



for a living planet®

Marine protected areas

Providing a future for fish and people



Restoring the balance

Marine protected areas (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. They also provide services to local communities who depend on the sea and its resources, increasing food security and reducing poverty. MPAs can also benefit local people by opening new opportunities to gain income. Countries with coral reefs attract millions of SCUBA divers every year, yielding significant economic benefits to the host country. Globally, almost USD 10 billion are spent on coral reef tourism annually.

By establishing MPAs, we can restore the balance in the use of our oceans, safeguarding valuable fish stocks and important habitats while providing long-term solutions for local communities.

The challenge

The world's oceans are under more pressure than ever before. 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. Sixty per cent of coral reefs are expected to be lost by 2030 if present rates of decline continue. The increasing number of people living on the coasts and the rapid 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, depriving communities of their main source of vital protein and increasing poverty.

Yet, only a mere 0.5 per cent of the oceans are protected – compare this to 13 per cent of land area under protection. And the large majority of that is inadequately managed, with almost all marine protected areas open to tourism and recreation and 90 per cent open to fishing.

*“only a mere 0.5 per cent
of the oceans are protected”*

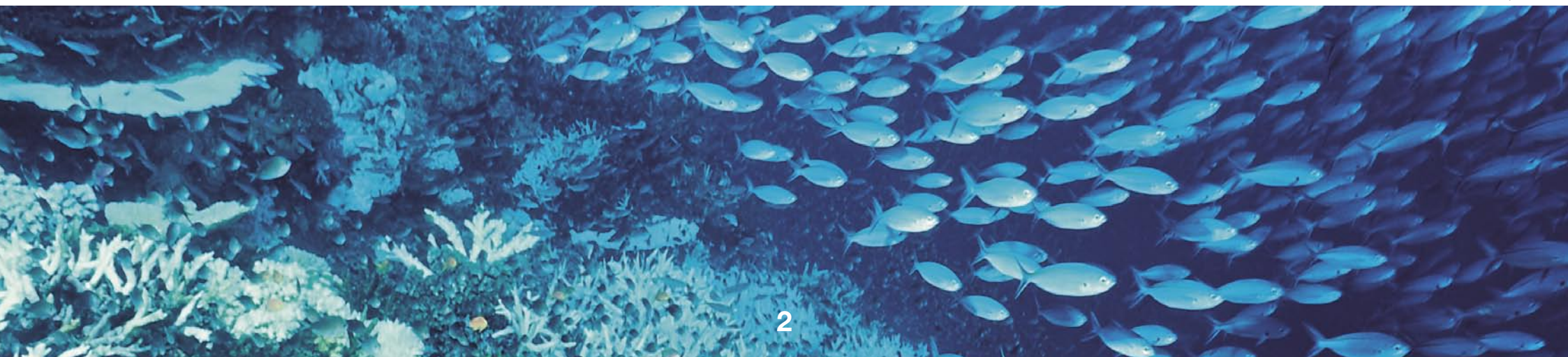


Fishing provides the economic basis for millions of families across the world.

© WWF-Canon / Martin Harvey

Coral reefs are some of the most diverse ecosystems on the planet, and healthy reefs can provide food security and income for local communities across the tropics.

© WWF-Canon / Cat Holloway



WWF's target

The establishment and implementation of a network of effectively managed, ecologically representative marine protected areas covering at least ten per cent of the world's seas by 2020.

Working to protect marine life and fisheries

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 MPAs by 2012.

— *it's time to put these global agreements into action!* —

WWF is working hard to make this happen. We work in some of the world's most sensitive areas to help protect marine biodiversity and support artisanal and commercial fisheries. We act both on the local level with fishers and managers, providing expertise to fishing communities, as well as internationally with policy makers, pushing new and better agreements on management practices. We help governments select what marine areas are the most important to protect, and then determine what kind of protection measures suit them best. We also cooperate with scientists to establish the baseline knowledge necessary for effective management, and advance the science of how to design networks of MPAs.

Protection comes in many ways

There is a bewildering variety of terms and definitions in use to label marine conservation areas across the world. These include marine reserves, fully protected marine areas, no-take zones, marine sanctuaries, ocean sanctuaries, marine parks, locally managed marine areas, etc. Many of these have very different levels of protection, and the range of activities allowed or prohibited within their boundaries vary considerably too. WWF uses the term marine protected area as an overarching description of

an area designated to protect marine ecosystems, processes, habitats and species. MPAs can contribute to the restoration and replenishment of resources for social, economic and cultural enrichment.



WWF works on many levels to achieve our goal: at least ten per cent of the seas protected by 2020.

© WWF-Canon / Petra Dörsam



By protecting vital habitats and nursing grounds, MPAs can help boost fish catches.

© WWF-Canon / Cat Holloway

Benefits of marine protected areas

Bigger fish – and more

Throughout the world, MPAs have had remarkably similar effects. Protection from fishing simply allows exploited species to live longer, grow bigger and become more numerous. Industrial fishing usually reduces populations to only a handful of age classes, never allowing them to reach full maturity. This has happened to the northeast Atlantic cod stocks, for example. MPAs especially allow slow-maturing, long-lived species to develop natural age structures, thus increasing the number of large fertile animals that can yield more offspring. Such a population has a higher resilience when facing environmental disturbances.

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

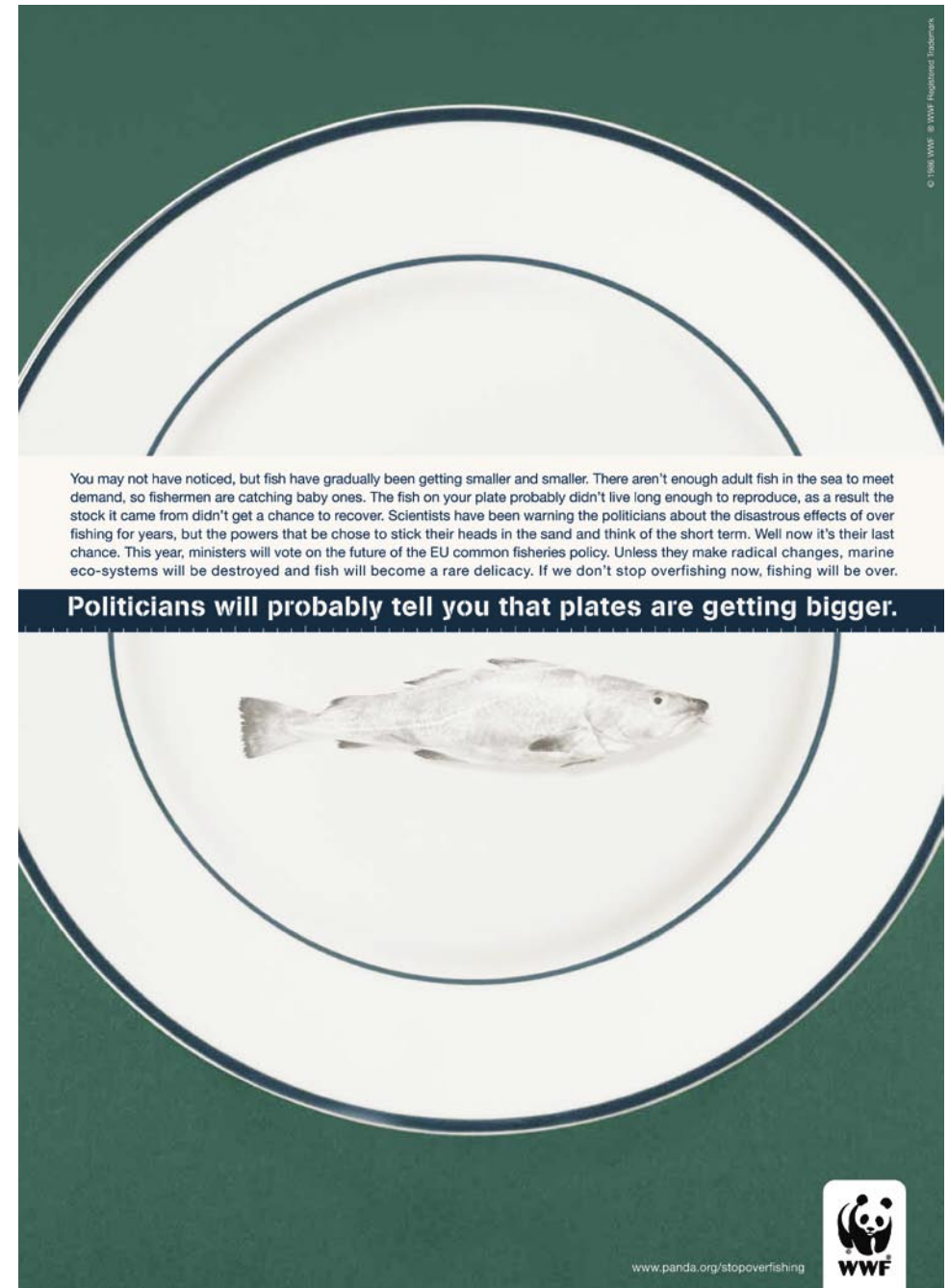


Older, mature fish can help replenish stocks by moving out from a protected area into areas where fishing is allowed.

© WWF-Canon / Alain Compost

So, without protected areas, fish stocks can collapse completely during periods when conditions are unfavorable for offspring survival - which makes it more difficult for them to recover when better times return. In contrast, if areas hosting older, mature fish are protected, they can help replenish stocks as soon as conditions improve, by providing spillover of both offspring and mature fish.

Long-term studies of well-managed protection clearly show that MPAs have huge benefits for both fish and fishers. The Leigh Marine Reserve, New Zealand, has been protected from fishing since 1977. At the end of the 1990's, densities of fishable size of a bream species were up to almost nine times higher inside the MPA compared to nearby areas. And in Florida, densities of the yellow-tailed snapper increased by more than 15 times within the protected areas after four years of protection.



In many fisheries, such as the North Sea, fish are caught before having had time to reproduce, eroding the future of stocks. Advert used during WWF's 2002 Stop Overfishing Campaign.

MPAs boost fish catches

Perhaps the most persuasive evidence that MPAs have positive effects for fisheries comes from changing fishing patterns. In most places where well-managed MPAs exist, fishers tend to move their activities closer to the boundaries of the protected area. Such fishing-the-line allows fishers to benefit from spillover of animals from inside the closed area.

A great example 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 MPA. The total yield is one of the highest in the country, and catches have been stable for the last 15 years.

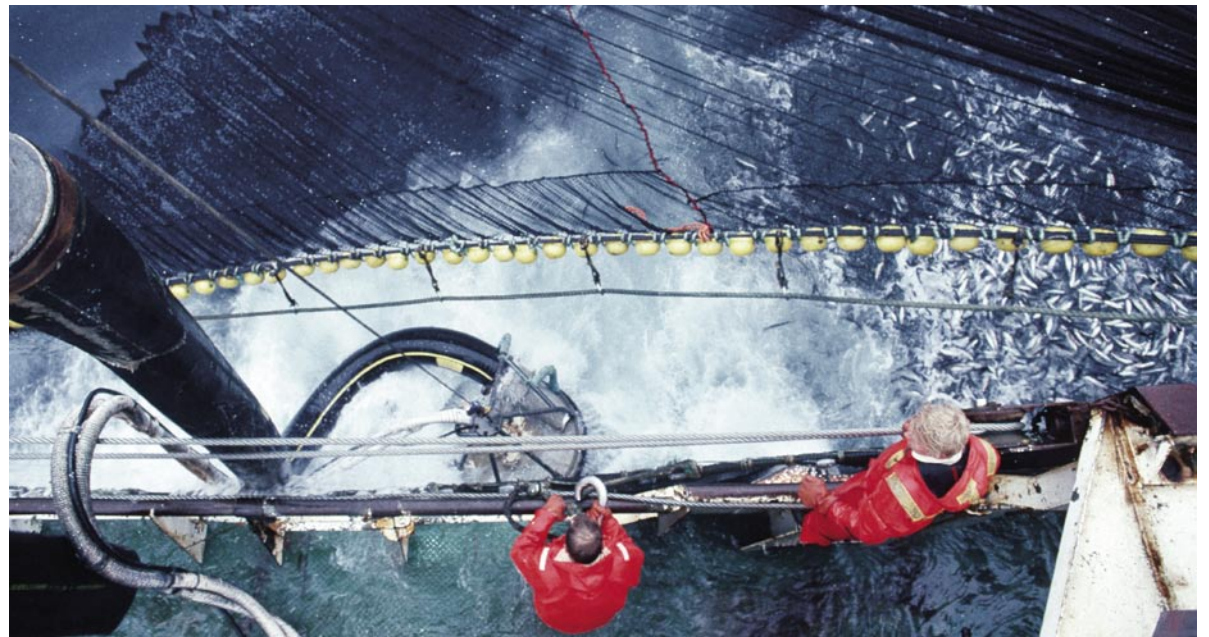
MPAs can work at much larger scale too. An MPA at Georges Bank, off Maine, USA, has resulted in increasing fish stocks. After dropping fish numbers and sizes caught, a 17,000 sq km area was closed to all fishing gear targeting ground fish, including gear that accidentally catch these species, such as scallop dredges. After five years, there were more and larger fish of the attractive species, and also cod stocks had started to creep up. These improvements now begin to have a positive impact on fish catches too. Fishers travel less distance to catch more cod than five years ago, as they are able to fish the line of the MPA. The ban of scallop dredges had yet another effect: the commercial scallop fishery is now fully rehabilitated and one of the most lucrative in the USA.

— *“fishing-the-line allows
fishers to benefit
from spillover”* —



From Africa to Australia, experience shows that fish catches increase in areas adjacent to MPAs.

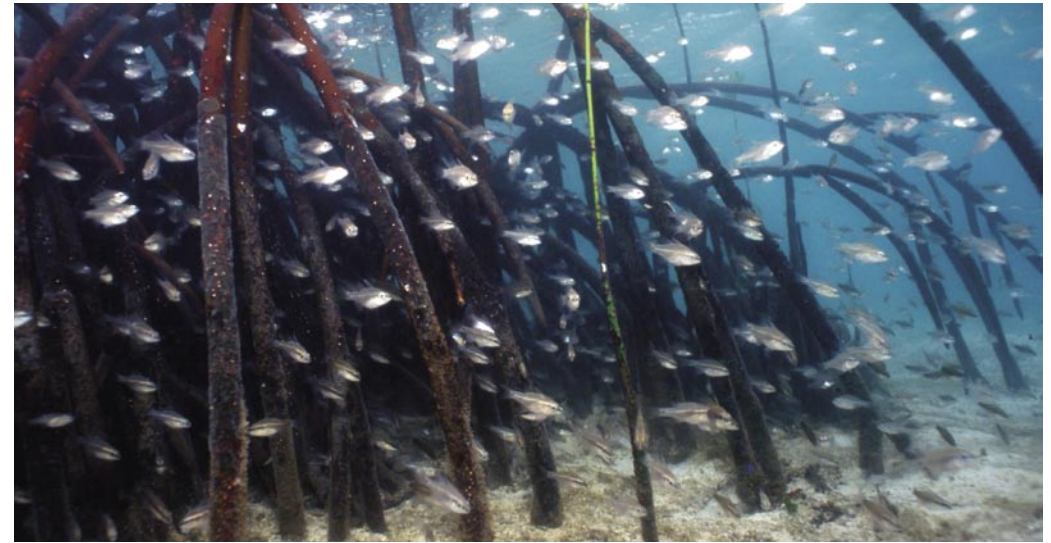
© WWF-Canon / Jo Benn



Protecting juveniles and spawning grounds

For a species to benefit fully from protection, it must spend a large proportion of its life inside a protected area. But also more mobile species capitalize from protection. The key is to provide protection at vulnerable stages of the life cycle. 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 sites. This over-harvesting of immature cod certainly contributed to the rapid decline of the stock and, subsequently, the collapse of the local fishing industry.

By protecting spawning grounds and areas where juvenile fish spend their time growing up, fish can be spared until they reach maturity and have already given rise to offspring before being caught. This approach is already 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.



Mangroves are important nursery grounds for many fish species who move out to reefs and open water areas at maturity.
© WWF-Canon / Jürgen Freund

Protection for spawning grounds and income for local people in Belize

The Hol Chan Marine Reserve, Belize, was established in 1987, with support from WWF, to conserve a unique coral reef channel suffering damage from uncontrolled tourism and fishing. Within a few years, the local community considered Hol Chan a major success, mainly for its popularity with the growing dive tourism industry.

This enthusiasm then spread to other coastal communities. Belize now has 18 MPAs, covering 22 per cent of its continental shelf and atolls, although only two per cent are fully protected from fishing. Over half of these MPAs host important fish spawning sites, including a cluster of five fully protected sites designated in 2003. About half of these MPAs were designated or proposed the request of local communities, primarily interested in the potential economic benefits.

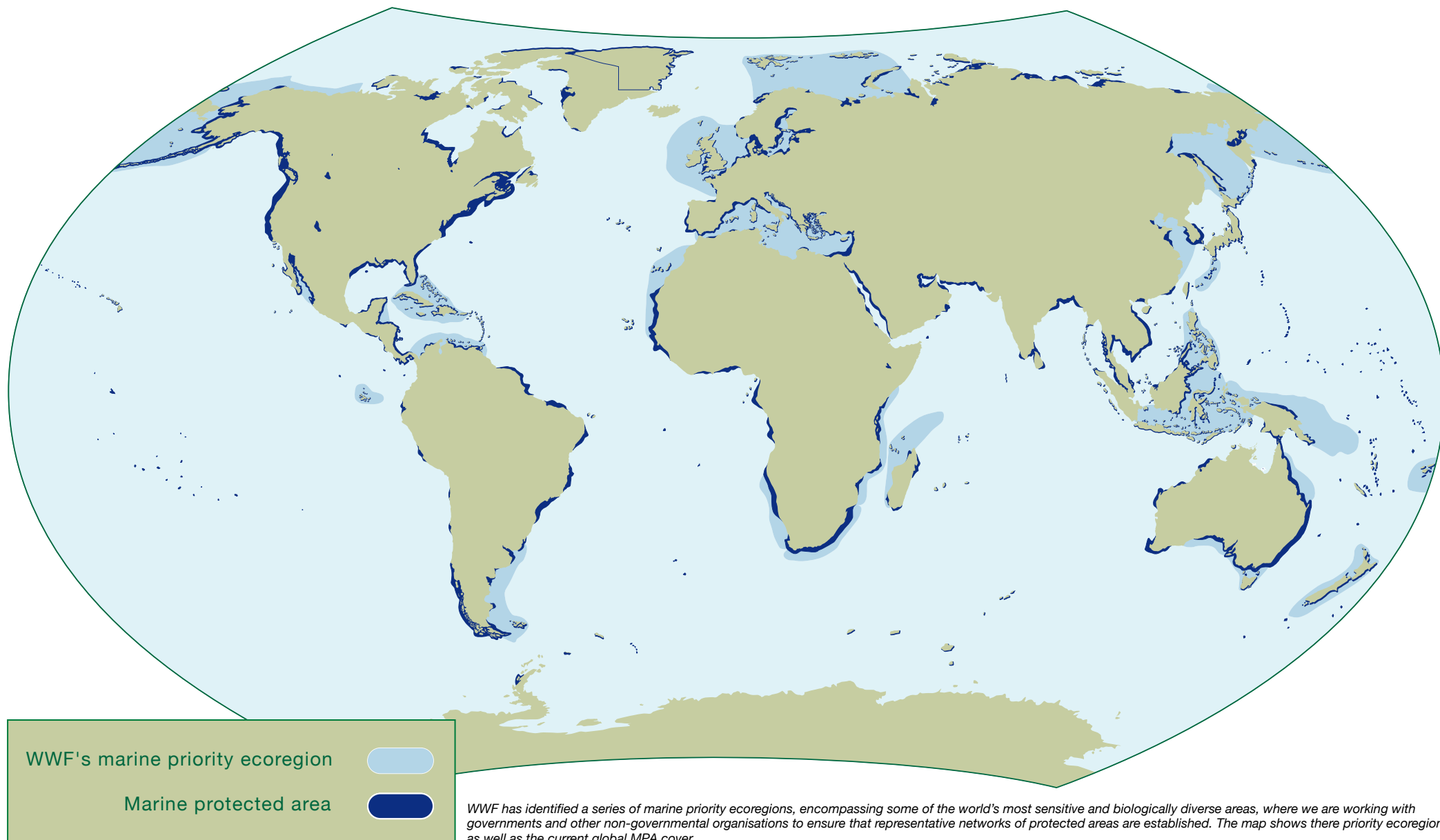
Other more scientifically based recommendations were also made, resulting in the protection of 13 critical spawning sites for Nassau grouper as no-take zones, as well as implementing a closed season for the species.

Many of the lessons learned in Belize can be applied in other countries. One essential aspect is to begin an MPA effort with a winner - a location with good potential for both economic and ecological success. A continued dialogue and shared decision making and responsibility among stakeholders, as well as using best science, were other key elements in building Belize's successful MPA network.



The Nassau grouper is an important food fish in Belize, where authorities have protected 13 spawning sites critical to this fish.
© WWF-Canon / Anthony B. Rath

Marine protected areas worldwide



Securing coastal livelihoods and alleviating poverty

Nearly 40 per cent 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 coastal populations soar, pressure on marine resources has become unsustainable in many places. Poverty is an important root cause to biodiversity loss and unsustainable resource use. And, vice versa, unsustainable resource use also aggravates poverty, as the very base of natural resource is degraded and disappears through overfishing or habitat destruction. A vicious circle is created, where increased fishing pressure depletes fish stocks and causes rising poverty and decreasing food security. This drives fishers further toward the use of destructive methods to catch what little fish there is left.

As coastal populations grow, communities become increasingly dependent on healthy fish stocks. The artisanal reef fishery on Zanzibar, Tanzania, for example, is crucial to approximately 60,000 fishers and contributes over 60 per cent of protein to local communities. All along the East African coast, about 100,000 reef-dependent full time fishers risk losing their livelihood if the current state of overfishing in the region continues.

Many Pacific islanders live close to the sea in dispersed village communities that depend on healthy marine life. In Fiji, Papua New Guinea and the Solomon Islands, an estimated three quarters of inhabitants depend almost entirely on natural resources for survival. On some Pacific islands, it is estimated that 90 per cent of families go fishing at least once a week, with many fishing nearly every day.

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

In order to ensure a future for coastal communities and alleviate poverty, it is necessary to protect and wisely manage the marine resources they depend upon. MPAs protect fisheries and marine habitats, both closely linked to sustainable coastal livelihoods. In many tropical countries, coral reefs play a vital role in the provision of income and protein for a growing population. Potential fishing benefits from healthy coral reefs are estimated to be in the order of USD 5.7 billion annually.

In Fiji, a locally managed MPA network has tripled fish catches and increased local income by 35 per cent over three years, and in the Solomon Islands, the locally managed MPA network in the Arnavan Islands has helped conserve biodiversity and improved local incomes for more than a decade.

“poverty is an important root cause
to biodiversity loss”

As coastal populations soar, pressure on marine resources has become unsustainable in many places. MPAs can help secure the livelihoods for some of the world's poorest people.

© WWF-Canon / Meg Gawler



Declining catches make local communities act in Senegal

One of the world's most important fisheries occurs within the West African Marine Ecoregion. Nearly 700 fish species, 20 cetaceans and five marine turtle species have been recorded in Senegal's waters alone. Eighty per cent of Senegal's fish catch is landed by artisanal fishers, providing vital protein for millions of people both along the coast and far inland.

However, the region's fisheries have been much depleted by overfishing, illegal fishing and the destruction of fragile breeding and nursery areas. Quantities of commercially valuable fish caught in Senegal's coastal waters have diminished to less than 20 per cent compared to the 1950s.

Faced with diminishing catches, local communities in Senegal requested the creation of MPAs. In response, an initiative was launched by WWF and partners, identifying four suitable sites totaling 7,500 sq km, including islands, mangroves and a marine canyon, as well as open water and seafloor. In addition to protecting important fish nurseries, the MPAs include important turtle nesting and feeding areas. The initiative was extremely collaborative, included town meetings and involved representatives from local communities, several government agencies, research and international conservation organizations. Local communities are now, for the first time in West Africa, granted the authority and responsibilities to manage their coastal and marine zone in accordance with their needs and values. It is hoped this approach will encourage other communities to seek establishing MPAs - in West Africa and elsewhere.



Fish for sale in Soumbédioune market, Dakar, Senegal.

© WWF-Canon / Jo Benn

The Senegaese initiative shows that MPAs can be used to assist with sustainable management of artisanal fisheries and tap local community support for enforcement, monitoring and surveying activities.

© WWF-Canon / Olivier Van Bogaert



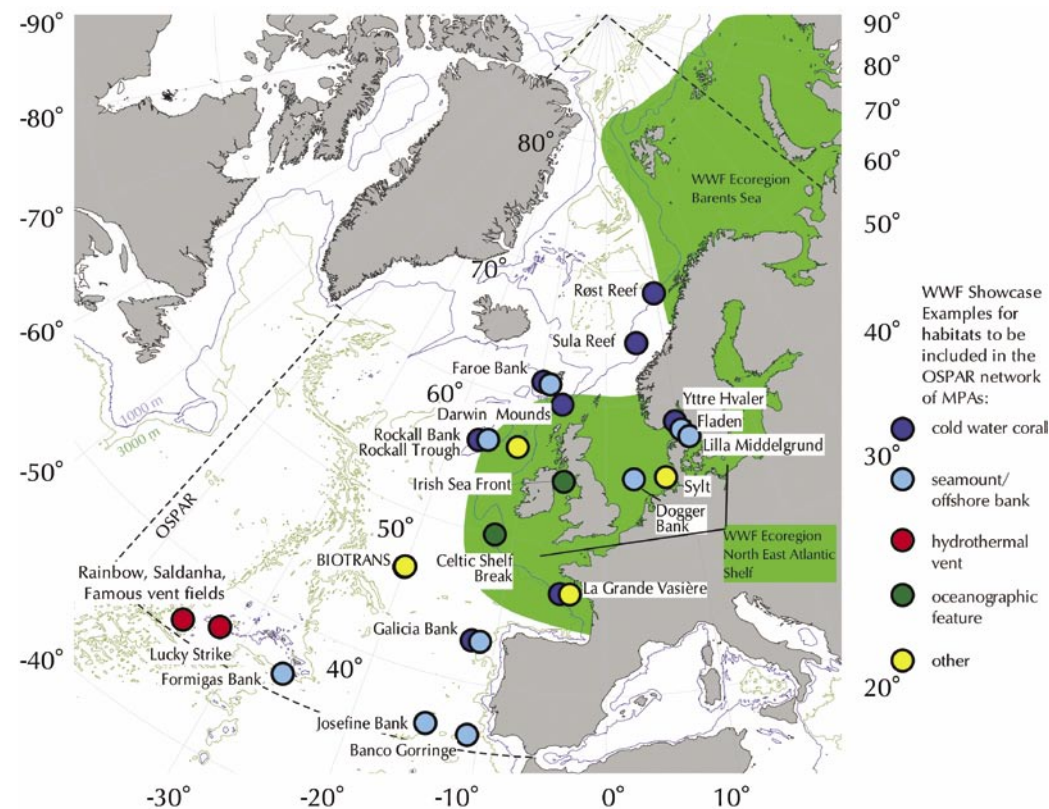
Protecting vital habitats

While some MPAs may be set up to protect fish stocks, they have additional benefits for the wider marine environment too. By eliminating trawling and other destructive fishing practices, MPAs give bottom habitats and non-target species a chance to recover. This has positive effects both for fish and other marine creatures, as well as for people relying on the habitat's productivity.

Bottom trawling is the one fishing technique that has the largest impact on marine habitats. Huge trawls equipped with steel beams, rubber rollers and heavy doors to keep the net open, are pulled across the ocean floor, crushing most of its fragile life. Cold-water corals, often forming reefs in the deep sea, are especially vulnerable to this destructive practice. They are brittle and slow-growing, providing complex structures that shelter many animals, some of them commercial fish species, from predators. A single trawler can crush a thousand year-old reef during the course of a few hours. Once the coral is gone, the habitat that provided shelter and food for many animals disappears. The fishing ground is quickly depleted and the trawler moves on.

To protect the fragile habitats and vulnerable fish stocks of the deep sea, WWF is advocating the set-up of networks of MPAs also in these relatively new fishing frontiers. Many deep sea fish grow slowly and mature only after decades, making them susceptible to overfishing. In the Northeast Atlantic, WWF is advocating a network of MPAs that would protect a wide range of habitats and species or allow them to recover from destructive practices. Here, MPAs can act as buffer zones preventing the complete degradation and irreversible change of a heavily impacted marine environment, by providing habitat conservation or regeneration areas, as well as refuges and stepping stones for species at risk.

“WWF is advocating networks of MPAs”



WWF is promoting the set up of a network of MPAs in the Northeast Atlantic to safeguard all habitat types in the region, working with the OSPAR Convention (the instrument guiding international cooperation on the protection of the marine environment of the Northeast Atlantic.)

Critical habitats for protection

- Tropical coral reefs
- Mangroves
- Seagrass beds
- Seamounts
- Cold-water corals
- Migration corridors
- Fish spawning grounds
- Upwelling areas



Volunteers checking a loggerhead turtle nest on Cirali beach, Turkey, one of their few remaining nesting sites in the Mediterranean Sea.
© WWF-Canon / Michel Gunther

Cold-water coral reefs provide habitats and shelter for many species, such as this stone crab.

© WWF-Canon / Erling Svensen

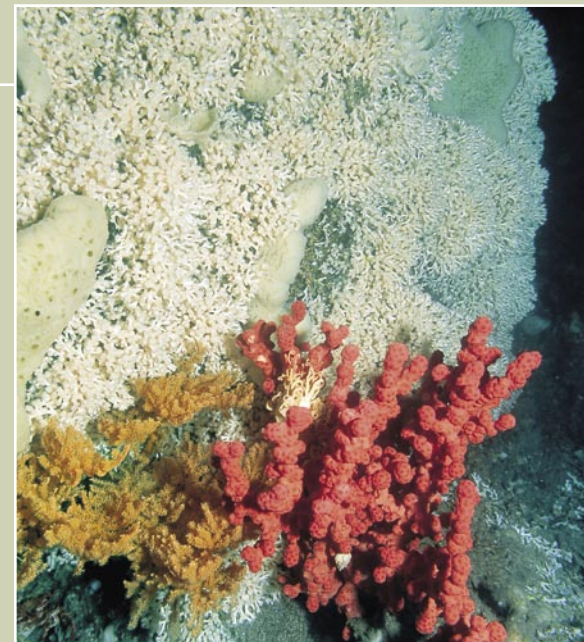


EU protects cold-water corals at the Darwin Mounds

In March 2004, after three and a half years campaigning by WWF, EU Fisheries Ministers finally agreed to give permanent protection and ban deep-water bottom trawling at the Darwin Mounds.

Only discovered in 1998, the Darwin Mounds are a unique collection of cold-water coral mounds at a depth of 1,000 m northwest of Scotland. They are made up of hundreds of coral reefs up to 5 m high and 100 m wide covering an area of approximately 100 sq km. They support a wide diversity of marine life, such as sponges, starfish, sea urchins, crabs and the commercially fished blue ling, round-nosed grenadier and orange roughy.

Since their discovery, WWF and others highlighted the damaging impacts that deep-water trawlers were having on the corals, with huge areas of the seabed being dredged and scarred, leaving nothing but rubble in their wake. The creation of a no-trawling zone at the Darwin Mounds is hoped to act as a blueprint for establishing MPAs to protect vulnerable areas and habitats from the destructive impacts of fishing.



Bottom trawling is one of the most destructive fishing practices. As one-tonne heavy trawls are dragged across the bottom, entire cold-water coral reefs can be turned into rubble within a few hours.

© WWF-Canon / Erling Svensen

The high seas need urgent protection too

Most of the high seas - the vast proportion of oceans outside national jurisdiction and thus open to exploitation - have not been explored by scientists and we have not even begun to understand what they can bring to humanity in terms of, for example, pharmaceuticals. But the frontier of the deep sea fishing industry is rapidly gnawing into these huge territories, often with devastating effects on local fish populations.

WWF has therefore set up a strategy for the conservation of the high seas. We are working with scientists and experts in maritime law to create framework legislation for these huge areas to prevent their destruction and safeguard their natural treasures that belong to us all and to future generations.

As high seas MPAs must be established within the international community, under international law, the complexity of implementation, compliance and enforcement issues on the international scene make this a true challenge. WWF's legal experts are working on exploring the existing legal avenues and opportunities available, using the Grand Banks off eastern Canada as a case study for establishing protection for these important marine areas.

The orange roughy is extremely sensitive to heavy fishing pressure and entire populations may be wiped out in a couple of trawls.

© Australian Fisheries Management Authority



Establishing effective marine protected areas

Size matters – but networks are more efficient

Size also counts. Among Tasmania's MPAs, the Maria Island Reserve is the most effective in terms of fish conservation and also the largest – here, big fish became more than three times more common after six years' protection than outside the MPA.

But one large MPA is not always the best solution. For protected areas to promote the build-up of exploited species, they must provide protection at all critical stages of the life cycle. The ranges of movement of a species can be very large over a life cycle and involve many habitats and ecosystems – and differ from other species. For a single MPA to protect the full range of distribution for all species in an area, it would have to be huge. But for fisheries to benefit, MPAs must be small enough to yield spillover into adjacent fishing grounds.

To balance the needs of fishers and the marine environment, and to get optimum benefit from protection, 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 their movements, and including important routes for migratory species and ecological corridors across ocean basins.

Networks of MPAs can be viewed as a fisheries management tool and must be based on best available science. This involves including vulnerable areas, such as spawning grounds, as well as an understanding of larval range and dispersal patterns, to be able to identify what areas need to be secured to design adequate MPA networks.

— *“a network must comprise thoroughly selected key inshore and offshore habitats”* —

The Baltic Sea is one of the world's most polluted seas, and overfishing and bycatch have reduced cod and salmon stocks and brought the harbour porpoise to near extinction. Setting up a network of MPAs covering at least ten per cent of the Baltic and promoting sustainable fishing practices are top priorities for WWF's Baltic Programme. In 2004, the Baltic Sea was designated a Particularly Sensitive Sea Area by the IMO, urging governments to adopt stringent shipping safety measures.

© WWF-Canon / Mauri Rautkari



MPA network safeguards Australia's Great Barrier Reef

In 2004, the Australian government put into effect a new zoning plan for the Great Barrier Reef National Park, creating the world's largest MPA network. Under this plan, more than 33 per cent of the national park, or 110,000 sq km, are protected from commercial and recreational fishing. The protected area consists of a network of small and larger areas, designed to protect representative habitats for each of the park's 70 regions.

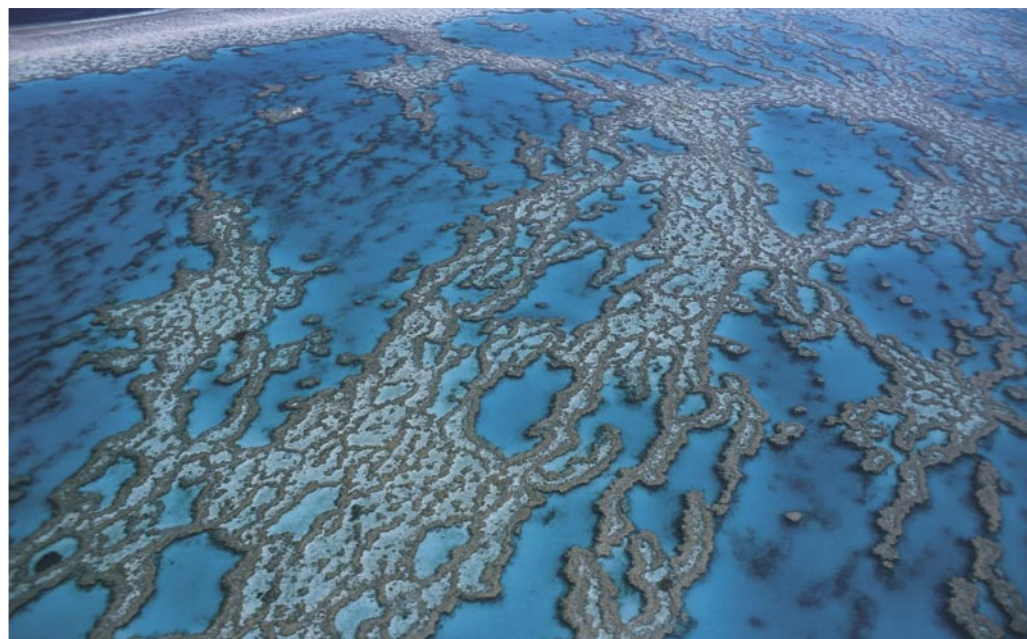
WWF campaigned for four years for this decision. The network of no-take zones aims to build resilience of the Great Barrier Reef (GBR) in the face of large-scale threats, such as coral bleaching caused by global warming and declining water quality from poor land management in adjacent catchment areas.

The GBR is also one of Australia's most valuable tourism assets, generating about USD 3.4 billion each year. A Yale University study found that the GBR is worth USD 57 billion to the international economy - annually. In addition to protecting one of the world's most precious natural treasures, the new zoning plan for the GBR helps safeguard a lucrative industry for Australia and secures the future for many local communities.



The potato cod is one of thousands of species that now benefit from the Australian government's ban from fishing in 33% of the Great Barrier Reef National Park.
© WWF-Canon / Jürgen Freund

————— *“the new zoning plan
for the GBR helps safeguard
a lucrative industry for Australia”* —————



The Great Barrier Reef National Park is a network of small and large protected areas, designed to protect all habitats in the region.
© WWF-Canon / Jürgen Freund

Local participation – the key to success

The participation of local communities is vital to the success of most coastal MPAs. With local support, marine protected areas offer a highly effective management tool. Without it, MPAs remain useless paper parks. Experiences from already established MPAs show that the better initial consultations with all user groups, the fewer subsequent conflicts and management problems arise.

Across the world and through history, local communities have closed areas to fishing and imposed other restrictions to sustainably manage the natural resources they depend upon. Such measures must be taken into consideration and be given a priority when designing MPAs, as this knowledge is crucial to achieving adequate protection in the long term.

*“without local support,
MPAs remain
useless paper parks”*

The Tortugas Ecological Reserve – engaging stakeholders

Designed to conserve the Florida Keys’ richest and healthiest reefs, the Tortugas Ecological Reserve bans all commercial and recreational fishing in nearly 685 sq km of diverse ocean habitats.

Most of the Florida Keys reefs are deeply affected by overfishing, declining coral cover, coral bleaching, diseases and pollution. The Tortugas region still boasts clean waters, high biodiversity, dense coral cover and many turtle nesting sites. Known as a “natural fish factory”, it is one of the most valuable spawning areas for reef fish in the region. Fish spawned there can drift hundreds of kilometers upstream, potentially helping replenish depleted populations throughout the Keys and beyond.

Government authorities proposed an MPA in the Tortugas, but quickly found the plan shot down by both conservationists and fishers. A working group of 26 local people representing a wide range of interests - from commercial and recreational fishing, collecting and diving, to conservation and science - was then set up to design an MPA from scratch. The group worked, guided by a neutral facilitator, to establish criteria for the MPA, study the ecological and economic value of the Tortugas (with information



WWF staff and Fiji villagers practice the skills of surveying and monitoring coral reefs. Surveyors set grid patterns within which the numbers and species of fish, corals and other indicator animals are listed. © WWF-Canon / Cat Holloway



The Tortugas Reserve was set up through a highly collaborative process, engaging all stakeholders. © WWF-Canon / WORLD TELEVISION

provided by scientists and local experts, including fishers and divers), develop a range of possible sizes and locations for the MPA, resulting in them finding common ground and creating an MPA everybody could live with and benefit from.

The success was due in large part to the culturally sensitive, open, collaborative and precautionary principles employed by the process, enabling formerly entrenched opponents to work together.

Although the MPA is only a few years old, it appears that participants’ confidence in the process is being rewarded. Preliminary results from a massive monitoring effort in the summer of 2004 show more and larger fish and recovering fish populations in the MPA.

Enforcement - making sure it works

When properly managed, MPAs function as an effective insurance policy for both marine life and people. One of the main problems facing many marine protected areas across the world is the lack of adequate resources for properly enforcing their management. Local participation in monitoring and enforcement is often the best way to circumvent a constant lack of resources for patrolling rangers.



Dynamite fishing is one of many threats to coral reefs. When the habitat is destroyed, the fish go too.
© WWF-Canon / Jürgen Freund



Rangers patrol the waters of the Banc d'Arguin National Park, Mauritania.

© WWF-Canon / Mark Edwards

Mafia Island engages community in enforcement

Like many MPAs in developing countries, the strategy of Tanzania's Mafia Island Marine Park is to try to engage the local community in conserving their marine resources and promote self-enforcement. In addition to raising awareness on the impacts of destructive fishing activities, the park has also helped its 11 villages to establish their own enforcement units, which can operate at much lower costs than centralised ranger units. This strategy has already had some success as local teams have reported a series of illegal incidents, showing that local communities can participate in management and shoulder the responsibility of surveillance. And in doing so they can take control of their future.



The communities in Mafia Island Marine Park live mainly off the sea. By making local communities responsible for surveying the protected area, enforcement is both low cost and effective.
© WWF-Canon / Peter Denton

Evaluating MPA effectiveness

Effective management of a protected area requires taking an adaptive approach based on learning from experience. To be able to meet the challenges of unprecedented pressure from human activities and the effects of climate change, MPA managers must be adequately equipped, trained and informed to safeguard the world's protected areas. One important component of good management is evaluating its effectiveness. How well do MPAs really function? Therefore, WWF, together with the IUCN World Commission on Protected Areas and the US National Oceanic and Atmospheric Administration, have published a set of guidelines on how to evaluate management effectiveness of MPAs. Through such an exercise, managers can learn from successes and failures and adapt and improve their management over time. This in turn will lead to better adherence to goals and objectives and to improved management effectiveness.

— *“MPA managers must be adequately equipped, trained and informed”* —



Through evaluating performance along WWF's and partners' MPA guide, MPA managers can continually improve their effectiveness.
© WWF-Canon / Cat Holloway

Collaborative management in Bunaken National Park

Bunaken National Park, Indonesia, spans both land and sea, and hosts 22 villages and over 30,000 inhabitants relying largely on subsistence fishing and farming.

The national park was created in 1991 to protect the high biodiversity and the migration paths and feeding grounds for protected species, such as dugongs and turtles. It has a 25-year management plan and a management advisory board. The collaborative management, supported by WWF, includes a participatory zoning revision process, involvement of the private tourism sector in park management, facilitation of a park entrance fee system and a joint patrol system. After several years of operations, management has become demonstrably successful.

WWF is working together with local communities and relevant authorities, research and conservation groups, as well as with the private sector to develop marine conservation and sustainable fisheries. WWF also supports capacity building in park authorities to monitor fisheries and other economic activities that support adaptive management.

Through participatory patrol and surveillance, blast fishing is practically eradicated and cyanide fishing has been significantly reduced. WWF has facilitated training in identification and monitoring of fish spawning aggregation sites in and near the park. As a result, in 2004, a grouper spawning aggregation site by the park's border was made a no-take zone.

WWF will continue to work through outreach and awareness on sustainable resource use and park management, further strengthen the participatory management approach by supporting appropriate policy and legislation, and help create options and mechanisms that would provide sufficient finances for sustainable park management in the long term.



WWF is working together with stakeholders to strengthen the management of Bunaken National Park.
© WWF-Canon / Soh Koon Chng

Community-based management in Fiji

Parts of the vibrant coral reefs around Fiji's Ono Island have been damaged since many fishing communities have shifted from subsistence living to a cash economy. Local commercial fishers frequently use diving equipment and spear guns, and until recently even poison, to catch fish and earn cash.

Towards the end of 1998, Ono islanders decided it was time to stop the decline of their marine environment. With WWF's help, the villagers have come together to create a community-based management system that makes the most of their customary ownership rights.

WWF is working with the community to identify the best strategies for local resource owners to better manage their reef and increase their capacity to manage income-generating activities. Among the community's options is a return to the traditional practice of reserving a fishing ground to increase a fish population for a traditional ceremony. One village has declared two large lagoons off limits to fishing, diving and other damaging activities. Elders of the community who have watched the changes in fishing methods are already noticing an improvement.

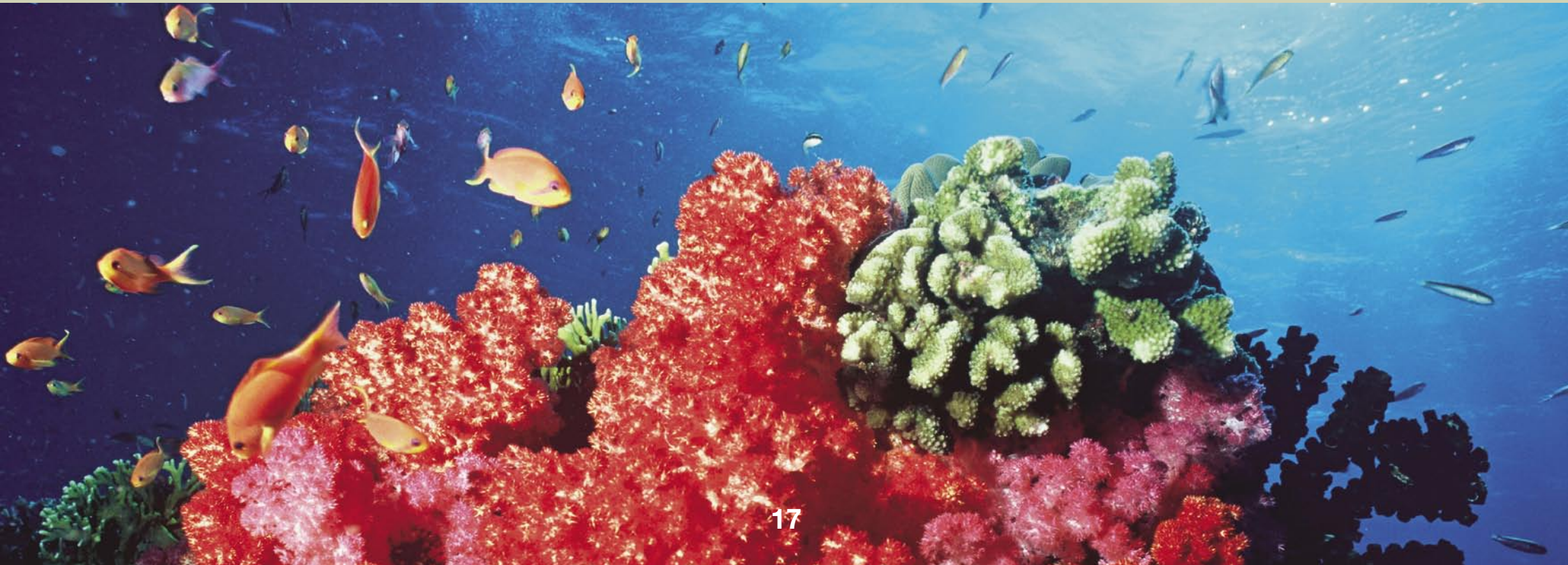


Villagers prepare to drop the anchor for a buoy marking Fiji's first marine protected area.

© WWF-Canon / Meg Gawler

Fiji is famous for its vibrant soft corals.

© WWF-Canon / Cat Holloway



The economics of MPAs

Establishing marine protected areas may initially be costly. One of the potential costs of MPAs to local fishers is that they may need to move further from home to catch fish in legal fishing grounds. In the short term, fishers may need compensation for loss of fishing grounds, until other livelihood options have been secured. Studies show that a global network of MPAs covering 20–30 per cent of the seas would cost between USD 5 and 19 billion to run per year. Such a network would require an increased investment in marine conservation by around two orders of magnitude compared to today.

But in the long run, benefits vastly overrule initial costs. Seen in a global perspective, the cost of a network of MPAs covering 30 per cent of the oceans is estimated at less than global spending on harmful subsidies to fisheries. Such a network would help safeguard and increase 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 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. And it would help coastal communities by generating between 830,000 and 1.1 million full-time jobs in tourism, park monitoring, etc.

“in the long run, benefits vastly overrule initial costs”

MPAs yield many benefits to fishers, local communities and biodiversity, for example:

- Provide alternative incomes for local communities and alleviate poverty
- Increase fish catches in surrounding fishing grounds
- Protect sensitive habitats from disturbances and damage from fishing gear, such as bottom trawls
- Foster natural age structures in populations, increasing fish catches
- Provide refuge for species that cannot survive in areas that continue to be fished
- Prevent bycatch of non-target species
- Eliminate ghost fishing by lost or discarded gear
- Serve as benchmarks of what is an undisturbed, natural ecosystem, that can be used to measure fishery effects in other areas and thereby help to improve fisheries management



Tourism, if managed properly, can provide alternative revenue for local communities in protected areas.
© WWF-Canon / Michel Gunther



Women gleaning after oysters on the reef flats in Bazaruto National Park, Mozambique.
© WWF-Canon / Meg Gawler



Subsistence fishing by locals is allowed within the borders of Mafia Island Marine Park.
© WWF-Canon / Peter Denton

For fish and people

“we need urgent global action”

Fishing is no longer about the lone fisher going out in the morning and coming back with the boat full of fish. As fishing has turned into a multi-million dollar industry and coastal populations are soaring across the world, another scenario has taken over the marine arena. We now need urgent global action to curb the current decline in fisheries and marine health across the oceans.

“everybody benefits from MPAs”

Marine protected areas offer a solution for local fishers and the marine environment. Everybody benefits from MPAs - they give us bigger fish and more, better livelihoods and stable incomes, and a healthy marine environment.

“ensuring a future for fish and people”

By creating networks of MPAs together with the people depending on marine resources and by using the best available science, we can restore the balance of the oceans and ensure a future for fish and people.



Coral reefs are important for coastal livelihoods across the tropics. Through creating MPAs, these treasures can be safeguarded for the future.
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WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
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