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## Lineage – Scientific methodology

### Annual distribution of the Roughy umbrella octopus lineage

#### 1. Literature

Literature sources were searched for distributional information on the roughy umbrella octopus *Opisthoteuthis chathamensis* O'Shea, 1999 (Suborder Cirrata, Family Opisthoteuthididae) around New Zealand. This octopus is recorded only from New Zealand. All specimens have been taken in the deep sea at depths between 900 and 1438 m.

- a. Using the keywords **Opisthoteuthis or chathamensis**, extracts were made from Aquatic Sciences and Fisheries Abstracts and NIWAcat (all records at 14 August 2005). Relevant publications were obtained and used to help define distribution.
- b. Using the keyword **Opisthoteuthis chathamensis**, Google records were examined on 14 August 2005. Relevant entries were obtained and used to help define distribution.
- c. Guided searches of library catalogues using the keywords (anywhere or global) **Opisthoteuthis AND thesis** and **umbrella AND octopus AND thesis** (The University of Auckland, Auckland University of Technology, Massey University, Victoria University of Wellington, University of Canterbury, The University of Waikato, University of Otago) on 14 August 2005 registered no hits.

#### 2. Ministry of Fisheries electronic databases

No MFish databases were checked as it was decided that they would not contain any useful information on the distribution of *O. chathamensis*. Nonetheless, on the 8 November 2007, the MFish trawl database was checked to determine whether there had been additional records which may extend the generic range. Between 15 September 2004 and 25 July 2007, 56 records of the generic code OPI were recorded. Records were plotted, and although species could not be determined, the recorded locations of combined species fell within the previously reported range for *O. chathamensis* and *O. mero* combined. This species is rarely taken, its identity not easily confirmed, and it is not listed in the MFish species database administered by NIWA.

### 3. Museum holdings

Holdings of *O. chathamensis* in the following museums were considered. Other museum holdings were not considered because discussions with Dr O'Shea, Auckland University of Technology, Auckland, indicated that any material received after that referred to in O'Shea (1999) would have either been shelved without formal identification or the identification would require confirmation.

- a. NIWA Greta Point. The **AllSeaBio** database was examined for records on 26 August 2005, with none being present. Additions made to the collection since about 1995 have not been loaded onto this database; in a search of more recent shelved material made on 29 August 2005, no additional material—formally identified as *O. chathamensis*—was found.
- b. Museum of New Zealand Te Papa Tongarewa records of *O. chathamensis* formed the basis of O'Shea (1999); no additional material—formally identified as *O. chathamensis*—has been added (Bruce Marshall, Collection Manager Molluscs, Museum of New Zealand, pers. comm.).

Examination of the NIWA Invertebrate Collection database **Specify**, and consultation with relevant experts in May 2009 revealed no new records of *Opisthoteuthis chathamensis*.

### 4. Summary

O'Shea (1999) reported *O. chathamensis* on soft sediments only from off the east coast of the North Island between 39°50' S and 41°10' S and near the Chatham Islands, at depths of 900–1438 m. The literature and museum searches did not lead to any extension in this distribution.

Discussions with Dr O'Shea indicated that the east coast North Island and Chatham Islands populations can be considered to be hotspots of distribution, the 100% distribution extending from about East Cape to the southwest part of the Chatham Rise. The species is unlikely to exist outside this region.

The above information on the distribution of the roughy umbrella octopus *O. chathamensis*, derived mostly from museum collections and the literature, was integrated by hand onto a large-scale map of New Zealand. The maximum depth was taken to be 1500 m, the minimum 900 m. The rounded lines, after being reviewed by Dr Steve O'Shea, were then digitised and imported into a GIS software package as layers. The areas of the hotspot and 100% distribution classes were calculated and the layers linked to attribute and metadata files. It is possible that the geographic extent of this species may increase as other deep waters are sampled more thoroughly.

There is no reason to believe that the seasonal distributions of this species are any different to this annual one.

## 5. References

The following publications and web site were the key references and/or the ones most useful in describing the annual distribution of the roughy umbrella octopus *O. chathamensis*. The list is not intended to be an exhaustive bibliography of publications about this species.

O'Shea, S. (1998). The deepsea finned Octopoda of New Zealand. *Seafood New Zealand October*: 26–28.

O'Shea, S. (1999). The marine fauna of New Zealand: Octopoda (Mollusca: Cephalapoda). *NIWA Biodiversity Memoir 112*.

[www.tonmo.com/science/public/Finned\\_octopoda.pdf](http://www.tonmo.com/science/public/Finned_octopoda.pdf) 26 August 2005