



**CHANNEL ISLANDS
NATIONAL MARINE
SANCTUARY**



**BREN SCHOOL
ENVIRONMENTAL SCIENCE & MANAGEMENT**
UNIVERSITY OF CALIFORNIA, SANTA BARBARA

MESM GROUP PROJECT 2023-2024

Exploring Ocean Access, MPAs, and Environmental Justice for Subsistence Fishers in California



Authors

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Clients

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Objectives

NOAA's Channel Islands National Marine Sanctuary (CINMS), NOAA Fisheries, and California Marine Sanctuary Foundation aim to explore the intersection of ocean ecosystems, marine protected areas (MPAs), ocean access, and climate change for diverse and disadvantaged populations in southern and central California. The goal of this project is to help establish baseline information about ocean access and recreational fisheries - with a focus on subsistence fisheries - for coastal California, including the state's marine protected areas (MPA) network and National Marine Sanctuaries.

Specific Objectives:

1. Conduct a review and develop a database related to primary and secondary literature focused on subsistence fishing in California;
2. Conduct a review and develop a database related to primary and secondary literature focused on equity and environmental justice considerations (e.g. ocean access) relevant to the adaptive management of California's MPA network and Sanctuaries;
3. Conduct a spatial analysis about the geographic patterns related to subsistence fishing and MPAs in California. Link spatial information with demographic characteristics about California's subsistence recreational fishers, including how the diversity indicators of current users compare to the general population by integrating recreational fisheries data and existing environmental justice indicators;
4. Characterize the marine species that are targeted by subsistence fishers in California.

Significance

This research will provide the National Marine Sanctuary System and the California Ocean Protection Council with overviews about coastal recreational fishers in California, including their relationship to marine protected areas (MPAs). Such information will feed directly into management and outreach efforts by State and Federal Agencies. For example, the proposed project responds directly to specific needs articulated by the 2018 report on Climate Resilience and California's MPA Network, which states that among barriers to improving understanding of the capacity of MPAs to serve as climate change mitigation and adaptation tools, "the largest information gap [is] related to the social and economic service provision of MPAs" (Hoffman et al., 2021). As the authors articulate, there is a lack of research documenting what species and habitats are considered significant to different stakeholder groups, and without this "critically important social baseline information" it will remain challenging to quantify prospective connections between MPAs and social resilience, both now and with future climate change. Likewise, while many have hypothesized the benefits of MPAs in helping to mitigate climate impacts, empirical evidence demonstrating the capacity of the California MPA network or National Marine Sanctuaries to advance such objectives is scarce.

Background

The clients for this project (Selgrath, Frawley) have been awarded a two year Prop 68 grant through the California Ocean Protection Council (OPC) to understand how MPAs can support or

enhance ocean-related community values in a changing climate, particularly focused on underrepresented and disadvantaged communities (including Tribes) in southern and central California (as identified using the [California State Parks Community Fact Finder](#)). The results from the proposed Bren project will provide an overview of key topics related to this goal, and provide an overview of one underrepresented community (subsistence fishers) across the state. Findings will serve as an important foundation for upcoming community focus groups and surveys, and will be shared with State and Federal policy makers who are seeking to create greater equity in ocean management. Additionally, the clients will co-develop climate adaptation strategies with local community partners.

Equity

Ensuring that the benefits of healthy and sustainable ocean ecosystems are equitably distributed throughout society is an enduring management challenge (Hicks et al., 2016; Bennett et al. 2020). Despite resource managers best intentions, established management and governance structures often function to enhance access and benefits for certain locations, demographics, and user groups at the expense of others (Friend & Moench, 2015; Morris et al. 2020). Nowhere are such environmental justice challenges more evident than in coastal California. Across the region, significant effort has been made to engage commercial and sport fishers and tourism operators in the Marine Life Protection Act (MLPA), national marine sanctuaries, and other collaborative coastal management processes and MPAs (Klein et al. 2008). In contrast, the social values and priorities of stakeholders from minority and low-income populations and tribal communities have received substantially less attention (Sayce et al., 2013; Hoffman et al., 2018, Stevenson et al. 2012, Quimby et al. 2020).

The need to expand the benefits of MPAs to a wider and more diverse population has become more urgent (Bennett et al. 2020). California and Federal MPA climate mitigation and adaptation planning may represent a valuable opportunity to redress previous shortcomings and enhance procedural, recognition, and distributional equity (i.e. Equity and Environmental Justice (EEJ)). Such work can be more strategic if managers have baseline information about (1) who they are currently reaching, and (2) how the diversity indicators of current users compare to the general population of states where sanctuaries are located. To-date, there has been only limited efforts to quantify the diversity of MPA users because establishing baselines for human uses in MPAs is quite difficult. Through the project, we can begin to develop a deeper understanding of the EEJ dimensions of MPAs.

Available Data

- [2020 Census Data](#)
- California Department of Fish and Wildlife Recreational Fisheries Survey Data, which can be accessed via the Channel Islands National Marine Sanctuary
- EEJ and social indicators including [EPA EJ Screen](#), [CalEnviroScreen](#), [CDC](#), and [NOAA Fisheries](#)
- Other GIS data available as needed from the [California State Geoportal](#)

Possible Approaches

Objectives 1 & 2: To conduct a tiered, systematic review of the literature on topics related to environmental justice and access the project can conduct a Google Scholar search using relevant keyword strings (to be refined iteratively) and select relevant literature based on reviewing abstracts for the search results. Objective 1 will focus on peer-reviewed primary literature. Objective 2 will include peer-reviewed primary literature as well as relevant reports and other secondary sources (e.g. management reports). Following identification of sources, summary information from the materials can be encoded into a database (which the clients will help develop) which will include the objectives and relevant conclusions.

Objective 3: Using geospatial tools, the CDFW recreation data (which contains names and zipcodes of recreational fishers) will be used to calculate a variety of characteristics about recreational fishers including: (1) map locations where fishing occurred; (2) map zip codes where fishers reside; (3) calculate the distance between locations where fishing occurred and zip codes where fishers resided; (4) calculate the distance between locations where fishing occurred and State and Federal MPAs; (5) calculate the travel distance between State and Federal MPAs and zipcodes where fishers reside; (6) using outputs from (2-5) link areas where fishers reside with EJ and social indicators and create figures summarizing this information.

Objective 4: Create tables and figures that summarize the species that are targeted by fishers overall, and by fishers from zip codes with different EJ characteristics (e.g. targeted species from low income vs high income zipcodes).

Objective 5: Create a brief (4-8 page) report summarizing findings. Create a google drive folder that contains databases from literature reviews, relevant R code and GIS files, and other products from the project.

Deliverables

Deliverables for this project include, but are not limited to:

- Literature reviews of environmental justice and ocean access, and of substance fishing
- A database compiling all the sources used for the literature reviews
- A series of maps, created in GIS, documenting the distance traveled by people coming to access the coast, and other questions outlined in 'Possible Methods'
- A brief (4-8 page) report summarizing findings (in English and Spanish)
- A google drive folder that contains databases from literature reviews, literature used in analysis (e.g. PDFs), relevant R code and GIS files, and other products from the project.

Internships

The California Ocean Protection Council grant includes funding for training of future ocean leaders and we can support at least one (and hopefully 2-3) paid summer internships. Internships will be hosted through the California Marine Sanctuary Foundation. We also would be delighted to host undergraduate students as part of the Bren mentorship program. The intern and other students in the group project would be involved in all aspects of this project including research, project planning, organizing focus groups with community members, reviewing and editing transcripts from focus groups, writing, GIS mapping, and leadership development.

Supporting Materials

Citations

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2. Hicks, C.C., Levine, A., Agrawal, A., Basurto, X., Breslow, S.J., Carothers, C., Charnley, S., Coulthard, S., Dolsak, N., Donatuto, J. and Garcia-Quijano, C., 2016. *Engage key social concepts for sustainability*. *Science*, 352(6281), pp.38-40.
3. Bennett, N.J., Calò, A., Di Franco, A., Niccolini, F., Marzo, D., Domina, I., Dimitriadis, C., Sobrado, F., Santoni, M.C., Charbonnel, E. and Trujillo, M., 2020. *Social equity and marine protected areas: Perceptions of small-scale fishermen in the Mediterranean Sea*. *Biological Conservation*, 244, p.108531.
4. Friend, R. and Moench, M., 2015. *Rights to urban climate resilience: moving beyond poverty and vulnerability*. *Wiley Interdisciplinary Reviews: Climate Change*, 6(6), pp.643-651
5. Morris, R.L., Boxshall, A. and Swearer, S.E., 2020. *Climate-resilient coasts require diverse defence solutions*. *Nature Climate Change*, 10(6), pp.485-487.
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7. Sayce, K., Shuman, C., Connor, D., Reisewitz, A., Pope, E., Miller-Henson, M., Poncelet, E., Monié, D. and Owens, B., 2013. *Beyond traditional stakeholder engagement: public participation roles in California's statewide marine protected area planning process*. *Ocean & coastal management*, 74, pp.57-66.
8. Stevenson, C., Sikich, S.A. and Gold, M., 2012. *Engaging Los Angeles County subsistence anglers in the California marine protected area planning process*. *Marine Policy*, 36(2), pp.559- 563
9. Quimby, B., Crook, S.E., Miller, K.M., Ruiz, J. and Lopez-Carr, D., 2020. *Identifying, defining and exploring angling as urban subsistence: Pier fishing in Santa Barbara, California*. *Marine Policy*, 121, p.104197.

Budget and Justification

We do not anticipate any significant costs associated with this project as data currently exist or are free and software licenses (e.g. ESRI) are available through UCSB. The budget for this project is not expected to exceed the funds provided by the Bren School of Environmental Science & Management. Costs will include printing expenses and a Spanish translator.

Client Letter of Support - See Below



CHANNEL ISLANDS
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NOAA Channel Islands National Marine Sanctuary
Ocean Science Education Building 514, MC 6155
University of California Santa Barbara
Santa Barbara, CA 93106-6155

Attn: Sean Kerr, Group Project Coordinator
UCSB Bren School of Environmental Science & Management
240 Bren Hall UC Santa Barbara
University of California Santa Barbara
Santa Barbara, CA 93106-5131

January 26, 2023

Dear Bren Reviewers,

Thank you for considering our proposed Master's Group Project entitled "*Exploring Ocean Access, MPAs, and Environmental Justice for Subsistence Fishers in California.*" The goal of this project is to help establish baseline information about ocean access and subsistence fisheries for coastal California, including the state's marine protected area (MPA) network and National Marine Sanctuaries.

Located in the Southern California Bight and founded in 1980, the [Channel Islands National Marine Sanctuary \(CINMS\)](#) belongs to the National Marine Sanctuary System, which serves to conserve, protect, and enhance locations with exceptional biodiversity, unique seascapes, and rich cultural heritage, as well as to preserve both modern and traditional uses of the ocean. As part of our growing efforts to understand relationships between people and nature (often referred to as 'human dimensions of management') and to integrate environmental justice considerations into management priorities, we are expanding our work in these areas. This Bren project would be in support of this goal, and would contribute to a two-year project that was funded by the California Ocean Protection Council and Prop 68 Funding entitled "*Identifying Pathways to Distributive Equity in MPA Management in a Changing Climate.*"

This proposed Bren project would be part of a broader collaborative effort spanning management agencies (NOAA Fisheries and NOAA Office of National Marine Sanctuaries), academic institutions (UC Santa Cruz, Stanford University, CSU Monterey Bay), and tribal entities (Native Coast Action Network). In addition, we are establishing a variety of new community partnerships among state management agencies and local NGOs working towards equity and environmental justice.

In support of this project, we commit to the following:

- Support a minimum of one paid summer internship (\$8,000) hosted by the California Marine Sanctuary Foundation to help develop and implement the proposed group project. Since the grant was officially awarded two days ago (2023-01-25), we need to finalize several budget items including student stipends. However, I anticipate that we can support 2-3 paid internships. We also would be delighted to host one of the Mantell Fellowship undergraduates, and commit to supporting them if they were to join the project.

- Provide students with training and experience conducting, synthesizing, and disseminating management and policy relevant research, as well as providing training and experience in community engagement.
- Support students with technical aspects of this project including: identifying keywords and solidifying methods for literature reviews; providing a database for literature summaries; providing students with relevant data or data sources (e.g. websites where data are hosted); and working with students to finalize a list of geospatial and environmental justice questions that can be asked from the data sources.
- The focus of the Bren project objectives and deliverables will be centered on clearly bounded projects including literature reviews and the analysis of existing data. However, students will also be able to participate in community-based focus groups and other community engaged aspects of this project which will begin in the late summer of 2023.

We would be delighted to work with the Bren School master's students. Please do not hesitate to reach out with any questions about the proposal or of our support for the project.

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'Jennifer Selgrath', with a long horizontal flourish extending to the right.

Jennifer Selgrath, Ph.D.