

# Red Herrings

## A Simulation Exercise on Fisheries Decision Making

### Scientists' Briefing

#### **Role of Scientists:**

The main way that the CFP attempts to legislate for the sustainable development of its fisheries is through a quota system that delimits the maximum amount of fish that can be legally landed within a specific time period

The International Council for the Exploration of the Seas (ICES) is the scientific body advising on the state of EU fish stocks, from which fishing quotas are derived.

#### **What Scientists Say:**

Many marine scientists argue that the 50% reductions in total allowable catches (TAC) of cod since 2001 have not gone far enough and they call for a total cod fishing ban.

Ices' Advisory Committee said a zero catch was needed for the next two years for North Sea stocks to reach target levels.

The committee's recommendations will go to European governments, and fishing quotas will be set in December.

Its report for the area which includes the North Sea and eastern English Channel said only a total ban would see stocks rise above the minimum desired level of 70,000 tonnes.

However, it would not be enough to reach the target of 150,000 tonnes agreed by the European Union and Norway in 2005.

Any catches made this year would prolong recovery to the target level, the report warned. It said that the stock had been reduced to a stage where its ability to reproduce itself was impaired, and that it was at or near its lowest observed level.

ICES says: "Our conclusion is that a prerequisite for the success of the plan is an initial boost of the spawning stock biomass.

"To achieve this, Ices advises that there should be no fishing for cod in these areas until the stocks show signs of recovery.

"The first sign of a possible recovery will be seen when a good year class (fish hatched or born in a particular year) is found in research surveys.

"Once a good year class has been seen, it takes about three years before they contribute significantly to the spawning stock biomass.

"From this point it is predicted that following the commission's recovery plan it will take at least a further five years for the stock to recover.

"And some simulations estimate that recovery time could be as high as 12 years.

"There is no way of predicting when the next strong year class will occur. For the North Sea cod, the last one was in 1996."

ICES says the North Sea cod are still below the minimum recommended level of 70,000 tonnes, and recent survey results suggest there will be even fewer young fish than assumed in 2002.

If fishing pressure continues at present high levels, it says, the spawning stock biomass in 2004 is predicted to be 28,800 tonnes, 4,200 tonnes less than estimated last October.

The spawning stock of cod in the Kattegat fell by 71% from the 1970s to the 1990s, to about 10,000 tonnes. Irish Sea cod are still below the minimum recommended level.

Last October estimates suggested the west of Scotland cod spawning stock would be 6,700 tonnes. The present estimate is 2,500 tonnes.

## **How Scientists Make Claims & What They Say About Fishermen's Knowledge :**

Fishermen's 'local knowledge' of the ocean is often said to be, at least partially, tacit or intuitive by which they have a 'feel for the sea' and can 'sniff out the fish'. Such knowledge is clearly disregarded by science which predominantly relies upon quantifiable data sources producing empirical evidence on which rational argument is based.

Scientists use large-scale ransom, trawl surveys to determine the health of stocks, in accordance with the methods of 'universal' form of knowledge. For scientists this universal method actually enhances the accuracy of assessments since scientists replicate *the same* techniques, trawling in *the same* areas year after year to estimate the trend of fish stocks.

Fishermen argue that when scientists survey the ocean's stocks they use 'out of date' trawl equipment that is consequently less effective than their own modern gear. But the scientists again defend this practice *a propos* the scientific method. According to one bureaucrat:

Scientists don't use the latest fishing technology [...] they use the same [gear] year on year, which shows the relative changes in abundance in the same areas, year on year on year (First Secretary UK Permanent Representation to the EU, Fisheries Division).

In this way, scientists attempt to avoid the 'shifting baselines' syndrome that is often attributed to

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fishers who do not acknowledge long-term decline in stocks because they only use the recent past as a frame of reference.

The scientists use the standardised monitoring methods, and they look at long time scales. They look at as many data as are available. So typically they are comparing the situation now with how it might have been in a much better state ten, twenty years ago when there was a much bigger stock. And that's the perspective (relatively long term) they use to give their advice.

Scientists say that fishermen will typically only remember operationally what happened in the last 3 or 4 years. That's what's important, that's what they compare it with. And also the fishing methods are continually improving. At a rate of about 5 per cent per year. [...] So [fishers] see the catch rates holding steady even though we see that the stocks are declining. (EU scientist).

To illustrate, if a relatively long time scale is taken to assess stocks, over, say 40 years, North Sea Cod will be seen to have fallen dramatically. However, in the view of a fishermen working at sea for only the past decade, the problem will not appear as marked.

Related to this syndrome, fishing organisations tended to put more stock by comparatively small variations in fish populations, whereas scientists view these variations as insignificant in terms of long term trends. Hence, it might be tempting for marine scientists to dismiss fishers' accounts of the size and numbers of fish as little more than 'fishy stories'.

As well as having disagreements over temporal-scale variations, fishers and scientists differ over their spatial analyses too. Broad-scale scientific surveys are dispersed widely across the North Sea and do not necessarily sample areas where there are fish concentrations.

However, many scientists explain that since fishers 'follow the fish' using sonar and other fish-finding equipment, they only observe local concentrations, which is why they might infer that stocks are healthy even when scientists are recommending low fishing quotas:

Essentially what the fishermen are asking the scientists to do is to extrapolate from dense areas of cod population where they fish to the rest of the sea. Which would be the equivalent of saying there are 8 million people in London, therefore there are 4 billion people in the UK! (First Secretary UK Permanent Representation to the EU, Fisheries Division).

Fishers naturally target those areas where fish are most likely to be found because where species aggregate it may still be possible to make large catches from concentrations despite low overall stock levels:

It's the usual story that when fish stocks get smaller they concentrate in small areas. So if the fishermen concentrate in the same way as stocks are concentrating, they're going to keep up their fairly high catch rates. So their perception will be that the stock is in reasonably good condition. Whereas, the scientist can see the overall size of the stock getting smaller (EU Scientist).

**Scientists are sceptical of involving fishermen in the scientific process: “Science is supposed to yield objective knowledge, not participatory compromises”.**