



## 95 POLYGONACEAE <sup>1</sup>

Dennis I Morris <sup>2</sup>

Annual or perennial herbs, shrubs or twining plants, rarely trees; stems often swollen at the nodes. Leaves alternate or rarely opposite or whorled, simple; petioles expanded at the base and fused to the stipules which form a membranous sheath (ochrea) around the stem; lamina usually entire. Inflorescence a contracted or elongated raceme or panicle, each branch or flower subtended by a small ochrea-like sheath (ochreola). Flowers small, bisexual or unisexual and then the plant either monoecious or dioecious. Receptacle hypogynous. Perianth segments 2–6, petaloid or sepaloid, usually in 2–3 whorls, imbricate in the bud and often enlarging in the fruiting stage. Stamens 2–9. Carpels (2)3(4); ovary superior, unilocular; styles as many as the carpels, free or fused at base. Fruit an achene or small nut, lenticular or trigonous, usually with as many angles as stigmas, usually falling with the persistent perianth.

A family of about 30 genera and 1100 species; cosmopolitan but mainly in temperate regions of the Northern Hemisphere. Australia has about 60 species in 10 genera (4 of them native). In Tasmania there are 24 species in 8 genera. The Polygonaceae are a clearly defined family though its relationships to other families are unclear (see Brandbyge 1993). It is considered to be part of the Caryophyllales possibly near Plumbaginaceae (worldwide), Frankeniaceae (worldwide) and Tamaricaceae (Eurasia & Africa) (see Stevens 2007 & references cited therein).

The family is of some economic importance because of some weedy genera, eg. *Acetosa*, *Acetosella* (Sorrel) and *Rumex* (Docks). Food plants include *Acetosella* (Sorrel), *Fagopyrum esculentum* Moench (Buckwheat), *Persicaria odorata* (Lour.) Sojak (Vietnamese Mint, Vietnamese Hotmint) and *Rheum x cultorum* Thorsrud & Reisaeter (Rhubarb). Members of the family are often used in horticulture (see Spencer 1997).

Synonymy: Persicariaceae.

Key references: Ronse Decraene & Akeroyd (1988); Wilson (1988, 1990, 1996).

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

1.	Perianth segments 3–5, not in 2 distinct whorls	2
1:	Perianth segments 6, in 2 distinct whorls	6
2.	Woody shrubs or perennials with cane-like stems; flowers unisexual or functionally so	3
2:	Annual or perennial herbs; flowers bisexual	4
3	Plants with cane-like stems; outer perianth segments winged	<b>3 Fallopia</b>
3:	Climbing, straggling or prostrate shrubs; outer perianth segments not winged	<b>4 Muehlenbeckia</b>
4.	Plant twining; outer perianth segments winged	<b>3 Fallopia</b>
4:	Plant not twining; outer perianth segments not winged	5

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<sup>2</sup> (deceased) formerly Tasmanian Herbarium, Tasmanian Museum & Art Gallery, Private Bag 4, Hobart, Tasmania 7001, Australia.

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| 5. | Ochreae silvery or pale brown; flowers solitary or a few together in leaf axils; perianth segments green with white margins   | <b>1 Polygonum</b>  |
| 5: | Ochreae brown or hyaline; flowers in groups subtended by ochreolae, arranged in terminal or axillary spike-like panicles or spikes; perianth segments pink or whitish | <b>2 Persicaria</b> |
| 6. | Fruiting perianth with a hard, 3-angled tube; outer segments spreading, spinous   | <b>8 Emex</b>       |
| 6: | Fruiting perianth with outer segments smaller than the inner, not spinous   | 7                   |
| 7. | Flowers bisexual  | 8                   |
| 7: | Flowers unisexual   | 9                   |
| 8. | Plant not climbing; inner perianth segments not membranous and greatly enlarged in fruit  | <b>5 Rumex</b>      |
| 8: | Plant climbing; inner perianth segments membranous, net-veined, greatly enlarged in fruit   | <b>6 Acetosa</b>    |
| 9. | Plant monoecious  | <b>5 Rumex</b>      |
| 9: | Plant dioecious or rarely polygamous  | <b>7 Acetosella</b> |

## 1 \* POLYGONUM

*Polygonum* L., *Sp. Pl.* 359 (1753).

Annual or perennial herbs; stems prostrate, procumbent or erect from a woody rootstock. Leaves alternate, subsessile, articulate at the junction with the ochrea; ochrea glabrous, silvery or pale brown, rapidly becoming lacerate. Flowers bisexual, solitary or in clusters in the axils of the upper leaves. Perianth segments usually 5, sepaloid, green with wide petaloid pink or white margins, not winged or keeled, scarcely enlarged in fruit. Stamens 5–8; filaments widely dilated at base; anthers versatile. Style (2)3; stigmas capitate. Nut trigonous or rarely biconvex.

An almost cosmopolitan genus of about 50 species with 5 species in Australia. In Tasmania there are 2 naturalized species.

Key references: Wilson (1988, 1996).

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|----|--|------------------------|
| 1. | Leaves of lateral branches usually c. $\frac{1}{2}$ as long as those of the main stems; perianth united for c. $\frac{1}{3}$ of its length | <b>1 P. aviculare</b>  |
| 1: | Leaves of lateral branches $\pm$ equalling those of the main stems; perianth united for c. $\frac{1}{2}$ of its length                     | <b>2 P. arenastrum</b> |

### 1 \* *Polygonum aviculare* L., *Sp. Pl.* 1: 362 (1753)

*Wireweed*

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 206 (1987); Walsh, *Fl. Victoria* 3: 274, fig. 53d-f (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 306 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 288 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 346 (2006).

Much-branched annual herb from a long slender tap root; branches decumbent, up to 1.4 m long or sometimes ascending or erect, wiry, striate. Lower leaves: petiole short, articulate at the junction with the ochrea; lamina elliptic to lanceolate, 2–5 cm long, 5–15 mm wide, margins entire, sometimes undulate. Upper leaves smaller than those on the main stems. Flowers in axillary clusters of 1–5. Perianth 2.5–4 mm long, the segments united for c.  $\frac{1}{3}$  of their length, green with white or pink margins. Nut 2.5–3 mm long, ovoid-trigonous, two faces usually wider than the third, mid to dark brown, minutely striate-punctate. Flowering & fruiting Dec.-Apr.

Tas. (KIN); naturalized in all states of Australia; native to Europe, widely naturalized in temperate regions including New Zealand. Common in all settled areas of the State as a weed of arable and pasture land, roadside, waste area, gardens.

**2 \* Polygonum arenastrum** Jord. ex Boreau, *Fl. Centre France (Boreau)* ed. 3, 2: 559 (1857) *Wireweed*

*Polygonum aequale* Lindm., *Svensk Bot. Tidskr.* 6: 692 (1912); *P. aviculare* subsp. *aequale* (Lindm.) Asch. & Graebn., *Syn. Mitteleur. Fl.* 4: 848 (1913). *Polygonum plebeium sensu* W.M.Curtis, *The Student's Flora of Tasmania* 3: 589 (1967), *non* R.Br. (1810).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 206 (1987); Walsh, *Fl. Victoria* 3: 274, fig. 53g-j (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 288 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 346 (2006).

Mat-forming annual herb to 1.5 m diam.; stems procumbent or prostrate. Leaves 5–20 mm long, 2–5 mm wide, narrow-elliptic, all ± equal in size but slightly smaller towards the ends of the branches, margins slightly recurved or the blade slightly convex; ochrea reddish-brown below, silvery above, rapidly becoming torn. Flowers 1–3 in axillary clusters. Perianth 2–3 mm long, the segments united for c. 1/2 of their length, green with white or pink margins. Nut 2–2.5 mm long, trigonous with 2 wide and 1 narrow side or almost biconvex. Flowering & fruiting Jan.–Apr.

Tas. (FLI, TNM, TNS, TSE, TSR); also naturalized in WA, SA, Qld, NSW, Vic.; native of Europe, also naturalized in New Zealand. Weed of cultivated and pasture land, roadsides, waste areas, gardens, from near sea level to c. 600 m alt.

## 2 PERSICARIA

*Persicaria* Mill., *Gard. Dict. Abr. ed.* 4: 3 (1754).

Annual or perennial herbs, rarely rhizomatous or stoloniferous; stems erect or decumbent, usually swollen at the nodes. Leaves alternate, simple, petiolate; ochreae tubular, membranous, brown or hyaline. Flowers bisexual, in groups subtended by an ochreola, arranged in terminal or axillary spike-like inflorescences. Perianth segments 4–5, herbaceous or more commonly pink or white, somewhat enlarged in fruit. Stamens 4–8, inserted on the perianth segments; anthers versatile. Styles 2–3; stigmas capitate. Nut lenticular, biconvex or trigonous.

A cosmopolitan genus of about 150 species; 15 species in Australia.

Key references: Wilson (1988, 1990, 1996).

The key given here has been adapted from that published by Baker (2007).

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|----|--|--------------------------|
| 1. | Some or all leaves hastate or cordate-sagittate  | <b>1 P. praetermissa</b> |
| 1: | All leaves narrowed at the base  | 2                        |
| 2. | Inflorescence an ovoid or globose head, no more than twice as long as wide   | 3                        |
| 2: | Inflorescence an elongate spike or spike-like raceme or panicle, more than four times as long as wide  | 5                        |
| 3. | Ochreae usually terminating in a green, toothed or lobed limb; perianth green  | <b>2 P. prostrata</b>    |
| 3: | Ochreae without a green limb at the apex ( <i>P. capitata</i> often has a leaf-like projection at the petiole-ochrea junction); perianth pink to whitish | 4                        |

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|----|---|--------------------------|
| 4. | Leaves ovate to elliptic, up to 3.5 cm long; perianth c. twice as long as the nut; plants prostrate   | <b>P. capitata</b> +     |
| 4: | Leaves lanceolate, 3–15 cm long; perianth only slightly exceeding the nut; plants ascending to erect  | <b>5 P. maculosa</b>     |
| 5. | Perianth conspicuously or sparsely glandular  | 6                        |
| 5: | Perianth without glands   | 7                        |
| 6. | Inflorescence slender; perianth segments usually five; ochreae ciliate at apex  | <b>3 P. hydropiper</b>   |
| 6: | Inflorescence stout; perianth segments usually four; ochreae not ciliate at apex  | <b>4 P. lapathifolia</b> |
| 7. | Inflorescences mostly axillary, dense, shorter or scarcely longer than the leaves   | <b>2 P. prostrata</b>    |
| 7: | Inflorescences mostly terminal or terminating lateral branches, usually extending well beyond the leaves  | 8                        |
| 8. | Leaves uniformly green, with conspicuous stiff hairs that are long on the abaxial surface but short on the adaxial  | <b>6 P. subsessilis</b>  |
| 8: | Leaves often with a dark blotch near the centre, apparently glabrous although sometimes with scattered hairs especially on the abaxial surface, or with glandular dots, and the margins often with short, stiff, curved hairs | 9                        |
| 9. | Inflorescence slender, 3–5 mm diam., with the groups of flowers distinct and not, or scarcely, overlapping  | <b>7 P. decipiens</b>    |
| 9: | Inflorescence stout, 7–10 mm diam., with the groups of flowers crowded and overlapping  | <b>5 P. maculosa</b>     |

+ *Persicaria capitata* (Buch.-Ham. ex D.Don) H.Gross (Pink-head Knotweed) is a native of Asia and is common garden plant and widely naturalized in Australia and elsewhere (Baker 2007). In Tasmania it occasionally becomes established in urban situations and a colony of plants has been located in western Tasmania near the King River (Baker 2007).

**1 *Persicaria praetermissa*** (Hook.f.) H.Hara, *Fl. E. Himalaya* 73 (1966)

*Spotted Knotweed*

*Polygonum praetermissum* Hook.f., *Fl. Brit. Ind. (J.D.Hooker)* 5: 47 (1886). *Polygonum strigosum sensu* J.D.Hook., *Bot. Antarct. Voy. Ill. (Fl. Tasman.)* 1: 307 (1860); G.Bentham, *Fl. Austral.* 5: 268 (1870); L.Rodway, *Tasman. Fl.* 162 (1903); W.M.Curtis, *Student's Flora of Tasmania* 3: 589 (1967); J.Willis, *Handbook Plants of Victoria* 2: 74 (1973), *non* R.Br. (1810).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 204 (1987); Walsh, *Fl. Victoria* 3: 278, fig. 54a-b (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 281 (2000).

Procumbent or scrambling perennial, stems up to 1.5 m long, reddish, ribbed, sparingly to densely retrorse-strigose. Leaves: ochreae c. 15 mm long, prominently veined, glabrous or with a few scattered short hairs, apex not ciliate, base with a ring of coarse appressed retrorse bristles; petiole 3–15 mm long, sparingly antrorsely or retrorsely hairy; lamina narrow-triangular, hastate, 3.5–7 cm long, 0.8–1.7 cm wide, margins minutely antrorsely ciliate, veins with scattered short coarse hairs. Inflorescence arising from the upper leaf axils, 5–9 cm long, once or twice branched above the mid-point, ochreolae c. 3.5 mm long, pink, free to near the base, peduncle and branches with spreading glandular hairs, flowers few, distant on the branches. Nut 2.5–3 mm long, brown to blackish, bluntly trigonous, style-base persistent. Flowering & fruiting Dec.-Mar.

Tas. (BEL, FLI, TNM, TNS, TSE); also SA, NSW, Vic.; also Asia; naturalized in New Zealand. Found on banks of rivers, creeks and drainage ditches and on river flats in lowland areas.

**2 \* ? *Persicaria prostrata* (R.Br.) Soják, *Preslia* 46: 154 (1974)***Creeping Knotweed**Polygonum prostratum* R.Br., *Prodr. Fl. Nov. Holland.* 419 (1810).

*Illustrations:* Walsh, *Fl. Victoria* 3: 278, fig. 54c-d (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 281 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 345 (2006).

Prostrate perennial herb with a ± woody root stock; stems up to 40(–60) cm long, woody at the base, reddish, sparingly or densely antrorsely strigose or subglabrous. Leaves: ochreae glabrous or with a few scattered hairs on the sheath, apex ciliate and usually expanded into a green toothed or lobed limb; petioles short, adnate to the sheath; lamina 2–5 cm long, 7–10 mm wide, lanceolate to elliptic green, occasionally with a purple blotch at about the mid-point, antrorsely strigose to subglabrous, margins antrorsely ciliate, lower surface occasionally with sessile glands. Inflorescences axillary and terminal, pedunculate, cylindrical, 1–3(–4?) cm long, 5–7 mm wide, the flowers 2–4 at each node. Perianth segments c. 2 mm long, elongating to c. 3 mm in fruit, free to about the mid-point, green, sometimes with white margins. Nut 1.7–2 mm long, broadly ovoid-lenticular, black, shining, minutely colliculate. Flowering & fruiting Jan.–Mar.

Tas. (BEL, KIN, TNM, TNS); all Australian states; naturalized in New Zealand. Local along creek and river margins and in damp areas. In some specimens the strigose hairs and cilia are caducous, leaving the whole plant apparently glabrous except for the minute bulbous bases which give the stems and leaf-margins a scabrous or glandular appearance.

**3 *Persicaria hydropiper* (L.) Spach, *Hist. Nat. Veg. (Spach)* 10: 536 (1841)***Water Pepper**Polygonum hydropiper* L., *Sp. Pl.* 361 (1753).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 205 (1987); Walsh, *Fl. Victoria* 3: 278, fig. 54e-g (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 282 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 344 (2006).

Erect or geniculate annual to 1 m high; stems glabrous, ± gland-dotted, ± ribbed. Leaves: ochreae 8–17 mm long, glabrous or with a few small antrorse hairs, apex with cilia 0.5–3 mm long; petiole scabrous 3–8 mm long, adnate to the ochrea; lamina narrow-ovate to lanceolate or elliptic, 3.5–11 cm long, 0.7–15 mm wide, with an acrid, peppery taste, minutely gland-dotted, glabrous or with antrorse hairs on the midrib below, at least in the upper half, margins minutely antrorsely ciliate. Inflorescences axillary, slender, up to 14 cm long; ochreolae 2.5–3 mm long, apex ciliate or not. Perianth segments 3.5–4.5 mm long, free for  $\frac{2}{3}$  of their length, conspicuously glandular, green or occasionally pinkish. Nut 2.2–3 mm long, ovate, biconvex or shallowly trigonous, dark brown to blackish, minutely rough. Flowering & fruiting Jan.–Jun.

Tas. (BEL, KIN, TNM, TNS); also WA, Qld, NSW, Vic.; also New Zealand, Temperate Asia, Europe, North America. Found in river and creek banks and gravel beds in lowland areas.

**4 \* *Persicaria lapathifolia* (L.) Gray, *Nat. Arr. Brit. Pl.* 2: 270 (1821)***Pale Knotweed**Polygonum lapathifolium* L., *Sp. Pl.* 360 (1753). *Polygonum lanigerum* R.Br., *Prodr. Fl. Nov. Holland.* 419 (1810).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 205 (1987); Walsh, *Fl. Victoria* 3: 278, fig. 54h-i (1996); Corrick & Fuhrer, *Wildflowers of Victoria* 181, fig. 634 (2000); Wilson, *Fl. New South Wales* 1, rev. edn: 282 (2000).

Erect or ascending annuals or biennial; stems up to 65(–100) cm high, glabrous or with a few strigose hairs. Leaves: ochreae with a few scattered hairs or glabrous, apex without cilia or minutely ciliate; lamina lanceolate to elliptic, 5–11(–20?) cm long, 0.8–18(–45?) mm wide, adaxial surface glabrous, abaxial surface gland-dotted, midrib and main veins ± strigose, margins antrorsely ciliate, petioles antrorsely ciliate, adnate to c. the mid-point of the ochrea. Inflorescence of axillary and terminal cylindrical pedunculate spikes 2–3(–7?) cm long, branches

and peduncles ± densely covered with subsessile yellowish glands. Perianth c. 2 mm long in flower, 3 mm long in fruit, pinkish, the lobes free for  $\frac{2}{3}$  the length of the perianth, sparsely to moderately glandular, veins prominent, bifurcate and recurved. Nut 2.5–3 mm long, suborbicular, lenticular or biconcave, dark brown or blackish. Flowering & fruiting Jan.-Mar.

Tas. (KIN, TNM, TNS, TSE); naturalized in all Australian states; native to SW Asia, Europe, NW Africa; naturalized in New Zealand. Uncommon as a weed in arable crops.

**5 \* *Persicaria maculosa*** Gray, *Nat. Arr. Brit. Pl.* 2: 269 (1821)

*Redbank*

*Polygonum persicaria* L., *Sp. Pl.* 361 (1753). *Polygonum minus sensu* Hook.f., *Bot. Antarct. Voy. Ill. (Fl. Tasman.)* 1: 307 (1860); G.Bentham, *Fl. Austral.* 5: 269 (1870); L.Rodway, *Tasman. Fl.* 163 (1903), *p.p., non* Huds. (1762).

*Illustrations:* Walsh, *Fl. Victoria* 3: 278, fig. 54j-k (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 281 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 344 (2006).

Erect or ascending annual; stems glabrous, up to 60 cm high, green or reddish. Leaves: ochrea ± hyaline with weak antrorse hairs, apex with cilia up to 3 mm long; lamina elliptical to narrow-lanceolate, 3–12 cm long, 8–20 mm wide, adaxial surface with short antrorsely curved strigose hairs, at least towards the apex, midrib strigose below, margins antrorsely ciliate. Flower spikes dense, short-cylindrical or ovate, ± interrupted below, 1–2.5 cm long, 7–10 cm wide. Perianth c. 2.5 mm long in flower, to 3.5 mm in fruit, the lobes free for  $\frac{2}{3}$  the length of the perianth, ± glandular, the glands often indistinct. Nut 2–2.3 mm long, lenticular, black. Flowering & fruiting Dec.-Feb.

Tas. (KIN, TNM, TNS, TSE); also naturalized in WA, SA, NSW, Vic.; native to Europe; naturalized in New Zealand. Found on creek and river banks gravel beds in streams, damp areas and roadside drains.

**6 *Persicaria subsessilis*** (R.Br.) K.L.Wilson, *Telopea* 3: 180 (1988)

*Hairy Knotweed*

*Polygonum subsessile* R.Br., *Prodr. Fl. Nov. Holland.* 419 (1810); *P. minus* Huds. subsp. *subsessile* (R.Br.) Danser, *Bull. Jard. Bot. Buitenzorg ser. 3*, 8: 176 (1927).

*Illustrations:* Walsh, *Fl. Victoria* 3: 278, fig. 54n-o (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 283 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 345 (2006).

Erect or ascending perennial, rhizomatous; stems to 100 cm high, sparsely to densely antrorsely strigose, green or reddish. Leaves: ochreae antrorsely strigose, apex with cilia 5–8 mm long; lamina subsessile, up to 12 cm long, 6–13 mm wide, lanceolate to narrow-elliptic, shortly adnate to the base of the ochrea, antrorsely strigose, the hairs short on the upper surface, longer on the lower, margins antrorsely ciliate. Inflorescences terminal and axillary, linear-cylindrical, c. 2.5 cm long, 4–7 mm wide, sometimes interrupted at the base; peduncles 2–6 cm long, sometimes branched, antrorsely strigose; pedicels longer than the ochreolae. Flowers 2.5–3 mm long, elongating in fruit, green, white or pale pink, the lobes free for c.  $\frac{1}{2}$  the length of the perianth. Nut ovoid-lenticular, c. 2.5 mm long, dark brown or blackish, smooth, shining. Flowering & fruiting Jan.-Mar.

Tas. (FLI, TNM); also WA, Qld, NSW, Vic.; also New Guinea, New Caledonia. Known only from the Launceston area and the Ringarooma River at Gladstone.

**7 *Persicaria decipiens*** (R.Br.) K.L.Wilson, *Telopea* 3: 178 (1988)

*Slender Knotweed*

*Polygonum decipiens* R.Br., *Prodr. Fl. Nov. Holland.* 420 (1810); *P. minus* Huds. subsp. *decipiens* (R.Br.) Danser, *Bull. Jard. Bot. Buitenzorg ser. 3*, 8: 178 (1927). *Polygonum salicifolium* Brouss. ex Willd., *Enum. Pl.* 1: 428 (1809). *Polygonum minus sensu* L.Rodway, *Tasman. Fl.* 163 (1903), *p.p., non* Huds. (1762).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 205 (1987); Walsh,

*Fl. Victoria* 3: 278, fig. 54l-m (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 282 (2000); Sainty & Jacobs, *Waterplants in Australia, a Field Guide* 248, 249 (2003); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 344 (2006).

Decumbent or erect perennial; stems up to 90 cm long, often rooting at the nodes, glabrous. Leaves: ochreae glabrous or antrorsely strigose, apex with cilia up to 3.5 mm long; petioles 0.5–1.5 cm long; lamina lanceolate to elliptical, 3–15 cm long, 7–30 mm wide, occasionally with a purplish blotch at about the mid-point, margins antrorsely ciliate, midribs glabrous or occasionally strigose, especially below, abaxial surface ± prominently gland-dotted. Inflorescences arising from the uppermost leaf-axils, the terminal spikes usually in pairs, spikes cylindrical, 2–5 cm long, 3–5 mm wide, occasionally interrupted below, peduncles up to 9 cm long. Flowers c. 2.5 mm long, to 3 mm in fruit; perianth lobes free for  $\frac{2}{3}$  the length of the perianth. Nut ovate, plano-convex, biconvex or trigonous, black, smooth, shining. Flowering & fruiting Dec.-Jun.

Tas. (FLI, TNM, TNS, TSE); all Australian States; also New Zealand, Malesia, Asia, Europe. Found on stream and river banks, gravel beds in streams, and other damp areas at lower altitudes.

### 3 \* FALLOPIA

*Fallopia* Adans., *Fam. Pl. (Adanson)* 2: 277, 557 (1763).

Synonymy: *Reynoutria* Houtt., *Nat. Hist. (Houttuyn)* 2(8): 639, t. 51 (1777).

Annual or perennial herbs; sometimes twining or forming thickets of cane-like stems. Leaves alternate, petiolate, ovate to deltoid, base truncate to cordate-sagittate; ochreae brown or whitish, truncate, soon disintegrating. Inflorescences terminal or axillary, paniculate or spike-like. Flowers bisexual or functionally unisexual and the plants dioecious. Perianth segments 5–6, the outer 3 segments larger, keeled or winged, pale green, white or tinged pink. Stamens 8. Styles 3-branched; stigmas subsessile, capitate or peltate. Nut trigonous, enclosed within the persistent perianth.

A genus of about 12 species of the Northern Hemisphere: 2 or 3 species naturalized in Australia.

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|----|--|-------------------------|
| 1. | Plants annual; stems twining; leaves hastate at the base                             | <b>1 F. convolvulus</b> |
| 1: | Plants perennial; stems stout, cane-like up to 2 m high; leaves truncate at the base | <b>2 F. japonica</b>    |

**1 \* Fallopia convolvulus** (L.) A.Löve, *Taxon* 19: 300 (1970)

*Black Bindweed*

*Polygonum convolvulus* L., *Sp. Pl.* 1: 364 (1753); *Bilderdykia convolvulus* (L.) Dumort., *Fl. Belg. (Dumortier)* 18 (1827).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 203 (1987); Walsh, *Fl. Victoria* 3: 280, fig. 55 (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 284 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 342 (2006).

Annual herb, branched from the base; stems twining or sprawling, up to 1.2 m long, slender, glabrous or slightly mealy, ribbed, the ribs finely scaberulous. Leaves: ochrea obliquely truncate whitish, becoming brown with age, with a green midrib and 2 green lateral veins; petioles slender, up to 6 cm long; lamina 2–7 cm long, deltoid or ovate-sagittate, entire, apex acute, cuspidate or acuminate. Inflorescence a terminal racemes on slender peduncles or flowers in axillary clusters; ochreolae membranous, midrib green; pedicels slender, articulate above the middle, elongating in fruit. Flowers 5-merous, 4–5 mm long in fruit, green with whitish margins, the outer 3 perianth members with a whitish keel or wing. Nut dull-black, 4–5 mm long, trigonous, finely granular. Flowering & fruiting Oct.-May.

Tas. (FLI, TNM, TNS, TSE); also naturalized in WA, SA, Qld, NSW, Vic.; native to Europe & W Asia; naturalized in New Zealand. Occasional in gardens, arable paddocks, roadsides and waste areas.

**2 \* Fallopija japonica** (Houtt.) Ronse Decr., *Bot. J. Linn. Soc.* 98(4): 369 (1988)

Knotweed

*Reynoutria japonica* Houtt., *Nat. Hist. (Houttuyn)* 2(8): 640 (1777); *Tiniaria japonica* (Houtt.) Hedberg, *Svensk Bot. Tidskr.* 40: 399 (1946). *Polygonum cuspidatum* Siebold & Zucc., *Fl. Jap. (Siebold)* 2: 84 (1846).

*Illustrations:* Spencer, *Horticultural Flora of South-eastern Australia* 2: 302 (1997); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 343 (2006).

Perennial with stout, long-spreading rhizomes; stems to 2(–2.5) m high, glabrous, reddish or red-spotted, hollow, branched above. Leaves: ochreae thinly membranous, soon disintegrating; petioles 2–5 cm long, red-purple, with a single pit on the abaxial side at the base; lamina pale green, 5–15 cm long, broad-ovate, base truncate, apex shortly acuminate to cuspidate. Inflorescence paniculate, the flowers in clusters at the nodes, subtended by prominent glabrous or puberulent ochreolae; pedicels exceeding the ochreolae. Perianth segments whitish, 1.5–2.5 mm long at anthesis; fruiting valves 6–10 mm long, the outer winged on the back. Nut black-brown, 2–2.5 mm long, acutely trigonous. Flowering & fruiting Dec.–Mar.

Tas. (FLI, TSE); also naturalized in NSW, Vic.; native to Japan; also naturalized in temperate regions of both hemispheres including New Zealand. Known from a few localities near Beauty Point in the Tamar Estuary, probably as a garden escape, as well as from Hobart. Grown as an ornamental in gardens.

**4 MUEHLENBECKIA**

*Muehlenbeckia* Meisn., *Pl. Vasc. Gen. [Meisner]* 1(7): 316 (1839), *nom. cons.*

Synonymy: *Calacinum* Raf., *Fl. Tellur.* 3: 33 (1837), *nom. rej.* *Sarcogonum* Sweet, *Hort. Brit. (Sweet)*, ed. 3: 577 (1839).

Dioecious or, less commonly, monoecious climbing, straggling or prostrate shrubs. Leaves alternate, petiolate; ochrea short, tubular, brown, membranous, glabrous, soon disintegrating. Flowers small, unisexual in spike-like inflorescences or sessile clusters or solitary at the nodes. Perianth deeply 5-lobed, usually sepeloid, green or whitish. Male flowers: fertile stamens usually 8; ovary abortive. Female flowers: staminodes present; style 3-branched; stigmas peltate, fringed. Nut trigonous or globose, enclosed in the persistent perianth which is either membranous or somewhat fleshy.

A genus with about 20 species in Australia, New Zealand, New Guinea and South America; 14 species native to Australia.

- |    |   |                       |
|----|---|-----------------------|
| 1. | Leaves < 1 cm long; plant prostrate, ± mat-forming                                | <b>1 M. axillaris</b> |
| 1: | Leaves > 1 cm long; plant climbing or straggling                                  | 2                     |
| 2. | Leaves ± orbicular or broadly ovate (coastal areas)                               | <b>2 M. adpressa</b>  |
| 2: | Leaves lanceolate, ovate-lanceolate or trullate (not restricted to coastal areas) | <b>3 M. gunnii</b>    |

**1 Muehlenbeckia axillaris** (Hook.f.) Endl., *Gen. Pl. (Endlicher)* suppl. 4(2): 51 (1848)

Matted Lignum

*Polygonum axillaris* Hook.f., *Hooker's J. Bot. Kew Gard. Misc.* 6: 278 (1847). *Pseudanthus tasmanicus* Rodway, *Pap. & Proc. Roy. Soc. Tasmania* 1901: 107 (1902).

*Illustrations:* Walsh, *Fl. Victoria* 3: 285, fig. 56a-b (1996); Kirkpatrick, *Alpine Tasmania* 57, fig. 24e (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 285 (2000); Whiting *et al.*, *Tasmania's Natural Flora* 258 (2004).

Prostrate or scrambling shrub forming densely matted to open patches up to 80 cm in diameter; stems blackish, wiry, rooting at any nodes which become shallowly buried. Leaves: ochreae 2–3 mm long, red-brown, obliquely truncate; petioles 1–3 mm long; lamina suborbicular to ovate-oblong, 3–7(–8) mm long, leathery, gland-pitted.

Flowers solitary or 2–3 together in the axils of upper leaves or terminal at the ends of branches. Perianth 2–3 mm long, yellow-green, the segments free almost to the base. Anthers pink to orange. Nut dark brown to black, 3–3.5 mm long trigonous with concave faces, smooth, shining, enclosed in the persistent perianth which is up to 4 mm long, occasionally fleshy and viscous. Flowering & fruiting Dec.-Apr.

Tas. (TCH, TNM, TNS, TSE, TSR, TWE); also NSW, Vic.; also New Zealand. Found on rocky slopes, exposed heath and shrubland, on rocks in river and creek beds, predominantly in Central Highlands but also North East and South West at an altitude of 120–1200 m.

**2 Muehlenbeckia adpressa** (Labill.) Meisn., *Pl. Vasc. Gen. (Meisner)* 227 (1841)

*Climbing Lignum*

*Polygonum adpressum* Labill., *Nov. Holl. Pl.* 1: 99, t. 127 (1805); *Calacinum adpressum* (Labill.) Raf., *Fl. Tellur* 3: 34 (1837); *Sarcogonum adpressum* (Labill.) G. Don, *Hort. Brit. (Sweet)* ed. 3 577 (1839). *Muehlenbeckia flexuosa* Meisn., *Pl. Preiss.* 1(4): 624 (1845); *M. adpressa* var. *flexuosa* (Meisn.) Benth., *Fl. Austral.* 5: 274 (1870). *Muehlenbeckia adpressa* var. *rotundifolium* Benth., 5: 273 (1870).

*Illustrations:* Walsh, *Fl. Victoria* 3: 285, fig. 56i-j (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 286 (2000); Corrick & Fuhrer, *Wildflowers of Victoria* 180, fig. 632 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 192 (2001); Whiting *et al.*, *Tasmania's Natural Flora* 257 (2004).

Perennial; stems woody at the base, up to 2 m long, scrambling, climbing or prostrate and spreading. Leaves: ochreae membranous, reddish, prominently veined, rapidly becoming torn; petiolate; lamina orbicular or broadly ovate, base cordate, shortly hastate or truncate, often thick, margins minutely crisped, usually also undulate, 1.5–7 cm long, 1–5 cm wide. Flowers in clusters of 3–7 in loose axillary or terminal racemes up to 10 cm long. Perianth 2–3 mm long, the segments free almost to the base; female perianth elongating to 4.5 mm long in fruit. Nut black, c. 3 mm long, ovoid-globular, roundly trigonous, shining. Flowering & fruiting Sep.-Jan.

Tas. (FLI, TNS, TSE); also WA, SA, NSW, Vic. Found in the north and east including the Furneaux Group, in coastal sands and rocks, coastal heaths and shrubberies.

**3 Muehlenbeckia gunnii** (Hook.f.) Endl., *Gen. Pl. (Endlicher)* suppl. 4(2): 51(1848)

*Coastal Lignum*

*Polygonum gunnii* Hook.f., *Hooker's J. Bot. Kew Gard. Misc.* 6: 278 (1847). *Muehlenbeckia adpressa* var. *hastifolia* Meisn., *Linnaea* 26: 363 (1854).

*Illustrations:* Walsh, *Fl. Victoria* 3: 285, fig. 56c-d (1996); Cameron, *A Guide to Flowers and Plants of Tasmania*, 3<sup>rd</sup> edn, 53, pl. 107 (2000); Whiting *et al.*, *Tasmania's Natural Flora* 258 (2004).

Perennial; stems woody at the base, up to 5(–10?) m long, prostrate, straggling or climbing over supporting vegetation. Leaves: petioles 1–5 cm long; lamina 2.5–12 cm long, 1–7 cm wide, lanceolate, ovate-lanceolate, trullate or hastate, margins minutely crisped and minutely revolute. Flowers in clusters of 3–5 in spike-like racemes, terminal or on axillary branches, the lower clusters leaf-subtended and ± distant. Perianth 2.5–3.5 mm long, divided almost to the base; female perianth elongating to 5–6 mm long in fruit and occasionally becoming ± succulent. Nut black, 4–5 mm long, ovoid-trigonous, apex pyramidal, transversely rugulose, shining. Flowering & fruiting Oct.-Jan.

Tas. (BEL, FLI, KIN, TCH, TNS, TSE, TWE); also SA, Vic. Prostrate on boulders and cliff-faces, climbing or scrambling in coastal shrubberies, riparian scrub, margins or rainforest, wet sclerophyll forest, from near sea level to c. 850 m alt.

## 5 RUMEX

*Rumex* L., *Sp. Pl.* 1: 333 (1753).

Annual or perennial herbs, usually with stout tap-roots or rarely rhizomatous. Leaves alternate, petiolate to sessile; ochreae short, tubular brownish, scarious, glabrous, truncate or erose, rapidly disintegrating. Flowers bisexual or unisexual and the plant monoecious, in whorls-like clusters at the nodes of racemes or panicles. Perianth segments 6, in 2 whorls, sepeloid, the inner 3 (valves) enlarging and hardening in fruit, sometimes developing marginal teeth and the midrib of one or all of them becoming swollen to form tubercular callosities. Stamens 6. Stigmas 3, fringed. Fruit a trigonous or triquetrous nut enclosed within the enlarged perianth.

A genus of about 160 species; cosmopolitan though mostly in temperate regions of the Northern Hemisphere. In Australia there are 13–15 species (7 introduced); in Tasmanian 7 species (4 introduced). *Acetosa* and *Acetosella* (see below) are sometimes included in *Rumex*.

Key reference: Rechinger (1984).

- |    |  |                           |
|----|--|---------------------------|
| 1. | Flowers unisexual, the plant monoecious with creeping or floating stems; aquatic or semi-aquatic   | <b>1 R. bidens</b>        |
| 1: | Flowers bisexual; the plant tap-rooted, terrestrial but often growing in poorly drained sites  | 2                         |
| 2. | Flowers (at least at the upper nodes of the inflorescence) in false whorls of 1–4  | <b>2 R. dumosus</b>       |
| 2: | Flowers in false whorls of 5–16 at all nodes   | 3                         |
| 3. | Fruiting valves entire   | 4                         |
| 3: | Fruiting valves with marginal teeth or spines  | 5                         |
| 4. | Panicle divaricate, the floral whorls distant, usually leaf-subtended; fruiting valve with callosities almost equalling the valves   | <b>3 R. conglomeratus</b> |
| 4: | Panicle with erect branches, floral whorls ± distant below, crowded above; fruiting valves with callosities ± half as long as the valves                                       | <b>4 R. crispus</b>       |
| 5. | Fruiting valves with hooked teeth on margins and at apex   | <b>5 R. brownii</b>       |
| 5: | Fruiting perianth without hooks on the marginal teeth, the apex acute or obtuse  | 6                         |
| 6. | Lamina of basal leaves usually constructed at about the mid-point; inflorescence divaricately branched; pedicels ± equalling the fruiting valves, articulated at the mid-point | <b>6 R. pulcher</b>       |
| 6: | Lamina of basal leaves not constructed; inflorescence branches ± erect; pedicels longer than the fruiting valves, articulated below the mid-point                              | <b>7 R. obtusifolius</b>  |

**1 *Rumex bidens*** R.Br., *Prodr. Fl. Nov. Holland.* 421 (1810)

*Mud Dock*

*Rumex muelleri* Meisn., *Prodr. (DC.)* 14: 61 (1856).

*Illustrations:* Walsh, *Fl. Victoria* 3: 290, fig. 57c (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 290 (2000).

Semi-aquatic, monoecious perennial; stems ± inflated, hollow, creeping, rooting at the nodes; flowering stems ascending to 70(–100) cm. Ochreae rapidly becoming torn. Basal leaves petiolate, petiole shorter than the lamina; lamina to 25 cm long, oblong to narrow-lanceolate, apex obtuse, base cuneate to truncate or subcordate. Upper leaves shorter, narrower, apex acute. Floral whorls crowded, many flowered, each subtended by a reduced leaf; uppermost flowers staminate, the lower pistillate, intermediate whorls with both staminate and pistillate flowers. Staminate flowers: perianth 2.5–3 mm long, outer segments red; anthers c. 2.5 mm long. Pistillate flowers: perianth segments subequal in the flowering stage, petaloid. Fruiting valves 5–6 mm long, ovate or rhombic,

indurated, the midrib thickened as an oblong callosity less than half the length of the valve, one, or less commonly two stout patent teeth towards the base at each margin. Flowering & fruiting Nov.-Feb.

Tas. (FLI, TCH, TNM, TSE); also SA, NSW, Vic. Widespread, found on the margins of rivers, streams and lakes, up to c. 800 m alt.

**2 \* ? *Rumex dumosus*** A.Cunn ex Meisn., *Prodr. (DC.)* 14: 62 (1856)

*Wiry Dock*

*Rumex dumosiformis* Rech.f., *Öesterr. Bot. Z.* 84: 43, t. 2, fig. 7 (1935); *R. dumosus* var. *dumosiformis* (Rech.f.) Rech.f., *Nuytsia* 5: 98 (1984).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 209 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57f (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 290 (2000).

Perennial herb up to 60 cm high with many divaricate branches forming a tangled mass. Ochreae 2–4 mm long, rapidly becoming torn. Basal leaves with lamina usually shorter than the petiole; lamina up to 12 cm long, 1–2.5 cm wide, lanceolate to linear-lanceolate, base cuneate or cordate, margins undulate and finely crisped, floral leaves reduced, soon withering. Basal nodes of the inflorescence with up to 8 flowers, at upper nodes 1–4 per whorl, the upper whorls distant; fruiting pedicels of varying length within the whorl, shorter or longer than the fruiting valves, articulate at or below the mid-point. Fruiting valves 4–5 mm long, 2–3 mm wide, triangular, prominently reticulate, mid-vein ± thickened at the base, margins with 2(3) patent teeth towards the base, apex acute. Nut 2.5–3 mm long. Flowering & fruiting Nov.-Jan.

Tas., (TNM, TSE); also WA, SA, Qld?, NSW, Vic. Found in dry grassy woodlands, roadside banks, near sea level to c. 200m altitude. Hooker (1860) does not record *R. dumosus* as present in Tasmanian and comments by Rodway (1903) suggest that he regarded it as introduced.

**3 \* *Rumex conglomeratus*** Murray, *Prodr. Stirp. Gott.* 52 (1770)

*Clustered Dock*

*Rumex sanguineus sensu* L.Rodawy, *Tasman. Fl.* 162 (1903), *non* L. (1753).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 208 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57b (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 307 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 290 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 347 (2006).

Erect, much-branched perennial up to 1(–1.2) m high; stems often flexuous, wiry, striate, the branches spreading. Basal leaves with petioles ± equally the lamina; lamina 4–12(–20) cm long, oblong lanceolate, base cuneate, apex acute or obtuse, margins often undulate and crisped; upper leaves reduced, petioles longer than lamina. Floral whorls distant, many-flowered, all except the uppermost leaf-subtended; pedicels articulate at or below the middle. Fruiting valves 2–3 mm long, ovate, margins entire, each with a prominent oblong callosity more than half as long as the valve and often almost equalling it. Nut dark brown, 1.5–2 mm long. Flowering & fruiting Dec.-Apr.

Tas. (BEL, FLI, KIN, TNM, TNS, TSE, TSR); also naturalized in WA, SA, Qld, NSW, Vic.; native to the Mediterranean region; widely naturalized including in New Zealand. Found in damp areas, ditches, margins of streams and lagoons.

**4 \* *Rumex crispus*** L., *Sp. Pl.* 1: 335 (1753)

*Curled Dock*

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 208–209 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57a (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 308 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 228, pl. 15; 290 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 217 (2001); Sainty & Jacobs, *Waterplants in Australia, a Field Guide* 258, 259 (2003); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 347 (2006).

Perennial herb 50–120 cm high; stems erect, usually with a few erect or ascending branches. Basal Leaves on petioles shorter than the lamina; lamina up to 30 cm long, 6 cm wide, margins undulate and strongly crisped, base cuneate to truncate; upper leaves reduced. Inflorescence up to 50 cm long, leafy at the base, floral whorls many-flowered, ± distant at the base, crowded above, forming a dense narrow panicle; pedicels 5–10 mm long, articulate near the base. Fruiting valves broadly ovate-cordate (3–)4–6 mm long, margins entire, usually each with a smooth oblong callosity at the base, occasionally the callosity absent on one or all of the valves. Nut 2.5–3.5 mm long. Flowering & fruiting Sep.–Feb.

Tas. (all regions except MIS); naturalized in all Australian states; native to SW Asia, Europe; widely naturalized globally including in New Zealand. A widespread weed, common on roadsides and waste areas and in agricultural situations, particularly in seasonally wet sites.

**5 *Rumex brownii*** Campd., *Monogr. Rumex* 64 (1819)

*Swamp Dock, Slender Dock*

*Rumex fimbriatus* R.Br., *Prodr. Fl. Nov. Holland.* 116 (1810), *nom. illeg.*, non Poir. *Rumex brownianus* Campd., *Syst. Veg. ed. 16* 7(2): 1395 (1830).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 207 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57i (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 291 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 217 (2001); Woolmore *et al.*, *King Island Flora* 66 (2002); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 347 (2006).

Erect perennial herb; stems 15–105 cm high, simple or sparingly branched. Basal leaves: petiole ± equaling the lamina; lamina 1.5–22 cm long, 1.5–4 mm wide, oblong or narrow-ovate, base cuneate, cordate or panduriform, apex acute or obtuse, margins ± crisped. Upper leaves reduced, restricted to the lower half of the stem. Inflorescence to 60 cm long, simple or branched; floral whorls distant, 5–16-flowered, only the lowest leaf-subtended; pedicels ± equaling the valves, articulate near the base. Fruiting valves 3–4 mm long, triangular, prominently reticulate, mid-vein not developed into a callosity, each margin with 3–5 strongly hooked teeth, apex also hooked. Nut 2–2.5 mm long. Flowering & fruiting Nov.–Jan.

Tas. (FLI, KIN, TNM, TNS, TSE, TSR, TWE); all Australian states; also Malesia; naturalized in New Zealand, Europe. Found in grassy woodlands, tussock grassland, shingle in river and stream beds, margins of marsh and streams coastal sand and rock crevices, near sea level to 700 m alt.

**6 \* *Rumex pulcher*** L., *Sp. Pl.* 1: 336 (1753) subsp. **pulcher**

*Fiddle Dock*

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 209 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57e (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 308 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 290 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 217 (2001).

Erect perennial to 60 cm high; stems striate, with many divaricate branches at maturity forming a tangled mass. Basal leaves: petioles shorter than to ± equaling the lamina; lamina 3–15(–20) cm long, 3–6 cm wide, oblong to oblong-ovate, base cordate, apex obtuse, usually somewhat constricted in the lower half, margins often undulate. Upper leaves reduced, lanceolate-acute, cuneate at the base. Floral whorls distant, many-flowered, subtended by reduced leaves; pedicels rather thick, articulated at or slightly below the mid-point, the articulation swollen. Fruiting valves ovate to ovate-trullate, 3–5(–6) mm long, 2–4 mm wide (excluding teeth), with prominent thickened reticulation and 4–10 irregular teeth on each margin, callosities unequal but prominent on each valve, oblong. Nut dark brown, 2.5–3 mm long. Flowering & fruiting Nov.–Jan.

Tas. (FLI, TNM, TSE); naturalized in WA, SA, NSW, Vic.; native in SW Asia, Mediterranean region; naturalized in New Zealand. Widespread in the north and east of the state and found in ditches, creek banks and low-lying areas subject to winter inundation.

Rechinger (1984) records two subspecies, *R. pulcher* subsp. *pulcher* and subsp. *divaricatus* L., for Australia and Tasmania. Rechinger acknowledged that 'The distinction between the two subspecies appears to be less clear in some cases in Australia than in the Mediterranean'. *Rumex pulcher* subsp. *divaricatus* has basal leaves usually not constricted below the middle, fruiting valves broadly ovate to orbicular-triangular with broadly acuminate apices.

**7 \* *Rumex obtusifolius* L., *Sp. Pl.* 1: 335 (1753)**

*Broad-leaf Dock*

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 209 (1987); Walsh, *Fl. Victoria* 3: 290, fig. 57d (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 308 (1997); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 348 (2006).

Erect perennial herb; stems 50–120 cm high, the branches ± erect. Basal leaves: petiole often longer than the lamina; lamina 15–30 cm long, 7–15 cm wide, oblong-ovate, base cordate, apex obtuse. Upper leaves: petiole shorter than the lamina; lamina much reduced, ovate-lanceolate to lanceolate. Inflorescence usually ± half the length of the plant; floral whorls somewhat distant below, becoming closer above, many-flowered, the lower whorls leaf-subtended; pedicels 1.5–3 times the length of the valves, articulate at the base. Fruiting valves trullate, 3.5–6 mm long, reticulate, with a smooth oblong callosity at the base of one or more of the valves, margins with 1–3 straight teeth towards the base. Nut 2.5–3.5 cm long. Flowering & fruiting Oct.–Mar.

Tas. (FLI, TNM, TNS, TSE, TWE); also naturalized in WA, SA, NSW, Vic.; native to SW Asia, Europe; naturalized in New Zealand. Found in all agricultural regions of the State, on roadsides, ditches, waste areas, pastures, particularly in seasonally wet sites. Four subspecies of *R. obtusifolius* have been described. In *R. obtusifolius* subsp. *obtusifolius* only one valve bears a callosity, in subsp. *transiens* (Simonk.) Rech.f. all 3 bear callosities. Though both subspecies appear to be present in Tasmania the specimens with all combinations of 1 to 3 occur. It would appear that further work is required.

**6 \* ACETOSA**

*Acetosa* Mill., *Gard. Dict. Abrid. ed.* 4, 3 (1754).

Annual or perennial herbs, erect or climbing; dioecious or polygamous, rarely monoecious. Leaves alternate petiolate, not articulate; ochrea short, tubular, brownish, membranous, entire or soon disintegrating. Inflorescence racemose or paniculate. Flowers bisexual or unisexual. Perianth segments 6, sepaloid, the 3 inner, enlarged and membranous at maturity, greatly exceeding the fruit. Stamens 6. Stigmas 3, each with 2 flattened fimbriate branches. Nut triquetrous, remaining enclosed by the fruiting perianth.

A genus of about 30 species; native to Eurasia and Africa. In Australia 2 species are naturalized. *Acetosa* and *Acetosella* (see below) are sometimes included in *Rumex* (see above).

**1 \* *Acetosa sagittata* (Thunb.) L.A.S.Johnson & B.G.Briggs, *Contr. New South Wales Natl. Herb.* 3: 166 (1962)**

*Rambling Dock*

*Rumex sagittatus* Thunb., *Prodr. Pl. Cap.* 1: 67 (1794).

*Illustrations:* Walsh, *Fl. Victoria* 3: 293, fig. 58a-b (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 301 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 228, pl. 15; 292 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 341 (2006).

Perennial herb, often forming a large tuberous rootstock; stems ridged, scrambling through supporting vegetation to 2(–3) m high. Leaves: ochrea brown, apex truncate, without cilia; petioles equalling or exceeding the blade; lamina triangular to deltoid, 3–10 cm long, 1.5–6 cm wide, base sagittate, the basal lobes up to 3 cm long, ± divergent, apex acute. Inflorescence up to 50 cm long, paniculate, diffuse, the branches flexuous, 2–6 flowers at

each node; pedicel elongating in fruit, articulate below the middle. Flowers bisexual or functionally female, in the latter the anthers fully formed but empty; perianth pink or red at first, becoming brown in fruit; inner segments to 9 mm long, to 10 mm wide, membranous, reticulate-veined, base cordate; outer segments scarcely enlarged, reflexed. Nut c. 3 mm long, elliptical, trigonous, angles  $\pm$  winged. Flowering & fruiting Apr.-Oct.

Tas. (KIN, TNS, TSE); also naturalized in WA, SA, Qld, NSW, Vic.; native to South Africa; naturalized in New Zealand. An occasional garden escape in suburban situations.

## 7 \* ACETOSELLA

*Acetosella* (Meisn.) Fourr., *Ann. Soc. Linn. Lyon* 17, 145 (1869).

Synonymy: *Rumex* section *Acetosella* Meissn. *Prodr. (Candolle)* 14(1): 63 (1856).

Perennial herbs, erect or ascending, dioecious or rarely polygamous rhizomatous. Leaves alternate, petiolate; ochreae membranous, whitish, entire or lacerate. Flowers clustered in narrow panicles with racemose branches or reduced to a single raceme. Perianth segments 6, sepalioid. Male flowers: perianth segments  $\pm$  equal; stamens 6. Female flowers: inner segments larger than the outer and c. as long as the nut; stigmas 3, peltate, fimbriate. Nut triquetrous enclosed in and sometimes adherent to the persistent perianth.

A genus of 4 species in Europe and western Asia. 1 species naturalized in Australia. *Acetosa* (see above) and *Acetosella* are sometimes included in *Rumex* (see above).

### 1 \* *Acetosella vulgaris* Fourr., *Ann. Soc. Linn. Lyon* ser 2, 17:145 (1869)

*Sheep Sorrel*

*Rumex acetosella* L., *Sp. Pl.* 338 (1753). *Acetosella vulgaris* Four. subsp. *pyrenaica* (Pourret ex Lapeyr.) A.Löve, *Bot. Helv.*, 93(2): 165 (1983). *Rumex angiocarpus sensu* W.M.Curtis, *Student's Flora of Tasmania* 3: 586 (1963), non Murb. (1891); *Acetosella angiocarpa sensu* W.M.Curtis, *Student's Flora of Tasmania* 3: 586 (1963), non (Murb.) A.Löve (1948).

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 207 (1987), as *R. acetosella*; Walsh, *Fl. Victoria* 3: 293, fig. 58c-d (1996); Spencer, *Horticultural Flora of South-eastern Australia* 2: 301 (1997); Wilson, *Fl. New South Wales* 1, rev. edn: 292 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 98 (2001); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 342 (2006).

Dioecious perennial herb with fine, long-spreading yellowish rhizomes; stems erect or ascending, 10–45 cm high, flowering in the upper half. Leaves extremely variable; lower leaves long-petiolate, lamina 1–6 cm long, lanceolate to narrow-ovate, base hastate with narrow, simple, spreading basic lobes; upper leaves smaller with shorter petioles, lamina sometimes entire and linear. Inflorescence usually branched, the branches  $\pm$  erect, flowers in clusters of 5–8 at each node, distant. Male flowers green or reddish, 1.2–2.5 mm long; inner perianth segments a little wider than the outer. Female flowers green or reddish; perianth 0.6–0.8 mm long at anthesis, the inner enlarging to 1.2–1.8 mm long, enclosing and adherent to the nut at maturity. Nut 1–1.5 mm long. Flowering & fruiting Oct.–May.

Tas. (all regions except MIS); naturalized in all Australia states; native to Europe, SW Asia, now an almost cosmopolitan weed. Widespread through most regions of the State, common on agricultural land, roadsides, waste areas, occasionally on walking tracks in alpine areas, sea level to c. 1350 m altitude.

A very variable species in which 4 subspecies have been separated. If this subdivision is accepted, Tasmanian material, having basal lobes of leaves undivided and the fruiting perianth adherent to the nut, is subsp. *pyrenaica* (Pourret ex Lapeyr.) A.Löve.

## 8 \* EMEX

*Emex* Neck. ex Campd., *Monogr. Rumex* 55, 56, t. 1, fig. 1 (1819).

Annual herbs with strong taproots, monoecious; stems prostrate to procumbent. Leaves alternate, petiolate, entire; ochreae membranous, brown or whitish. Male flowers clustered in panicles, terminal or in the upper leaf axils; perianth sepaloid, 5–6, free to the base, ± equal; stamens 4–6. Female flowers sessile or subsessile in clusters in the lower leaf axils; perianth segments 6, the 3 outer becoming hard and thickened, the midrib produced as a hard recurved spine, inner segments shorter, erect enclosing the nut; stigmas 3, flattened, fringed. Nut trigonous or triquetrous, enclosed within the enlarged perianth.

A genus of 2 species of the Mediterranean region and southern Africa; both species naturalized in Australia, one doubtfully naturalized in Tasmania.

**1 \* *Emex australis*** Steinh., *Ann. Sci. Nat. Bot.* ser. 2, 9: 195, t. 7 (1838)

*Spiny Emex*

*Illustrations:* Auld & Medd, *Weeds, an Illustrated Botanical Guide to Weeds of Australia* 202–203 (1987); Walsh, *Fl. Victoria* 3: 293, fig. 58f–g (1996); Wilson, *Fl. New South Wales* 1, rev. edn: 293 (2000); Richardson *et al.*, *Weeds of the South-East, an Identification Guide for Australia* 342 (2006).

Annual herb; stems up to 50 cm long from a basal rosette. Leaves: petiole equalling or usually longer than the lamina; lamina broadly ovate to oblong, 2.5–5(–8) cm long, base cuneate to shallowly cordate, apex obtuse, margins often undulate. Male inflorescences 2–5(–7) cm long; perianth c. 1.5 mm long. Female flowers subsessile; fruiting perianth 3.5–4 mm wide below the spines; spines 4–5 mm long, stout, spreading. Nut trigonous, brown. Flowering & fruiting most of year [non Tasmanian records].

Tas. (FLI, TSE); naturalized in all Australian states; native to S Africa; naturalized in New Zealand. Rare and probably not fully naturalized in Tasmania. Few specimens are lodged at the Tasmanian Herbarium including a small number of specimens from Flinders Island (all 1974) and a collection from South Arm (1946).

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NOTE: Web addresses can and do change: a list of current web addresses will be maintained on the *Flora of Tasmania Online* website [[www.tmag.tas.gov.au/floratasmania](http://www.tmag.tas.gov.au/floratasmania)].

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