

Science for Environment Policy

Study indicates decline in seabed-dwelling fish in the Mediterranean

Using data gathered by satellites, scientists have monitored changes in fishing activity around Italy in the Mediterranean Sea for the period 2007-2010. From this, they developed new ecological indicators that gave a more detailed pattern of fishing activity in the Italian seas. In addition, the new indicators suggest that fish stocks on the seabed around Italy are continuing to decline.

In the EU, fisheries are regulated through the Common Fisheries Policy¹. In 2008, as part of the move to an ecosystem-based approach to fisheries management, the European Commission established the Data Collection Framework² (DCF), for the collection, management and use of data across the whole fisheries system. The data are used by the Commission to support scientific advice related to the CFP, including the assessment of fish stocks.

Since overfishing is a serious concern and protecting [marine ecosystems](#) and fish stocks is a major objective of ecosystem-based management of fisheries, data collected via the DCF plays an important role in this management by, for example, establishing the pattern of fishing activities across space and time. In 2008, a number of ecological indicators were introduced as part of the DCF to monitor the impact of fisheries on marine ecosystems. The ecological indicators could supply information on the state of the ecosystem, pressures affecting the ecosystem and the response of management to changes in the ecosystem.

More than 90% of the commercial European fishing fleet, (i.e. vessels with overall length greater than 12m), is monitored by satellite under the Vessel Monitoring System³ (VMS) to determine their movements. On-board transmitters regularly report the position, speed and direction of the fishing vessel. For this study, the researchers used information gathered from the VMS to identify the fishing grounds for Italian bottom trawlers in seven areas of the Mediterranean Sea for the period 2007 to 2010.

The study also used the data to develop new versions of ecological indicators and compare the performance of these indicators with the current versions. These indicators provide information on the impact of fishing pressures on an ecosystem, including where and when fishing activity occurs.

The current indicators revealed that fishing areas depended strongly on the season, and that there was little variation in fishing patterns during the period 2007-2010. By comparison, the new indicators revealed different patterns of fishing activity, implying that the real area exploited for fishing varied over time and in different ways. In particular, they suggested that the fishing effort (a measure of the amount of fishing) had increased during this time in the Italian seas.

When the new indicators were related to information on the fish actually caught in the area, the study found there had been a decline in fish stocks in the Mediterranean Sea around Italy. The researchers warn that the combination of increased fishing effort and declining fish stock revealed by this study exposes the serious state of bottom-dwelling fish resources in the Italian seas.

The study proposes a new definition of fishing grounds that includes the economic aspects of how fisheries operate. Fishing grounds, according to the researchers, are thus fishing areas which can change in location over time as fishermen change their behaviour to maximise fish catches and minimise their risks and costs. Changes in fishing effort are therefore not only related to the availability of fish, but also to the ability of fishermen to respond to the market price for fish or fuel costs, for example.



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Contact:
Tommaso.Russo@Uniro.ma2.it

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1. See: http://ec.europa.eu/fisheries/cfp/index_en.htm

2. See: <http://datacollection.jrc.ec.europa.eu/>

3. See: http://europa.eu/legislation_summaries/transport/waterborne_transport/l24261_en.htm