



Lineage

Annual distribution of butterfish lineage

FD0580_1; FD0581_1; FD0582_1, FD0583_1; FD0584_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. Records of butterfish from offshore waters around the South Island, and the Auckland Islands shelf, are considered invalid, and mis-codings for some other species (possibly *Seriolella* spp., Family Centrolophidae, known in other parts of the world as butterfish). Butterfish are shallow water, rocky shore fish, seldom if ever caught by trawl.
 - 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. Although information from this source is rather generalised, the absence of reported butterfish catches from statistical areas 34 (Westland) and 42–47 (west Northland) agrees with other limited information from these areas.
 - 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. A few records of butterfish from deep water localities around New Zealand are mis-codings, possibly of *Seriolella* spp., and were ignored.
 - 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 or confirmed the distributional ranges determined from other databases.
 - e. Databases of research bottom trawl records (**fish_comm**, **trawl**), commercial tuna longline catches (**TLCER**), recreational fishing records (**rec_data**), observer records from tuna longlines (**I_line**), and aerial sightings (**aer_sight**) 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 butterfish were the CELR database, Museum of New Zealand records, and published accounts of butterfish.
 - c. Butterfish are endemic to New Zealand (Gomon and Paxton 1985). They do not occur at Tasman Sea islands, and are replaced at the Three Kings Islands by the related species *Odax cyanoallix*. They occur around most of the New Zealand coast from North Cape to the Snares Islands, and at the Chatham Islands. Their presence on the high energy mid-Westland coastline is probable but not confirmed, and they might be present in small numbers at isolated rocky coast localities along the west Auckland and west Northland coast, where the habitat is predominantly sandy shores. The known depth range of butterfish is 0–20 m.
 - d. Some records of butterfish from Australia are considered unreliable (Gomon and Paxton 1985).

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.

Ayling, [A.M.]; Cox, G.J. (1984). Collins guide to the sea fishes of New Zealand. Collins, Auckland. 343 p.

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- Paul, L.J. (2000). New Zealand Fishes. Identification, natural history and fisheries. Reed Books, Auckland. 253 p.
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- Ritchie, L.D. (1969). Aspects of the biology of the butterfish *Coridodax pullus* (Forster). Unpublished M.Sc. Thesis, Victoria University of Wellington. 145 p.
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