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2013

Recovery of European fish stocks and the Reform of the Common Fisheries Policy

Europe's Common Fisheries Policy (CFP) is currently undergoing reform. After 30 years of failed policy, this has become a matter of urgency because European fish stocks and fishermen are suffering badly. A recent study by Philipp Neubauer et al., published in Science[1] clearly shows the urgent need for radical reform

Many fish stocks are in a dire condition – studies show that two out of three European stocks are overfished. But we currently have a narrow window of opportunity to reform Europe's Common Fisheries Policy and to call a halt to overfishing in Europe. In 2002 Europe made a commitment, within the context of the Johannesburg Declaration (World Summit on Sustainable Development), to manage European fish stocks in accordance with the principle of sustainability from 2015 onwards at the latest. The EU must keep this promise and make the recovery of fish stocks a clear and central objective of the CFP basic regulation. Examples from other countries show how good fisheries legislation can end overfishing in the long-term, can contribute to rebuilding stocks and can promote a sustainable fisheries sector. In the USA, for example, the fisheries policy was reformed in 1996 through the Magnuson-Stevens Act. The primary objective of the reform was to rebuild overfished stock as quickly as possible, but at the latest ten years from the start. The latest scientific findings suggest that this goal has largely been achieved. The value of catches in the year 2010 was around 585 million US dollars and thus 92 percent higher (or 54 percent when adjusted for inflation) than before the recovery of the fish stocks[2].

Empty seas – the consequences of overfishing

Our seas are sensitive ecosystems and overfishing is a threat to them. Ninety percent of stocks of all large fish such as tuna, swordfish, shark, cod and halibut have already disappeared. Without healthy fish stocks our ecosystems cannot function well. Additionally, the growing world population, particularly in the developing countries, is dependent on the sustainable use of marine resources. To use the seas in a way that disadvantages developing countries and only heightens global political problems such as poverty, hunger, war and migration.

[1] Neubauer et al. (2013). Resilience and Recovery of Overexploited Marine Populations. Science 340: 347-349
[2] Sewell, B. et al. (2013). Bringing Back the Fish: An Evaluation of U.S. Fisheries Rebuilding Under the Magnuson-Stevens Fishery Conservation and Management Act. Natural Resources Defense Council Report, February 2013.

Overfishing in Europe could have ended ten years ago when the last CFP reform was introduced, but instead the situation has continued to deteriorate. The result of 30-years of failed fisheries policy is that today 47% of some stocks in the Northeast Atlantic and 80 percent of Mediterranean stocks have to be considered as "overfished." Scientific analysis has shown that as a result European fisheries currently catch only about 60 percent of the amount that healthy EU fish stocks could actually produce[3].

The financial consequences of overfishing currently add up to annual losses of between 2.1 and 3 billion euros for the EU[4]. Lower yields have meant substantial loss of income. If overfishing continues, costs will continue to escalate since fishermen will have to work harder in order to achieve a comparable catch. Anticipated shadow interest rates lie between 13 and over 200%, depending on the fish stock and the degree of overfishing[5].

Management based on the sustainability principle (MSY)

In order to achieve healthy fish stocks, the catches of overfished stocks must be reduced so that they can reach a size that enables long-term sustainable fishing with appropriate financial returns. One way to achieve this goal is to manage fisheries using the sustainability principle of the Maximum Sustainable Yield (MSY). It is based on a balance between the stock size (or biomass: B_{MSY}) necessary for the highest possible long-term yield and a high but nevertheless sustainable fish mortality rate (F_{MSY}). The fishing mortality rate (F) is simplified to "catch level" in this paper for the sake of clarity.

Examples from New Zealand show that management based on the MSY approach enables larger catches, higher profits and greater economic security for those employed in the fisheries sector[6] - as well as healthy fish stocks.

Many European fish stocks are currently being fished above F_{MSY} levels even though they are too small in size (their biomass is under B_{MSY} levels) – large catches are being landed despite the low number of individuals in the stocks. Fixing a universally valid catch level at F_{MSY} is not the solution to the problem of ensuring the recovery of European fish stocks. To allow overfished stocks to grow to healthy biomass levels above B_{MSY}, catches should be below F_{MSY} level in the short- to medium-term. The adjustment of catch levels is possible at any time since it happens within the context of fisheries management. These stocks could then grow to a size above B_{MSY} level. In the long-term it would then be possible to achieve the maximum sustainable yield with an annual catch level at F_{MSY}, without harming the stock.

The necessary adjustment of catch levels for recovery differs between stocks. Some fish species recover relatively quickly, because of shorter lifespans and greater levels of offspring as with herring. Other species, such as halibut, need considerably longer because they only reach sexual maturity quite late and do not reproduce as successfully. The state of individual fish stocks is also crucial. The further away a fish stock is from a stock size at the level of "B_{MSY}", the longer recovery takes and the greater the need for temporary restrictions placed on fishing. This stands with contrast to those stocks that can recover quickly and with a relatively slight reduction in catch levels below F_{MSY} (for example, herring).

Results

WWF Germany has evaluated new models as calculated by the scientist Philipp Neubauer et al. that have been produced on the basis of his publication "Resilience and Recovery of Overexploited Marine Populations"[7]. The new model calculations simulate the recovery of 30 commercially important EU fish stocks which have been surveyed by ICES (see Annex). The list of stocks includes both species that recover quickly and ones that recover at a slower pace. All the results presented here refer to stocks with a stock size below B_{MSY} – they are too small to provide the maximum sustainable yield.

[3] Froese, R. et al. (2011). Generic harvest control rules for European Fisheries. Fish and Fisheries 12(3): 340-351

[4] Salz, P. (2012). Socio-Economic Benefits of a bold EU fisheries reform, A discussion paper, Framian BV, Netherlands.

[5] Quaas, M. et al. (2012). Fishing industry borrows from natural capital at high shadow interest rates. Ecological Economics 82: 45-52.

[6] Froese, R. (2011). Fisheriy reform slips through the net. Nature 475: 7.

[7] Neubauer et al. (2013). Resilience and Recovery of Overexploited Marine Populations. Science 340: 347-349

The results of the model predictions show that:

- the longer one waits to reduce the catch level, the longer stocks need to recover and the more imprecise the prediction of when recovery can be achieved.

- if the catch level is only reduced to the level of F_{MSY}, the uncertainty in predicting stock recovery increases exponentially.

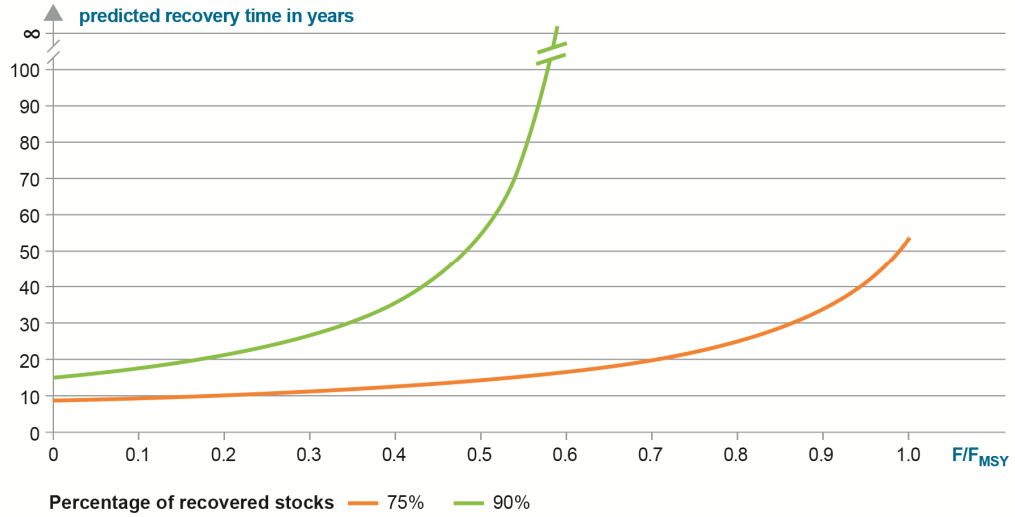

Figure 1: The predicted recovery time in years (at 75% probability of recovery) of 30 EU fish stocks depending on catch levels (Factor F/ F_{MSY}) during the recovery time. The higher the catch level F is in relation to F_{MSY} during the recovery period, the nearer the value of the Factor F/ F_{MSY} is to 1 and the longer and more difficult it is to predict the recovery.

The calculations and their relevance for the CFP reform

Now is the time to reform the policy that is responsible for overfishing in Europe. This is a once in a decade opportunity. At present final negotiations are taking place, but the reform of the Common Fisheries Policy is at risk of failure. Even if the EU institutions agree that the MSY principle should be anchored in the new CFP, they are struggling to agree on the wording of the sustainability objective. The EU Parliament and the Council of Ministers have two different visions on this.

The proposal of the Fisheries Ministers envisages a reduction of catch levels (F) to F_{MSY} by 2015 where possible and by 2020 at the latest for all fish stocks. A catch at the level of F_{MSY} is equivalent to a factor of 1 ($F/F_{MSY} = 1$; see figure 1). If the Council's proposal was implemented it would probably take over a century from the moment F is reduced to F_{MSY} until 90 percent of the stocks have recovered. The later F is reduced to F_{MSY} level, the longer recovery takes and the higher the uncertainty about whether a recovery can be attained. Politicians seem to be striving for a simple solution but there is no panacea for the recovery of all fish stocks in the sense of fixing a universal catch level valid for recovery of all fish stocks. This would continue to expose already overfished stocks to catch levels that are too high and have adverse effects, causing long delays in stock recovery.

The proposal of the European Parliament focuses on the recovery of fish stocks and makes this the basis for decisions in fisheries management. The Parliament plans to adjust catch levels so that stocks can grow to sizes above B_{MSY} level by 2020. The choice of the Factor F/ F_{MSY} is not fixed. Factor Zero means the closure of a fishery, while values close to one signify a catch only minimally below F_{MSY} level. To what extent catch levels must be reduced in order to enable the fastest possible stock recovery is dependent on the degree of overfishing. For fish stocks with a stock size relatively close to B_{MSY}, recovery can be achieved by 2020 with a slight reduction of the catch to levels below F_{MSY}.

If Parliament's proposal was implemented 75 percent of EU stocks could recover within the next 10 years.

Conclusion

The data presented here shows that another delay of a fundamental reform would have fatal consequences for both fish stocks and the fishing sector. Many European fish stocks are currently being fished at levels above F_{MSY}. The adjustment the catch levels (F) can be implemented anytime, even as early as next year when fishing quotas are fixed.

Any delay of the adjustment of catch levels (F) until 2020 would therefore be a conscious decision by politicians to continue overfishing. In the case of extremely overfished stocks, this would even amount to negligence since it would mean that some stocks may not be able to recover. On the basis of the data presented here it would take several decades or even more than a century to allow 75 – 90 percent of fish stocks to recover to stable sizes and to reestablish an economically viable fishing sector in Europe. That could mean the end to fishing activities for several generations of fishermen.

WWF asks for

- all fish stocks must first of all be able to recover to sizes that can produce the maximum sustainable yield, so that in the long term sustainable catches at F_{MSY}-level can be achieved; and

- in order to achieve this goal the new fisheries policy should declare as its main objective that stock recovery is achieved within a defined period of time by setting appropriate catch levels (F). Catch levels (F) must be reduced when the new fisheries policy comes into effect in 2015.

    - Without a defined timeframe, putting an end to overfishing simply remains a declaration of intent, which does not require any actions in order to end overfishing.

    - How much can be fished to restore and maintain stock sizes that deliver the maximum sustainable yield has to be determined on the basis of the state of individual stocks and scientific advice. This is not a political decision, but one based on fisheries biology.

From a fisheries biology perspective and from the data presented here, it is evident what the different MSY objectives mean for the recovery of fish stocks and what has to be done in order to end overfishing.

As described above, an adjustment of catch levels (F) can be implemented anytime when fishing quotas are fixed. The decision as to whether there will be healthy fish stocks and an economically viable fishing sector in the EU in the future is a political one.

Politicians have to decide

- to either allow continued overfishing until 2020 with an uncertain prospect for stock recovery. In this case, the recovery of fish, on which the fishing sector depends, would merely become a possible "side-effect"

- or to make the fastest possible recovery of fish stocks the objective by setting catch levels (F) accordingly as of 2015, in order to achieve maximum sustainable yields in the foreseeable future.

During the already advanced and difficult political negotiations, it has become very clear that some EU Member States have short-term socio-economic concerns with regard to the reduction in catch levels (F), which would be necessary to bring about recovery of overfished stocks within a certain timeframe.

The recovery of European fish stocks is not a short-term, but a long-term goal. No law can bring about an immediate recovery of all EU stocks. However, the new European Fisheries Policy can and must put into law the way forward towards ending overfishing. The EU must not miss this opportunity in view of the ecological crisis of many fish stocks in its waters, the economic crisis in large parts of its fishing sector and its international obligations.

The findings presented here are based on model calculations by Philipp Neubauer, who kindly made them available to WWF Germany.

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