

November 2008

Ref. No. FD42
File No. FSC 08/03

FINAL DETERMINATION

Metaprotella haswelliana – Haswell's caprellid

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), has made a final determination to insert *Metaprotella haswelliana* into Part 4 of Schedule 4 as a 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 Section 220F(1) of the *Fisheries Management Act 1994* has found that:

Background

1. *Metaprotella haswelliana* is a valid, recognised taxon and is a species as defined in the Act.
2. The marine amphipod crustacean, *Metaprotella haswelliana* Mayer, 1882 of the family Caprellidae, Suborder Amphipoda, Class Crustacea, has not been known by any other name.
3. *Metaprotella haswelliana* is one of ten species in the genus *Metaprotella*: the others are *M. africana* Mayer, 1903 and *M. makrodactylos* Stebbing, 1910 from southern Africa, *M. excentrica* Mayer, 1890 and *M. problematica* Mayer, 1890 from India, *M. hummelincki* McCain, 1968 from south-eastern United States, *M. mauritiensis* Guerra-García, 2003 from Mauritius, *M. sandalensis* Mayer, 1890 from the Loyalty Islands, New Caledonia, *M. tanzania* Guerra-García, 2002 from Tanzania and *M. unguja* Larsen, 1997 from Zanzibar. *Metaprotella sandalensis* has been reported from a number of localities in Australia, but it is considered that these may represent an undescribed species.
4. Caprellids, like all peracaridan crustaceans, brood their young. There is no larval stage and the juveniles walk out of the brood pouch. Caprellids may breed seasonally or annually and the life-cycle lasts from about 8 to 18 months (Ashton, 2007). Although some species, eg. *Caprella equilibrium*, are widespread, most species have restricted distributions, such as *M. haswelliana*, which occurred from Sydney around southern Australia to Perth.
5. *Metaprotella haswelliana* has been collected from only three localities: Port Jackson, New South Wales (prior to 1882); Port Phillip, Victoria (December, 1971) and Emu Point, Western Australia (February, 1960). The species has not since been collected from southern Australia despite concerted efforts for over 35 years by amphipod experts, and is thus presumed extinct in New South Wales.

Reduction in abundance, geographic distribution or genetic diversity

1. *Metaprotella haswelliana* has only ever been recorded from three sites in southern Australia. Its range based on this information was probably from the Sydney area around southern Australia to Perth. No specimens of *M. haswelliana* could be found during field surveys along the coast of New South Wales conducted during the 1995/96

austral summer, nor from the recent collections made in Batemans Bay by Millar (2004), nor from the extensive crustacean collection of the Australian Museum (Springthorpe & Lowry, 1994; Takeuchi & Lowry, unpubl.).

2. 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, beyond a time frame appropriate to its life cycle and habitat characteristics; this meets the criteria of species presumed extinct.

Threatening processes

1. *Metaprotella haswelliana* has not been reported in New South Wales for more than 100 years and not from Victoria in more than 30 years. In light of this Takeuchi and Lowry (2007) suggested that “changes of environmental conditions during the last century might have caused the disappearance of *M. haswelliana* from the marginal areas of its distribution, including the Sydney area”.
2. A number of antifouling paints have been shown to show serious decline in the number of caprellids. Ohji et al. (2003), Takeuchi et al. (2004a, b) and Murai et al. (2005) gave convincing evidence for the susceptibility of caprellid amphipods to tributyltin (TBTs) used in antifouling paint. Other authors (Perrett, et al. 2006) have shown their susceptibility to other pollutants such as copper. Although we have no direct evidence of the effects of these types of pollutants on caprellids in Australian waters, recent work has shown that these threats exist in enclosed bays.
3. In light of the above, the Fisheries Scientific Committee has found that these threatening processes continue to operate within 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:

- a. *Metaprotella haswelliana* 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
- b. That it is therefore eligible to be listed as a Species Presumed Extinct.

References

- Ashton, G.V. (2006). Distribution and dispersal of the non-native caprellid amphipod, *Caprella mutica* Schurin 1935. PhD, Aberdeen University, 180 pp.
- Guerra-García, J.M. (2004). The Caprellidea (Crustacea, Amphipoda) from Western Australia and Northern Territory, Australia. *Hydrobiologia* 522: 1–74.
- Guerra-Garcia, J. M. & Takeuchi, I. (2004). The Caprellidea (Crustacea : Amphipoda) from Tasmania. *Journal of Natural History* 38: 967-1044.
- Lowry, J.K. & H.E. Stoddart (2003). Crustacea: Malacostraca: Syncarida, Peracarida. In W.W.K. Houston & A. Wells, Zoological Catalogue of Australia vol. 19.2a, 531 pp, Melbourne: CSIRO Publishing, Australia.

Mayer, P. (1882) Monographie: Caprelliden. *Fauna und Flora des Golfes von Neapel und der angrenzenden Meeres-Abschnitte*, 6, i-x, 1–201, pls I-X.

Millar, A.J.K. (2004). The Marine benthic algae and associated invertebrates from Brush Island to Broulee Island, including the Tollgate Islands of Batemans Bay, NSW. Hermon Slade Report HSF – 02-5

Ohji, M., Arai, T. & Miyazaki, N. (2003). Chronic effects of tributyltin on the caprellid amphipod *Caprella danilevskii*. *Marine Pollution Bulletin*, 46(10): 1263–1272.

Perrett, L.A., Johnstone, E.L. & Poore, A.G.B. (2006). Impact by association: direct and indirect affects of copper exposure on mobile invertebrate fauna. *Marine Ecology Progress Series*, 326: 195-205.

Takeuchi, I., Takahashi, S. & Tanabe, S. (2004a). Decline of butyltin levels in *Caprella* spp. (Crustacea: Amphipoda) inhabiting the Sargassum community in Otsuchi Bay, Japan from 1994 to 2001. *Journal of the Marine Biological Association of the United Kingdom*, 84: 911–918.

Takeuchi, I., Takahashi, S., Tanabe, S. & Miyazaki, N. (2004b). Butyltin concentrations along the Japanese coast from 1997 to 1999 monitored by *Caprella* spp. (Crustacea: Amphipoda). *Marine Environmental Research*, 57: 397–414.

Takeuchi, I. & Lowry, J.K. (2007). Description of *Metaprotella haswelliana* (Mayer, 1882) (Crustacea: Amphipoda: Caprellidae) from Western Australia with designation of a neotype. *Zootaxa* 1466: 11-18.

Springthorpe, R.T. & Lowry, J.K. (1994). Catalogue of crustacean type specimens in the Australian Museum Part 1: Malacostraca. *Technical Reports of the Australian Museum* 11: 1-134.

Assoc Prof Ron West
Chair
Fisheries Scientific Committee