

## STRIGULA

*P.M.McCarthy*

[From *Flora of Australia* volume 57 (2009)]

*Strigula* Fr., *Syst. Mycol.* 2: 535 (1823); from the Latin *striga* (a furrow or wrinkle) and the suffix *-ula* (diminutive), in reference to furrows around the perithecia of the type species.

Type: *S. smaragdula* Fr. : Fr.

*Raciborskiella* Höhnelt, *Sitzungsb. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Cl.* 118: 1176 (1909). T: *R. janeirensis* (Müll.Arg.) R.Sant. [= *S. janeirensis* (Müll.Arg.) Lücking]

*Phylloporis* Clem., *Gen. Fung.* 41, 173 (1909). T: *P. phyllogena* (Müll.Arg.) Clem. [= *S. phyllogena* (Müll.Arg.) R.C.Harris]

Thallus crustose, usually subcuticular on leaves (occasionally supracuticular), usually epiphyllous (rarely hyphophyllous), or on bark or rock, rarely on soil or lichenicolous, whitish, silvery to dull pale grey, bluish grey, greyish green, grass-green to dark green or dark olive-brown, thin to moderately thick, with a well-defined and occasionally sublobate margin (with or without a blackish delimiting border), or the margin effuse, usually ecorticate, occasionally with a true cortex or a pseudocortex. Photobiont *Cephaleuros* (foliicolous species), *Phycopeltis* (foliicolous species) or *Trentepohlia* or a trentepohlioid alga (corticulous and saxicolous species); one non-Australian species with a protococcoid alga. Ascomata perithecia, immersed in the thallus to almost superficial, or immersed in thalline verrucae, solitary, with an apical or, rarely, lateral ostiole, usually with a substantial dark greenish brown to black involucrellum; involucrellum rarely very pale or absent (not in Australia). Exciple composed of periclinal hyphae, usually hyaline. Paraphyses long-celled, simple to sparingly or richly branched, or anastomosing, 1.0–2.0 (–2.5)  $\mu\text{m}$  thick; apices not swollen. Periphyses usually absent, rarely sparse. Asci fissitunicate, 8-spored, narrowly to broadly cylindrical, narrowly obclavate or elongate-ellipsoidal, predominantly thin-walled, but with a thicker apex and a minute but well-defined ocular chamber (especially when immature), non-amyloid. Ascospores euseptate, predominantly 1-septate (in most foliicolous species), also 3–7-septate, submuriform or densely muriform, hyaline, fusiform, ellipsoidal or bacilliform; 1-septate ascospores frequently deeply constricted at the septum, the cells occasionally separating within the ascus so that it appears 16-spored, or separating after release from the ascus. Conidiomata pycnidial, usually solitary, rarely clustered, immersed in the thallus to almost superficial, or immersed in thalline verrucae, of two broad types: either smaller structures that produce minute simple bacilliform or fusiform microconidia, or larger structures producing much larger macroconidia that are 1–7-septate, submuriform or densely muriform (often a similar septation in ascospores and macroconidia of the same species, or the macroconidia with fewer septa), developing slightly obliquely at the tips of short unbranched conidiophores; frequently having short to elongate gelatinous apical appendages.

Chemistry: No lichen substances detected.

A genus of c. 85–90 species, mostly foliicolous in the wet tropics, reasonably diverse in the subtropics and warm-temperate regions, much less so at higher latitudes. Twenty-six species (20 obligately foliicolous) are known from Australia; four occur in the tropical Northern Territory, 22 in eastern Queensland, 14 in eastern and south-eastern New South Wales, one in Victoria and four in Tasmania.

Eight additional species, including four endemics, are known from Christmas Island and Lord Howe Island (McCarthy, 2008). Most of the species found in mainland Australia are pantropical or Palaeotropical, and while two Australian taxa are newly described here, both are likely to be discovered elsewhere, at least in the Palaeotropics.

R.Lücking, Foliicolous lichens – A contribution to the knowledge of the lichen flora of Costa Rica, Central America, *Beih. Nova Hedwigia* 104: 1–179 (1992); P.M.McCarthy, New saxicolous species of *Strigula* Fr. (lichenised Ascomycotina, Strigulaceae) in Australia and New Zealand, *Muelleria* 8: 323–329 (1995); P.M.McCarthy, New and interesting saxicolous species of *Strigula*, *Lichenologist* 29: 513–523 (1997); P.M.McCarthy & G.Kantvilas, Additional lichen records from Australia 37. *Strigula albicascens* (Nyl.) R.C.Harris, *Australas. Lichenol.* 44: 4–5 (1999); G.Thor, R.Lücking & T.Matsumoto, The foliicolous lichens of Japan, *Symb. Bot. Upsal.* 32(3): 1–72 (2000); C.Roux, E.Sérusiaux, O.Bricaud & B.Coppins, Le genre *Strigula* (lichens) en Europe et en Macaronésie, *Biblioth. Lichenol.* 90: 1–96 (2004); D.J.Galloway, *Flora of New Zealand Lichens*. Revised Second Edition 2: 1701–1727 (2007); P.M.McCarthy, Checklist of the Lichens of Australia and its Island Territories. Version 3 December 2008. <http://www.anbg.gov.au/abrs/lichenlist/introduction.html> (2008).

1	Thallus on leaves .....	2
1:	Thallus on bark or rock, rarely on soil .....	20
2	Thallus usually hypophyllous; paraphyses richly branched and anastomosing (1) .....	3
2:	Thallus epiphyllous; paraphyses simple or sparingly branched, rarely anastomosing.....	4
3	Perithecia convex to hemispherical, 0.25–0.50 mm diam.; ascospores 12–18 × 4–6 µm (2) .....	<b>22. S. prasina</b>
3:	Perithecia conical, 0.35–0.90 mm diam.; ascospores 35–60 (–70) × 4.5–7.0 (–7.5).....	<b>8. S. janeirensis</b>
4	Ascospores 3-septate (2:.).....	<b>18. S. orbicularis</b>
4:	Ascospores 1-septate.....	5
5	Ascospores 8–12 (–16) µm long (4:.).....	6
5:	Ascospores (10–) 14–23 (–30) µm long .....	12
6	Thallus subcuticular, not readily separating from the leaf; photobiont <i>Cephaleuros</i> , the cells irregularly arranged (5).....	7
6:	Thallus supracuticular, readily separating from the leaf; photobiont <i>Phycopeltis</i> , the cells forming net-like aggregations or radiating plates.....	9
7	Thallus 10–20 µm thick, medium to dark green (often appearing somewhat metallic), often bordered by a thin black line and/or with black punctae (6).....	<b>19. S. nitidula</b>
7:	Thallus 15–50 µm thick, pale greyish green to medium green, not bordered by a thin black line, not black-punctate .....	8
8	Macroconidiomata usually solitary, 0.08–0.15 mm diam.; ascospore cells often separating within or outside the ascus (7:.) .....	<b>5. S. concreta</b>
8:	Macroconidiomata in compact applanate 0.30–0.77 mm wide groups of 10–20; ascospore cells not separating within or outside the ascus .....	<b>10. S. lacericola</b>
9	Thallus with numerous blackish punctae, greenish grey (6:.) .....	<b>14. S. multipunctata</b>
9:	Thallus without blackish punctae; colour various.....	10
10	Perithecia 0.4–0.8 mm diam., hemispherical or conical in the centre but with a conspicuously spreading base (9:.).....	<b>21. S. platypoda</b>
10:	Perithecia 0.15–0.50 mm diam., hemispherical or conical; base not markedly spreading.....	<b>10</b>
<b>10</b>	<b>Asci 41–58 × 8–10 µm; ascospores 3.5–5.0 µm wide .....</b>	<b>S. caerulensis (McCarthy, 2009d)</b>
<b>10:</b>	<b>Asci 25–40 × 4–6 µm; ascospores 2–3 (–3.5) µm wide.....</b>	<b>11</b>
11	Perithecia usually greenish, overgrown by the thallus; apex ±rounded (10:.) .....	<b>17. S. obducta</b>
11:	Perithecia black, less commonly greyish, not overgrown by the thallus; apex conical ...	<b>20. S. phyllogena</b>
12:	Thallus supracuticular, readily peeling/flaking from the leaf; ascospore cells usually separating outside the ascus (5:.) .....	<b>4. S. austropunctata</b>
12:	Thallus subcuticular, not readily peeling/flaking from the leaf; ascospore cells not or rarely separating outside the ascus .....	13
13	Thallus or thalline lobes bordered by a thin black line, usually dark green, dark grey-green or olive-brown (12:.).....	14
13:	Thallus not bordered by a thin black line, usually pale grey, greyish green or bright green.....	16
14	Ascospores fusiform, 14–25 × 3–5 µm (13) .....	<b>13. S. melanobapha</b>
14:	Ascospores oblong-cylindrical, 10–18 × 2.0–3.5 µm .....	15
15	Thallus with distinct divergent lobes separated by large spaces; perithecia subconical to subhemispherical (14:.) .....	<b>25. S. subtilissima</b>
15:	Thallus with indistinct confluent lobes separated by minute spaces; perithecia conical ....	<b>12. S. maculata</b>

16	Perithecia predominantly or completely whitish to pale greyish green (13:)	15. <i>S. nemathora</i>
16:	Perithecia predominantly black	17
17	Perithecia 0.5–1.2 mm diam. (16:)	11. <i>S. macrocarpa</i>
17:	Perithecia 0.2–0.6 mm diam.	18
18	Pycnidia that produce macroconidia clustered in the centre of the thallus (17:)	2. <i>S. antillarum</i>
18:	Pycnidia that produce macroconidia solitary, scattered	19
19	Thallus bright medium green; ascospores with the two cells $\pm$ equal in size (18:)	23. <i>S. smaragdula</i>
19:	Thallus pale bluish grey to greenish grey; ascospores with the distal cell larger than the proximal	24. <i>S. subelegans</i>
20	Ascospores 1-septate (1:)	21
20:	Ascospores 5–7-septate, or submuriform to muriform	22
21	Ascospore cells separating within or outside the ascus; asci 80–110 $\mu$ m long; thallus corticate, with a dark discontinuous basal layer (20:)	7. <i>S. fractans</i>
21:	Ascospore cells not separating within or outside the ascus; asci 45–65 $\mu$ m long; thallus ecorticate, lacking a dark basal layer	19. <i>S. phaea</i>
22	Thallus on bark (20:)	1. <i>S. albicascens</i>
22:	Thallus on rock, rarely or soil	23
23	Ascospores transversely (5–) 7-septate (22:)	6. <i>S. decipiens</i>
23:	Ascospores submuriform or muriform	24
24	Ascospores 23–36 $\times$ 7.0–11.5 $\mu$ m, submuriform, 7–9 (–11) $\times$ (0–) 1 (–2)-septate (23:)	3. <i>S. australiensis</i>
24:	Ascospores 37–63 $\times$ 10–19 $\mu$ m, muriform, 10–17 $\times$ (1–) 2–3-septate	9. <i>S. johnsonii</i>