

1447-2554 (On-line)

<https://museumsvictoria.com.au/collections-research/journals/memoirs-of-museum-victoria/>

DOI <https://doi.org/10.24199/j.mmv.2026.85.2>

On the distribution of the water mite family Limnocharidae Grube in Australia (Acari: Hydrachnidia)

SMIT, H.

Naturalis Biodiversity Center, PO Box 9517, 2300 RA Leiden, the Netherlands [harry.smit@naturalis.nl]

Abstract

Smit, H. 2026. On the distribution of the water mite family Limnocharidae Grube in Australia (Acari: Hydrachnidia). *Memoirs of Museum Victoria* 85: 131–133.

New records are given from Australia of two species of the water mite family Limnocharidae, i.e. *Limnochares australica* and *Austrolimnochares womersleyi*. The former species is widespread, and occurs in almost every state and territory. The latter species is confined to the east and southeast of Australia.

Keywords

Distribution, *Limnochares australica*, *Austrolimnochares womersleyi*.

Introduction

The water mite family Limnocharidae Grube is a small family in Australia, with only three genera, i.e. *Limnochares* Latreille, *Austrolimnochares* Harvey, 1998 and *Neolimnochares* Lundblad, 1937, each with one species. The most important papers on the family Limnocharidae from Australia were published by Lundblad (1947) and Cook (1986), but the most comprehensive paper was published by Harvey (1990).

The papers mentioned above do not give a full picture of the distribution in Australia. The aim of this paper is to give the distribution in all states and territories of mainland Australia, based on eight collecting trips to Australia between 1994 and 2024. The results of the collecting trip to Western Australia in 1998 were published by Smit (2021).

Material and methods

The material of this study was collected by the author in 1994, 1997, 2001, 2003, 2005, 2008, 2014 and 2024 from all states and territories of Australia. However, no species were collected in the Australian Capital Territory, which was visited in 2024. The material was collected with a dip net and fixed in Koenike's fluid (5 parts glycerine, 2 parts glacial acetic acid, 3 parts water). The following abbreviations are used: asl = above sea level; NP = National Park. Most of the material is lodged in the Naturalis Biodiversity Center, Leiden, and material from Western Australia in the Western Australian Museum, Perth.

Numbers are given as male/female/nymph or adult/nymph. Limnocharids are weakly sclerotised, and often break apart, making it hard or impossible to determine the sex.

Coordinates were taken with a Global Positioning System-enabled device. Coordinates given as degrees, minutes and seconds were taken from Google Earth and are approximate.

The maps were produced from the website of the Atlas of Living Australia (ALA, <https://www.ala.org.au>).

Results

Family Limnocharidae Grube

Subfamily Limnocharinae Grube

Genus *Limnochares* Latreille, 1796

The genus *Limnochares* occurs in all but one faunal regions, lacking only from the Neotropical region (Smit, 2020).

Subgenus *Cyclothrix* Wolcott, 1905

Limnochares (Cyclothrix) australica Lundblad, 1941 (fig. 1)

Previous published records. Lundblad (1947), Szalay (1953), Cook (1986), Harvey (1990), Storey et al. (1993), Horwitz (1997), Martin and Smit (2002), Halse et al. (2002), Smit (2021).

Material examined. **Tasmania.** 1/4/3, pond near Shadow Lake, Cradle Mountain–Lake St Clair NP, ± 900 m asl, 15-x-1997; 1/5/1, Blackmans Lagoon, Waterhouse Protected Area, 21-x-1997; 9/2/0, Little Waterhouse lake, Waterhouse Protected Area, 21-x-1997; 8/4/0, swamp along road B28, 41° 57.241' S, 145° 32.349' E, 512 m asl, 24-iii-2008; 2/1/3, small lake near Lake Shadow, Cradle Mountain–Lake St Clair NP, 42° 5' 47.87" S, 146° 7' 45.23" E, 25-iii-2008; 2/2/1, pool near crossing of roads A5 and B51, 42° 01.209' S, 146° 49.533' E, 922 m asl, 28-iii-2008. **New South Wales.** 0/0/1, small lake near Diggers Creek, Kosciuszko NP, 36° 21.589' S, 148° 29.248' E, 1511 m asl, 5-xii-2003; 0/1/0, Water Gardens, Batemans Bay, 35° 42.733' S, 150° 10.688' E, 16-xii-2003. **Victoria.** 0/0/1, Lower Stony Creek, Brisbane Ranges NP, 27-ix-1997; 1/1/0, Victoria Lagoon, SW of Grampians NP, 30-ix-1997; 0/1/0, pond 3 km N of Chiltern, 9-x-1997. **South Australia.** 0/0/1, Round Swamp, Bool Lagoon Game Reserve, 12-x-2001; 6/0/1, Bool Lagoon near Big Hill, Bool Lagoon Game Reserve, 12-x-2001;



Figure 1. Distribution of *Limnochares australica* in Australia.

0/0/1, Big Swamp, 20 km W of Port Lincoln, 27-x-2001. **Queensland.** 1/0, Canal Creek at Twin Falls, Cape York Peninsula, 11° 22.976 S, 142° 24.788 E, 54 m asl, 20-x-2014; 0/0/1, Ewen Maddock Dam, NE of Landsborough, 26° 47.795 S, 152° 59.416 E, 29 m asl, 1-xii-2014. **Northern Territory.** 5/11/0, plunge pool Edith Falls, Katherine Gorge NP, 14° 10.899 S, 132° 11.342 E, 30-vii-1994; 1/1/4, Manton Dam, 12° 51.726 S, 131° 07.148 E, 1-viii-1994; 10/2/21, Manton Dam, 12° 51.726 S, 131° 07.148 E, 24-ix-2005; 0/3/1, plunge pool Edith Falls, Nitmiluk NP, 14° 10.899 S, 132° 11.342 E, 149 m asl, 2-x-2005. **Western Australia.** 0/1/0, Fortescue Falls (pool), Hamersley Range NP, 22° 28' 39.18" S, 118° 33' 3.04" E, 11-viii-1994; 4/8/0, pond Dales Gorge, Hamersley Range NP, 22° 28' 37.53" S, 118° 33' 26.66" E, 12-viii-1994; 6/7/2, pond Kalamina Gorge near falls, Hamersley Range NP, 22° 24' 48.08" S, 118° 24' 34.50" E, 13-viii-1994; 0/1/0, Deep Reach Pool, Millstream-Chichester NP, 21° 36' 47.36" S, 117° 6' 31.53" E, 15-viii-1994; 0/1/0, Palm Pool, Millstream-Chichester NP, 21° 34' 2.85" S, 117° 2' 32.10" E, 15-viii-1994.

Distribution. Widespread in Australia, and reported from Tasmania, New South Wales, Victoria and Western Australia. Reported here for the first time for South Australia, Queensland and the Northern Territory. Outside Australia the species is known from New Zealand (Smit, 1996), New Caledonia (Smit, 2002) and Fiji (Smit, 2004).

Habitat. *Limnochares australica* is a species of standing waters like ponds, lakes, marshes and quiet parts of streams.

Remarks. Martin and Smit (2002) described the larvae of *L. australica* parasitising the water strider *Tenagerris pallidus* Anderson & Weir, 1997 (Hemiptera, Gerridae). However, according to Gerecke et al. (2020), the larva Martin and Smit described does not belong to *L. australica* but to a *Neolimnochares* species. These larvae may belong to *Neolimnochares kakadu* Harvey, 1990, the only known *Neolimnochares* species from (northern) Australia.

Cook (1967) found no morphological differences between *L. crinita* Koenike, 1898 from India and *L. australica*. He kept

the species apart based on their disjunct distribution. Molecular research might be able to solve the status of the two species. The same applies to *L. australica* from New Zealand, which is morphologically similar to Australian specimens.

Subfamily Rhyncholimnocharinae Lundblad

Genus *Austrolimnochares* Harvey, 1998

Austrolimnochares is an endemic genus, with one species known.

Austrolimnochares womersleyi (Lundblad, 1952) (fig. 2)

Previous published records. Lundblad (1952), Cook (1986), Harvey (1990, 1998).

Material examined. Tasmania. 1/1/1, shallow pond near Derwent Bridge, near Lake St Clair NP, 15-x-1997; 0/4/1, old river branch Coal River, N of Richmond, 17-x-1997; 1/1/0, Julius Rivulet, Julius River Forest Reserve, 41° 09.296 S, 145° 01.707 E, 123 m asl, 21-iii-2008; 0/2/0, Sumac Rivulet at crossing with South Arthur River Forest Drive, 41° 09.934 S, 145° 04.152 E, 127 m asl, 22-iii-2008; 0/0/1, Collingwood River at crossing with road A10, Franklin-Gordon Wild Rivers NP, 42° 09.770 S, 145° 55.658 E, 370 m asl, 24-iii-2008; 1/1/0, Newton Creek at crossing with road B28, 41° 54.520 S, 145° 34.199 E, 493 m asl, 24-iii-2008; 1/5/0, Pearl Creek 3 km N of Queenstown, 42° 03.387 S, 145° 32.441 E, 255 m asl, 24-iii-2008; 1/0/1, Franklin River at crossing with road A10, Franklin-Gordon Wild Rivers NP, 42° 12.916 S, 146° 01.170 E, 421 m asl, 26-iii-2008. **New South Wales.** 1/0/0, Brindle Creek, Border Ranges NP, 28° 22.780 S, 153° 04.023 E, 12-xi-2003; 2/1/0, Diehard Creek, Mann River Nature Reserve, 29° 40.528 S, 152° 05.282 E, 585 m asl, 21-xi-2003; 1/0/0, Pipers Creek at crossing with Guthega Road, Kosciuszko NP, 36° 21.140 S, 149° 24.815 E, 1349 m asl, 9-ii-2024. **Victoria.** 0/1/0, West Kiewa River, 11 km upstream of Mount Beauty, upstream of power station, 12-x-1997; 1/0/0, Betka River at crossing with Stony Creek Road, SW of Genoa, 24-x-1997; 2/0/0, Moleside Creek, Lower Glenelg NP,



Figure 2. Distribution of *Austrolimnochares womersleyi* in Australia.

38° 04.336 S, 141° 17.507 E, 25 m asl, 3-iv-2008. **South Australia.** 0/1/0, The Deep Creek downstream of falls, Deep Creek Conservation Park, 35° 38.582 S, 138° 13.868 E, 5-iv-2008; 0/1/0, Aaron Creek at crossing with Heysen Trail, Deep Creek Conservation Park, 35° 38.794 S, 138° 10.904 E, 165 m asl, 5-iv-2008. **Queensland.** 5/0, Coomera River upstream of Coomera Falls, Lamington NP, 28° 14' 7.21" S, 153° 11' 28.81" E, 14-xi-2003; 3/0, Toolona Creek downstream of Toolona Falls, Lamington NP, 28° 14' 50.63" S, 153° 10' 11.36" E, 16-xi-2003.

Distribution. The species is known from E and SE Australia, with records reported from Tasmania, New South Wales, Victoria and Queensland. Reported here for the first time for South Australia.

Habitat. *Austrolimnochares womersleyi* is a species of lentic habitats.

Subfamily Neolimnocharinae Gerecke, Wohltmann, B.P. Smith & Judson

Genus *Neolimnochares* Lundblad, 1937

Species of the genus *Neolimnochares* occur in the Neotropical, Nearctic, Afrotropical and Australasian regions (Smit, 2020).

Neolimnochares kakadu Harvey, 1990

Previously published records: Harvey (1990).

Material examined. Not recollected.

Habitat. *Neolimnochares kakadu* is a species of standing waters.

Distribution. Only known from the type locality in Kakadu National Park in the Northern Territory.

Acknowledgements

I am indebted to the national parks authorities in Australia for their permission to collect in parks, nature reserves and state forests. Truus van der Pal (Alkmaar) assisted me on all collecting trips. Jeroen Creuwels (Naturalis Biodiversity Center) uploaded the data to Gbif, and ALA made it possible to produce the maps, including the new data listed in this paper.

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