THE STATE OF U.S. MARINE MANAGED AREAS: WEST COAST

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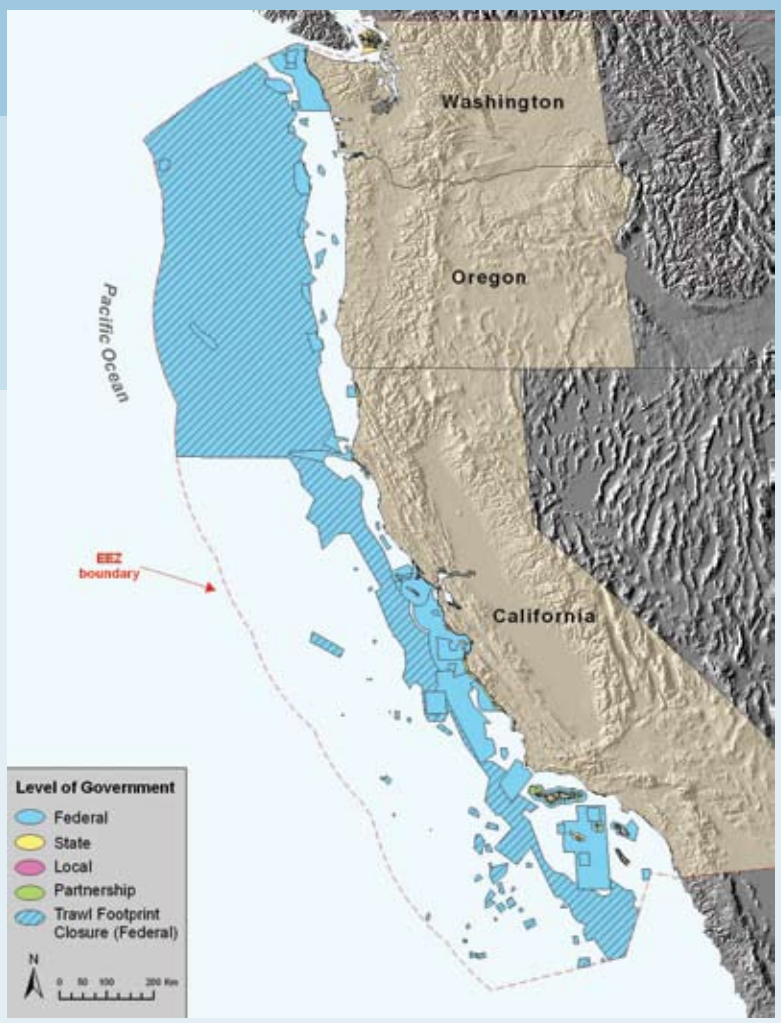

NATIONAL NOAA Marine Protected Areas CENTER

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This report summarizes how marine managed areas (MMAs) along the west coast of the United States are used to conserve marine resources and ecosystems. The report contains the best available information on the purpose, management approach, and location of MMAs off the coasts of California, Oregon and Washington.

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Photos: *All photos are from U.S. government collections and illustrate west coast marine resources and marine users.*

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NATIONAL Marine Protected Areas CENTER

EXECUTIVE SUMMARY

The nation's oceans are in trouble. Pollution, loss of coastal habitat, and over-exploitation of marine species threaten the health and sustainability of our marine ecosystems. Unchecked, these trends jeopardize much of what our society values most about the oceans. Growing concerns over declines in ocean health have driven interest in place-based and ecosystem-based approaches to conserving marine habitats and resources.

Marine protected areas (MPAs) are valuable ecosystem-based tools that conserve important ocean areas by managing human uses within their boundaries. In response to the growing interest in MPAs within the United States, Executive Order 13158 calls for the establishment of an effective and comprehensive National System of MPAs, representing the nation's diverse marine ecosystems and natural and cultural resources. To better understand how these place-based conservation tools are used in U.S. waters, the National Marine Protected Areas Center inventoried key information about the nation's marine managed areas (MMAs), a broad suite of place-based conservation areas, of which marine protected areas are a subset.

This report describes functional characteristics of west coast MMAs, such as their size, location, purpose, and management approach. The highlights reported here illustrate how MMAs are widely used in the west coast region, with interesting differences and similarities among the three coastal states (Table 1).

Regional Highlights in West Coast Waters (0–200 nautical miles)

- *Number and Size:* 296 MMAs conserve marine resources in nearly half (47%) of west coast regional waters. The large majority of MMAs are located off the California coast (204), followed by Washington (61) and Oregon (34).
- *Level of Government:* State MMAs comprise two thirds of the number of west coast MMAs, but account for only 1% of the area within MMAs. In comparison, federal MMAs comprise 99% of MMA area in fewer, yet larger MMAs.
- *Level of Protection:* Practically the entire area within MMAs (99.7%) permits multiple use

	West Coast 823,953 km² (0-200 nm)	California 15,048 km² (0-3 nm)	Oregon 3,915 km² (0-3 nm)	Washington 10,042 km² (0-3 nm)
Size of area protected	390,636 km²	7,082 km²	122 km²	2,627 km²
% of waters covered by MMAs	47%	47%	3%	26%
Number of MMAs	296	189	23	55
% MMA area that is multiple use	99.7%	91%	95%	99.5%
% of waters* that is no take	0.1%	4%	0.2%	0.1%
Total no take area	1,051 km²	643 km²	6 km²	12 km²

* West coast and state waters

Table 1
Comparison of MMAs in west coast and state waters.

activities, such as fishing, boating, or other recreational and commercial activities. A small amount of the area within MMAs (< 0.3%), amounting to 1,051 km^2, is designated as no take or no access, where all forms of extractive activity are prohibited.

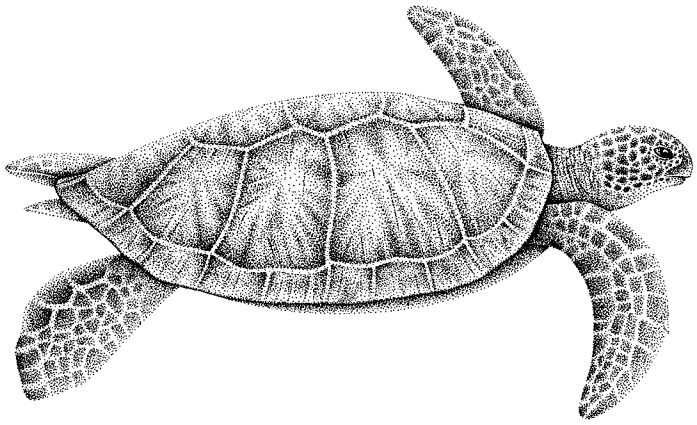
- *Conservation Focus:* MMAs have one or more conservation foci, such as conservation of natural heritage (e.g. biodiversity), cultural heritage (e.g., shipwrecks), and sustainable production (e.g. fisheries). While about 60% of west coast MMAs are focused solely on conserving natural heritage, these cover 1% of the MMA area. In contrast, the vast majority of MMA area (88%) is set aside for conserving both natural heritage and sustainable production. These MMAs are predominantly the Essential Fish Habitat (EFH) areas that were designated for west coast groundfish.
- *Ecological Scale of Protection:* The large majority of MMA area (91%) targets the conservation of focal habitats and species, such as the EFH areas for west coast groundfish. The rest of the MMA area targets conservation of west coast ecosystems.
- *Permanence and Constancy of Protection:* All MMAs provide permanent protection (100%) with the potential to remain in place in perpetuity. Practically all MMAs provide year-round protection, with two small MMAs (< 0.001% of MMA area) protected on a seasonal basis.

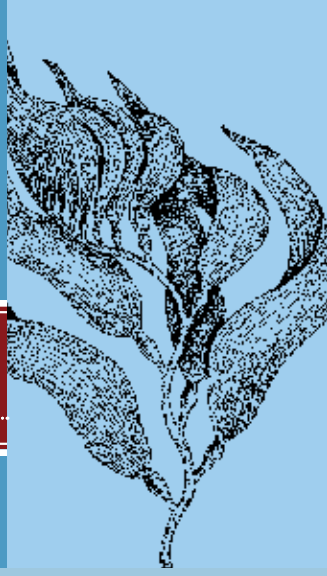
Highlights from State Waters (0 – 3 nautical miles) (Table 1)

Although the prevalence of MMAs differs across states, the amount of MMA area set aside as no take is uniformly small for each state. State highlights include the following:

- California has the most MMAs and the largest percentage of regional waters within MMAs (47%). California also accounts for the largest percentage of state waters set aside as no take (4%).
- Oregon has the fewest number of MMAs and smallest percentage of regional waters within MMAs (3%).
- Washington has the smallest percentage of MMA area within no take areas (0.5%).

This report provides a better understanding of how the diverse types of MMAs along the west coast conserve marine resources and contribute to healthy and intact ecosystems. A comprehensive understanding of the collection of west coast MMAs is intended to inform the effective conservation of marine ecosystems in the region across multiple managing authorities, and provide the foundation for designing an effective National System of MPAs meeting multiple conservation goals.





INTRODUCTION

Declines in fisheries and vital marine habitats have led to a growing interest in ecosystem-based and place-based approaches, including marine protected areas (MPAs). Both ecosystem-based management and MPAs emphasize the management of specific places in order to conserve marine resources and habitats. Each offers an integrated approach that considers interactions and interdependences among species, including humans, within a physical environment. MPAs have frequently been incorporated as an effective tool into ecosystem-based management approaches to promote sustainable fisheries and protect marine habitats and species.

A wide range of MPA types have been established for various purposes (Box 1). Familiar types of U.S. MPAs include national marine sanctuaries, marine parks, wildlife refuges, research reserves, and fishery management closures. The diversity of MPA types is a consequence of the large number of agencies and programs at all levels of government that have designated MPAs. Each program has designated unique types of MPAs to fulfill specific legal mandates focused on conservation of marine resources and ecosystems.

The growing use and recognized potential of MPAs as an effective ecosystem management tool led to Executive Order 13158. Signed in 2000, the Executive Order seeks to enhance the conservation of the nation's natural and cultural heritage through the development of an effective National System of MPAs (Box 2). Fundamental to the design of a system of MPAs is a clear understanding of existing place-based conservation management and of its likely ecosystem and socioeconomic impacts. Toward this end, the National Marine Protected Areas Center (MPA Center) is completing a National Inventory of marine managed areas

Box 1 Marine Protected Area Purposes

MPAs may have a single or multiple purposes, including the following:

- protect unique marine habitats, features, and ecological processes
- protect biological diversity
- protect endangered species
- protect cultural heritage
- promote sustainable fisheries
- promote public enjoyment
- provide recreation and economic opportunities
- provide areas for research and scientific baselines
- act as an "insurance policy" against human impacts

Box 2 Developing a National System of MPAs

Although the U.S. has over 1,800 MMAs, these areas operate under hundreds of different state, federal and local authorities. This piecemeal approach has not provided a comprehensive, strategic approach to the conservation of the nation's key natural and cultural resources. To address this need, Executive Order 13158 on MPAs (2000) directs federal agencies to work closely with state, territorial, local and tribal governments and other stakeholders to develop a scientifically-based, effective, and comprehensive National System of MPAs. This National System should represent diverse U.S. marine ecosystems and the nation's natural and cultural resources. The Executive Order itself does not establish any new MPAs; this responsibility remains with the federal, state, tribal, territorial, and local agencies under a variety of existing authorities.

Box 3 MPA and MMA Definitions

The term marine managed area (MMA) is broadly defined compared to marine protected area (MPA) and refers to various types of place-based areas set aside for marine conservation purposes.

- **MPAs:** Executive Order 13158 defines an MPA as "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." Key terms within the definition -- area, marine, reserved, lasting, and protection -- are defined in the *Framework for Developing a National System of Marine Protected Areas*, which is being developed with extensive stakeholder involvement.
- **MMAs:** the term MMA casts a wide net over most types of spatial conservation management, including those commonly thought of as MPAs. In practical terms, an MMA is any delineated marine area with a higher level of protection than in surrounding waters for the purpose of conserving marine resources. Marine areas set aside for purposes other than conserving marine resources, such as areas to reduce user conflict or for human safety, are not considered MMAs. The definition of an MMA includes the following components:
- **area:** must have legally defined boundaries;
- **marine:** an area of ocean or coastal waters or the Great Lakes;
- **reserved:** established by or currently subject to regulation;
- **lasting:** provide year-to-year protection for a minimum of two consecutive years, and;
- **protection:** have existing regulations that afford increased protection specifically to natural and/or cultural resources and qualities within the site.

(MMAs): an unprecedented compilation of the best available information on all U.S. place-based marine conservation. The National Inventory intentionally focuses on MMAs, instead of MPAs (Box 3), to identify the full range and diversity of place-based conservation management of marine resources. From the collection of MMAs, a narrower subset of MPAs will be identified as the first phase of the emerging National System of MPAs.

National Inventory

The National Inventory of MMAs has many applications. Foremost, it systematically documents for the first time the distribution, size, purpose, and management approach for all existing U.S. MMAs across government jurisdictions. This information permits for the first time comprehensive analyses of MMA practices on local and regional scales, providing important insights on the potential ecological and socioeconomic effects of MMAs. More fundamental though, analytical results provide basic information on MMA trends and status, essential for building the National System of MPAs and identifying gaps and priorities in place-based conservation management.

The National Inventory is a dynamic and evolving database that is periodically updated as new MMAs are implemented, existing MMAs altered, and gaps are filled. Gaps, perceived and real, generally have two sources. First, the National Inventory excludes those areas that do not adhere to the defined MMA criteria (Box 3; Appendix 1 for in-depth information), even though some sites potentially provide conservation benefits important to marine resources and ecosystems. Familiar examples of sites excluded are de facto MPAs, or sites implemented with conservation measures that vary on a yearly basis. Sites unintentionally excluded are marine areas that comply with the MMA criteria that have been inadvertently overlooked. The Center is working towards filling gaps from the latter source. Even with gaps, the National Inventory is the most comprehensive database of marine conservation sites in U.S. waters and an excellent source of information for regional conservation planning efforts.

Methods

Using guidelines developed by the MPA Center, federal, state, and territorial agencies (Box 4) submitted candidate MMAs and their descriptive information. Only those candidate MMAs fitting the MMA criteria are added to the National Inventory. A classification system is applied to the descriptive information to facilitate analyses. This classification system (Box 5), developed by the MPA Center, is intended to provide an objective method to describe functional characteristics of MMAs. In addition, sites are classified according to their establishment date, level of government of the managing program, and fishing restrictions.

The geographic location and sizes of MMAs are determined for all west coast sites. Although coastal MMAs may have upland area within their boundaries, only the marine and estuarine portions are depicted and calculated. MMA sizes are based on their location within regional waters, 0-200 nautical miles (nm) and state waters (0-3 nm). Thus, size calculations based on state waters include only those sites or portion of sites that fall within state waters.

How to Use this Report

This report provides a comprehensive evaluation of the questions, "How many MMAs exist along the west coast? What are they intended to protect?" and "What is the nature of that protection?" It does not evaluate the effectiveness of MMAs, but is a first step toward that end. The report provides summary statistics of the number and total area protected within MMAs for various functional characteristics. These two different ways of describing MMA distribution often provide very different perspectives, and when reported together provide a more thorough picture of how MMAs

Box 4 MPA Agencies and Programs

MMAs are implemented and managed by many different programs and agencies that operate at different levels of government, from federal to local authorities.

Federal Agencies
National Marine Sanctuaries Program (NMSP)
NOAA Fisheries or National Marine Fisheries Service (NMFS)
National Parks Service (NPS)
Fish and Wildlife Service (FWS)
Minerals Management Service (MMS)

Tribal Authorities

State and Territorial Agencies
State and Territorial Departments of Fish and Game
State and Territorial Water Resource Control Boards
State and Territorial Wildlife Management Area Programs
State and Territorial Coastal Zone Management Programs
State and Territorial Departments of Natural Resources

Partnership Programs (State and Federal)
National Estuarine Research Reserve System (NERRS)

Local Agencies
City Councils
County Boards

Box 5 A Functional Classification System for Place-based Conservation Management

The MPA Center has developed a classification system that provides a straightforward means to describe MMAs and MPAs in purely functional terms using objective characteristics common to most sites.

Conservation focus: the site's conservation purpose is focused on protection of natural heritage (e.g., biodiversity or endangered species) and cultural heritage (e.g., submerged shipwrecks), sustainable production (e.g., fisheries), or a combination of these.

Level of protection: the site allows multiple use activities (i.e., uniform uses across the site, zoned uses, or zoned uses with no take zones), or is more restrictive (i.e., no take, no access, or no impact).

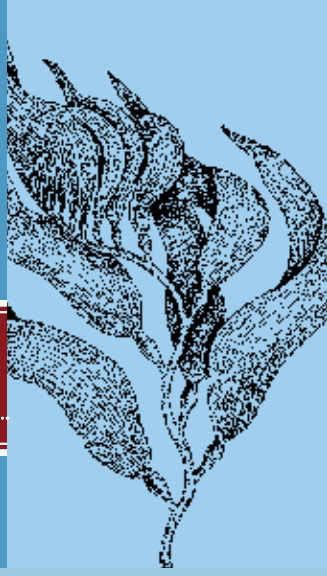
Permanence of protection: across years, the site's protection is permanent, conditional (frequently with 'sunset clauses'), or temporary.

Constancy of protection: within a year, the site's protection is year-round, seasonal, or rotational.

Ecological scale of protection: the site's protection is focused on all components and processes of an ecosystem, or focused on a particular resource (e.g., habitat, species/assemblage, cultural resource).

are managed. For clarity purposes, summary results of the various MMA characteristics are consistently provided with number of MMAs first, followed by area within MMAs.

The report provides a west coast regional perspective (0–200 nm) of MMA patterns followed by state perspectives (0–3 nm) for California, Oregon and Washington. For each perspective, the collection of MMAs are described for their distribution, level of government, date of establishment, level of protection, impacts on fishing activities, conservation focus, ecological scale of protection, permanence of protection, and constancy of protection. Throughout the report information boxes are posted with in-depth information on specific topics. An appendix at the end of the report provides more thorough detail on MMA criteria.



A REGIONAL PERSPECTIVE: WEST COAST

AT A GLANCE

- 296 MMAs are located in west coast waters of the U.S. (0–200 nm).
- These MMAs cover nearly half (47%) the regional waters.
- Almost all MMA area allows multiple uses (99.7%), such as fishing and recreation.
- A small fraction of the MMA area is no take (0.3%), prohibiting access and extractive uses.
- Fishing is allowed in almost the entire MMA area (99.7%).
- Federal MMAs are fewer, but much larger compared to state MMAs.

Background

California, Oregon, and Washington share a productive ocean and coastline, rich with diverse marine resources that form the basis of a dynamic ecosystem and economy. To better understand and protect this productive marine ecosystem the west coast states have been at the forefront of U.S. ocean science and governance for several decades. Continued declines in ocean health, however, have troubled citizens and motivated the governors of these states to recently announce a landmark, bipartisan pact to safeguard oceans and coastal areas. The 'Agreement on Ocean Health,' signed on September 18, 2006, is a blueprint for enhanced coordination among governing bodies to better manage ocean and coastal resources using ecosystem principles. The results reported here will help inform this and other marine conservation initiatives about the role of MMAs in ecosystem-based management.

MMA Distribution and Coverage

The west coast contains 296 MMAs that cover nearly half of regional waters (47% of waters ranging from 0–200 nm). The large majority of MMAs (~ 65%) are located off California (204), particularly central and southern California, followed by Washington (61) and Oregon (34) (Map 1, Figures 1 and 2).

The prevalence of MMA usage on the west coast has recently increased tremendously. In June 2006, the Pacific Fishery Management Council designated 52 Essential Fish Habitat (EFH, Box 6) sites along the entire length of the west coast, increasing the number of MMAs from 220 to 272. More strikingly, the percent of west coast waters protected in MMAs increased from 6% to 47% by the EFH designation. A single EFH site, the Trawl Footprint Closure, accounts for 86% of all MMA area in the region. In April 2007, the state of California designated 24 new MMAs and modified five existing MMAs as part of the Marine Life Protection Act (MLPA). In comparison, the

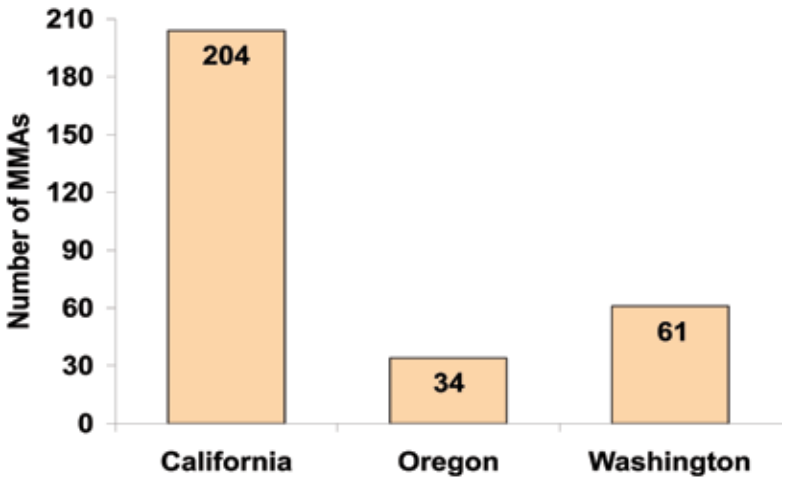


Figure 1
Number of MMAs in regional waters (0–200 nm) off the shores of California, Oregon, and Washington.

MLPA sites added 219 km^2, which is less than 1% of all EFH area designated a year earlier.

Overlapping Boundaries

MMAs frequently have overlapping boundaries, as the result of different legal jurisdictions and conservation goals for the same marine location. When MMAs have overlapping boundaries, the regulations for each MMA apply. The MMAs in west coast waters overlap with each other in 8% of the MMA area. Most of this overlap is contributed by MMAs in California waters, which overlap with each other extensively (42% of area within MMAs). When reporting the percent of spatial waters covered by MMAs, the area of overlap has been removed to reflect the true spatial extent of MMA coverage.

Level of Government

A variety of state, federal, partnership, and local government programs and agencies establish and manage west coast MMAs (Box 4, Table 2, Map 1). Fewer MMAs are managed by federal agencies compared to state programs, yet federal agencies manage almost all area in MMAs (99%, Figure 3). In contrast, state agencies and partnership programs manage small percentages of area. These differences in number and size of MMAs are partly explained by the extent of jurisdiction for each level of government. States have jurisdiction over state waters only, from the coastline out to 3 nm, while federal programs, depending on legal authorities, have jurisdiction over the full range of regional waters, from the shoreline out to 200 nm. The much larger extent of federal jurisdiction contributes to federal agencies managing relatively large MMAs compared to state managed MMAs.

Federal Programs

Several federal programs actively manage systems of MMAs along the west coast to fulfill responsibilities as outlined in their legal mandates. The federal mandates frequently have multiple purposes that range from protecting biodiversity and habitats to sustainable production of fisheries. A review of federal program goals and legal mandates for managing MMAs can be found in detail at www.mpa.gov (see "Helpful Resources"). Federal MMA programs on the west coast include the National Marine Fisheries Service and National Marine Sanctuaries Program within the National Oceanic and Atmospheric Administration (NOAA) at the Department of Commerce; the National Park Service and U.S. Fish and Wildlife Service at the Department of Interior; and the National Estuarine Research Reserves System as a partnership program between NOAA and coastal states.

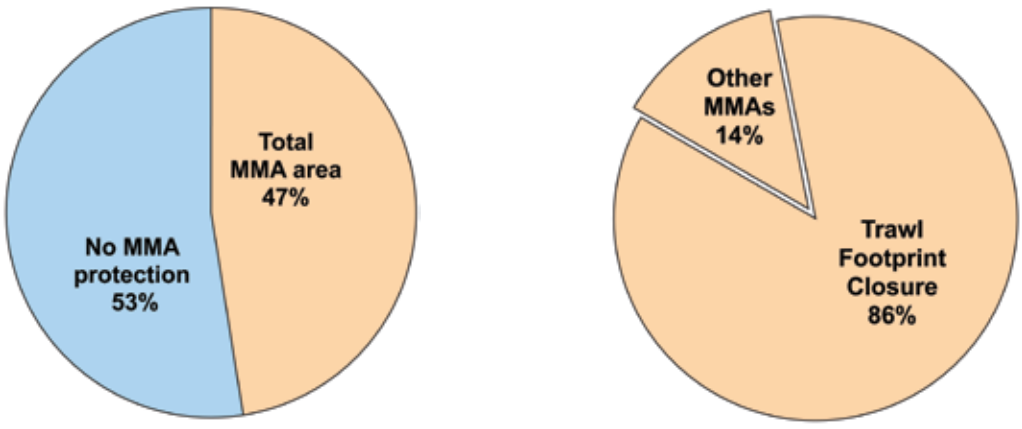
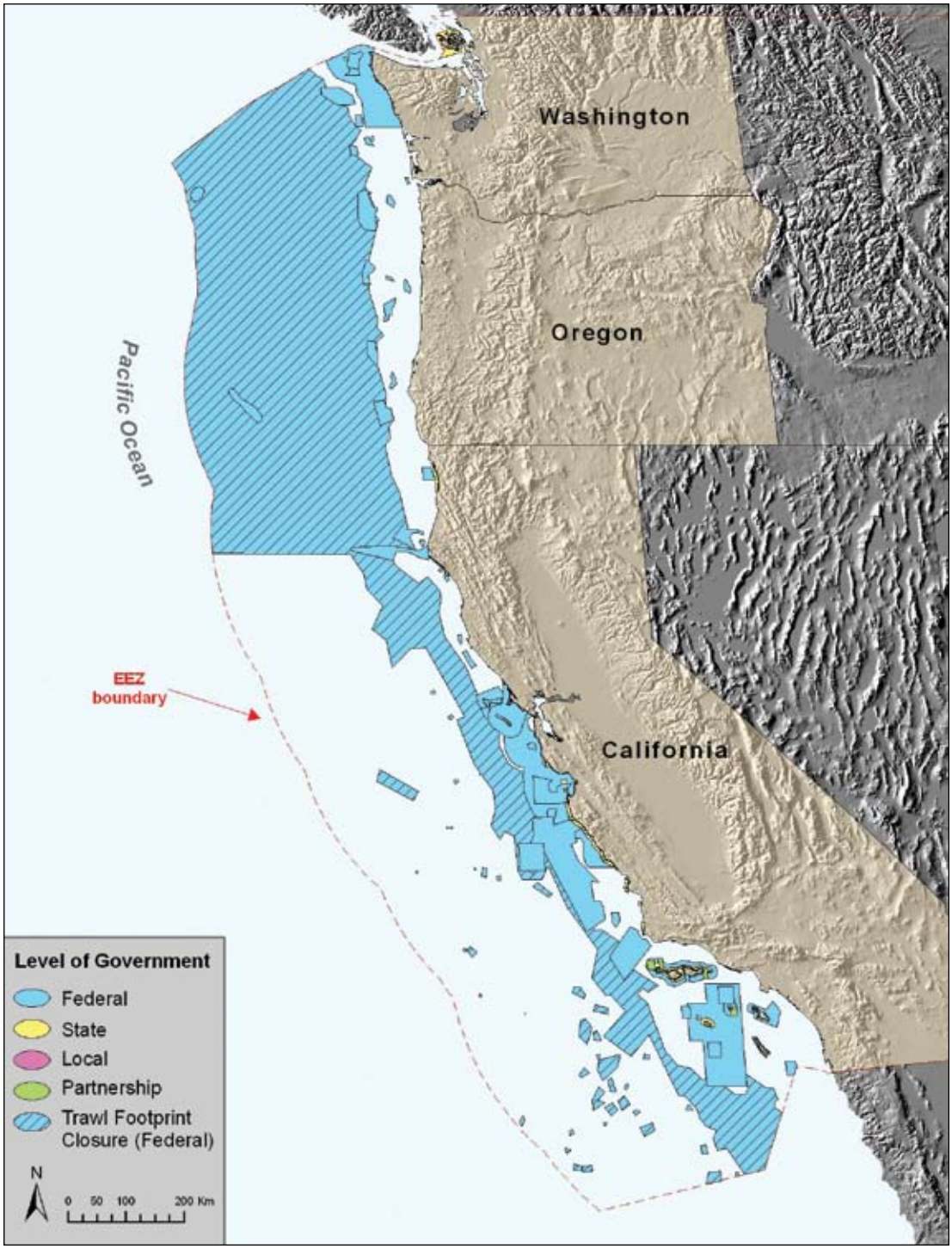


Figure 2
Percent of west coast waters covered by MMAs (left) and a breakdown of total MMA area (right).



Map 1
Location of the 296 MMAs along the west coast of the United States, by level of government. The dashed red line indicates the Exclusive Economic Zone (EEZ) limit (200 nm). The Trawl Footprint Closure (in blue hatching) was designated as Essential Fish Habitat by the federal government.

The National Marine Fisheries Service (NMFS) manages the largest portion (93%) of federally managed MMA area on the west coast, due primarily to the 52 large EFH sites (Figure 4, Box 6). In addition, NMFS manages another four relatively large fishery management zones. Two of these, the Klamath River and Columbia River Conservation Zones were designated to reduce salmon bycatch in the Pacific whiting fisheries where salmon congregate at the mouths of large river drainages. The other two sites, the Cowcod and Yelloweye Conservation Areas, are managed to reduce bycatch of overfished stocks of cowcod and yelloweye rockfish.

The second largest portion of federally managed MMA area is within five large National Marine Sanctuaries Program (NMSP) sites (Figure 4). The largest and deepest National Marine

	Number of MMAs				Percentage of West Coast Waters Covered by MMAs[1]
	CA	OR	WA	Total	
Federal	52	17	15	81	50.76
State	135	15	38	188	0.64
Partnership	17	2	7	26	0.01
Local	0	0	1	1	< 0.01
Total	**204**	**34**	**61**	**296[2]**	47.4[2]

Table 2
Number of MMAs and percentage of west coast waters by level of government.

[1]Total area in west coast (WC) waters = 823,953 km^2

[2]A few MMAs range across multiple states. Duplicate MMAs and overlap in MMA area were removed from regional totals.

Sanctuary within the continental U.S. is centered along the shores of Monterey Bay in California waters. The other four National Marine Sanctuaries are located from north to south along the Olympic Coast, Cordell Banks, Gulf of the Farallones, and the Channel Islands (Box 7). NMFS and the NMSP tend to manage large oceanic MMAs, compared to MMA agencies within the Department of Interior, which tend to manage small coastal MMAs in this region.

The National Park Service (NPS) manages five small MMAs that are primarily coastal tidal areas (Figure 4). A few have an offshore marine component. For example, the Channel Islands National Park has a 1 mile marine area surrounding the five Channel Islands.

The U.S. Fish and Wildlife Service (FWS) manages 15 west coast MMAs as part of the National Wildlife Refuge System (NWR). The west coast NWR sites are almost exclusively estuarine, made up of large wetlands, salt marshes, and intertidal zones, with limited offshore marine components. One such site is Bandon Marsh National Wildlife Refuge, established to protect the largest remaining tidal salt marsh within the Coquille River estuary of Oregon. Together, NPS and FWS manage less than 1% of the area in west coast MMAs (Figure 4).

Washington, Oregon, and California have partnered with NOAA to establish National Estuarine Research Reserves (NERRs) at five estuaries along the west coast. From north to south, NERRs sites are managed at Padilla Bay, South Slough, San Francisco Bay, Elkhorn Slough and Tijuana River. The marine area for each NERR is very small. For example, Padilla Bay NERR in Washington, the largest NERR along the west coast covers only 50 km^2 of estuarine area, and the Tijuana NERR, the smallest, covers less than 1 km^2.

Date of Establishment

MMAs have existed for nearly a century along the west coast (Figure 5). The first MMA was Olympic National Park in Washington, designated by President Theodore Roosevelt in 1909 as a

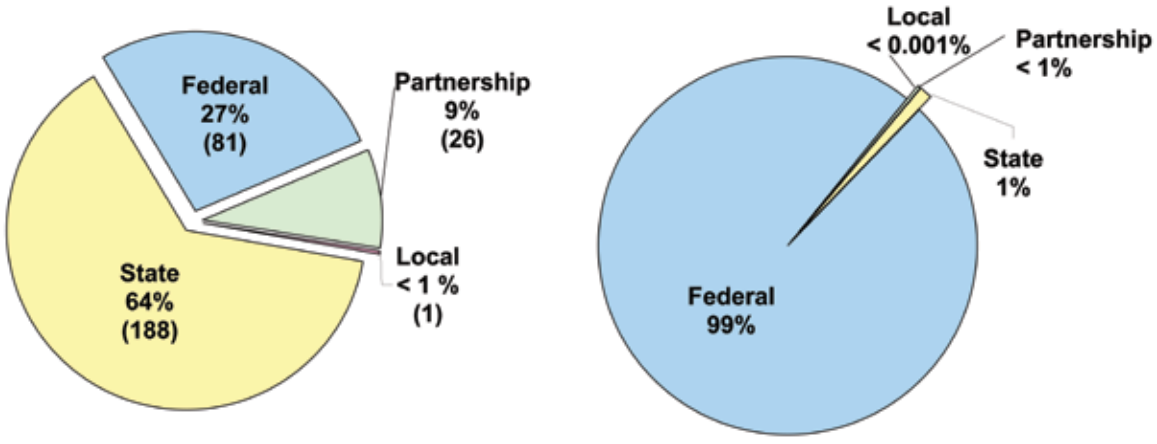


Figure 3
MMAs by level of government in west coast waters depicted by number (left) and by area (right) (number of MMAs is in parentheses).

Box 6 **Essential Fish Habitat for West Coast Groundfish**

Marine fish depend on many types of healthy habitats throughout their lives to survive and reproduce. Various human activities alter, damage, or destroy these habitats. To address these threats, state and federal agencies collaborate with the regional fishery management councils to identify essential fish habitat (EFH) and develop measures to protect and restore these habitats.

In June 2006, the Pacific Fishery Management Council (PFMC) and the National Marine Fisheries Service (NMFS) designated 52 EFH sites along the entire west coast in state and federal waters. These designations are intended to minimize, to the extent practicable, adverse effects to ecologically important habitats of west coast groundfish from fishing activities. The west coast groundfish assemblage includes rockfishes (*Sebastes* spp) and flatfishes. Within the EFH sites, specified gear types are regulated to minimize harmful impacts. Some EFH areas are closed to bottom trawl gear, and others are closed to bottom contact gear. The PFMC collaborated with the Channel Islands, Monterey Bay, and Cordell Bank National Marine Sanctuaries by designating the bottom contact gear closures within Sanctuary boundaries to support Sanctuary goals.

The EFH designation increased the total area along the west coast covered by MMAs from 6% to 47%. One MMA, the Trawl Footprint Closure, is extremely large (337,216 km^2), and accounts for 80% of the area in MMAs along the west coast. This MMA, made up of multiple parts, occurs in the deepest portions of groundfish habitat, at depths greater than the 1,280 m depth contour (700 fathoms) out westward (Map 1). The Trawl Footprint Closure is a precautionary measure intended to prevent expansion of bottom trawling into areas where fishing for groundfish has been limited or nonexistent.

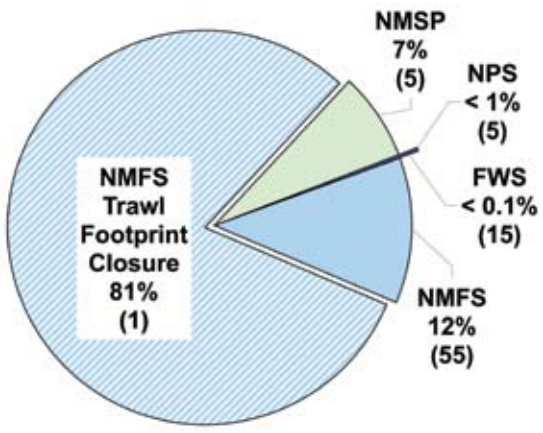
National Monument to protect the diverse and stunning habitats of the Olympic peninsula. Most (93%) were established after 1970, coinciding with the growth in environmental awareness and the passage of landmark federal and state laws.

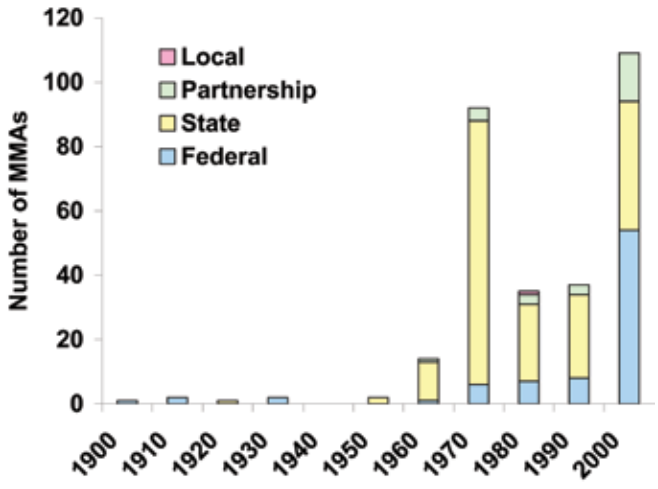
Level of Protection

MMA number and spatial coverage along the west coast is extensive. It is important, however, to further evaluate what user activities are allowed or restricted to achieve an MMA's marine conservation goals. Multiple use MMAs are the most common type of MMA (237). They range from the smallest to the largest size classes of MMAs, and cover more than 99% of the total MMA area (Figures 6 and 7). Multiple use MMAs allow many activities, including some extractive activities within their boundaries. A multiple use

Figure 4
Total federal MMA area in west coast waters by federal agency (number of MMAs is in parentheses).

Figure 5
MMAs by decade of establishment and level of government in west coast waters.





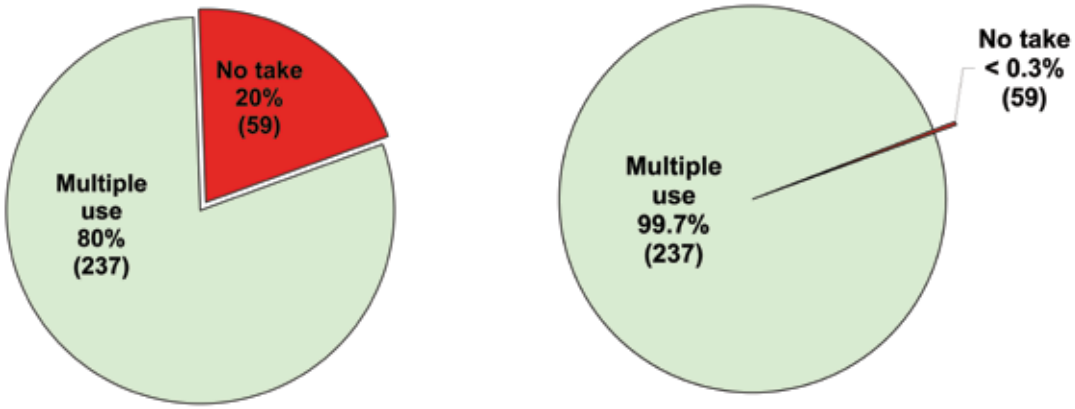


Figure 6
MMAs by level of protection in west coast waters: by number (left) and by area (right) (number of MMAs is in parentheses). Multiple use includes MMAs that are uniform multiple use, zoned multiple use, and zoned multiple use with no take areas; no take includes MMAs that are no take and no access.

MMA may be either uniform multiple use or zoned multiple use, where specific extractive activities are allocated to compatible zones in order to reduce adverse impacts. For example, the Monterey Bay NMS is classified as zoned multiple use. Exploring for, developing or producing oil, gas or minerals is prohibited, except for the collection of jade from well defined zones within the sanctuary boundaries. The third type of multiple use site is one that is zoned with no take areas, such as the Channel Islands NMS (Box 7).

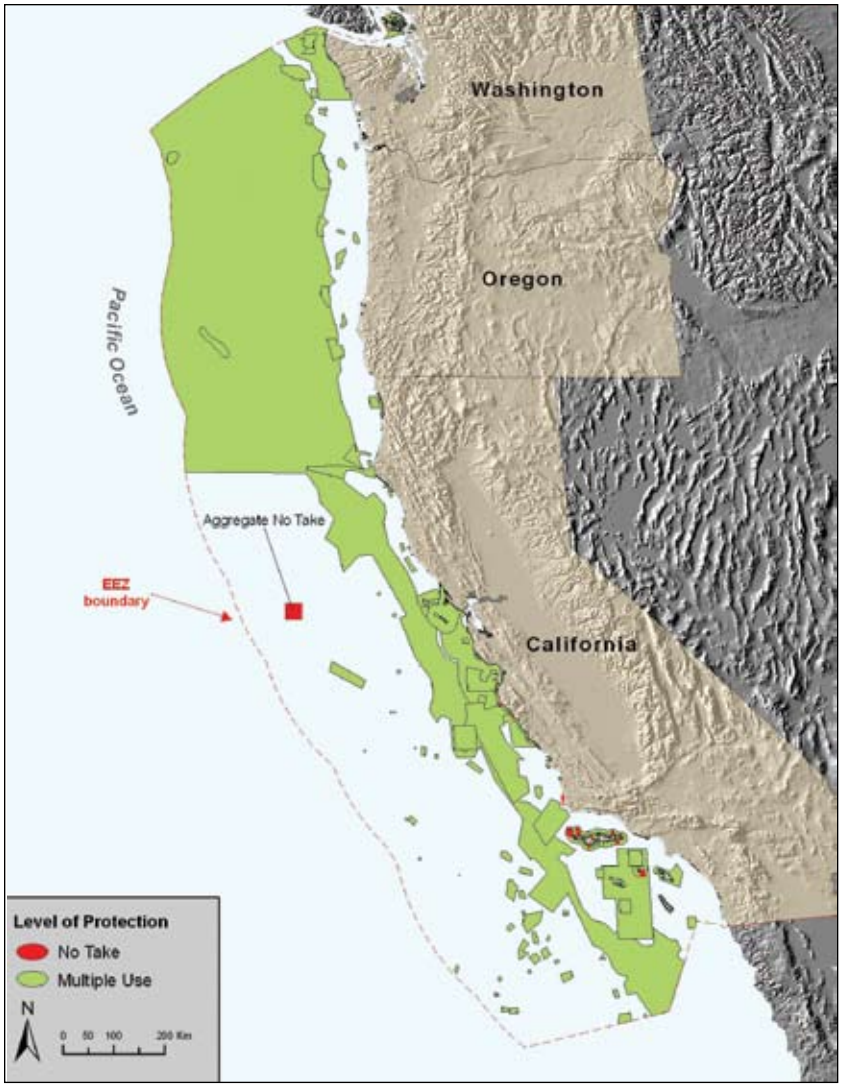
Compared to the multiple use MMAs, no take

Box 7 Channel Islands National Marine Sanctuary: Partnerships and Zoning within an MMA

The Channel Islands National Marine Sanctuary (CINMS), designated in 1980, is an area of national significance because of its exceptional natural beauty and resources. It encompasses the waters that surround Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending from mean high tide to 6 nm offshore around each of the five islands. The Sanctuary's primary goal is the protection of rich and diverse marine life and habitats, unique and productive ecosystems, and culturally significant resources.

Deteriorating marine populations of the Channel Islands waters prompted a diverse group of stakeholders and managers of the Channel Islands National Park and CINMS to propose to the California Fish and Game Commission the use of special marine zones to restore biodiversity and population levels within park and sanctuary boundaries. All extractive activities would be prohibited in zones designated as marine reserves, and limited lobster and pelagic fishing would be allowed in zones designated as marine conservation areas. In 2003, the CINMS, in partnership with the state of California, designated a network of special marine zones within portions of state waters of the sanctuary. The boundaries of the state no take marine reserves were extended out from 3 to 6 nm to include federal waters in summer 2007. Previously, Bottom Contact Closed Areas (BCCA) were designated in 2006 by the Pacific Fishery Management Council. In anticipation of the boundary extension out to federal waters, the BCCAs have the same boundaries as the current marine reserves that cover state and federal waters of the CINMS.

The designation process of a marine reserve network within waters of the CINMS, exemplifies the need for a flexible regulatory framework and collaborative approaches across management agencies and stakeholder groups for effective implementation. The partnerships built during the design and designation process continue, as the network is co-managed and collaboratively enforced by the CINMS, the Channel Islands National Park, the California Fish and Game, NMFS, and U.S. Coast Guard.



Map 2
Total aggregate area of no take MMAs within west coast waters. The total amount of area within no take MMAs is 1051 km^2, 0.1% of west coast waters. The red square indicates the combined size of all, not the location of any particular MMA.

and no access MMAs are fewer (59) and much smaller sites, limited to the smaller size classes (Figure 7). These more restrictive MMAs cover less than 0.3% of the total MMA area. Their combined area along the west coast covers 1,051 km^2, an area twice the size of Lake Tahoe (Map 2). Examples of no take MMAs are the marine reserves around Channel Islands or the Bodega State Marine Reserve (SMR), where human access is allowed but extraction of marine resources is prohibited unless under scientific permit. No access MMAs restrict all human access in order to prevent potential ecological disturbance. Types of no access MMAs are those that protect marine animals during sensitive life stages, or serve as areas for research in the absence of any human activities. Many Natural Area Preserves (NAP) of Washington, such as the Skookum Inlet, are classified as no access, to serve as gene reserves and baselines against which disturbed ecosystems may be compared

Multiple use MMAs are managed primarily by the federal government, whereas no take and no access MMAs are managed typically by state agencies (Figure 8). Federal MMAs usually have

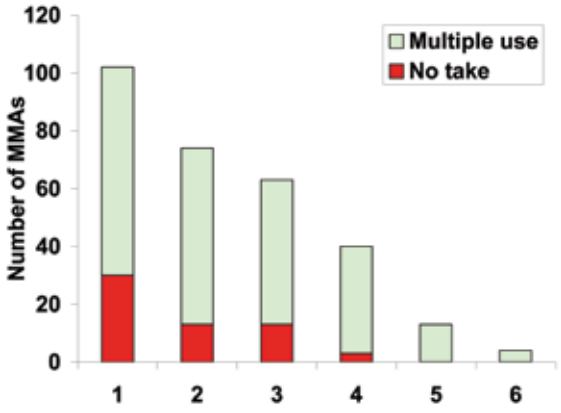


Figure 7
MMAs by level of protection in west coast waters, summarized by six size classes.
1: < 1 km2; 2: ≥ 1 km2 < 10 km2; 3: ≥ 10 km2 < 100 km2; 4: ≥ 100 km2 < 1000 km2; 5: ≥ 1,000 km2 < 10,000 km2; 6: ≥ 10,000 km2. Multiple use includes MMAs that are uniform multiple use, zoned multiple use, and zoned multiple use with no take areas; no take includes MMAs that are no take and no access.

Box 8 Types of Fishing Regulations in MMAs

Fishing activities, although usually allowed within MMAs, are frequently managed through various regulations. These measures include limits, restrictions, and prohibitions to fishing gear, fishing type, depth of fishing, fish size and season of fishing.

Commercial fishing restrictions
- Fishing vessel size
- Bottom contact gear, including bottom trawling
- Pelagic fishing gear
- Mesh size of net
- Fishing season
- Depth limits
- Bycatch limits

Recreational fishing restrictions
- Fish size
- Fishing season
- Hook size and hook number
- Bottom contact gear
- Use of powerheads
- Catch and release only

mandates that include multiple purposes, such as protection of biodiversity and promotion of healthy fisheries.

Impacts on Fishing Activities

A common perception of MMAs is that they prohibit all user activities within their boundaries, including fishing. Yet, fishing is completely prohibited in less than 1% of all area protected by MMAs (Figure 9). Fishing is not managed or regulated by one sixth of the MMAs, covering 5% of the MMA area. However, other fishing regulations not issued by that MMA may be in effect. In the majority of MMAs (2/3), some form of fishing is allowed albeit with modifications to gear type and fishing depth (Box 8). These modifications are most often applied to commercial fishing (89% of MMA area) compared to recreational fishing (< 1% of MMA area). Catalina Marine Science Center SMR is one of the few MMAs where all forms of fishing and anchoring are prohibited, unless by permission of the Marine Science Center Director. Scientists use this small MMA to study marine species and communities. This MMA may also serve as a reference point to measure changes in the marine environment in the absence of fishing pressure.

Conservation Focus

MMAs generally address one or more of three different conservation goals. Natural heritage MMAs are created to conserve natural heritage values, such as biodiversity, ecosystems or protected species. Sustainable production sites are established to support healthy and sustainable fisheries, which might include restoring overfished stocks, and protecting spawning grounds or other key habitats. Lastly, cultural heritage MMAs focus on conserving our nation's maritime history and traditional cultural connections to the sea, such as shipwrecks, submerged cultural artifacts and areas important to specific cultures. An MMA's

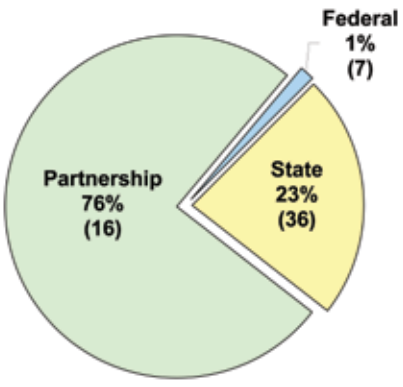


Figure 8
No take MMA area in west coast waters by level of government (number of MMAs is in parentheses).

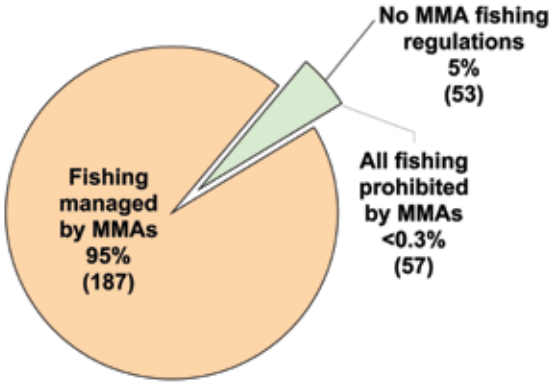


Figure 9
MMA area by how fishing is managed in west coast waters (number of MMAs is in parentheses).

conservation focus influences its design, location, size, management strategies, and potential contribution to surrounding ecosystems.

More than half of west coast MMAs have a single conservation focus, whereas the rest have multiple conservation foci. However, nearly all of MMA area (96%) is within MMAs with multiple conservation objectives (Figure 10), either natural heritage and sustainable production combined or natural heritage and cultural heritage combined. MMAs focused on natural heritage and sustainable production are typically fisheries management areas that also have a focus on protecting benthic habitats, such as the EFH sites. Natural heritage and cultural resource MMAs make up the next largest area of MMAs. Most of this area is within National Marine Sanctuaries, which have a mandate to protect natural habitats and ecological processes and enhance the sustainable use of historical, cultural and archeological resources.

Natural heritage MMAs make up more than half of all MMAs, yet comprise only 1% of MMA area. Most MMAs focused on conserving natural heritage are small nearshore MMAs such as California's State Marine Parks or Oregon's Marine Gardens. Only a few MMAs established with the sole purpose of sustainable production occur on the west coast, such as Haro Strait Special Management Fishery Area in Washington. As for cultural heritage MMAs, one site exists along the west coast: Fort Ross State Marine Conservation Area in California.

Ecological Scale of Protection

The ecological scale of protection of an MMA can be focused on an entire ecosystem and community or on focal species and assemblages. On the west coast, two thirds of MMAs were established to conserve comprehensive ecosystem function. Yet, these MMAs make up a small area (8% of MMA area), compared to the large majority of west coast MMA area (92%) established for the conservation of a focal species or a group of focal species. The Tijuana River National Estuarine Research Reserve is an example of an MMA with an ecosystem scale of protection aimed at understanding and conserving the Tijuana River estuarine ecosystem near the Mexico border. In contrast, the Yaquina Bay Shellfish Preserve in Oregon, an experimental clam area for research and harvest, is an example of an MMA with a focal species scale of protection.

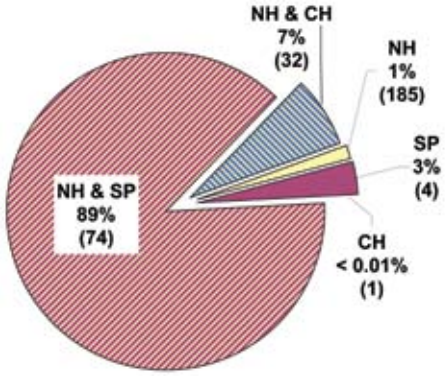


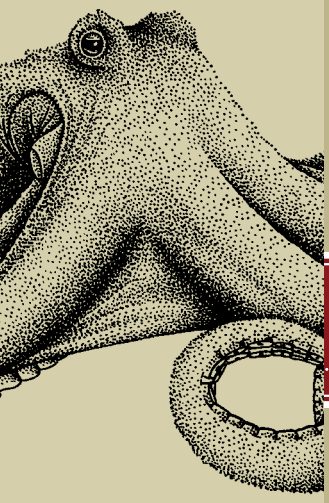
Figure 10
MMA area by conservation focus in west coast waters (number of MMAs is in parentheses). NH = natural heritage; SP = sustainable production; CH = cultural heritage.

Permanence of Protection

Sites differ in how long their protections remain in effect, and may be permanent, conditional or temporary. All (100%) west coast MMAs provide permanent or 'long-term' protection, with the potential to remain in place in perpetuity.

Constancy of Protection

Practically all MMAs on the west coast provide year-round protection, with only a small fraction (< 0.001%) with seasonal protection. Year-round protection means that measures are in place throughout the year. Only two small MMAs on the west coast provide seasonal protections for breeding marine birds and mammals. Anacapa Special Closure B provides seasonal protections for nesting and fledgling brown pelicans by barring human access from January 1 to October 31.



CALIFORNIA: A STATE PERSPECTIVE

AT A GLANCE

- 189 MMAs are located within California state waters (0 – 3 nm).
- MMAs cover 47% of state waters.
- MMAs overlap with each other frequently (41% of MMA area)
- 91% of the MMA area is multiple use; 9% is no take.
- 4% of California waters are set aside as no take

Background

California leads the nation in marine conservation, with many innovative laws that regulate coastal development and conserve marine resources. Examples include the Marine Life Management Act (MLPA) and the recent California Ocean Protection Act, which both require ecosystem-based approaches to protect and sustainably use marine resources. The MLPA calls for the creation of a network of MPAs to protect marine life, habitats, ecosystems, and natural heritage, as well as to improve recreational, educational and study opportunities provided by marine ecosystems. California's Department of Fish and Game (CDFG) and a non-profit organization have joined a unique public-private partnership to implement requirements of the MLPA. Combined with stakeholder input this partnership implemented 24 new sites and redesigned five existing along the central California coast in 2007. The initiative is now proceeding with network design for a northern California region.

Distribution of MMAs

There are 189 MMAs, either wholly or partly in California waters (0–3 nm), more than Oregon and Washington combined. These MMAs cover almost half (47%) of California state waters (Figure 11), in coastal and marine habitats including estuaries, rocky reefs, and deep submarine canyons. California MMAs span the entire coastline, though

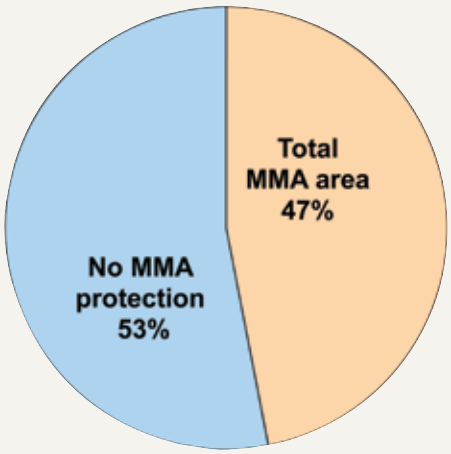
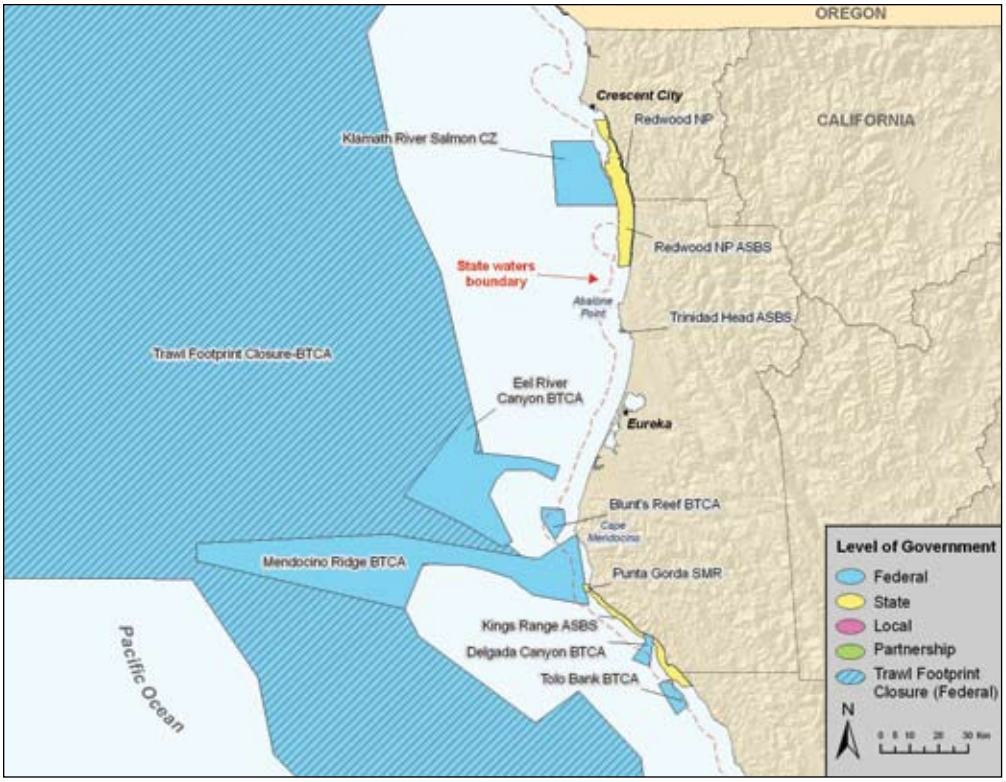
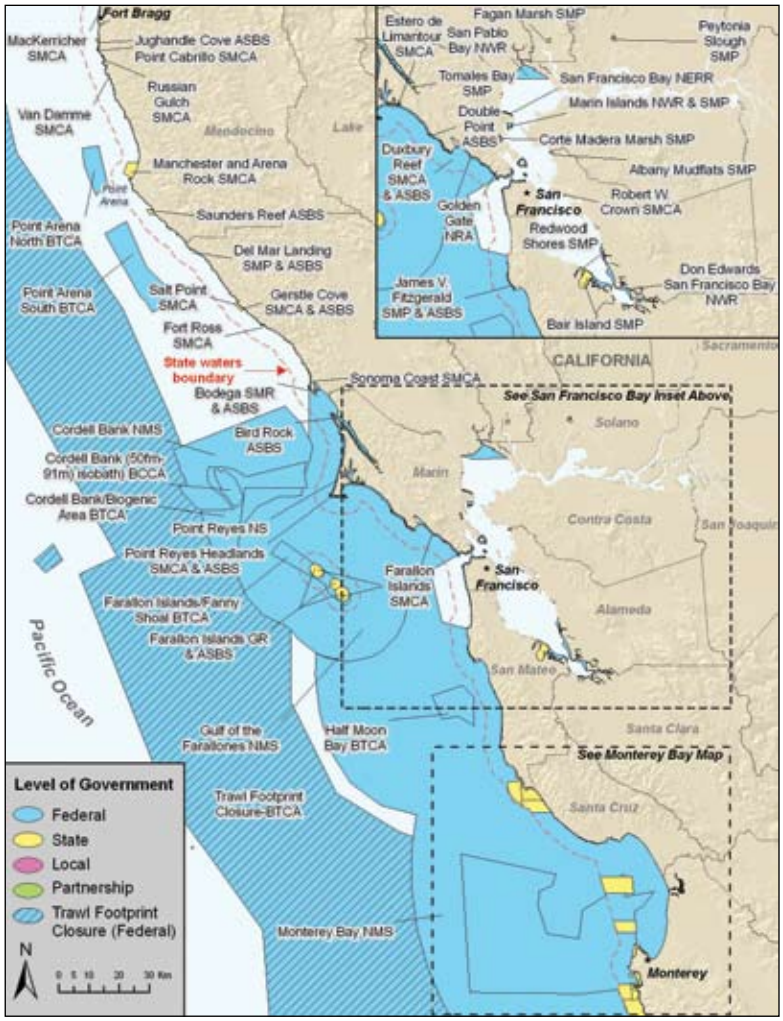


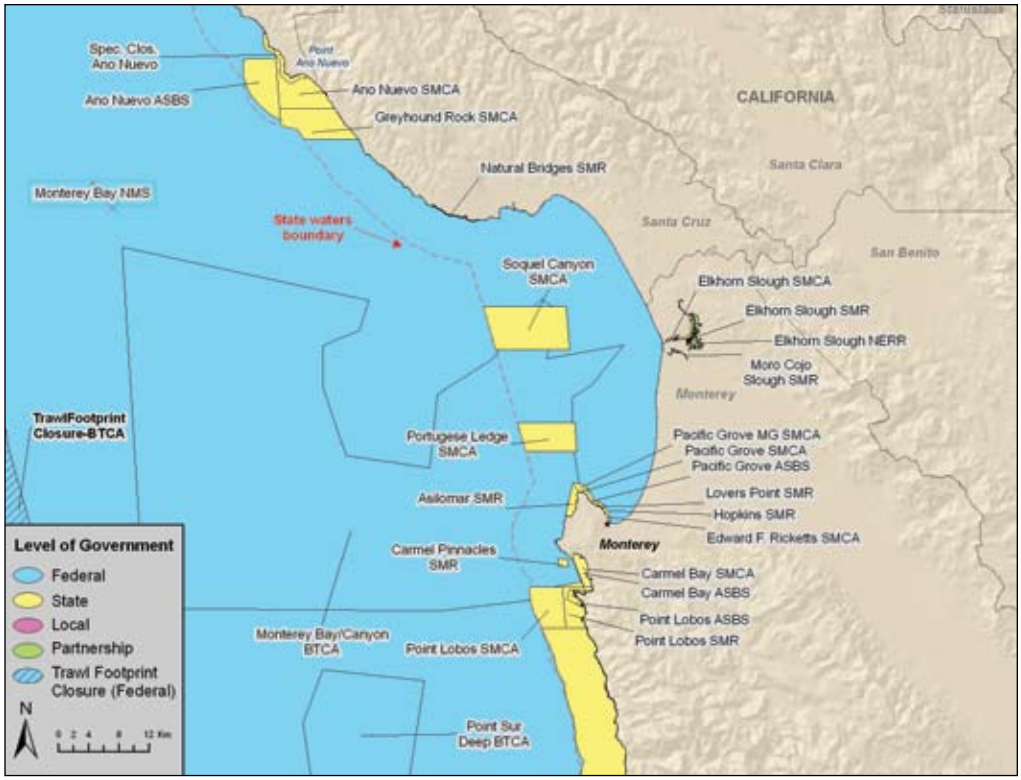
Figure 11
Percent of California waters (0 – 3 nm) covered by MMAs.



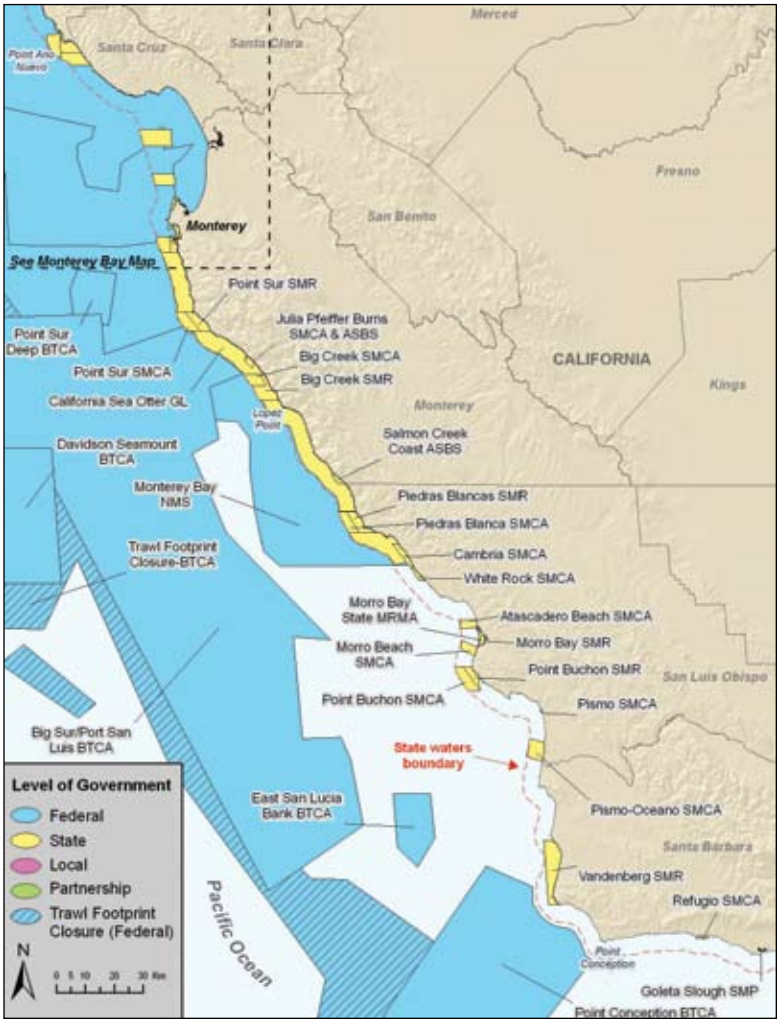
Map 3
California MMAs by level of government located along the northern coastline from the Oregon border to north of Fort Bragg. The dashed red line indicates the state water boundary (3 nm).



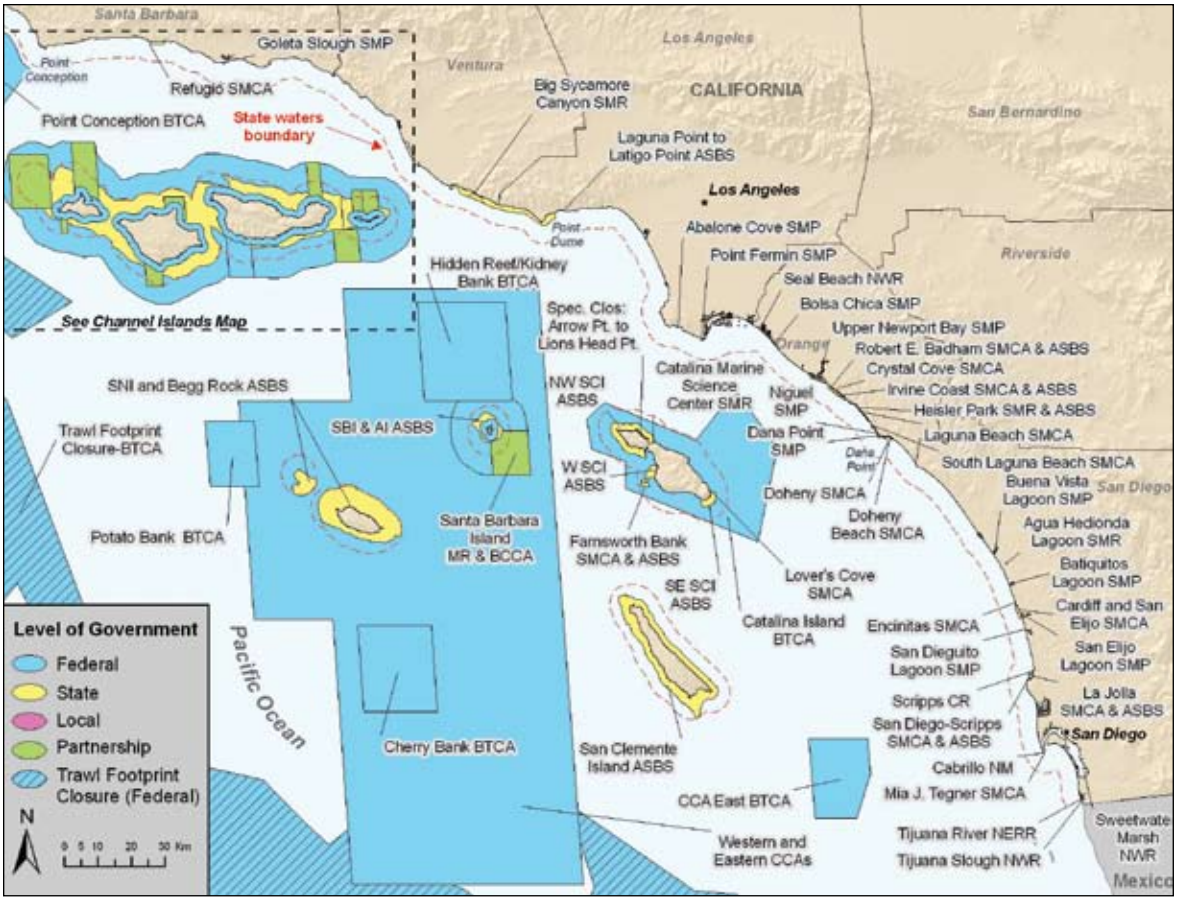
Map 4
California MMAs by level of government located along the northern-central California coastline from Fort Bragg in the north to south of the city of Monterey. The inset map depicts California MMAs by level of government surrounding the San Francisco Bay. The dashed red line indicates the state water boundary (3 nm).



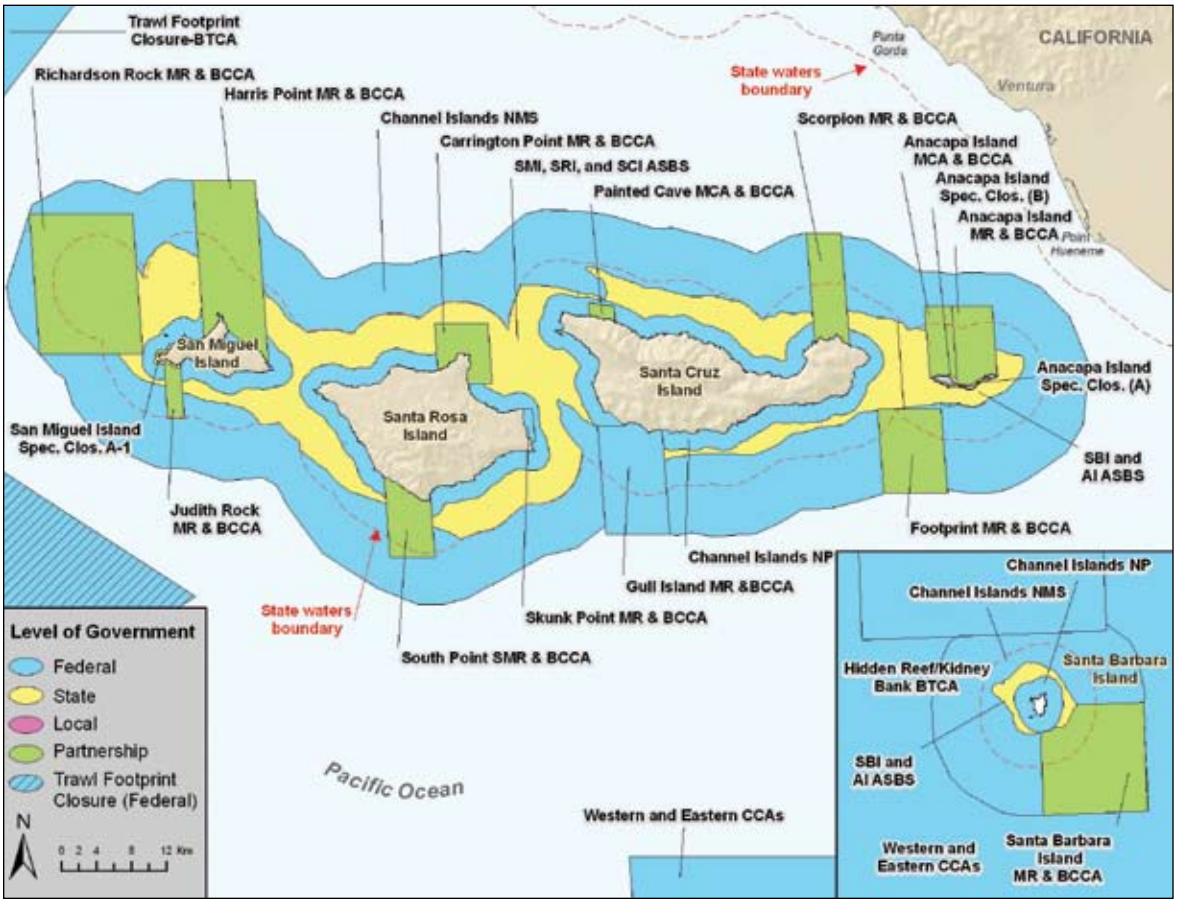
Map 5
California MMAs by level of government along the Monterey Bay in central California. MMAs are depicted from Año Nuevo in the north to south of the city of Monterey. The dashed red line indicates the state water boundary (3 nm).



Map 6
California MMAs by level of government located along the central California coastline from north of Point Año Nuevo to the south of Point Conception. The dashed red line indicates the state water boundary (3 nm).



Map 7
California MMAs by level of government located along the southern California coastline, from north of Point Conception to the Mexican border. The dashed red line indicates the state water boundary (3 nm).



Map 8
California MMAs by level of government surrounding the Channel Islands, including the Santa Barbara Island within the inset. The dashed red line indicates the state water boundary (3 nm).

many are clustered around the Channel Islands to the south and Monterey Bay in central California (Maps 3 to 8). Slightly more than half (53%) of California waters have no spatial protection for marine resources offered by MMAs.

Some sections of the California state waters have extensive overlap of MMAs (Box 9). For example, Heisler Park State Marine Reserve was designated in 1973 by California's Department of Fish and Game to protect marine life from harvest. In 1974, the State Water Resources Control Board designated Heisler Park an Area of Special Biological Significance (ASBS) to protect marine life and their biological communities from harmful waste discharge. These MMAs have exactly the same boundaries but different legal jurisdictions and supporting regulations. Most overlapping MMAs however, only partially share boundaries, such as the Monterey Bay/Canyon Bottom Trawl Closed Area (BTCA) and Soquel Canyon State Marine Conservation Area (SMCA). All regulations apply, with the more prohibitive form in effect for the areas of overlap.

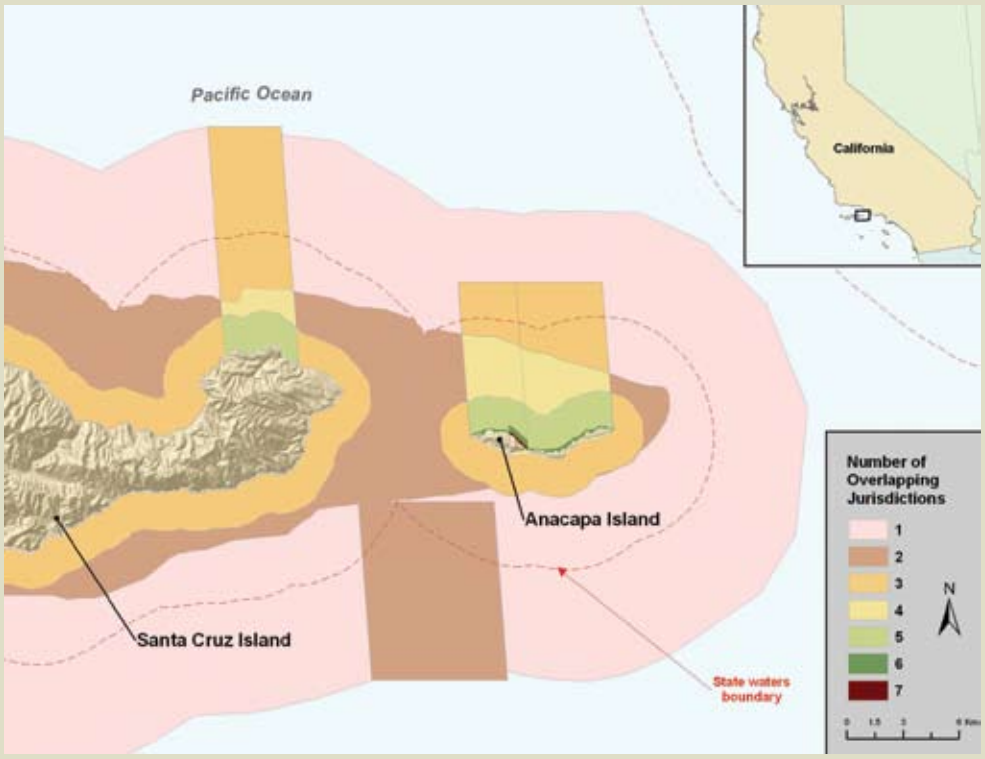
Level of Government

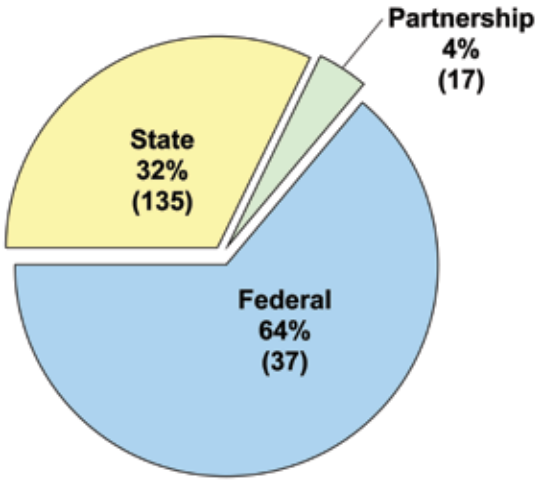
State agencies and programs manage the majority of California MMAs, followed by federal and partnership programs (Table 3, Figure 12, Maps 3

Box 9 Overlapping MMAs in California

MMAs sometimes have overlapping boundaries with differing regulations. When MMAs overlap, all regulations apply. For example, when a no take MMA overlaps portions of a multiple use MMA, all forms of extraction are prohibited for those areas of overlap.

The MMAs surrounding Anacapa Island of the Channel Islands overlap extensively, often adding piecemeal protection to marine resources. Eight different MMAs are located around Anacapa Island, with up to seven different MMAs overlapping with each other in various configurations. The majority of overlap occurs among MMAs that are multiple use. These overlapping areas and regulations may be confusing to marine users and decision makers.





	Number of MMAs	Percentage State Waters Covered by MMAs[1]
Federal	37	51.49
State	135	26.09
Partnership	17	3.03
Local	0	0
Total	**189**	**47.06**[2]

[1]California state waters (0-3 nm) = 15,048 km^2

[2]Overlap in MMA area was removed in calculating percentage of state waters.

Table 3
MMAs by level of government in California marine and estuarine waters (0–3 nm)

Figure 12
MMAs by level of government in California waters (number of MMAs is in parentheses).

to 8). The federal government, however, manages the largest percentage of MMA area in California state waters (64%). Federally managed MMAs are much larger because many federal MMAs tend to span across the state maritime zone into federal waters. For example, the boundaries of the Monterey Bay NMS begin at the shoreline of the central coast and extend beyond state waters up to 30 nm from shore. In contrast, all state and partnership MMAs are within 3 nm from shore and are much smaller than federal MMAs. Consequently, state MMAs, although more numerous, occupy a smaller fraction of the MMA spatial extent.

California MMA programs

Several state programs manage MMAs in California, including the California Department of Fish and Game (CDFG) and the State Water Resources Control Boards (Box 10). The CDFG is implementing provisions of the MLPA process to design a network of MPAs for sites that are primarily intended to protect or conserve marine life and habitat. These MMAs are divided into three distinct categories according to conservation purpose and regulations: State Marine Reserves (SMR), State Marine Parks (SMP), and State Marine Conservation Areas (SMCA). The SMRs typically allow public access but prohibit the damage or take of marine resources. State Marine Parks prohibit the take of marine resources for commercial purposes, while SMCAs prohibit the take of marine resources for commercial and recreational purposes that would compromise the integrity of the marine resource or community.

Other California MMAs include the State Water Quality Protection Areas of Special Biological Significance (ASBS), Game Refuges,

Box 10 California's Marine Resource Agencies and MMAs

California Department of Fish and Game
State Marine Parks
State Marine Conservation Areas
State Marine Reserves
State Marine Cultural Preservation Areas
State Marine Recreational Areas
State Game Refuges
National Estuarine Research Reserves (in partnership with NOAA)

State Water Resources Control Board
Areas of Special Biological Significance

University of California
Natural Reserves

and a Natural Reserve. California's natural water quality is protected in ASBS sites, where waste discharge is prohibited to protect marine species, biological communities, or unique and significant resources from an undesirable alteration in natural water quality, unless under special permit by California's Water Resources Control Boards. Examples of ASBS sites are Año Nuevo and Salmon Creek. California also has two Game Refuges to protect marine mammals and birds: the California Otter Game Refuge and the Farallon Island Game Refuge. Finally, Scripps Coastal Reserve is part of the University of California's Natural Reserve System in support of teaching, research and public service. Natural Reserves provide University of California students and professors with relatively undisturbed environments for research and "hands-on" educational experiences. The state of California did not provide data for their state managed fishery zones. California's marine resource agencies do not consider spatial fishery closures either MMAs or MPAs.

The state of California entered into partnership with NOAA to establish three National Estuarine Research Reserves (NERRs): Elkhorn Slough, Tijuana River, and San Francisco Bay NERRs. The San Francisco Bay NERR was recently established in 2003 and is comprised of two locations that include some of the highest quality wetlands of the San Francisco estuary at Suisun Bay and San Pablo Bay.

Establishment Date

The majority of California's MMAs were established in the 1970s and 2000s (Figure 13). The first MMA designated in California waters is the Cabrillo National Monument of 1913, to memorialize the place where the first European, Juan Rodríguez Cabrillo, set foot on California soil in 1542. Managed by the National Park Service, the Cabrillo National Monument is the most southwesterly National Monument in the contiguous United States. The first MMA designated by the state of California is the San Diego–Scripps State Marine Conservation Area. The regents of the University of California established this MMA in 1958 for scientific purposes, originally as a Marine Life Refuge. It was recently reclassified a State Marine Conservation Area in 2000 as part of the MLPA process.

Level of Protection

The overwhelming majority of MMAs are multiple use (including those that are zoned multiple use and zoned with no take areas), accounting for nearly all MMA area (Figure 14). In contrast, 37 MMAs are no take or no access, with a total no take area in California waters of 643 km^2. Although this is a small amount, it is the largest fraction of no take area in state waters (61%). The size of no take off the California coastline (0–200 nm) is even larger (1032 km^2), accounting for 98% of no take on the west coast. The size of no take area within California state waters has practically doubled in 2007 with the implementation of

Figure 13
MMAs by decade of establishment and level of government in California waters.

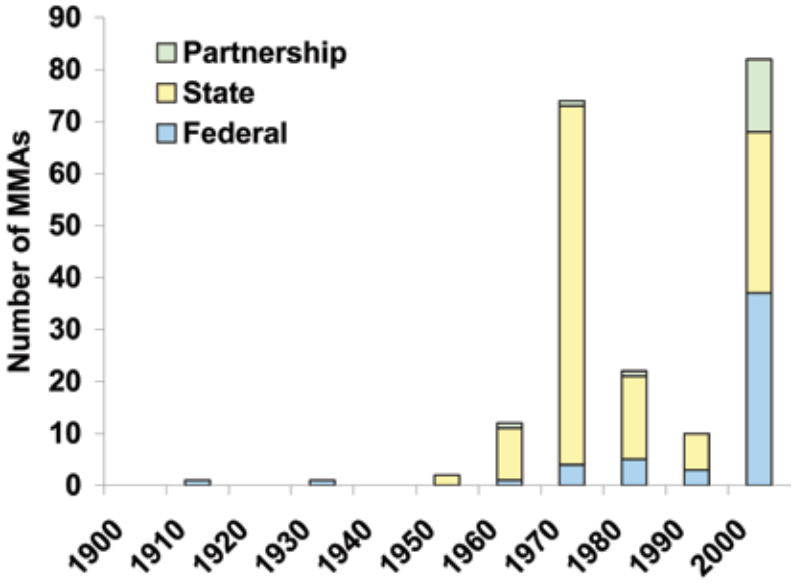
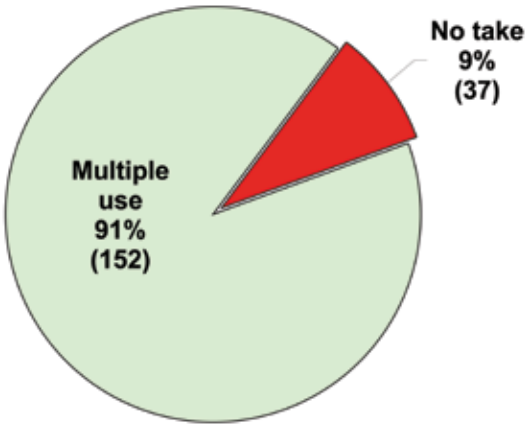
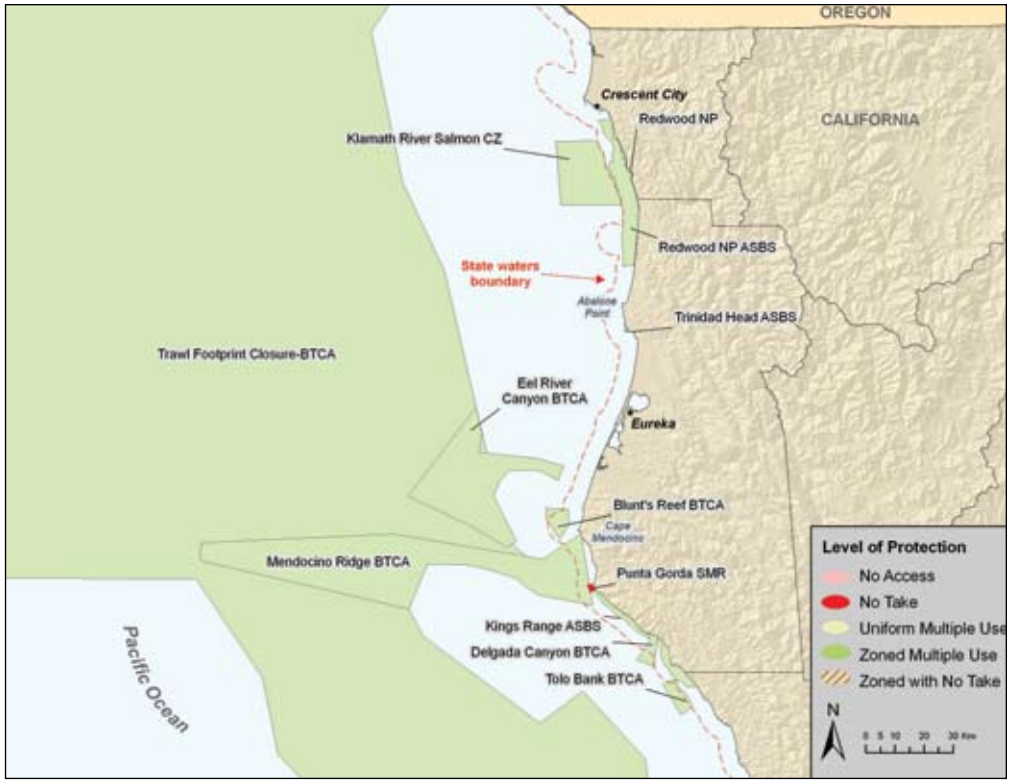
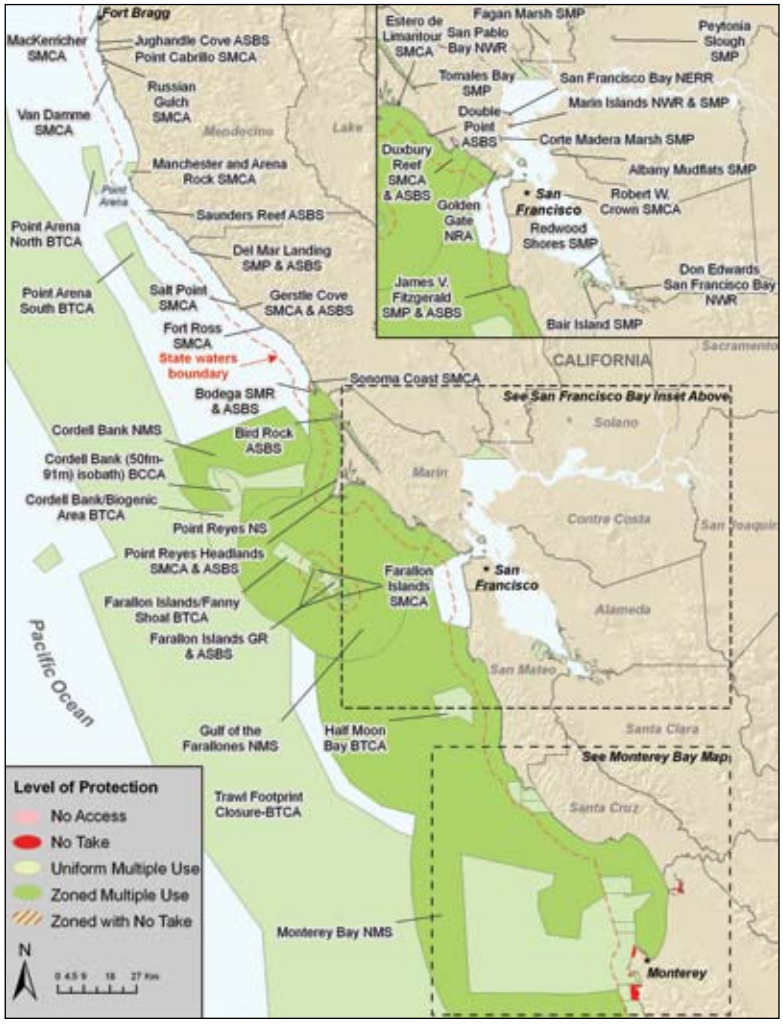


Figure 14
MMA area by level of protection in California waters (number of MMAs is in parentheses). Multiple use includes MMAs that are uniform multiple use, zoned multiple use, and zoned multiple use with no take areas; no take includes MMAs that are no take and no access.

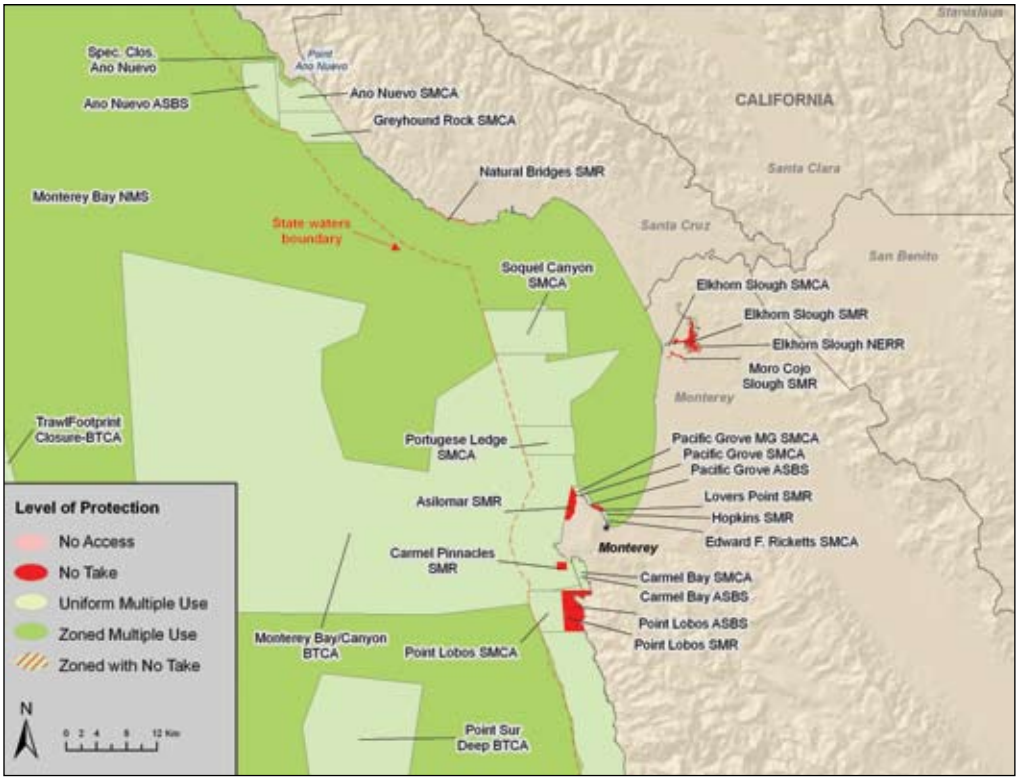




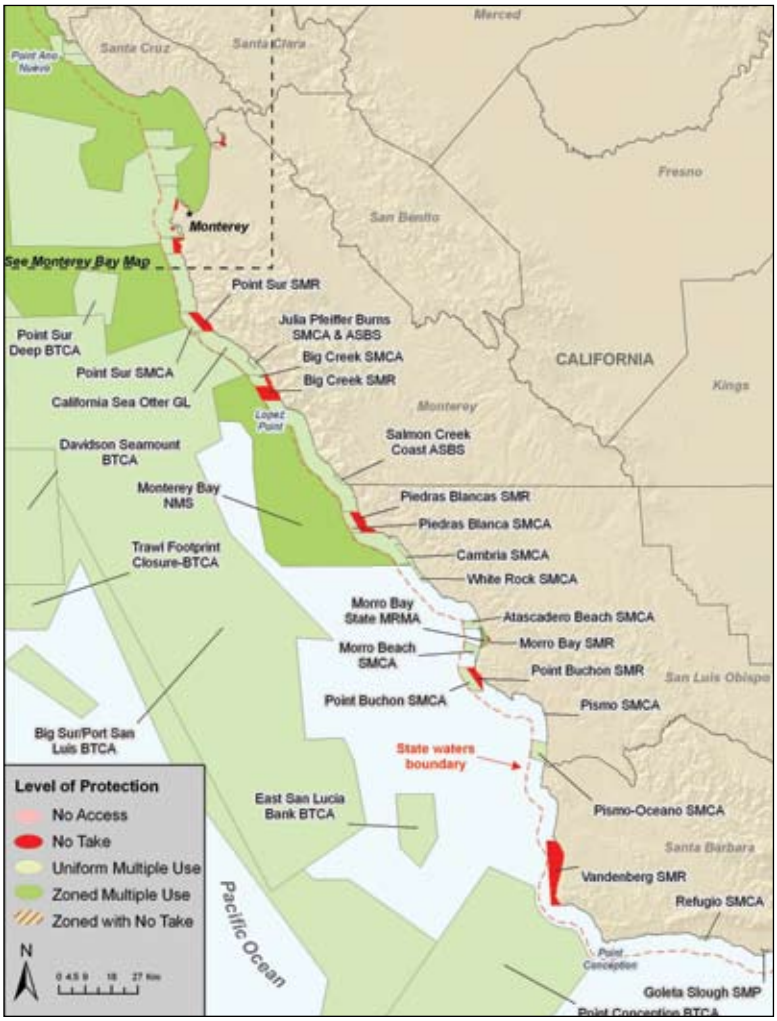
Map 9
California MMAs by level of protection located along the northern coastline from the Oregon border to north of Fort Bragg. The dashed red line indicates the state water boundary (3 nm).



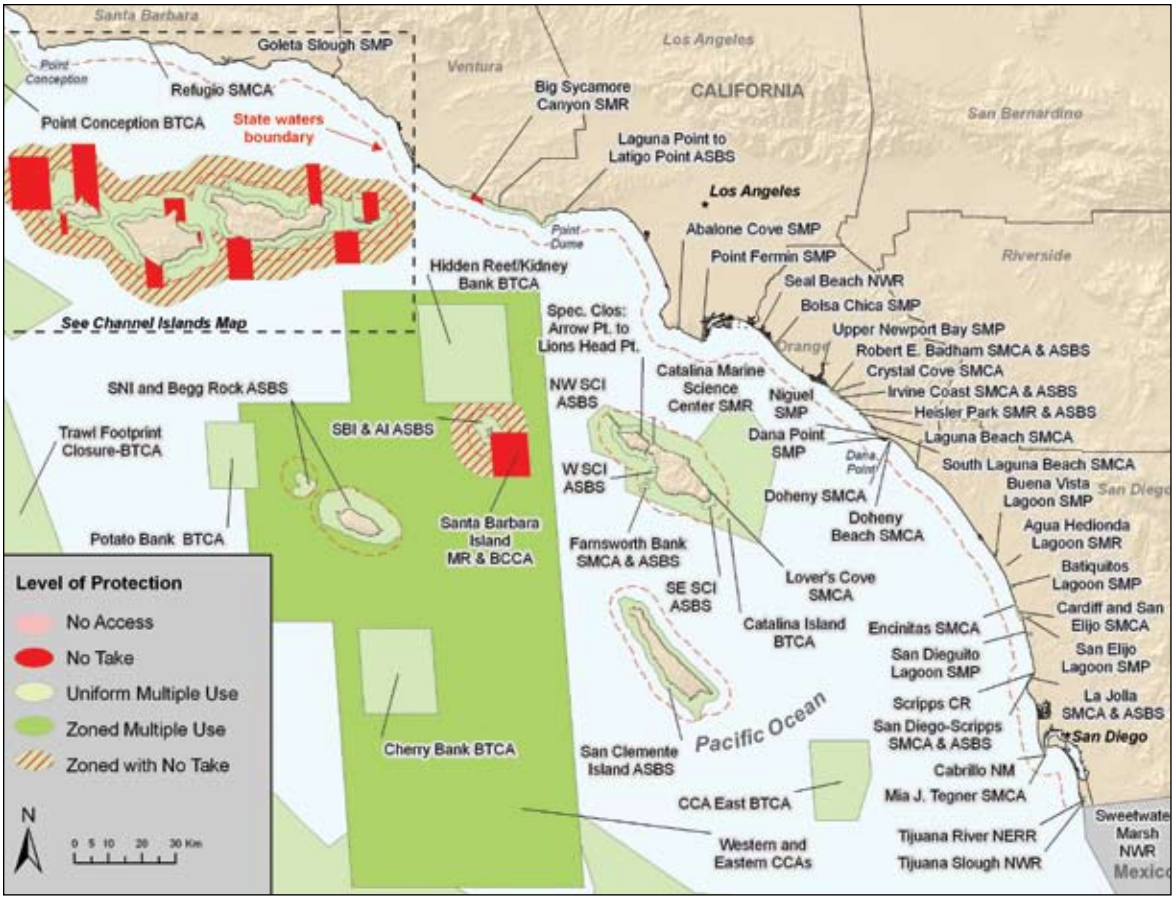
Map 10
California MMAs by level of protection located along the northern-central California coastline from Fort Bragg in the north to south of the city of Monterey. The inset map depicts California MMAs by level of government surrounding the San Francisco Bay. The dashed red line indicates the state water boundary (3 nm).



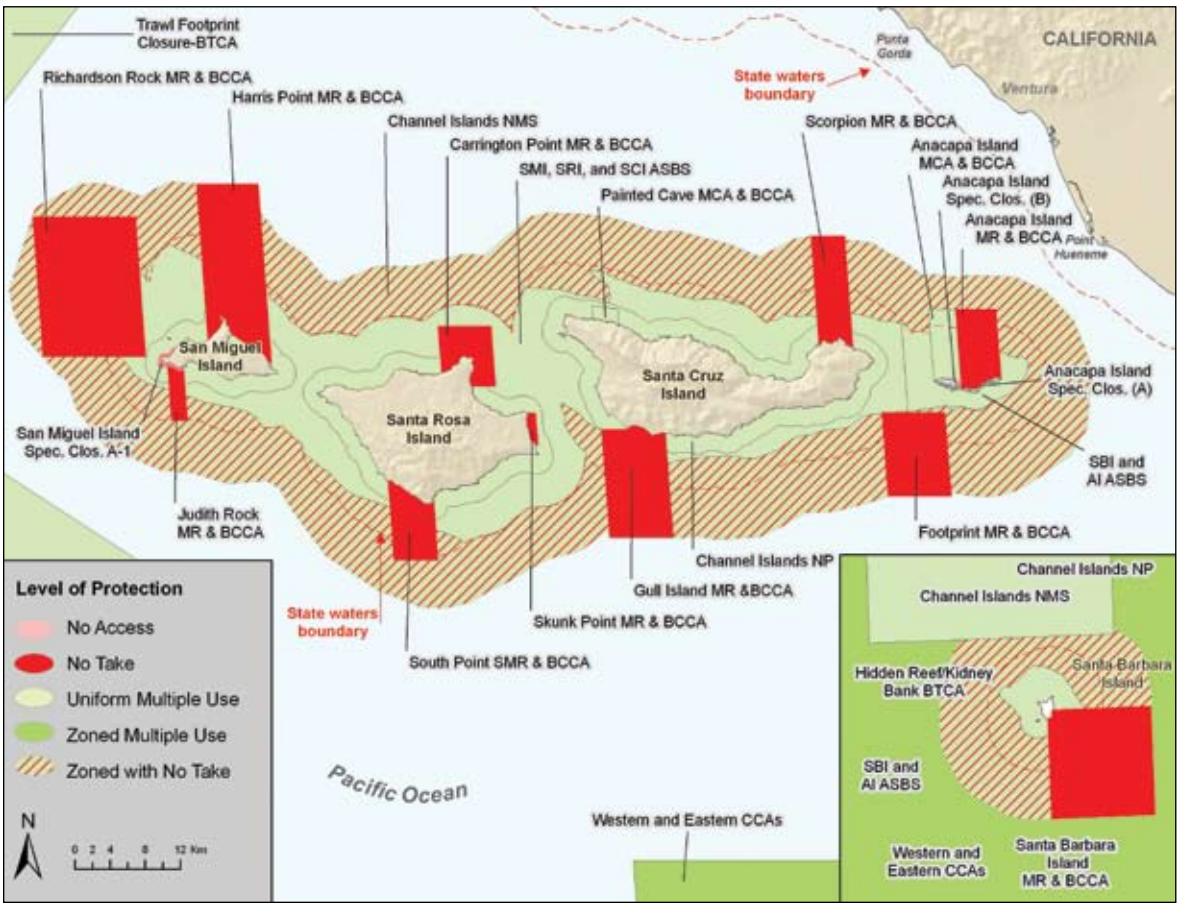
Map 11
California MMAs by level of protectiont along the Monterey Bay in central California. MMAs are depicted from Año Nuevo in the north to south of the city of Monterey. The dashed red line indicates the state water boundary (3 nm).



Map 12
California MMAs by level of protection located along the central California coastline from north of Point Año Nuevo to the south of Point Conception. The dashed red line indicates the state water boundary (3 nm).



Map 13
California MMAs by level of protection located along the southern California coastline, from north of Point Conception to the Mexican border. The dashed red line indicates the state water boundary (3 nm).



Map 14
California MMAs by level of protection surrounding the Channel Islands, including the Santa Barbara Island within the inset. The dashed red line indicates the state water boundary (3 nm).

a network of MPAs as part of MLPA and the expansion of marine reserve boundaries for the Channel Islands marine reserves. Maps 9 to 14 depict the MMAs off the California coast according to level of protection, with a focus on MMAs in California's state waters. Examples of no take MMAs are the State Marine Reserves (SMR) along the coast, and the Marine Reserves (MR) around the Channel Islands NMS, which share the same boundaries as the Bottom Contact Closed Areas (Map 14). The Channel Islands NMS is also classified as zoned multiple use with no take areas. Other types of multiple use MMAs are the other National Marine Sanctuaries, most National Parks, California's ASBS water quality sites, State Marine Conservation Areas, State Marine Parks, and the EFH areas.

Impacts on Fishing Activities

Fishing is managed by the majority of California's MMAs by number (~ 75%), but it is managed in only half of the MMA area (Figure 15). This difference in number and area is explained by the large proportion of California state waters occupied by National Marine Sanctuaries that do not directly manage fishing activity. Although fishing is not explicitly regulated within half of all MMA area, it frequently overlaps with areas that have fishing regulations, either implemented by an MMA or other management measure. For example, the Monterey Bay NMS overlaps with the Monterey Bay/Canyon Bottom Trawl Closed Area. In the areas of overlap between the Sanctuary and EFH site, bottom gear restrictions are in effect. A similar situation occurs when State Marine Reserves (the no harvest sites) overlap with ASBS sites (water quality sites). Of course, fishing regulations that are not area specific, such as seasonal and size restrictions for all California waters, apply both inside and outside MMAs.

Conservation focus

The majority of MMAs (128) in California waters is focused on natural heritage conservation, covering a moderate portion of MMA area (37%). In contrast, more MMA area (46%) is focused on conservation of both natural heritage and cultural heritage resources in a quarter of the number of MMAs (Figure 16). The State Marine Reserves, ASBS sites, and National Estuarine Research Reserves are examples of natural heritage sites, with goals to protect or restore unique habitats and ecological process. National Marine Sanctuaries are examples of sites focused on natural heritage and cultural heritage. Smaller portions of MMA area (14%) aim to protect both natural heritage and sustainable production. Examples of this combination of conservation foci are the EFH sites and the National Wildlife Refuges Don Edwards and San Pablo Bay within the San Francisco Bay. The only sustainable production site located within state waters is the federally managed Western and Eastern Cowcod Conservation Areas, a fairly large MMA (5% of MMA area). The Cowcod Conservation Areas were implemented in 2001 to reduce the bycatch of cowcod taken incidentally in all commercial and recreational fisheries for groundfish and halibut. One small cultural heritage site is represented by Fort Ross State Marine Conservation Area, with less than 0.01% of MMA area. California has the only cultural heritage MMA in the west coast region.

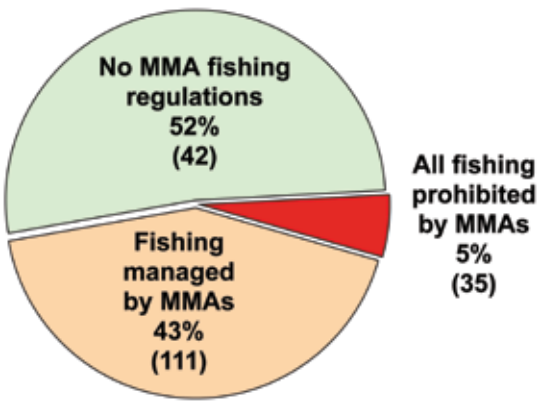


Figure 15
MMA area by how fishing is managed in California waters (number of MMAs is in parentheses).

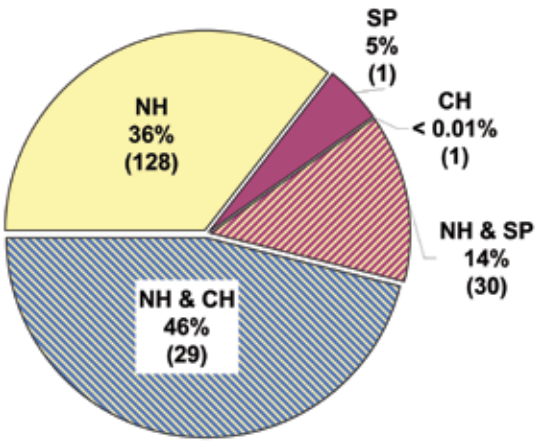


Figure 16
MMA area by conservation focus in California waters (number of MMAs is in parentheses). NH = natural heritage; SP = sustainable production; CH = cultural heritage.

Ecological Scale of Protection

The majority of MMAs (147) and most MMA area within California waters (81%) is focused on the protection of ecosystems or components of ecosystem function, such as at Seal Beach NWR. The remaining MMA area (19%) is focused on the protection of a focal species, typically for sustainable production. For example, the Klamath River Salmon Conservation Zone and Western and Eastern Cowcod Conservation Areas were designated to conserve focal species: salmon and cowcod.

Permanence and Constancy of Protection

Practically all California MMAs provide permanent or 'long term' protection, with the potential to remain in place continuously. Only two small MMAs (< 0.001% of MMA area) are seasonally protected. The San Miguel Special Closure A-2 prohibits boats from approaching the island no nearer than 100 yards from shore in two separate periods, in the spring and the fall, to protect breeding birds and mammals.

OREGON: A STATE PERSPECTIVE

AT A GLANCE

- 23 MMAs are located in Oregon state waters (0 – 3 nm)
- MMAs cover only 3% of state waters
- 95% of the MMA area is multiple use; 5% of MMA area is no take

Background

Starting in 2002, Oregon's Ocean Policy Advisory Council (OPAC) recommended a limited system of marine reserves in Oregon state waters to evaluate their efficacy in meeting nearshore conservation and management goals. In late 2005, Governor Kulongoski directed OPAC to further develop and advise him on a network of marine reserves by identifying and evaluating information and issues to guide this proposal. This process is still underway.

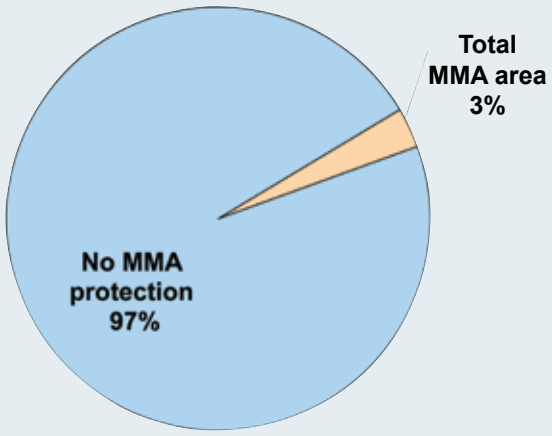


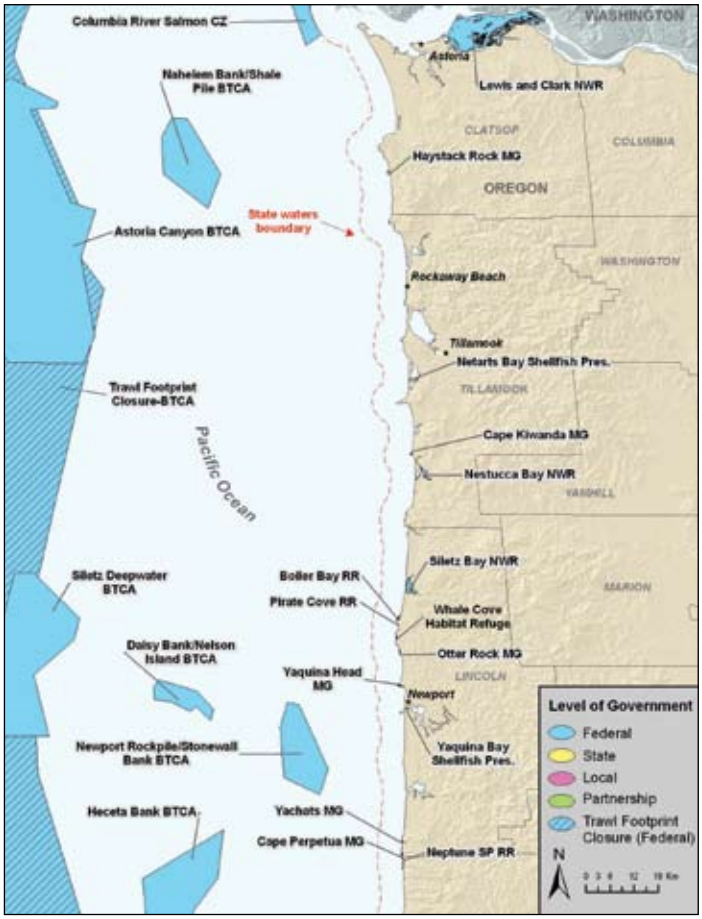
Figure 17
Percent of Oregon waters (0 – 3 nm) covered by MMAs.

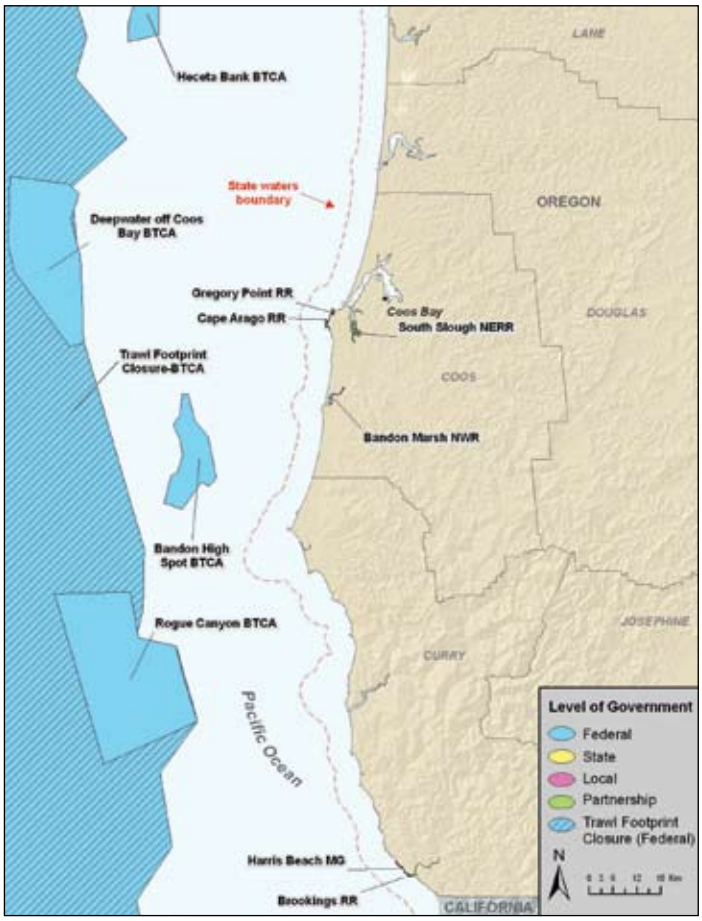
Distribution of MMAs

There are 23 MMAs in Oregon waters. These MMAs cover a small percentage (3%) of Oregon waters (Figure 17). Oregon has the fewest number and area of MMAs of all west coast states, compared to Washington (55) and California (189). Large portions of Oregon's coastline do not have any MMA. Most are small and located nearshore, in estuaries, marsh lands or intertidal habitats. MMAs rarely have overlapping boundaries in Oregon waters (<1% of MMA area).

Level of Government

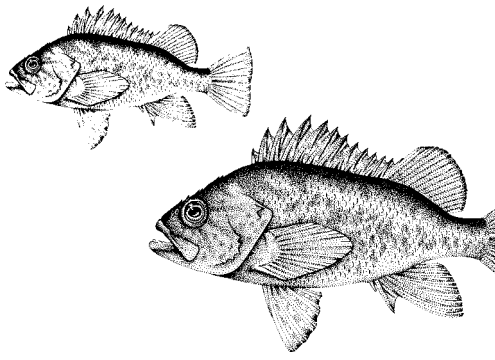
The state of Oregon manages more MMAs than federal agencies and partnership programs. However, the federal government manages most of the area (94%) in Oregon's MMAs (Table 4, Figure 18, Maps 15 and 16). The U.S. Fish and Wildlife Service manages most of Oregon's MMA





Map 15
Oregon MMAs by level of government along the northern coastline from the Washington border to south of the city of Newport. The dashed red line indicates the state water boundary (3 nm).

Map 16
Oregon MMAs by level of government along the southern coastline from south of the city of Newport to the California border. The dashed red line indicates the state water boundary (3 nm).



	Number of MMAs	Percentage State Waters Covered by MMAs[1]
Federal	6	2.89
State	15	0.1
Partnership	2	0.1
Local	0	0
Total	**23**	**3.1**

[1]Oregon state waters (0-3 nm) = 3,915 km^2

Table 4
MMAs by level of government in Oregon waters (0-3 nm)

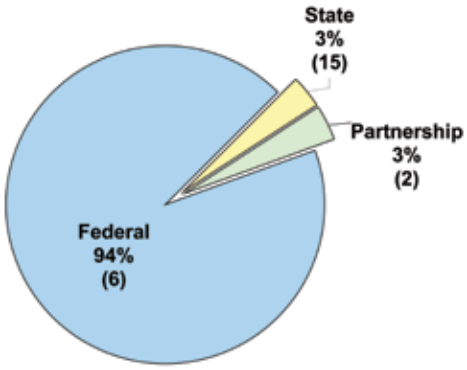


Figure 18
MMA area by level of government in Oregon waters (number of MMAs is in parentheses).

area in four National Wildlife Refuges (NWR): Bandon Marsh, Nestucca Bay, Siletz Bay, and Lewis and Clark. These NWRs are either within nearshore salt marsh or estuarine habitat. The Lewis and Clark NWR, located near the mouth of the Columbia River by the Washington Oregon border, is the largest of Oregon's MMAs and accounts for 87% of MMA area (Map 15). In contrast, only 3% of MMA area is managed by the state because all state and partnership MMAs are very small, occupying nearshore wetlands.

Oregon State Programs

Oregon's Department of Fish and Wildlife (ODFW; Box 11) has established four types of MMAs. These include marine gardens, habitat refuges, research reserves, and shellfish preserves. Marine Gardens (MG) are tide pool areas created for educational purposes that allow visitors to enjoy and learn about intertidal resources. In a Marine Garden, it is illegal to collect any marine invertebrate, except single mussels for bait. Yaquina Head MG is uniquely managed via a partnership between ODFW and the Bureau of Land Management. The Habitat Refuges are represented by one site, located at Whale Cove to maintain the health of the rocky shore ecosystem. Habitat Refuges are similar to no take marine reserves because they prohibit the take of all marine fish, shellfish and invertebrates. Research Reserves (RR) are used for scientific study or research, such as monitoring, or applied research. Most Research Reserves prohibit the harvest of certain shellfish and marine invertebrates without a scientific permit. Two Shellfish Preserves, at Netarts Bay and Yaquina Bay prohibit the harvest of clams to protect experimental clam and oyster cultures.

Oregon's Division of State Lands and NOAA manage in partnership the South Slough National Estuarine Research Reserve. The single Oregon NERR is part of the Coos Bay estuary. The marine component of the South Slough Reserve includes tidelands of sandflats and rocky bottom, saltmarshes, spoil islands, and mudflats with channels.

Establishment Date

The majority of MMAs in Oregon state waters (80%) were established in the 1990s (Figure 19). The first MMA established in Oregon is Netarts Bay Shellfish Preserve of 1960 to support clam cultivation.

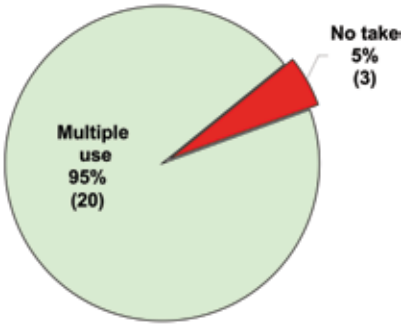
Level of Protection

The majority of MMAs (19) in Oregon waters are multiple use, accounting for 95% of MMA area (Figure 20; Maps 17 and 18). Only 6 km^2

Box 11 Oregon's Marine Resource Agencies and MMAs

Oregon Department of Fish and Wildlife (ODFW)
Marine Gardens
Habitat Refuges
Research Reserves
Shellfish Preserves

Oregon's Division of State Lands
National Estuarine Research Reserves (in partnership with NOAA)



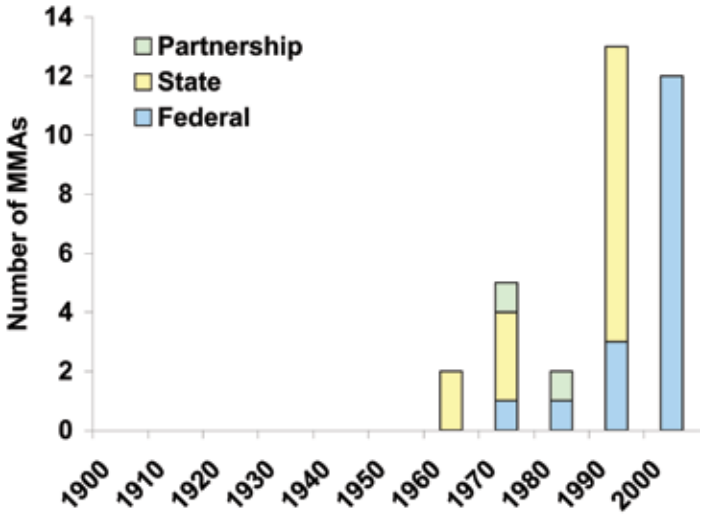
of Oregon's water is managed as no take or no access in three MMAs. Whale Cove is the smallest no take MMA in Oregon at 32 acres, which is approximately the size of the footprint for the Oregon Coast Aquarium.

Impacts on Fishing Activities

Fishing is allowed in 95% of Oregon MMA area (Figure 21). The largest MMA in Oregon, Lewis and Clark National Wildlife Refuge, has no specific fishing regulations itself. Sportfishing for salmon and trout is allowed at this site in accordance with Oregon's fishing regulations. Where fishing is regulated by MMA specific restrictions, in a small fraction of MMA area, commercial fishing is more restricted than recreational fishing.

Conservation focus

While the number of MMAs with a natural heritage focus is relatively high (19), these MMAs are typically small. The focus of most of Oregon's MMA area (88%), located primarily in Lewis and Clark NWR, is natural heritage and sustainable production combined (Figure 22). This NWR promotes hunting for waterfowl and fishing while conserving valuable wetland habitats. Otter



Rock Marine Garden, an example of the natural heritage MMAs, is a popular intertidal habitat among visitors because of its extensive beds of purple sea urchins and mussels.

Ecological Scale of Protection

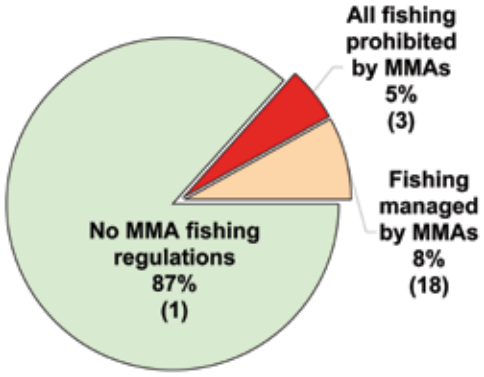
Practically all of Oregon MMA area (99%) is focused on the protection of ecosystems or components of ecosystem function. The Marine Gardens and Research Reserves are examples of Oregon MMAs focused on the protection of components of ecosystems. The only MMAs focused on conservation of a focal resource are the small Shellfish Preserves at Yaquina Bay and Netarts Bay and the small portions of Columbia River Salmon Conservation Area that fall within Oregon's state waters.

Permanence and Constancy of Protection

All MMAs within Oregon waters are permanent, also defined as 'long term.' They also uniformly (100%) provide year round protection with the potential to remain in place in perpetuity.

Figure 20
MMA area by level of protection in Oregon waters (number of MMAs is in parentheses). Multiple use includes MMAs that are uniform multiple use, zoned multiple use, and zoned multiple use with no take areas; no take includes MMAs that are no take and no access.

Figure 19
MMAs by decade of establishment and level of government in Oregon waters.



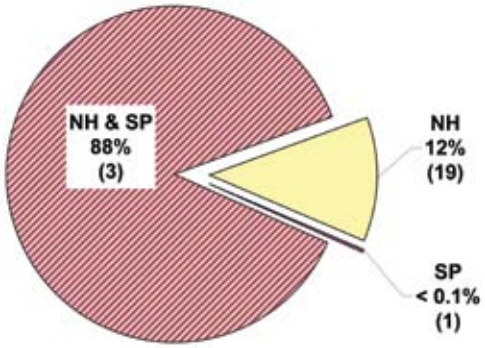
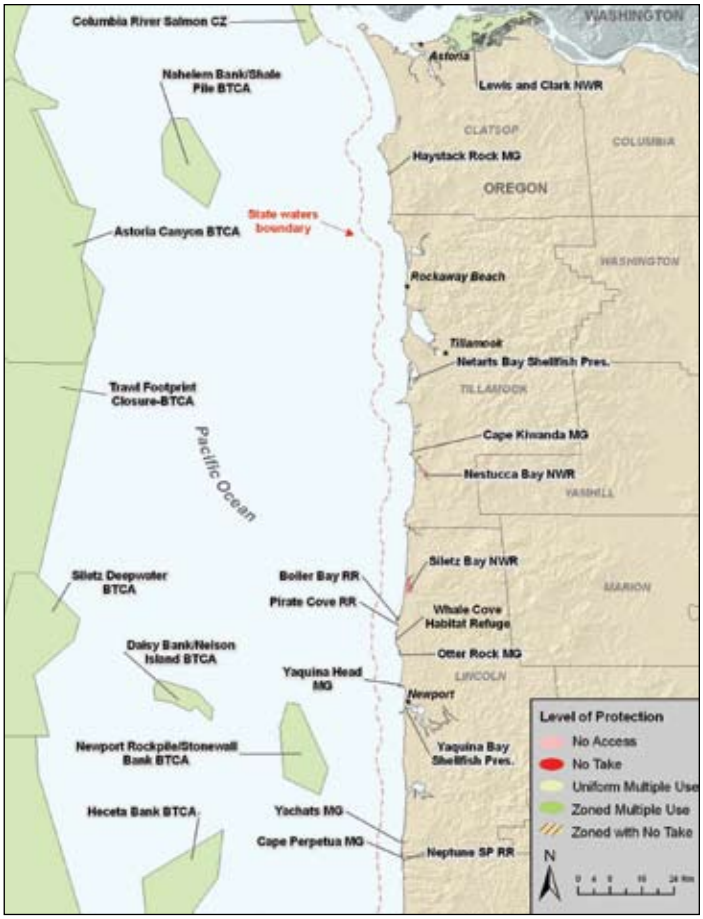
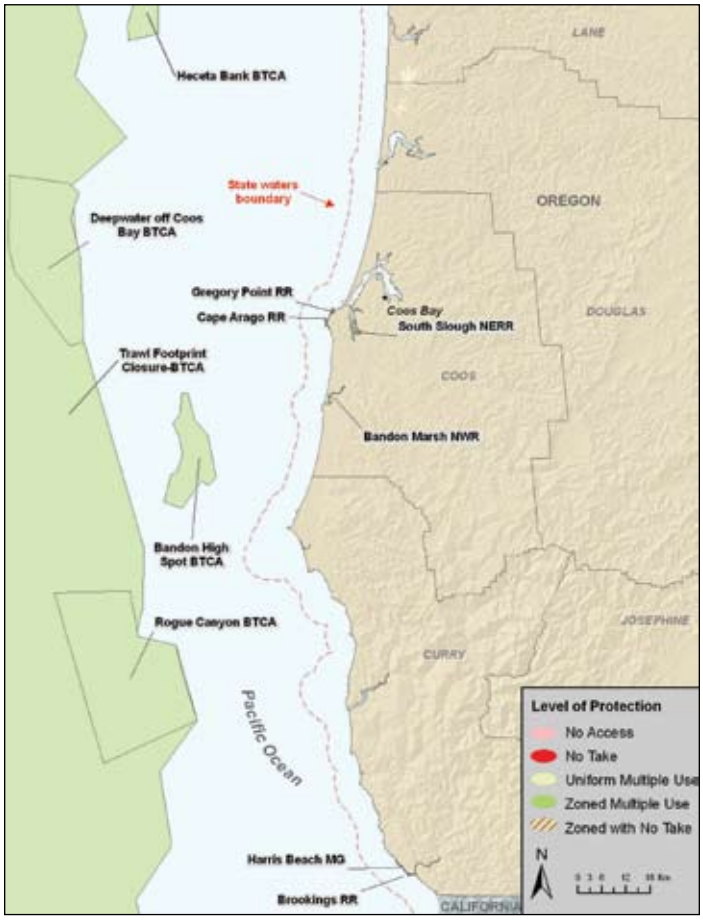


Figure 21
MMA area by how fishing is managed in Oregon waters (number of MMAs is in parentheses).

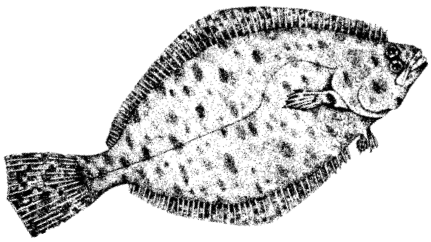
Figure 22
MMA area .by conservation focus in Oregon waters (number of MMAs is in parentheses). NH = natural heritage; SP = sustainable production; CH = cultural heritage.



Map 17
Oregon MMAs by level of protection along the northern coastline from the Washington border to south of the city of Newport. The dashed red line indicates the state water boundary (3 nm).



Map 18
Oregon MMAs by level of protection along the southern coastline from south of the city of Newport to the California border. The dashed red line indicates the state water boundary (3 nm).



WASHINGTON: A STATE PERSPECTIVE

AT A GLANCE

- 55 MMAs are located in Washington's state waters (0–3 nm)
- MMAs cover 26% of state waters
- Nearly 100% of the MMA area is multiple use; less than 1% is no take

Background

Washington's coast can be divided into two separate regions, the protected waters of the Puget Sound and the Northwest Straits, and the outer coast with a rugged shoreline and few natural harbors. These two different regions have been frequently managed differently by area-specific initiatives. On the outer coast, where population levels are lower, few marine initiatives have been created. In contrast, the Puget Sound and Northwest Straits have multiple initiatives directed towards reducing the harmful impacts of urban development. The Northwest Straits Marine Conservation Initiative of 1999 has a mandate to achieve a scientifically based, regional system of MPAs in the Northwest Straits. The initiative uses community involvement in the development of local strategies towards this goal. Many MMAs have been established independently in the Northwest Straits and the Puget Sound that were not intended to function as a network.

Distribution of MMAs

There are 55 MMAs in Washington waters (0–3 nm), less than California (189), but more than Oregon (23). These MMAs cover a quarter of Washington's state waters (Figure 23). The majority of MMAs are within the protected waters of Puget Sound and the Northwest Straits. They are mainly close to shore in estuarine and salt marsh habitats. In contrast, one MMA, the

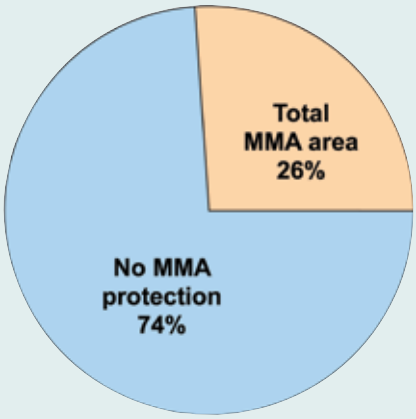
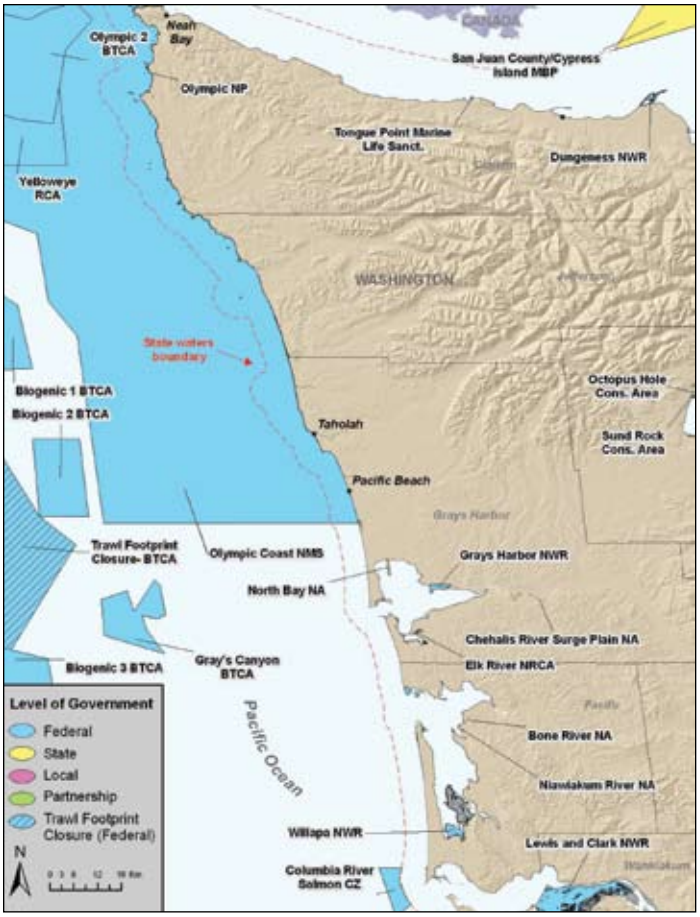
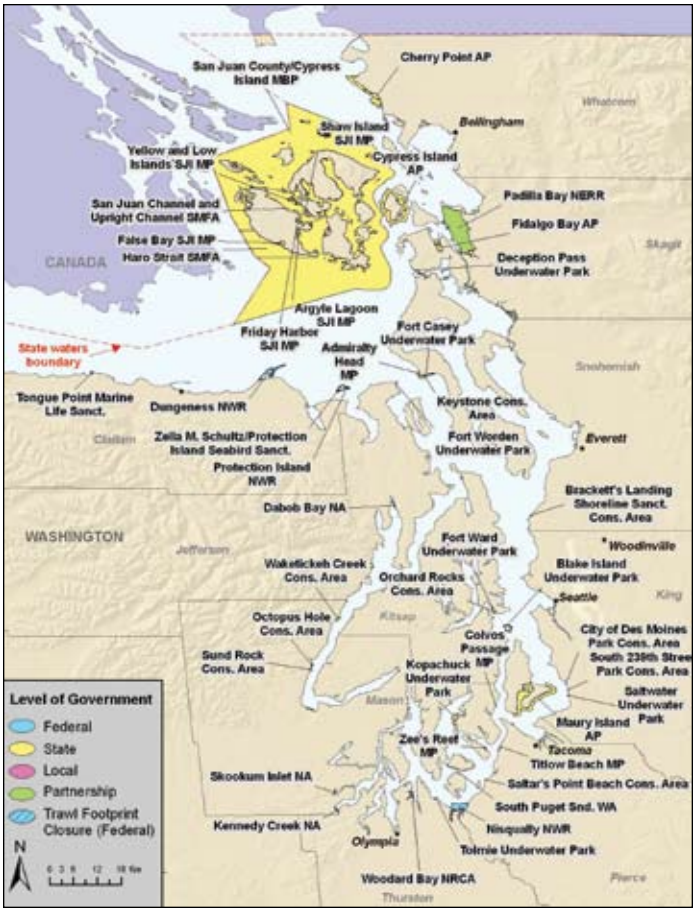


Figure 23
Percent of Washington waters (0 – 3nm) covered by MMAs.





Map 19
Washington MMAs by level of government from Neah Bay in the north to the Oregon border. The dashed red line indicates the state water boundary (3 nm).

Map 20
Washington MMAs by level of government within Puget Sound. The dashed red line indicates the state water boundary (3 nm).

Figure 24
MMA area by level of government in Washington waters (number of MMAs is in parentheses).

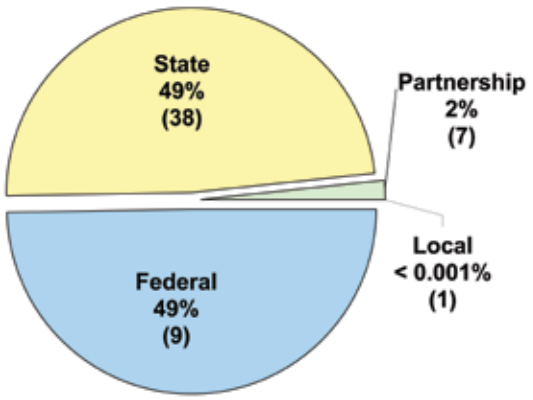
Olympic Coast National Marine Sanctuary covers a large stretch of coastal and rocky reef habitat along the central coast of the Olympic Peninsula. Like MMAs within Oregon waters, but unlike those in California waters, MMAs rarely overlap in Washington waters (4% of MMA area).

Level of Government

As observed in other west coast state waters, federally managed MMAs within Washington waters are fewer, yet larger than those managed by other government programs (Maps 19 and 20). Besides the Olympic Coast National Marine Sanctuary, many of these large federal MMAs are National Wildlife Refuges, such as Protection Islands, Dungeness, Gray's Harbor, Nisqually and Willapa National Wildlife Refuges. The boundaries for these wildlife refuges include a great deal of upland areas with little marine influence, but contain important habitat for marine dependent species. For example, Protection Island is a 364 acre island with high sandy bluffs and low sand spits, where most of Puget Sound's auklets and glaucous-winged gulls nest. State programs manage four times as many MMAs than federal programs. Yet federal and state programs manage an equal proportion of the MMA area (Figure 24, Table 5). State MMAs are typically small nearshore areas, such as those managed by the states Natural Reserves Program. For example, Niawiakum River Natural Area Preserve has less than 0.005 km^2 exposed to marine influence.

Washington State Programs

The Washington state institutions that have



established and manage MMAs are numerous and varied (Box 12). On the state level they include the Washington Department of Natural Resources (WDNR), Washington Department of Fish and Wildlife (WDFW), Washington State Parks and Recreation Commission (WSPRC), and Washington State Department of Ecology. Several county and city governments in Washington designate and manage MMAs as well either solely, or in partnership with the state. Fisheries management authority of WDFW is shared with Washington's Indian Treaty Tribes. As cooperative managers of Washington's fisheries, the Treaty Tribes work in partnership with WDFW to carry out fishery management.

	Number of MMAs	Percentage State Waters Covered by MMAs[1]
Federal	9	13.50
State	38	13.18
Partnership	7	0.49
Local	1	< 0.01
Total	**55**	**26.16**[2]

[1]Washington state waters (0-3 nm) = 10,042 km^2

[2]Overlap in MMA area was removed in calculating percentage of state waters.

Table 5
MMAs by level of government in Washington marine and estuarine waters (0–3 nm)

Box 12 Washington's Marine Resource Agencies and MMAs

Washington Department of Natural Resources
- Natural Area Preserve
- Natural Resources Conservation Areas
- Aquatic Reserves

Washington Department of Fish and Wildlife
- Marine Preserves
- Wildlife Area
- Conservation Areas
- Natural Area Preserves
- Seabird Sanctuaries
- Fishery Areas

Washington State Parks and Recreation Commission
- Underwater Park

Washington Department of Ecology
- National Estuarine Research Reserves (in partnership with NOAA)

Treaty Tribes
- Hoh Indian Tribe
- Jamestown S'Klallam Tribe
- Lower Elwha Klallam Tribe
- Lummi Indian Tribe
- Makah Indian Tribe
- Muckleshoot Tribe
- Nisqually Indian Tribe
- Nooksack Indian Tribe
- Port Gamble S'Klallam
- Puyallup Tribe
- Quileute Indian Tribe
- Quinault Nation
- Sauk-Suiattle Tribe
- Skokomish Tribe
- Squaxin Island Tribe
- Stillaguamish Tribe
- Suquamish Tribe
- Swinomish Tribe
- Tulalip Tribe
- Upper Skagit Tribe

County and City Governments
- e.g. Clallam County in partnership with state programs

The Washington Department of Natural Resources (WDNR) manages three types of MMAs. Natural Area Preserves (NAPs) protect the best remaining undisturbed ecosystems native to Washington, including rare plant and animal habitats. For example, Dabob Bay NAP contains one of the few remaining coastal spits in the Puget Sound with native salt marsh and serves as a Pacific Flyaway stopover for migrating shorebirds. Natural Resources Conservation Areas (NRCA) also protect outstanding examples of native ecosystems for environmental education and low impact public use, provided these uses are appropriate and do not impair the resource values of the area protected. Aquatic Preserves (AP) protect important native aquatic ecosystems of special educational or scientific interest. Cypress Island AP has a mostly undisturbed shoreline with extensive eelgrass and kelp beds that support valuable fish and wildlife. These three programs represent protection alternatives that complement each other and create a diverse natural areas program.

Washington Department of Fish and Wildlife (WDFW) has broad responsibilities for the preservation, protection and sustainability of fisheries and wildlife, and manages seven types of MMAs. WDFW, like WDNR, also manages NAPs to protect undisturbed ecosystems. Marine Preserves (MP), on the other hand, are for recreational, research and education purposes. For example, Titlow Beach MP supports non-consumptive recreational diving, and research and educational opportunities for a nearby high school. Wildlife Areas (WA) were originally designed to optimize fish and hunting opportunities and have evolved into places that benefit wildlife and their habitats for recreational and educational purposes. South Puget Sound WA exemplifies this evolution as a site where harbor seals are protected at haul-outs. Conservation Areas, such as Octopus Hole and Orchard Rock, are essentially no take marine preserves, where all extractive activities by non-tribal members are prohibited, primarily for viewing by scuba divers. Zella M. Schultz Seabird Sanctuary, co-managed with Protection Island NWR is the only Seabird Sanctuary in Washington waters. WDFW manages a no-access buffer zone around the island to protect marine resources of the NWR. Lastly, Haro Strait is an example of a Special Management Fishery Area (SMFA) where sea urchins and cucumbers are protected from harvest in subtidal and intertidal areas of southern San Juan Island.

Washington State Parks and Recreation Commission (WSPRC) designates and manages Underwater Parks to provide high quality recreational dive sites. Recreational harvest of fish may be allowed in these sites while take of non-food

species, such as sea stars and other invertebrates is prohibited. Fort Worden Underwater Park is an artificial reef, installed in partnership by WSPRC and a scuba club to attract greenling and lingcod.

The Washington State Department of Ecology manages the Padilla Bay National Estuarine Research Reserve (NERR) in partnership with NOAA. Padilla Bay is an estuary at the saltwater edge of the large Skagit River delta with a very shallow, flat, and muddy bottom. Padilla Bay's exposure to large tidal flux creates optimal conditions for eelgrass growth, which in turn creates thriving nursery areas for shrimp, crab, and salmon.

Establishment Date

Similar to patterns of establishment dates observed elsewhere on the west coast, more than 90% of Washington MMAs were established after 1970 (Figure 25). Large increases in MMA designations occurred during the 1970s and 1990s. The practice of creating MMAs in Washington waters was initiated in 1909, when a portion of Olympic Forest Reserve was designated a National Monument by President Theodore Roosevelt. Olympic National Park qualifies also as the first MMA of the west coast.

Level of Protection

Approximately 65% of MMAs (36) in Washington waters are managed as the three types of multiple use, covering nearly all MMA area (Figure 26). In contrast, 19 no take and no access MMAs account for less than 1% of all MMA area. These no extraction MMAs are very small with the total area amounting to 13 km^2. Only three of these MMAs are larger than 1 km^2, the North Bay Natural Area Preserve, and the Grays Harbor and Protection Island National Wildlife Refuges.

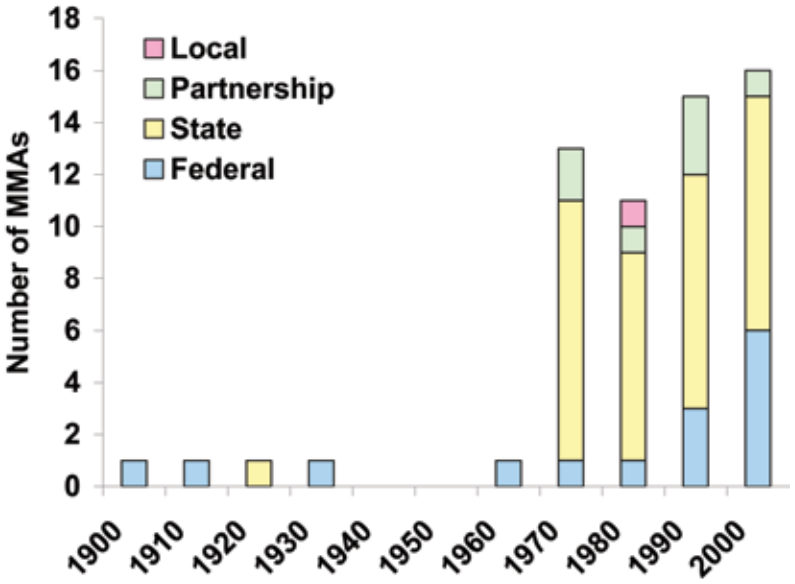


Figure 25
MMAs by decade of establishment and level of government in Washington waters.

Impacts on Fishing Activities

Virtually all of Washington waters are open to some form of fishing (Figure 27). Half of the MMAs manage some form of fishing, comprising 95% of MMA area, with close to one fifth of MMAs with no MMA specific fishing regulations at all (5% of MMA area). A tiny amount of area within MMAs prohibits all fishing. For example, Natural Area Preserves frequently prohibit access and fishing, since they are set aside to serve as baselines to evaluate the influences of extractive activities on marine resources.

Conservation Focus

Most MMAs (38) in Washington waters have a natural heritage conservation focus, accounting for nearly half of the area within MMAs (Figure 28). The other half is within the Olympic National

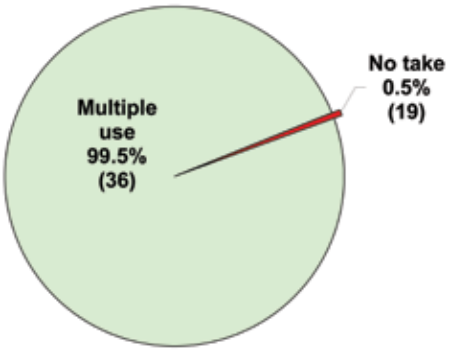


Figure 26
MMA area by level of protection in Washington waters (number of MMAs is in parentheses). Multiple use includes MMAs that are uniform multiple use, zoned multiple use, and zoned multiple use with no take areas; no take includes MMAs that are no take and no access.

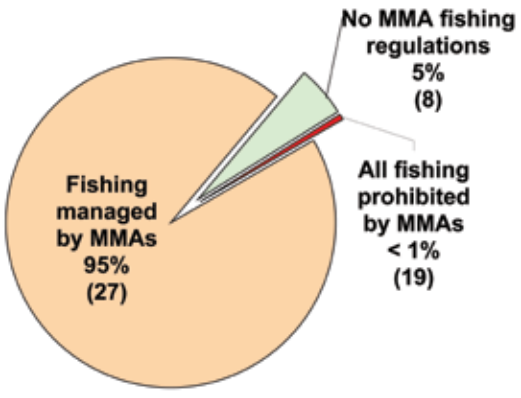
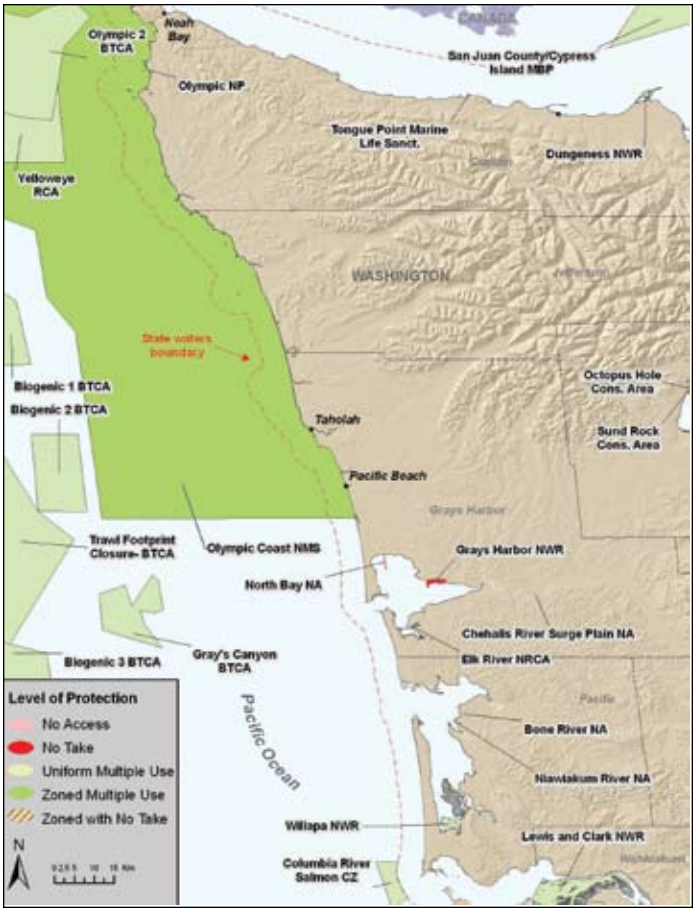


Figure 27
MMA area by how fishing is managed in Washington waters (number of MMAs is in parentheses).



Map 21
Washington MMAs by level of protection from Neah Bay in the north to the Oregon border. The dashed red line indicates the state water boundary (3 nm).

Map 22
Washington MMAs by level of protection within Puget Sound. The dashed red line indicates the state water boundary (3 nm).

Marine Sanctuary focused on natural and cultural heritage. Very small portions of MMA area are focused on sustainable production, or natural heritage and sustainable production combined.

Permanence and Constancy of Protection

All MMAs within Washington waters are permanent, also defined as 'long term'. They also uniformly (100%) provide year round protection with the potential to remain in place in perpetuity.

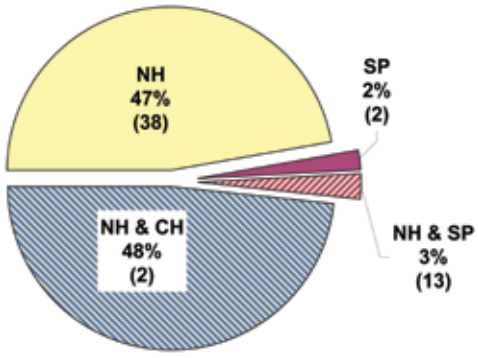
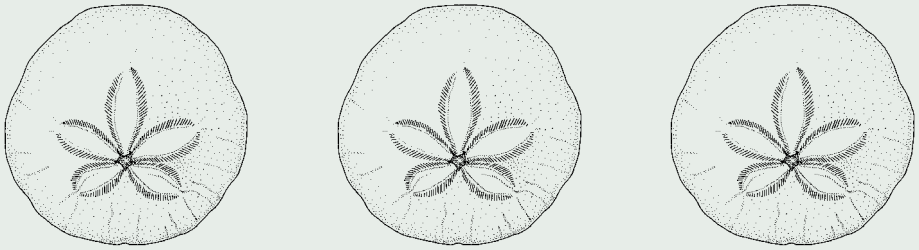


Figure 28
MMA area by conservation focus in Washington waters (number of MMAs is in parentheses). NH = natural heritage; SP = sustainable production; CH = cultural heritage.

CONCLUSION

The waters from Washington to California include many MMAs, which cover nearly half of regional waters. Two patterns emerge from this MMA assessment. First, human access and multiple uses are allowed in the vast majority of area encompassed by MMAs. The sites managed as no access and no take are uniformly very small. Secondly, the majority of MMA area is managed by the federal government, even within state waters. The Essential Fish Habitat sites for west coast groundfish and the National Marine Sanctuaries, both federally managed sites, dominate the seascape of west coast place-based conservation management.

This assessment lays the groundwork for better understanding the contribution of MMAs to marine conservation and their effects on ecosystems and human activities. Furthermore, these findings may help west coast managers at all levels of government and non-governmental partners to improve marine resource management by promoting collaboration in MMA management, research, and education. As the nation moves toward an effective, science-based National System of MPAs, this information will point to opportunities to enhance management and identify gaps in meeting our nation's conservation goals.



Glossary

Abbreviated Terms

AI Anacapa Island

AP Aquatic Preserve

ASBS Area of Special Biological Significance

BCCA Bottom Contact Closed Area

BTCA Bottom Trawl Closed Area

CCA Cowcod Conservation Area

CDFG California Department of Fish and Game

CINMS Channel Islands National Marine Sanctuary

Cons. Conservation

CR Coastal Reserve

CZ Conservation Zone

EEZ Exclusive Economic Zone

EFH Essential Fish Habitat

fm fathoms

FWS Fish and Wildlife Service

GL Game Land

km² kilometer squared

MBP Marine Biological Preserve

MCA Marine Conservation Area

MG Marine Garden

MLPA Marine Life Protection Act.

MMA Marine Managed Area

MP Marine Park

MPA Marine Protected Area

MR Marine Reserve

NAP Natural Area Preserve

NERR National Estuarine Research Reserve

nm nautical miles

NM National Monument

NMFS National Marine Fisheries Service

NMSP National Marine Sanctuary Program

NOAA National Oceanic and Atmospheric Administration

NP National Park

NRA National Recreation Area

NRCA Natural Resources Conservation Area

NS National Seashore

NW Northwest

NWR National Wildlife Refuge

ODFW Oregon Department of Fish and Wildlife

OPAC Ocean Policy Advisory Council

PFMC Pacific Fisheries Management Council

Pres. Preserve

RCA Rockfish Conservation Area

RR Research Reserve

Sanct. Sanctuary

SBI Santa Barbara Island

SCI Santa Catalina Island

SJI San Juan Islands

SMCA State Marine Conservation Area

SMFA State Marine Fishery Area

SMI San Miguel Island

SMP State Marine Park

SMR State Marine Reserve

SNI Saint Nicholas Island

Spec. Clos. Special Closure

SRI Santa Rosa Island

U.S. United States

W West

WDFW Washington Department of Fish and Wildlife

WDNR Washington Department of Natural Resources

WSPRC Washington State Parks and Recreation Commission

Appendix I

Final MMA Inventory Criteria

Area Must have legally defined geographical boundaries, and may be of any size, except that the site must be a subset of the U.S. federal, State, commonwealth, territorial, local or tribal marine environment in which it is located. Application of this criterion would exclude, for example, generic broad-based resource management authorities without specific locations and areas whose boundaries change over time based on species presence.

Marine Must be: (a) ocean or coastal waters (note: Coastal waters may include intertidal areas, bays or estuaries); (b) an area of the Great Lakes or their connecting waters; (c) an area of lands under ocean or coastal waters or the Great Lakes or their connecting waters; or (d) a combination of the above. The term "intertidal" is understood to mean the shore zone between the mean low water and mean high water marks. An MMA may be a marine component part of a larger site that includes uplands. However, the terrestrial portion is not considered an MMA. For mapping purposes, an MMA may show an associated terrestrial protected area. NOAA and Department of the Interior intend to use the following definition for the term "estuary": "Part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage, and extending upstream to where ocean-derived salts measure more than 0.5 parts per thousand during the period of average annual low flow." Application of this criterion would exclude, for example, strictly freshwater sites outside the Great Lakes region that contain marine species at certain seasons or life history stages unless that site is a component of a larger, multiunit MMA. However, upon request the agencies will work with individual states, commonwealths and territories to examine unique conditions which may affect applicability of the term "estuary". Estuarine-like sites on tributaries of the Great Lakes will be considered for inclusion if they are located within the eight-digit U.S. Geological Survey cataloging unit adjacent to a Great Lake or its connecting waters.

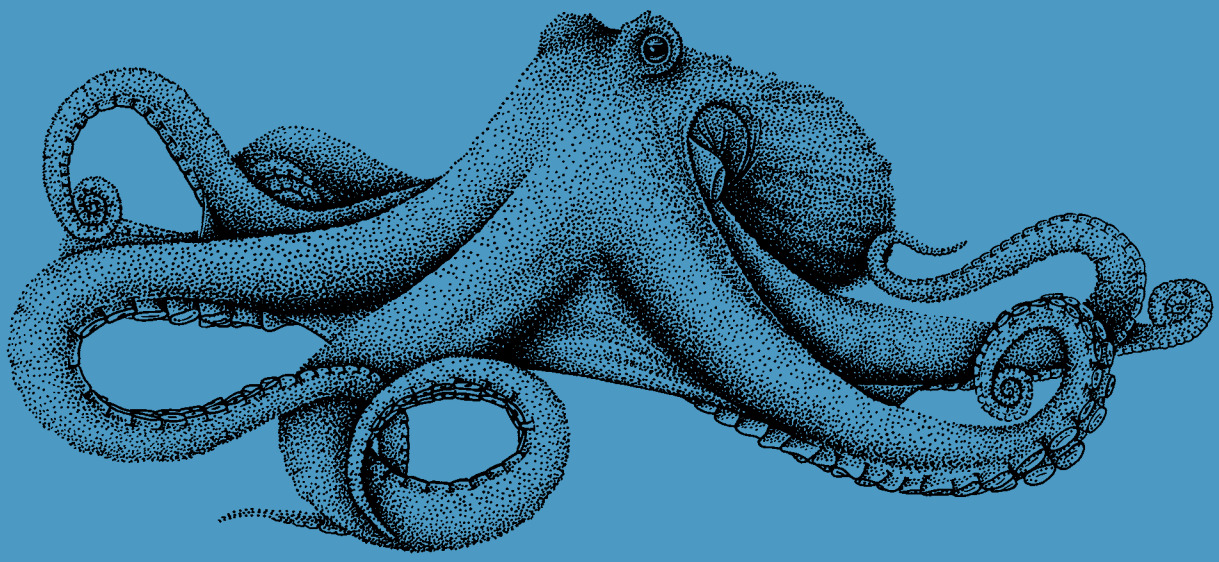
Reserved Must be established by and currently subject to federal, state, commonwealth, territorial, local or tribal law or regulation. Application of this criterion would exclude, for example, privately created or maintained marine sites.

Lasting Must provide the same protection, for any duration within a year, at the same location on the same dates each year, for at least two consecutive years. Must be established with an expectation of, history of, or at least the potential for permanence. Application of this criterion would exclude, for example, areas subject only to temporary protections, such as areas protected only by emergency fishery regulations under the Magnuson-Stevens Act, which expire after 180 days.

Protection Must have existing laws or regulations that are designed and applied to afford the site with increased protection for part or all of the natural and submerged cultural resources therein for the purpose of maintaining or enhancing the long-term conservation of these resources, beyond any general protections that apply outside the site. Application of this criterion would exclude restricted areas that are established for purposes other than conservation. For example, the term would not include areas closed for navigational safety, areas closed to safeguard modern man-made structures (e.g., submarine cable no-anchor zones), polluted shellfish-bed closure areas, areas closed to avoid fishing gear conflicts, and areas subject to area-based regulations that are established solely to limit fisheries by quota management or to facilitate enforcement.

Cultural In addition, the Executive Order uses the term cultural resources. NOAA and the Department of the Interior interpret this to mean any submerged historical or submerged cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts in the marine environment.

Taken together, these six definitions and criteria provide the basis for selecting sites to be included in the National MMA Inventory.



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