

## **Marine reserves: Responses to a global phenomenon**

One response to overfishing and declining fish stocks is the creation of Marine Reserves or Marine Protected Areas (MPAs). These reserves are examples of local scale responses to a global phenomenon. Some of the data and activities could be used to form the basis of a SAC.

Currently, less than 0.5% of the ocean is protected to some degree in MPAs. Smaller sub-regions that are off-limits to fishing, called “no-take reserves” comprise less than .001% of global waters.

Marine reserves are highly protected areas that are off limits to all extractive and destructive uses including fishing. It has been suggested that these reserves are a powerful tool for the conservation of ocean wildlife and may benefit fisheries by promoting the recovery and reproduction of exploited species. Some fishing experts say large numbers of fish and other aquatic species are on the verge of extinction and the only realistic way of saving them is to create specially protected marine reserves, or "national fish parks", covering as much as 20% of the Earth's seas.

Go to the home page of the American Museum of Natural History <http://sciencebulletins.amnh.org/> and search for global oceans

1. Examine the map above.
  - (a) Explain what the map is showing.
  - (b) What are the implications for the future management of fish resources of this map?
  - (c) Suggest reasons to explain why so small a proportion of the world’s oceans are preserved in protected areas.

## **Marine protected areas of the world**

Go to the MPA Global home page [www.mpaglobal.org](http://www.mpaglobal.org) and enter the section About the Project. The map here allows you to focus in on the specific marine protected areas.

2. Examine the map above showing the distribution of Marine Protected Areas (MPAs).
  - (a) Describe the global distribution of the MPAs
  - (b) Suggest reasons to explain this pattern.
3. Charles Clover in his book, “The End of the Line: How Overfishing is Changing the World and What We Eat.” examines the nature of marine reserves with a case study of Goat Island Reserve. (Pages 215-226) In this section he outlines the establishment of this reserve and the effects that it has had on the marine environment and the fish populations.

Another possible case study is in the Bahamas. About 50 years ago, 456 square kilometres of a 700-island archipelago, was set aside to be “always preserved for study in

[its] primordial state.” For decades, some fishing was allowed in this region, called the Exuma Cays Land and Sea Park but in 1986 the reserve was designated “no-take”— nothing in its borders could be fished, pulled, or otherwise extracted. Exuma Cays Land and Sea Park is one of the largest no-take marine reserves in the world.

Read these pages or research Marine Protected Areas on the Internet. The Wikipedia site on MPAs provides a good starting point. Questions that you might consider are:

- (a) What is a Marine Reserve?
  - (b) What is the purpose of establishing these reserves?
  - (c) What factors led to the establishment of the Goat Island Reserve in New Zealand?
  - (d) What problems face the managers of these reserves?
  - (e) Which groups were in favour of the establishment of these reserves?
  - (f) Which groups were opposed to their establishment? Why?
  - (g) What were the short term and long term effects of establishing this reserve?
- Discuss these questions in class in relationship to the case studies you have looked at.

4. Go to the website

[http://sciencebulletins.amnh.org/bio/f/bahamas.20050814/essays/66\\_1.php](http://sciencebulletins.amnh.org/bio/f/bahamas.20050814/essays/66_1.php)

at The American Museum of Natural History and complete the following table. Click on the map of Global Marine Protected Areas.

<b>Protected Area</b>	<b>Date established</b>	<b>Area</b>	<b>Geographic Characteristics</b>	<b>Species Protected</b>
Channel Islands				
Galapagos Marine Reserve				
Hol Chan Marine Reserve				
Red Sea Marine Peace Park				
Heard and McDonald Islands				
Bunaken National Park				
Great Barrier Reef				
Northwest Hawaiian Islands				

- (a) Identify the similarities and differences of these reserves.
- (b) What factors were involved in the establishment of some of these reserves?
- (c) What are some of the effects of the establishment of these reserves?

5. Most of the current Marine Reserves are located within the territorial waters of individual countries and can be considered to be local responses. Greenpeace is proposing a more global approach with the establishment of a global network of marine reserves in the high seas, that is the sections of the open ocean that fall beyond the jurisdiction of any single country and are common property. See Greenpeace website report <http://oceans.greenpeace.org/en/documents-reports/roadmap>

Why does Greenpeace want to establish these reserves? (What factors have contributed to their decision?)

6. Examine the map of these proposed reserves. (Map can be expanded with a key from the website)

- (a) Describe the distribution of these proposed reserves.
- (b) What percentage of the oceans would be included in these reserves?
- (c) Which groups do you think might be in favour of these proposals?
- (d) Which groups do you think might be opposed to them?
- (e) Suggest what problems may face the managers or people in charge of these reserves.
- (f) Suggest why most of the world's marine reserves are located within the territorial waters of individual countries.
- (g) Imagine that you are evaluating the success of marine reserves as a way of ensuring the sustainability of fisheries. Suggest criteria that could be used to evaluate the effectiveness. Explain your choice of criteria.
- (h) Write a persuasive piece outlining the benefits of a marine reserve to professional fishers.