Are Reserves Deserved in California?

Adapted from: Are Reserves Deserved?
http://hmsc.oregonstate.edu/education/teachers/curricula/reserves/index.html

1. The theory behind marine reserves is that fish populations can recover from the effects of intense fishing within reserve boundaries if fishing is banned. Once fish size, density, and fecundity increase, the reserve can act as a source of larvae, juveniles, and adult fish for populations outside the reserve.

2. Overwhelmingly, no-take reserves were associated with higher values of density, biomass, organism size, and diversity of species (Halpern, 2000).

3. Hundreds of species occupy the seafloor and oceanic waters in complex communities. Area-based management can ensure that all species, habitats and ecosystem functions are protected in a way that single-species management cannot.

4. Studies show that recovery of fish and shellfish populations occurs when areas are closed to fishing. Fish increase in size, shellfish can be carried by ocean currents to seed downstream areas and adults can migrate to nearby sites that provide fishers with catch.

5. Protected areas can buffer marine ecosystems against swings in ocean conditions, such as El Niño. Marine protected area can also protect fish populations from potentially irreversible damage resulting from inaccurate fish stock assessments or erroneous fishery management decisions.

6. Setting aside ocean areas as marine protected areas can change patterns of human uses - in some cases, how people make a living may be changed.
7. Word is spreading among fishermen that an area off New Jersey, protected to bring back fish populations, also resulted in scallop beds several feet thick - also enhancing that fishery.

8. Fishers may be displaced from traditional areas. The most immediate drawback can be loss of fishing opportunities and negative economic impacts on fishers and local communities.

9. In the proposed Channel Islands (California) no-take reserve scenario, fishing ex-vessel values (value of catch) would be reduced by about 16% and charter/party boats income by about 20%. These figures assume that fishing could continue at present levels.

10. Marine protected areas prevent bottom trawling and dredging within their boundaries. Both are known to cause habitat destruction on the ocean bottom, which may take years, even decades, to recover from.

11. Some believe that there is no need to establish marine protected areas if fishing regulations are designed so that fish populations can rebound on their own.

12. A network of reserves would cover a variety of habitats and thus protect against environmental variation, as well as unanticipated pollution threats. Other researchers suggest that a rotating reserve system (where areas of no fishing are rotated over time) would hedge against fish population collapse in case of extreme environmental fluctuation or degradation.
13. Reserves designed to rebuild fish populations should lie in areas that have either supported large populations historically or do so currently (historically

abundant sites may no longer offer economic benefits to fishers and restrict fisheries least).

14. Some of the reserves in a network should be located in an area where currents or other features would maximize the export of larvae to enhance rebuilding of fish populations on the fishing grounds.

15. Carr and Reed (1993) suggest that reserves should cover 10-20% of a representative area in order to adequately protect habitat.

16. Alone, small reserves may not be able to provide significant export of larvae and adult fish outside the reserve, and are probably more susceptible to catastrophic events, such as an oil spill.

17. A recent scholarly survey of 89 scientific papers on marine reserves revealed that (1) 90% of the reserves studied had higher fish biomass than fished areas; (2) fish density was higher in 63% of the reserves; (3) 83% of the reserves had larger carnivorous fish and invertebrates; and (4) 59% of the reserves had higher biodiversity than fished areas (Halpern, 2000).

18. Species that responded well to marine reserves management include lingcod and rockfish, both of which have suffered steep declines in abundance due to fishing (Fujita et al, 1999).

19. Results gained from studying models of West Coast marine reserves indicate that marine reserves should result in more total catch, despite the loss of catch from within the reserve (Polacheck 1990, Sladek Nowlis and Roberts, 1997, and Sladek Nowlis and Yoklavich, 1998).

20. Marine reserves would protect real fish from too much fishing, rather than paper fish that fishery managers think will be protected, based on data that are often woefully inadequate and analyses that are often quite uncertain (Fujita, 2001).

21. The location of marine protected areas may create a situation where the cost of a boat traveling to and from the fishing grounds is greatly increased, due to the distance that has to be traveled.

22. There is increasing evidence that reserves replenish populations nearby via larval transport.

23. Research and monitoring on how the MPA is working should be conducted so that changes can be made in the boundaries and fishing regulations as more is learned.

24. Fishermen would likely not agree to MPA rules and fishing regulations that could be changed from year to year, disrupting their source of income.

25. One female red snapper that is 61cm long has the same gonad weight as 212 females that are 42cm long - which shows how maximizing life span greatly increases productivity.

26. Marine Protected Areas should not be open to periodic harvest, so that fish may reach maximum growth, and therefore spawning potential. The

reserve time line should encompass at least 25-30 years, given the long life cycle of rockfish (Dugan and Davis, 1993; Fujita et al., 1997).

27. Fish populations, even if protected from fishing, cannot survive without access to quality nursery and spawning grounds. Appropriate habitat should include intact bottom surfaces, adequate naturally occurring plants and animals, and good water quality.

28. A reserve that protects habitat should persist long enough for damaged habitats to repair themselves. Ideally, this reserve would last indefinitely, to maximize benefits to marine life (Dugan and Davis, 1993).

29. Marine Protected Areas should remain intact long enough to allow species to complete their natural life cycles - MPA's that include long-lived rockfish should therefore last 25-50 years.

30. Boats that can not fish in one area will fish in another, possibly resulting in congested and crowded conditions on the remaining fishing grounds.

31. Marine reserves are only effective when they can be effectively enforced. Using transponders, satellite tracking techniques, and video monitoring systems, enforcement officials can keep track of fishing vessels and differentiate between vessels that are merely traversing marine reserves from vessels that may be fishing illegally.

32. Enforcement of marine reserves would rely on the U.S. Coast Guard and National Marine Fisheries Enforcement to enforce rules - but they must also worry about smuggling, boat safety, fishing regulation violation, and other crimes in much larger areas and with higher priorities.

33. There are successful programs for certain commercial fishers today that pay for retraining in another field when they are forced to get out of the fishing industry.

34. Fishers may be more amenable to the concept of marine protected areas if they have some influence on where the areas are and how the area will be managed.

35. Boats taken out of a fishery because of lack of available catch sometimes refit for different fisheries. This creates more competition and fishing pressure in these other fisheries. Some boats that once fished on the Oregon Coast are now engaged in whale watching.

36. "Economic losses due to the collapse of a fishery hit fishers first, longest and hardest. Being out front on admitting that there is a problem of overfishing and habitat loss, and actively working to prevent it gives fishers credibility and serves the long-term sustainability of the fishery and fishers" (fishermen's association)

37. "Rather than just being big 'no trespassing zones', Marine Protected Areas should be appropriately used as marine replenishment zones to protect

important habitat or spawning areas for certain species" (fishermen's association)

38. "Marine Protected Areas should not be established unless they have a clear purpose (i.e., protect ocean wilderness, prevent overfishing, or improve fisheries management), and, they do not have to be no-take zones" (fishermen's association)

39. "Are there fish in every area? No, and as fishermen we know where and when to fish for them. We use knowledge of weather, bottom features, moon phases as well as past experience to help us" (commercial bottom trawler)

40. "Fishing is normally concentrated around areas of transition - changes in bottom material, depth, changes in temperature" (commercial bottom trawler)

41. "Kelp beds seem to be important to rockfish reproduction. Places to catch rockfish seem to be the same place as they reproduce. But we never catch juvenile shelf rockfish and biologists don't know where they go" (commercial bottom trawler)

42. "Fewer places I can fish means fewer customers, and more of us trying to fish the same remaining areas. I don't think the charter business will be much fun" (charter boat captain)

43. "There are a lot of stocks that seem to be going away, and now they have mysteriously rebounded" (commercial fisherman)

44. There are definite cycles observed in crab, sardines, sablefish and shrimp over long periods - ten years or more - but all fish benefit from upwelling" (commercial fisherman)

45. "There are times when all the factors seem to come together to produce a very productive area - and it is always concentrated over one of these rockpiles (banks)" (commercial fisherman)

46. "California has more than 100 marine reserves. Yet there is no evidence, other than anecdotal, that they are working - because there is very little monitoring" (fishermen's association)

47. "To hit the dock with a load of fish and think about all the people that will work that day because I'm delivering my load - that is really overwhelming! (commercial fisherman)

48. "We can buy out fishermen and reduce the fishing fleet size, but that also affects all the back up businesses and the community" (marine supply business owner)

49. "We go as far as we have to catch fish, but longer distances mean greater operating costs and more risks to the safety of my boat and crew" (commercial fisherman)

50. "We could probably work around the loss of 25% of one fishing area, but 25% for the coastal system would really have

a huge impact. So, small closures would be better for us" (commercial fisherman)

51. "A marine reserve for research would be smaller and provide information that is vitally needed. Fishermen could be part of monitoring it" (port manager)