

Buchanans Fairy Shrimp – *Branchinella buchananensis*

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Threatened Species Unit, Port Stephens Fisheries Institute

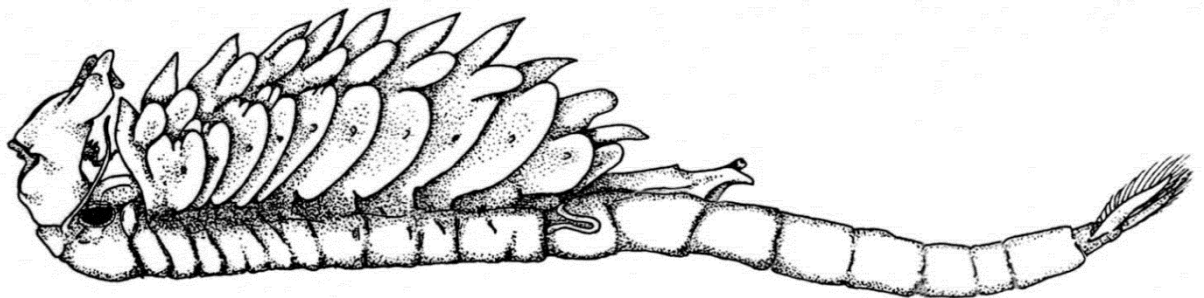


Figure 1: A Buchanans Fairy Shrimp

Introduction

Buchanans Fairy Shrimp are a small species of crustacean that are only known from Lake Buchanan in southwestern Queensland, and Gidgee and Burkanoko Lakes in north-west NSW (approximately 130 km north-west of Bourke). These sites cover a very small area on private land and they do not occur in any designated conservation reserves. The species could be threatened by development activities, such as mineral extraction.

Buchanans Fairy Shrimp are listed as a vulnerable species in NSW. There are heavy penalties for harming, possessing, buying or selling them, or for harming their habitat (see 'Legal implications

Description

Buchanans Fairy Shrimp are a small crustacean related to brine shrimp that grow to 2-3 cm in length. They have a long cylindrical body divided into a head, a thorax with many pairs of limbs and an abdomen. All fairy shrimps swim upside down and they typically inhabit temporary waters.

Like all crustaceans, they have two pairs of antennae on the head; however fairy shrimp are distinguished from other crustaceans by the lack of a carapace (hard exterior shell) and their leaf-like shaped limbs

Habitat and Ecology

- Buchanans Fairy Shrimp live in the water of temporary (intermittently inundated) salt lakes, with salinities between freshwater and seawater.
- All fairy shrimps produce drought resistant eggs that are carried in a brood pouch where they mature. Buchanans Fairy Shrimp eggs are often blue-black-silver and can remain viable in completely dry lake beds for years or decades. They hatch as soon as conditions are suitable; the adult shrimps appearing soon after the lake fills.
- The exact growth period is uncertain, however is likely to be very rapid like other fairy shrimps. Other fairy shrimps mature within as little as 4 days, though 2-3 weeks is more normal.

- Buchanans Fairy Shrimp filter feed on planktonic algae, bacteria on clay particles and organic matter.
- Once mature, they produce a batch of eggs every day or so and eventually die of old age (if not eaten earlier) within a month or two if the pool should last that long.
- As the lake dries and the water becomes more saline, they lay dormant eggs that fall into the sediment. The population then disappears and does not reappear until the lake dries and then refills. The primary habitat for this aquatic species is thus dry for most of the year.
- Buchanans Fairy Shrimp are predated on by invertebrate predators such as flatworms, beetles and dragonfly larva.

- Development activities such as mining for gypsum or other forms of mineral extraction could cause significant disturbance to the beds and hydrology of the lakes, including changes to the drying/filling cycle.

Conservation and recovery actions

- Undertake research to identify, prioritise and improve understanding of the threatening processes and causes of decline of Buchanans Fairy Shrimp.
- Conduct targeted surveys to determine current distribution and abundance of Buchanans Fairy Shrimp.
- Conduct research on the biology and ecology of Buchanans Fairy Shrimp, particularly the species' ecological role, environmental tolerances, factors influencing population dynamics, age and growth, lifestyle and diet.
- Undertake work to identify, restore and protect known and potential Buchanans Fairy Shrimp habitats and address key threats such as mineral extraction activities near temporary salt lakes.

Why is the Buchanans Fairy Shrimp threatened?

- The distribution of Buchanans Fairy Shrimp is limited to three inland lakes which cover a very small area. They have limited potential to survive local impacts.

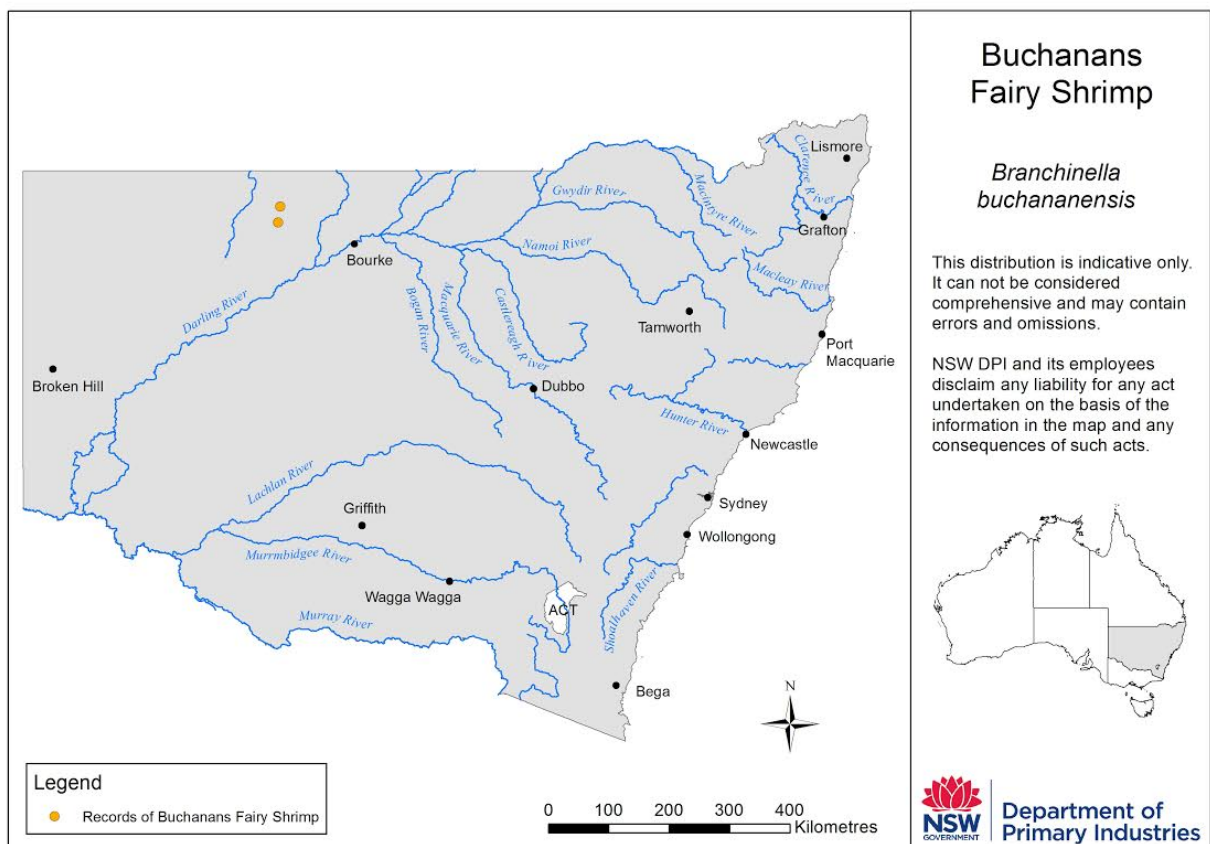


Figure 2: Records of Buchanans Fairy Shrimp from NSW

Legal implications

It is illegal to catch and keep, buy, sell, possess or harm Buchanans Fairy Shrimp (or any other threatened species in NSW) without a specific permit, licence or other appropriate approval, and significant penalties apply. For vulnerable species, these penalties can include fines of up to \$55,000 and one year 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 river beds, removing large woody debris and constructing barriers that block the free passage of fish.

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 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 Buchanans Fairy Shrimp are set out in the NSW DPI Priorities Action Statement.

Bibliography and further reading

- Fisheries Scientific Committee (2001)
Recommendation: *Branchinella buchananensis* – (BUCHANANS FAIRY SHRIMP)
- Geddes, M.C. (1981). Revision of Australian species of *Branchinella* (Crustacea: Anostraca). *Australian Journal of Marine and Freshwater Research* **32**: 253-295.
- Timms, B.V. (1993) Saline lakes of the Paroo, inland New South Wales, Australia. *Hydrobiologia* **267**: 269-289
- Timms, B.V. (2015) A revised identification guide to fairy shrimps (Crustacea: Anostraca: Anostracina) of Australia, *Museum Victoria Science Reports* **19**: 1-44.

For further information

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

Contact the NSW DPI Threatened Species Unit:
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