



A national perspective on the role of Marine Protected Areas in sustaining fisheries

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ABSTRACT

Marine Protected Areas (MPAs) have been used by traditional cultures for generations as a means to sustain local fisheries for food security. In more recent decades, MPAs have been used by coastal and ocean managers to protect special areas for a wide range of purposes – protecting threatened or rare species, conserving areas for biological diversity and other ecological functions, setting aside areas for recreation – as well as a fisheries management tool. While the role of an MPA in protecting species or biological diversity is fairly well understood, their role as fisheries management tools is more complex and controversial. This paper provides an overview of the use of MPAs as a fisheries management tool in the United States, drawing on the comprehensive MPA Inventory developed and maintained by the National Marine Protected Areas Center (MPA Center).

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1. Defining MPAs

The United States defines an MPA as “any area of the marine environment (including the Great Lakes) 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 (Executive Order, 2000).” Further refining on this definition, from Executive Order 13158 (2000) on MPAs, the U.S. has defined three primary conservation purposes for MPAs – natural heritage (biological communities, habitats, ecosystems, and processes); cultural heritage (resources that reflect the nation’s maritime history and traditional cultural connections to the sea); and sustainable production (renewable resources and their habitats) (Framework for the National System, 2008a). Sustainable production MPAs may include reproduction areas, including larval sources and nursery grounds; areas that sustain or restore high-priority fishing grounds; areas for maintaining the natural age/sex structure of important harvestable species; foraging grounds; areas that mitigate the impacts of bycatch; and areas that provide compatible opportunities for education and research (Framework for the National System, 2008b).

The U.S. approach is more inclusive than that taken by the World Conservation Union (IUCN), which defines an MPA as a marine area that meets the definition of a protected area: “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Guidelines for applying the IUCN Protected Area Management, 2011).” The IUCN specifically notes that MPAs must have conservation as a primary, rather than a secondary aim, and that temporary or permanent fishing closures that are established primarily to help build up stocks for fishing and have no wider conservation aims should not automatically be considered MPAs. While the IUCN does classify no take areas established to conserve fishery resources and their habitats as MPAs, it does not include, for example, areas closed to fishing if the percentage of juveniles or bycatch goes above a certain number (Guidelines for applying the IUCN Protected Area Management, 2011).

In the U.S. and around the world, MPAs are often confused by stakeholder groups with the term “marine reserve”, a particular type of MPA that prohibits all extractive uses. In fact, most U.S. MPAs are multiple use, and allow fishing, diving, boating and other recreational and commercial uses. Over 92% of MPA area in the U.S. is multiple use. Examples of MPAs in U.S. waters include national parks, wildlife refuges, monuments and marine sanctuaries, fisheries closed areas, critical habitat and habitat areas of particular

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concern, and the state and territorial counterparts to these national programs.

Data used here are taken from the MPA Center's MPA Inventory (<http://www.mpa.gov/dataanalysis/mpainventory/>), which includes U.S. MPAs managed by federal, state and territorial agencies. The Inventory includes information on MPA conservation focus, managing agencies, authority, scope, level of protection, ecoregion, and geographic information system (GIS) shapefiles. The center is currently expanding the Inventory to add information on natural and cultural resources located within MPAs, such as habitat types. These data will contribute to regional and national analyses of MPA objectives, functions and gaps. The center has also developed mapping tools to make spatial information from the Inventory readily available to non-GIS users.

2. Sustainable production MPAs

The United States has a rich history of commercial and recreational fishing, with 528 individual stocks and stock complexes that are currently managed within 46 federal fishery management plans nationwide (NMFS, 2011). The United States Exclusive Economic Zone (EEZ), which extends from state boundary waters (usually 3 miles) out to 200 nautical miles offshore, is the largest in the world, spanning over 90,000 miles of coastline and containing 3.4 million square nautical miles of ocean. NOAA's Fisheries Service has responsibility for managing fisheries in federal waters, in cooperation with regional fishery management councils. Councils develop fishery management plans and management measures for the fisheries within their region, and NOAA's Fisheries Service approves and implements these plans and measures. MPAs established and managed by NOAA's Fisheries Service focus on sustainable production, natural heritage, or a combination of both.

The U.S. is moving toward an ecosystem approach to sustainable fisheries. One important tool to protect habitat that is important to various life history stages of species is the designation of such areas as Essential Fish Habitat (EFH) under the Magnuson-Stevens Act. EFH has been described for about 1000 managed fisheries, and Fishery Management Councils and NOAA are required to minimize, to the extent practicable, fishery impacts on EFH and to consult with other federal and state agencies to minimize non-fishery impacts on EFH. NOAA and the Councils have also identified more than 100 "habitat areas of particular concern" or HAPCs. These are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. Examples of HAPCs include seamounts and cold water corals in Alaska, corals and banks in the Gulf of Mexico, and seagrass beds, sites of spawning aggregations and corals in the Southeast. Levels of protection for HAPCs vary.

The North Pacific Fishery Management Council has been particularly proactive in protecting structurally forming habitat, especially cold water corals and sponges. For example, 95% of the Aleutian Island waters are closed to bottom trawling. In the Bering Sea, the Council and NOAA have "frozen the footprint," banning the expansion of bottom trawling outside areas already trawled. Sixteen seamounts in the Gulf of Alaska are closed to all bottom contact gear. Southeast Alaska has several closed areas where cold water corals and sponge fields have been documented. Several designated habitat areas of particular concerns (HAPCs) throughout Alaska ban the use of all bottom contact gear (Livingston et al., 2011).

As of 2011, 177 MPAs were managed by NOAA's Fisheries Service in the U.S. These MPAs are typically quite large and include, for example, areas closed to bottom trawling gear, seasonally protected areas (e.g. spawning and nursery areas), and areas with fishing restrictions to protect sensitive species or rebuild depleted stocks. MPAs managed by NOAA's Fisheries Service account for

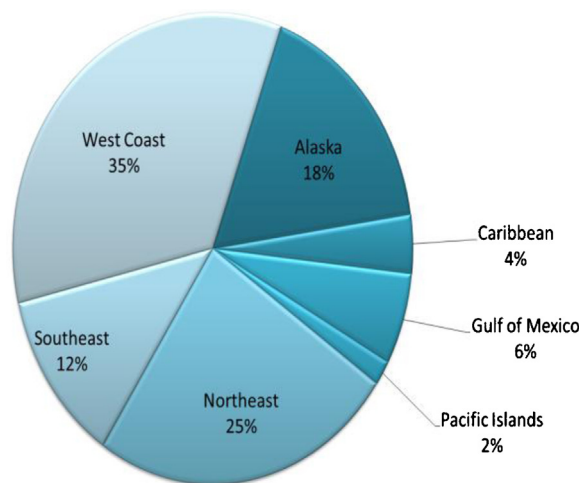


Fig. 1. Number of NMFS-managed MPAs by region.

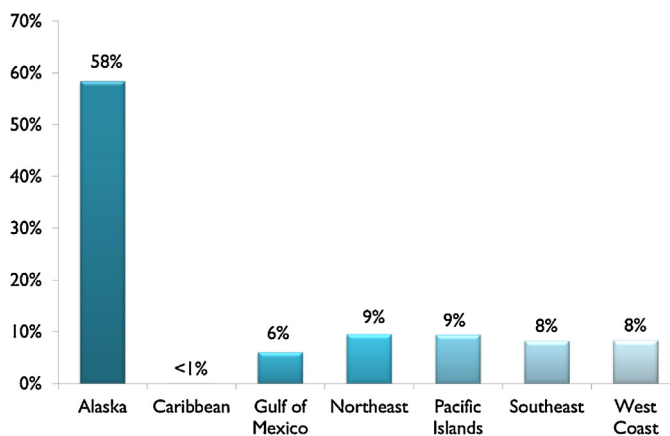


Fig. 2. Area of NMFS-managed MPAs by region.

4,370,970 km², or 87% of MPA area in U.S. waters, and less than one percent of this total area is "no take." Because many fisheries MPAs are so large, they often overlap with other MPAs that may be managed for different purposes. For example, the West Coast Essential Fish Habitat Conservation Area, located seaward of the 700 fathom depth contour, covers more than 337,000 km², or 41% of the marine area of the West Coast. This MPA was established to protect groundfish (multiple species of bottom-dwelling species that are often caught together) habitat by prohibiting commercial fishing with bottom trawl gear. In addition to overlapping 18 other fisheries MPAs, it also overlaps three National Marine Sanctuaries.

NOAA's Fisheries Service manages MPAs in every region of the country (Figs. 1 and 2). The West Coast has the largest number of MPAs, while Alaska has the greatest area. These include, for example, the Aleutian Islands Habitat Conservation Area, Southeast Alaska Trawl Closure and the Northern Bering Sea Research Area. In some ocean areas where marine jurisdiction is shared across multiple governmental entities, some MPAs share common marine area and overlap each other. As a result, the total area of MPAs in U.S. waters may be different from the area of MPAs based on their classifications.

The MPA Inventory identifies levels of protection by U.S. MPAs as follows (Figs. 3 and 4):

Uniform multiple-use: MPAs or zones with a consistent level of protection, allowable activities or restrictions throughout the protected area. Extractive uses may be restricted for natural or cultural resources.

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