

The NABIS logo features the word "NABIS" in a bold, blue, sans-serif font. To the right of the text is a stylized graphic of a magnifying glass with a black handle and a silver rim, focusing on a small map of New Zealand. The background of the logo is a light green and white map of New Zealand.

To view this as a map and **many** more go to:

www.nabis.govt.nz
web mapping tool

Type the map name into: Search for a **map layer** or **place**

Lineage – Scientific methodology

Annual distribution of porae

1. Electronic databases were used to generate initial maps of species distribution.
 - a. Commercial trawl fishing returns: **TCEPR** and **TCE** forms. All records from 1 October 1989 to 30 September 2008 were extracted on 4 August 2009. Data were used to estimate mean annual catch and catch rate (kilograms per kilometre towed) in 0.25 degree rectangles. Only the top five or eight species respectively are reported on these forms so information on the absence of a species is not available. Many of the records of porae (species code POR) from this database are highly suspect, and almost certainly confused with those for porbeagle shark (species code POS). The main concentration of records from the north-east coast (Cape Reinga to East Cape) and Ninety Mile Beach are probably correct, some of the records extending south to Cook Strait may be correct (there are few supporting data), but those from offshore waters around the South Island are presumably of porbeagle sharks.
 - 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. Records of porae (species code POR) from around the South Island and at the Chatham Islands are considered implausible from comparison with other data sources, and are probably of porbeagle shark (species code POS). Consequently, catch records from the lower North Island are considered unreliable.
 - c. Scientific observer records from commercial vessels: **COD** database. All records from 1 April 1986 to 30 September 2008 were extracted on 6 August 2009. 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. All records of porae (species code POR) are considered

to be incorrect; they lie south of the known distribution of this species, are mainly offshore, and probably refer to porbeagle shark (species code POS).

- d. Research bottom trawl records: **fish_comm** and **trawl** databases. **fish_comm** is a groomed version of **trawl**. All **fish_comm** records from 2 September 1978 to 30 September 2005 were extracted on 19 May 2006. All **trawl** records from 1 October 2005 to 30 September 2008 were extracted on 7 August 2009. Data were used to estimate total catch, proportion of tows that caught the species, and catch rate (kilograms per kilometre towed) in 0.25 degree rectangles. Records of porae extend only from Ninety Mile Beach, around North Cape and along the north-eastern coast to just south of East Cape. These are considered reliable for the fish on trawlable grounds, but almost certainly omit reef-associated fish a little further south.
 - e. Commercial set net fishing returns: **NCE** forms. All records from 1 October 2006 to 30 September 2008 were extracted on 4 August 2009.
 - f. Databases of recreational fishing catches (**rec_data**), commercial tuna longline catches (**TLCER**), observer records from tuna longlines (**I_line**), and aerial sightings (**aer_sight**) were not used as they contained no records of this species, the number of records was too small to provide useful additional distributional information, or species identification was considered unreliable. Complete Museum of New Zealand Te Papa records were not available for porae. Records from Russian trawl surveys (**trawl**) were not used because they were historic (pre 1987), species identification is regarded as unreliable, and they did not cover the geographic or depth range of porae.
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 porae were the fish_comm database and published accounts of the species.
- c. In New Zealand, porae are mainly restricted to north-eastern North Island coastal waters, straggling south to about Cook Strait (Kapiti Island, Ayling & Cox 1984; Kaikoura, Francis 2001, based on a specimen at Edward Percival Field Station). They have not been reliably recorded from most of the west coast of the North Island, but occur at a few localities close to inner shelf reefs (Museum of New Zealand records from Taranaki and Waikato). Although the distribution in this region may extend to 150 m (based on their depth range elsewhere), porae will occur mainly in shallower water near reefs. There is a single record from the southern Kermadec Islands (Francis 1991), but it is not known if the species is more widespread in the island group. Poraes also occur in south-eastern Australia. The known depth range of porae is 5–150 m.

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.

Anderson, O.F.; Bagley, N.W.; Hurst, R.J.; Francis, M.P.; Clark, M.R.; McMillan, P.J. (1998). Atlas of New Zealand fish and squid distributions from research bottom trawls. *NIWA Technical Report 42*. 303 p.

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

Francis, M.P. (1991). Additions to the fish faunas of Lord Howe, Norfolk and Kermadec Islands, Southwest Pacific Ocean. *Pacific Science* 45: 204-220.

Francis, M.P. (1993). Checklist of the coastal fishes of Lord Howe, Norfolk, and Kermadec Islands, Southwest Pacific Ocean. *Pacific Science* 47: 136-170.

Francis, M. (2001). Coastal fishes of New Zealand. An identification guide. Reed Books, Auckland. 103 p.

Paul, L. (2000). New Zealand fishes. Identification, natural history and fisheries. Reed Books, Auckland. 253 p.

[Paul, L.J.] (2003). Poraes (*Nemadactylus douglasii*). In Information summaries and indicative areas for species proposed to be introduced to the Quota Management System in October 2004. Report to the Ministry of Fisheries. 134 p. NIWA.

Thompson, S. (1981). Fish of the Marine Reserve. A guide to the identification and biology of common coastal fish of north-eastern New Zealand. Leigh Laboratory, University of Auckland. 364 p.