rich waters from the north, supporting exceptionally high biodiversity (Hamilton et al. 2010, Blanchette et al. 2008, Arafeh-Dalmau et al. 2023). The waters offshore of Point Sal in particular are highly productive and nutrient-rich due to seasonal coastal upwelling in the area. This area supports abundant fish and invertebrate populations and serve as critical foraging grounds for seabirds and marine mammals – including multiple iconic California species such as brown pelicans, southern sea otters, and humpback whales (Checkley & Barth 2009).

The proposed new SMCA would protect a large portion of Point Sal's coastline and offshore waters, including sandy beach, rocky shoreline, shallow hard bottom, shallow soft bottom, and deep soft bottom habitats (SeaSketch California 2026). The new SMCA would also include a known krill hotspot that supports feeding blue whales from late spring to early fall (Santora et al. 2011, Savoca et al. 2021). Importantly, as noted by the petitioner, the area inside the proposed SMCA leeward of Point Sal may also function as a larval retention zone. Headlands and coastal promontories like Point Sal can slow or recirculate ocean currents, allowing fish and invertebrate larvae to remain near suitable settlement habitats rather than being transported offshore during upwelling events (Mace & Morgan 2006, Morgan et al. 2011, Harvey et al. 2021, Robinette et al. 2019). Robinette et al. (2019) found that seabird foraging rates, which can be used as an indicator of juvenile fish abundance, are generally higher in the lee of headlands and along south-facing coasts such as Point Sal. This suggests that the proposed new MPA has the

20 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=245526&inline>

potential to protect an area of high juvenile fish recruitment, which could potentially add a rich new larval source “node” to the MPA Network.

The proposed Point Sal SMCA would also protect an area of substantial cultural importance to the Chumash people. There are long-standing Chumash connections to Point Sal, including archaeological evidence of occupation near the area dating back nearly 5,000 years. The Northern Chumash Tribal Council has stated that Point Sal is an especially sacred area within the broader Chumash Heritage National Marine Sanctuary, and designation of the proposed new Point Sal SMCA represents a unique opportunity to strengthen biodiversity protections within the Sanctuary.

Importantly, Point Sal is extremely remote. The public access road to Point Sal State Beach was washed out during severe storms during the 1998 El Niño event and was never repaired. Currently, access to Point Sal State Beach requires a round-trip hike of approximately 10 miles. Therefore, although the petitioners’ proposed take allowance for hook-and-line fishing from shore would technically result in a moderate-low level of protection for Point Sal based on the science guidelines from the MPA planning process, OPC finds that the proposed new SMCA would likely still provide meaningful and significant biodiversity benefit given the difficulty associated with accessing Point Sal State Beach for shore-based fishing. Should existing conditions change in the future, we would support revisiting the take allowance for shore-based fishing.

Overall, OPC finds that the proposed new Point Sal SMCA represents an important opportunity to protect a pristine and relatively undisturbed biodiversity hotspot, while recognizing the biocultural significance of the area to local Chumash tribes. **OPC recommends that CFGC approve the proposed new Point Sal SMCA.**

Petition 2023-29MPA_AM2: Add a new MPA near Carpinteria (Mishopshno SMCA)

The Santa Ynez Band of Chumash Indians, Natural Resources Defense Council, and Environmental Defense Center have proposed the designation of a new SMCA near Carpinteria, California, located approximately twelve miles southeast of Santa Barbara. The proposed new MPA, to be named Mishopshno in honor of a nearby Chumash coastal village, would protect key nearshore ecosystems in the Santa Barbara Channel, including a large portion of Carpinteria Reef. As amended by petitioners at the April 14, 2026 meeting of CFGC’s Tribal Committee²¹, the proposed new Mishopshno SMCA would span nearly 4 miles of shoreline and encompass

21 <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=245526&inline>

approximately 9 square miles, from shore to a maximum depth of 141 feet (SeaSketch California 2026). It would prohibit all forms of take except for recreational take of finfish from shore using hook and line, with a tribal take exemption for the Santa Ynez Band of Chumash Indians.

The Santa Barbara Channel is part of a major biogeographic transition zone near Point Conception, separating cold waters to the north of Point Conception from warmer waters to the south (Dever et al. 2004, Johnson & Hartwell 2018). The proposed new Mishopshno SMCA would protect a number of important coastal and marine habitats within the Santa Barbara Channel, including sandy beach, coastal marsh, estuary, and kelp forest habitats (SeaSketch California 2026). Importantly, a new Mishopshno SMCA would provide new protection for Carpinteria Reef, a shallow kelp forest and rocky reef ecosystem that is home to a diversity of marine fishes and invertebrates such as Lingcod, California Sheephead, Kelp Bass, and both red and purple sea urchins (Levenbach 2008, Carr et al. 2017). This reef supports a large kelp patch that, according to Landsat data from 1984-2023 (Bell et al. 2024), has continued to persist despite the recent 2014-2016 marine heat wave and overall declines in the region, making it one of the most stable kelp forests in the Santa Barbara Channel (Fig. 2). The petitioners also note that Carpinteria Reef may serve as an aggregation site for juvenile Great White Sharks, though such aggregations are often highly dynamic and may shift locations from year to year.

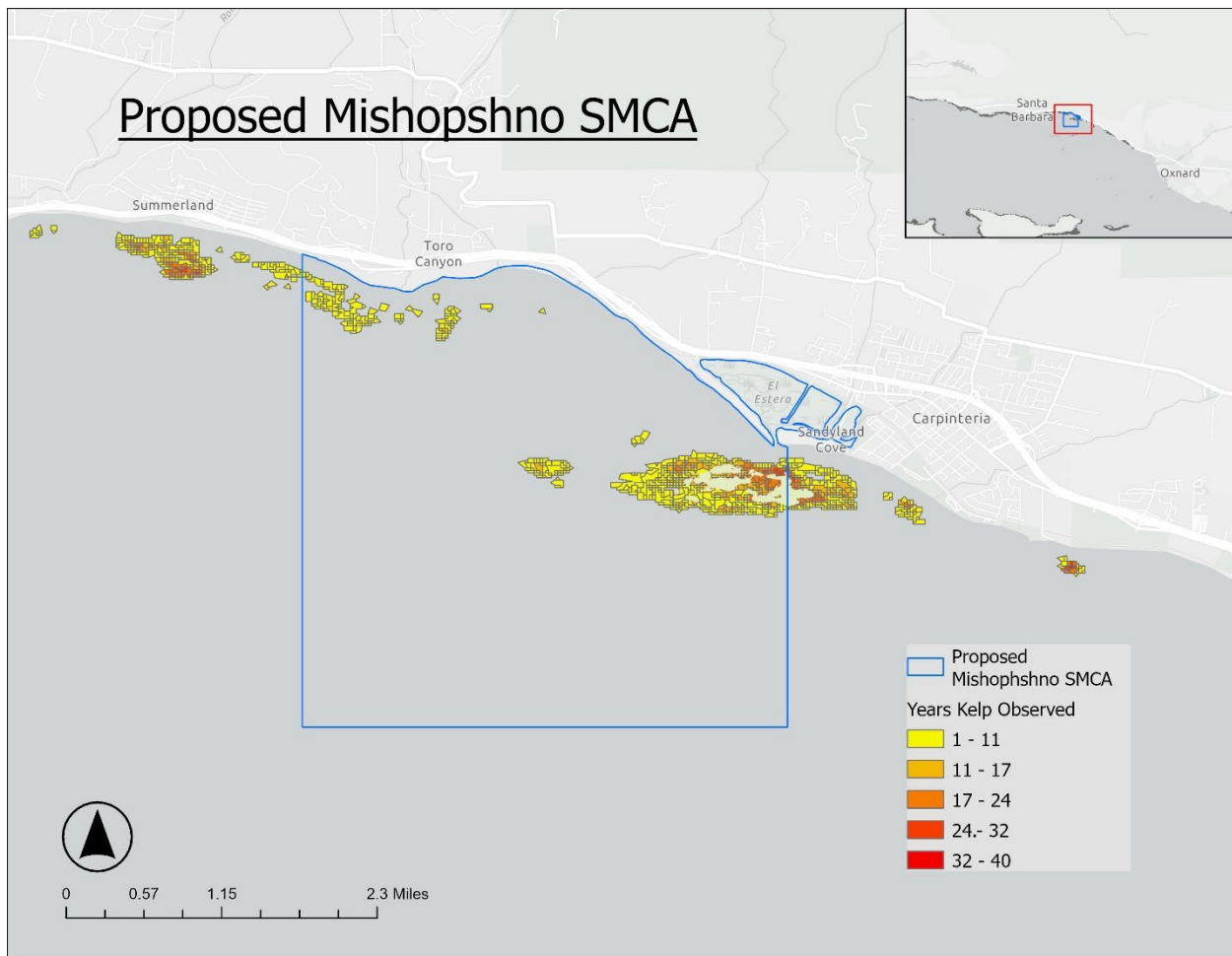


Figure 1. The proposed new Mishopshno SMCA. Satellite monitoring of kelp canopy cover via Landsat from 1984-2023 shows a persistent kelp forest at Carpinteria Reef near the proposed eastern boundary of the SMCA.

In addition to protecting an area of high biodiversity in an ecologically important region of the state, the most significant way in which the proposed Mishopshno SMCA could improve the ecological performance of California’s MPA Network is by strengthening connectivity between Campus Point No-Take SMCA to the west and Point Dume SMCA to the southeast. Ensuring that larvae, eggs, spores, or juveniles of marine species are able to move into, out of, or between MPAs is fundamental to the success of California’s MPAs as an ecologically connected network. For this reason, science guidance from the MPA planning process included explicit spacing guidelines for MPAs. According to this guidance, in order for MPAs to be within dispersal range for most ecologically and economically important groundfish and invertebrate species, they should be spaced 31-62 miles apart. Currently, the distance between the eastern boundary of Campus Point SMCA and the western boundary of Point Dume SMCA is approximately 60 miles (SeaSketch California 2026). This is very near the upper limit of the spacing guidelines and the largest distance between MPAs in the entire Network.

This distance concerns OPC for multiple reasons. First, while there are several MPAs nearby at the Northern Channel Islands, recent studies suggest the islands may not be as reliably or consistently ecologically connected to the mainland as previously thought due to the presence of small-scale eddies and coastal currents that can impact cross-channel exchange during some oceanographic conditions, while enhancing local retention and alongshore connectivity under others (Dauhajre et al. 2019, Robinette et al. 2012, Harvey et al. 2021). Second, both Campus Point No-Take SMCA and Point Dume SMCA contain kelp forests. Potentially weak connectivity between these habitats could pose risks to kelp resilience in the broader region. Finally, ecological connectivity has the potential to be highly disrupted by the impacts of climate change, which have already been well documented in the Southern California Bight (Magris et al. 2014, Schiff et al. 2019, Wilson et al. 2020, Kekuewa et al. 2022, Frieder et al. 2024). Climate-driven changes in temperature, ocean circulation, and upwelling can dramatically affect larval development, settlement, and survival, with important implications for connectivity (O'Connor et al. 2007, Kendall et al. 2016, Pecl et al. 2017, Pinsky et al. 2019, Wilson et al. 2020). Additionally, in some cases, climate impacts can eliminate important larval source populations entirely, such as when kelp forests are converted to urchin barrens (Rogers-Bennett & Catton 2019, Starko et al. 2024) – potentially making the effective ecological distance between intact protected habitats much greater than the geographic distance between MPA boundaries (Wilson et al. 2020).

The proposed Mishopshno SMCA, which would be located 14.6 miles from Campus Point No-Take SMCA and 44.1 miles from the Point Dume SMR/SMCA cluster (SeaSketch California 2026), would fill the existing large distance between these two MPAs and potentially act as a key “stepping stone” in the Santa Barbara Channel. This has the potential to improve ecological connectivity between Campus Point No-Take SMCA and Point Dume SMCA, especially between the kelp habitats protected by these MPAs, buffer against future climate impacts on connectivity, and strengthen overall resilience in the Santa Barbara Channel. OPC recognizes that the petitioners’ proposed allowance for hook-and-line fishing from shore would result in a moderate-low level of protection per science guidance from the MPA planning process, with potential impacts on connectivity; however, continued shore-based fishing access to this area has significant potential to benefit local communities and non-federally recognized tribes.

OPC also recognizes the cultural significance of this area to local Chumash peoples. Members of the Santa Ynez Band of Chumash Indians have described ecosystems within the proposed Mishopshno SMCA as “living homelands and cultural landscapes” where gathering, teaching, ceremony, and other cultural practices have occurred for millennia. The area is also central to Chumash peoples’ creation stories and canoe-building traditions. Designation of the proposed Mishopshno SMCA would represent a significant opportunity to protect the biocultural significance of the area and advance co-management with the Santa Ynez Band of Chumash

Indians, supporting the continued stewardship and care of this area's unique coastal and marine biodiversity by its original guardians.

Overall, OPC finds that the proposed new Mishopshno SMCA represents an important opportunity to improve MPA Network design, strengthen ecological connectivity, and recognize the biocultural significance of the area to local Chumash tribes. **OPC recommends that CFGC approve the proposed new Mishopshno SMCA.**

Petition 2023-32MPA: Expand Duxbury Reef SMCA and modify regulations to strengthen protections for intertidal species

The Environmental Action Committee of West Marin has proposed several actions intended to strengthen protections at Duxbury Reef SMCA. As clarified by the petitioner at the April 21, 2026 CFGC regional meeting²², those actions are: expand the northern and southern boundaries of Duxbury Reef SMCA to protect the majority of Duxbury Reef's contiguous rocky intertidal habitat and modify regulations in Duxbury Reef SMCA to remove the current allowance for shore-based take of finfish by methods other than hook-and-line.

Duxbury Reef SMCA, located at the southern tip of the Point Reyes Peninsula in Marin County approximately one mile west of Bolinas, was designed specifically to protect Duxbury Reef, one of the largest shale reefs in North America and a unique geological feature found nowhere else in California (U.S. Geological Survey 2005). Duxbury Reef is very large and shallow; its broad, low-relief, gently sloping shale platform hosts an extensive network of cracks and crevices that are exposed at low tide and support exceptionally high biodiversity, including iconic intertidal species such as anemones, sea stars, and nudibranchs. It is one of the most accessible and frequently visited coastal sites in the region for tidepooling, and the reef serves as one of California's premier locations for environmental education and tidepool interpretation. Duxbury Reef SMCA was intentionally designed as a narrow, nearshore MPA that extends from the mean high tide line out to 1,000 feet seaward of mean lower low water, protecting intertidal habitat while allowing for commercial and recreational fishing further offshore, as well as recreational take of abalone (when allowed) and finfish from shore.

Currently, Duxbury Reef SMCA does not encompass the full extent of the reef's rocky intertidal habitat. This means that the northernmost and southernmost portions of Duxbury Reef currently receive no MPA protection, despite functioning as part of the same unique and biodiverse ecosystem as the portion of the reef within the existing SMCA. Expanding protections

22 Video available at https://cal-span.org/meeting/cfg_20260421/. Discussion of Petition 2023-32MPA begins at 03:11:24.

northward to Double Point/Stormy Stack Rock Special Closure and southward to the southernmost fringe of the reef, as proposed by petitioners, would capture the vast majority of Duxbury Reef, nearly doubling the amount of rocky shoreline protected by this MPA from 3.26 linear miles to 6.83 linear miles (SeaSketch California 2026) and improving representation of intertidal habitats, one of the rarest and most vulnerable coastal habitats in California, in the North Coast bioregion of the MPA Network (U.S. Geological Survey 2005).

OPC finds that these additional protections have the potential to increase biomass of currently harvested intertidal species, such as seaweed and shellfish, in the expansion areas, bolster overall species richness and diversity at Duxbury Reef, and improve ecological connectivity across the full reef ecosystem. Additional protection could also strengthen the reef's resilience to future climate change impacts, as protected rocky intertidal ecosystems have been found to exhibit greater resistance to, and recovery from, climate-driven disturbances such as marine heat waves compared to unprotected areas, helping to maintain community structure and ecological function during periods of extreme heating (CDFW 2023, Smith et al. 2023). However, OPC also notes that simply expanding the northern and southern boundaries of the existing SMCA could unnecessarily restrict existing boat-based commercial and recreational fishing activities in the proposed expansion areas, such as an important local commercial hook-and-line halibut fishery, that are not currently impacting intertidal biodiversity.

OPC recommends adding new protections for the intertidal in a way that does not change the existing Duxbury Reef SMCA and does not restrict existing commercial or recreational take, beyond new protections for intertidal seaweed and invertebrates, in the expansion areas. To accomplish this, **OPC recommends that CFGC designate two new SMCAs to protect the northern and southern portions of the contiguous rocky intertidal habitat of Duxbury Reef, with take regulations that protect intertidal seaweed and invertebrates (except abalone when allowed) while allowing for existing shore- and boat-based fishing.** We defer to CDFW to recommend final boundaries for these two new SMCAs based on feasibility and enforceability.

Petition 2023-33MPA_AM1: Expand six MPAs statewide and add a new MPA in Santa Cruz

Environment California and Azul have proposed a suite of actions – six proposed MPA expansions and one proposed new MPA – aimed at strengthening protections for kelp forest habitats across the state. Specifically, this petition proposes to expand Cabrillo SMR (southern San Diego), South Point and Gull Island SMRs (Northern Channel Islands), Point Dume SMCA (north of Los Angeles near the Los Angeles County/Ventura County border), Point Conception SMR (north of Santa Barbara), and Natural Bridges SMR (Santa Cruz). It also proposes the designation of a new SMCA at Pleasure Point (Santa Cruz). The proposed expansions and new MPA are aimed at protecting persistent, healthy kelp patches currently unprotected by the MPA

Network. Petitioners argue that protecting these new locations will help improve the resilience of kelp forest ecosystems across the state in the face of anticipated future marine heat waves and other climate stressors.

Kelp forests in California provide a variety of critical ecological functions and ecosystem services. Kelp serves as habitat and an important food source for a rich diversity of invertebrates, fishes, marine mammals, and birds, including ecologically and economically important species such as abalone, rockfishes, and sea otters (Hamilton et al. 2022, Bell et al. 2020). Kelp forests are critical to the well-being of California's coastal residents and the state's multi-billion-dollar ocean economy, providing valuable recreational opportunities such as scuba diving and wildlife viewing (Schiel & Foster 2015, NOAA Office of National Marine Sanctuaries 2025, Monterey Bay National Marine Sanctuary 2025), and kelp forest ecosystems also hold tremendous cultural significance for California Native American tribes. Unfortunately, recent climate-driven changes have resulted in severe and concerning kelp loss in California. A prolonged marine heat wave beginning in 2014 triggered unprecedented declines in California's kelp forests (Rogers-Bennett & Catton 2019, McPherson et al. 2021). Along the North Coast, more than 95% of bull kelp canopy was lost from 2014-2019 and has shown little recovery since then (McPherson et al. 2021), while statewide more than 75% of kelp forests remain below their long-term average in 2024 (Harris et al. 2026). As marine heat waves are expected to become more frequent and more severe as climate change accelerates, supporting the protection and restoration of these vulnerable ecosystems is a top priority for OPC.

Though MPAs cannot directly mitigate climate stressors such as warming ocean waters, petitioners argue that MPAs can support kelp resilience by promoting intact food webs. Specifically, petitioners note that healthy, abundant populations of predatory organisms, such as California Sheephead and California spiny lobster, can keep populations of kelp grazers like sea urchins in check, preventing urchins from overgrazing kelp (Hamilton et al. 2010, Caselle et al., 2015). While this is an active area of research and scientific evidence for the kelp resilience benefits of MPAs is mixed (Cavanaugh et al. 2019), several recent studies in California have demonstrated support for this "trophic cascade" hypothesis.

Eisaguirre et al. (2020) analyzed decades of subtidal monitoring data from the Northern Channel Islands and found that giant kelp density was significantly higher, and purple sea urchin density significantly lower, inside MPAs compared to adjacent fished areas. Kumagai et al. (2024) combined subtidal monitoring data with remotely sensed kelp canopy data to evaluate the statewide response of kelp forests to the 2014-2016 heat wave and found that fully protected MPAs appeared to enhance kelp forests' resistance to, and recovery from, marine heat waves in Southern California. Ortiz-Villa et al. (2025) used four decades of remote sensing data to examine the effects of 54 MPAs on kelp canopy coverage statewide and found that

implementation of MPAs resulted in an 8.5% increase in kelp canopy coverage compared to unprotected areas, with kelp forests in MPAs showing faster and more significant recovery following the 2014-2015 marine heat wave. Finally, results from the first Decadal Management Review of California’s MPA Network showed that kelp canopy was more stable and resilient in MPAs, particularly in the South Coast (CDFW 2023).

Importantly, these documented benefits have largely been limited to Southern California, where lobster and Sheephead are abundant. In central California, where these predators are absent or uncommon and the main predator of sea urchins is the southern sea otter, most studies here have found little to no significant differences in urchin or kelp densities between MPAs and unprotected areas (Hamilton et al. 2010, Eisaguirre et al. 2020).

To identify specific areas to target for additional MPA protection, petitioners focused on areas of overlap between highly persistent kelp patches, as identified by Arafeh-Dalmau et al. (2021) using satellite data, and “medium-priority kelp restoration sites” as identified by Giraldo-Ospina et al. (2025) – defined as historically stable kelp beds that resisted the effects of the 2014-2015 marine heat wave and currently have a high proportion of kelp compared to their historical mean. This classification was intended by the authors of this study for use in a kelp restoration context; however, satellite imagery of kelp forest canopy, specifically Landsat data from 1984-2023 (Bell et al. 2024), does show that the areas identified by petitioners appear to be largely persistent over time (Fig. 2, Fig. 3). Given the anticipated impacts of climate change on kelp statewide, especially in the context of a historic new marine heat wave currently forming along the California coast and a predicted “Super El Niño” this year, OPC finds that, from a precautionary standpoint, protecting additional persistent kelp within the MPA Network is worth exploring at a limited scale.

Of the actions proposed in the petition, OPC recommends that CFGC deny the proposed expansion of Natural Bridges SMR and deny the proposed designation of a new SMCA at Pleasure Point. Both of these areas are located in Santa Cruz, at the northern end of the Monterey Bay. As described above, empirical support for the hypothesized “trophic cascade” benefits of MPAs for kelp has not been found in central California. Additionally, the proposed new MPA at Pleasure Point would not meet minimum guidelines for MPA size or level of protection, making it unlikely to accomplish biodiversity conservation objectives.

The remaining proposed actions are all focused on Southern California, where MPAs may promote improved kelp resilience by promoting trophic cascades. Of these actions, **OPC recommends that CFGC deny the proposed expansion of Cabrillo SMR.** Per the U.S. Navy, this proposed expansion has the potential to impact military readiness in the area. **OPC recommends that CFGC deny the proposed expansions of South Point SMR and Gull Island**

SMR; these proposed expansions would compromise the decades-long, deeply institutionalized state-federal partnership to co-manage the existing Channel Islands MPAs, which currently protect 20% of state waters around the Northern Channel Islands in no-take marine reserves. The proposed expansion of South Point SMR in particular would result in a misalignment with the boundaries of the neighboring Federal Marine Reserve.

OPC recommends approval, with modifications, of the remaining two proposed actions in Southern California (expansion of Point Dume SMCA and Point Conception SMR).

Point Dume SMCA. Located just offshore of Malibu in Los Angeles County, the existing Point Dume SMCA currently protects nearly 16 square miles of sandy beach, rocky shoreline, and kelp forest, as well as portions of a submarine canyon extending more than 2,000 feet deep. Petitioners propose expanding the existing Point Dume SMCA to the west by 4.6 square miles, approximately a 29% expansion, to protect a portion of a large, persistent kelp bed immediately adjacent to the SMCA. This expansion would increase the amount of kelp protected by the SMCA from 1.2 linear miles to 2.9 linear miles (SeaSketch California 2026, Fig. 3). **OPC recommends that CFGC approve the proposed expansion of Point Dume SMCA.** Petitioners have also proposed an adjustment to the take allowance at Point Dume SMCA to allow additional recreational take, including a new take allowance for recreational shore-based hook-and-line fishing. **OPC recommends that CFGC deny the proposed additional take allowance at Point Dume SMCA,** as this would drop the SMCA's Level of Protection from high to moderate-low such that it would no longer serve as a replicate MPA for kelp, beach, rocky intertidal, and soft bottom habitats.

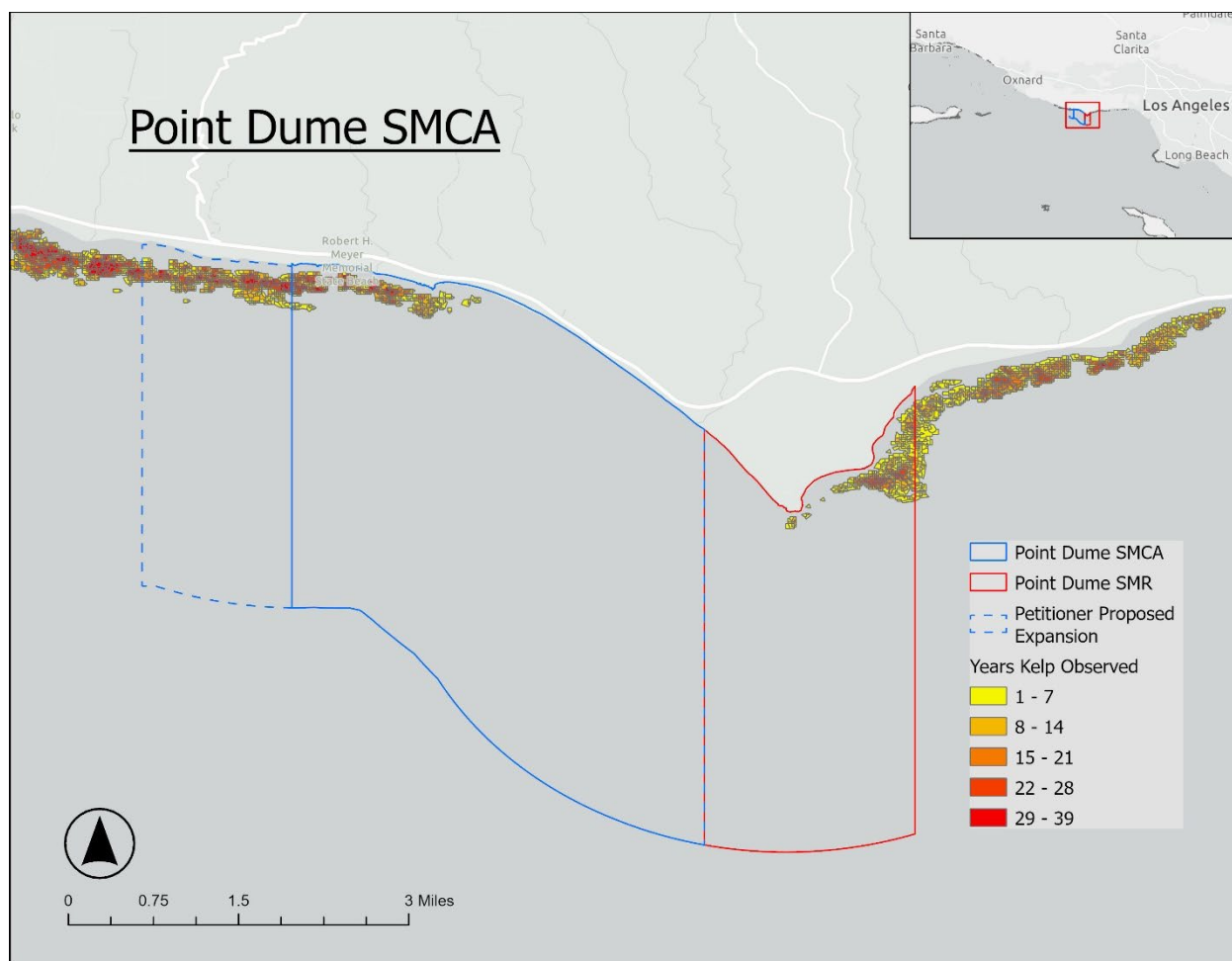


Figure 2. Point Dume SMCA and SMR, with petitioners' proposed expansion of Point Dume SMCA shown.

Point Conception SMR. Located at a major biogeographic transition zone, Point Conception SMR currently protects more than 22 square miles of rocky reefs, surfgrass beds, and kelp forests. Petitioners propose expanding the existing Point Conception SMR to the east by 14.6 square miles, which would include a very large patch of persistent kelp (Fig. 3). However, given the existing large size of this MPA, OPC finds that a smaller expansion, similar to the scale of expansion proposed for Point Dume SMCA, is more appropriate and would capture a significant portion of persistent kelp while maintaining some continued fishing access in this area. **OPC recommends that CFGC expand Point Conception SMR by shifting the eastern boundary of the SMR from the current 120° 25.000' W longitude line eastward to the 120° 23.000' W longitude line (Fig. 3).** This would expand the SMR by 7.65 square miles, approximately a 35% expansion, and increase the amount of kelp protected by the SMR from 2.27 linear miles to 4.44 linear miles (SeaSketch California 2026).

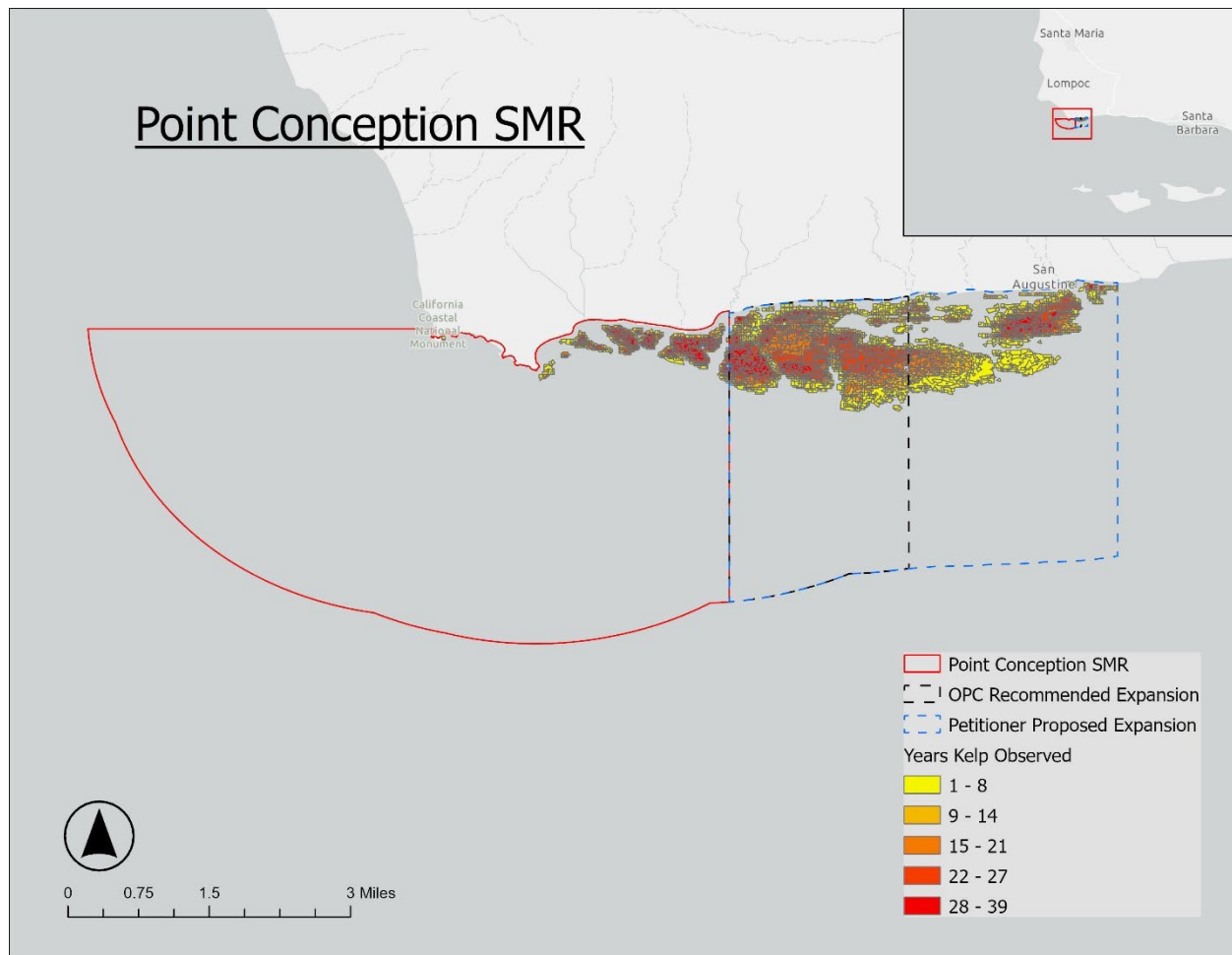


Figure 3. Point Conception SMR with petitioners' proposed expansion (blue dotted line) and OPC's recommended expansion (black dotted line) shown. OPC's recommended expansion encompasses much of the persistent kelp immediately adjacent to Point Conception SMR.

Recommendations At-a-Glance

Table 2. OPC's recommendations on all MPA petitions currently under consideration by CFGC.

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-14MPA	Nine SMCAs statewide (existing)	California Sea Urchin Commission	Allow commercial take of sea urchin in various MPAs	Deny
2023-15MPA_AM	Footprint SMR, Gull Island SMR, and Santa Barbara Island SMR (existing)	Blake Hermann	Reclassify SMRs to SMCAs to allow limited take of highly migratory species and possession of coastal pelagic species, or the take of pelagic finfish	Deny
2023-16MPA	Stewarts Point SMR and Bodega Head SMR (existing)	Bodega Bay Fisherman's Marketing Association	Reclassify SMRs to SMCAs to allow commercial take of salmon by trolling	Deny
2023-18MPA	Vandenberg SMR, Kashtayit SMCA, and San Miguel and Anacapa Island Special Closures (existing)	Ocean Conservancy	Multiple actions to modify allowed uses at several Santa Barbara Channel MPAs	Deny

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-19MPA	Chitqawi SMCA (new)	Santa Ynez Band of Chumash Indians	Add a new MPA near Morro Bay	Deny
2023-20MPA_AM 1 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Point Buchon SMCA and Point Buchon SMR (existing)	Santa Ynez Band of Chumash Indians	Add a tribal take exemption at Point Buchon SMCA, rename Point Buchon SMCA, and adjust northern boundary of Point Buchon SMR	Approve tribal take exemption and renaming; deny proposed boundary change
2023-21MPA_AM1 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Pyramid Point SMCA (existing)	Tolowa Dee-ni' Nation	Remove recreational take of true smelt in Pyramid Point SMCA and adjust northern boundary of Pyramid Point SMCA	Approve proposed removal of recreational take of true smelt; deny proposed boundary change
2023-23MPA_AM1	Various MPAs in Monterey County (existing)	Giant Kelp Restoration Project	Modify several regulations related to kelp restoration, including allowing urchin culling in Monterey MPAs; establish a new SMR at Tankers' Reef	Deny

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-24MPA_AM1	Laguna Beach No-Take SMCA and Dana Point SMCA (existing)	Laguna Bluebelt Coalition	Extend the southern boundary of the Laguna Beach No-Take SMCA to the southern border of Laguna Beach	Deny
2023-27MPA_AM1 (as clarified at the May 6, 2026 CFGC regional meeting)	Anacapa Island SMCA (existing)	Environmental Defense Center	Modify regulations at Anacapa Island SMCA to protect sensitive eelgrass habitats (with several options proposed)	Modify SMCA regulations to prohibit the deployment of lobster traps shallower than 50 feet
2023-28MPA_AM2 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Point Sal SMCA (new)	Northern Chumash Tribal Council and Natural Resources Defense Council	Add a new MPA near Point Sal	Approve the proposed new Point Sal SMCA
2023-29MPA_AM2 (as amended at the April 14, 2026 CFGC Tribal Committee meeting)	Mishopshno SMCA (new)	Santa Ynez Band of Chumash Indians and Natural Resources Defense Council	Add a new MPA near Carpinteria	Approve the proposed new Mishopshno SMCA

Petition Number	MPA(s) Affected	Petitioner	Proposed Action	OPC Recommendation
2023-32MPA (as clarified at the April 21, 2026 CFGC regional meeting)	Duxbury Reef SMCA (existing)	Environmental Action Committee of West Marin	Expand Duxbury Reef SMCA and modify regulations to strengthen protections for intertidal species	Designate two new SMCAs to protect the northern and southern portions of Duxbury Reef, each with take regulations that protect intertidal seaweed and invertebrates while allowing for continuation of other existing shore- and boat-based fishing
2023-33MPA_AM1	Various existing MPAs and one proposed new MPA	Environment California and Azul	Expand six existing MPAs statewide and add a new MPA in Santa Cruz	Approve proposed expansion of Point Dume SMCA, but deny proposed additional take allowance in Point Dume SMCA. Approve a smaller expansion of Point Conception SMR. Deny proposed expansion of Natural Bridges SMR, Cabrillo SMR, South Point SMR, or Gull Island SMR. Deny proposed designation of a new SMCA at Pleasure Point.
2023-34MPA	Point Buchon SMCA, Farnsworth Onshore and Offshore SMCAs (existing)	Environment California and Azul	Reclassify Point Buchon SMCA to an SMR to prohibit take; Remove all take except for recreational spearfishing in Farnsworth Onshore and Offshore SMCAs	Deny

References

- Abadie, A., Lejeune, P., Pergent, G., & Gobert, S. (2016). From mechanical to chemical impact of anchoring in seagrasses: The premises of anthropogenic patch generation in *Posidonia oceanica* meadows. *Marine Pollution Bulletin*, 109(1), 61-71.
<https://doi.org/10.1016/j.marpolbul.2016.06.022>
- Altstatt, J. (2021). Island eelgrass (*Zostera pacifica*): Focused assessment of condition, health and extent of beds and biological monitoring of associated fish and invertebrate communities.
- Altstatt, J. M., Ambrose, R. F., Carroll, J., Coyer, J., Wible, J., & Engle, J. M. (2014). Eelgrass meadows return to Frenchy's Cove, Anacapa Island: Recovery ten years after successful transplantation. *Monographs of the Western North American Naturalist*, 7, 500–517.
- Arafeh-Dalmau, N., Cavanaugh, K. C., Possingham, H. P., Munguia-Vega, A., Montaña-Moctezuma, G., Bell, T. W., Cavanaugh, K., & Micheli, F. (2021). Southward decrease in the protection of persistent giant kelp forests in the northeast Pacific. *Communications Earth & Environment*, 2, Article 119. <https://doi.org/10.1038/s43247-021-00177-9>
- Arafeh-Dalmau, N., Munguia-Vega, A., Micheli, F., Vilalta-Navas, A., Villaseñor-Derbez, J. C., Précoma-de la Mora, M., Schoeman, D. S., Medellín-Ortíz, A., Cavanaugh, K. C., Sosa-Nishizaki, O., Burnham, T. L. U., Knight, C. J., Woodson, C. B., Abas, M., Abadía-Cardoso, A., Aburto-Oropeza, O., Esgro, M. W., Espinosa-Andrade, N., Beas-Luna, R., ... Possingham, H. P. (2023). Integrating climate adaptation and transboundary management: Guidelines for designing climate-smart marine protected areas. *One Earth*, 6(11), 1523-1541.
<https://doi.org/10.1016/j.oneear.2023.10.002>
- Bell, T. W., Allen, J. G., Cavanaugh, K. C., & Siegel, D. A. (2020). Three decades of variability in California's giant kelp forests from the Landsat satellites. *Remote Sensing of Environment*, 238, 110811. <https://doi.org/10.1016/j.rse.2018.06.039>
- Bell, T. W., Cavanaugh, K. C., & Siegel, D. A. (2024). SBC LTER: Time series of quarterly NetCDF files of kelp biomass in the canopy from Landsat 5, 7 and 8, since 1984 (ongoing) ver 26. Environmental Data Initiative.
- Blanchette, C. A., Miner, C. M., Raimondi, P. T., Lohse, D., Heady, K. E. K., & Broitman, B. R. (2008). Biogeographical patterns of rocky intertidal communities along the Pacific coast of North America. *Journal of Biogeography*, 35(9), 1593–1607.
- California Department of Fish and Wildlife. (2020). Surf smelt (*Hypomesus pretiosus*) enhanced status report. Marine Species Portal. <https://marinespecies.wildlife.ca.gov>

California Department of Fish and Wildlife. (2023). Decadal management review of California's marine protected area network.

California Department of Fish and Wildlife. (2025). Marine fisheries data explorer: Commercial landings. <https://wildlife.ca.gov/Fishing/Commercial/Landings>

Carr, M. H., Robinson, S. P., Wahle, C., Davis, G., Kroll, S., Murray, S., Schumacker, E. J., & Williams, M. (2017). The central importance of ecological spatial connectivity to effective coastal marine protected areas and to meeting the challenges of climate change in the marine environment. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 27(S1), 6-29. <https://doi.org/10.1002/aqc.2800>

Caselle, J. E., Rassweiler, A., Hamilton, S. L., & Warner, R. R. (2015). Recovery trajectories of kelp forest animals are rapid yet spatially variable across a network of temperate marine protected areas. *Scientific Reports*, 5, Article 14102. <https://doi.org/10.1038/srep14102>

Cavanaugh, K. C., Reed, D. C., Bell, T. W., Castorani, M. C. N., & Beas-Luna, R. (2019). Spatial variability in the resistance and resilience of giant kelp in Southern and Baja California to a multiyear heatwave. *Frontiers in Marine Science*, 6, Article 413. <https://doi.org/10.3389/fmars.2019.00413>

Charles, A., & Wilson, L. (2009). Human dimensions of marine protected areas. *ICES Journal of Marine Science*, 66(1), 6–15.

Checkley, D. M., Jr., & Barth, J. A. (2009). Patterns and processes in the California Current System. *Progress in Oceanography*, 83(1–4), 49–64.

Dauhajre, D. P., McWilliams, J. C., & Renault, L. (2019). Nearshore Lagrangian connectivity: Submesoscale influence and resolution sensitivity. *Journal of Geophysical Research: Oceans*, 124(7), 5180–5204. <https://doi.org/10.1029/2019JC014943>

Dever, E. P. (2004). Objective maps of near-surface flow states near Point Conception, California. *Journal of Physical Oceanography*, 34(2), 444-461.

Duarte, C. M., Losada, I. J., Hendriks, I. E., Mazarrasa, I., & Marbà, N. (2013). The role of coastal plant communities for climate change mitigation and adaptation. *Nature Climate Change*, 3(11), 961-968. <https://doi.org/10.1038/nclimate1973>

Eisaguirre, J. H., Eisaguirre, J. M., Davis, K., Carlson, P. M., Gaines, S. D., & Caselle, J. E. (2020). Trophic redundancy and predator size class structure drive differences in kelp forest ecosystem dynamics. *Ecology*, 101(5), Article e02993. <https://doi.org/10.1002/ecy.2993>

- Essington, T. E., Moriarty, P. E., Froehlich, H. E., Hodgson, E. E., Koehn, L. E., Oken, K. L., Siple, M. C., & Stawitz, C. C. (2015). Fishing amplifies forage fish population collapses. *Proceedings of the National Academy of Sciences*, 112(21), 6648–6652. <https://doi.org/10.1073/pnas.1422020112>
- Fourqurean, J. W., Duarte, C. M., Kennedy, H., Marbà, N., Holmer, M., Mateo, M. A., Apostolaki, E. T., Kendrick, G. A., Krause-Jensen, D., McGlathery, K. J., & Serrano, O. (2012). Seagrass ecosystems as a globally significant carbon stock. *Nature Geoscience*, 5(7), 505–509. <https://doi.org/10.1038/ngeo1477>
- Frieder, C. A., Kessouri, F., Ho, M., Sutula, M., Bianchi, D., McWilliams, J. C., Deutsch, C., & Howard, E. (2024). Effects of urban eutrophication on pelagic habitat capacity in the Southern California Bight. *Frontiers in Marine Science*, 11, Article 1392671. <https://doi.org/10.3389/fmars.2024.1392671>
- Giraldo-Ospina, A., Bell, T., Carr, M. H., & Caselle, J. E. (2025). A site selection decision framework for effective kelp restoration. *Biological Conservation*, 302, Article 110980. <https://doi.org/10.1016/j.biocon.2025.110980>
- Grech, A., Chartrand-Miller, K., Erftemeijer, P., Fonseca, M., McKenzie, L., Rasheed, M., Taylor, H., & Coles, R. (2012). A comparison of threats, vulnerabilities and management approaches in global seagrass bioregions. *Environmental Research Letters*, 7(2), Article 024006. <https://doi.org/10.1088/1748-9326/7/2/024006>
- Hamilton, S. L., Caselle, J. E., Malone, D. P., & Carr, M. H. (2010). Incorporating biogeography into evaluations of the Channel Islands marine reserve network. *Proceedings of the National Academy of Sciences*, 107(43), 18272–18277. <https://doi.org/10.1073/pnas.0908091107>
- Hamilton, S. L., Gleason, M. G., Godoy, N., Eddy, N., & Grorud-Colvert, K. (2022). *Ecosystem-based management for kelp forest ecosystems*. *Marine Policy*, 136, 104919. <https://doi.org/10.1016/j.marpol.2021.104919>
- Harris, J. L., Waters, T., & Zulian, M. (2026). California’s 2026 coast and ocean assessment. California Ocean Science Trust.
- Harvey, J. B. J., Ryan, J. P., Zhang, Y., Chavez, F. P., Cheriton, O. M., Fiechter, J., McManus, M. A., & Kudela, R. M. (2021). Influences of extreme upwelling on a coastal retention zone. *Frontiers in Marine Science*, 8, Article 648944. <https://doi.org/10.3389/fmars.2021.648944>

Herrera, M., Tubío, A., Pita, P., Vázquez, E., Olabarria, C., Duarte, C. M., & Villasante, S. (2022). Trade-Offs and Synergies Between Seagrass Ecosystems and Fishing Activities: A Global Literature Review. *Frontiers in Marine Science*, 9, Article 781713. <https://doi.org/10.3389/fmars.2022.781713>

Johnson, S. Y., & Hartwell, S. R. (2018). California State Waters Map Series—Offshore of Point Conception, California. U.S. Geological Survey.

Kekuewa, S. A. H., Courtney, T. A., Cyronak, T., & Andersson, A. J. (2022). *Seasonal nearshore ocean acidification and deoxygenation in the Southern California Bight*. *Scientific Reports*, 12(1), 17969. <https://doi.org/10.1038/s41598-022-21831-y>

Kendall, M. S., Poti, M., & Karnauskas, K. B. (2016). Climate change and larval transport in the ocean: Fractional effects from physical and physiological factors. *Global Change Biology*, 22(4), 1532–1547. <https://doi.org/10.1111/gcb.13159>

Kindeberg, T., Severinson, J., & Carlsson, P. (2022). Eelgrass meadows harbor more macrofaunal species but bare sediments can be as functionally diverse. *Journal of Experimental Marine Biology and Ecology*, 554, Article 151777.

Kumagai, J. A., Goodman, M. C., Villasenor-Derbez, J. C., Schoeman, D. S., Cavanuagh, K. C., Bell, T. W., Micheli, F., De Leo, G., & Arafeh-Dalmau, N. (2024). Marine protected areas that preserve trophic cascades promote resilience of kelp forests to marine heatwaves. *Global Change Biology*, 30(12), Article e17620.

Levenbach, S. (2008). Community-wide ramifications of an associational refuge on shallow rocky reefs. *Ecology*, 89(10), 2819–2828. <https://doi.org/10.1890/07-0656.1>

Mace, A. J., & Morgan, S. G. (2006). Larval accumulation in the lee of a small headland: Implications for the design of marine reserves. *Marine Ecology Progress Series*, 318, 19–29. <https://doi.org/10.3354/meps318019>

Magris, R. A., Pressey, R. L., Weeks, R., & Ban, N. C. (2014). Integrating connectivity and climate change into marine conservation planning. *Biological Conservation*, 170, 207–221.

McPherson, M. L., Finger, D. J. I., Houskeeper, H. F., Bell, T. W., Carr, M. H., Rogers-Bennett, L., & Kudela, R. M. (2021). Large-scale shift in the structure of a kelp forest ecosystem co-occurs with an epizootic and marine heatwave. *Communications Biology*, 4, Article 298.

Monterey Bay National Marine Sanctuary. (2025). Iconic kelp forests. National Oceanic and Atmospheric Administration. <https://montereybay.noaa.gov/science/characterization/kelp-forests.html>

- Morgan, S. G., Fisher, J. L., & Largier, J. L. (2011). Larval retention, entrainment, and accumulation in the lee of a small headland: Recruitment hot spots along windy coasts. *Limnology and Oceanography*, 56(1), 161–178. <https://doi.org/10.4319/lo.2011.56.1.0161>
- NOAA Fisheries. (2022). State of the California Current Ecosystem in 2021: Winter is coming?
- NOAA Office of National Marine Sanctuaries. (2025). Kelp forest. National Oceanic and Atmospheric Administration. <https://sanctuaries.noaa.gov/visit/ecosystems/kelpdesc.html>
- Ortiz-Villa, E. M., Rassweiler, A., Caselle, J. E., Cavanaugh, K. C., Arafeh-Dalmau, N., Bell, T. W., & Cavanaugh, K. C. (2025). Marine protected areas enhance climate resilience to severe marine heatwaves for kelp forests. *Journal of Applied Ecology*, 62(9), 2439–2453. <https://doi.org/10.1111/1365-2664.70112>
- O'Connor, M. I., Bruno, J. F., Gaines, S. D., Halpern, B. S., Lester, S. E., Kinlan, B. P., & Weiss, J. M. (2007). Temperature control of larval dispersal and the implications for marine ecology, evolution, and conservation. *Proceedings of the National Academy of Sciences*, 104(4), 1266–1271.
- Pecl, G. T., Araújo, M. B., Bell, J. D., Blanchard, J., Bonebrake, T. C., Chen, I., Clark, T. D., Colwell, R. K., Danielsen, F., Evengård, B., Falconi, L., Ferrier, S., Frusher, S., Garcia, R. A., Griffis, R. B., Hobday, A. J., Janion-Scheepers, C., Jarzyna, M. A., Jennings, S., ... Williams, S. E. (2017). Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. *Science*, 355(6332), eaai9214. <https://doi.org/10.1126/science.aai9214>
- Pikitch, E. K., Rountos, K. J., Essington, T. E., Santora, C., Pauly, D., Watson, R., Sumaila, U. R., Boersma, P. D., Boyd, I. L., Conover, D. O., Cury, P. M., Heppell, S. S., Houde, E. D., Mangel, M., Plaganyi, E., Sainsbury, K., Steneck, R. S., Geers, T. M., Gownaris, N., & Munch, S. B. (2014). The global contribution of forage fish to marine fisheries and ecosystems. *Fish and Fisheries*, 15(1), 43-64.
- Pinsky, M. L., Eikeset, A. M., McCauley, D. J., Payne, J. L., & Sunday, J. M. (2019). Greater vulnerability to warming of marine versus terrestrial ectotherms. *Nature*, 569(7754), 108-111. <https://doi.org/10.1038/s41586-019-1132-4>
- Reed, B. J., & Hovel, K. A. (2006). Seagrass habitat disturbance: How loss and fragmentation of eelgrass *Zostera marina* influences epifaunal abundance and diversity. *Marine Ecology Progress Series*, 326, 133-143. <https://doi.org/10.3354/meps326133>
- Rees, A., Sheehan, E. V., & Attrill, M. J. (2021). Optimal fishing effort benefits fisheries and conservation. *Scientific Reports*, 11, Article 3784. <https://doi.org/10.1038/s41598-021-82847-4>

Robinette, D. P., Nur, N., Brown, A., & Howar, J. (2012). Spatial distribution of nearshore foraging seabirds in relation to a coastal marine reserve. *Marine Ornithology*, 40(2), 111-116.
<https://doi.org/10.5038/2074-1235.40.2.978>

Robinette, D. P., Nur, N., & Jahncke, J. (2019). Spatial patterns in nearshore juvenile fish abundance throughout the California network of marine protected areas as revealed by seabird foraging rates. *CalCOFI Reports*, 60, 1–14.

Rock, B. M., & Daru, B. H. (2021). Impediments to understanding seagrasses' response to global change. *Frontiers in Marine Science*, 8, Article 608867.
<https://doi.org/10.3389/fmars.2021.608867>

Rogers-Bennett, L., & Catton, C. A. (2019). Marine heat wave and multiple stressors tip bull kelp forest to sea urchin barrens. *Scientific Reports*, 9, Article 15050.
<https://doi.org/10.1038/s41598-019-51114-y>

Russell, M., Olson, M. B., Love, B. A., & Thuesen, E. V. (2022). Surf smelt accelerate usage of endogenous energy reserves under climate change. *PLOS ONE*, 17(6), e0270491.
<https://doi.org/10.1371/journal.pone.0270491>

Santora, J. A., Sydeman, W. J., Schroeder, I. D., Wells, B. K., & Field, J. C. (2011). Mesoscale structure and oceanographic determinants of krill hotspots in the California Current: Implications for trophic transfer and conservation. *Progress in Oceanography*, 91(4), 397-409.
<https://doi.org/10.1016/j.pocean.2011.04.002>

Santora, J. A., Schroeder, I. D., Bograd, S. J., Chavez, F. P., Cimino, M. A., Fiechter, J., Hazen, E. L., Kavanaugh, M. T., Messié, M., Miller, R. R., Sakuma, K. M., Sydeman, W. J., Wells, B. K., & Field, J. C. (2021). *Pelagic biodiversity, ecosystem function, and services: An integrated observing and modeling approach*. *Oceanography*, 34(2), 16–37. <https://doi.org/10.5670/oceanog.2021.212>

Savoca, M. S., Czapanskiy, M. F., Kahane-Rapport, S. R., Gough, W. T., Fahlbusch, J. A., Bierlich, K. C., Segre, P. S., Di Clemente, J., Penry, G. S., Wiley, D. N., Calambokidis, J., Nowacek, D. P., Johnston, D. W., Pyenson, N. D., Friedlaender, A. S., Hazen, E. L., & Goldbogen, J. A. (2021). *Baleen whale prey consumption based on high-resolution foraging measurements*. *Nature*, 599(7883), 85–90. <https://doi.org/10.1038/s41586-021-03991-5>

Schiel, D. R., & Foster, M. S. (2015). *The biology and ecology of giant kelp forests*. University of California Press.

Schiff, K., McLaughlin, K., Moore, S., & Cao, Y. (2019). Southern California Bight. In C. Sheppard (Ed.), *World seas: An environmental evaluation* (2nd ed.). Academic Press.

SeaSketch California. (2026). California marine protected area petition evaluation mapping and spatial analysis [Interactive mapping platform].

Smith, J. G., Free, C. M., Lopazanski, C., Brun, J., Anderson, C. R., Carr, M. H., Claudet, J., Dugan, J. E., Eurich, J. G., Francis, T. B., Hamilton, S. L., Mouillot, D., Raimondi, P. T., Starr, R. M., Ziegler, S. L., Nickols, K. J., & Caselle, J. E. (2023). A marine protected area network does not confer community structure resilience to a marine heatwave across coastal ecosystems. *Global Change Biology*, 29(19), 5634–5651. <https://doi.org/10.1111/gcb.16862>

Starko, S., van der Mheen, M., Pessarrodona, A., Wood, G. V., Filbee-Dexter, K., Neufeld, C. J., Montie, S., Coleman, M. A., & Wernberg, T. (2024). *Impacts of marine heatwaves in coastal ecosystems depend on local environmental conditions*. *Global Change Biology*, 30(8), e17469. <https://doi.org/10.1111/gcb.17469>

Stevens, B. G. (2021). The ups and downs of traps: Environmental impacts, entanglement, mitigation, and the future of trap fishing for crustaceans and fish. *ICES Journal of Marine Science*, 78(2), 584–596. <https://doi.org/10.1093/icesjms/fsaa135>

Tomlin, H., Schellenberg, C., Barrs, J. B., Vivani, A. J. S., & Shaw, P. (2021). *Identifying and monitoring of forage fish spawning beaches in British Columbia's Salish Sea for conservation of forage fish*. *FACETS*, 6(1), 1024–1043. <https://doi.org/10.1139/facets-2020-0038>

Turner, N. J., Gregory, R., Brooks, C., Failing, L., & Satterfield, T. (2008). From invisibility to transparency: Identifying the implications. *Ecology and Society*, 13(2), Article 7.

U.S. Geological Survey. (2005). Roadside geology of Point Reyes National Seashore and vicinity (Open-File Report 2005–1127).

Waycott, M., Duarte, C. M., Carruthers, T. J. B., Orth, R. J., Dennison, W. C., Olyarnik, S., Calladine, A., Fourqurean, J. W., Heck, K. L., Hughes, A. R., Kendrick, G. A., Kenworthy, W. J., Short, F. T., & Williams, S. L. (2009). Accelerating loss of seagrasses across the globe threatens coastal ecosystems. *Proceedings of the National Academy of Sciences*, 106(30), 12377–12381. <https://doi.org/10.1073/pnas.0905620106>

Wilson, K. L., Tittensor, D. P., Worm, B., & Lotze, H. K. (2020). Incorporating climate change adaptation into marine protected area planning. *Global Change Biology*, 26(6), 3251–3267. <https://doi.org/10.1111/gcb.15094>

Zabarte-Maeztu, I., Matheson, F. E., Manley-Harris, M., Davies-Colley, R. J., & Hawes, I. (2021). Fine sediment effects on seagrasses: A global review, quantitative synthesis and multi-stressor model. *Marine Environmental Research*, 171, Article 105480. <https://doi.org/10.1016/j.marenvres.2021.105480>