Maximum Clarity about Maximum Sustainable Yield

A key debate in the reform of the Common Fisheries Policy is over the proper timetables and abundance targets for restoring European fish stocks to their Maximum Sustainable Yield, or MSY. All agree in principle that we want our fish stocks to recover. But the devil is in the details: How far do we want to go, and how fast can we – or should we aim to -- get there?

The CFP reform debate:

Should our goal be to reduce the rate of fishing (Fmsy) to a level that would be consistent with maintaining healthy fish stocks once they recover?

Or should our goal be to get our fish stocks to that healthy level of abundance or Biomass that would support fishing at that rate indefinitely (Bmsy) by a date certain (either 2015 or 2020)?

Pending proposals from the Commission, Council and Parliament each approach these questions differently, and use the term MSY to mean different things.

EDF undertook an analysis to show what would happen if we chose one or the other of these approaches, given the current state of our stocks, the biological characteristics of the fish, and our current fishing practices.[1]

The key findings:

- Not all EU fish stocks we analyzed could recover by 2015, even if we were to halt all fishing tomorrow.
- All but one of the stocks could recover by 2020, if we set our abundance targets and fishing rates right today
- Many stocks could be restored by 2015, if we set the targets and fishing rates right today
- Setting a fishing rate of Fmsy will not restore all EU stocks by 2015 or 2020; for some stocks it would delay recovery significantly past those dates.

The analysis:

To help decision makers evaluate their options EDF analyzed existing data about the state of stocks and current fishing rates, as well as the stocks' biological characteristics, to find out:

[1] We used the most current year for which ICES data were available, and applied a methodology developed by Froese and Proelss in their 2010 study [insert name/cite]. Because our analysis required use of current fishing mortality rates, which were only available for 44 of the 54 stocks originally analyzed in the 2010 study, we cover only those 44 stocks in this analysis.

+ Which European fish stocks are biologically capable of recovering to a biomass level of Bmsy:

(a) **By 2015?** (Frequently cited because of the EU's commitment under the Johannesburg agreement)

(b) **By 2020?** (Frequently cited because of the Good Environmental Status requirement of the Marine Strategy Framework Directive)

(c) **Within ten years?** (Ten year rebuilding times are used as a benchmark in a number of other countries with successful fisheries)

To do this part of the analysis we assumed that *some* rate of fishing would continue – in other words, we did not assume a fishing rate of zero. We did this because we found that recovery rates were not significantly faster even if fisheries would close entirely, and we assumed that it was politically and socially infeasible to close fisheries completely.

Here is what we found:

Currently Above B_{MSY}	Achieve B_{MSY} by 2015	Achieve B_{MSY} by 2020	Achieve B_{MSY} in 10 years (2022)
8 stocks • 3 herring stocks • 2 horse mackerel stocks • 2 whiting stocks • 1 haddock stock	17 stocks (25 total stocks) • 3 herring stocks • 3 haddock stocks • 3 sole stocks • 2 cod stocks • 1 saithe stock • 1 plaice stocks • 1 megrim stock • 1 mackerel stock • 1 Norway pout stock • 1 sprat stock	18 stocks (43 total stocks) • 3 cod stocks • 3 haddock stocks • 3 sole stocks • 2 herring stocks • 2 plaice stocks • 2 saithe stocks • 1 sardine stock • 1 blue whiting stocks • 1 megrim stock	1 stocks • 1 cod stock

What is striking is that over half of these stocks could indeed be returned to a healthy state in only a few short years if we set ambitious targets; and that nearly all of the others could get there by 2020. It is also important to note that 19 of the 44 stocks we studied are not biologically capable of reaching Bmsy by 2015 – even if we were to halt all fishing. No legislative mandate can change that biological fact.

The next question we posed gets to the heart of the challenge we face: reducing current fishing to reach our desired goals. We analyzed

+ What reductions in current fishing rates would be necessary:

(a) **To bring fishing rates in line with Fmsy?**

(b) **To enable stocks to recover to Bmsy by 2015?**

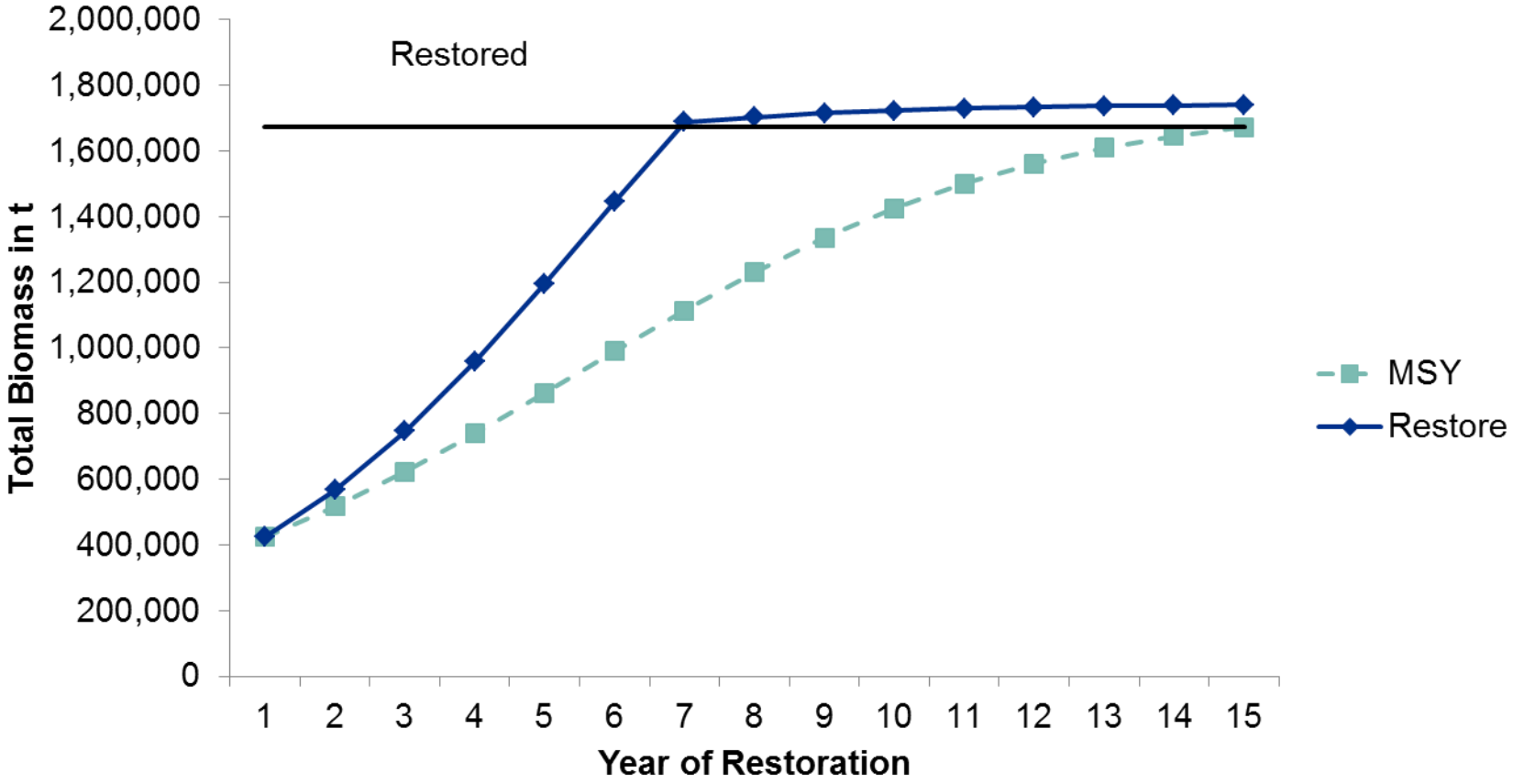
(c) **To enable stocks to recover to Bmsy by 2020?**

Reduction to Achieve F_{MSY}	Reduction to Restore by 2015	Reduction to Restore by 2020
34 stocks require reductions in F • Smallest reduction 2% (herring stock) • Largest reduction 76% (whiting stock) • 4 stocks are stocks that are currently above B_{MSY}	17 stocks • Smallest reduction 22% (mackerel stock) • Largest reduction 94% (saithe stock)	18 stocks • Smallest reduction 22% (megrim stock) • Largest reduction 87% (plaice stock)

What we found is both sobering and encouraging. Sobering in that 34 --over three fourths of the stocks we studied -- are currently being fished at a rate that is not sustainable even for a healthy stock (much less for the 30 out of 34 that are depleted). Some are being significantly overfished today.

Encouraging, because we can plot out a route to recovery for all of the stocks we analyzed that need take no longer than ten years. If we choose to plot out longer timeline for recovery in order to enable fishing communities to weather the transition, this analysis enables us to eliminate the guesswork and create stepwise pathways to recovery that do not compromise on the end goal.

The final key element of our analysis was to look at the use of Fmsy as the central tool to achieve a recovery of our fish stocks.[i] Fisheries scientists view Fmsy as a tool best suited to maintaining a healthy biomass (Bmsy) once a fish stock as already recovered; it is a clumsy means for achieving recovery because there may be little or no relationship between the rate of fishing ultimately sustainable and the rate of fishing needed to recover a fish stock by the dates we have in mind. In the hypothetical example below (using a cod-like composite species) we illustrate how using an Fmsy fishing rate could significantly delay a stock's recovery and the potential profits associated with its recovery – and place the stock at additional risk during the early years when its biomass hovers near the danger zone.



In summary, we need not debate recovery targets or community impacts in a knowledge vacuum. While natural systems can vary, we can still predict quite well how these differing recovery paths will affect our fisheries and our livelihoods on the way to our destination. It is time to use what we know to find a pathway that works.

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[i] The Council's General Approach does this, proposing as an objective that 'exploitation of living marine biological resources restores and maintains populations of harvested species at least at levels which can produce the maximum sustainable yield. This **exploitation rate** shall be achieved by 2015, where possible, and by 2020 for all stocks at the latest.'