

# Satellite data can help protect bluefin tuna

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A new model developed by scientists of the European Commission's Joint Research Centre (JRC) allows the potential presence of bluefin tuna to be tracked through daily updated maps, helping to protect endangered stocks and fight illegal fishing.

The model, based on [satellite remote sensing](#) data, provides for the first time an overall view of the preferred [bluefin tuna](#) habitats in the Mediterranean Sea, as well as their changes over time. Satellite-based [habitat](#) mapping can help identify more precisely areas to be inspected or to be closed for fisheries and it can also help refine [estimates](#) of fish stocks, thus contributing to a more effective fisheries management. European Commissioner for Research and Innovation, Máire Geoghegan-Quinn, said: "This model will help to ensure sustainable management of bluefin tuna, actively contributing to two of the most pressing challenges for the future: food security and protection of the environment. Another good example of how science and research provide support to European Union policies."

European Commissioner for Maritime Affairs and Fisheries, Maria Damanaki, said "Responsible [fisheries management](#) decisions that ensure the sustainable exploitation of fisheries resources and the availability of fish for future generations worldwide rely on good science. New findings, like the JRC's new model, will help us greatly in our efforts to protect bluefin tuna and fight illegal fishing practices."

The JRC habitat model allows the creation of near real-time maps of feeding and spawning potential bluefin habitats in the Mediterranean

Sea, as well as habitat maps over a decade. The novelty of this model is the use of satellite data on the concentration of chlorophyll on the sea surface, as well as temperature, to track specific oceanographic features, which play a key role on the fish distribution.

The results achieved through the model clearly highlighted that bluefin tuna feeding and spawning is concentrated in some recurrent locations. Areas most frequently chosen for nutrition are on the northern side of the Mediterranean. Reproduction starts in May in the eastern part of the Mediterranean and ends in July in the western part.

However, the results also displayed a strong seasonality in habitat size and locations, as well as high year-to-year variations for the potential spawning habitat depending on regional weather conditions. This variability is key to evaluating the pertinence of Marine Protected Areas (or sensitive areas) for this species.

Bluefin tuna is a commercial fish of high market value which has been strongly overexploited for 15 years, especially in the Mediterranean Sea. The largest stock of adults which reproduce in the [Mediterranean Sea](#) is now at its lowest on record, around 40% of late 1950s' level.

In the past years the International Commission for the Conservation of Atlantic Tunas (ICCAT) has set lower quotas, established a restricted fishing period and recommended measures to enforce fisheries control. However, there is a need to increase the knowledge about spawning grounds for exploring additional management measures.

The implementation of a habitat-guided management could help identify spawning areas to be partially closed to fishing, thus protecting the spawners and ensuring adequate repopulation. Moreover, by restricting authorised fishing areas, control operations can be better targeted to fight illegal fishing, which is estimated to account for more than one-

third of total catches in recent years.

The JRC habitat model can be adapted to other species of commercial interest. Potential habitat maps of [fish](#) at basin scale could help to produce more reliable assessments of [fish stocks](#) and can contribute to the planning of more efficient and sustainable use of limited maritime space.

**More information:** Druon J-N, Fromentin J-M, Aulanier F, Heikkonen J, Vol. 439: 223/240, 2011, [doi: 10.3354/meps09321](https://doi.org/10.3354/meps09321)

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