*Exuma Cays Land and Sea Park, Bahamas*

The Exuma Cays Land and Sea Park was declared a marine reserve in 1985, making it one of the first marine reserves in the Caribbean. After decades of widespread overfishing in the region, populations of top predators like large groupers were extremely low. In their absence, numbers of their prey, such as mid-level predators like graysbys increased. However, large groupers rebounded in dramatic fashion when they were protected from fishing inside this reserve, eventually reducing the numbers of graysbys. Similarly, studies have shown that the reserve also benefits herbivorous fishes, which increased in number, ate more algae, and cleared space for coral to settle and begin rebuilding these coral reefs. Additional data from:[Mumby et al (2006) Science](http://www.sciencemag.org/content/311/5757/98.short)

*South El Ghargana, Egypt*

South El Ghargana is a no-take zone in the Nabq Protected Area, a multi-use MPA in the South Sinai area of Egypt. The Nabq Protected Area includes a network of no-take reserves that are protected from extraction as well as areas where the local Bedouin community can fish using traditional methods. Studies have demonstrated that commercially valuable species such as snapper, grouper, and emperors have rebounded inside the marine reserves. This increase has in turn led to documented spillover as adult fishes leave the no-take area to supplement the fisheries outside the reserves.

*Soufriere Marine Management Area, St. Lucia*

The Soufriere marine reserves were established in 1995 and protects over 12 kilometres of St. Lucia's considerable marine resources. Since the management area was established, many parrotfish species have increased both in number and in biomass. Repeated monitoring by a team of multinational scientists has demonstrated similar increases in surgeonfish, snapper, and grunts. By sharing the data with the local community and St. Lucia’s policy makers, the success of St. Lucia's first marine reserve led to the creation of additional reserves, such as those in the Canaries/Anse la Marine Management Area.

Malindi Marine National Park, Kenya

Founded in 1968, extractive practices are forbidden in the waters inside Malindi Park, and the areas outside the park are open to a managed, traditional fishery. This protection has been vital to the recovery of many fish populations. A study of 17 local fish species demonstrated that despite species-specific responses to the reserve’s creation, average density of fishes increased by over four times and average size increased by 18% when compared to the areas outside the park. While more study is needed, there is substantial evidence of spillover into neighboring fisheries of many commercially important species, especially from areas of fringing reefs. Given the protection afforded to many of Kenya’s most commercially valuable species, the Malindi Marine National Park may prove to be a key part of protecting Kenya’s fish stocks.

Cape Rodney-Okakari Point Marine Reserve, New Zealand

Created in 1975 and covering 547 hectares of waters from Cape Rodney to Okakari Point, New Zealand’s oldest marine reserve highlights the benefits of ocean protection. Due to fishing pressure on the larger predators in the ecosystem prior to 1975, numbers of commercially valuable New Zealand snapper and southern rock lobster were extremely low. With protection, however, studies have documented that not only have their numbers grown steadily, but also that heavy fishing had the indirect effect of allowing their prey to proliferate to artificially high numbers. Inside the reserve, as snapper and lobster populations have recovered, their respective prey species have returned to more a balanced level as well.

San Diego-La Jolla Ecological Preserve, California, USA

This marine reserve is a good example of how a reserve may be limited in overall effectiveness by its size, but still be quite beneficial to the ecological community. Created in 1971 as a no-take zone in the larger La Jolla Underwater Park, the Ecological Preserve covers only 2.2 square kilometers, but protects a variety of habitats. As a result of its relatively small size, however, studies have shown that more mobile species are not necessarily benefitting as much as more sessile ones. Rock scallops, spiny lobster, and especially red sea urchins have grown in density compared to outside the reserve, whereas fish like kelp bass that may move in and out of the reserve have actually shown a small decline. However, the reserve has an ecologically important population of green abalone and vermilion rockfish, which as permanent residents of the park may be critical to increasing the supply of larvae for future generations of those overharvested species.

Arquipélago, Abrohlos Reefs, Brazil

Brazil’s coral reefs have such a high number of endemic species – species found nowhere else in the world – that some scientists believe that the coastal ocean should be considered its own biogeographic province. Brazil manages these unique coastal resources with some fully protected reserves and some partially protected areas. The Arquipélago marine reserve is a large no-take reserve many miles off of Brazil’s coast, and since its inception in 1983, it has successfully protected many of the major commercial fish species in its waters. A study of many of the marine protected areas in Brazil found that not only were grouper populations healthier inside these protected areas, but also that the size of groupers shifted up significantly. Instead of a population comprised of mostly 10-30 centimeter fish, 70% of the groupers inside Arquipélago marine reserve were 30 centimeters or greater. Since a larger fish releases more eggs than a smaller one, this means a larger larval supply of groupers every time they spawn.

Abore Reef, New Caledonia

The Abore Reef marine reserve was created in 1990 to protect a 25 kilometer portion of one of the largest coral reef systems in the world. After three years of protection, much of the reef was opened to fishing and only the southern portion remained a no-take zone. In 1995, the whole reef was again closed to fishing. Meanwhile, the overall density of fishes on Abore Reef had declined almost universally across both the protected and fished areas from 1993 to 1995, most likely due to high fishing pressure on the unprotected area of the reef. However, in the area that remained protected for those two years, the density of fishes was higher across almost all levels of the food web, with significantly greater numbers of fish that eat plants (herbivores), fish that eat prey like urchins and crabs (macrocarnivores), and fish that eat primarily other fish (piscivores). Abore Reef is an important reminder that isolated areas can be very sensitive to fishing pressure, and that marine reserves are most effective when they cover larger areas for longer periods of time.

*Not included: The study also showed a dramatic decline in the family Acanthuridae (surgeonfishes), possibly because one of the most sought-after species also has a large home range and probably left the reserve to the fished area.*

Ningaloo Marine Park, Australia

Ningaloo Marine Park encompasses the entire 300 kilometer long Ningaloo Reef, where all commercial fishing is banned. In over 65% of the park, however, recreational fishing is allowed and targets fishes like those in the emperor family (Lethrinidae). Scientists have shown that even though commercial fishing is banned throughout the study area, the no-take Mandu Sanctuary Zone had greater numbers and larger sizes of emperors than a nearby site where recreational fishing is allowed. These results are intriguing because they illustrate that even moderate levels of recreational fishing can be enough to deplete certain fish populations. This supports the idea that establishing more no-take zones around the world can contribute to the protection of fishes and other marine resources.

Glover’s Reef, Belize

This reserve, part of the Belize Barrier Reef Reserve System, was founded in 1993 to protect lobster and conch biomass, and studies have shown that it has done just that. While one might expect that the reserve would also protect fish stocks, studies have shown great variation in results from species to species. Like many other reserves, the positive effects are centered among species at the higher trophic levels, while many other fish have declined or remained the same. Some scientists have suggested that because Glover’s Reef gets such high fishing pressure just outside the no-take zone, that increased fishing pressure at areas just outside the reserve has driven numbers downward for some species.