MARINE PROTECTED AREAS, A MANAGEMENT TOOL AND NOT AN END IN THEMSELVES.

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CONTENT

1) EXECUTIVE SUMMARY

According to FAO, *any marine geographical area that is afforded greater protection than the surrounding waters for biodiversity conservation or fisheries management purposes will be considered a Marine Protected Area* (MPA).

There are evidences that a well-planed and well-managed MPA protects biodiversity and maintains the ecosystem stability in the area where it applies. There are also different categories of MPAs (IUCN, International Union for Conservation of Nature, has defined 6) according to the type of protection to implement and the great diversity in terms of size.

In 2015, the 193 States of the United Nations confirmed their commitment to conserve at least 10 percent of coastal and marine areas by 2020 (Objective 14.5 of the 2030 Agenda for Sustainable Development). In 2016, a study in the *Conservation Letters* journal positioned in favor of requesting the protection of 30% of the Ocean through MPAs or reserves. Tthis is the position that has been supported by conservationist groups in recent years and approved by the IUCN during the IUCN World Conservation Congress in 2016. There are organizations that even uphold the closure of 50% of the ocean areas to fishing activities.

In June 2017 the study "*Marine reserves can mitigate and promote adaptation to climate change*" was published where different researchers argue that the establishment of MPAs would be a low-tech, cost-effective strategy to combat climate change effects and again would support the high-sea closure or part of it, to fishing activities.

This document explains with regard to the establishment of MPAs based on opinions of some researchers of renowned prestige. The main points are:

a) MPAs must be another resource management tool and not the only alternative.
b) Efforts should be made to find the integration between the objectives pursued by the conservation governance and fisheries management for the sustainability of marine resources.
c) It´s essential to properly assess the costs and benefits from implementing conservation and management measures, including all relevant aspects (biological, economic and social).

2) MPAs AS AN END IN THEMSELVES OR AS A MANAGEMENT TOOL?

The study "*Marine reserves can mitigate and promote adaptation to climate change*" , where different PEW-related researches participated, concludes that MPAs could contribute to climatic resilience. The study deal with 5 aspects related to climate change in which MPAs might be of benefit: ocean acidification, sea-level rise, intensification of storms, shifts in species distribution, and decreased productivity and oxygen availability. So that it becomes a fact MPAs must be large (≥ 100km2), strictly managed in terms of human activities allowed and isolated and well-established (≥ 10 years old).

According to Study leading researchers,, Dr. Callum Roberts and Dr. Bethan O´Leary of the University of York (United Kingdom), their study *demonstrates that to boost the resilience of ecosystems, safeguard their wildlife, protect their capacity to supply vital goods and support fisheries, provide coastal protection and provide clean and healthy water, we must speed up the implementation of effective marine protected areas.*

The authors believe that speeding up the implementation of effective marine protected areas would mean an integrated mitigation and climate change adaption strategy, in line with biodiversity protection and emission reduction objectives.

This study has only reinforced the motion approved by the International Union for Conservation of Nature (IUCN) during its World Conservation Congress 2016, in which the protection of almost 30% of the ocean was proposed. According to conservationists who uphold MPAs, only 3.5% of the ocean is protected and only 1.6% of the ocean is totally protected at present,. In their view these data are insufficient for the resources and ecosystems conservation and far from the 10% established for the year 2020 by United Nations in 2015. Other voices propose to achieve the 50% of protection through MPAs and not to allow fishing in such protected areas.

However there are others scientists relief on researches of international prestige, who do not support the implementation of extreme protection measures based on the establishment of MPAs and the closure of large marine areas. Amongst these researchers, specific mention is made to Jean-Jacques Maguire, Serge Michel García and Ray Hilborn, all of them members of CACT-ARVI, who published an article entitled "When can marine reserves improve fisheries management?" in 2004. In this document the authors highlight the role of marine reserves as a good tool for managing fisheries and for biodiversity conservation, stressinghowever, that they are not the panacea for fisheries management problems.

Hereunder we seek to go in depth into some arguments set out by the researches mentioned above.

RAY HILBORN. SKECTIP ABOUT MPAS

For more in-depth details on this topic Ray Hilborn has published some videos in his YouTube Channel in which he reflects his opinion about marine protected areas.

In one of these videos he explains why he is skeptic about MPAs, basing his arguments on the fact that the threats for the marine biodiversity are the global warming, the ocean acidification, oil spills,

sediments from land, plastics and other contaminants, and illegal fishing. According to him, none of these threats can be solved by marine protected areas because MPAs only protects from regulated fishing. Even if 10%, 30% or 50% of protection areas was reached, this wouldn´t protect the ocean from its main threats.

In the same video he also demonstrates that the establishment of MPAs, aiming at increasing fish abundance, could be counterproductive because, in some cases, while fish abundance increases in those protected areas, outside those areas fish abundance declines.

According to Ray Hilborn, there are two options in respect to the protection of large ocean areas: the protection of large areas where no great fishing activity occurs – so nothing would be changed by protecting them -, or the protection of large fished areas. This would mean that developed countries would have to consume different type of food other than fish (entailing high associated costs to alternative food - livestock) or fish from other poorly managed areas. In addition underdeveloped countries would suffer because of the lack of their source of survival.

He highlights that the problem of overfishing will not be solved through the establishment of large MPAs since overfishing will not disappear, it will move to another area. Concerning to incidental catches or by-catch, the solution would be the implementation of technical measures and the use of selective fishing gear, as well as temporal closures of specific areas : Finally in the case of sensible habitats subject to be damaged, the solution would be to close these areas to the activities that might damage them.

In other video he describes the role that MPAs should play. He said that MPAs must be the bridge between producers and fisheries management as temporary measures applied to managed areas where some specific problems are detected. **MPAs must be an additional fisheries management tool**.

In an article published in the Nature magazine, Hilborn maintains that in order to sustain the seas, supporters of marine protected areas and of fisheries management must work together, not at cross purposes.

He emphasizes the proposal of protecting the 30% of the oceans by means of MPA and its consequences, making it clear that although it seems normal to ensure that the abundance of fish in these areas will increase, it would not be so clear that this happens in the ocean in general (may be the opposite, actually)

The main concern of Ray Hilborn and other researchers that are skeptic about the closure of 30% of ocean through the establishment of MPAs is that fishing pressure will shift elsewhere and higher pressure would concentrate in a smaller area. They rather advocate for closing certain areas to certain fishing gears or limiting the catch of certain species.

Likewise, he stresses that there are other threats to marine biodiversity such as oil exploration and extraction, ocean mining and ocean acidification, which are not addressed and should be taken into account in fisheries management.

In Hilborn's view, there are many other useful tools and legal frameworks designed to reduce overfishing, rebuild fish stocks and protect the biodiversity in the oceans. National and international fisheries agencies have been developing and enforcing these tools for the past two decades.

In fact, overfishing has been reduced during the last decades thanks to the implementation of these management measures. In US waters fish stocks listed as 'overfished' halved between 1997 and 2014 According to European Commission 68% of stocks are within safe biological limits almost doubling its 2003 level (35%).This is also the case in Latin-American countries where management strategies have been implemented (for example Peru, Argentina or Chile). This only confirms that fisheries management work.

According to Hilborn, the solutions should identify and solve specific problems in specific areas in consultation with the different stakeholders involved in those areas.

SERGE GARCÍA. LACK OF STUDIES ON REAL IMPACTS.

On the 13th October 2015 the EBCD (European Bureau for Conservation & Development) held an event on AMP and Fisheries Management where Serge García presented the bio-ecological, socio-ecological and governance effects that MPAs may have depending on a number of factors such as the type of ecosystems, species, MPA type and size, local political and socioeconomic conditions and governance.

Serge showed that the expected bio-ecological positive effects of MPAs on fish stocks, communities and habitats, are usually verified even though they might not be accurately predicted. MPAs could also decrease fishing effort if they were located on key fishing areas, which on the other hand this could cause economic problems.

Socioeconomic effects show an impact beyond the MPA that can be very large and of a very diverse nature. Currently social and economic data are limited consequently the assessment carried out is incomplete. Opportunity costs are not included in the economic impact analyses underestimating their negative economic impact. MPA effectiveness as a fishery management tool depends on the level of control of fishing mortality inside and outside the MPA, hence, the importance of opportunity costs of an MPA, the potential reallocation of fishing effort within and outside the MPA, and fishers' reactions to their activity closure should not be undermined.

According to the presentation of Serge García, researchers further suggest that, **when fishing effort is correctly controlled, MPAs may add little to management of fisheries resources**. If controlling fishing effort is not sufficient, then MPAs could be established as a tool to support fisheries management.

There is a growing pressure to increase the coverage of MPAs even though their effectiveness is being discussed. Possible impacts from the establishment of MPAs need to be addressed and assessed before deciding on introducing or not MPAs.

It is worth to mentioning that the need to convergence fisheries and conservation management is again approached. If we talk about objectives and approaches, fisheries governance aims to develop economically viable fisheries while minimizing the effects on the ecosystem, and conservation governance targets the protection of the ecosystem while minimizing the effects on the economic and social development. Therefore a common objection would make sense.

He concludes that space-based management is unavoidable, advisable and not new to fishers; that local governance and effective participation of fishers are indispensable for both MPAs and fisheries management.

Shortly before, Serge García had participated at the FAO workshop on impacts of marine protected areas on fisheries yield, fishing communities and ecosystems, that was held in Rome from 16th to 18th June 2015.

At that workshop the issue about the differences between conservation objectives and fisheries objectives and the perspectives of MPAs differing between those objectives was also dealt with. Risks and allocations of benefits in environmental and social terms are often viewed differently and such differences currently hinder a more effective integration of both conservation and fisheries management objectives towards MPAs.

MPAs with both types of objectives (conservation and fisheries management) require input from natural and social sciences with clear incorporation of the human dimension. This would require that the different subjects were included in an comprehensive analysis.

Serge García gave a presentation entitled *"Fisheries and MPAs: Considerations on governance"* where he explained the effects that have been summarized in this document. Among these, the following are highlighted:

- MPAs (including NTZs, *no take zones*, where no fishing activity is allowed) could be used as one of the many fishery management tools and adopted after case-by-case comparative costs/benefit analyses;
- The respective performance of MPAs and fisheries governance is interdependent and coherence between the respective policies is vital for both. However, differences in the perception of risk and its allocation between nature and people hamper a tight integration;
- Local governance and effective participation of the actors directly (and indirectly affected) are indispensable to ensure legitimacy and compliance;
- Both fisheries and MPAs need to consider their impact on national poverty reduction and food security policies, and the impacts of existing MPAs on fisheries should be openly assessed to optimize their relations;

- Multi-use MPAs are only one of the space-based management frames and broader cross-sectoral national frames would facilitate integration of conservation and development.

ANTHONY CHARLES ET AL. SUBSISTENCE OF FISHING AS A KEY FOR MPA.

In September 2016 the paper entitled "*Fishing livelihoods as key to marine protected areas: insights from the World Parks Congress (WPC)"* was published in the journal *Aquatic Conservation.* In the conclusions, reference is also made to the need to support the sustainable use of nature and ensure the involvement of local people and communities in decision-making, to achieve the conservation outcomes (co-management).

According to the authors, a sustainable future must be built by the integration of environmental, economic and social considerations (UN Conference on Sustainable Development in 2012 (Rio+20)). The subsequently agreed Sustainable Development Goals confirm this perspective and in particular, Goal 14, referring to the oceans, includes targets spanning the three dimensions of sustainability (UN, 2015).

Likewise, the sustainability of marine environment will depend on ensuring that governance arrangements maintain human use activities, such as fishing, while engaging in additional conservation initiatives, such as MPAs. In such cases, inclusion of the human dimension must be an essential part of any evaluation of the set of management arrangements including MPAs.

They mention that the important role of spatial management systems, including MPAs, as part of the efforts to safeguard our oceans is widely recognized. There are policy-level approaches already available to develop synergies, ones that are mutually supportive of marine conservation (such as through MPAs) and of resource use (i.e. fishing). This will imply the need to reach co-management arrangements, marine spatial planning and the ecosystem approach to fisheries.

There are cases where MPA establishment make fisheries more sustainable and support livelihoods and food security. For that, a suitable context, under appropriate bio-ecological and socio-economic circumstances, should be used, and it should be designed and implemented properly. **These examples tend to be at local level. Attempting to draw conclusions at a global scale could be dangerous.**

the article assumes that in order to better acknowledge all of the environmental, economic and social dimensions of sustainability, a significant departure from current practices used to develop MPAs is required. Protected areas should be developed with human objectives at least as prominent as biodiversity conservation ones. This has several implications among which seeking the 'ideal' MPA with an 'acceptable level of impact' across the entire ecosystem and meshing well with other appropriate management tools is highlighted. It should also be taken into account that a parallel focus on human and biodiversity objectives may well lead to a greater focus on multi-zoned MPAs with nesting of small no-take zones within spatially larger management and planning frames. Moreover, it should be considered that the costs of maintaining ecosystem services is borne locally while the benefits of those services are enjoyed externally, for this reason cost should be borne globally.

Marine Statement of the WPC 2014 highlights the importance of moving to a more comprehensive evaluation of the relative costs and benefits of MPAs. Such a process could be followed at the next WPC to produce a scientifically-presented set of options reflecting the full range of discussions, and including areas both of agreement and of disagreement. In this way, proposals such as the 30% MPA like NTZ (no take zone) would be presented to all participants along with potential costs and benefits (by integrating biodiversity conservation and sustainable fisheries, relating both concepts to livelihoods and food security), plus the uncertainties in both the short and long-term, in such a way as to ensure that this takes into account the impact of the MPA not only within but also beyond its boundaries

3) MPAs. Identifying the possible specific consequences.

In the previous section some authors show the lack of knowledge about the effects of the closure of large areas of the ocean through the establishment of MPA and NTZ. Without the possibility of carrying out any study about this issue by our company, however, based on the currently available data and the sector's opinion, we can state there will be three main effects for the sector and the society:

Loss of employment.

According to FAO report The State of World Fisheries and Aquaculture (SOFIA) 2016, the fisheries and aquaculture sector are an important source of employment and income, supporting the livelihoods of 10 to 12%of the world's population, and almost 60 million people are employed in the primary sector alone and a further 140 million are employed in activities directly dependent on fisheries and aquaculture. Approximately 65% of the employment depends on fishing.

If the high sea or the 30% of fishing areas were closed, the employment would be directly affected for the following reasons:

- Disappearance of most of the fleet that operates in those closed areas.
- Relocation of fleet that operates in high seas to areas closer to the coast, this will result in increased pressure on coastal fleet which would mean the disappearance of some of this fleet.

These economic losses would be a greater impact on regions highly dependent on fisheries both in developed and developing countries.

In Europe there is a long-standing tradition of fishing that is associated to an important cultural heritage, and there are regions which name comes from fishing (Pescara in Italy, Fisherrow in Scotland, Icaria in Grace). There are regions highly dependent on fisheries in Europe as already laid down in the Common Fisheries Policy and in the European Maritime and Fisheries Fund (EMFP) regulation. For this reason, we should not underestimate the needs of these regions which depend on fisheries (for example Brittany in France and Andalusia, Basque Country and Galicia in Spain)

In the case of Galicia, input-output tables for Galician fishing and canning sectors (Mª do Carme García Negro. Tablas input-output de peca-conserva gallegas 2011. Xunta de Galicia) shows that Galician fishing continues to maintain inter-industrial relations of structural nature with 74 branches, out of the 81 representing the entire economy in Galicia, this implies that 91% Galician economic activities depend on marine sector.

ECONOMIC LOSSES.

Economic losses --- would be basically of two types:

- Business losses: when companies are forced to give up their fishing activity. Likewise, the adaptation to another activity implies business expenditures.
- Social losses: losing a job leads to a loss of incomes and this influences families' income at millions of homes, hence the families' purchasing power will diminished.

We suppose that losses would be greater for industrial fishing (in high seas) than for artisanal fishing, but socio-economic impact for artisanal and coastal fishing will be significant as well.

LOSS OF GLOBAL HEALTHY FOOD SUPPLY.

On a hypothetical scenario in which artisanal fleet wasn´t affected by MPA and NTZ, food supply would certainly be affected.

In terms of the importance in number of boats, SOFIA 2016 report provides world fleet data. This report shows that 90% of fishing units belong to Asia (75%) and Africa (15%) and that most of those fishing units are artisanal (about 85%of the motorized fishing vessels in the world are less than 12 m in length overall)

However, according to the report done by Fisheries Centre, University of British Columbia, Canada, in which the global importance of artisanal fleet is analysed using different possible scenarios since data of all countries could not be found, the artisanal fleet represents ¼ to 1/3 of total world fisheries production (other studies where the origin of the data used is not specified, indicate 50%)

On the basis of these data it is deduced that 85% of world fleet is artisanal fleet (with regard to the number of vessels) and that this fleet provides about 25% to 33% of global fish catches. In other words, **artisanal fleet couldn´t provide marine resources supplies for the population all over the world**.

BIODIVERSITY CONSERVATION.

According to conservationists (as already explained in previous sections) it´s expected that the closure of 30% of the ocean (even longer) have a positive impact on the conservation and recuperation of the marine biodiversity, and, although there is not specific studies to support this prediction accurately, there is no reason to believe that this is not so.

However, the question is what will happen with those areas that have not been closed. The answer seems obvious: higher concentration of activities, this would imply depletion of their biodiversity and a difficult sustainability of resources.

4) CONCLUSIONS

After assessing the information provided from scientific organizations and researchers of international prestige, as expressed in this document, and based on the knowledge gained over decades of activity, concludes that:

a) The protection of the ocean and its resources could be reached by different means. With regard to MPAs, we are not against them but think that MPAs should be integrated as another marine management tool, allowing for their temporary use in specific areas. Also, specific species or habitats could be protected by implementing restrictions to those activities involving a hazard for their survival or biodiversity.
b) There is sufficient documentary evidence in scientific literature, as mentioned above, that space-based management is advisable. But local governance and effective participation of those concerned are also indispensable for good functioning of the management measures adopted. Then, the objectives pursued by the conservation governance and fisheries management governance should be integrated to achieve the sustainability of marine resources.
c) Before conservation and management measures are established it´s necessary to assess the cost and benefits of implementing such measures. To do so, we should bear in mind all of the aspects to be considered: biological, economic and social. All these aspects are extremely relevant when making the decision.

For these reasons, the proposal for the protection of 30% of the ocean or the high sea closure to fishing activities should take into account all the negative associated aspects such as: the effect on unprotected areas, where all economic activities would be concentrated, impacts on the economy and employment and last but not least important the effect on fish production worldwide. The decline in fish production would imply a change in the main food source, knowing that livestock production and agriculture have a higher carbon footprint than fishing activity.