

EURHYNCHIUM

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Eurhynchium Bruch & Schimp., in P.Bruch, W.P.Schimper & W.T.Gümbel, *Bryol. Europ.* 5: 217 (1854); from the Greek *eu-* (completely, truly) and *rhynchos* (a beak), in reference to the operculum.

Type: Not designated.

Autoicous or dioicous. Plants minute, small or medium-sized, irregularly, pinnately or bipinnately branched; branches sometimes strongly differentiated from stems, ±straight when dry. Axillary hairs with 1–4 upper cells. Stem leaves erecto-patent to almost spreading, occasionally with a recurved acumen, ±evenly arranged around the stem, concave or plane, not plicate, ovate to broadly cordate, gradually or abruptly narrowed to a short or long acumen; apex acuminate or narrowly so; branch leaves sometimes differing strongly from stem leaves in their shape and size; costa single, occasionally with 1 or 2 short branches in the lower half, ending 40–80% up the leaf, often ending in an abaxial spine, especially in branch leaves; margin denticulate or strongly denticulate above, slightly recurved in lower part, otherwise plane. Median laminal cells linear, incrassate or slightly incrassate, eporose, smooth; alar cells undifferentiated or rectangular to short-linear, often slightly inflated, forming an ovate to transversely triangular distinct or indistinct group, decurrent.

Seta smooth or mammillose. Capsules horizontal; operculum rostrate or short-rostrate. Peristome: exostome perfect, red or brown-red; endostome with high basal membrane; processes well developed; cilia about as long as processes.

Eurhynchium sens. lat., as it is understood here, includes 65–70 species, four of which occur in Australia. However, like *Brachythecium* and *Rhynchostegium*, this genus is in considerable need of revision on a global scale.

References

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- Sainsbury, G.O.K. (1955), A handbook of the New Zealand mosses, *Bull. Roy. Soc. New Zealand* 5: 1–490.

- 1 Plants minute; stem leaf costa 18–31 µm wide near the base; median laminal cells (15–) 18–45 µm long. **4. E. pumilum**
- 1: Plants small, medium-sized or large; stem leaf costa 31.5–86.0 µm wide near the base; median laminal cells 29.5–140.5 µm long.....2

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- 2 Stem leaves erecto-patent to spreading; base cordate-triangular or broadly cordate-triangular, abruptly narrowed to a recurved or reflexed long channeled acumen c. half the leaf length; branch leaves ovate and gradually narrowed to the acuminate apex, strongly differentiated from stem leaves. **3. E. praelongum**
- 2: Stem leaves erecto-patent to almost spreading; base ovate to broadly cordate, gradually or abruptly narrowed to a short plane acumen less than one-third of the leaf length; branch leaves smaller and more short-acuminate than stem leaves, but not sharply differentiated from stem leaves3
- 3 Dioicous; stem and branch leaves erecto-patent to patent; branch leaves \pm distinctly complanate; median laminal cells 61.0–140.5 μ m long **1. E. laevisetum**
- 3: Autoicous; many stem and (especially) branch leaves directed forwards to incurved from a spreading leaf base when dry; median laminal cells 40–122 μ m long. **2. E. asperipes**

1. *Eurhynchium laevisetum* Geh., *Rev. Bryol.* 3: 4 (1876)

Rhynchostegium laevisetum (Geh.) Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 88 (1882). T: Sydney, N.S.W., coll. unknown; iso: M.

Oxyrrhynchium howeanum Broth. & Watts, *Proc. Linn. Soc. New South Wales* 40: 382 (1915). T: Mt Gower, Lord Howe Island, W.W.Watts; n.v.

Illustration: L.Hedenäs, *op. cit.* 72, fig. 7E (2002).

Dioicous. Plants medium-sized, sparingly and irregularly branched or irregularly pinnately branched, dull green, sometimes becoming brownish when old. Stem leaves erecto-patent to patent, more erect when dry, ovate to cordate-ovate, gradually narrowed towards an acuminate apex, occasionally more abruptly narrowed to a short plane acumen (c. 8–20% of the leaf length), not or slightly concave; branch leaves smaller and shorter, sometimes with an acute apex; costa 38.0–73.5 μ m wide near the base, abaxially often ending in sharp spine; margin denticulate or occasionally finely denticulate, entire in the acumen and near the insertion, strongly denticulate in branch leaves, one or both sides recurved in the proximal c. 15–20%. Median laminal cells (50.0–) 61.0–140.5 (–143.0) \times 6.5–10.5 μ m. Seta smooth, occasionally low-mammillose.

Known from Qld, N.S.W., Vic. and Lord Howe Island; on soil, rocks and tree trunks in moist or wet habitats, mostly in rainforest or other wet forest types, rarely in more open habitats, at elevations up to c. 1000 m. Endemic.

Qld: Logan R., *F.M.Bailey* 60 (NY). N.S.W.: Gloucester R., *H.Streimann 1581* (CANB); Knights Hill, *H.Streimann 10512* (CANB). Vic.: Gembrook, *I.G.Stone 5999* (MELU). Lord Howe Island: Mt Lidgbird, *D.H.Vitt 28339* (S).

This species resembles *E. speciosum* (Brid.) Jur. (with which it has been confused) and, especially, *E. hians* (Hedw.) Sande Lac., which has a very similar leaf shape. However, *E. laevisetum* has smooth to low-mammillose setae, this structure being strongly mammillose in the other taxa. *Eurhynchium laevisetum* has also slightly broader median laminal cells in the stem leaves (6.5–10.5 vs. 5.0–9.0 μ m), more strongly denticulate leaf margins (especially in the branch leaves), and a leaf costa that ends in a somewhat stronger spine. The median laminal cells of the stem leaves in *E. laevisetum* are longer than those of *E. hians* (29–85 μ m) and, to a lesser degree, in *E. speciosum* (40–101 μ m). Dioicous sexuality also distinguishes this moss from the autoicous or synoicous *E. speciosum*.

2. *Eurhynchium asperipes* (Mitt.) Dixon, *J. Bot.* 65: 9 (1927)

Hypnum asperipes Mitt., in J.D.Hooker, *Fl. Tasman.* 2: 209 (1859). T: s. loc., Tas., W.Archer; holo: NY.

Illustrations: J.Beever, K.W.Allison & J.Child, *Mosses of New Zealand*, 2nd edn 144 (1992); L.Hedenäs, *op. cit.* 72, fig. 7F (2002).

Autoicous. Plants medium-sized, pinnately or irregularly pinnately branched; branching usually dense; shoot and branch apices often attenuate, green. Stem leaves almost spreading, when dry many leaves directed forwards to incurved from spreading leaf bases (these more distinct in branch leaves), cordate-ovate to broadly cordate, abruptly narrowed to a short narrow and plane acumen (10–30% of the leaf length); apex narrowly acuminate, slightly concave; branch leaves smaller and more ovate, apices broader than those of stem leaves;

costa 31.5–86.0 µm wide near the base, its adaxial surface occasionally with prorate cell ends and/or ending in an obtuse or sharp spine; margin finely denticulate or entire in the upper acumen and near the insertion, otherwise moderately to strongly denticulate, slightly recurved near the insertion. Median laminal cells 40–122 (–130) × 6.5–11.0 µm. Seta strongly mammillose throughout.

Occurs in Vic. and Tas.; on soil and tree bases in moist or wet habitats, in forest, often in seepages or on creek banks, at altitudes up to c. 750 m. Also in New Zealand.

Vic.: Grampians, *H.Streimann 3243* (CANB); Maits Rest, *I.G.Stone 9644* (MELU); Wombat S.F., *H.Streimann 39055* (NY). Tas.: Cradle Mountain Natl Park, *D.H.Norris 27928* (H); St. Crispins Well, *A.V.Ratkovsky H669* (CANB).

Dry specimens are especially easy to identify, with the leaves of stems and branches directed forwards to incurved from their spreading leaf bases. Sainsbury (*Bull. Roy. Soc. New Zealand* 5: 1–490, 1955) incorrectly reported this moss to be dioicous.

3. *Eurhynchium praelongum* (Hedw.) Schimp., in P.Bruch, W.P.Schimper & W.T.Gümbel, *Bryol. Europ.* 5: 224 (fasc. 57–61, Mon. 8) (1854)

Hypnum praelongum Hedw., *Spec. Musc.* 258 (1801); *Kindbergia praelonga* (Hedw.) Ochyra, *Lindbergia* 8: 54 (1982). T: Europe; lecto: G, *vide* L.Hedenäs (1996).

Illustrations: E.Nyholm, *Illustrated Moss Flora of Fennoscandia* 2(5): 524 (1965); A.J.E.Smith, *The Moss Flora of Britain and Ireland* 613 (1978); H.A.Crum & L.E.Anderson, *Mosses of Eastern North America* 2: 1076 (1981); L.Hedenäs, *op. cit.* 72, fig. 7G (2002); D.Meagher & B.Fuhrer, *A Field Guide to the Mosses and Allied Plants of Southern Australia* 58, 59 (2003).

Dioicous. Plants small to medium-sized, regularly pinnately or slightly bipinnately branched, green or dark green. Stem leaves from erecto-patent to having a spreading base, with a recurved or reflexed acumen, when dry the acumen is more erect and slightly twisted; base cordate-triangular or broadly so, concave above, abruptly narrowed to a long channeled acumen (c. half the leaf length); apex acuminate; branch leaves smaller and ovate, gradually narrowed to an acuminate apex, strongly differentiated from stem leaves; costa 37.8–52.5 µm wide near the base, abaxially smooth or occasionally ending in a prorate cell; branch leaf costa usually ending in a spine and occasionally a few abaxial cells distally prorate; margin finely to moderately denticulate in the acumen, moderately to strongly denticulate below, often reflexed or recurved near the base. Median laminal cells 29.5–64.0 (–73.5) × 5.5–8.5 µm. Seta markedly mammillose throughout (sporophytes not seen in Australian material).

Occurs in S.A., N.S.W., Vic. and Tas., in man-made habitats (e.g. lawns, gardens, roadsides) and on soil in lowland forest. Also in New Zealand, North America, northern South America, Eurasia and North Africa.

S.A.: Mylor, Southern Lofty Ra., *L.D.Williams 2083* (AD). N.S.W.: Merimbula, *H.Streimann 46928* (CANB). Vic.: Jamieson Ck, *H.Streimann 42657* (CANB, S); Surrey Hills, *D.H.Ashton 5262B* (MELU). Tas.: Adamson Falls, *A.V.Ratkovsky H683* (CANB).

Eurhynchium praelongum can be distinguished from other Australian Brachytheciaceae by its strongly dimorphic stem and branch leaves and the often slightly bipinnately branched shoots, its appearance sometimes resembling that of a *Thuidium* species. However, the latter have paraphyllia and shorter, mammillose-papillose laminal cells, the latter making them considerably duller than *E. praelongum* to the naked eye. The preferred habitats of *E. praelongum* and molecular data (Hedenäs, 2010) indicate that it was probably introduced to Australia. The haploid chromosome numbers c. 6, 7, 8, 9, 9 + 1acc, 9 + 2acc, 9 + 4acc, 10 + *m* and 11 have been reported from Europe and North America (R.Fritsch, *Bryophytorum Biblioth.* 40: 1–352, 1991).

4. *Eurhynchium pumilum* (Wilson) Schimp., *Coroll.* 119 (1856)

Hypnum pumilum Wilson, *Engl. Bot.*, Suppl. 2942, fig. 1 (1843); *Oxyrrhynchium pumilum* (Wilson) Loeske, *Verh. Bot. Ver. Brandenburg* 47:342 (1906); *Rhynchostegiella pumila* (Wilson) E.F.Warb., *Trans. Brit. Bryol. Soc.* 4: 248 (1962); *Microeurhynchium pumilum* (Wilson) Ignatov & Vanderpoorten, *J. Bryol.* 31: 219 (2009). T: Europe; lecto: BM, *vide* L.Hedenäs (1996).

Illustrations: E.Nyholm, *Illustrated Moss Flora of Fennoscandia* 2(5): 522 (1965); A.J.E.Smith, *The Moss Flora of Britain and Ireland* 611 (1978); D.G.Catcheside, *Mosses of South Australia* 322, fig. 199 (1980).

Dioicous. Plants minute, irregularly branched, green. Stem leaves erecto-patent, patent or spreading, sometimes slightly more erect when dry, ovate to triangular-ovate, gradually narrowed to an acuminate or short-acuminate apex, slightly concave; branch leaves smaller; costa 18–31 μm wide near the base, abaxially often ending in a spine; margin almost completely denticulate or finely denticulate, often narrowly recurved near the base on one side. Median laminal cells 18–42 \times 6–9 μm . Sporophytes not seen in Australian material.

Known only from one locality in south-eastern S.A., where it has been introduced; on soil in the shady part of a garden. Also in Europe and North Africa.

S.A.: Bagot's Gymnosperm Garden, Algate, Southern Lofty Ra., *D.G.Catcheside* 76277, 76297 (AD).

Eurhynchium pumilum is readily recognised by its small size, the narrow stem leaf costa and short median laminal cells. The haploid chromosome number 11 has been reported from Europe (R.Fritsch, *op. cit.*).