

Adam's Emerald Dragonfly - *Archaeophya adamsi*

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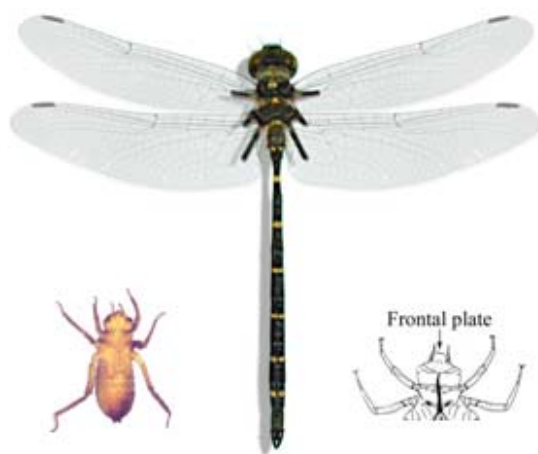


Figure 1: Adult Adam's Emerald Dragonfly (Photo: CSIRO Entomology) and larva (Photo: J. Hawking, Line drawing: G. Theischinger)

Introduction

The Adam's Emerald Dragonfly (*Archaeophya adamsi* Fraser) is one of Australia's rarest dragonflies. Only a small number of adults have ever been collected, and the species is only known from a few sites in the greater Sydney region. Some remaining areas of habitat are under threat from urban, industrial and agricultural development.

Adam's Emerald Dragonfly was listed as a vulnerable species in NSW in November 1999. However, in 2007 the Fisheries Scientific Committee reviewed the conservation status of the species and upgraded Adam's Emerald Dragonfly to an **endangered species** in NSW. There are heavy penalties for harming, possessing, buying or selling them, or for harming their habitat (see 'Legal implications').

Description

The Adam's Emerald Dragonfly (also called Horned Urfly) is a moderately large, robust Dragonfly. Larvae grow to about 23mm in length and have a large two-lobed frontal plate on the head (see Figure 1), which distinguishes them from any other species found in NSW. The adults have a brown-black body with yellow markings, and a slight green or bluish metallic reflection on some parts. The abdomen length is around 46 mm and wingspan around 75 mm.

Habitat and ecology

- Adam's Emerald Dragonfly larvae have been found in narrow, shaded riffle zones with moss and abundant riparian vegetation (often closed canopy) in small to moderate sized creeks with gravel or sandy bottoms.
- All dragonflies are predatory. The larvae stalk or ambush aquatic prey while the adults capture prey while flying.
- Adam's Emerald Dragonfly larvae may live, in particular cases, up to 7 years and undergo various moults before metamorphosing into adults. Adults are thought to live for a few months at most.
- Adult dragonflies generally fly away from the water to mature before returning to breed. Males fly actively at breeding sites and often guard a territory. Females probably lay their eggs into the water.
- This species seem to have a low natural rate of recruitment and limited dispersal abilities.

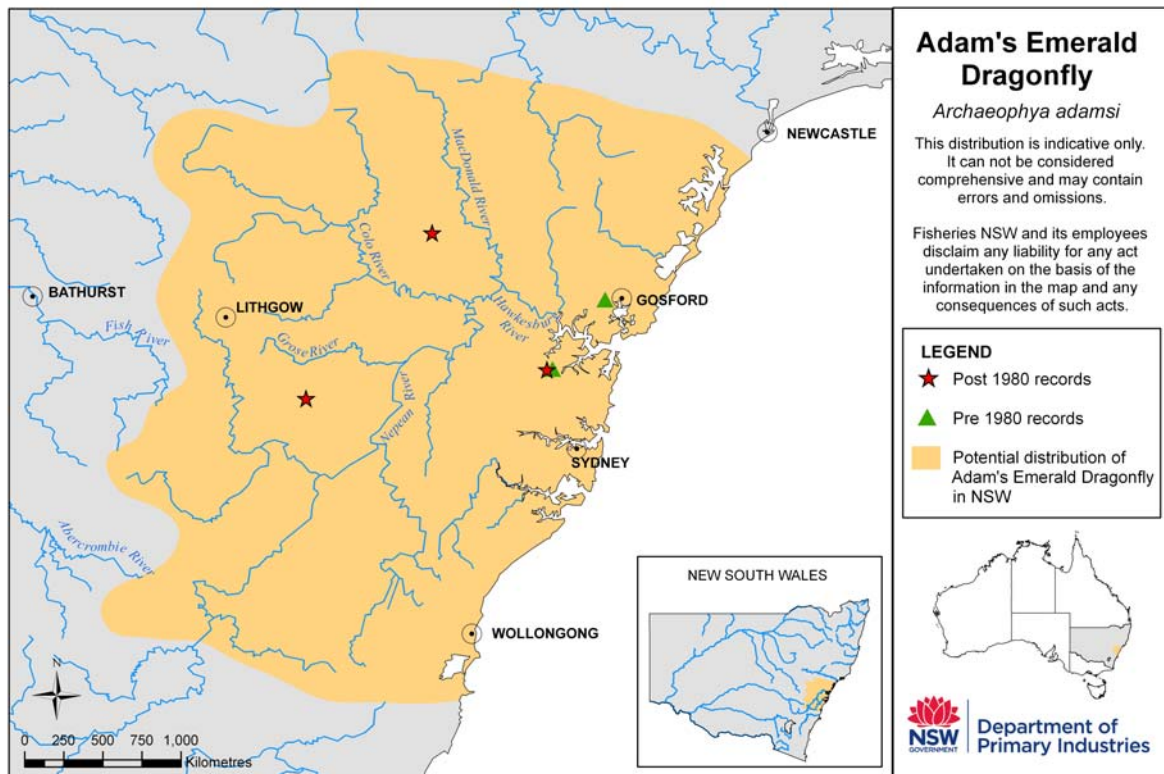


Figure 2: Potential distribution of Adam's Emerald Dragonfly and recorded sightings

Why is the Adam's Emerald Dragonfly threatened?

- Habitat degradation resulting from removal of riparian (river bank) vegetation, drainage works, sedimentation from road crossings, etc.
- Water pollution and sedimentation due to land clearing, waste disposal and stormwater runoff from urban, industrial and agricultural development in the catchment.
- Chance events such as natural disasters (drought) may eliminate remaining local populations. Local extinctions could greatly affect the survival of the species as a whole due to their rarity.
- Low population sizes and a long larval period indicate an extremely low rate of natural recruitment and therefore slow recovery from any population decline.

Conservation and recovery actions

- Rehabilitate degraded habitats. Protect riparian vegetation and encourage the use of effective erosion and sediment control measures in catchments where the dragonfly may occur.
- Protect the few remaining sites that still support the species, and address key threats

such as habitat degradation and water quality decline from expanding development.

- Conduct further research into the species' biology and distribution.
- **Report any sightings of the species via the NSW DPI online form:**
www.dpi.nsw.gov.au/fisheries/species-protection/report-it/threatened-species-sighting-form

Figure 3: Adult Adam's Emerald Dragonfly (Photo: L. Müller)



Legal implications

It is illegal to catch and keep, buy, sell, possess or harm Adam's Emerald dragonflies (or any other threatened species in NSW) without a specific permit, licence or other appropriate approval, and significant penalties apply. For endangered species these penalties can include fines of up to \$220,000 and up to 2 years in prison.

There can also be significant penalties for causing damage to the habitat of a threatened species without approval through actions such as dredging riverbeds.

Clearing that constitutes a routine agricultural management activity, and certain routine farming practice activities (other than clearing) are permitted, provided the activities are to the minimum extent reasonably necessary and all other relevant statutory approvals or authorities have been obtained.

The impacts of developments or activities that require consent or approval in accordance with the *Environmental Planning and Assessment Act 1979* must be assessed and considered by consent or determining authorities. Where such actions are likely to result in a significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared.

Strategies to be adopted for promoting the recovery of the Adams Emerald Dragonfly must be set out in the NSW DPI Priorities Action Statement.

A recovery plan may be prepared in accordance with the provisions of the *Fisheries Management Act 1994* to promote the recovery of the species to a position of viability in nature.

Bibliography and further reading

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Theischinger, G., Jacobs, S. & M. Krogh (2011) *Archaeophya adamsi* Fraser (Odonata, Gomphomacromiidae): not in Queensland, but safe in New South Wales? *Agrion, Newsletter of the Worldwide Dragonfly Association* 15(2): 64-68.

For further information

See the NSW DPI website: www.dpi.nsw.gov.au

Contact the NSW DPI Threatened Species Section:

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