



Lineage

Annual distribution of escolar

FD0650_1; FD0651_1; FD0652_1; FD0653_1; FD0654_1

1. Electronic databases were used to generate initial maps of species distribution.
 - a. Commercial fishing returns (larger vessels): **TCEPR** database. All records from 1 October 1989 to 30 September 2005 were extracted on 17 October 2005. Data were used to estimate mean annual catch and catch rate (kilograms per kilometre towed) in 0.25 degree rectangles. Only the top five species caught are reported on these forms so information on the absence of a species is not available.
 - b. Commercial fishing returns (smaller vessels): **CELR** database. All records from 1 October 1989 to 30 June 2003 were extracted on 15–17 July 2003. Data were used to estimate mean annual catch in statistical areas. Information from statistical areas 1–10 was down-weighted because of likely mis-recording of Fishstock instead of statistical area. Only the top five species caught are reported on these forms so information on the absence of a species is not available.
 - c. Scientific observer records from larger vessels: **obs** database. All records from 1 March 1990 to 30 September 2005 and stored in the new data format were extracted on 20 October 2005. Data were used to estimate mean annual catch and catch rate (kilograms per kilometre towed), and proportion of tows that caught the species, in 0.25 degree rectangles. There is a record of escolar catch east of the Chatham Islands, but it is unvalidated and this region is designated unknown.
 - d. Tuna longline fishing returns: **TLCER**. All records were extracted on 17 May 2006. 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. Records on the west coast of the South Island are ignored as these are expected to be mis-identified oilfish.
 - e. Scientific observer records from tuna longline vessels: **L_line** database. All records between 1 October 1992 and 30 September 2005 were extracted on 9 December 2005. 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.
 - f. 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.

- g. Databases of recreational fishing (**rec_data**), aerial sightings (**aer_sight**), research trawls (**fish_comm**) and Russian trawl surveys (**trawl**) were not used as they contained no records of this species, or the number of records was too small to provide useful additional distributional information.

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 escolar were TLCER and I_line databases.
- c. Escolar are widely distributed in tropical and temperate seas of the world. Adults are found mainly from lat 40 °S to 40 °N. Their distribution in New Zealand is mostly confined to the North Island and waters north of New Zealand, but escolar have been recorded in northern waters of the South Island and east of the Chatham Islands. The known depth range for escolar is from the surface to approximately 300 m.
- d. Escolar are often confused with oilfish, which are often landed as 'escolar' by fishers. Rudderfish are sometimes confused with escolar as well. Oilfish are more widely distributed around New Zealand and are found further south, on the west coast of the South Island, than escolar. Fish recorded as escolar on the west coast of the South Island on TLCER forms are probably oilfish and these were ignored.

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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- Bailey, K.; Williams, P.G.; Itano, D. (1996). By-catch and discards in Western Pacific tuna fisheries: a review of SPC data holdings and literature. *Oceanic Fisheries Programme Technical Report 34*. 171 p.
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