

Fisheries Scientific Committee

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Ref. No. PR33
File No. FSC 99/11

PROPOSED DETERMINATION

Archaeophya adamsi – Adam's emerald dragonfly

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to omit *Archaeophya adamsi* – Adam's emerald dragonfly from Part 1 of Schedule 5 Vulnerable Species of the Act and insert *Archaeophya adamsi* – Adam's emerald dragonfly into Part 1 of Schedule 4 Endangered Species 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, prescribed by Part 11B of the *Fisheries Management (General) Regulation 2002* (the Regulation) has found that:

Background

1. *Archaeophya adamsi* – Adam's emerald dragonfly is a valid, recognised taxon and is a species as defined in the Act.
2. The dragonfly *Archaeophya adamsi* Fraser, 1959 (family Gomphomacromiidae) is the only NSW species of this genus and family, and the majority of its lifecycle is aquatic. The aquatic larva of *A. adamsi* cannot be confused with any other dragonfly species owing to a large bilobed frontal plate on its head. The only other species in the genus occurs in Queensland.
3. *Archaeophya adamsi* is currently listed as Vulnerable in Part 1 of Schedule 5 of the *NSW Fisheries Management Act 1994*.

Criteria – reduction in abundance, geographic distribution or genetic diversity (Regulation clause 340F)

1. *Archaeophya adamsi* has been collected from only four localities in NSW: Somersby Falls and Floods Creek in Brisbane Waters National Park near Gosford; Berowra Creek near Berowra and Hornsby; Bedford Creek in the Lower Blue Mountains; and Hungry Way Creek in Wollemi National Park (where it is known only from exuviae or shed larval skins). However, the species has not been found elsewhere in the Hawkesbury watershed or in the Sydney region, despite active collecting over the last 35 years.
2. In light of the above, the Fisheries Scientific Committee has found that it can be inferred or reasonably suspected that the species has undergone, or is likely to undergo, a very large reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon; this meets the criteria of Endangered, but not Critically Endangered.

Criteria – threatening processes (Regulation clause 340G)

1. Two localities of *A. adamsi* may be negatively impacted by human activities. Although the Gosford sites are in Brisbane Waters National Park, agricultural development in the headwaters of Floods Creek poses a threat to water quality in the lower catchment. The Berowra site is near rapid residential development, and a population decline is indicated by the failure to find additional specimens from Berowra Creek. Therefore, *A. adamsi* may suffer further decline or local extinction in the coastal region.
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(3) of the Act

In the opinion of the Fisheries Scientific Committee:

- a. *Archaeophya adamsi* – Adam’s emerald dragonfly is facing a very high risk of extinction in New South Wales in the near future, as determined in accordance with the criteria prescribed by the Regulation as discussed above, and
- b. That it is not eligible to be listed as a critically endangered species.

The species is eligible to be listed as an ENDANGERED SPECIES.

Sources and Links

Chessman, B. C. and Williams, S. A. (1999). *Biodiversity and conservation of river macroinvertebrates on an expanding urban fringe: western Sydney, New South Wales, Australia*. Pacific Conservation Biology. 5:36-55. Surrey Beatty and Sons, Sydney.

Hawking, J. H. (1999). *An evaluation of the current conservation status of Australian dragonflies*. In *The other 99%. The Conservation and Biodiversity of Invertebrates*. Ponder, W and Lunney, D. (Eds.) Transactions of the Royal Zoological Society of New South Wales.

Hawking J. H., Theischinger, G.(2004). *Critical Odonata in Australia*. International Journal of Odontology. 7(2) 113-132.

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