



Lineage

Summer distribution of blue marlin

1. Electronic databases were used to generate initial maps of species distribution.
 - a. Tuna longline fishing returns: **TLCER**. All records were extracted on 17 July 2003. Data were used to estimate mean annual catch and catch rate (kilograms per hook) in 0.25 degree rectangles. However, the latitudes and longitudes used were for the set start position, and because longline length is often greater than 140 km, the resolution of the data is about 1 degree square.
 - b. Scientific observer records from tuna longline vessels: **I_line** database. All records between 1 October 1992 and 30 September 2002 were extracted on 11 August 2003. Data were used to estimate catch rate (number per 1000 hooks) in 0.25 degree rectangles. However, the latitudes and longitudes used were for the set start position, and because longline length is often greater than 140 km, the resolution of the data is about 1 degree square.
 - c. Recreational fishing database: **rec_data**. All records were extracted on 24 July 2003. Data were used to determine the presence of a species in a variety of statistical reporting areas.
 - d. Museum of New Zealand Te Papa records of this species based on voucher specimens held in their collection were searched for distributional information that added to the distributional ranges determined from other databases.
 - e. Databases of inshore and offshore commercial fishing (**CELR**, **TCEPR**), scientific observer records (**obs**), groomed research trawls (**fish_comm**), Russian trawl surveys (**trawl**) and aerial sightings (**aer_sight**) were not used as they contained no or few records of this species.
2. Literature sources were searched for distributional information that added to the distributional ranges determined from databases.
 - a. Unpublished electronic bibliography of New Zealand fishes compiled by L. J. Paul and held on a NIWA computer.
 - b. Aquatic Sciences and Fisheries Abstracts.
 - c. *New Zealand Professional Fisherman* and *Seafood New Zealand* for 1986–2002.
 - d. *New Zealand Fishing News* for 1998–2002.
 - e. Scientific papers, unpublished reports and university theses available to the expert who prepared the distributional layers.
3. Other sources.
 - a. Nil.
4. Summary

- a. Maps generated from the electronic databases were provided to an expert scientist who integrated this information with other information from the literature, and expert opinion, and produced hand-drawn distributional zones on a template map containing depth contours at 250 m, 500 m, and 1000 m. These maps were then digitised and imported into a GIS software package as layers. The areas of the zones were calculated, and the layers were linked to attribute and metadata files.
- b. The primary sources of distributional data for blue marlin were the TLCER database, recreational data, and literature.
- c. Indo-Pacific blue marlin is found primarily in tropical and subtropical waters of the Pacific and Indian oceans. It is the most tropical billfish species, often found in equatorial waters. The latitudinal range extends to about 41 °S in the western South Pacific Ocean. It is an epipelagic and oceanic species mostly confined to waters warmer than 24 °C. They are not seen close to land except where there is a sharp drop-off. Tagging studies show that blue marlin undergo long north-south migrations. New Zealand blue marlin are part of a Pacific Ocean stock. In New Zealand they are found mostly around the North Island and Kermadec Islands. Most of their time is spent between the surface and 30 m depth, but they occasionally dive briefly to depths of about 200 m.
- d. Blue marlin may be confused with striped marlin or black marlin. It is likely that blue marlin have been recorded as striped marlin, especially in the past.
- e. In summer blue marlin are caught mainly along the east coast of the North Island from north of the Three Kings Islands to East Cape.
- f. Summer, for the purposes of NABIS, is defined as being the months of January, February and March. This definition is based on research regarding the spatial and temporal variability of sea surface temperature in the New Zealand region (Uddstrom and Oien 1999).

5. References

The following sources provided useful information on the distribution of this species. This is not an exhaustive list of all references to the species.

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