

The logo for NABIS (New Zealand Aquatic Biodiversity Information System) features the word "NABIS" in a bold, blue, sans-serif font. To the right of the text is a stylized map of New Zealand with a magnifying glass icon overlaid on it, symbolizing search and discovery.

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Lineage – Scientific methodology

Annual distribution of koheru lineage

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.
 - 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 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.
 - d. 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.
 - e. 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.
 - f. Databases of tuna longline fishing returns (**TLCER**), observed tuna longline vessels (**I_line**), aerial sightings (**aer_sight**), research trawls (**fish_comm**) and Russian trawl surveys (**trawl**) were not used as they contained no 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 koheru were the CELR and recreational fishing databases, Museum of New Zealand records, and the literature. There is little information about the distribution of this species.
 - c. Koheru is endemic to New Zealand. It is a coastal species that ranges from the Three Kings Islands to the northern South Island. It is most abundant on the east coast of the North Island. Koheru is a schooling species found in shallow bays, harbours and estuaries, and around rocky reefs and offshore islands between the Three Kings Islands and White Island. A species of *Decapterus* also occurs at the Kermadec Islands, and may be *D. koheru*, but this has not been verified. Young fish frequent rocky inshore areas, while larger fish school further from shore. The known depth range for koheru is 0–55 m.
 - d. Koheru are regularly caught by recreational fishers, but koheru and jack mackerel are often confused, or grouped together. CELR records of koheru on the east coast of the South Island were ignored as this is a species of warm temperate waters not expected to occur this far south.

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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