

PROPOSED DETERMINATION

The marine worm - *Hadrachaeta aspeta* as a species presumed extinct in NSW

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to insert the marine worm - *Hadrachaeta aspeta* into Part 4 of Schedule 4 Species Presumed Extinct of the Act.

The amendment of the threatened species lists is provided for by Part 7A, Division 2 of the Act.

The Fisheries Scientific Committee, with reference to the criteria relevant to this species, has found that:

Background

1. *Hadrachaeta aspeta* is a valid, recognised taxon and is a species as defined in the Act.
2. *Hadrachaeta aspeta* Hutchings, 1977 is a polychaete annelid of the family Terebellidae. *Hadrachaeta aspeta* is the only species in the genus and is endemic to eastern Australia.
3. *Hadrachaeta aspeta* is not known outside of eastern Australia. It has been recorded from central New South Wales north to Moreton Bay. The only published records are Hutchings (1977) and Hutchings and Glasby (1988) from Patonga Creek, lower Hawkesbury River, and Yamba, New South Wales and Serpentine Creek, Brisbane, Queensland. The species has not been collected since 1975. It is listed in the Australian Faunal Directory (Hutchings & Johnson 2003). In Australia the species has been recorded in the temperates from Sydney, New South Wales to Brisbane, Queensland. In New South Wales, the species has only been collected in Broken Bay and Yamba. There are voucher specimens in the Australian Museum, Sydney, the Queensland Museum, Brisbane, the National Museum of Natural History, Smithsonian Institution, Washington, DC and the Natural History Museum, London and not anywhere else.
4. *Hadrachaeta aspeta* is a benthic tubicolous living species preferring enclosed bays and estuaries where it lives in intertidal muddy habitats on the seaward side of mangroves. The species reaches about 25 mm in length. Nothing is known about its life history although based on related species probably breeds annually and may live for several years.

Reduction in abundance, geographic distribution or genetic diversity

1. *Hadrachaeta aspeta* has suffered a serious population decline in NSW. Within New South Wales the species has not been collected since those records listed in the original description of the species by Hutchings, 1977. The first records of *H. aspeta* were in 1973 and the last recorded specimen from NSW was in 1975. There are no records prior to this and none since. The species is of phylogenetic importance and targeted surveys along much of the NSW coastline have failed to find it. The last specimen from the Sydney area was taken in Brooklyn in 1975.
2. Hutchings has made extensive collections in New South Wales in the habitats where the species has been recorded. Chris Glasby made extensive intertidal collections

from the Hawkesbury River during fieldwork for his MSc thesis (Glasby, 1986). These surveys found no specimens of *Hadrachaeta aspeta*, yet this is a relatively large conspicuous species. The species has not been collected in New South Wales waters since 1975. For these reasons we consider *Hadrachaeta aspeta* to be extinct in New South Wales waters.

3. In light of the above, the Fisheries Scientific Committee has found that the species has not been recorded in its known or expected habitat in New South Wales, despite targeted surveys, over a time frame appropriate [far in excess of] to its life cycle, and the species is eligible to be listed as PRESUMED EXTINCT.

Threatening processes

1. The cause of extinction of *Hadrachaeta aspeta* is unknown but might include:
 - pollution caused by antifouling paints in enclosed waters (Murai *et al.*, 2005);
 - accumulation of toxins in sediments of enclosed waters (McCready *et al.*, 2006); and
 - habitat degradation through changes in environmental condition over the last century.
2. In light of the above, the Fisheries Scientific Committee has found that these threatening processes continue to operate throughout the geographic distribution of the species and existing reserve systems or other forms of refuge do not protect the species.

Conclusion pursuant to section 220F(1) of the Act

In the opinion of the Fisheries Scientific Committee:

Hadrachaeta aspeta has not been recorded in its known or expected habitat in New South Wales, despite targeted surveys, over a time frame appropriate to its life cycle and form, and the species is eligible to be listed as PRESUMED EXTINCT.

Sources and Links

- Glasby, C. J. 1986. Population structure and reproductive biology of *Ceratonereis limnetica* (Polychaeta: Nereididae) at Lower Portland, Hawkesbury River, Australia. *Marine Biology* 90: 589–595
- Hutchings, P.A., 1977. The Terebelliform Polychaeta from Australia, chiefly from Moreton Bay, Queensland. *Records of the Australian Museum* 31: 1–39.
- Hutchings, P.A., & Glasby, C.J., 1988. The Amphitritinae (F. Terebellidae) of Australia. *Records of the Australian Museum* 40: 1–60. (just a note of the original description)
- Hutchings, P.A., & Johnson, R. 2003. Polychaeta. *Australian Faunal Directory*. Online 2010 at: <<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/taxa/POLYCHAETA;ANNELIDA>>.
- McCready, S., Greely, C.R., Hyne, R.V., Birch G.F. & Long, E.R., 2005. Sensitivity of an indigenous amphipod (*Corophium colo*) to chemical contaminants in laboratory toxicity tests conducted with sediments from Sydney Harbor, Australia, and vicinity. *Environmental Toxicology and Chemistry* 24(10): 2545–2552.
- Murai, R., Takahashi, S., Tanabe S. & Takeuchi, I., 2005. Status of butyltin pollution along the coasts of western Japan in 2001, 11 years after partial restriction on the usage of tributyltin. *Marine Pollution Bulletin* 51: 940-949.

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