

A more realistic picture of Europe's fish numbers

Europe's fishing sector relies on many biological assumptions underlying current fish stock assessment methods. The PANDORA project has created a new online tool that contains assessments and projections of 30 fish species found in Europe's waters, integrating the latest biological knowledge. The new tool will soon be available on the ICES website.

The growth of Europe's fishery sector is at risk because of overfishing and climate change changing productivity and spatial ranges of important fish stocks. Without new knowledge about fish biology and environmental conditions, Europe's fishing industry cannot know how to best fish sustainably or economically responsible.

Using new biological and environmental data, researchers from the PANDORA project were able to revise fisheries reference points by adding more realism to assessment models.

The lead result is the PANDORA's Box of Tools, which provides new assessment modelling and stock projections for 30 European fish stocks.

For example, the tool uses data on environmental drivers such as altered temperatures, sea currents and plankton production. These can affect some fish species more than others, but current stock assessments assume decades-long stability.

Crucially, this data have been collected both by researchers and commercial fishers. "The ocean is big, and the amount of data we can get by conventional data collection is really limited," said project coordinator Stefan Neuenfeldt, a senior researcher at the National Institute of Aquatic Resources in Denmark.

"If we do not collaborate with those people who are on the ocean every day, we don't have the slightest chance of understanding what's going on there no matter what. And that is not only for scientists, of course, but also for decision makers," he said.

The PANDORA project consists of 25 partners (universities, national laboratories, industry and advisory bodies) from nine countries. It started in May 2018 and is finishing its research this month (April 2022).

The toolbox, Neuenfeldt says, is a mix of existing fish stock assessment data & tools and new ones developed by PANDORA. "Every single year during the project, there was at least one innovation in each of these assessments," said Neuenfeldt.

The tool will be made available for fishers, researchers, and the public on the website of the International Council for the Exploration of the Sea (ICES), the world's oldest intergovernmental science organisation.

"ICES is the hub for stock assessment and management," said Neuenfeldt. "ICES has got the official mandate from the European Union to prepare advice on catch options, as well as ecosystem- and fisheries overviews. Putting the Box of Tools on the ICES website is the very best way to make it visible for everybody who's working with fish assessment and ecosystem management in Europe."

The tool also includes apps that simplify these models so that people who do not work in industry or academia can understand the impacts of fisheries and environmental change on our fish stocks.

Modelling and management

The project consisted of two parts: a research part and a management strategy evaluation part.

The research part used laboratory experiments, sampling by the industry and genetics to get a better picture of current and future stock developments and spatial distributions of 30 fish species. Data collected with and by fishermen means there's a lot more information the researchers can use to assess/predict fish stocks. The end result is more accurate information for both the researchers and the fishing industry.

“The idea was to create three-way dialogue between ecologists, economists and the industry – sampling, researching, modeling and evaluating strategy together,” said Neuenfeldt. “That was certainly the vision of the project.” This proved to be highly successful; an original self-sampling program for the Scottish pelagic fleet was extended to include all 22 member vessels.

Alongside gathering new data alongside the project wants advise on how to stabilise the long-term profitability of European fisheries. The management strategy evaluation part uses this new biological data to improve fish stock in European seas. For example, in the Mediterranean Sea the populations of many commercial species are threatened because they are the same size and age. By letting these species become more diverse in age and size, the species-wide populations can be rebuilt.

Europe’s fishing industry

The EU is the [fifth largest fisheries and aquaculture producer](#) worldwide, accounting for about 3.3% of global fisheries and aquaculture production. 80% of this production comes from fisheries and 20% from aquaculture.

The fisheries industry in the EU employed about 160 000 people in 2019. A [2016 study](#) showed that replenishing the continent’s fishing stocks could create around 92000 jobs and boost the EU’s GDP by €4.9 billion each year.

The EU’s Common Fisheries Policy (CFP), promised to end overfishing of all stocks by 2020, though this goal was missed. A [2020 report](#) by the European Environmental Agency showed that the North- East Atlantic Ocean and the Baltic Sea have been showing progress towards achieving this goal but the Mediterranean Sea and the Black Sea remain highly overfished.

Additional resources

Project page on CORDIS website: <https://cordis.europa.eu/project/id/773713>

Project website: [PANDORA \(pandora-fisheries-project.eu\)](http://PANDORA (pandora-fisheries-project.eu))

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