

Are Reserves Deserved in California?

The following activity is designed to focus student's attention on Marine Protected Areas as a way to manage and protect marine life, habitat, and ecosystems. The activity asks students to review background information supplied on cards that give information that supports the need for a marine protected area and the negative impacts it would have on the fishing industry. Students are given maps and directed to select a site for the Marine Protected Area(s) or decide not to designate an area. They then must decide on regulations for their MPA(s) (which of the 3 types of MPAs will it/they be: state marine reserve, state marine park, state marine conservation area?) with certain goals in mind. The students give presentations at the conclusion of the activity about their decisions and the reasoning behind them.

Time: 2-3 three hours

Materials:

- Maps for each group of 4 to 5 students
(South Coast Study Region maps can be found here: www.dfg.ca.gov/mlpa/scprofile.asp)
- Set of situation cards for each group of students

THE NOTION OF MARINE RESERVES

There is a long and cherished tradition around the world of setting aside wilderness and park areas for the long-term enjoyment and benefit of the public. The United States has set the standard. In 1872, President Ulysses S. Grant signed a bill to create the first national park, Yellowstone. In 1894, Yellowstone became a no-take zone; all hunting was prohibited. Generally, the protection of natural habitat by Congress began as early as 1903 and continued throughout the early part of the twentieth century.

Today, about 4% of the land in the U.S. has been protected in national parks. Our nation's territory now extends beyond the land, 200 miles out to sea. This is termed the Exclusive Economic Zone (EEZ). Yet, less than 0.5% of U.S. territorial waters are protected in existing National Marine Sanctuaries. Fishing is banned within only 36 square miles (0.2%) of all these sanctuary waters, amounting to about 0.001% (one thousandth of a percent) of all U.S. territorial waters.

On the U.S. Pacific Coast, conventional fisheries management strategies have not prevented the decline of many groundfish species and the fisheries associated with them. Fifteen species of groundfish appear to be overfished, including two species that have declined to less than 10% of their unfished levels: ling cod and bocaccio (a kind of rockfish). Several species do not appear to be reaching the population levels expected as a result of fisheries management (bocaccio, widow, canary, yellowtail, and black rockfish); these stocks are not being harvested sustainably (Ralston, 1998). The future of marine ecosystems, and the fishing industry is, at best, uncertain without innovative and improved conservation strategies. New guidelines for preventing overfishing and rebuilding depleted stocks adopted by the Pacific Fisheries Management Council are a step in the right direction, but may not be sufficiently conservative.

Setting aside parts of the ocean that serve important roles during reproduction, pelagic dispersal, or juvenile settlement can safeguard against many threats facing marine organisms (Bohnsack, 1993). More marine reserves in which fishing is banned are proposed to protect marine organisms and the fisheries that depend on them. Ocean environments without fishing disturbance are needed to fully realize the research, educational, and conservation benefits of marine protected areas. The biodiversity and ecosystems that would be protected within marine reserves provide many goods and services to society, such as insurance against fishery management failures, potentially enhanced fisheries, a way to reduce uncertainty about the effects of fishing and other factors on habitat, a way to separate the effects of fishing from the effects of environmental variation, enhanced educational opportunities, increased revenue from tourism and property sales, and potentially important medicines and other natural products. (Rodney M. Fujita, February, 2001)

In May 2000, President Clinton issued an Executive Order, which has been reviewed and let stand by the Bush Administration in 2001, that requires federal agencies to "develop, strengthen and expand" a national system of marine protected areas to help assure the conservation of natural and cultural resources. This executive order also establishes a federal science center and training center for marine protected areas and a federal advisory committee.

The Pacific Fisheries Management Council (PFMC) has endorsed using no-take areas called "marine reserves" to help restore dwindling groundfish populations and provide fish for future generations of fishers. These no-take reserves are seen as one "tool" in groundfish rebuilding efforts which; to be effective, also need to be coupled with other strategies.

The President's Executive Order broadly defines marine protected areas to include any area of the marine environment in which federal, state; tribal or local laws or regulations have been enacted to protect natural or cultural resources.

The term marine reserve is most often used to mean an area where no extractive or harvest uses are allowed or are very highly regulated. The PFMC is considering no-take "marine reserves" as a management tool for rockfish and other species, where certain or all fishing activities would be excluded.

California has several marine protected areas, national marine sanctuaries, and coastal national monuments off its coast (you can obtain GIS map layers of MPAs here: www.geog.ucsb.edu/~jeff/projects/mpa or the lat and long coordinates and maps are available here: www.dfg.ca.gov/mlpa/maps.asp).

Passed into California state law in 1999, the Marine Life Protection Act (MLPA) requires a statewide system of marine protected areas be created to protect, among other things, marine life, habitat, and ecosystems. The initial planning stages of the MLPA process are ongoing in Southern California from Point Conception in Santa Barbara County to the California border with Mexico, including offshore islands. Ocean science plays an important role in planning marine protected areas. For additional information about the MLPA Initiative, visit <http://www.dfg.ca.gov/mlpa>.

Marine Life Protection Act Goals (MLPA) Goals

California Fish and Game Code Section 2853

(from: www.dfg.ca.gov/mlpa/scworkshopmaterials.asp)

- (A) The Legislature finds and declares that there is a need to reexamine and redesign California's MPA system to increase its coherence and its effectiveness at protecting the state's marine life, habitat, and ecosystems.
- (B) To improve the design and management of that system, the commission, pursuant to Section 2859, shall adopt a Marine Life Protection Program, which shall have all of the following goals:
 - (1) To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
 - (2) To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
 - (3) To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
 - (4) To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.
 - (5) To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
 - (6) To ensure that the state's MPAs are designed and managed, to the extent possible, as a network.

WHAT ARE MARINE PROTECTED AREAS?

Defined in Public Resources Code, Sections 36602 and 36710

(from: www.dfg.ca.gov/mlpa/scworkshopmaterials.asp)

A "**marine protected area**" (MPA) is a named, discrete geographic marine or estuarine area seaward of the mean high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law or administrative action to protect or conserve marine life and habitat. MPAs are primarily intended to protect or conserve marine life and habitat...

- (a) In a **state marine reserve**, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the managing agency for research, restoration, or monitoring purposes. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state. Access and use for activities such as walking, swimming, boating, and diving may be restricted to protect marine resources. Research, restoration, and monitoring may be permitted by the managing agency. Educational activities and other forms of nonconsumptive human use may be permitted by the designating entity or managing agency in a manner consistent with the protection of all marine resources. [PROHIBITS ALL EXTRACTIVE ACTIVITIES]

(b) In a **state marine park**, it is unlawful to injure, damage, take, or possess any living or nonliving marine resource for commercial exploitation purposes. Any human use that would compromise protection of the species of interest, natural community or habitat, or geological, cultural, or recreational features, may be restricted by the designating entity or managing agency. All other uses are allowed, including scientific collection with a permit, research, monitoring, and public recreation, including recreational harvest, unless otherwise restricted. Public use, enjoyment, and education are encouraged, in a manner consistent with protecting resource values. [PROHIBITS ALL COMMERCIAL EXTRACTIVE ACTIVITIES AND POTENTIALLY SOME RECREATIONAL ACTIVITIES]

(c) In a **state marine conservation area**, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes, that the designating entity or managing agency determines would compromise protection of the species of interest, natural community, habitat, or geological features. The designating entity or managing agency may permit research, education, and recreational activities, and certain commercial and recreational harvest of marine resources. [LIMITS RECREATIONAL AND/OR COMMERCIAL EXTRACTIVE ACTIVITIES]

SOUTHERN CALIFORNIA'S OCEAN

The chart of our study area is from Point Conception to the California/Mexico border. These maps represent actual maps and data compiled to be used in the MLPA Initiative process to try to choose an MPA network for this study region (south coast study region).

The rocky areas of the continental shelf contain a high diversity of physical habitats and conditions. Production (breeding and nursery functions) for species such as rockfish is very high compared to the sand and sand-mud areas nearby. However, the sand and mud areas have supported bottom trawling for rockfish and other species over a number of years. Over the last ten years, these traditional areas have yielded smaller and smaller catches. Commercial bottom trawlers have therefore increased their efforts in rocky areas even though the rocky bottom is more damaging to bottom trawl gear. Charter and private sport boats, fishing with hook and line, have always fished the rocky areas for lingcod and rockfish. In recent years, this effort has increased due to reductions in opportunities to catch salmon. Charter captains and sport fishers have noticed that some of the rockfish species they catch have been getting smaller, on average, over the last ten years.

Los Angeles and Long Beach harbors support major commercial fisheries, have fish processing plants, and related marine businesses. Sport fishers fish with hook and line, and either use their own boats, or pay charter boats to take them to the fishing areas. Both ports support large charter businesses. The sport fishery catches primarily rockfish and lingcod, mostly around rocky areas and close to shore. The commercial fishing industry has been hit hard with cutbacks in allowed catch for some rockfish species in recent years.

The area is characterized by seasonal and year-round upwelling (where cold, nutrient-rich bottom water rises to the ocean surface, providing the basis of a food web). The current direction is generally southerly (except for the California countercurrent). Rockfish breeding and nursery areas are concentrated near upwelling areas, in areas where currents can deliver food, and near rock transition areas. Marine mammals feed throughout the area; gray whales are particularly numerous near shore late spring to late fall. Marine birds make heavy use of the area to feed.

What we do know about the area is that we know very little. Much more research is needed before we understand the complex interactions of long and short term natural cycles, tides, currents, weather, and the creatures that live around, on, and in the ocean. However, you must use what information you have now to make decisions about where to place (or not) MPAs.

Various groups would like to designate one or more no-take marine reserves and other groups favor no reserves. All groups agree on the goals for action. These are:

1. to rebuild fish populations, especially rockfish.
2. protect fish breeding and nursery areas, and fish habitat in general.
3. to insure against failures in fisheries management (Fishery managers must set up regulations for not only the ocean's surface, but also the water column and the bottom. They have to use the information they have and make some educated guesses about what they don't know. With so much unknown, error is a given and may include inaccurate estimates of the fish and wildlife that are present, the number of fish that will be produced, fishing mortality and variability in these numbers due to weather and climate variation.)

YOUR GROUP'S TASK...

is to recommend to the coastal community which area or areas should be included as a no-take marine reserve for the south coast study region of California. Your group can also recommend that no marine reserve be established, or that the entire area on the map be established as a marine reserve. Whatever your recommendation, your group must justify your decision based on the information given to you and by using your own good judgment.

Once you choose one or more MPAs, you must decide which of the 3 types of MPAs it/they will be. For instance, you may decide to allow some human activity in some or all of your MPAs if you have good reason to do so.

Your group has been given a series of maps showing physical and biological characteristics for the area, and human activity in the area. Additionally, you have been given a stack of cards that provide other information. These should be dealt as you would deal cards in a card game. They all contain different information, so each member of the group must familiarize themselves with the information they do have and be willing to share it. The information came from reports and testimony regarding marine reserves, and statements made by meeting participants discussing marine reserves.

A good way to start is to lay out the maps so that all can see them. Remember that we are just beginning to learn about our ocean, and that we know relatively little. Then review the information given and decide, as a group, what your recommendations will be.

As you proceed, consider the following:

What marine protected area(s), if any, should be recommended?

Considerations:

1. Whether a single marine reserve or a network of marine reserves is best
2. The present and past uses of the area by fishers, mammals and birds, and others
3. Currents and upwelling patterns
4. Distances from fishing ports to fishing grounds remaining open
5. Evidence of breeding, nursery and rearing areas
6. The effects of the reserve on fishing communities and livelihoods
7. Are there other considerations?

What other issues affect the recommendation?

1. How much time should the marine reserve be in effect?
2. Possible disruption of human activity on fish, marine mammals and birds
3. The need for research and monitoring, if one exists
4. The expected concentration of fishing effort at the boundaries of the newly created marine reserve whether or not the boundaries of the marine reserve should change if it is found that a change is needed
5. Are there exceptions to the no-take rule that could be allowed for your recommended marine reserve?
6. Could educational activities be allowed, if a need exists?

7. Possible economic solutions to help reduce the effects of prohibited fishing or increased competition on the fishing grounds
8. How the fishing industry could be convinced to support the marine reserve proposal
9. The possibility of using more restricted fishing rules to accomplish the goals for the fishery, without the use of marine reserves

When your group has decided what to recommend, give a short presentation to the larger group on your findings. Remember, there are no right or wrong answers. Marine reserves are simply a proposed tool to use in building sustainable fisheries over time and protecting important ocean habitat. The experience you have in this activity is similar to the process fishery managers, fishers, and coastal communities in California (and other places in the world) are dealing with now to build sustainable fisheries and protect important ocean habitats for the future.