

## *Fish consumption in accordance with ecological status*

*Global overfishing can be considered one of the biggest economic and ecological disasters of the late 20<sup>th</sup> and early 21<sup>st</sup> century. According to a WWF study, overfishing results in a loss of income for fishers of approximately 50 billion euros annually. Most significantly, it threatens the livelihood of billions of people, particularly in developing nations. To raise awareness about protecting fish as a resource, INCOFISH, a project of the EU, has developed a simple tool: the fish ruler.*

According to the most recent report by the FAO (Food and Agriculture Organization of the United Nations) on the status of world fisheries' yields (*The State of World Fisheries and Aquaculture 2006, SOFIA*) more than 50 percent of the world's fish stocks have been so intensively fished that there is no room for further expansion. Furthermore, around 25 percent of the observed stocks were considered to be in a precarious state. This means that the biological stability of virtually three-quarters of commercially significant fish resources worldwide can be considered endangered; stocks that are already being fished to the limit can at any time – especially with the changing environmental and climate conditions – “tip over” into the overfished state.

---

### *“Fishing Down Marine Food Webs”*

---

If stock sizes slip below species-specific safe biological limits, stock recovery is no longer certain even if fully protected. While in its report the FAO suggests that not much has changed about this statistic since the early 1990s (on average around 25 % overexploited and around 50 % fully exploited stocks), in reality the situa-



Photo: Ueberschär

tion has only remained approximately the same because the fishing industry keeps tapping new resources, with the trend toward smaller and smaller species. If the density of large-fish stocks (such as tuna, marlin, swordfish, shark or cod) in the Atlantic from the early 19<sup>th</sup> century is compared with current stocks of these species, only about 10 percent of the original stocks are left. “While these [large migratory fish] represent only a small fraction of the

*Levels of mature fish in the oceans already reached historic lows in 2000. The fish ruler can become an important tool to sensitise fishermen and consumers to be more careful with our fish resources.*

world's fishery resources, they are key indicators of the state of a massive piece of the ocean ecosystem,” noted Ichiro Nomura, FAO Assistant Director-General for Fisheries. In 1998, Pauly et al. put together a pictorial illustration of

---

### **INCOFISH**

---

*INCOFISH: “Integrating Multiple Demands on Coastal Zones with Emphasis on Aquatic Ecosystems and Fisheries”*



INCOFISH, a large-scale EU funded project combines the efforts of 200 researchers from 35 research organisations based in 22 countries, including 15 developing countries. INCOFISH has used powerful new research tools (e.g. large fish databases, interactive maps, and ecosystems modelling) to implement concrete solutions, including the extension of marine protected areas and the promotion of sustainable fish markets and selective fishing activities.

INCOFISH was recently recognised as a “star project” by the EU in Futuris. The 11<sup>th</sup> edition of Futuris was entitled “Giving Fish a Second Chance: International Research Cooperation Restores Ecosystems for Sustainable Fishing” (Futuris Episode 11, 2008: “Fishing for Tomorrow”, [www.mc-medialibrary.com](http://www.mc-medialibrary.com)).

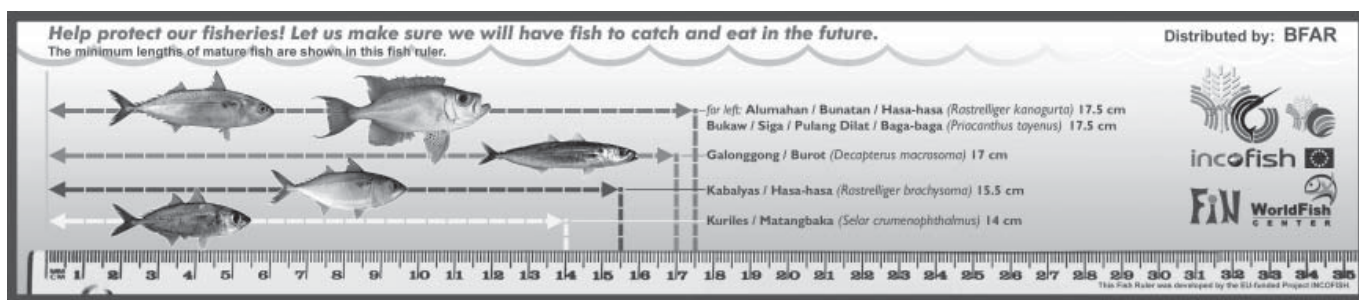
Project Duration: 2005 – 2008

More information: [www.incofish.org](http://www.incofish.org)

---

### **Dr Bernd Ueberschär**

Leibniz Institute for  
Marine Science (IfM-GEOMAR)  
Kiel, Germany  
[bueberschaer@ifm-geomar.de](mailto:bueberschaer@ifm-geomar.de)



Poster of the fish ruler distributed by the Philippine Bureau of Aquatic Resources to fishermen and consumers.

these changes – called “Fishing Down Marine Food Webs” – for an article in the journal *Science* (Daniel Pauly et al., 1998).

## EU fleet threatens West Africa's fisheries

The oceans' seemingly inexhaustible abundance of fish has led to the massive overcapacity of fishing fleets. Together with more efficient fishing techniques this has caused the stocks to shrink even faster. Today large factory trawlers know practically no bounds with regard to the length of fishing trips and in terms of being unaffected by weather conditions at sea. It is estimated that global fishing fleets are three or four times larger than necessary to reach maximum fish yields sustainably. This is only possible because of the massive subsidies for fishing in Europe, among other reasons: the industry is subsidised with around 4 billion euros of tax money annually.

But instead of reducing their capacities, these fishing fleets move to other regions because the stocks in Europe are no longer yielding enough. So the fishing rights belonging to countries in West Africa, such as Senegal, Mauritania and Guinea, are bought with European tax money in order to acquire new fishing grounds for European fishing fleets. But

the licensing fees only amount to a small portion of the value of the actual fish caught and the local fishing industry in these countries benefits little from the license fees paid to the governments. Added to this is illegal fishing, which is next to impossible to prevent due to a lack of suitable monitoring methods. According to detailed studies by Failler and Gascuel (UN Environment Programme), the yields from fishing demersal (near the ocean floor) and pelagic (open-ocean) fish off the African coast from Morocco to Sierra Leone alone shrank by around 25 percent between 1997 and 2006. The pirogues belonging to the approximately 70,000 Senegalese small-scale fishers cannot compete with the highly subsidised EU high-seas fishing fleet. This overfishing has thus led to the demise of the local African fishing industry in many places. Massive waves of emigration occur as a result of the social and economic hardships experienced by the people there; impending collapse of the industry has driven some unemployed West African fishers into the business of illegal migration to Europe.

## Too many juvenile fish netted

The collapse of fisheries is not only the result of taking too many fish; catching younger and younger fish also endangers the stocks. With fish stocks declining, fish are caught at younger and younger stages, often before they have reached sexual maturity. Thus, levels of mature fish in the oceans already reached historic lows in 2000 (CEC 2001, *Green paper on the future of the common fisheries policy*). In addition to an immediate ban on fishing for heavily overfished species, increasing the minimum size of fish caught using the size of the fish at sexual maturity as a guideline is necessary. Furthermore, net mesh sizes that give the juveniles a chance to escape the fishing nets need to be specified. This is why scientists have been appealing to politicians for years to once and for all introduce biologically sustainable catch quotas **and** minimum sizes that enable the fish to at least spawn before landing in a net. But so far the EU fisheries commission has not responded appropriately to this appeal.

*It is high time to ban fishing of overfished species and to give binding guidelines on what size and age of fishes are allowed for further fishing.*

Photo: Ueberschär





## *“Don’t eat the babies”*

To draw attention to this fatal downward spiral and to sensitise consumers to the issue, several years ago scientists from Kiel, Germany, seized on an idea that originated in the Philippines in the early 1990s: the fish ruler. Consumers can use the ruler anywhere fish are sold to determine for themselves whether or not they want to buy fish that has not yet reached sexual maturity. The lengths of sexually mature fish found in a specific marine area are marked on the fish ruler. This way, when consumers are at a market or a fish counter they can determine whether a fish has been able to reproduce before being caught (helping boost the numbers of the species) or whether it was still a juvenile when caught. By boycotting fish that are too small, every fish consumer can actively fight against the overexploitation of fish stocks.

This approach, which has been successful in Europe, is now returning to developing nations as part of the EU INCOFISH project (see Box on page 36). Together with various WWF support sites in the Philippines, the INCOFISH project and the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) have designed a fish ruler marked with the lengths of mature fish for the five most important commercial fish species in the Philippines. The fish ruler, which is called *panukat isda* in the official local lan-

guage, Tagalog, has been distributed in pilot projects to the Philippine people on islands in the Sulu Sea and the South China Sea, and on the Palawan islands. Using the *panukat isda*, fishers are learning, in seminars jointly organised by BFAR, WWF Philippines, the National Fisheries Research and Development Institute (NFRDI) and the WorldFish Center, which net mesh sizes they should use to protect juveniles that are not yet sexually mature. Field staff from the Philippine Bureau of Agricultural Statistics (BAS) are learning how to measure fish with the ruler for statistical purposes. And when consumers buy fish at Philippine markets they can use the *panukat isda* to check if the fish was able to reproduce or not. And now the story of the fish ruler has made its way into a Philippine children’s book, so even the youngest Filipinos can develop an awareness about protecting marine ecosystems.

## *The fish ruler can be used anywhere*

The fish ruler for the Philippines is only one of many that are now being designed – thanks to the INCOFISH project – in different developing nations for the local fish species and circumstances. The data that are needed to design a fish ruler for specific fish species, including the length at which sexual maturity is first reached, can be

## Information and contacts

General information about the INCOFISH project can be obtained from the project coordinator: Dr. Rainer Froese, Leibniz Institute of Marine Sciences, e-mail: [rfroese@ifm-geomar.de](mailto:rfroese@ifm-geomar.de). Specific information, for example help with designing a fish ruler for the fish in your region, can be obtained from our INCOFISH partner in the Philippines (FishBase Information and Research Group, Inc. FIN, Mary Ann P. Bimbao, e-mail: [mpbimbao@yahoo.com](mailto:mpbimbao@yahoo.com)).

found in the FishBase database ([www.fishbase.org](http://www.fishbase.org)) for practically all known fish species. The photos of threatened fish species that are needed to make the ruler can be easily shot at the respective local fish markets.

The fish ruler is a good example of how a simple tool can be used to sensitise many different levels of society in both industrial and developing and emerging nations to the subject of overfishing. Maybe this – pressure from consumers and chain stores on the decision-makers, whether in Brussels or in countries outside of the EU – is the way to ensure that the approximately 2.5 billion people worldwide who have to meet their protein requirements by eating fish will be able to eat fish in the future, too.

*A list of references can be obtained from the author.*

## Zusammenfassung

Unabhängig von der geografischen Region hängt der Lebensunterhalt vieler Menschen direkt oder indirekt von der Fischerei ab. Vom Senegal bis Deutschland, von Spanien bis zu den Philippinen sind aber die Bestände hunderter kommerzieller Fischarten durch Überfischung infolge jahrelanger falscher Fischereipolitik, die sich nicht an der Biologie der Fischbestände orientiert hat, dabei zusammenzubrechen. Damit ist die Lebensgrundlage von Milliarden Menschen, vor allem in den Entwicklungsländern, gefährdet. Der Artikel gibt einen Überblick über die

gegenwärtige Situation der Weltfischerei und zeigt auf, wie mit einfachen Mitteln das Bewusstsein breiter Bevölkerungsschichten für das Thema Überfischung mobilisiert werden kann.

## Resumen

Independientemente de las regiones geográficas, los medios de vida de muchas personas dependen en forma directa o indirecta de la pesca. Sin embargo, desde Senegal hasta Alemania, desde España hasta las Filipinas, la sobrepesca ha mermado las existencias de cientos de especies piscícolas comerciales y

las ha llevado al borde del colapso. La razón para ello reside en las políticas de pesca equivocadas que fueron implementadas durante años, las cuales no se basaban en la biología de las reservas de peces. Ello pone en peligro los medios de vida de miles de millones de personas, sobre todo en los países en desarrollo. El artículo nos da una visión panorámica de la situación actual de la pesca mundial. Asimismo, indica que es posible recurrir a medios sencillos para sensibilizar y movilizar a grandes estamentos de la población respecto del tema de la sobrepesca.