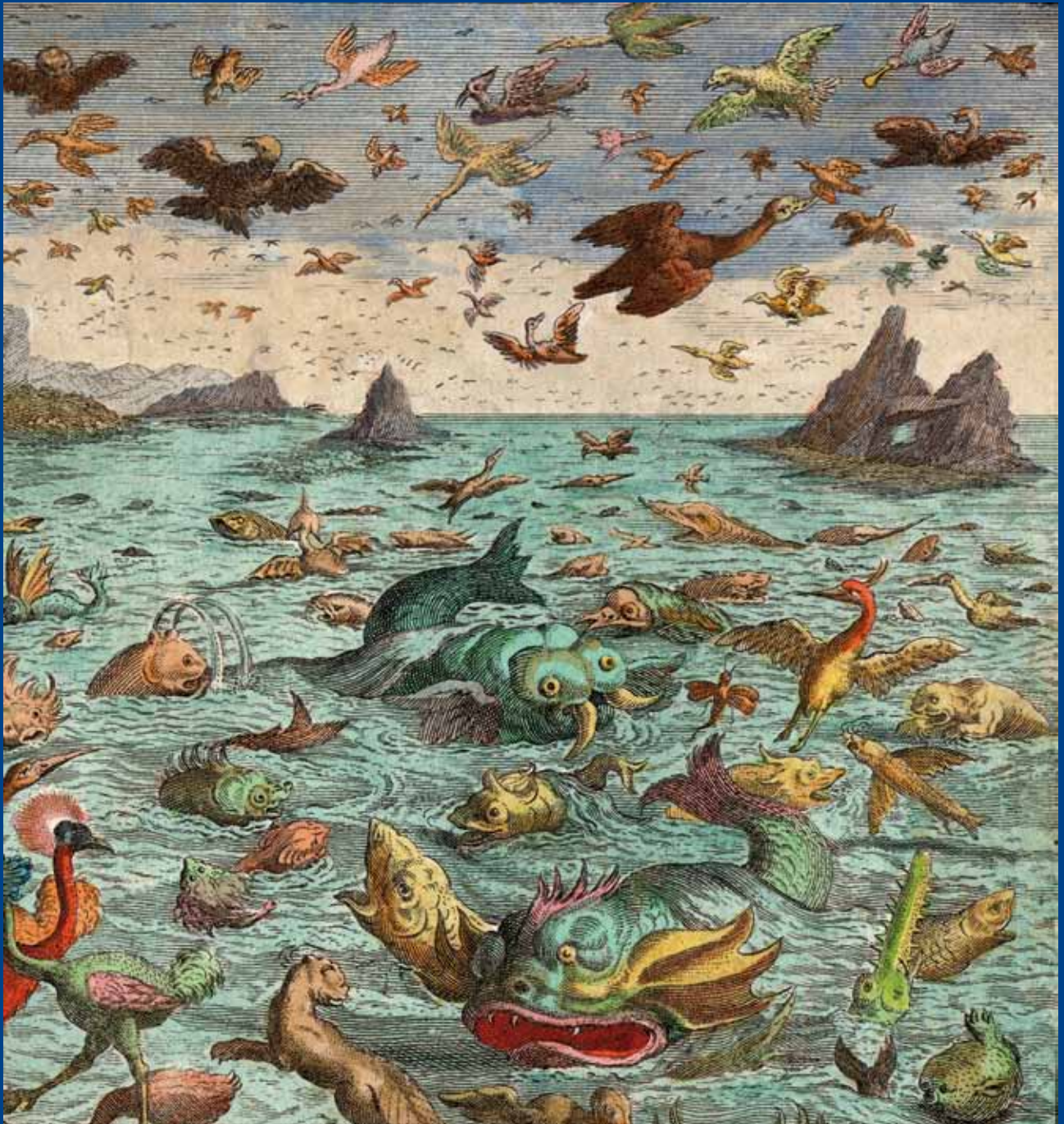
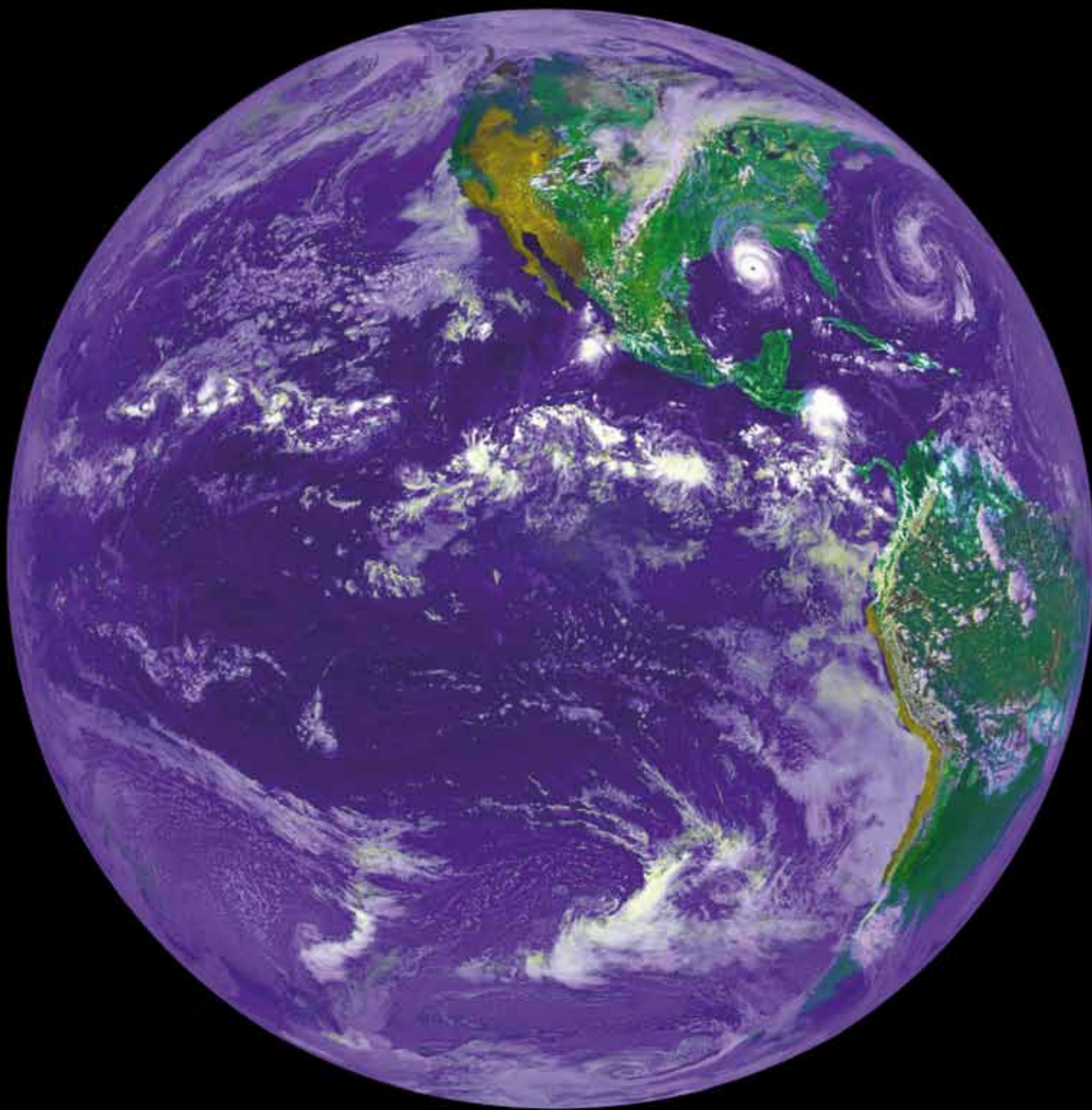


The Ocean Planet



A Proposal for Fundamental
Changes in Marine Management



The Ocean Planet

To see the Earth from space it is a blue planet, a water planet. All life is water based, water driven, and water dependent.

It is difficult to grasp the immensity of the sea. In some parts it is almost 7 miles deep, far deeper than Mount Everest is tall. The sea holds 97 percent of the world's water, covers 71 percent of its surface, and is home to around 80 percent of all plants and animals.

It is also difficult to appreciate the benevolence of the sea, and easy to undervalue its critical role, and how it makes all life on Earth possible. The constant flow of ocean currents distributes heat from the sun around the globe, moderating otherwise extreme temperatures, and regulating the world's climate.

The oceans absorb and store huge amounts of carbon dioxide from the atmosphere, more than all the combined plants and forests on land. Some carbon dioxide dissolves into the seawater directly from the air, and the rest is taken up by billions of tiny plants floating on the surface called phytoplankton. These then release enormous quantities of oxygen back into the atmosphere through the process of photosynthesis.

Life in the sea is abundant and fantastically diverse. It is beautiful, mysterious and misunderstood. It can be breathtaking, frightening, and otherworldly. So vast and bountiful is the sea, it has long been regarded as an inexhaustible and indestructible resource.

The Wealth of Britain's Seas

The seas around the British Isles are among the richest in the world. Colder waters to the north merging with the warmer southern seas, together with a complex underlying geology, have created many different undersea landscapes and marine habitats.

They include cold water coral reefs, sea grass meadows, kelp forests, broad sand and gravel banks, underwater valleys, cliffs and caves, and they range in depth from shallow coasts and estuaries, to the open ocean, over 2000m down to the seabed.

There is as much variety of landscape under the water as there is on land, and the many diverse habitats support a vast treasury of marine life – all colours, shapes and sizes: from micro-organisms like plankton and bacteria, thousands of types of seaweed and algae, fish, invertebrates, and birds, to the celebrated mammals, such as the Bottlenose dolphin and Killer whale. Even the magnificent Fin whale, second only in size to the Blue whale, can be found in UK waters.

The United Kingdom is very much a sea-loving nation. Over centuries seafaring has enabled us to prosper through shipping, international trade and fishing. As an island people, the British have an enduring cultural, and for many a spiritual connection with the sea. Many of us have early memories of messing around in rock pools with a net, or of running along the beach trying to dodge the surf. To stand on the cliff edge and gaze over the sea is a sobering experience, and also a strangely comforting one.

The UK's territorial waters are three times the size of the land. There are an estimated 44,000 recorded species of plants and animals living in the sea and on the coastline – and still more are being discovered. And incredibly, less than 0.001 percent are currently protected by law, in marine reserves. Establishing marine reserves has been proved to be the best way to safeguard the sea and its wildlife. A prime area to be designated a marine reserve, for example, is the Dogger Bank in the North Sea.



The Dogger Bank

The Dogger Bank is a powerhouse of marine life in the North Sea. A huge sandbank of roughly 10,000 square km, it is one of the north Atlantic's most productive spawning and feeding areas. The clear, shallow waters give rise to high levels of year-round phytoplankton, supporting a massive food web, from microscopic fauna and flora, burrowing worms in the sediment, crabs,

flatfish, lobster and starfish on the seabed, to an abundance of fish, including many commercially caught species such as sand eel, herring, whiting, and cod. Mammals there include Harbour porpoise, White-beaked dolphin and Grey seal, while thousands of seabirds (from 24 recorded species), colonise the skies above, among them gannets, storm petrels and fulmars.

Crisis at Sea

Beneath its expansive surface though, the sea is suffering. Decades of ignorance and misuse have resulted in our oceans being seriously damaged and degraded. Precious habitats have been destroyed, fish populations have collapsed and waters are polluted.

Over Fishing

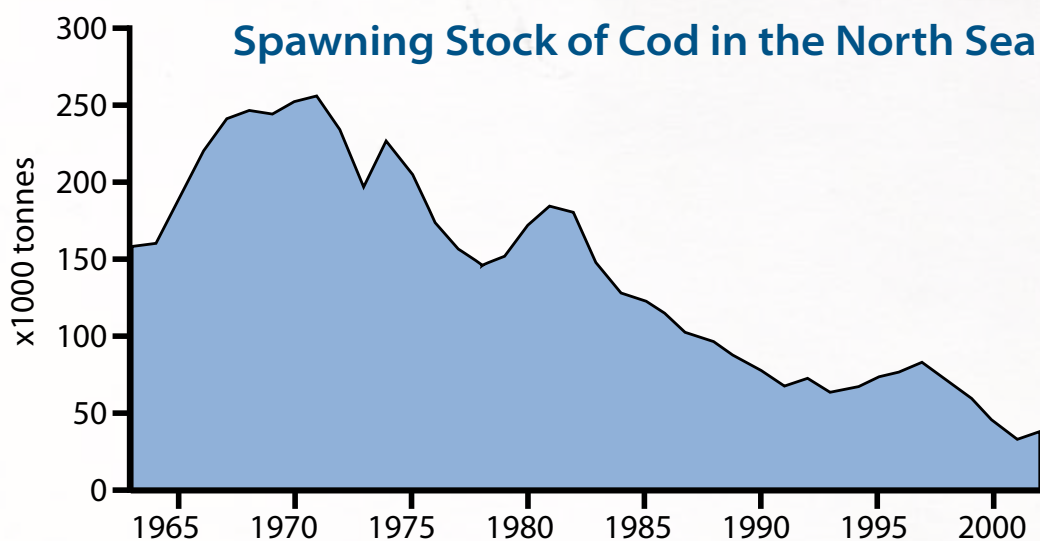
For decades fishing fleets have been very effective at emptying the seas, and now over fishing has left the populations of many species close to collapse. The scientific evidence shows that 88 percent of commercial stocks are being over fished in EU waters, i.e. to a degree where they cannot replenish themselves, and that 30 percent are being fished to a point

where they will become extinct.¹ Tuna were once prolific in UK waters, but were fished out in the 1960s. In 1900 six to eight times more cod were caught in the North Sea than today. And this is despite the technological advances which now allow farther and deeper fishing. Cod stocks were then at least ten times greater than they are now.²

Methods of Fishing

Over the past 50 years the technology of fishing has changed enormously. Large factory ships with all manner of fishing gear, able to stay out at sea for weeks, have replaced the traditional small vessels. They

can take more and more, go further and further, and reach deeper and deeper. And their sophisticated sonar equipment easily locates their target. Powerful mechanical winches haul in the hefty nets, (which in the





The average size of Cod caught in the North Sea in the 1960s relative to the average size caught today

case of drift nets can be a mile long). Nets are huge and indiscriminate, catching and killing everything they encounter, including tonnes of unwanted species, (known as bycatch). Scallop and oyster dredging demolishes delicate seabed habitats, and various types of trawl reach wide areas and great depths of the sea. Trawling has been described as the marine equivalent of clear cutting forests to the ground before we even know what is in them. The most iniquitous of all fishing methods though, could be bottom trawling, where immense weighted nets are dragged across the sea floor, crushing everything in their wake. Habitats which take moments to destroy, may take decades to recover. In the southern North Sea, for example, a vast area of the seabed, thousands of square miles wide, which was crusted with oysters and other species, has been left lifeless by trawling and dredging.

The large, older fish have nearly all been taken. They produce the most eggs, and hence many more offspring and so are vital for maintaining the population. A female cod produces eight times more eggs when she doubles in length. But most of the cod caught today are barely mature, and so are virtually

unable to reproduce. Cod can grow to over 2m long. The average fish caught in the North Sea in the 1960s was 1.52m long, while the average caught today is less than 50cm long.³

Grand Banks

There is no more powerful a cautionary tale of how not to manage the sea than the tragedy of Grand Banks – once the largest cod fishery in the world. Lying off the coast of Newfoundland in Canada the wealth of its fish was legendary and attracted fishermen from far and wide. New super-trawlers came into use in the 1950s, and in 1968 the catch peaked at 810,000 tons of cod. The sheer volume of fish caught and the methods used were destroying whole populations for decades, and despite repeated warnings from scientists, the Canadian government failed to act. Finally, in 1992, the Grand Banks fishery was closed, though it had already collapsed, and had gone beyond a state of recovery. Even today the cod have still not returned.



Bycatch

Bycatch is all that is caught and then discarded, dead or dying, back into the sea, because it is not what the fishermen want. Apart from fish and invertebrates, this waste of life often includes dolphins, seabirds, turtles, and seals. Up to 7000 porpoises are killed each year, for instance. The waste is phenomenal and the slaughter is unjustifiable. For example, for every kilo of Dover sole landed, approximately 6 kilos

of other sea life is caught and thrown away, including many types of fish, crab, sponge and coral. Some of them are rare and slow growing and their numbers may never recover. WWF has estimated that between 40 and 60 percent of all fish caught by North Sea trawlers are discarded, and that every year at least 1 million tonnes of fish and other sea creatures are thrown overboard, just in this region.⁴

Other Causes of Marine Degradation

Other causes of marine degradation include the adverse impacts of the oil and gas industries, and the development of off-shore wind farms. Aggregate dredging too has a devastating effect on shallow, coastal habitats. This is the mining of sand and gravel from the sea floor, largely for use in the construction industry. Both sand and gravel seabeds support rich and varied biological communities and are important spawning and feeding areas for many types of fish, including

commercially caught species. Aggregate sites are often located precisely in these sensitive areas, and intensive and repeated dredging severely damages marine habitats and may destroy them completely, before their value has been recognised.

Pollution

There are many types of pollution at sea. The most well known type is from accidental oil spills such as from the Exxon Valdez and the

Deepwater Horizon rig in the Gulf of Mexico. Damaging as these disasters are, it is the pollutants entering the sea on a regular and daily basis which are worse. Their long-term, cumulative effect is disastrous for the sea. For instance, *eutrophication* (caused by fertilisers running off the land into rivers and into the sea), results in increased nutrient levels in the water and makes algae grow rapidly on the surface, which disrupts the balance of the ecosystem and triggers many problems. When the algae die, their decomposition by bacteria uses up the dissolved oxygen in the water, leaving too little for other marine life. The effect has been described as creating 'dead zones', as the sea and all life within it simply dies. Other forms of pollution include untreated sewage, toxic chemical discharges from industry, waste from nuclear power stations, dumping, ships flushing tanks and emptying waste, and plastic litter.

This is a huge subject, but here is a brief overview of just one area of marine pollution:

The plague of Plastic. Over the past

two decades there has been a massive proliferation in the production of plastic: bottles, food containers, bags, netting, six pack rings, packaging, etc. Plastic pollution is everywhere and vast quantities are found at sea and on the shore. It kills all types of marine life, as they ingest it, are trapped by it, strangled by it, and choke on it. There are 46,000 pieces of plastic per square km floating on the world's oceans, killing an estimated 1 million seabirds and 100,000 marine mammals every year.⁵ Tonnes of tiny granules of plastic, used in the manufacturing process, reach seas and beaches. They harm even the smaller creatures such as barnacles and worms, as they ingest them. Plastics release toxic styrene compounds which contaminate sea life right along the food chain, including the fish we eat. Plastic is virtually permanent. It may take hundreds or even thousands of years to break down. The Great Pacific Garbage Patch is a vast accumulation of plastic debris floating in the Pacific, covering an area twice the size of France.



The Solution

A major change is needed in our attitude towards the sea. European seas urgently need to be rescued, restored and protected.

Marinet is proposing a radical and pioneering strategy for managing our seas, which will restore them to health for present and future generations, and which could also set the precedent for marine management around the world. *This strategy starts with the premise that all the United Kingdom's seas are protected as a marine reserve.*

Any human activity would be strictly controlled and monitored, and those who profit from the sea would have to demonstrate that their activities are non-damaging and sustainable. In this way the present situation would be reversed and the health of the marine environment would take precedence

over commercial interests. The default position of the sea would be switched from exploitation to protection.

Users of the sea such as industry and fishing would become accountable and responsible, and at last respectful of the natural environment. Fishermen would need to be compensated and after 5-10 years they would have a sustainable livelihood, rather than the one they have now, which has no future.

Other management measures are needed, such as regulations on industrial and agricultural pollutants, and on shipping. Changes in fishing techniques, using smaller vessels, and reducing the use and manufacture of plastics are also crucial.

Marine Reserves

Creating marine reserves is the most effective method of protecting habitats and restoring undersea ecosystems to a healthy, productive, and resilient state.

A marine reserve is a protected area of sea where human activities such as fishing, dredging and dumping are either prohibited or severely restricted. Within the reserve, life in the sea is undisturbed, and damaged habitats can recover and flourish.

The establishment of marine reserves creates a 'win-win situation, better conservation and higher profitability for fishermen', (Christopher Costello, University of California).⁶

There are many examples which demonstrate the success of marine reserves around the world. One of the first, known as Goat Island or Leigh Marine Reserve, was created in New Zealand in 1975. Over fishing had left the waters there devoid of wildlife and the seafloor barren. Today, undisturbed for 35 years, the area has completely regenerated and is now teeming with a rich variety of marine life, so plentiful that more than 140,000 people visit each year to experience this unique environment.

Studies show that biomass, which is the volume of life, increases within a reserve by over 440 percent.⁷ All sea life is more numerous and much bigger, and therefore more productive. The undisturbed seabed recovers and provides a safe haven for young

fish and shellfish. And the sea beyond the reserve also benefits with the upsurge of life spilling over its boundary.

The only reserve in England where all fishing is banned is on the east side of Lundy Island, and is less than 4 square km. Since it was set up in 2003, the recovery of sea life has been remarkable. Lobsters particularly have flourished, both in numbers and size, and they are now colonising the waters outside the reserve.

Ecosystems

An ecosystem is a community of plants and animals and the physical environment where they live. It can vary in size, from a small rock pool for example, to an entire forest or ocean. In any case the common feature of an ecosystem, and the key to its success, is the interdependence and complex balance

of the life within it. A healthy ecosystem is biologically diverse, productive, and robust, and it is resilient to change and disturbance such as storms and pollution.

The ecosystem-based approach

An ecosystem-based approach to management recognises the fundamental support processes of nature, and, puts the safeguard of these natural processes first. In simple terms, this means leaving the ecosystems to manage themselves and, instead, managing the human activities which impact upon them. For ultimately we are entirely dependent on sound ecosystems for the food we eat and the very air we breathe. This management approach is central to EU law; the Marine Strategy Framework Directive 2008 requires members to apply an ecosystem-based approach to managing their seas.



Over fishing of one particular species wrecks ecosystems. If a top predator is lost, its disappearance affects other species throughout the food chain. Shark fishing is an example of this, and the ruinous effects can be seen in areas such as the Sea of Cortez in Mexico. Here there has been a massive population explosion of the Humboldt squid, a large and aggressive species, which is wiping out all other fish populations. Similarly in Chesapeake Bay in the United States, the sea is infested with Cownose ray. Both of these ecosystem breakdowns are caused by the insatiable demand for shark fin soup. Once the sharks have been fished out, the squid and the rays are able to flourish, unchecked, and the balance of nature is lost.

The Mediterranean Bluefin tuna is another pivotal top predator. Now it is on the brink of extinction due to ruthless and relentless over fishing. One predicted consequence is the widespread proliferation of squid and jellyfish, which will have a devastating impact throughout the Mediterranean.



Bluefin tuna at Tsukiji Fish Market, Tokyo

The paradox of European legislation governing the sea

The Common Fisheries Policy (CFP) is the European Union's framework for regulating fisheries. Member states are set quotas of fish they can catch. But the CFP has consistently failed in its very purpose to protect fish stocks. This is because governments have continued to put short-term gain before intelligent long-term management. For decades quotas have been set too high, and species such as cod are now on the verge of commercial extinction.

Meanwhile, there is another EU law concerning the sea: the Marine Strategy Framework Directive 2008 (MSFD). Its overriding aim is to achieve 'Good Environmental Status' (that is ecologically

diverse, healthy, and productive seas) in all European seas by 2020. Clearly this would be impossible to achieve with the destructive quotas of the Common Fisheries Policy. Hence, the noble ambition of one EU law is being thwarted by the failings of another.

Therefore, given our complete dependence upon productive ecosystems, and the primacy of law, the best course of action becomes very clear. The only way for the Marine Strategy Framework Directive to achieve its aim, for member states to secure Good Environmental Status in their seas by 2020, is to create marine reserves throughout European waters.

UK Legislation and the Precautionary Principle

The Marine and Coastal Access Act represents a welcome commitment to marine conservation by government. Passed in November 2009, the Act requires a network of marine conservation zones (MCZs) to be established around England, Wales, and Scotland by 2012. Highly Protected Marine Reserves (HPMRs) are areas of the sea where all potentially damaging activity is prohibited; they are recognised as the best method of restoring degraded seas by both the scientific community and by government. And yet the 2009 Act did not include them, thereby seriously weakening the effectiveness of the legislation.

Despite the considerable studies made and data recorded, the undersea world is an alien one to us, and its life and processes are still largely unknown. Therefore it is very difficult, if not impossible, to know where the MCZs should be located, for them to succeed. This is a clear case for applying the precautionary principle, established in international and EU law. It states that scientific uncertainty should not be a reason to delay protecting the environment. In other words: when scientific knowledge is limited, be on the safe side and take protective action wherever possible.

Recently the UK government gave the go-ahead to establish the world's largest marine reserve around the Chagos Islands, a British protectorate in the Indian ocean. The reserve will cover an area twice the size of the UK: 545,000 square km. It will protect habitats rich in biodiversity, such as unspoiled coral reefs which are home to over a thousand species of fish.

Policy makers and legislators have already delayed for too long, in preventing the violation of our oceans, and government needs to take protective action urgently. There is now a precious opportunity to build on the foundation of the Chagos Reserve, to implement pledges made and treaties signed, to rescue vital habitats and failing fish stocks, and for the UK to lead the world in marine management, by being the world's first nation to fully protect all its sovereign seas.

To enable positive change and help to make this proposal a reality, you can contact us by going to the website www.marinet.org.uk. Please open the contact page where our email addresses are available. You will be able to join us in our Marine Reserves and Reform of the Common Fisheries Policy campaigns.

Action you can take:

- Contact and lobby your elected member in the UK and national Parliaments to amend marine legislation in order to establish highly protected marine reserves, which implement the ecosystem approach and the precautionary principle with the ultimate aim of protecting all UK sovereign seas as a marine reserve.

- Contact and lobby your elected member in the European Parliament to press for the Reform of the Common Fisheries Policy to comply with the legal obligations of the EU Marine Strategy Framework Directive, and thus rebuild all commercial fish stocks to historic levels.

- If you are an MP or MEP, contact us and we will provide you with a full Briefing Paper to help you discuss with, and persuade, colleagues to urgently bring about fisheries reform and to legislate for the creation of marine reserves throughout European seas.

For more information on the practical application of this proposal please visit www.marinet.org.uk

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Publisher: Marinet, 2010

*“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has”
- Margaret Mead, (1901-1978)*



School of Snappers, Diego Garcia, Chagos Marine Reserve

With grateful acknowledgement of the assistance of James Attlee, John Gooch, Clare Hartland, Penny Rogers, and Michael Swindells.

And for information from:

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British Seas Montage on page 3; Cuttlefish by Dan Bolt, Short Snouted Seahorse by Fiona Crouch and John Dory and Cuckoo Wrasse by Sue Daly.

Front cover image courtesy of the New Bedford Whaling Museum.



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