



## Opinion Paper

## From sea sharing to sea sparing – Is there a paradigm shift in ocean management?



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## ABSTRACT

During the past decade, the apocalyptic rhetoric of dwindling ocean resources and the destruction of aquatic habitats in the ocean and along our coasts has motivated conservationist, scientists, international Non Governmental Organisations (NGOs) and several coastal states to advocate the separation of ever increasing ocean and coastal areas as Marine Protected Areas (MPAs) to allow for the restoration of the ocean and its resources. At the same time, and analogue to what is happening with industrial agriculture, large industrial fishing fleets are operating in the Economic Exclusive Zones (EEZ's) of foreign countries, extracting a substantial part of their valuable ocean resources for the world market. The sparing of ocean and shelf areas for both, MPA implementation and Distant Water fishing (DWF) has impacted (positively and negatively) the concerned ecosystems and has often caused use conflicts with local stakeholders. I argue that current ocean use and conservation strategies are favouring these ocean-sparing (“blue grabbing”) measures as necessary means for ocean protection and sea food production over the science-based sustainable fisheries management approach, which is based on participatory fisheries assessment and the inclusion of local stakeholders in the management process. I perceive this change from sea sharing to sea sparing approaches as a paradigm shift in ocean management.

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## 1. Introduction

Following the logic of the “green revolution” after the second world war, many people, governments and multinational companies argue for a further enlargement of areas for industrial agriculture. These are characterized by high technification and fuel consumption coupled with low employment rates, abundant use of fertilisers, pesticides and an increasing use of genetically modified seed etc. Advocates of this group believe that this kind of agriculture is needed to keep up with the worldwide growing demand for food (Clausing, 2013). Since the backside of this high-tech- agriculture are long term damages to the ecosystem (e.g. loss of soil fertility), protected areas are put forward as a compensation measure, within which nature stays greatly untouched from human intervention (Phalan et al., 2013; Sanchez-Azofeifa et al., 2013). This “land sparing” (instead of “sharing” the land with the local stakeholders) has frequently resulted in “land grabbing” by multinational companies (or foreign countries) for intensive crop or biofuel production (Benjaminsen and Bryceson, 2012; Zoomers, 2010;

Clausing, 2013) but also in the creation of large conservation areas (Zoomers, 2010; Leenhardt et al., 2013). As a consequence, many people were forced to leave their homeland and to move to low productive areas, often losing the basis for their livelihoods (Kareiva et al., 2012). I argue that a similar trend of “sea sparing” has become visible in the ocean, especially along tropical coastlines.

When I started to study fisheries biology in the late 1970s, world fishery catches were still growing (besides already visible signs of local overfishing) (FAO, 2012; Pauly et al., 1998) and most fisheries scientists were convinced that a sustainable fisheries management was possible if the science was done correctly and if the scientists find the ears of the managers. Target reference points for healthy fisheries (F<sub>MSY</sub>, F<sub>MEY</sub>, F<sub>01</sub> etc.) were defined, many fisheries were assessed and advice was given for their sustainable management (Caddy and Mahon, 1995; Caddy, 1999; Pascoe et al., 2014).

Today, a large group of conservationists but also of fisheries scientists describe the fisheries situation as being beyond the possibility of sustainable management. Many of those have become advocates for the closure of large ocean and coastal areas from human intervention, which is also proposed by large international conservation organisations such as Greenpeace, WWF, IUCN, PEW but also implemented by several states (see Leenhardt et al., 2013).

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At the same time, and analogue with what is happening with industrial agriculture on land, we observe large industrial fishing fleets operating in the EEZ's of foreign countries. Here they extract a substantial part of the valuable ocean resources for the world market, often with damaging impacts on the ecosystem and to the disadvantage of the host countries (Gagern and van den Berg, 2013; Grynberg, 2003; Petersen, 2003).

So, if my perceptions are correct, the paradigm has shifted from believing in fisheries science, people's rationality and sustainable resource management, to thinking that fisheries research and sustainable management are largely deficient and unable to prevent the collapse of our ocean resources. Instead of attempting to evaluate, manage and share the marine resources with local stakeholders (old paradigm), the advocates of the new group argue that only the separation of huge parts of the ocean for no-take areas may allow for some restoration of the (otherwise emptied out) ocean (new paradigm).

So - before I further analyse this paradigm shift, and reflect on current and possible future approaches for ocean resource management, I try to shine some light on the present situation of the ocean resources. Since narratives about 'overgrazing' are often used to legitimise green (land) grabbing, somewhat similar narratives of 'overfishing' are also used to legitimise "blue grabbing" (Benjaminsen and Bryceson, 2012). As we shall easily see by screening through the literature, opinions diverge greatly and a balanced diagnosis is difficult.

## 2. State of the ocean resources

In a paper published in *Science* (Worm et al., 2006) the authors predicted that all fish stocks would be collapsed by 2048, if current fishing trends continued. This apocalyptic rhetoric found many followers, and the press was full of articles painting a bleak picture for the future of the ocean and its resources. However, numerous critiques soon followed and even the lead author of the above article himself acknowledged only a few years later that the situation was not that bad, and that a substantial stock rebuilding had also been observed in many parts of the ocean (Worm et al., 2009). The *World Ocean review* (2010) states that more than a quarter of the world's fish stocks are now classed as overexploited or depleted, but also acknowledges that some countries such as Australia, New Zealand and the U.S. are now structuring their fishing industries towards sustainability. According to the IUCN (2013) those more optimistic outlooks are misplaced, however, and "70% of world fish populations are overexploited of which 30% have biomass collapsed to less than 10% of unfished levels". Hilborn (2010) who also participated in the global analysis (Worm et al., 2009) specifies that about half of the 30 per cent of the stocks currently classified as overfished would be expected to recover to above overfished thresholds if current fishing pressure continues. He points out that the success in reducing fishing pressure had been achieved by a broad range of traditional fisheries management tools, including catch-and-effort limitation, gear restrictions and temporary closed areas. Interestingly, marine protected areas (MPAs) were an insignificant factor in the success achieved. The author emphasizes, as well as others before (Essington et al., 2009) that the observed declining trophic level of fisheries landings (Pauly et al., 1998) — through fisheries that start with the predators and working their way down the food web — is just as often a result of new fisheries (on lower trophic levels) developing rather than old ones collapsing (Fishing "through" instead of "down" the food web). The often-made statement that the large fish of the oceans were collapsed by 1980 (Meyers and Worm, 2003) was challenged (Hutchings et al., 2010) and it was reported that world tuna stocks in total were well above the level that would produce maximum

sustained yield, with the exception of Bluefin tuna (see also Gagern et al., 2013) and some other billfish that are depleted. A recent analysis of EU fish stocks and fisheries (Cardinale et al., 2013) concluded that actions implemented in the last decade under the EU Common Fisheries Policy (CFP) have led to an improvement in the status of many commercially important fish stocks and their fleets towards levels that are closer to those producing Maximum Sustainable Yield (MSY). In a recent global analysis of the trajectory of world fisheries over the last 100 years (Christensen et al. 2014) a decline of two thirds in the biomass of predatory fish was found, with 54% occurring in the last four decades. This decline is, however, paralleled by a substantial increase in prey fish biomass as a result from predation release. As a result, the trophic structure of marine ecosystems has greatly changed at a global scale.

So, while opinions and perceptions about the state of the ocean still seem to differ, there is a broad consensus that significant fishery-induced changes and collapses of several fish stocks have occurred in the marine ecosystems over the past century. These have led to substantial alterations in fish population sizes and the structure and functioning of ocean food webs. On the positive side, there are examples of stocks that have successfully been rebuilding, when suitable management measures were put in place.

For future generations to continue benefitting from the ocean's services and resources their sustainable management is imperative and the key question of today is, if present practices and trends in ocean and resource management ought to continue or need reorientation.

If we look at this question from a global perspective, we find that two prominent ways of present day ocean sparing - declaring large areas as no take MPAs and the industrially use of large shelf and open ocean areas for Distant Water Fisheries (DWF) — are of utmost relevance here. We need to ask about the pros and cons of these developments and shall have a closer look in the paragraphs that follow.

## 3. Sparing the ocean for marine protected areas (MPAs)

Many advocates of MPAs talk them up as 'win-win'. That is, MPAs are good for both conservation and for fisheries, largely because fish populations can build up within a reserve and then 'spill over' to the surrounding area, where they can be fished. There is a rich and comprehensive literature on the use of MPAs for management, conservation and restoration purposes that includes theoretical-ecological, socio-economic as well as governance issues (Cochrane et al., 2011; Pomeroy et al., 2004; Selig and Bruno, 2010; Ojeda-Martinez et al., 2011; Toropova et al., 2010; Ward et al., 2001 among many others).

One of the targets in the new Convention for Biological Diversity (CBD) strategic plan is to have by 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas protected. These should be areas of particular importance for biodiversity and ecosystem services, should be ecologically representative and well connected and should be integrated into the wider landscape and seascapes. Greenpeace (2006) proposes to go beyond this 10% target and declares that 40% of the Global Ocean should be made to no take areas. During the recent World Parks Congress in Sydney (November 2014), a once-in-a-decade event, it was called to ensure at least 30 per cent of marine-protected areas are made no-take zones by 2030 (see: <http://www.smh.com.au/environment/world-parks-congress-call-to-extend-notake-share-of-marine-protected-areas-20141119-11pyqz.html>).

According to the *World Wildlife Fund* (2013) the vast majority of existing marine parks and reserves suffer from little or no effective management. The projection of annual rate of increase of global marine area protected between 1984 and 2006 into the future

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