Flora of Tasmania online

128 MENYANTHACEAE [1]

AM Gray [2]

Annual or perennial, aquatic or amphibious herbs; stems floating or erect and emergent, often rhizomatous or stoloniferous. Leaves alternate, simple (Australia) or compound, radical or cauline and often clustered at the base of the stem, exstipulate; petioles often with expanded or sheathing bases. Inflorescence a solitary flower (Tas.) or a fascicle or panicle or a raceme (not in Australia). Flowers actinomorphic, bisexual, sometimes heterostylous, 4(not in Tas.)–5-merous. Sepals free or united at the base, persistent. Corolla short-lived and deliquescent; tube short; lobes spreading, valvate or induplicate-valvate, usually with entire or laciniate lateral wings and a transverse fringe of hairs or papillae near the base, sometimes with a papillose or laciniate median keel. Stamens alternating with the petals, attached at or near the throat of the tube; anthers longer than the filaments, 2-celled, linear-oblong, dehiscence introrse. Ovary superior to semi-inferior, often with 4(not in Tas.)–5 nectary lobes at the base, 1-locular with 2–5 parietal placentae; style simple, persistent; stigmas 2–5, each with a papillate or laciniate wing. Fruit a capsule, ellipsoid to spherical, dehiscence apical, 4-valved, or fleshy and indehiscent. Seeds few or numerous, with endosperm.

A family of 5 genera and about 60 species found throughout tropical to cold temperate regions of the world. In Australia there are 3 genera and about 35 species. In Tasmania there are 3 genera and 6 species, including 1 monotypic genus, occurring only in Tasmania and New Zealand. Menyanthaceae are placed in Asterales near Goodeniaceae (mainly Australian), Calyceraceae (S America) and Asteraceae (cosmopolitan) (see APG II 2003).

The family is of little economic importance, apart from some species of *Menyanthes* L. from which certain anti-fever and arthritis medicines are extracted. Some species have minor horticultural use as pond or aquarium ornamentals. In Australia, a few species of *Nymphoides* have become minor environmental weeds in waterways while in some Asian countries some species cause serious problems, affecting navigation, irrigation and fish culture (Aston 1986).

Due to the mainly aquatic habitat preference of shallow, fresh water which in many localities may vary seasonally from permanent or intermittent inundation, to moist or dried out mud-pans, the general habit of some plants in this family may differ according to the prevailing weather. Some species, stranded for various periods, may not develop stolons or other adventitious structures and the internodes may be much contracted so that the plants may be considerably smaller and of a tufted habit. As well, petiole and leaf characteristics may show some departures from the typical (aquatic) forms.

In Tasmania, further critical collections of *Villarsia* and *Nymphoides* species, in particular, are required to more accurately determine their distribution.

Key reference: Aston (1986).

External resources: accepted names with synonymy & distribution in Australia (APC); author & publication abbreviations (IPNI); mapping (AVH, NVA); nomenclature (APNI, IPNI).

1 This work can be cited as: Gray AM (2009) 128 Menyanthaceae, version 2009:1. In MF Duretto (Ed.) *Flora of Tasmania Online*. 7 pp. (Tasmanian Herbarium, Tasmanian Museum & Art Gallery: Hobart). ISBN 978-1-921599-42-2 (PDF). **www.tmag.tas.gov.au/floratasmania**

2 Tasmanian Herbarium, Tasmanian Museum & Art Gallery, Private Bag 4, Hobart, Tasmania 7001, Australia.

1.	Flowers numerous, in large, open, showy panicles, usually erect and emergent or reclining; capsule dehiscent, opening in air by 4 apical valves	**1 Villarsia**
1:	Flowers solitary or in pairs, or in spaced pairs or clusters along floating or submerged stems, if the latter then only 1–2 flowers emergent at any one time on elongating pedicels; capsule usually indehiscent, usually ripening whilst submerged	2
2.	Flowers solitary, rarely in pairs, on terminal peduncles as long as or a little shorter than the leaves; leaves linear to linear-oblong or narrow, obtuse to sub-acute, fleshy, crowded at the nodes, usually arising from submerged stems	**2 Liparophyllum**
2:	Flowers solitary, or in spaced pairs or clusters, terminal or axillary, on peduncles shorter than the leaves; leaves orbicular or broadly elliptical, or broad ovate and deeply cordate, clustered or dispersed along horizontal, usually floating or submerged stems	**3 Nymphoides**

1 VILLARSIA

Villarsia Vent., *Choix Pl.* 2: 9 (1803).

Perennial, aquatic herbs, but sometimes stranded for various periods during dry periods. Leaves alternate or radical, on long, supple petioles that are variously expanded or sheathing at the base, arising from a thickened, often fleshy rootstock, or stolons; leaf blade erect and emergent and more or less concolorous, or floating and then strongly discolorous, ovate or elliptic or orbicular to reniform and shallowly to deeply cordate at the base, abaxial surface glossy, adaxial surface dull and distinctively gland-dotted, apex rounded to obtuse, margins entire to distantly and shallowly dentate, or crenate. Inflorescence an erect or semi-erect, open panicle or (not in Tas.) a dense head. Flowers bracteate, pedicellate, heterostylous or homostylous. Sepals 5. Corolla yellow (in Tas.), often showy, shortly tubular with 5 spreading lobes; lobes deliquescent, induplicate in bud, spreading. Stamens 5, epipetalous. Ovary semi-inferior. Capsule mostly ripening in air, opening by 4 apical valves. Seeds with or without a caruncle; testa smooth, granular or tuberculate.

A genus of about 15 species, in South Africa, Thailand, Laos, Cambodia and Australia; 13 species in Australia, all endemic; 3 species in Tasmania.

Key reference: Aston (1969).

1.	Leaves erect, usually much longer than broad, concolorous, dull; flowers heterostylous seed mostly 1.7–2.6 mm long, sparsely to densely tuberculate, (tubercles to 0.3 mm long), with a conspicuous caruncle	**1 V. exaltata**
1:	Leaves erect or floating, mostly about as long as broad, often strongly discolorous, more or less glossy; flowers homostylous; seed mostly 1.5 mm long, smooth or tuberculate, without caruncle	2
2.	Plants stoloniferous; leaf blades usually floating and strongly discolorous; scapes robust and usually erect; mature capsules on erect pedicels	**2 V. reniformis**
2:	Plants not stoloniferous; leaf blades usually erect to reclining, weakly discolorous; scapes lax, spreading; mature capsules on recurved pedicels	**3 V. umbricola**

1 Villarsia exaltata (Sims) G.Don, *Gen. Hist.* 4: 169 (1838) *Erect Marshflower*

Menyanthes exaltata Sims. Soland. ex Sims, *Curtis's Bot. Mag.* 26: t. 1029 (1807); *Limnanthemum exaltatum* (Sims) F.Muell., *Fragm.* 9 (72): 165 (1875); *Renealmia exaltata* (Sims) Kuntze, *Revis. Gen. Pl.* 2: 430 (1891).

Illustrations: Aston, *Muelleria* 2: 39, fig. 26; 40, fig. 27 (1969); Jacobs, *Fl. New South Wales* 3: 508 (1992); Aston, *Fl. Victoria* 4: 384, fig. 74g (1999).

Perennial, non-stoloniferous herb with fleshy roots. Radical leaves emergent, not floating; petioles up to 75 cm long; blades erect, broadly ovate to ovate-elliptic, 5–15 cm long, usually longer than broad, concolorous, surfaces dull, although sometimes with the abaxial surface a little darker, texture thick and sometimes more or less succulent, base narrowed to rounded or truncate, occasionally shallowly cordate, margins entire to crenate dentate or undulate. Scapes 1 to many, erect and held well above the radical leaves. Inflorescence an open, many-flowered panicle; bracts ovate, acute, (2–)4–5 mm long. Flowers heterostylous, pedicellate. Calyx 5-lobed, 3–5 mm long. Corolla bright yellow, 16–20(–30) mm diam., lobes (4)5, variable in shape, rarely with an obscure keel, wings broad, entire or crenulate. Ovary usually with 2 or occasionally 3 placentae, 10–20 ovules per placenta. Long-styled flowers: style slender, (3–)4–6 mm long; stigmas papillose,1–2.5 mm long, longer than broad, erect and with recurved edges, presented well above the anthers; filaments short, inconspicuous, 1 mm long; anthers 1.6–2.2 mm long. Short-styled flower: style thicker, stigmas papillose, 0.5–2 mm long, 1–1.8 mm broad, semi-erect to widely divergent, irregularly rounded, slightly undulate, hardly reaching the level of the anthers; filaments conspicuous; anthers 2–3 mm long. Fruiting pedicels erect, 4–12(–18) mm long; capsule 5–13 mm long, nearly equal to calyx, subglobular, to broad ellipsoid, the lower third to half adnate to calyx tube. Seeds broad ellipsoid, laterally compressed, (1.5–)1.7–2.6(–3) mm long, pale fawn to dark grey-black, usually with crowded, terete tubercles, to c. 0.3 mm or sometimes smaller, rarely absent, apices of tubercles minutely papillate; caruncle large, whitish or translucent, conspicuous. Flowering Nov.-Feb.; fruiting Feb.-Mar. (3 records only).

Tas. (BEL, FLI); also Qld, NSW, Vic. In Tasmania, known only from a few localities on the east coast, near St Helens and a little farther north at The Gardens. Mostly aquatic in still, fresh water to c. 60 cm deep; occasionally amphibian in wet-land areas and low-lying areas subject to occasional or seasonal inundation, usually in association with other wet-land sedges and other semi-aquatic vegetation. Listed as Rare under the *Tasmanian Threatened Species Protection Act 1995*.

2 Villarsia reniformis R.Br., *Prodr. Fl. Nov. Holl.* 457 (1810) *Running Marshflower*

Menyanthes sarmentosa Sims, *Bot. Mag.* 32: t. 1328 (1810); *Villarsia sarmentosa* (Sims) Roem. & Schult., *Syst. Veg. edn 16,* 4: 180 (1819). *Villarsia parnassiifolia* (Labill.) R.Br. var. *reniformis* (R.Br.) Griseb., *Gen. Sp. Gent.* (1838). *Villarsia parnassiifolia* var. *reniformis* Schltdl., *Linnaea 20: 607* (1847)*, nom. illeg., non* (R.Br.) Griseb. (1838). *Limnanthemum stygium* J.M.Black, *Trans. & Proc. Roy. Soc. South Australia* 42: 52, t. VI (1918); *Nymphoides stygia* (J.M.Black) H.Eichler, *Taxon* 12: 296 (1963) [as *N. stygium*]. *Villarsia exaltata p.p. sensu* W.M.Curtis, *The Student's Flora of Tasmania* 3: 483 (1967).

Illustrations: Aston, *Muelleria* 2: 47, fig. 30 (1969); Sainty & Jacobs, *Waterplants of New South Wales* 310 (1981); Aston, *Fl. S. Austral*. 2, edn. 4: 1050, fig. 514c (1986); Jacobs, *Fl. New south Wales* 3: 508 (1992); Aston, *Fl. Victoria* 4: 384, fig. 74f (1999); Corrick & Fuhrer, *Wildflowers of Victoria* 141, fig. 496 (2000); Spencer, *Horticultural Flora of South-Eastern Australia* 4: 134 (2002); Gilfedder *et al.*, *The Nature of the Midlands* 83 (2003); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, 4th edn, 100 (2008).

A perennial herb with fleshy roots, stoloniferous when in permanent water, stolons usually not developing on plants growing in temporary or shallow water; stolons to 2 m long. Radical leaves typically floating but lax to erect and emergent on plants in shallow water; petioles up to 65 cm long; blades broadly ovate to orbicular, or reniform-cordate, 3–8(–12) cm long, as long as or slightly longer than broad, basal sinus broad to very narrow or the lobes sometimes overlapping; floating leaves strongly discolorous, abaxial surface deep green and glossy, adaxial surface pale, dull green or purplish and strongly gland-dotted; emergent leaves similar to the floating leaves but less strongly discolorous, adaxial surface dull, abaxial surface greener with the glands almost inconspicuous; texture thick, margins entire to shallowly dentate-crenate. Scapes erect, or in deeper water reclining. Inflorescence a many-flowered panicle; bracts subtending the flowers ovate, acute c. 3–5 mm long. Flowers homostylous, pedicellate. Calyx 5-lobed, 6.5–12 mm long. Corolla yellow, 20–40 mm diam., lobes (4)5(6), not keeled, wings broad, entire to crenulate. Filaments short, 1–2 mm long, anthers 3–4(–5) mm long. Ovary with 2 placentae, ovules numerous. Style 0.5–3 mm long; stigma 2-lobed, papillose. Fruiting pedicels erect, 7–25(–35) mm long. Capsule 6–12 mm long, about as long as the calyx, adnate to the calyx tube only at the base. Seeds ellipsoid to sub-globular, fawn to pale brown, testa smooth or sometimes granular; without caruncle. Flowering Oct.-Mar.; fruiting Oct.-May.

Tas. (BEL, FLI, KIN, TCH, TNM, TNS, TSR, TWE); also SA, NSW, Vic. Widespread and mostly aquatic in still, fresh water 50–100 cm deep but also amphibian in wetland areas and low lying land subject to occasional or seasonal inundation, usually in association with emergent sedges and other semi-aquatic vegetation.

3 Villarsia umbricola Aston, *Muelleria* 2: 1 (1969) var. **umbricola** *Lax Marshflower*

Illustrations: Aston, *Muelleria* 2: pl. 2 (1969); Aston, *Fl. S. Austral*. 2, edn. 4: 1050, fig. 514d (1986); Aston, *Fl. Victoria* 4: 384, fig. 74e (1999).

A tufted perennial or sometimes annual to 110 cm high, erect or reclining, without stolons. Leaves radical; petioles 2.5–45 cm long; blades 1.8–12 cm long, ovate to broad ovate or almost circular, mostly aerial, erect to partially floating when in water, the blades more or less undulate and not lying flat on the surface, erect to spreading or reclining on land plants, concolorous, thin textured, base rounded to shallowly cordate, margins entire. Scapes often many, usually much longer than the leaves. Inflorescence paniculate, slender, lax, semi-erect to reclining on land plants, the panicle occupying much of the flowering stem; pedicels 5–40(–60) mm long. Flowers homostylous. Calyx (3–)6–9 mm long. Corolla yellow, 11–22(–30) mm diam.; lobes (4) 5 (6), not keeled, wings broad, entire to crenulate. Filaments short, 0.5–1.5 mm long; anthers 1.5–2.5 mm long. Ovary with 2 placentae, ovules 11–50 per placenta; style 1.5–2 mm long; stigmas 2, fleshy and papillose. Fruiting pedicels recurved, pendulous. Capsule 5–11 mm long, usually noticeably exserted by ⅓to ½, or more the length of the calyx. Seeds ellipsoid to sub-globular, slightly laterally compressed, 0.8–1.4–1.6 mm long, testa pale fawn to light brown, smooth or tuberculate; without caruncle. Flowering & fruiting Dec.-Jan.

Tas. (FLI?, TSE?, TWE); also SA, Vic. A poorly collected species found in damp, boggy areas, shallow fresh water pools and the edges of slowly flowing streams to 45 cm deep. In 2006, specimens from a population of this species were collected from Tiger Creek, just south of the Arthur River, on the Tasmanian west coast. More recently (2008), specimens, yet to be confirmed as this species, were collected from a number of localities on the east coast of the state. The species is perhaps more widespread but overlooked because of its resemblance to *V. reniformis*.

The other variety, *V. umbricola* var. *beaugleholei* Aston, differs mainly in the character of the seed testa, this being strongly tuberculate, the tubercles cylindrical, slightly expanded and minutely papillate at the apex.

2 LIPAROPHYLLUM

Liparophyllum Hook.f., *Hooker's J. Bot. Kew Gard. Misc.* 6: 472 (1847).

Small, rhizomatous herbs. Leaves alternate, radical, clustered on short erect stems. Flowers solitary or in pairs on terminal peduncles, usually shorter than the leaves, (4)5(6)-merous. Calyx deeply divided into 5 linear segments, persistent. Corolla with a short tube; lobes subrotate, longer than the calyx, with broad translucent margins, induplicate-valvate. Stamens epipetalous; filaments short, broad; anthers oblong, introrse. Disc fleshy. Gynoecium 1 locular with 2(–3) parietal placentae; style very short; stigmas 2. Fruit fleshy, indehiscent, spherical to sub-spherical. Seeds lenticular.

A monotypic genus occurring in Tasmania and New Zealand.

1 Liparophyllum gunnii Hook.f., *Hooker's J. Bot. Kew Gard. Misc.* 6: 473 (1847) *Alpine Marshwort*

Limnanthemum gunnii (Hook.f.) Hook.f., *Bot. Antarct. Voy. III (Fl. Tasman.)* 2(10): 368, 421 (1860); *Villarsia gunnii* (Hook.f.) Hook.f., *Bot. Antarct. Voy. III. (Fl. Tasman.)* 2(10): 368, 421 (1860).

Illustrations: Kirkpatrick, *Alpine Tasmania* 104, fig. 46b (1997); Whiting *et al.*, *Tasmania's Natural Flora* 205 (2004).

Glabrous aquatic or amphibious herbs, the plants often covering area several metres in diameter; rhizomes long, fleshy, branching; roots large, fleshy, submerged in mud. Leaves mostly crowded at the ends of emergent stems up to 5 cm tall; blade (10–)30–40(–50) mm long, thick, fleshy, terete or bi-convex, narrow lanceolate, linear-lanceolate or linear-spathulate, apex bluntly pointed and obscurely gland-tipped, with membranous, sheathing bases. Flowers solitary or in pairs, terminal, c. 5 mm diam., on stout pedicels, as long as, or shorter than, the leaves. Sepals persistent, narrow linear, lobes 3–5 mm long, fleshy, obscurely gland-tipped. Corolla subrotate, the lobes longer than the calyx, narrow ovate, undulate, white, inner surface slightly hairy. Stamens epipetalous; filaments relatively broad and scarcely longer than the anthers. Ovary superior, tapering to a short, persistent style; stigmatic lobes 2, broad. Capsule spherical to sub-spherical, c. 4–6 mm diam.; seeds numerous, lenticular; testa yellowish, smooth, glossy, minutely reticulate. Flowering & fruiting Dec.-Mar.

Tas. (TCH, TSR, TWE); also New Zealand. Locally frequent in higher areas in the west of the state, around the margins of shallow tarns, pools, and slowly flowing steams, in sand or mud, either submerged or emergent in seasonally dry periods.

3 NYMPHOIDES

Nymphoides Ség, in J.Hill, *The British Herbal* 77 (1756).

Synonymy: *Limnanthemum* S.G.Gmel., *Novi Comment. Acad. Sci. imp. Petrop.* 14(1): 527 (1770); *Villarsia* section *Limnanthemum* (S.G.Gmel.) F.Muell., *Fragm. (Mueller)* 4(27): 127 (1864).

Perennial aquatic or amphibious herbs, often shortly rhizomatous; stems erect or floating, often stoloniferous. Leaves alternate, radical or cauline, exstipulate; petioles winged to sheathing at the base. Leaf blades ovate to orbicular (Tas.), or elliptic, triangular to sagittate, base rounded to strongly cordate, entire or crenate, semi-erect or usually floating, and then strongly discolorous, usually glossy adaxially, dotted and pale green, or purplish abaxially. Inflorescences bearing flowers in pairs along the axis or condensed to a tight cluster of flowers subtended by several leaves at a stem node (Tas.) or a unilateral fascicle arising at the junction of a long petiole-like stem and a true petiole of a solitary subtending leaf. Flowers on long pedicels, heterostylous or homostylous. Corolla yellow or white (Tas.), or pink or orange. Capsule ellipsoid, mostly indehiscent and ripening underwater on recurved pedicels or sometimes dehiscing by valves when the fruits are aerial.

A genus of about 32 species in most tropical and temperate parts of the world; about 17 species in Australia, 2 species in Tasmania.

1.	Leaves (3–)5–7(–10) mm diam, texture thin; petioles 5–15–30(–50) mm long. Flowers solitary or in pairs	**1 N. exigua**
1:	Leaves 20–35–65 mm diam., texture thick; petioles 2–65 cm long; flowers in spaced pairs or clusters, usually one flower emergent at any time	2
2.	Leaves not or only obscurely crenate; corolla lobes not keeled; placentae and stigmas usually two, stigmas not decurrent; seed with a prominent circular caruncle	**2 N. montana**
2:	Leaves mostly crenate to crenate-dentate; corolla lobes with laciniate longitudinal keel on the inner surface; placentae 5; stigmas 5, decurrent on the style; seeds without caruncle	**N. crenata** [+]

[+] Curtis (1967) included *N. crenata* (F.Muell.) Kuntze in her treatment of Gentianaceae, with the comment: "collected only once from the Carlton River near Dunalley". There are no specimens of this species from that or any other Tasmanian locality held at the Tasmanian Herbarium and this species is not treated further here.

1 Nymphoides exigua (F.Muell.) Kunze, *Revis. Gen. Pl.* 2: 249 (1891) *Dwarf Marshwort*

Limnanthemum exiguum F.Muell., *Fragm. (Mueller)* I(2): 40 (1858); *Villarsia exigua* (F.Muell.) F.Muell., *Fragm. (Mueller)* 2(15): 137 (1861), *nom. illeg. Nymphodes exiguum* Kuntze, *Revis. Gen. Pl.* 2: 429 (1891).

Illustrations: Stones & Curtis, *The Endemic Flora of Tasmania* 6: t. 135, No. 223 (1978); Kirkpatrick, *Alpine Tasmania* 104, fig.46a (1997); Gilfedder *et al.*, *The Nature of the Midlands* 83 (2003); Aston, *Muelleria* 18: 41, figs 24–27 (2003), detail of seed.

Small, perennial herbs. Stems rhizomatous or floating, often tangled and forming large masses in still, fresh or brackish water, or in wet mud. Leaves arising from a stout rootstock, and from subtending runners which root at the nodes and produce tufts of emergent leaves along long, floating stems; petioles 1–3(–5) cm long, filiform but expanded at the base; blade obovate or broadly elliptical, or nearly orbicular, (2–)4–5(–8) mm long, margins entire, texture thin in submerged leaves, fleshier in emergent leaves or on exposed plants growing in mud. Flowers small, solitary, or two together at the nodes; pedicels shorter or seldom as long as than the leaves. Calyx persistent, lobes broadly triangular, obscurely gland-tipped, 0.5–2 mm long. Corolla pale yellow, tube scarcely as long as the sepals; lobes entire, rotate, as long as the sepals. Style short, with 2 short stigmatic lobes, persistent. Capsule broadly ovoid to spherical, c. 3 mm diam. Seeds c. 1 mm long, ellipsoid-lenticular; pale fawn, smooth, shining. Flowering Nov.-Feb.; fruiting Feb.-Mar.

Tas. (KIN, TCH, TSE, TSR, TWE); endemic. Locally abundant from sea level to c. 800 m alt., in shallow pools and along the banks of slowly flowing streams, either submerged, in mud, or in herb 'lawns', with other small, semi-aquatic herbs; also tolerates brackish water in coastal lagoons.

2 * ? Nymphoides montana Aston, *Muelleria* 5, 1 (1982) *Entire Marshwort*

Nymphoides geminata sensu Aston, *Aquatic Pl. Australia* 111 (1973), *non* (R.Br.) Kuntze (1881).

Illustrations: Aston, *Muelleria* 5 (1): 37, fig. 1 (1982); Aston, *Fl. Victoria* 4: 384, fig. 74a (1999); Aston, *Muelleria* 18: 50, figs 64–69 (2003), detail of seed.

Robust perennial aquatic or amphibious herbs; stems to 2+ m long, floating, stoloniferous. Leaves: petioles of basal leaves to 65 cm long, sheathing at the base; blade broadly ovate to almost spherical, 2–10 cm long, deeply cordate, margins entire or rarely obscurely crenate, discolorous, green adaxially, purplish and gland dotted abaxially. Flowers heterostylous, in well spaced pairs along an elongated, submerged inflorescence up to 30 cm long, with usually only one flower emerging and opening at a time; fruiting capsule recurved, becoming submerged following anthesis. Calyx (5–)6–8(–10) mm long, margins of the lobes narrowly membranous. Corolla bright yellow, 20–35 mm diam., lobes 5–(6), not keeled, with broad laciniate wings, glabrous but with a tuft of hairs just below the middle and another near the base. Style with 2 ornate stigmatic lobes. Capsule 5–10 mm long, equal to or slightly longer than the calyx, usually indehiscent in deeper water, the capsules dispersing as the pedicels decay. Seeds ellipsoid, strongly dorsally compressed, 1–1.5 mm long; testa smooth, black when mature; caruncle thin, pale. Flowering Nov.-Feb.; fruiting Feb.-Mar.

Tas. (TSE); also NSW, Vic. This species is known only from a single collection made at an artificial dam situated at Longley in southern Tasmania. The plants in this dam apparently originated from a plant collected from the East Coast of Tasmania. It is not known if this species is a Tasmanian native or introduced from interstate. Outside Tasmania the species is found in highland areas along the edges of slow to fast flowing streams up to 2 m deep.

REFERENCES

APC (Australian Plant Census) http://www.chah.gov.au/apc/about-APC.html

APG II (2003) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG II. *Botanical Journal of the Linnean Society* **141** 399-436.

APNI (Australian Plant Name Index) http://www.anbg.gov.au/cgi-bin/apni

Aston HI (1969) The genus *Villarsia* (Menyanthaceae) in Australia. *Muelleria* **2** 3–63.

Aston HI (1986) Menyanthaceae. *Flora of South Australia*, edn 4, **2** 1048–1050.

AVH (Australia's Virtual Herbarium) (Council of Heads of Australasian Herbaria) http://www.anbg.gov.au/avh.html

Curtis WM (1967) Gentianaceae.*The Student's Flora of Tasmania* **3** 477–484.

IPNI (International Plant Name Index) http://www.ipni.org/index.html or http://www.us.ipni.org/index.html

NVA (Natural Values Atlas) (Department of Primary Industries and Water: Hobart) http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LJEM-6TV6TV?open

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