REASONS TO ACHIEVE AND MOVE BEYOND MAXIMUM SUSTAINABLE YIELD

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NEED FOR ACTION

European marine ecosystems have the potential to support a high productivity of fish stocks. However due to mismanagement most stocks are overexploited[1] which means that these populations have been harvested over their rebuilding capacity. This trend threatens the future of fisheries by eroding its ecological and economic value. In fact the situation is so dramatic that a number of EU fishing fleet segments are either running losses or returning low profits.

To address this situation there is broad agreement among fisheries scientists that part of the solution is to prioritize the restoration of fish stocks by reducing fishing pressure temporally. Only restoring productivity and reaching good environmental status (GES) of marine ecosystems will result in better revenues for fishers and improving the welfare of fishing communities. A failure to do so will perpetuate unsustainability and delay the efficiency of the EU fisheries.

Oceana believes reaching Maximum Sustainable Yield (MSY) by 2015 is a prerequisite to ensuring that marine fisheries and the fishing sector have a future in Europe. It is also a binding obligation under international law (UNCLOS and 1995 UN Fish Stocks Agreement). The transition from the current decision making process will not be easy but it is urgently needed and well worth the effort. This Common Fisheries Policy (CFP) reform may be the last opportunity to change the current situation.

MAXIMUM SUSTAINABLE YIELD AS THE CORNERSTONE OF MANAGEMENT

The achievement of the Maximum Sustainable Yield (MSY) is one of the most important tool to improve fisheries management. Although this concept has gained wide popularity among policy makers[i], none of whom have questioned its inclusion as an objective in the CFP, its implementation has regrettably been very poor[2].

The idea behind MSY is to move towards a biomass target point and fishing mortality rate that maximize yield while minimizing the impact of fishing on populations, thereby maintaining harvested biomass as high as possible[ii]. Given the current state of EU fisheries, the best way to achieve this objective is through a temporal reduction of fishing pressure[3,iii] which would effectively allow for biomass recovery[4,iv,v]. By reducing fishing pressure, fish stocks will be allowed to recover to levels of spawning biomass that provide abundant resources to fish and satisfactory recruitments to replenish the stock. If in addition size selectivity is increased so as to avoid catching too many juveniles, an even higher increase in potential catches can also be expected.

[1] The current situation, as described by the Commission in the COM (2011) 298, is that 63% and 82% of the managed stocks in the Atlantic and Mediterranean respectively are overfished.
[2] According to Commission communication COM(2011) 298, only 13 Atlantic stocks and 11 Mediterranean stocks are fished at or in transition to MSY by 2015.
[3] Assessment conducted under the auspice of ICES show that it is necessary to divide fishing pressure by 2 or 3, or even more, for the majority of the large demersal European stocks.
[4] Abundance of stocks is expected to be often multiplied to 3 or 4.

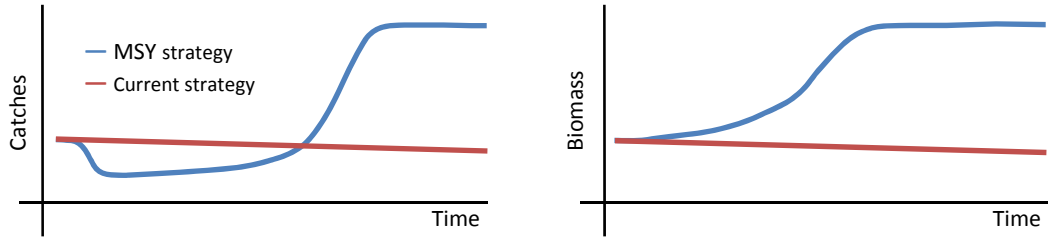

Figure 1. Comparison of catch and biomass scenarios according to management exploitation models.

Once stocks are restored, resource abundance will allow for high and stable catches while applying moderate fishing effort. This will considerably improve the economic profitability of the fishing sector[vi], as the cost of fishing is roughly inversely proportional to stock size, will also reduce the heavy reliance of the sector on subsidies, and the dependence of EU fish markets on imports[5]. If politicians have the will to reduce fishing mortality in the direction of MSY, European stocks and fisheries would undoubtedly be in a much better shape than they are today.

Table 1. Benefits vs. impacts to achieving MSY by 2015.

Benefits		Impacts
Short-term	**Medium-long term**	**Short-term**
Stock recovery	Ending overexploitation	Reduction of catch possibilities
Move towards GES	Increased biomass resilience	Economic and social impacts
	Greater and more stable fishing opportunities	
	Lower fishing exploitation costs per catch unit	
	Increased profitability of the EU fishing sector	

CHALLENGES AND LIMITATIONS TO APPLYING MSY

The achievement of the MSY objective could cause some conflict between ecological and economic-social objectives in the short term, especially when fishing opportunities have to be temporarily reduced[6] in order to rebuild overexploited fish stocks. This transition phase requires strong political will and represents the biggest challenge in how best to reduce fishing pressure while minimizing impacts on the fishing sector.

One of the biggest concerns expressed by scientists on the MSY objective is its applicability to mixed fisheries (which are the most common in the EU), as the concept was introduced in the context of single species fisheries under specific conditions[7]. Problematic points mentioned by scientists include:

- MSY does not take care of the composition of catches and other potential impact of the fishing activity than may be acceptable;
- MSY could lead the depletion of other species that depend on the species harvested at MSY[8,vii,viii]; or
- In mixed fisheries it is not possible to reach MSY simultaneously for all species[9,ix].

[5] According to Commission MEMO/06/268 over 60% of EU fish consumption is covered by imported products.
[6] For several depleted stocks even if fishing were halted they cannot be rebuilt by 2015.
[7] Constant population growth that follows logistic dynamics, no environmental constrains and constant source of food.
[8] Approaching MSY in ecosystems means that most likely some fish species will be driven to depletion for every fishery that includes fishing of at least one trophic level which is directly or indirectly used as food for a higher trophic level. In other words, the application of MSY in many low trophic stocks could lead to depletion of large number of high trophic fish species in most ecosystems.
[9] In mixed fisheries species of lower productivity are progressively depleted as the fishery harvest the most productive species to level of its supposed MSY, so a potential solution is to simply harvest the most productive species below MSY and the less productive (or more vulnerable) species over MSY.

Other concerns include questioning whether MSY actually correspond with maximum economic profitability or social aspects.

However, the aforementioned issues raised by critics and doubters of this concept suggest a misguided understanding of what MSY actually represents, and what role it should play in the path towards better fisheries management. MSY should not be considered as the lone solution but rather as the cornerstone of multiannual management plans, wherein additional measures and instruments ensuring that binding indicators included in the Marine Strategy Framework Directive, such as trophic index or integrity of the seabed, are maintained within the boundaries needed for reaching GES by 2020.

Regardless of its limitations MSY is a desirable goal that should be targeted, as many of these drawbacks are even worse for current reference points used by EU, which are less precautionary than MSY because their target biomass are lower than MSY, and experiences in MSY based policies have been relatively successful to redress the state of stocks in other countries[x].

MSY COMMITMENT BY 2015 AND IMPLICATIONS FOR THE GES

Maintaining or restoring fish populations above levels that are capable of producing MSY is a binding obligation for EU Member States under the United Nations Convention on the Law of the Sea[xi] (UNCLOS) and the agreement for it implementation[xii] (UNFSA). Unlike other fisheries obligations, this commitment also the deadline: under Article 31(a) of the 2002 Johannesburg Plan of Implementation of the World Summit on Sustainable Development, the EU committed to "restoring stocks to levels that can produce MSY (…) for depleted stocks on an urgent basis and where possible not later than 2015."

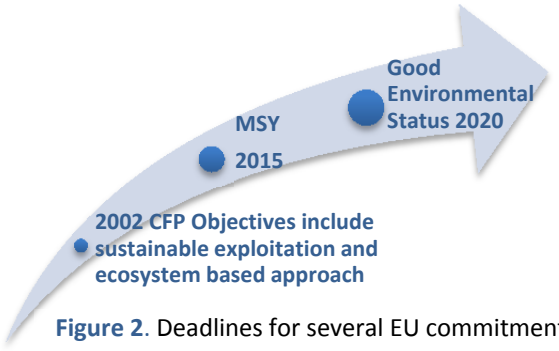

Figure 2. Deadlines for several EU commitments

Reaching MSY by 2015 is also a necessary step towards the implementation of the ecosystem-based approach to fisheries management, as it is absolutely critical to recover target species population biomass and to minimize the ecological impact of fishing activities. Though reaching MSY does not equate to the ecosystem-based approach, it is an essential bridge to reaching GES by 2020 – a binding obligation for the EU.

CONCLUSION & RECOMMENDATIONS FOR THE NEW COMMON FISHERIES POLICY

- Environmental, economic and social sustainability requires productive fish stocks and healthy marine ecosystems.
- Rebuilding biomass stocks over MSY is a required very first step in the right direction to improve the state of the EU fisheries.
- The MSY objective should be achieved before 2015 not only because of the EU's international commitment to do so, but also as a precondition to achieving GES in Europe's waters by 2020.
- MSY should not be considered as an isolated objective, but as the main path to be followed by multiannual management plans and encompassed by the appropriated measures. Due to the limitations in the MSY application more integrated and precautionary reference points will be necessary to develop and implement in the near future of fisheries management.
- The short-term costs or controversies in the implementation of an MSY objective should not be used as a scapegoat by decision makers.

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