

## Staff Summary for April 15-16, 2026

**6. Non-Regulatory Requests from Previous Meetings (Marine)****Today's Item**Information Action 

Consider and potentially act on non-regulatory requests (requests for action that do not require a regulation change) received from members of the public at previous meetings.

**Summary of Previous/Future Actions (N/A)****Background**

Requests for non-regulatory action are received from members of the public under general public comment. All non-regulatory requests follow a two-meeting cycle to ensure proper review and thorough consideration of each item. Requests received in writing or public testimony during general public comment at the previous Commission meeting are scheduled for consideration at the next regular meeting.

Non-regulatory requests that have been referred to staff, legal counsel, a committee, or the Department for review and recommendation are scheduled for action once a recommendation has been received. Staff recommendations and rationales are developed in consultation with the Department.

One non-regulatory request is scheduled for action today (Exhibit 1). This request was received in February as a “petition for regulation change” using Form FGC1 Regulation Change Petition. However, upon formal staff review, staff determined that a regulation change is not necessary to advance the proposed management plan. While the petition was rejected, the substance of the petition was redirected as a non-regulatory request for Commission consideration today.

This request includes two parts:

- The Commission adopt an adaptive management and outreach plan for Duxbury Reef State Marine Conservation Area (SMCA) as an alternative to Petition 2023-32MPA, which proposes to expand and redesignate Duxbury Reef as a state marine reserve. The proposed management plan provides a detailed stewardship plan developed collaboratively within the broader Bolinas community, including local educators and community members.
- The Commission formally accept for consideration the proposed alternative alongside review of Petition 2023-32MPA during the regional MPA petition review meeting on April 21, 2026.

**Significant Public Comments**

Four members of the public support the alternative proposal provided by Save Duxbury Access (Exhibit 2).

**Recommendation**

**Commission Staff:** The *Master Plan for Marine Protected Areas*—adopted by the Commission and updated in 2016—recognizes the Department as the statutory management

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agency, responsible for implementing statewide guidance on outreach, education, enforcement, and overall MPA management. Consistent with the master plan, the Department and the Commission recognize numerous partners that apply the statewide principles to different MPA settings. Local stewardship is formally coordinated through the MPA Collaborative Network, a nonprofit whose 14 regional collaboratives convene agencies, tribal partners, community experts, educators, fishermen, and enforcement personnel, among others, to address MPA-specific management, education, outreach, and enforcement needs within statewide guidance (<https://www.mpacollaborative.org>). The MPA Collaborative structure, which includes coordination with the Department, is the appropriate venue for considering local stewardship approaches such as the one proposed in this request; staff recommends that the proponent utilize this pathway to further the goals of the proposed plan.

In addition, the Commission has requested that petitioners and the public bring these types of proposals (i.e., petition updates, negotiations between stakeholders, changes to recommendations, community plans) to the regional MPA petition meetings for discussion purposes and Commission consideration. Staff supports the requestor's commitment to engage in that venue.

No further action recommended.

### Exhibits

1. [Letter and attachments from Mollie Lunibos on behalf of Save Duxbury Access](#), received February 5, 2026
2. [Emails received from four Bolinas residents](#), received between March 22 and April 2, 2026

### Motion

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission adopts the staff recommendation for the non-regulatory request.

**OR**

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission adopts the staff recommendation for the non-regulatory request, except: \_\_\_\_\_.



**February 5, 2026**

**Melissa Miller-Henson, Executive Director California Fish and Game Commission**

P.O. Box 944209 Sacramento, CA 94244-2090 *Sent via Email: fgc@fgc.ca.gov*

**RE: PETITION FOR REGULATION CHANGE & REQUEST FOR CONSOLIDATION**

**Subject:** Counter-Petition regarding Duxbury Reef State Marine Conservation Area

Dear Director Miller-Henson and Honorable Commissioners,

Please accept the attached **Petition for Regulation Change (Form FGC 1)** submitted on behalf of the **Duxbury Access Group**.

Save Duxbury Access is a grassroots coalition of Bolinas residents, educators, scientists, small businesses, and commercial, recreational, and subsistence fishers committed to stewarding the existing Duxbury Reef State Marine Conservation Area (SMCA), through a science based and Duxbury-specific Adaptive Management Plan Framework. We offer a reasonable alternative MPA petition for the Duxbury Reef SMCA that preserves the current boundaries and designation, while developing and implementing a multi-stakeholder Adaptive Management Plan and focused public education strategy to strengthen understanding and voluntary compliance with the ample existing protective regulations already in place. In contrast, the Environmental Action Committee of West Marin (EAC) petition proposes a major change in designation and boundaries without presenting a clear, site-specific management or compliance plan for how those new restrictions would be implemented on the ground.

In good faith, we asked the EAC to withdraw its petition so we could work together outside the time constraints of the regulatory process, to assess the challenges facing Duxbury Reef. That collaboration could draw on the most comprehensive datasets available—from UC Santa Cruz's Long-Term Intertidal Monitoring program and the long-awaited College of Marin Bolinas Field

Station intertidal studies to the traditional ecological knowledge of community stakeholders—and incorporate the perspectives of educational partners throughout the Bay Area who visit the reef to inspire a love of the natural world. As Marin County Supervisor Dennis Rodoni recently explained in retracting his earlier support for the EAC petition, the path forward at Duxbury must “center the coastal community most directly affected and ensure that any changes are driven by robust local engagement and the best available science.”

At Agate Beach, the primary challenge is not a failure of the SMCA design as a whole, but a localized problem of visitor confusion concentrated in a small, popular area of the tidepools that represents only a tiny fraction of the protected area. In this zone, visitors often arrive with limited understanding of tidepool etiquette, the ecological significance of the reef, or the rules that apply, while online information is fragmented and existing onsite signage is sparse, technical, and easy to miss. At the same time, local residents and traditional users report that their lawful, long-standing cultural and subsistence connections to the reef are frequently misunderstood or mischaracterized, fueling tension between user groups and creating the mistaken impression that the SMCA itself is failing.

Expanding the SMCA boundaries in response to this localized communication gap would not resolve the underlying issues and would create disproportionate harm for subsistence gatherers who rely on legal, sustainable shore-based fishing and gathering to feed their families. For these households, the open areas north and south of the SMCA boundary where it is currently legal to gather shellfish and kelp—renewable sources of protein—are a critical source of affordable, culturally meaningful food that does not require boats, expensive gear, or long travel. When protected boundaries are expanded, the first opportunities effectively lost are these accessible areas, which more affluent or boat-based users can more easily replace elsewhere, but low-income shore-based families often cannot. In practice, a nominally uniform regulatory change becomes an inequitable burden on those with the fewest alternatives, undermining trust in MPA management, weakening voluntary compliance, and eroding long-term support for conservation. Closing the only accessible walk-in reef shoreline in Marin County for local subsistence fishers and gatherers is the type of adverse impact on place-based coastal fishing communities that the Coastal Fishing Communities Policy directs the Commission to recognize, and to minimize.

An expansion and potential redesignation at Duxbury Reef would also compound existing economic pressures on West Marin’s working waterfront and small-scale commercial fleet. Marin County already hosts a high density of marine and coastal protections that significantly constrain viable commercial fishing grounds; further closure or conversion of fishing space in the Duxbury region would push effort into fewer open areas, increase operating costs, and reduce flexibility for businesses operating on narrow margins. For ports and communities that depend on a mix of commercial, charter, and shore-based fishing, this loss of opportunity translates into reduced local landings, less income for skippers and crew, and diminished economic activity for processors, fuel docks, small businesses, and the restaurants and grocery stores that rely on fresh local seafood. Over time, these cumulative impacts would weaken the economic viability of fishing-dependent households and erode West Marin’s local-foods identity,

which depends on the continued availability of locally caught seafood alongside local farm products. This outcome conflicts with Commission policies that support the long-term social and economic health, adaptive capacity, and resilience of coastal fishing communities.

Making such changes without a clear, site-specific peer-reviewed scientific justification would raise serious concerns about environmental justice. Importantly, It would also be inconsistent with the Commission's Justice, Equity, Diversity, and Inclusion (JEDI) policy, which is intended to counteract historic systems of exclusion, reduce disproportionate burdens on marginalized communities, and improve equitable access to nature and abundant fish and wildlife.

Given the looming impacts of climate change on coastal communities—where rising costs, climate-driven disruptions, and habitat shifts already strain household resilience—policy decisions at Duxbury should strengthen, not erode, the ability of marginalized and low-income coastal residents to maintain food security, cultural continuity, and a living relationship with the shoreline. Policy changes must also respect California's constitutional and statutory protections for public access to, and sustainable use of, marine resources, ensuring that any additional restrictions on the right to fish in state waters are narrowly tailored, science-based, and truly necessary to advance legitimate conservation goals.

Our petition offers a constructive alternative: keep the existing Duxbury Reef SMCA boundaries and designation intact, and address the specific problem area through targeted, community-centered education and outreach. Key elements include a youth Coastal Ambassador program that culminates in a short, youth-produced digital welcome—accessible on-site via QR code—and improved, community-designed signage at the main access point. (Cell phone tower improvements are in process and will allow for better connectivity.) These informational displays would be co-designed with local residents, youth, and subject-matter experts in partnership with the county, and willing corporate partners. This process would ensure that on-site messaging is visually clear, multilingual where appropriate, and truly effective at communicating both regulations and shared stewardship values. The community-designed signs would tell a clear, place-based story—what makes Duxbury unique, how current boundaries function, and how local residents, tribal members, small-scale fishers, and commercial operators legally rely on the reef and adjacent waters—alongside simple, actionable guidance on respectful behavior.

Our proposal is grounded in existing science and enforcement records. Long-term intertidal monitoring by UC Santa Cruz and MARIN at Duxbury Reef and nearby sites shows stable rocky shore communities over decades without evidence of collapse under the current configuration, and recent kelp research indicates that, while Northern California bull kelp has experienced regional declines, patches of kelp forest along the North Central Coast remain comparatively resilient and kelp in our area is doing relatively well. Despite this, the current EAC petition does not present clear, site-specific empirical evidence of an ecological problem at Duxbury Reef under the current SMCA, including systematically documented observations, monitoring data, or peer-reviewed analyses that would warrant moving from an education- and enforcement-based approach to a more restrictive no-take regime. Nor is it accompanied by California Department

of Fish and Wildlife (CDFW) enforcement records demonstrating a sustained pattern of SMCA violations at Duxbury Reef that would justify changing the existing designation or boundaries. Taken together, this supports focused, evidence-driven management at Duxbury Reef rather than blanket assumptions of failure.

Any reconsideration of Duxbury's status must also meaningfully include original SMCA stakeholders and educational partners—teachers, schools, and youth programs—who were not engaged in either the original or current petition processes but who prepare thousands of student visitors each year. Our path is stewardship through inclusion, adaptive management, and education, not exclusion—exactly the kind of collaborative, equity-minded approach envisioned in the Commission's JEDI policy and the Marine Life Protection Act—by improving communication and on-the-ground support so that existing rules can be understood, respected, and effectively enforced without a total ban on fishing and gathering.

Together with the proposed formation of a multi-stakeholder implementation group for Duxbury on the model of the [Bolinás Lagoon Advisory Council](#), these measures directly address the true driver of current concerns—localized confusion, not inadequate spatial protection—by increasing understanding and voluntary compliance where problems occur, while preserving the balance of protection and access across the broader SMCA. They avoid additional economic harm to already constrained fishing-dependent communities and affirm the rights and needs of coastal residents who have long depended on Duxbury Reef and nearby grounds for subsistence, culture, livelihood, and the local-foods economy that defines West Marin's sense of place. For these reasons, we respectfully ask the Commission to accept this education-based alternative MPA petition, maintain the current Duxbury Reef SMCA boundaries and designation, and invest in the communication and community partnerships needed to make existing protections work as intended in the specific high-use tidepool area.

We urge the Commission to reject the EAC's 2023-32MPA petition and instead consider our science-driven, multi-stakeholder alternative, which takes the time and the process necessary to build on the protections the Commission established for Duxbury Reef SMCA in 2009. We respectfully disagree with the EAC's assertion that "something needs to happen there that's not just signage, education and enforcement" and instead emphasize that durable stewardship is achieved through science-backed education, clear signage, and community-based programs that foster voluntary compliance—especially when neither long-term intertidal data, kelp studies, nor CDFW records indicate that fishing on the reef is directly harming ecosystem health or that an enforcement crisis exists. Our alternative also establishes a community-led, site-specific adaptive management strategy for Duxbury Reef, so that traditional knowledge, scientific monitoring, and on-the-ground experience can be integrated over time in line with the Decadal Management Review framework. This ensures that education, enforcement, and management adjustments are guided by real conditions on the reef and can evolve as new information emerges. We hope that the EAC will someday recognize the merits of this approach and ultimately withdraw its petition so that, together, we can pursue our common goals through an inclusive, community-driven path—because the future of both the reef and the coastal communities around it rests on collaboration and inclusive stewardship.



Melinda Griffith - Bolinas Resident



Leo Kostelnik - Superintendent of Bolinas-Stinson Unified School District



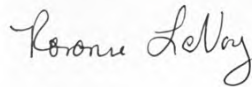
David Ainley - Marine Biologist



Brook Harvey - Marine Biologist



Nick Newcomb - Hydrologist



Rosanne Lavoy - Bolinas restaurant owner, Coast Cafe



Jeremy Dierks- Commercial Fisherman



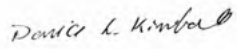
Robert McDonald - Recreational Angler



Estella Mora Lopez - Recreational Angler



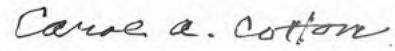
Matt Lewis - Bolinas Business Owner



David L. Kimball - Bolinas Resident



Mollie Lounibos - Educator



Carol A. Cotton - Educator



William Espinosa-Setchko – Subsistence Gatherer

## Procedural Request for Consolidation and Settlement

Because the EAC petition and the Save Duxbury Access petition address the same geography and usage but offer mutually exclusive regulatory philosophies (Exclusion vs. Stewardship), it is procedurally improper to adjudicate the EAC petition in isolation. To avoid an arbitrary decision that causes irreparable environmental, cultural and economic harm to the Bolinas community, the Save Duxbury Access Group requests the following:

- 1. Consolidation of Review:** That the Commission and Department staff review the enclosed "Proposed Enhancements to the existing SMCA / Stewardship Plan" in conjunction with the EAC's "SMR" proposal as a formal regulatory alternative.
- 2. Modification of Process or Stay of Decision:** If the parameters of the ongoing process adopted to review the petitions before the Commission resulting from the adaptive management component of the MLPA Decadal Management Review cannot accommodate the addition of this counter petition, we request the process be modified to allow it to be added. If staff finds this impossible, we request the stay of any eventual decision around the EAC petition until such time that it and this counter petition can be considered at the same time and with the same weight.
- 3. Constructive Settlement:** Save Duxbury Access suggests the Commission direct both parties (EAC and Save Duxbury Access) to enter facilitated discussions to determine if a consensus "Hybrid Approach" can be reached. This hybrid could increase actual reef protection (through signage, community docents, educational partnerships, and targeted adaptations to the existing SMCA as well as improved enforcement), without severing historic community access, and without ending local fishing and subsistence harvesting as collateral damage to what is an educational aim.

The Save Duxbury Access group prefers to resolve these differing approaches through constructive dialogue. However, we are prepared to vigorously defend the community's statutory right to access under the "least restrictive" mandate of the Marine Life Protection Act. We are deeply concerned that 'cumulative impacts' related to multiple regulatory actions and takings in West Marin at large over several decades, and the Duxbury Reef State Marine Conservation Area in particular, have not been adequately evaluated with respect to scientific evidence and cumulative socioeconomic impacts. We are submitting a separate letter to establish the Administrative Record for any necessary, however undesirable, potential future litigation relating to this matter.

Additionally, we respectfully request that all written submissions to the Commission regarding Petition 2023-32MPA be formally recognized and recorded as part of the record of this alternative petition.

Because our alternative petition is expressly aligned with these stated goals, we ask that such correspondence be treated as consistent with, and supportive of, the relief we seek, and that it be considered in the Commission's deliberations on our proposal.

We look forward to your confirmation that this petition has been received.

**February 4, 2026**

**To:** California Fish and Game Commission

P.O. Box 944209 Sacramento,  
CA 94244-2090

Sent via Email: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

Cc: [saveduxburyaccess@gmail.com](mailto:saveduxburyaccess@gmail.com)

**Re: Support for Coastal Ambassadors Pilot Program at Bolinas Stinson Unified School District**

Dear Honorable Fish and Game Commissioners,

As educators and program leaders from the Bolinas-Stinson Union School District we write to express our strong support for exploring the opportunity to implement the Coastal Ambassadors pilot program at our school. We see this initiative as a powerful opportunity to deepen science learning, build youth leadership, and strengthen our communities' relationship with Agate Beach and the Duxbury Reef SMCA.

The Coastal Ambassadors pilot offers a rare “living lab” where students can connect classroom learning directly to a real, nearby marine protected area. Through standards-aligned fieldwork and a youth-led public outreach project using a student-made welcome video and visiting-educator materials, our students can investigate tidepool ecosystems, observe human use first-hand, and explore how conservation, coastal access, and California fishing rights all intersect at one shared shoreline. This place-based approach makes science meaningful and memorable while reinforcing critical thinking, communication, and collaboration skills that support success across subjects.

We are especially excited that the program asks students to step into authentic leadership roles as Coastal Ambassadors. The youth-created welcome video, accompanying visiting-educator materials, signage projects, and “shared shoreline” guidelines invite young people to become thoughtful communicators who can explain safety, tidepool etiquette, and respect for lawful traditional uses in clear, welcoming language. For many of our students, this will be their first chance to speak as representatives of their school and community to visitors from other places. That experience can be transformative—building confidence, empathy, and a sense of responsibility for the coast they are learning to know and love.

The pilot's emphasis on involving traditional users and local fishers as co-teachers and co-designers is equally important to us. Our students need to see that science and local knowledge are not in competition, but can work side by side to care for a place. Hearing directly from people who fish, gather, surf, and steward these shores lets young people understand Duxbury Reef not only as a protected ecosystem, but as part of a living cultural and food

landscape. This kind of nuanced understanding supports more respectful behavior today and more informed civic engagement in the future.

From an educational standpoint, the Coastal Ambassadors pilot program supports multiple state priorities. It aligns with Next Generation Science Standards by engaging students in asking questions, collecting and analyzing data, building models, and designing solutions that reduce human impacts while maintaining access. It supports English Language Arts standards by having students research, write, and present to real audiences. It also advances social-emotional learning and civic readiness by asking students to consider fairness, equity, and shared responsibility in how we use and protect the coast.

We believe this kind of youth-centered, community-grounded education will only strengthen the long-term success of Duxbury Reef SMCA and other marine protected areas across California. When students understand why protections exist and how they connect to the needs of coastal communities, they are more likely to support and model respectful behavior—both now and as future voters, parents, and leaders. In our view, investing in programs like Coastal Ambassadors is an investment in durable, community-supported conservation.

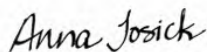
For these reasons, we are eager to participate as partners in the Bolinas–Stinson Coastal Ambassadors pilot. We respectfully ask the Commission to recognize the educational value of this work and to view it as a positive complement to your management of Duxbury Reef SMCA. We look forward to continuing to collaborate with local partners, families, and traditional users to make this program a success for students and for the coast we all share.

Thank you for your consideration and for your stewardship of California’s marine environments.

Sincerely,



Leo Kostelnik  
Superintendent  
Bolinás Stinson Unified School District



Anna Tosick  
4th/5th grade teacher  
Bolinás Stinson Unified School District



Meadow Evans  
Steering Committee Secretary  
Bolinás Stinson Young Stewards of the Land and Earth Allies

# Bolinas-Stinson Union School District Coastal Ambassadors Pilot Program

The Bolinas–Stinson Coastal Ambassadors program is a fully Next Generation Science Standards (NGSS)-driven, California Common Core-aligned way to turn our local shore into a living classroom while explicitly honoring traditional coastal users and California’s coastal fishing rights. Traditional users are invited in as co-teachers and co-designers of solutions, helping students evaluate conservation measures that protect biodiversity and keep California’s coastal fishing rights and access meaningful. It uses the same phenomena students already see at Duxbury Reef—changing tidepools, increased visitation, and local fishing traditions—as the anchor for three-dimensional science learning, literacy, and real community stewardship. Conservation is taught as something done with local communities, not to them. Students analyze dynamic impacts on intertidal ecosystems, then co-design solutions—like youth-led monitoring, tidepool etiquette, and clearer signage—that both protect sensitive species and respect California’s coastal fishing rights.



# Coastal Ambassadors Pilot Program: **Index**

**1. Program Overview:** Big Science Ideas and Standards Links - 4th/5th grade

**2. Core Instructional Units**

3.1 Unit 1 – Tidepool Life & Habitats

3.2 Unit 2 – People and the Shore

3.3 Unit 3 – Public Outreach Project

**3. Field Lesson: Monitoring at Duxbury Reef**

4.1 Pre-Trip Classroom Lesson

4.2 On-Site Intertidal Survey

4.3 Post-Trip Data and Reflection

**4. Local Users, Rights, and Responsibilities**

5.1 Local Traditional Users at Duxbury Reef

5.2 Coastal Access and Shared Space

5.3 California’s Constitutional Right to Fish

**5. Youth Public Outreach Project**

6.1 Digital “Welcome to the Reef” (English/Spanish)

6.2 Classroom guide for visiting educators

# Coastal Ambassadors Pilot Program: Outline

Equip 4th/5th grade students to use local intertidal ecosystems (Duxbury Reef/Agate Beach) as a living lab to meet Next Generation Science Standards (NGSS) while learning how conservation, traditional uses, and California coastal fishing rights fit together.

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## Big Science Ideas (grade-level friendly)

- Students learn that different tide zones are like “neighborhoods” where different plants and animals live. (NGSS CA 4-LS1-1; 5-LS2-1 focus on structure, roles, and ecosystems)
- They see how waves, tides, and people can help or hurt tidepool animals. (4-ESS3-2; 5-ESS3-1)
- They design simple ways (rules, signs, and a digital welcome) to protect tidepools while still welcoming families who fish or gather food legally. (4-ESS3-2; 5-ESS3-1)

## Unit Flow

### Unit 1 – Tidepool Life & Habitats

- Find and name common tidepool animals and seaweeds. (4-LS1-1)
- Notice which zones they live in and make easy charts or drawings of patterns. (Practices: analyzing and interpreting data)
- Build simple food webs showing “who eats whom.” (5-LS2-1-type ecosystem idea)

### Unit 2 – People and the Shore

- Read or hear short stories about local tribal members, fishers, and families who visit or gather food at the coast. (5-ESS3-1 – communities using science to protect environments)
- Map where people spend time and where the most fragile tidepool areas are. (Practices: using maps/models; 4-ESS3-2/5-ESS3-1)
- Talk about fair sharing: public access to the coast, the right to fish, and why we need rules to keep people and places healthy. (5-ESS3-1)

### Unit 3 – Public Outreach Project

- Create kid-made signs, class rules, and “shared shoreline” tips for visitors. (4-ESS3-2; 5-ESS3-1 – designing/proposing solutions)
- Develop a short, kid-friendly digital “Welcome to the Reef” using students’ voices and artwork to share safety, tidepool care, and respect for all users. (Science & Engineering Practices + ELA writing/speaking)

## **Assessments & Outcomes**

- Work samples: tidepool notebooks with drawings/labels, simple graphs or charts, maps, and models of food webs. (Supports 4-LS1-1; 5-LS2-1 practices)
- Projects: rubric-scored signs, class rules, and the digital welcome script that use facts and kind, inclusive language. (4-ESS3-2; 5-ESS3-1 + ELA writing/speaking)

## **What Students Can Do (linked back to NGSS)**

- Explain in their own words how the local tidepools work and how people fit in. (4-LS1-1; 5-LS2-1; 5-ESS3-1)
- Suggest kid-friendly ways to protect tidepools that still allow access and legal fishing. (4-ESS3-2; 5-ESS3-1 – solutions that reduce impacts)
- Act as Coastal Ambassadors by creating and sharing a clear, respectful digital welcome for other students and visitors. (Science communication practices + ELA speaking/listening)

# Unit Overview - 4th/5th grade

## Monitoring Intertidal Surveys at Duxbury Reef

Students will learn to spot common tidepool species, collect simple data at Duxbury Reef, and explain how this helps us see changes in the ecosystem over time.

### Pre-Trip (Classroom, 1 period)

- Show where Duxbury Reef is and what “intertidal zones” are (high, middle, low on the rocks).
- Teach 6–8 easy-to-recognize tidepool species (like mussels, barnacles, snails, and seaweed).
- Show how scientists use simple tools called transects and quadrats (a line and a square) to count what they see.
- Let students practice with printed “photo quadrats” and fill in a sample data sheet together.

### Field Lesson at Duxbury (Half day, low tide)

- Review safety rules and “reef manners” (watch your step, don’t pry animals off rocks, stay with your group).
- Put students in small groups and give each person a job (recorder, quadrat helper, species spotter, safety watcher).
- Have each group lay 1–2 short lines (transects) from higher rocks to lower rocks and place the quadrat at marked spots.
- At each spot, students record which main species or rock type they see and notice patterns (which species are higher up, which live lower down).

### Post-Trip (Classroom, 1 period)

- Put all group data together into one class chart or table.
- Make simple graphs (like bar charts) to show where certain species, such as mussels or seaweed, are most common.
- Talk about what the patterns might mean (for example, more waves or more drying near the top, more trampling near paths).
- Explain how doing the same survey again in future years could help people see if Duxbury Reef is changing.
- Quick writing: “What did our data tell us about life at Duxbury Reef, and why is it important to keep checking?”

# Unit Overview - 4th/5th grade

## Local Traditional Users at Duxbury Reef, Access Rights, and California's Constitutional Right to Fish

Students will be able to describe local coastal users, explain basic coastal access rights, and tell in simple words what California's "right to fish" means

### Local Traditional Users

- Class brainstorm with photos of tribal members, local fishers and shellfish gatherers, surfers, docents, and long-time families.
- Students make a simple "coast users map" that shows how each group uses and cares about the shore.

### Access Rights and Shared Space

- Short teacher talk about the coast as a shared public place that belongs to everyone.
- A few quick "what would you do?" stories (a blocked path, a crowded reef) where students say who is affected and what respectful behavior could look like.

### Right to Fish in California

- Read a kid-friendly version of the rule in the California Constitution that says people are allowed to fish from public lands and waters.
- Make a class T-chart of "Rights and Responsibilities":
  - Rights: people can fish from public places like piers, beaches, and rocks.
  - Responsibilities: follow seasons and limits, respect protected areas, and fish in ways that keep animals and habitats healthy.

### Exit Check

- Quick write (about 3–4 sentences):
  - "Name one traditional coastal user, one coastal right, and one reason we still have rules that can limit fishing or access."

# Coastal Ambassadors Pilot Program: Public Outreach Project

Project Goal - 4th/5th grade

Create a short, kid-friendly digital “Welcome to the Reef” that visitors can access on-site (QR code / link) and that uses the real voices, ideas, and artwork of Bolinas youth.

## Goal and Audience

- Create a short, kid-friendly digital welcome to Duxbury Reef using Bolinas students’ voices and artwork to reach visiting classes, local and visiting families, and new community members, in both English and Spanish.

## Core Content

- Welcome to the reef and why it is special.
- Simple tidepool rules (how to walk, what not to touch or take).
- Brief note on local traditional users and that people have both rights and responsibilities.

## Student Creation

- In class, students brainstorm what visitors should know before stepping on the reef.
- Small groups write short, simple lines for the script in English; key lines are then translated into Spanish (with help from bilingual staff, families, or community partners).
- Students record an English version and a Spanish version using youth narrators for each language.
- Students create drawings of the reef, key species, and “do/don’t” behaviors. **Digital**

## Products

- Combine student audio and art into two short videos or narrated slideshows (one in English, one in Spanish), each about 2–4 minutes.
- Add short on-screen captions in the matching language for the most important rules and ideas.

## Access and Sharing

- Make QR codes linking to the English and Spanish versions, clearly labeled at the main access point (e.g., “Welcome / Bienvenida”).
- Include both QR codes on teacher handouts and simple flyers so groups can watch before or during their visit.
- Share links through school newsletters, local partners, and community boards in both English and Spanish.

# Coastal Ambassadors Pilot Program: Visiting Educator Outline

Welcome, and thank you for bringing your students to Agate Beach/Duxbury Reef. This outline is a short, teacher-friendly planning guide for your visit, highlighting key learning goals, simple pre-trip and post-trip activities, and what to expect on site so students arrive ready to explore tidepools, think about how people share the coast, and practice caring, respectful behavior at the reef together.

## 1. Welcome and Purpose

- Brief note from Bolinas–Stinson introducing the Coastal Ambassadors pilot program
- One sentence on goals: tidepool science, shared coastal use, and respectful behavior

## 2. Key Learning Goals

- Students will:
  - Identify a few common tidepool species and zones
  - Understand that many people use this coast, including for food
  - Name simple ways to protect tidepools while respecting legal fishing and access

## 3. Pre-Trip Prep (1–2 Class Periods)

- Show where Duxbury Reef is, introduce intertidal zones, and identify 6–8 focal species
- Briefly discuss local traditional users and “rights and responsibilities” at the coast
- Watch the student-made “Welcome to the Reef” (English/Spanish)

## 4. Field Trip Basics

- Meeting time and place; tide and parking notes
- What students need (clothes, shoes, clipboards)
- Safety and “reef manners” expectations

## 5. On-Site Activities

- Short orientation using Bolinas-Stinson youth made “Welcome Video”
- Small-group tidepool monitoring with simple data sheets
- Quick discussion prompts about who uses the reef and how to share the space

## 6. Post-Trip Follow-Up

- Combine class data into one chart; make simple graphs and discuss patterns
- Short reflection writing: “What I learned about the reef and how people fit in.”
- Optional Activity: Have students create a mini poster or slide about “how to be a good guest at the reef” and share it back with Bolinas–Stinson

# Community Signage Project Proposal

## Agate Beach Access to Duxbury Reef SMCA

A community-led signage project would bring Bolinas–Stinson students, local residents, county staff, and supportive businesses together to redesign the signs at Agate Beach as a shared effort. Using simple Design Thinking steps—listening to visitors, defining the main confusion points, brainstorming ideas, testing draft signs, and then installing improved versions—the group would co-create clear, bilingual, kid-friendly signs that reflect local knowledge, protect the reef, and support fair access for traditional users and visitors alike.



# Community Signage Project Proposal

## Agate Beach Access to Duxbury Reef SMCA

### 1. Project Purpose and Partners

- Purpose
    - Create clear, welcoming, and effective on-site signs at Duxbury/Agate that support protection, access, and equity
    - Make the design process community-led, with youth at the center
  - Core partners
    - School: Bolinas–Stinson School (students, teachers, admin)
    - County: Parks/public works/coastal access staff
    - Corporate sponsors: local or regional businesses supporting materials, printing, or tech
- 

### 2. Design Thinking Framework

Use a simple 5-step Design Thinking cycle:

1. Empathize – understand users
  2. Define – agree on the main problems to solve
  3. Ideate – brainstorm many sign ideas
  4. Prototype – make simple test versions
  5. Test & Refine – try them, get feedback, improve
- 

### 3. Phase 1: Empathize (Listen and Observe)

- Activities
    - Student + community “reef walks” to watch where people get confused or break rules
    - Short interviews with:
      - Local residents, traditional users, fishers, docents
      - Visiting teachers and families
    - Quick surveys or sticky-note boards at school and community spots (“What confuses you at Duxbury?”)
  - Outputs
    - List of common questions and pain points
    - Map of “trouble spots” where signs are needed most
-

## 4. Phase 2: Define (Clarify the Signage Needs)

- Joint workshop (school + county + community reps)
    - Sort what you learned into 3–5 key problems (e.g., “Kids don’t know tidepool best practices”, “Visitors don’t know that some people fish and gather here legally.”)
    - Prioritize sign types:
      - Welcome/overview
      - Map/wayfinding
      - Rules/etiquette
      - Cultural/traditional users and rights
  - Outputs
    - Short problem statements for each sign or sign cluster
    - Agreement on locations and number of signs
- 

## 5. Phase 3: Ideate (Brainstorm Sign Concepts)

- Co-design sessions
    - Mixed groups of students, community members, county staff, and sponsor reps
    - Brainstorm content, visuals, and formats:
      - Kid-friendly language, bilingual (English/Spanish)
      - Icons and simple diagrams
      - QR codes linking to youth-produced digital welcome
    - Encourage many ideas; no “perfect” sign yet
  - Role of Sponsors
    - Share examples of durable materials, printing options, and accessibility best practices
    - Offer in-kind design support, if they have design teams
  - Outputs
    - Rough sketches, wording drafts, and layout ideas for each key sign
- 

## 6. Phase 4: Prototype (Make and Test Draft Signs)

- Low-cost prototypes
    - Print large paper/poster versions of signs and temporarily place them at Agate Beach access
    - Use student art and draft text; clearly mark as “test” signs
  - Feedback collection
    - Short on-site questions for visitors (“What’s clear? What’s confusing?”)
-

- o Teacher and student walk-throughs: “Would you know where to go and what to do?”
  - o County staff review for regulatory accuracy and liability
  - Outputs
    - o Marked-up prototypes showing what to keep, change, or remove
    - o Final content and design decisions
- 

## 7. Phase 5: Final Production and Installation

- Design finalization
    - o Graphic designer (sponsor or contractor) cleans up layouts using community-chosen colors, fonts, and images
    - o Ensure accessibility: contrast, font size, multilingual text, icons
  - Funding and production
    - o Corporate sponsors and county share costs for fabrication and installation
    - o School and community thanked/featured on the signs (e.g., “Designed with Bolinas–Stinson students and community”)
  - Installation
    - o Coordinate with county for placement, mounting, and any permits
    - o Host a community “sign unveiling” with students explaining their work
- 

## 8. Maintenance and Iteration

- Maintenance plan
  - o County responsible for physical upkeep
  - o School “sign stewards” (student club or class) check condition each year
- Ongoing improvement
  - o Every 2–3 years, repeat a mini Design Thinking cycle:
    - Are visitors still confused anywhere?
    - Do signs need updates (rules, languages, QR links)?

# Design Thinking: Effective Signage

Several research strands support the idea that locally designed, user-centered signage created through Design Thinking Strategies or participatory processes is more effective than top-down, text-heavy signs. A community-led signage project would bring Bolinas–Stinson students, local residents, county staff, and supportive businesses together to redesign the signs at Agate Beach as a shared effort, putting those principles into practice.

- Design-thinking signage improves wayfinding and clarity.  
A “Signage by Design” study at the University of Technology Sydney used a design-thinking process (empathize, prototype, test) with real library users and found that redesigned signs significantly improved people’s ability to orient themselves and find what they needed.
- User-centered, co-designed signage is more inclusive and effective.  
Research on user-centered signage graphics shows that involving marginalized users (e.g., partially sighted people) in co-design leads to clearer, more accessible signs that better match real needs and improve overall wayfinding effectiveness.
- Participatory design in environmental settings increases relevance and engagement. A study of participatory design in visitor centers found that co-creation sessions with visitors helped produce environmental messages and signage that were more relatable, appropriate, and appealing, strengthening engagement with conservation goals.
- Local, community-tailored displays change attitudes and understanding. A community exhibit study by Rare showed that well-crafted, locally relevant environmental displays significantly increased people’s confidence and understanding about targeted behaviors, suggesting that localized, user-tested visuals can correct misperceptions and support behavior change.
- Resident involvement improves trust, ownership, and system effectiveness.  
District-scale research on sign systems concludes that involving residents in design and implementation fosters ownership, trust, and long-term effectiveness of the signage system in keeping people informed and engaged.

Together, these findings support the argument that a student-led, design-thinking signage project at Agate Beach—rooted in local users’ perspectives, prototyped and user-tested, and co-created by Bolinas–Stinson students, community members, and partners—will produce clearer, more trusted, and more effective signs than generic, top-down designs.

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# MARINe

Multi-Agency Rocky Intertidal Network [pacificrockyintertidal.org](http://pacificrockyintertidal.org)

Home / Site Info / Bolinas Point / **Bolinas Point Long-Term trends**

## Bolinas Point Long-Term trends



In order to standardize species resolution across all MARINe groups and over time, some species (typically rare) were lumped for graphical presentation of Long-Term monitoring data. See [lumped categories](#) for definitions (some variation occurs between methods and over time).

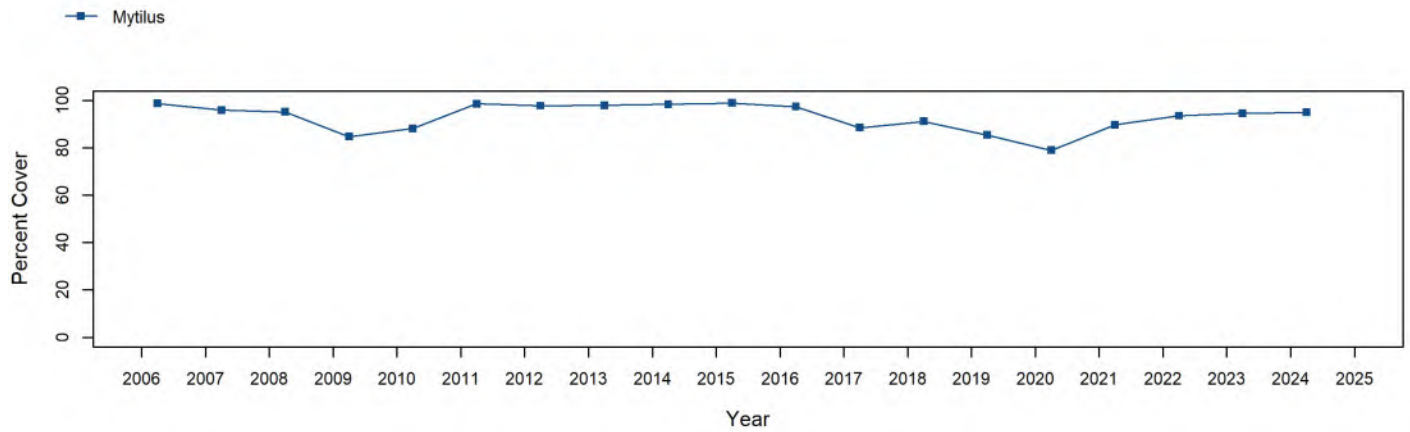
If you experience any barriers accessing the trend graphs below, please contact ([pacificr@ucsc.edu](mailto:pacificr@ucsc.edu)) for help.

## Photo Plots

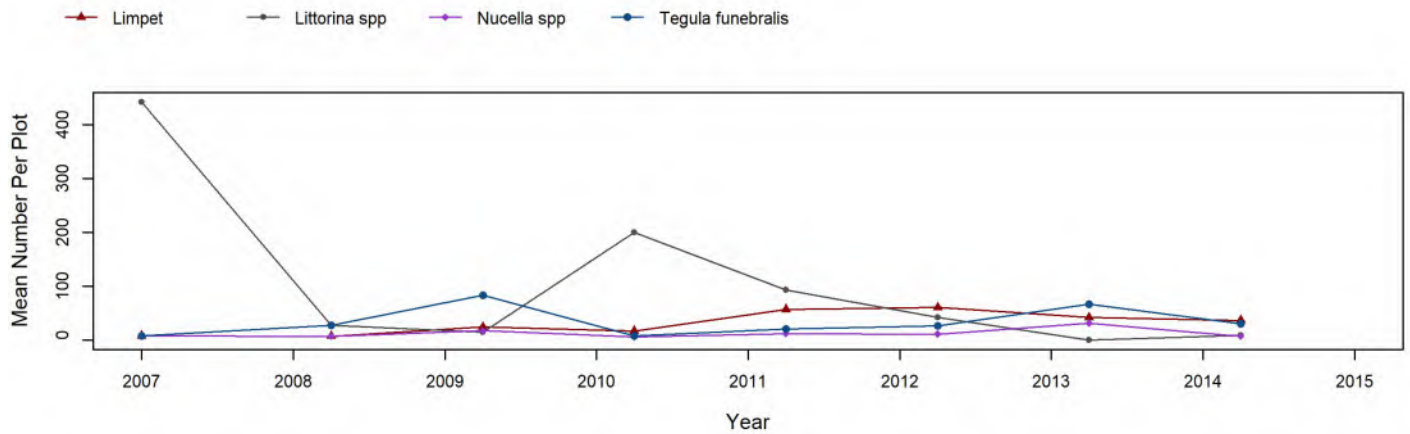


Below are the trends observed for each [Photo Plot target species](#) at this site. Long-Term percent cover trend graphs also include any species that reached a minimum of 25% cover during any single point in time within a given target species assemblage. Breaks in trend lines represent missed sampling events. For additional species observed that did not meet this 25% threshold, please use the [Graphing Tool](#).

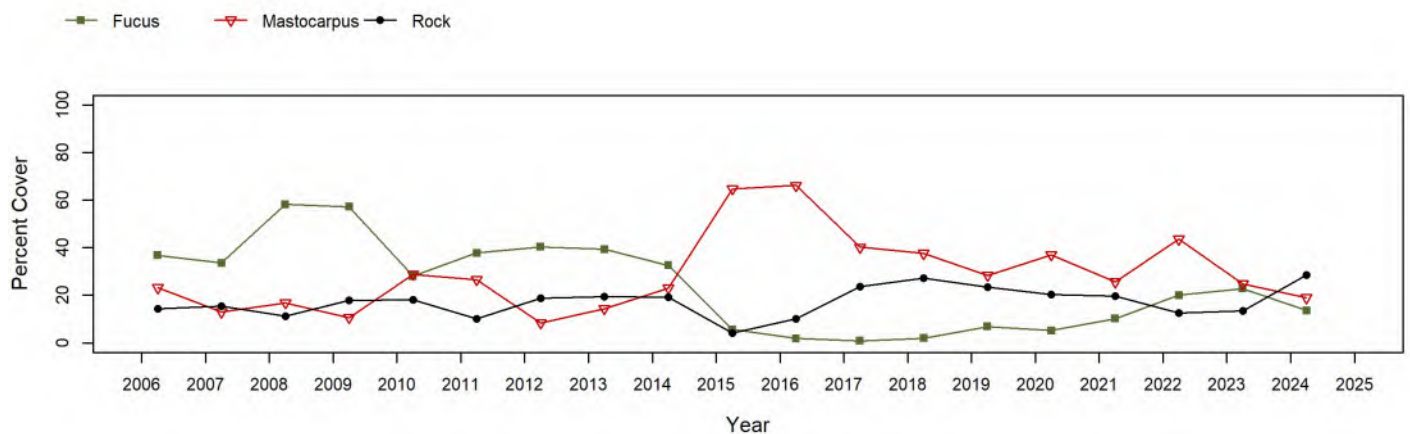
### Mytilus (California Mussel) – percent cover



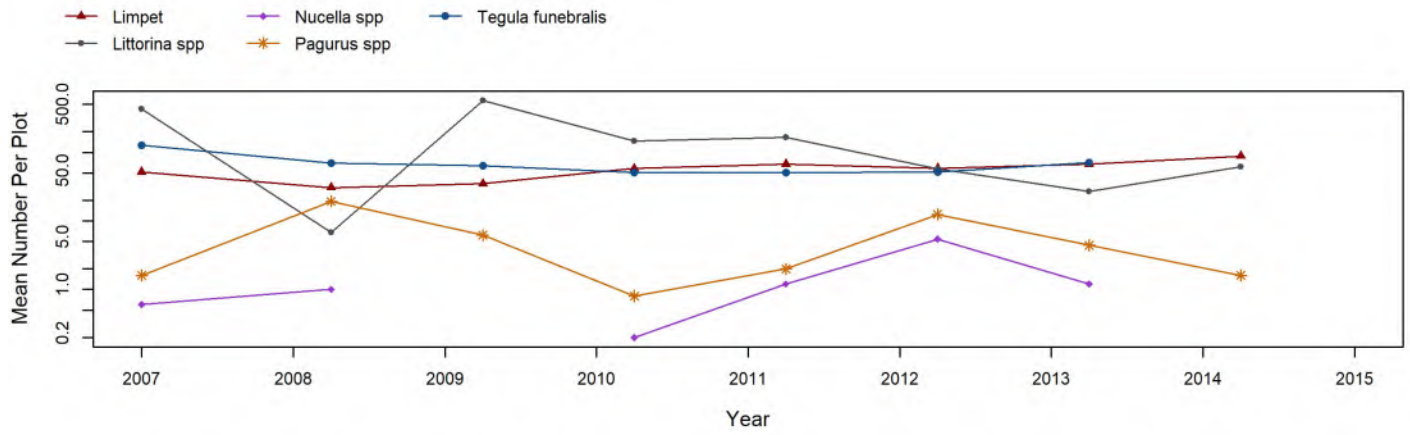
### Mytilus (California Mussel) – motile invertebrate counts



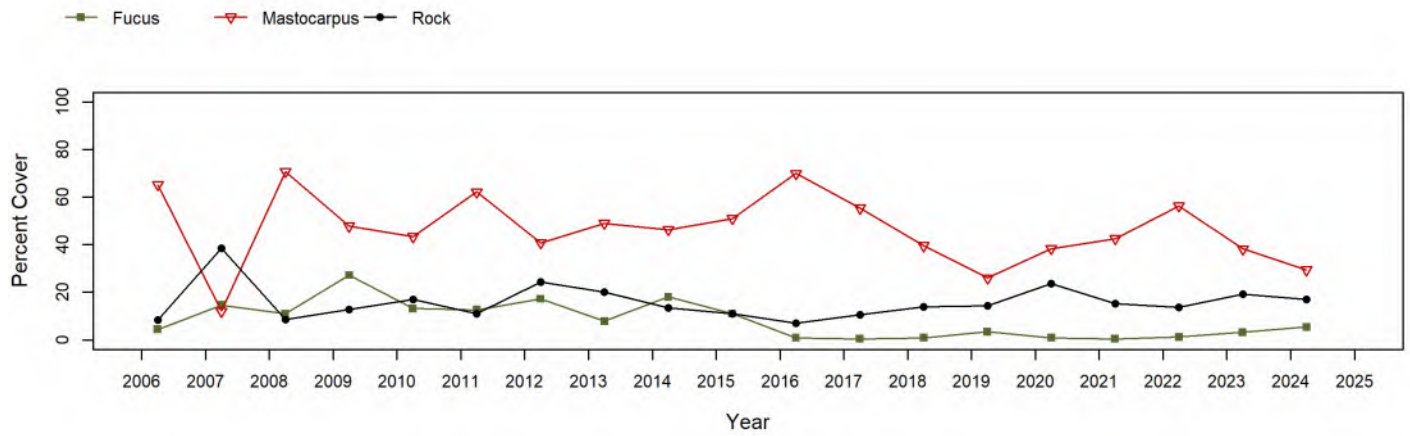
### Fucus (Northern Rockweed) – percent cover



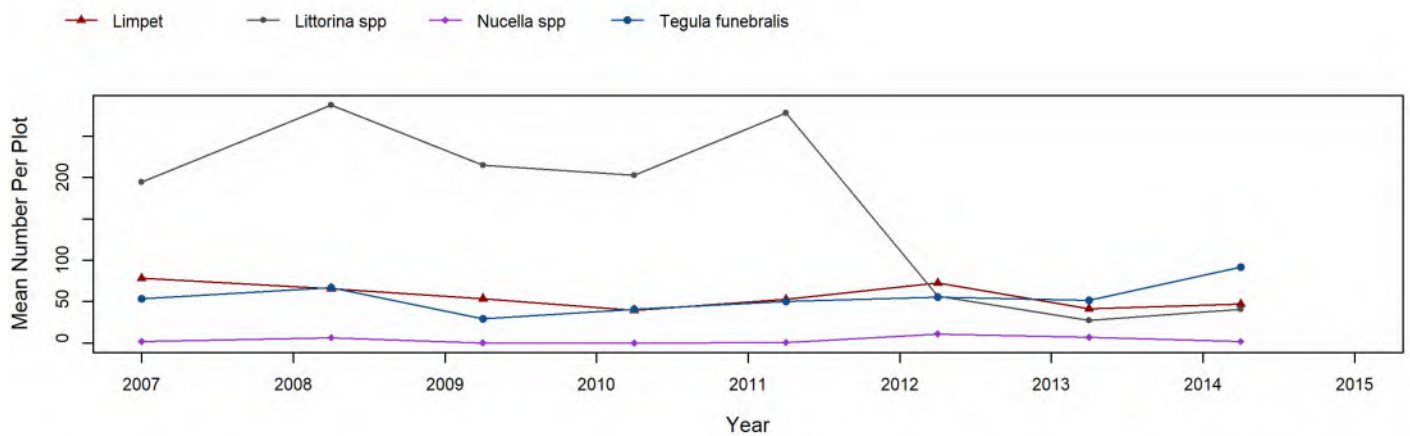
## Fucus (Northern Rockweed) – motile invertebrate counts



## Mastocarpus (Turkish Washcloth) – percent cover



## Mastocarpus (Turkish Washcloth) – motile invertebrate counts

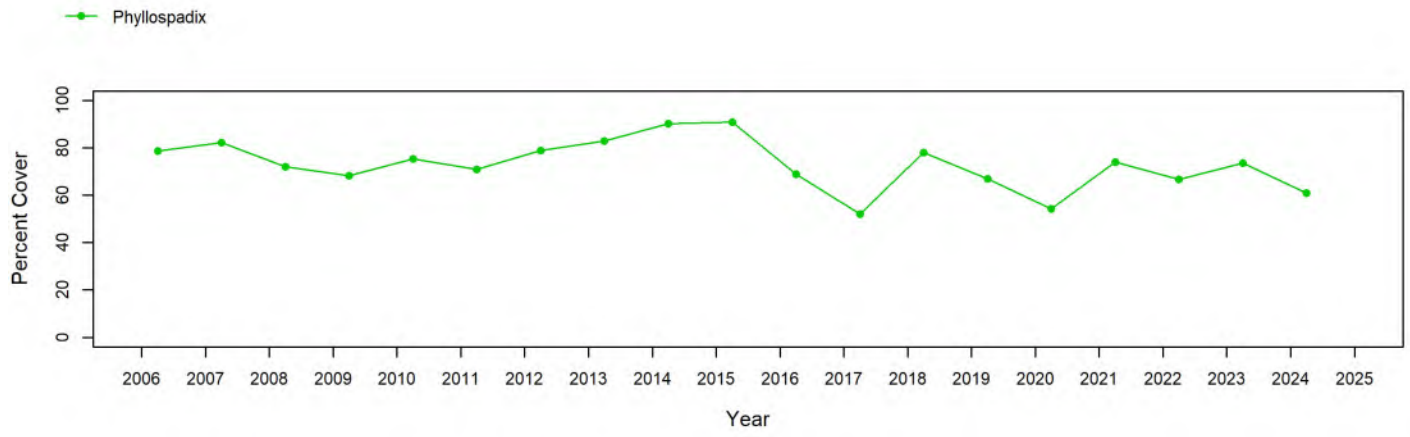


## Transects



Below are the trends observed for each [Transect target species](#) at this site. Long-Term trend graphs also include any species that reached a minimum of 25% cover during any single point in time within a given target species assemblage. Breaks in trend lines represent missed sampling events.

# Phyllospadix (Surfgrass)

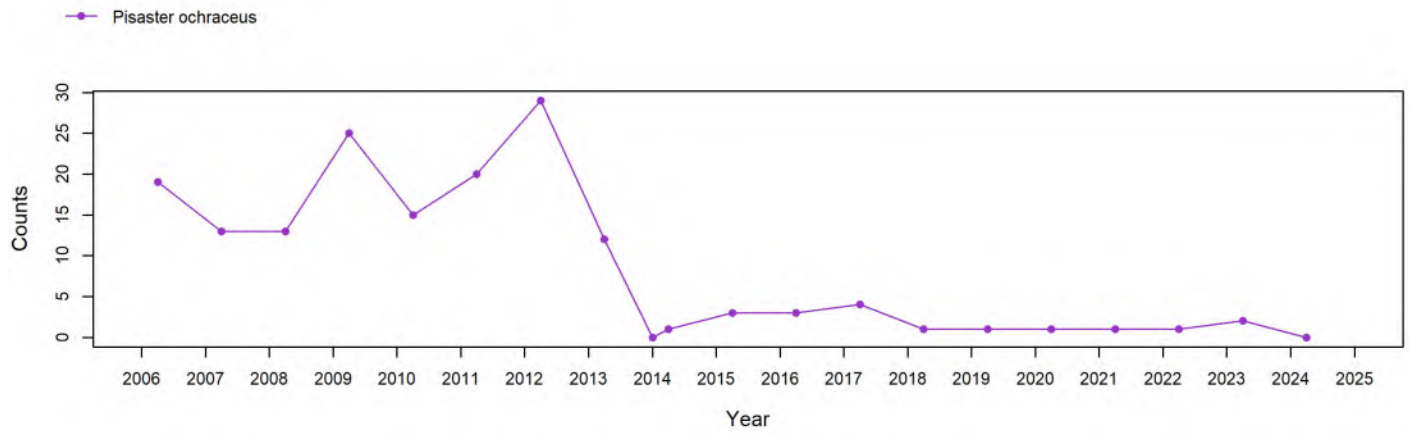


## Species Counts and Size

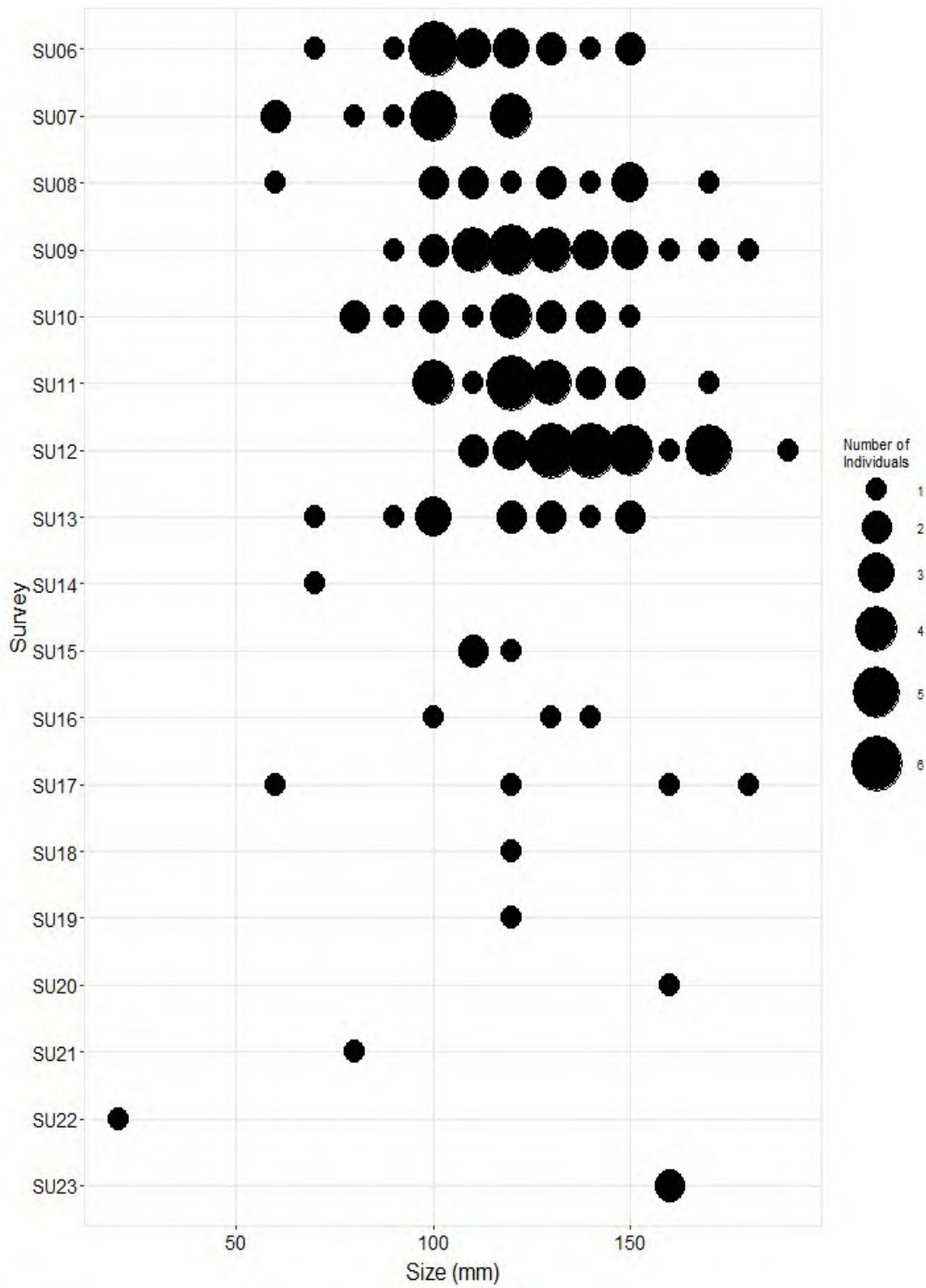


[Species Counts and Sizes](#) (where recorded) for *Pisaster* are shown below for this site. At some sites, other sea star species and *Katharina* are counted in addition to *Pisaster*. The sum of all individuals across all plots is displayed. Note that data gaps are represented by breaks in long-term count trend lines, but are not shown in size plots.

# Pisaster ochraceus (Ochre Star) – counts



# Pisaster ochraceus (Ochre Star) – sizes



Multi-Agency Rocky Intertidal Network



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Title: SBC LTER: Time series of quarterly NetCDF files of kelp biomass in the canopy from Landsat 5, 7 and 8, since 1984 (ongoing)

Creators: Bell, Tom W  
Cavanaugh, Kyle C  
Siegel, David A

Publication Date: 2024-11-04

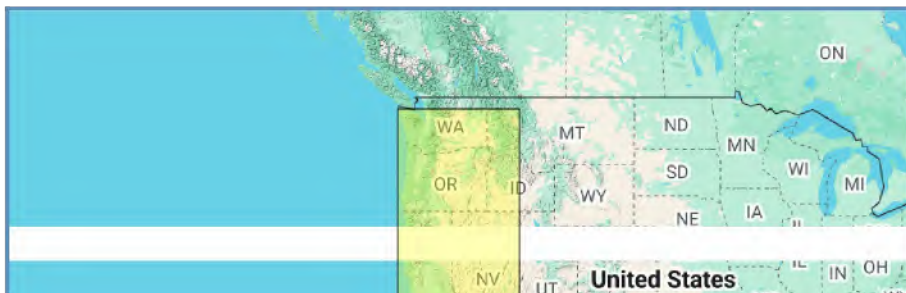
Citation: Bell, T., K. Cavanaugh, and D. Siegel. 2024. SBC LTER: Time series of quarterly NetCDF files of kelp biomass in the canopy from Landsat 5, 7 and 8, since 1984 (ongoing) ver 26. Environmental Data Initiative. <https://doi.org/10.6073/pasta/a9071a2ce1b78242c2ad1dda5854ec78> (Accessed 2026-02-04).

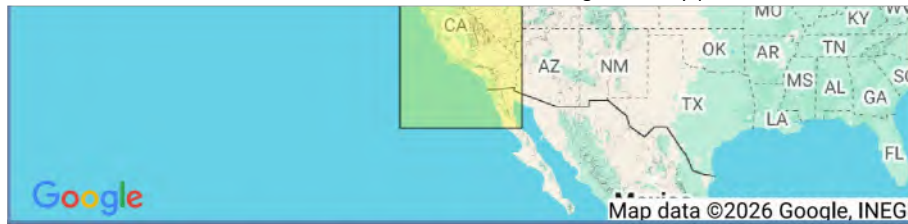
Copy Citation

Abstract: This data file represents a time series of canopy area of giant kelp, *Macrocystis pyrifera*, and bull kelp, *Nereocystis luetkeana*, and canopy biomass of giant kelp derived from Landsat 5 Thematic Mapper (TM), Landsat 7 Enhanced Thematic Mapper Plus (ETM+), Landsat 8 Operational Land...

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N: 48.4 S: 27.01 E: -114.04 W: -124.77

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Data Entities:

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2. Patch definition in metapopulation analysis: a graph theory approach to solve the mega-patch problem (10.1890/13-0221.1), *Ecology* (knb-lter-sbc.74.10) [🔗](#)
3. Extreme warming challenges sentinel status of kelp forests as indicators of climate change (10.1038/ncomms13757), *Nature Communications* (knb-lter-sbc.74.10) [🔗](#)
4. Diet of a threatened endemic fox reveals variation in sandy beach resource use on California Channel Islands (10.1371/journal.pone.0258919), *Plos one* (knb-lter-sbc.74.13) [🔗](#)
5. Modeling the past, present, and future distributions of endangered white abalone (*Haliotis sorenseni*) to inform recovery efforts in California (10.1371/journal.pone.0259716), *Plos one* (knb-lter-sbc.74.13) [🔗](#)
6. Southward decrease in the protection of persistent giant kelp forests in the northeast Pacific (10.1038/s43247-021-00177-9), *Communication Earth and Environment* (knb-lter-sbc.74.13) [🔗](#)
7. Blue Carbon and Kelp: Exploring the Potential of *Macrocystis Pyrifera* as an Emerging Blue Carbon Sink, Thesis (knb-lter-sbc.74.10) [🔗](#)

8. Winter oceanographic conditions predict summer bull kelp canopy cover in northern California (10.1371/journal.pone.0267737), Plos one (*knb-lter-sbc.74.14*) 
9. Disturbance and nutrients synchronise kelp forests across scales through interacting Moran effects (10.1111/ele.14066), Ecology Letters (*knb-lter-sbc.74.14*) 
10. CubeSats show persistence of bull kelp refugia amidst a regional collapse in California (10.1016/j.rse.2023.113521), Remote Sensing of Environment (*knb-lter-sbc.74.18*) 
11. Unraveling the causes and consequences of dynamic species interactions in California kelp forests, UCSB Dissertation 2023 (*knb-lter-sbc.74.15*) 
12. Evaluating the effects of temperature on kelp forest persistence, CALIFORNIA STATE UNIVERSITY, NORTHRIDGE 2024 (*knb-lter-sbc.74.24*) 

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Acorn mast data (1995-2025), Black Rock Forest, Cornwall, NY

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This webpage was updated on June 12, 2025

## FOR IMMEDIATE RELEASE: California's Marine Protected Area Network Recognized as International Gold Standard for Marine Conservation

FOR IMMEDIATE RELEASE June  
12, 2025

Media Contacts:

[Kirsten Macintyre](#), California Natural  
Resources Agency

SACRAMENTO – This week, [California's marine protected area network](#) was [officially accepted](#) to the [International Union for Conservation of Nature \(IUCN\) Green List of Protected and Conserved Areas](#), a high-profile international certification that recognizes the most successful examples of biodiversity conservation worldwide. California's system of marine protected areas, or MPAs, is the first nature network in the world to receive this honor.

"We're thrilled that California's marine protected area network will join the IUCN Green List," said **Wade Crowfoot, California's Secretary for Natural Resources**. "As the first nature network in the world to be awarded Green List status, the system of 124 protected areas along our coast provides an important model of science-based conservation at large scale. Nature networks like this are essential to protect and restore nature across our planet and help all life thrive."

California's 124 MPAs span the state's 1,100-mile coastline and cover 16% of state waters. Just as California's State Parks protect special places on land, MPAs protect a variety of iconic coastal and marine ecosystems, from sandy beaches and estuaries to kelp forests and deep underwater canyons. About half of the MPA network is fully protected by no-take marine reserves.

California's MPAs were intentionally designed to function as an ecologically connected network, helping to maintain the flow of life between ecosystems. The first [Decadal Management Review](#) of the MPA network, completed in 2023, clearly demonstrated that MPAs are providing important ecological benefits, with more and bigger sea life found within many MPAs compared to unprotected areas across the state. MPAs also support coastal communities, conserving ecosystems for their economic value and providing unparalleled opportunities for surfing, diving, kayaking, and other recreational activities – helping to drive California's multi-billion dollar ocean economy.

Green Listing of the MPA network represents the culmination of a seven-year evaluation process conducted by IUCN in close collaboration with an expert panel of Californians representing diverse sectors such as marine ecology, fishing, recreation, tourism, and resource management. The California Ocean Protection Council, the California Department of Fish and Wildlife, and the California Fish and Game Commission worked together to provide evidence demonstrating the MPA network's alignment with the [global Green List standard](#), which focuses on positive

outcomes for both nature and people. Further cementing its status as a global leader in biodiversity conservation, California helped IUCN tailor its Green List standard so that it could be applied to a large-scale network, which will ultimately help advance nature networks around the world.

“This success demonstrates the collaborative spirit driving California’s marine conservation,” said **Samantha Murray, Vice President of the California Fish and Game Commission**, the primary designating entity for the MPA network. “We look forward to continuing to work alongside our sister agencies, tribal stewards, and stakeholders to adaptively manage this globally recognized, interconnected system.”

Adaptively managing California’s MPAs so that they continue to provide strong protections for coastal and marine ecosystems, especially in the face of a changing climate, is one of the ways in which California will meet its goal to conserve 30% of coastal waters by 2030. A key management recommendation highlighted in the Decadal Management Review, and endorsed by IUCN, is enhancing engagement with California Native American tribes. Initially not recognized as full partners in the MPA planning process, tribes are now working with the state to monitor and manage coastal waters within their ancestral territories. Moving forward, California is committed to improving state agencies’ tribal engagement and relationship-building efforts, creating a clear pathway to tribal MPA management, and building tribal capacity to participate in MPA management activities.

“This is such great news. The Green List recognition of California’s Marine Protected Area network showcases the state’s leadership in biodiversity conservation,” said **Charlton H. Bonham, Director of the California Department of Fish and Wildlife**. “California is committed to protecting marine ecosystems and fostering cooperation through strengthened partnerships with Native American tribes as we strive to conserve 30% of coastal waters by 2030.”

Managing California’s MPAs is a collaborative effort that brings together state and federal agencies, California Native American tribes, academic researchers, and community partners. These strong partnerships have always been essential to ensuring the long-term success of the network. Now, with this international recognition, California has also joined a worldwide community of conservation practice that provides an opportunity for our state to lead on the global stage while also learning from others around the world.

“As someone who was deeply involved in the MPA designation process and is now helping the state maximize ecological and community benefits through successful MPA management, I am so proud to see our MPA network join the IUCN Green List,” said **Jenn Eckerle, California’s Deputy Secretary for Oceans and Coastal Policy and Executive Director of the California Ocean Protection Council**. “While there is much work ahead, this honor confirms that our MPA network truly is the gold standard for marine conservation.”



**Categories:** [30x30](#), [Coastal Habitats](#), [Habitats](#), [Marine Habitats](#), [Marine Protected Areas](#), [Press Releases](#), [Strategic Goal 1: Climate Change](#), [Strategic Goal 2: Equity](#), [Strategic Goal 3: Biodiversity](#)

## Who We Are

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# Improving Community Communication: The Impact of the Sign System on the District Scale

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**Abstract.** This article examines the impact of the sign system on community communication at the sub-district level. It focuses on its role in enhancing public engagement and information dissemination. The study assesses the effectiveness of various types of signage in fostering community involvement and supporting decision-making processes. This evaluation is accomplished by thoroughly examining secondary data acquired from various sources. In accordance with the findings, well-designed signage not only enhances the accessibility of information and the level of community engagement, but also assists in strengthening the identity of the local community as well as assisting in successfully navigating and managing public places. The research highlights the importance of incorporating cultural elements and local language into signage design to foster a sense of belonging and improve communication within communities. It is, therefore, crucial that the authorities of the sub-district give the greatest attention to the process of developing and implementing comprehensive signs system plans.

**Keywords:** Sign System, Visual Communication, Local Community.

## 1 Introduction

Effective communication within the community is essential to ensure seamless coordination and encourage active population participation [1]. Clear, timely, and accessible communication fosters an environment where residents are well-informed about local events, services, and initiatives, thus allowing them to engage more actively and effectively in community life [2]. It, in turn, increases social cohesion and nurtures a sense of belonging and shared responsibility among members of society.

On a sub-district scale, the signage system can be indispensable in disseminating information, directing traffic flows, and strengthening community identity. An effective signage system is considered an important element that can assist visitors in the process of navigating within the area [3]. These signs serve as essential tools for navigation and communication, providing residents and visitors with explicit directions to important locations, such as educational institutions, healthcare facilities, and public parks. Additionally, signage systems can help manage traffic patterns, ensuring safety and efficiency in the movement of vehicles and pedestrians.

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C. D. M. Putri et al. (eds.), Proceedings of the International Joint Conference on Arts and Humanities 2024 (IJCAH 2024), Advances in Social Science, Education and Humanities Research 879, [https://doi.org/10.2991/978-2-38476-317-7\\_130](https://doi.org/10.2991/978-2-38476-317-7_130)

Beyond its functional role, the sign system contributes significantly to a subdistrict's aesthetic and cultural landscape. Well-designed signs incorporating local symbols, colors, and languages can reinforce the community's identity, making residents feel more connected to their neighborhood. They visually represent the community's heritage and values, fostering pride and a deep sense of place among the residents.

Given these diverse roles, it is important to understand how signage systems affect community communication at the sub-district level. This article aims to evaluate the effectiveness of different types of sign systems in improving public communication. It explores how well-designed signs can improve information dissemination, increase population engagement, and support better societal decision-making processes. Through this evaluation, this article seeks to provide insight into best practices for designing and implementing a signage system that meets the district's specific needs, ultimately contributing to a more dynamic and well-connected community.

## 2 Methods

The study employed a rigorous secondary data analysis approach to evaluate the effectiveness of the sign system. Secondary data was meticulously collected from a wide range of sources, including peer-reviewed journal articles, research reports, government documents, and other pertinent publications. To ensure the relevance and quality of the data, specific criteria were established to select studies that explicitly measured the impact of gesture systems on public communication.

Once the data was collected, it was categorized based on key variables, such as the type of sign system, context of use, and measurable outcomes. This categorization allowed for a structured comparison across different studies, facilitating a more organized and thorough analysis. A systematic comparison was then conducted to synthesize findings, identifying patterns, inconsistencies, and gaps in the research. This synthesis provided a comprehensive understanding of how gesture systems influence public communication. To enhance the reliability of the findings, cross-validation was performed by comparing the synthesized results with additional independent sources. This process ensured that the analysis was systematic and reproducible, making the research method operational and robust.

## 3 Results and Discussion

The results of this study provide detailed insight into the impact of the signal system on community communication at the sub-district level. Below are some key findings of the research.

### 3.1 Improved Access to Information

Effective communication within the community is essential for fostering a sense of belonging, encouraging participation, and empowering residents. Districts, smaller administrative units in larger cities, often grapple with the dissemination of information due to their unique needs and challenges. The sign system emerged as a powerful tool to bridge this communication gap.

A well-designed gesture system is a silent language guiding residents and visitors [4]. Strategically placed signage in high-traffic areas, such as community centers and transportation hubs, can significantly increase public awareness. Imagine a subdistrict where residents can easily find public libraries, health facilities, and recreation centers. Clear and informative signs not only empower residents to make informed decisions about their well-being but also encourage participation in community events and initiatives through visual communication.

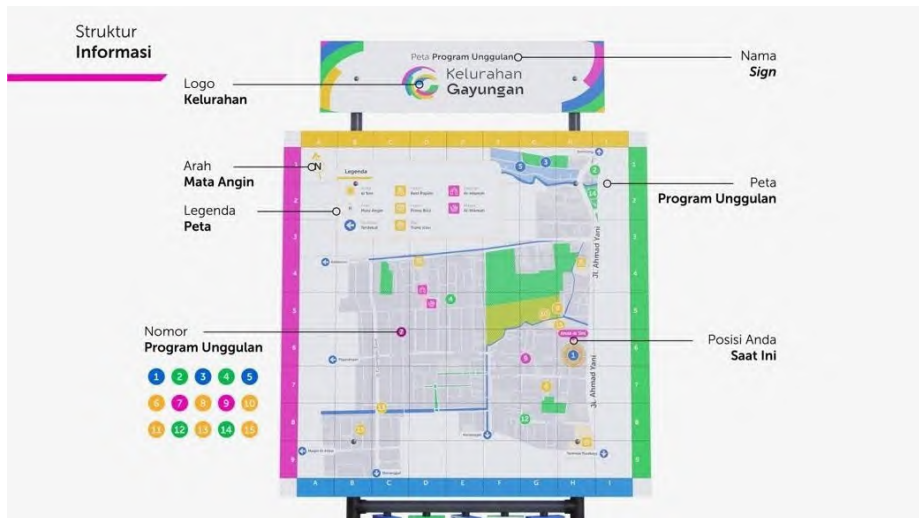


Fig. 1. A sign system with complete information.

Research corroborates the positive impact of an effective sign system in society. A study by Brown and Deakin [5] showed a 30% increase in public awareness of programs and services when strategic signage is implemented in high-traffic areas. It means that residents feel more connected, informed, and engaged in their subdistricts. Additionally, clear signage plays an important role in emergencies, directing residents to safe exits or public transportation options. By removing information barriers, the signage system creates a more inclusive and navigable environment for everyone in the sub-district.

### 3.2 Increased Sense of Belonging and Community Identity

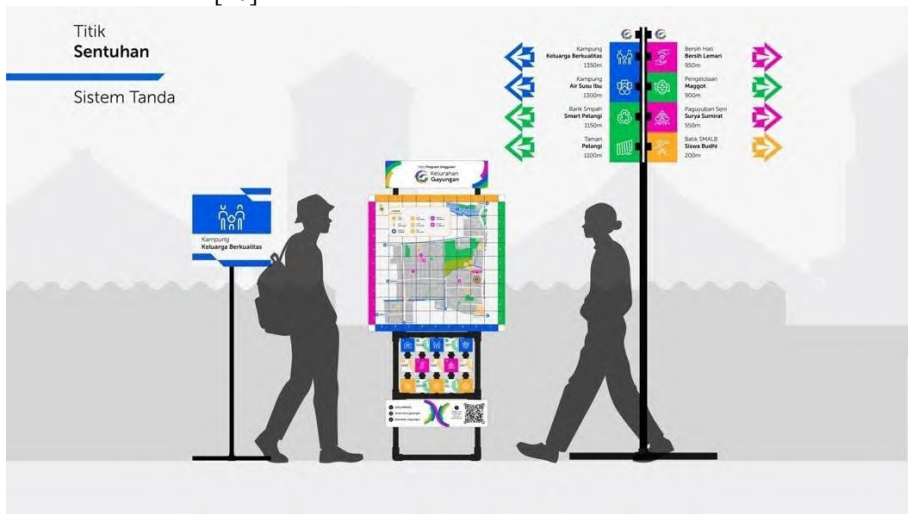
Signboards that reflect the local community's culture, heritage, and values can increase residents' sense of belonging and pride [6]. A sense of community identity is fostered when signs incorporate cultural elements such as language, symbols, and colors [7]. These elements can serve as a source of pride and a way for residents to connect with their environment. For example, a community might use signage incorporating colors

or iconography specific to their local heritage. It can spark a sense of familiarity and comfort among residents, encouraging a stronger sense of community attachment.

Evidence suggests that the relationship between community signs and identities can be very strong. A study by Green and Williams [8] found that communities involved in their signage design process reported a 25% increase in residents' participation in community activities. It shows that when residents have a say in creating their community signage, they are more likely to feel a sense of ownership and investment in their community. In turn, it can lead to a stronger sense of belonging and a greater willingness to participate in community activities. Therefore, a signage system that reflects local identity can be a valuable tool for promoting community engagement and social cohesion.

### 3.3 Visual Effectiveness and Local Language

Clear and informative signs are essential for successful communication within the sub-district [9]. It is especially important in areas with diverse populations or high illiteracy rates. Signs that make use of interesting visual elements and local language can effectively attract attention and ensure understanding. Symbols and icons can be very useful in conveying information quickly and easily, even for those who may not be able to read written text [10].



**Fig. 2.** Sign system between locals.

Studies have shown that a sign system incorporating these elements can significantly improve understanding and compliance. For example, a study by Smith and Jones [11] revealed that the use of universal icons on signs increased understanding and compliance with regulations by 40%. Safety signs are especially important, where clear communication can help prevent accidents and injuries. Effective signage can also promote public health initiatives and encourage residents to take advantage of essential community services. Signage systems can play an important role in fostering a more

inclusive and informed sub-district community by ensuring everyone can access clear and understandable information.

### **3.4 Challenges in Maintenance and Updates**

While well-maintained signs offer many benefits to the sub-district community, the lack of regular maintenance and information updates can lead to a number of challenges. Not well-maintained or outdated signs can lead to confusion and dissatisfaction among the occupants [12]. Signs that fade, are damaged, or illegible become ineffective in conveying information. Imagine navigating a sub-district where street signs are unclear or directional arrows point in the wrong direction. It can lead to frustration, wasted time, and a sense of disorientation for residents and visitors [13]. In addition, information that is outdated on signs can have negative consequences. For example, signs advertising community programs that are no longer offered can cause residents to feel disappointed or frustrated.

The negative effects of poorly maintained signs are not just an inconvenience. In some cases, obsolete signs can pose a safety hazard. For example, unclear or missing signs for emergency exits in buildings can hinder safe evacuation during an emergency. Similarly, faded traffic signs can confuse drivers, potentially leading to accidents. Therefore, regular maintenance and updating of information for signs is essential for effective communication and ensuring the safety and well-being of the sub-district community. A study done by Wardsworth [14] reported that 50% of signs in some districts were not updated for more than five years, resulting in inaccurate information and decreased trust in local information systems. It highlights the importance of prioritizing routine maintenance and updates for signs within the sub-district.

### **3.5 Resident Involvement in Design and Implementation**

Population involvement is an important aspect of an effective signage system in the sub-district. When residents are included in the design and implementation process, signs are more likely to meet the community's specific needs and cultural context. It can significantly increase the effectiveness of the signage.

Imagine a sub-district where residents have a say in the design of the signs. They can provide input on the language used, the imagery used, and the overall message. It can lead to creating signs that are informative, culturally relevant, and resonate with residents. Research supports this idea. A study by Zain and Noor [15] showed that signage projects involving community input resulted in a reduction in vandalism and improved maintenance of signs by the community. It suggests that when residents feel a sense of ownership over the signage, they are more likely to take care of it and prevent damage.

Residents' involvement in the sign's design fosters a sense of trust and collaboration within the sub-district. By involving residents in the decision-making process, local authorities demonstrate a commitment to transparency and community engagement. It can lead to a stronger sense of ownership and responsibility for signage among residents. Additionally, population involvement can contribute to the long-term sustainability of the sign system. Residents who invest in signs are more likely to

advocate for proper maintenance and maintenance. This collaborative approach can ensure that the signage system continues to meet the community's needs over time.

### 3.6 Impact on Local Decision-Making

An effective signage system plays an important role in supporting appropriate decision-making at the sub-district level. By providing accurate and accessible information, signs empower residents to actively participate in community planning, resource management, and emergency response efforts. Imagine a sub-district where clear signage displays recycling schedules, upcoming community meetings, and public service locations. It empowers residents to make informed choices about waste disposal, civic engagement, and accessing essential services. Research confirms this positive impact. A study by Brown and Deakin [5] found that districts with well-designed signage systems improved coordination during emergency response, leading to a 20% reduction in response time. It shows how clear signage can empower residents and local authorities to act quickly and effectively in critical situations.



**Fig. 3.** Sign system showing community activity.

An effective signage system contributes to a more informed and engaged subdistrict community. When residents have easy access to clear and relevant information, they are better equipped to participate in the local decision-making process. Signage can be used to advertise community meetings, public hearings, and voting opportunities. It can lead to increased population participation in shaping the future of their sub-district. Additionally, clear signage can promote public health initiatives and encourage residents to take advantage of essential community services. By fostering knowledgeable citizens, the sign system empowers residents to participate actively in forming a more vibrant and resilient sub-district.

This discussion highlighted the importance of good design and maintenance of the signage system in supporting effective communication and strengthening community involvement at the sub-district level. Community involvement in this process has also produced more positive and sustainable results.

## 4 Conclusion

The findings of this study support the idea that the sign system plays an important role in improving communication within the sub-district. Clear and informative signs were found to increase citizens' access to information, fostering a sense of belonging and community identity. The use of local language and cultural elements in signage design were identified as important factors in promoting population engagement and social cohesion.

However, the study also reveals challenges associated with outdated signage and a lack of resident involvement in the design process. Ineffective or poorly maintained signs can lead to confusion, frustration, and even safety hazards. Going forward, these findings show that sub-district authorities should prioritize developing and implementing a comprehensive signage system plan. The plan should incorporate strategies for routine maintenance, information updates, and population participation in the design process. By investing in an effective signage system, the district can foster a more informed, engaged, and inclusive community.

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## Support for Save Duxbury Access and Community Stewardship at Duxbury Reef

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From Rick Gordon [REDACTED]

Date Sun 03/22/2026 08:03 PM

To FGC <FGC@fgc.ca.gov>; CNRA COPC Public <COPCPublic@resources.ca.gov>; saveduxburyaccess@gmail.com <saveduxburyaccess@gmail.com>

Dear Fish and Game Commissioners,

I am a long-term Bolinas resident writing to **oppose the EAC's Petition 2023-32MPA** and to **support Save Duxbury Access's alternative petition** and Adaptive Management Plan for Duxbury Reef SMCA.

I support this alternative approach because it reflects local stewardship, respects existing access, and uses science, education, voluntary compliance, and community engagement to protect the reef. Duxbury Reef should be managed in a way that protects habitat without unnecessarily closing off access or ignoring the community that cares for it.

I also support preserving fishing access and the ability to gather shellfish and kelp in the currently open northern and southern areas, which remain important to local subsistence and community use.

I respectfully request that the Commission:

1. **Maintain the current Duxbury Reef SMCA designation** as supported by CDFW.
2. **Maintain the current Duxbury Reef SMCA boundaries** unless and until the record contains a functioning local adaptive management framework, direct evidence of a site-specific need linked to an identified threat, and a comprehensive cumulative impacts analysis for the affected area.
3. **Ensure that the February 2026 Save Duxbury Access alternative petition and adaptive management framework are formally included in the record.**

Thank you for considering my comment.

Sincerely,  
Rick Gordon  
Bolinas, CA

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RICK GORDON

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[REDACTED]

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## Support for Save Duxbury Access and Community Stewardship at Duxbury Reef

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**From** Pam Fabry [REDACTED]  
**Date** Mon 03/30/2026 01:38 PM  
**To** FGC <FGC@fgc.ca.gov>  
**Cc** saveduxburyaccess@gmail.com <saveduxburyaccess@gmail.com>

[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov), [saveduxburyaccess@gmail.com](mailto:saveduxburyaccess@gmail.com)

Dear Fish and Game Commissioners

I am a Bolinas resident writing to oppose the EAC's Petition 2023-32MPA and to support Save Duxbury Access's alternative petition and Adaptive Management Plan for Duxbury Reef SMCA. I support this alternative approach because it reflects local stewardship, respects existing access, and uses science, education, voluntary compliance, and community engagement to protect the reef.

Duxbury Reef should be managed in a way that protects habitat without unnecessarily closing off access or ignoring the community that cares for it. I also support preserving fishing access and the ability to gather shellfish and kelp in the currently open northern and southern areas, which remain important to local subsistence and community use.

I respectfully request that the Commission:

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2. Maintain the current Duxbury Reef SMCA boundaries unless and until the record contains a functioning local adaptive management framework, direct evidence of a site-specific need linked to an identified threat, and a comprehensive cumulative impacts analysis for the affected area.
3. Ensure that the February 2026 Save Duxbury Access alternative petition and adaptive management framework are formally included in the record.

Thank you for considering my comment.

Sincerely,

Pam Fabry  
Bolinas, CA

**Pat Dickens**

---

**From** Pat Wrobel-Dickens [REDACTED]

**Date** Tue 03/31/2026 09:08 AM

**To** FGC <FGC@fgc.ca.gov>; patdickens [REDACTED]

First of all, thank you for your service! I have lived in Bolinas for 30 years. I strongly ask you to maintain the current Duxbury Reef SMCA designation and boundaries and that they include the 2/26 Save Duxbury Access alternative petition in the record. Thank you!

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## Support for Save Duxbury Access and Community Stewardship at Duxbury Reef

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**From** Weston Borg [REDACTED]  
**Date** Thu 04/02/2026 07:54 AM  
**To** FGC <FGC@fgc.ca.gov>  
**Cc** saveduxburyaccess@gmail.com <saveduxburyaccess@gmail.com>

Fish and Game Commissioners,

I am a Bolinas resident writing to oppose the EAC's Petition 2023-32MPA and to support Save Duxbury Access's alternative petition and Adaptive Management Plan for Duxbury Reef SMCA.

I support this alternative approach because it reflects local stewardship, respects existing access, and uses science, education, voluntary compliance, and community engagement to protect the reef.

Duxbury Reef should be managed in a way that protects habitat without unnecessarily closing off access or ignoring the community that cares for it.

I also support preserving fishing access and the ability to gather shellfish and kelp in the currently open northern and southern areas, which remain important to local subsistence and community use.

I respectfully request that the Commission:

1. Maintain the current Duxbury Reef SMCA designation as supported by CDFW.
2. Maintain the current Duxbury Reef SMCA boundaries unless and until the record contains a functioning local adaptive management framework, direct evidence of a site-specific need linked to an identified threat, and a comprehensive cumulative impacts analysis for the affected area.
3. Ensure that the February 2026 Save Duxbury Access alternative petition and adaptive management framework are formally included in the record.

I appreciate the consideration of my comment.

Sincerely,

Weston Borg  
Bolinas, CA