



Lineage

Annual distribution of black flounder

FD0250_1; FD0251_1; FD0252_1; FD0253_1; FD0254_1

1. Electronic databases were used to generate initial maps of species distribution.
 - a. Museum of New Zealand Te Papa records of this species based on voucher specimens held in their collection were searched for distributional information.
 - b. All other databases examined were not used as they contained no records of this species (**fish_comm**, **TCEPR**, **CELR**, **TLCER**, **rec_data**, **I_line**, **aer_sight**), or contained records from offshore locations that suggest probable mis-identifications or mis-codings (**trawl**, **obs**); black flounder has an inshore distribution and largely inhabits fresh or brackish water.
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 - a. Unpublished electronic bibliography of New Zealand fishes compiled by L. J. Paul and held on a NIWA computer.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 - e. Scientific papers, unpublished reports and university theses available to the expert who prepared the distributional layers.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. Online NIWA Atlas of New Zealand Freshwater Fishes.
4. Summary
 - a. An expert scientist integrated all available information, 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 source of distributional data for black flounder was the online NIWA Atlas of New Zealand Freshwater Fishes.
 - c. Black flounder are endemic to New Zealand and are common in the tidal reaches of many rivers and estuarine areas around much of the North and South islands. When the river gradient is not too steep, they may travel more than 100 km upstream in some rivers (NIWA 2003). They are also occasionally found in coastal waters to about 50 m depth (Ayling and Cox 1984, Paul 2000). Black flounder

have not been reported from the northern North Island, Fiordland, or Stewart Island. However, they do not respond well to electric fishing techniques used to sample freshwater fish, and Northland's waterways have not been well studied (R. McDowall, NIWA, pers comm.). Black flounders are unlikely to occur in much of Fiordland, due to the very steep gradient of many of the waterways and the lack of suitable habitat (R. McDowall, pers comm.).

- d. Black flounder have been recorded as occurring in Te Whanga Lagoon, Chatham Islands (Young, 1929, Roberts 1991). However, Young's identification appears to have been based on Hutton (1874) who provided an illustration and description of an aberrant ('left-eyed') greenback flounder, *Rhombosolea tapirina*, but referred to an earlier paper (Hutton 1873) in which he incorrectly identified a black flounder as a greenback flounder. This record is therefore likely to be a greenback flounder, or an incorrectly identified sand flounder (*R. plebeia*).
- e. Hot spots of black flounder are reported as being Lake Ellesmere (Canterbury) and Lake Onoke (Wairarapa) (Ayling & Cox 1984). The known depth range of black flounder is from above sea level in rivers to about 50 m depth in coastal waters.

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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- Eldon, G.A.; Kelly, G.R. (1985). Fishes of the Waimakariri River Estuary. Fisheries Environmental Report No. 56. Fisheries Research Division, New Zealand Ministry of Agriculture and Fisheries, Christchurch. 59 p.
- Francis, M.P. (1979). Checklist of the marine fishes of Kaikoura, New Zealand. *Mauri Ora* 7: 63–71.
- Gorman, T.B.S. (1960). Preliminary report on flatfish: Lake Ellesmere. New Zealand Marine Department Special Report. Unpublished report, held in the MAF Fisheries Greta Point library, Wellington. 26 p.
- Hardy, C.J. (1989). Fish habitats, fish, and fisheries of the Ellesmere catchment. *New Zealand Fisheries Freshwater Report* 104.
- Hicks, B.J. (1993). Investigation of the fish and fisheries of the Lake Wairarapa wetlands. New Zealand Fisheries Miscellaneous Report 126. 77 p.
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