Trithuria submersa

All images by Richard Schahinger

FAMILY: HYDATELLACEAE

BOTANICAL NAME: *Trithuria submersa* (Hook.f., *Bot. Antarct. Voy. III. (Fl. Tasman.)* 2: 79 (1858)

COMMON NAME: Submerged watertuft

COMMONWEALTH STATUS (EPBC Act): Not Listed

TASMANIAN STATUS (TSP Act): rare

Description

Trithuria submersa is a glabrous annual herb that grows more-or-less submerged in fresh water. The leaves are clustered at the base of the stem: they are slender and subterete to ± flattened, 1 to 3 (–6) cm long, tapering at the tip and widening at the base. Leaves are bright red when plants are in open conditions, green when shaded. Inflorescences are borne on slender erect scapes that elongate in the fruiting stage, becoming longer than the leaves. Each inflorescence consists of an umbel-like cluster of unisexual flowers enclosed by 4 to 6 lanceolate to ovate bracts 2 to 4 mm long; there are usually 2 to 4 stamens per inflorescence, surrounded by 10 to 20 (–35) carpels each with a single ovule and 3 styles. Flowering occurs from spring to summer. The fruit is obovoid, 0.5 and 0.8 mm long, dehiscent and opening by 3 valves. The seed coat is rough and white (description from Curtis & Morris 1994 and Walsh & Entwisle 1996). **Confusing species:** *Trithuria filamentosa* has ovaries that are globular, inflorescences that are often unisexual, and fruit that are indehiscent.

Distribution and Habitat

On mainland Australia *Trithuria submersa* occurs in Western Australia, South Australia, Victoria and New South Wales (Walsh & Entwisle 1996). In Tasmania the species occurs in the Northern Midlands, near-coastal areas in the east and north-east, King Island, Flinders Island and Cape Barren Island, with an isolated record from the Central Highlands. Habitat includes areas subject to flooding, viz., the margins of wetlands, small watercourses, shallow temporary depressions and wet heathlands. In the Northern Midlands *Trithuria submersa* typically co-occurs with a suite of rare flora species, including *Aphelia gracilis, Isoetes drummondii* subsp. *drummondii, Phyllangium distylis* and *Stylidium despectum*.

Key Sites and Populations

Cape Naturaliste, Lavinia Plains, Moulting Lagoon, Powranna–Conara, Waterhouse. Allwrights Lagoons.

Plates 1 & 2. *Trithuria submersa:* habit & habitat

Known Reserves

Foochow Conservation Area, Lavinia State Reserve, Moulting Lagoon Game Reserve, Mount William National Park, Powranna Nature Reserve, Waterhouse Conservation Area. The species also occurs on four private properties in the Northern Midlands that are covered by conservation covenants under the Tasmanian *Nature Conservation Act 2002*.

Ecology and Management

Trithuria submersa is believed to be self-pollinating, self-compatible and primarily autogamous, with very occasional pollination by wind (Taylor et al. 2010). The species develops under water, and indeed, its reproductive parts (stamens and carpels) may develop while the plant is still submerged, though anther dehiscence does not occur until the reproductive unit has emerged from the water. Fruits mature within a few weeks of anther dehiscence (Taylor et al. 2010).

As an annual species, numbers may fluctuate from year to year depending on conditions pre- and post-germination. Reproductive function, triggered by water drawdown, may be short and locally unpredictable (Taylor et al. 2010). Survival through unfavourable periods will depend upon the presence and persistence of a soil seed-bank (Tuckett et al. 2010). The species' fruit does not have obvious dispersal aids, so any movement will generally be associated with water flow and/or animals.

Potential threats to *Trithuria submersa* and its habitat include clearance, changes to local and broader hydrological processes, stock trampling, nutrient enrichment associated with fertiliser application, and weed invasion. The species' ephemeral nature means that there is a risk of inadvertent habitat destruction, as environmental impact assessments may not be conducted at optimal times for detection.

Conservation Status Assessment

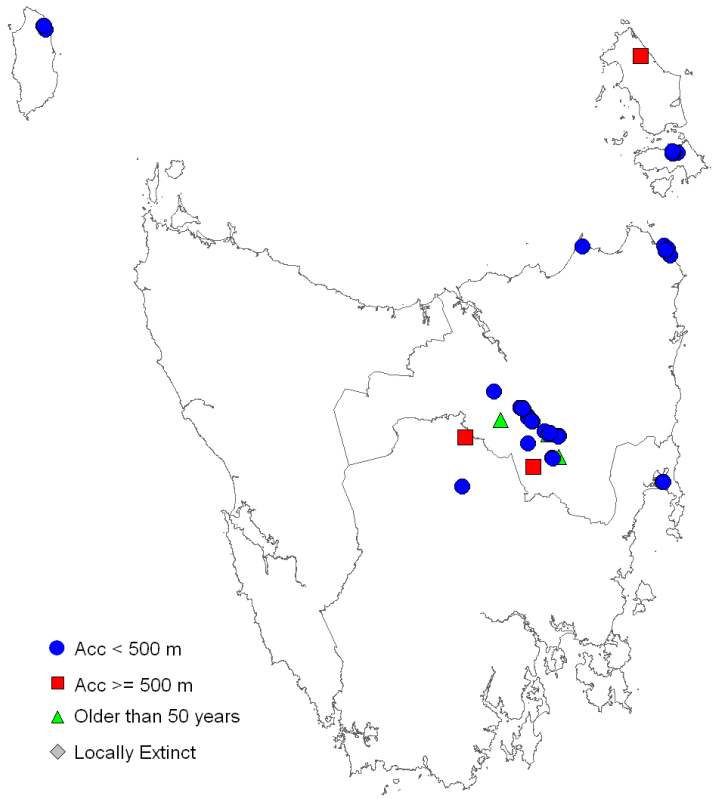
Trithuria submersa was listed as rare on the TSP Act in 1995, at which time it had been recorded in Tasmania from the mainland only. The species has since been found on King Island, Flinders Island and Cape Barren Island, several 'new' sites have been discovered in the Northern Midlands, and its reservation status has been improved. A re-assessment of the species' conservation status may be warranted, though in the first instance surveys of older sites are required to determine their status.

Further Information

- Curtis, W.M. & Morris, D.I. (1994). *The Student's Flora of Tasmania, Part 4B. ANGIOSPERMAE: Alismataceae to Burmanniaceae*. St. David's Park Publishing, Hobart.
- Taylor, M.L., Macfarlane, T.D. & Williams, J.H. (2010). Reproductive ecology of the basal angiosperm *Trithuria submersa* (Hydatellaceae). *Annals of Botany* 106: 909–920.
- Tuckett, R.E., Merritt, D.J., Hay, F.R., Hopper, S.D. & Dixon, K.W. (2010). Comparative longevity and low-temperature storage of seeds of Hydatellaceae and temporary pool species of south-west Australia. *Australian Journal of Botany* 58: 327–334.
- Walsh, N.G. & Entwisle, T.J. (1996). *Flora of Victoria. Volume 2. Ferns and Allied Plants, Conifers and Monocotyledons*. Inkata Press, Melbourne.

Tasmanian Distribution

(As per Threatened Species and Marine Section records, April 2014)



1:25 000 Map Sheets

Bradys Lookout (?), Campbell Town, Cleveland, Conara, Cranbrook, Cressy, Delmont, Diamond, Egg Lagoon, Jacobs, Longford, Naturaliste, Nile, Puncheon, Waterhouse, Wihareja, Wingaroo.

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View

http://www.dpipwe.tas.gov.au/threatenedspecieslists

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Permit

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