



# Global Marine Programme

*Restoring the balance*

## The Fisheries Benefits of Marine Protected Areas

### Marine Protected Area – WWF’s Definition

“An area designated to protect marine ecosystems, processes, habitats and species, including the essentials of marine biodiversity and which can contribute to the restoration and replenishment of resources for social, economic and cultural enrichment.”

### For Fish and People

The world’s fisheries and fishing communities face an unprecedented crisis. From France to Japan, from Senegal to Australia and Chile, fish stocks are overfished and important habitats are being lost or degraded at an unprecedented rate. The increasing number of people living on the coasts and the continuing rise in consumer demand for fish, threaten marine biodiversity across the oceans. Inadequate fisheries management and widespread overuse of marine and coastal resources are also eroding the traditional basis of life for millions of people and even entire countries.

To turn the tide towards healthy oceans, the world’s leaders agreed, at the World Summit for Sustainable Development in 2002, to create representative networks of marine protected areas (MPAs) by 2012.

MPAs offer a range of benefits for fisheries, people and the marine environment. They work by providing safe havens for depleted fish stocks to recover and alternative sources of income for local people, maintaining biodiversity, preventing habitat loss – and much more. By establishing MPAs, we can restore the balance in the use of our oceans, safeguard valuable fish stocks and important habitats while providing long-term solutions for local communities.



*High fishing pressure drives natural selection for smaller fish that have reduced reproductive potential. Securing healthy fish populations with all age classes is therefore vital to good fisheries management.*



*MPAs provide safe havens for fish stocks, protect important habitats where fish live and grow and reduce bycatch of non-commercial species.*

### Bigger Fish – and More

Throughout the world, well managed MPAs, or other areas with restrictions on resource use, such as no-take zones, have had remarkably similar effects. Protection from fishing simply allows exploited species to live longer, grow bigger and become more numerous. Such a population usually has a higher resilience when facing environmental disturbances and fishing pressure. If areas hosting older, mature fish are protected, they can help replenish stocks by providing spillover of both offspring and mature fish.

Since most fish have free-floating larvae or eggs, the offspring of protected animals can drift out of reserves – re-supplying even far-away fishing grounds. And as stocks build up inside reserves, also juvenile and mature fish move out to populate nearby areas open to fishing. This “spillover” can then be harvested by fishers “fishing the line” of the protected area.

A great example of spillover effects from protected areas is the hook-and-line fishery around the 20-year old Apo Island Reserve in the Philippines. Catches in this fishery have increased ten-fold since the establishment of the reserve. The total yield is one of the highest in the country, and catches have been stable for the last 15 years.

### Protecting Vital Habitats

While MPAs may be set up to protect fish populations, they have additional benefits for the wider marine environment too. By eliminating trawling, drift nets and other destructive fishing practices, MPAs give bottom habitats and non-target species a chance to recover.

## Juveniles and Spawning Grounds

More mobile species can capitalize on reserves too. Some MPAs are set up to provide protection at vulnerable stages of the life cycle, protecting nurseries and spawning grounds. Cod, for example, aggregates to spawn in certain places. Prior to the huge stock collapse of Newfoundland cod in 1992, the cod population was intensively fished in near-shore spawning aggregation sites. This overharvesting of immature cod certainly contributed to the rapid decline of the stock.

By protecting spawning grounds and areas where juvenile fish spend their time, fish can be spared until they reach maturity so that they have already produced offspring before being caught. This approach has been used by fisheries managers in Florida Bay, for example, where lobsters are protected until they are large enough to migrate out to the reefs where they may be captured.

## Networks are More Efficient

One large MPA is not always the best solution. For reserves to promote the build-up of exploited species, they must be large enough to protect animals from fishing by encompassing their full ranges of movement. And for surrounding fisheries to benefit, reserves must be small enough to yield spillover. The best solution is often a network including a number of MPAs of different sizes. Such a network must comprise thoroughly selected key inshore and offshore habitats, ensuring protection for the full range of habitat types and species, and include important routes for migratory species and ecological corridors across ocean basins.

WWF is advocating the establishment of such a comprehensive network in the Northeast Atlantic, for example. In Australia, the government recently declared a network of no-fishing zones covering 33% of the Great Barrier Reef National Park.

## Protecting the Unknown

The high seas - the 64% of ocean outside national jurisdiction - need protection too. Fishing, oil and gas exploration and mining all threaten the unexplored biodiversity of the high seas. What we do know is that deep sea fish, such as orange roughy, are highly vulnerable to fishing, and an entire fish population may be hauled up in a single trawl. The deep sea may hold the cure to many diseases - in fact there are already pharmaceuticals based on substances derived from deep sea organisms in the market.

But until now, there are no high seas MPA anywhere in the world. WWF is working with scientists and experts in maritime law to create framework legislation for these vast expanses.



MPAs provide shelter for both fish and other marine species. Hawksbill turtles are caught as bycatch in many fisheries and their nesting beaches are increasingly used for tourism development.



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MPAs protect fisheries and coastal habitats, both closely linked to sustainable livelihoods.

## Securing Livelihoods and Alleviating Poverty

In order to ensure the future for coastal communities and alleviate poverty, it is necessary to protect and wisely manage the marine resources they depend upon.

Nearly 40% of the global population now lives within 100 kilometers of a coast, and many of these people depend on the productivity of the sea. As populations grow, increased fishing pressure depletes fish stocks and causes rising poverty and decreasing food security. This drives fishers toward the use of destructive methods to catch what little fish there is left. The UN Development Programme estimates that more than one billion people in developing countries worldwide risk being deprived of their main source of protein as a result of rampant overfishing.

Growing coastal populations also create a surge in land development, leading to the clearing of vital habitats where many fish spawn, such as mangrove forests and seagrass beds.

## The Economics of MPAs

Establishing marine protected areas may initially be costly and fishers may need compensation for loss of fishing grounds, until other livelihood options have been secured. But in the long run, benefits vastly overrule initial costs. Seen in a global perspective, the cost of a network of MPAs covering 30% of the oceans is estimated at less than global spending on harmful subsidies to fisheries.

Such a network would help safeguard and increase global fish stocks, today worth about USD 80 billion yearly. It would also make sense for local fishers who, as fish stocks grow and important habitats are restored, may start to harvest bigger and more fish closer to home. Another positive effect of MPA networks is to ensure the sustained delivery of marine ecosystem services (such as reefs providing shoreline protection and sewage cleansing in mangrove areas), worth an estimated USD 7,000 billion each year. They also assist coastal communities, generating jobs in tourism, park management and, of course, sustainable fisheries.

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