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FINAL DETERMINATION

Bousfields marsh-hopper - *Microrchestia bousfieldi* as a Vulnerable Species

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), has made a final determination to list the talitrid amphipod, *Microrchestia bousfieldi* as a VULNERABLE SPECIES in Part 1 of Schedule 5 of the Act.

The listing of Vulnerable Species is provided for by Part 7A, Division 2 of the Act.

The Fisheries Scientific Committee, with reference to the criteria relevant to this species, prescribed by Part 16 of the *Fisheries Management (General) Regulation 2010* (the Regulation) has found that:

Background

1. *Microrchestia bousfieldi* Lowry & Peart, 2010 is a valid, recognised taxon and is a species as defined in the Act.
2. The marine crustacean, *Microrchestia bousfieldi* of the family Talitridae (Peracarida: Amphipoda), has not formally been known by any other name, although it could be referred to as 'Bousfields marsh-hopper'.
3. *Microrchestia bousfieldi* is one of four species in the genus *Microchestia*. The others are *Microrchestia macrochela* (Bousfield, 1971) from the Bismarck Archipelago, Papua New Guinea, *Microrchestia similis* (Bousfield, 1971) from the Bismarck Archipelago, Papua New Guinea, *Microrchestia watsonae* (Lowry & Peart, 2010) from Lizard Island, Queensland, Australia, and there are two additional species, currently considered in the genus *Eorchestia*, from Tasmania (Lowry, pers. comm.).
4. All marsh-hoppers are direct developers. The juveniles develop in a special brood pouch until released as young adults. There is no current information on the life cycle of species of *Microrchestia*.
5. All species are restricted to the supralittoral zone where they shelter under rotting logs and accumulated mangrove debris at the edge of the mangroves along coastal regions of eastern Papua New Guinea and eastern Australia (Bousfield, 1971, 1984; Lowry & Peart, 2010). These habitats are confined to mangrove swamps and salt marshes in eastern PNG and Australia. As far as is known, all marsh-hoppers are coupled with these habitats and appear to have very small geographic distributions (Bousfield, 1971; Lowry & Peart, 2010). Short-range marine taxa with direct development and restricted habitat are considered potentially vulnerable (Ponder, 2004).

Criteria – reduction in abundance, geographic distribution or genetic diversity (Regulation clause 271)

1. *Microrchestia bousfieldi* has only been collected from a small isolated location at South West Rocks Creek, South West Rocks, New South Wales, Australia (Lowry & Peart, 2010) although collections have been made from many sites along the NSW coast. It is likely that the species is confined to the population living in mangroves along the South West Rocks Creek. About 20

individuals were first collected in April, 1999 and none have been collected since. The species has an extremely limited distribution (Lowry & Peart, 2010) and has not been located in other mangrove areas despite active collecting (Lowry, pers. comm.). These mangroves are located near a growing human community in the immediate area.

2. In light of the above, the Fisheries Scientific Committee has found that the species is likely to undergo a large reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon, meeting the criteria of a Vulnerable Species.

Criteria – threatening processes (Regulation clause 272)

1. The *Microrchestia bousfieldi* population living at South West Rocks may be negatively impacted by several human activities. They are likely to undergo a large reduction in numbers due to reduction in available habitat through increased urban development and pollution from recreational activities, particularly boating (Conlan, K., 1994).
2. Other threatening processes caused by increased urbanisation include habitat damage and/or modification due pollution from increased storm water run-off, pesticide inputs and possible pollution from the old oil terminal. Amphipods are particularly sensitive to oil pollution (Jones *et al.*, 1998; Junoy *et al.*, 2005).
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(4) of the Act

In the opinion of the Fisheries Scientific Committee:

- a. *Microrchestia bousfieldi*, a marine talitrid amphipod, is facing a high risk of extinction in New South Wales in the medium-term future, as determined in accordance with the criteria prescribed by the Regulation as discussed above, and
- b. it is not eligible to be listed as an endangered or critically endangered species.

The species is eligible to be listed as a VULNERABLE SPECIES.

Sources and Links

Bousfield, E.L. (1971) Amphipoda of the Bismarck Archipelago and adjacent Indo-Pacific islands (Crustacea). *Steenstrupia* 1: 255-293.

Bousfield, E.L. (1984) Recent advances in the systematics and biogeography of landhoppers (Amphipoda: Talitridae) of the Indo-Pacific Region. *Bishop Museum Special Publication* 72, 171-210.

Conlan, K. (1994) Amphipod crustaceans and environmental disturbance: a review. *Journal of Natural History* 28(3): 519-554.

Jones, D.A., Plaza, J., Watt, I. & Sanei, M.A. (1988) Long-term (1991–1995) monitoring of the intertidal biota of Saudi Arabia after the 1991 gulf war oil spill. *Marine Pollution Bulletin* 36(6): 472-489.

Junoy, J., Castellanos, C., Viéitez, J.M., de la Huz, M.R. & Lastra M. (2005) The macroinfauna of the Galician sandy beaches (NW Spain) affected by the *Prestige* oil-spill. *Marine Pollution Bulletin* 50(5): 526-536.

Lowry, J.K. & Peart, R. (2010) The genus *Microrchestia* (Amphipoda: Talitridae) in eastern Australia. *Zootaxa* 2349: 21-38.

Ponder, W. F. (2004). Narrow range endemism in the sea and its implications for conservation. *Australian Zoologist*. pp. 89–102. In *Conserving Marine Environments* (ed. P. Hutchings and D. Lunney), Royal Zoological Society of NSW, Mosman.

Dr Jane Williamson
Chairperson
Fisheries Scientific Committee