The Ecosystem Approach -
protecting marine life in
all its forms

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Defending Our Oceans

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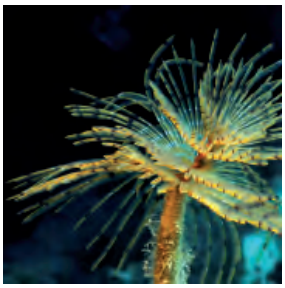

The world's oceans, once thought to contain inexhaustible resources, are under increasing threat. In recent years, scientific study after scientific study has pointed to the fact that human activities and fishing in particular have been putting extreme pressure on marine ecosystems to the point that profound ecosystem changes are being experienced in many parts of the world. In November 2006, an international group of ecologists and economists, led by Professor Boris Worm of Dalhousie University, published a study in Science that brought the extent of this degradation into stark relief. Looking at marine biodiversity on a global scale, the study shows that loss of marine biodiversity is drastically reducing the ocean's ability to produce seafood, resist diseases, filter pollutants and rebound from stresses such as over-fishing and climate change. The team's projection that all commercial and seafood species are on the brink of collapse was shocking enough to make news headlines across the world.

The study however was not all doom and gloom, for it also showed that closing areas to fishing by establishing marine reserves increases the abundance, productivity and diversity of species found in the reserves. This applies to fish species at least as much as it applies to other species, which means that marine reserves boost fish stocks and ultimately the catch per unit effort in waters adjacent to the reserves. This should be a wake-up call to us all. If we take action now, the oceans possess the potential to rebound; if we do nothing, we will witness further fisheries collapses until there is nothing left to fish, except perhaps jellyfish.

The **ecosystem approach** is vital if we are to ensure the health of our oceans for future generations.

The Mediterranean

The Mediterranean Sea reflects the shocking global trends outlined. The close proximity of the many millions of people who live along or visit the Mediterranean coastline across three continents places huge pressure on the marine environment. From overfishing to pollution, it is amongst the most degraded marine ecosystems in the world, to the point where many species and ecosystems are on the brink of collapse. Bluefin tuna stocks are a case in point; once a mainstay of fishermen in the Mediterranean, the stock is now in urgent need of recovery. Mediterranean green turtles, listed as endangered, are one of three turtle species that are threatened by exploitation, fishing, coastal development, shipping and pollution.

It is clear that current management regimes are to blame for the widespread degradation of Mediterranean Sea. It is further widely accepted amongst many policy makers, scientists and others that we must therefore adopt a radical new approach to managing the Mediterranean - one that is precautionary in nature and has protection of the whole marine ecosystem as its primary objective.

So what is the ecosystem approach?

Essentially, the ecosystem approach to the management of activities in the marine environment requires consideration of whole ecosystems at a scale that ensures that ecosystem integrity is maintained. It recognises the complex interactions between species that make up marine ecosystems, and so is underpinned by principles of community biology and ecology. This is radically different from the present situation where most fisheries management measures focus on single species and do not consider the role of the species in the wider ecosystem. Moreover, the various industries that affect the marine environment are currently managed on a sector-by-sector basis so that no consideration is given to their cumulative impacts.

Given the scientific uncertainty and unpredictability of marine ecosystems it is vital that the ecosystem approach is applied in conjunction with a precautionary approach. What this means in practice is that a lack of knowledge does not excuse decision-makers from taking action, but rather that they err on the side of caution. To achieve this, the burden of proof must be placed on those who want to undertake activities, such as fishing or coastal development, to show that these activities will not harm the marine environment before any action is permitted. This will encourage sustainable development and fisheries, while limiting destructive practices.

The objective of applying the ecosystem approach is to ensure that ecosystems are not systematically degraded and that the conditions required for the provision of human needs, future or present, are not undermined. Moreover, the ecosystem approach should focus management action where the control over the impact of the activity is most feasible and effective, i.e. on the human activities that impact the marine environment, rather than attempt to manipulate the way in which an ecosystem is functioning.

Applying the ecosystem approach in practice

In order to implement the ecosystem approach a whole package of management measures need to be introduced, underpinned by **the establishment of networks of large-scale marine reserves**.

Implementation of the ecosystem approach requires a management strategy that:

- goes beyond a single or multi-species approach by considering the ecosystem as a whole;
- is aimed at protecting biodiversity and restoring degraded ecosystems, not least with the aim to improve their resilience to global climate change;
- avoids over-harvesting and ecosystem modifications;
- is based on the precautionary principle - i.e. conservation measures are taken even in the absence of full knowledge of the activities, impacts and ecological responses to these impacts;
- focuses on the 'up-stream' control of human activities, i.e. controlling human activities to minimise and eliminate impacts, rather than focusing on the control of impacts or of ecosystems;
- is robust even in the light of uncertainties and management oversight; and
- can be applied with immediate effect.


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Protected areas plus sustainable management - it's a package deal

While marine reserves are an essential part of the solution to the crisis facing our oceans and intrinsic to the application of the ecosystem approach, human activities in the surrounding waters must also be managed sustainably. Indeed, the effectiveness of marine reserves will depend as much on the management of activities in waters beyond their boundaries as on their designation as protected areas. Among the measures needed to achieve sustainability in the seas outside marine reserves are:

Reduction of fishing overcapacity and effort

The continued expansion of fishing capacity and effort presents an obstacle to achieving equitable and sustainable use of marine resources. Both fishing capacity and effort must be adjusted to a level that the sea can sustain, and subsidies that encourage over-capacity must be eliminated.

Elimination of destructive fishing practices

Fishing practices that clearly fail the test of sustainability must be prohibited. An example is the use of large-scale driftnets, which are indiscriminate and have unacceptably high levels of by-catch and as a result have been banned in some regions such as the Mediterranean. (However it should be noted that this ban has not been properly enforced as yet.) Beam trawling is another highly destructive form of fishing that produces huge levels of bycatch and inflicts widespread damage to bottom habitats across the North Sea.

Elimination of pirate fishing

The management of fisheries is only as good as its enforcement. Illegal, unregulated and unreported (IUU) fishing threatens the global marine environment and the livelihoods of those who fish legitimately. Loopholes in fisheries management, lax attitudes allowing the proliferation of flags of convenience and poor enforcement of regulations must be addressed.

End pollution

Unfortunately our oceans have been used as a dump for all sorts of wastes and many areas are highly polluted from land-based and as well as ship-based sources. Marine pollution comes in many forms, the most familiar being from oil tanker accidents, but these are only a tiny part of the problem. Agricultural runoff from river basins, chemical pollution from industrial plants discharging into the sea from the land, oil from ships washing out their tanks, intentional dumping, mining and the throwing of litter into the sea are all fouling our oceans. Every effort should be made to eliminate the introduction of pollutants into the marine environment and shipping routes need to be devised to take vessels carrying dangerous cargoes away from the most vulnerable areas.

Marine reserves - an essential part of an ecosystem approach

Marine reserves are highly protected areas that are off-limits to all extractive and destructive uses including fishing. Comparable to national parks on land, they are the most powerful tool available for the conservation of ocean wildlife and may also benefit fisheries by promoting recovery and reproduction of exploited species.

Marine reserves also have important benefits for building our scientific understanding of the marine environment. They provide control areas for all direct human disturbances and more natural baselines for measurement of impacts. This enables scientists to obtain data that are less confounded by human activities (e.g. separating natural variation from fishing effects) and acquire a greater understanding of the intrinsic processes of ocean ecosystems. Marine reserves are therefore essential to implementing the ecosystem approach.

Where marine reserves have been designated, they have been shown to result in long-standing and often rapid increases in the abundance, diversity and productivity of marine life, especially of species that were previously exploited. Marine reserves may benefit fisheries by the “spill-over” of animals from inside the reserves, and from the export of eggs and larvae to adjacent marine areas.

In the past, vast tracts of our oceans were inaccessible to industrial fisheries and other extractive activities and so were de facto marine reserves, providing natural refuges for marine species. However today, technological innovations have extended the reach and capacity of these activities so that fishing can take place practically anywhere on the planet, eliminating any refuges that once provided respite to fish populations. So designating 'no-take' areas is key to restoring and maintaining healthy marine ecosystems for the future. Marine reserves are known to promote resilience to overfishing and are important for maintaining the integrity of marine ecosystems in the face of climate change.

Scale and size of marine reserves

In order to ensure sufficient protection across the whole range of marine ecosystems it will be necessary to establish a representative network of fully protected marine reserves. To be effective such networks must, therefore, span large geographic distances and be of sufficient scale to protect against catastrophes and ensure the long-term health and stability of marine ecosystems.

In order to reverse the current decline in the health of our oceans, Greenpeace is calling for 40% of the oceans to be protected by marine reserves.

This figure is firmly based in science. A review (Gell and Roberts 2003) of forty previous studies into what area coverage is required to achieve conservation and fisheries management goals concluded that 20-50% is required. In its 2004 report '*Turning the tide: addressing the impact of fisheries on the marine environment*' the UK's Royal Commission on Environmental Pollution (RCEP) similarly recommended that 30% of the UK's EEZ be designated as no-take zones in order to reverse the trend of declining fish stocks.

Greenpeace's call is also consistent with that of the World Parks Congress, which said “networks should be extensive and include strictly protected areas that amount to at least 20-30% of each habitat.” Meanwhile, the United Nations Millennium Project calls for 10% of the oceans to be covered by Marine Reserves in the short to medium term, with a long-term goal of 30%.

Implementing networks of marine reserves that benefit small-scale and sustainable fisheries will require the full participation of these communities from inception onwards. While Greenpeace envisages the establishment of large-scale marine reserves on the high seas, closer to the coast a patchwork of small reserves will be more effective. This difference in scale not only reflects the difference in scale of habitat distribution but also ensures equitable access to fishing resources to the communities along the coast.

Marine Reserves support fisheries

Apo Island is the oldest marine reserve in the Philippines. Twenty years ago, fishermen there were engaging in destructive fishing practices such as dynamite fishing. Fishing was fast becoming a poor long-term investment and local fishermen noticed their catches were decreasing. Now the marine reserve has been in place for twenty years, locals have seen a marked increase in catch levels. Similar stories are told by fishers near other well-established reserves around the world, such as El Hierro in the Canary Islands, St Soufrière in St Lucia, and the Azores.

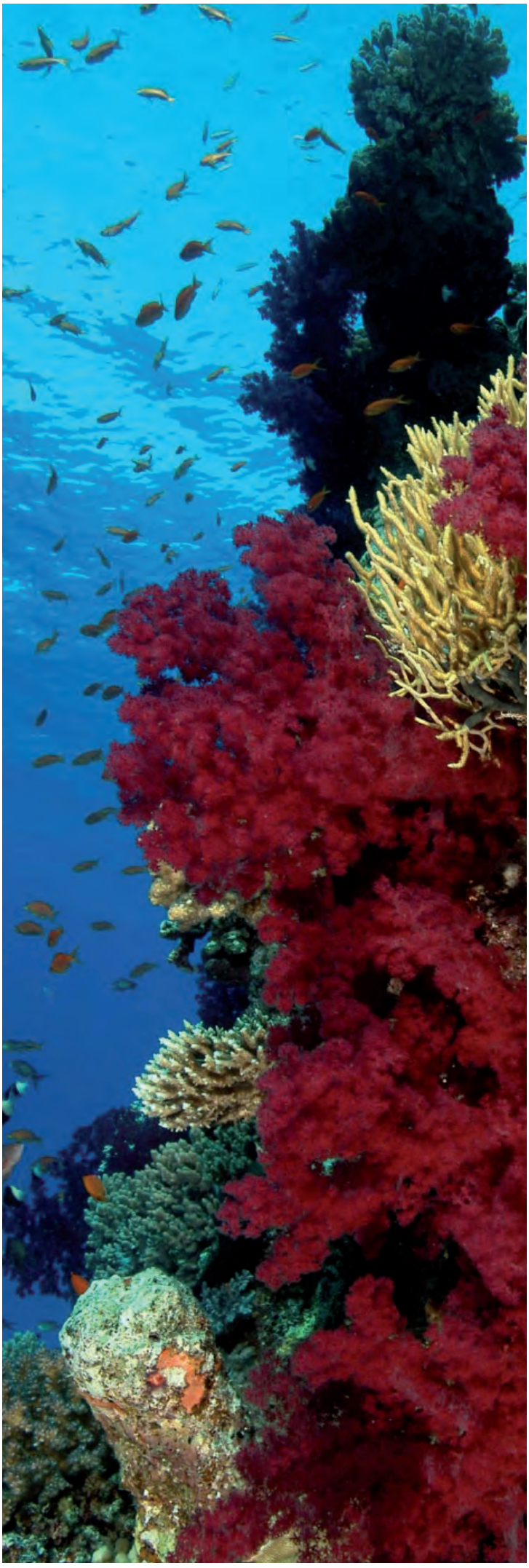
Time for Action

While some countries have introduced protected areas within their own national waters, this is not going to be enough to provide the marine protection required. Countries must work together to identify and designate national, regional and global networks of marine reserves, fully representative of the diversity of ecosystems.

To help with this process, Greenpeace has identified specific areas which should be set aside in regional networks of marine reserves, as well as a proposal for a global set of marine reserves on the high seas. http://oceans.greenpeace.org/en/our-oceans/marine-reserves/roadmap-to-recovery

Now is the time to make these proposals real.

There is no time to waste:
defending our oceans must begin now!



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Greenpeace is an independent global campaigning organisation that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace.

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