



Marine destruction

By Benjamin Hennig

The world's oceans may at times appear like vast undiscovered spaces. More than 70 per cent of the planet's surface is covered with 1.332 billion cubic kilometres of oceanic water. Oceans are crucial to our survival, not only being a critical component of the water cycle, but also because of their role in regulating the global climate and their plentiful resources that are ever more exploited by humanity. Human impact on the world's oceans has, in recent decades, increased considerably and threatens the ecological stability and biodiversity that exists in them. The threat of extinction for marine wildlife is a direct effect of human pressures on the oceans.

The 2010 Census of Marine Life, conducted by 2,700 scientists from over 80 nations, helped build the World Register of Marine Species. This states that 'excluding microbes, approximately 250,000 valid marine species have been formally described in the scientific literature, with an estimate of at least 750,000 more species remaining to be described. [It is] also estimated that more than a billion types of microbes may live in the oceans.'

The census also showed the long history of human impact on some marine habitats, sometimes going back thousands of years. Threats to and extinction of ocean

Figure 1:
Ocean pollution
levels (resized map)

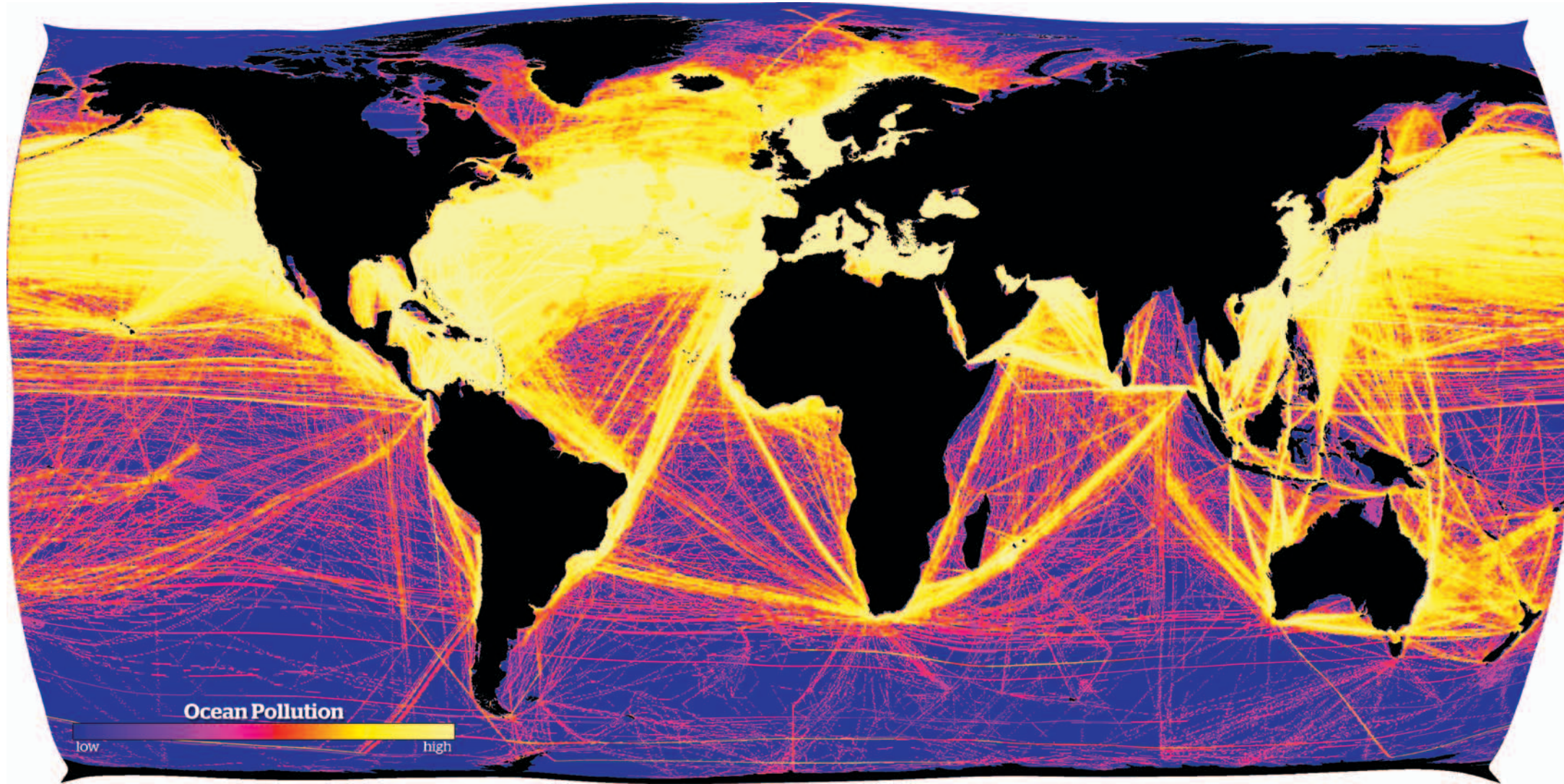


Figure 3 (below): Destructive fishing levels (resized map)

destructive fishing practices highlights how concentrated these activities are in Europe and Asia where the fishing industry plays an important role on a large industrial scale (figure 3).

Combining this picture with ocean-based pollution, it can be seen how these two factors alone considerably affect the oceans that are closest to where large parts of humanity live in the world and where marine extinction will directly affect those livelihoods that are dependent on functioning ecosystems.

Some of the most extreme fishing methods are destroying fish habitats and putting stress on the marine environment

THREAT REDUCTION
Oceans are complex, interconnected systems that need concerted and international efforts in reducing threats to marine habitats. The maps on these pages give an insight into how we transform these spaces that provide a crucial basis for our own survival. To conclude with a quote from the MarineBio Conservation Society, the 'loss of habitats, the spread of disease, pollution, and unsustainable fishing practices are directly related to the actions of humans and recovery from these problems is rarely straightforward.'

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species have to be seen in the context of diverse human activity on these waters. Recent studies try to quantify and better understand these processes. These started monitoring impacts to marine ecosystems at a global level, supporting management efforts that improve the conditions and take action on increasing extinction.

Spatial patterns of marine species extinction are often hard to map, not least because of the complex nature of marine ecosystems. Therefore it requires a closer look at the analysis of human impacts on the ocean areas that directly contribute to marine species extinction. Research by the National Center for Ecological Analysis and Synthesis of the University of California, Santa Barbara started making a global assessment of human impacts on the ocean which shows 'where cumulative impact was greatest and least and which human activities were driving these results.'

The cartograms on these pages look at two central issues that contribute significantly to the destruction of marine ecosystems using data from the aforementioned study: marine pollution and destructive fishing.

MARINE POLLUTION

While 80 per cent of pollution in the oceans is estimated to come from land-based activities, ocean-based pollution has its own distinct geographical patterns.

Figure 2: Ocean pollution levels (standard sized map)

Ocean-based pollution is considerably higher along the world's shipping routes and also considerably higher in the oceans near the most industrialised parts of the world, most notably the North Atlantic and Pacific as well as the Mediterranean. A gridded cartogram projection from these patterns created over the ocean-surface therefore increases these spaces in the map image, while the land areas alongside are squeezed together to give space for the most polluted parts of the map (figure 1). The non-distorted map (figure 2) shows the same data in a more conventional manner, and both serve to highlight the areas where pollution considerably contributes to a transformation of habitats.

DESTRUCTIVE FISHING

The more immediate threat to marine species comes from fishing activities. Global fish stocks are said to be in decline. Fishing methods have become ever more advanced, with the result of some of the most extreme actions destroying fish habitats and putting considerable stress on the marine environment. Destructive fishing practices include bottom trawling, bycatch, the use of poison and explosives and ghost fishing.

They do not only affect the immediate fish species affected by these methods, but often have an effect on entire habitats, such as coral reefs. The cartogram of

