Using GBIF to forecast climate change impacts on marine resources

Case studies

The three case studies, using data derived from the GBIF and OBIS networks, rely on AquaMaps (www.aquamaps.org), a model-based system for generating large-scale distribution maps based on the known occurrences of organisms in relation to key environmental variables such as temperature, depth and salinity. In addition to present day distribution maps derived from known occurrence data, predicted distributions for 2050 have also been generated using climate forecasts. A general shift polewards of 45-59 km per decade is predicted. 

Example 1: Atlantic cod, Gadus morhua, a commercially important species

The Atlantic cod, Gadus morhua, is a highly commercial and highly vulnerable species. As sea temperatures warm, cod will be driven northwards in the Arctic seas. In general, a shift polewards of 45-59 km per decade is predicted.

Example 2: Narrow-barred Spanish mackerel, Scomberomorus commerson, an invasive species

S. commerson, an Indo-Pacific species, is already colonising the eastern Mediterranean by way of the Suez canal. By 2050, it is predicted to spread further westwards in the Mediterranean.

Example 3: Whale shark, Rhincodon typus, a widely distributed commercial species vulnerable to overfishing

The Whale shark, Rhincodon typus, is a pelagic-oceanic, migratory shark species. The prediction for 2050 indicates a contraction of much of its range.

GBIF makes digital biodiversity data openly and freely available on the Internet for everyone, and endorses both open source software and open data access.

http://www.gbif.org

GBIF provides scientific biodiversity data for decision-making, research endeavours and public use.

http://data.gbif.org

GBIF is a network of data publishers who retain ownership and control of the data they share. Linked datasets provide a more robust representation of biodiversity than any single database.

GBIF provides access to primary biodiversity data held in institutions in developed and developing countries.

GBIF is a dynamic, growing partnership of countries, organisations, institutions and individuals working together to mobilise scientific biodiversity data.

GBIF invites you to download species occurrence data freely and openly from http://data.gbif.org

GBIF invites you to join the GBIF network and share your biodiversity data, as well as participate in developing new tools and services.

GBIF is supporting the formation of the Group on Earth Observations Biodiversity Observation Network (GEO BON)3 to monitor the status and trends of the world’s biological resources by enabling multidisciplinary investigations such as the climate change impact results reported here.

3 http://www.earthobservations.org/geobon.shtml