

PSEUDOCYPHELLARIA

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Pseudocyphellaria Vain., *Acta Soc. Fauna Fl. Fenn.* 7: 182 (1890), *nom. cons.*; refers to the pseudocyphellae on the lower surface of the thallus (sometimes also on the upper surface), structures anatomically and developmentally different from the cyphellae found on the lower surface of species of *Sticta*.

Type: *P. aurata* (Ach.) Vain.

Stictina Nyl. *p. min. p.*, *Syn. Meth. Lich.* 1(2): 333 (1860). Lecto: *S. crocata* (L.) Nyl. [= *Pseudocyphellaria crocata* (L.) Vain.]

Parmosticta Nyl. *p.p.*, *Flora* 58: 363 (1875), *nom. superfl.* T: *P. aurata* (Ach.) Nyl. [= *Pseudocyphellaria aurata* (Ach.) Vain.].

Parmostictina Nyl. *p.p.*, *Flora* 58: 363 (1875). T: *Sticta hirsuta* Mont.

Cyanisticta Gyeln. *p.p.*, *Feddes Rep. Spec. Nov. Regni Veg.* 21: 1 (1931). T: *C. argyrea* (Delise) Gyeln.

Thallus orbicular, rosette-forming or irregularly lacinate, or \pm dichotomously branching to complex-tangled, loosely to closely attached. Upper surface smooth, wrinkled, \pm scabrid or hairy, often shallowly to deeply faveolate, with a faint or strongly marked reticulum of shallowly to sharply delimited interconnecting ridges, glossy, often conspicuously maculate ($\times 10$ lens, best seen when wet), with or without isidia, pseudoisidia, phyllidia, pseudocyphellae or soredia. Lower surface pseudocyphellate, usually \pm tomentose, glabrous in some species; tomentum pale to dark, thick and felted to indistinctly pubescent; pseudocyphellae white or yellow, \pm immersed in tomentum, plane and \pm fleck-like to raised-conical, verruciform or glomerulate, round to irregular. Apothecial margins entire or crenate-stryate to \pm stellate, with or without isidia, phyllidia or soredia. Pycnidia often eroding and leaving gaping pits. Conidia bacilliform.

Pseudocyphellaria is a cosmopolitan genus of at least 114 species. Taxa grow on twigs, bark, soil or rock, often intermingled with bryophytes or other lichens in a wide variety of habitats. The genus is especially diverse in the Southern Hemisphere particularly in humid, cool-temperate habitats; major areas of diversity are southern South America (54 species), New Zealand (50 species), the Palaeotropics (29 species) and Australia (39 species). *Pseudocyphellaria* occurs most commonly in forest, shrubland and grassland, often dominated by *Nothofagus* and various podocarp genera. The pan-austral distribution, well-defined areas of endemism, and its frequent association with *Nothofagus* and with various southern gymnosperms, together with the widespread occurrence of hopane and other "primitive" triterpenoids strongly suggest that it is a classic Gondwanaland genus. Taxa of austral affinities are found in south-eastern Australia and Tasmania, while the tropical rainforests of Queensland have species with mainly Palaeotropical affinities. The genus has a diverse chemistry comprising depsides, depsidones, terphenylquinones, pulvinic acid derivatives and triterpenoids.

D.J.Galloway & P.W.James, Nomenclatural notes on *Pseudocyphellaria* in New Zealand, *Lichenologist* 12: 291–303 (1980); D.J.Galloway, Nomenclatural notes on *Pseudocyphellaria* I. The identity of *Pseudocyphellaria neglecta*, *Lichenologist* 15: 307–308 (1983); D.J.Galloway, P.W.James & A.L.Wilkins, Further nomenclatural and chemical notes on *Pseudocyphellaria* in New Zealand, *Lichenologist* 15: 135–145 (1983); D.J.Galloway, *Fl. New Zealand Lichens* 420–460 (1985a); D.J.Galloway, Nomenclatural notes on *Pseudocyphellaria* II: some Southern Hemisphere taxa, *Lichenologist* 17: 303–307 (1985b); D.J.Galloway & P.W.James, Species of *Pseudocyphellaria* Vainio (Lichenes), recorded in Delise's "Histoire des Lichens: Genre *Sticta*", *Nova Hedwigia* 42: 423–490 (1986); D.J.Galloway, Studies in *Pseudocyphellaria* (lichens) I. The New Zealand species, *Bull. Brit.*

Mus. (Nat. Hist.), Botany 17: 1–267 (1988); D.J.Galloway, Studies in *Pseudocyphellaria* (lichens) III. The South American species, *Biblioth. Lichenol.* 46: 1–275 (1992); D.J.Galloway & S.Kemp, Palaeotropical species of *Pseudocyphellaria* collected by Gunnar Degelius in 1964 and 1970, *Graphis Scripta* 5: 8–11 (1993); D.J.Galloway, Studies in *Pseudocyphellaria* (lichens) IV. Palaeotropical species (excluding Australia), *Bull. Nat. Hist. Mus. Lond. (Bot.)* 24: 115–159 (1994); D.J.Galloway, Nomenclatural notes on *Pseudocyphellaria* VI: two endemic Australian taxa, *Lichenologist* 29: 599–601 (1997); G.Kantvilas & J.A.Elix, A new species of *Pseudocyphellaria* (lichenised fungi), with a key to the Tasmanian species, *Muelleria* 12: 217–222 (1999); G.Kantvilas & S.J.Jarman, *Lichens of Rainforest in Tasmania & SE Australia* 110–125 (1999).

1	Medulla white (or patchily yellow-white).....	2
1:	Medulla pure yellow (not patchily yellow-white).....	29
2	Photobiont a unicellular green alga(1).....	3
2:	Photobiont <i>Nostoc</i>	11
3	Lobes lacking isidia, phyllidia, lobules and soredia(2).....	4
3:	Lobes with isidia, phyllidia, lobules or soredia.....	7
4	Lobes narrow, to 1.5 mm wide(3).....	38. P. stenophylla
4:	Lobes broader than 1.5 mm.....	5
5	Upper surface punctate-impressed, without interconnecting ridges(4:).....	39. P. sulphurea
5:	Upper surface faveolate, with well-defined interconnecting ridges.....	6
6	Margins often indented, with projecting verruciform white pseudocyphellae, not or rarely ridged below; apothecial disc often white-pruinose (especially when immature); containing physciosporin(5:).....	15. P. faveolata
6:	Margins entire, smoothly rounded, ridged below, without projecting pseudocyphellae; apothecial disc never white-pruinose; physciosporin absent.....	6. P. billardierei
7	Lobe margins isidiate and/or phyllidiate; not sorediate(3:).....	8
7:	Lobe margins sorediate.....	10
8	Lobe margins isidiate; lower surface chocolate-brown or blackish, densely tomentose(7).....	17. P. glabra
8:	Lobes margins phyllidiate; lower surface pale, buff to red-brown, patchily tomentose.....	9
9	Upper surface dimpled, punctate-impressed; margins ±thickened above and below; phyllidia often proliferating(8:).....	29. P. prolificans
9:	Upper surface smooth; margins not or slightly thickened below; phyllidia not proliferating.....	24. P. multifida
10	Upper surface ±plane, yellow-green; usnic acid present; physciosporin absent(7:).....	37. P. soredioglabra
10:	Upper surface punctate-impressed to ±faveolate, glaucous grey; usnic acid absent; physciosporin present.....	19. P. granulata
11	Pseudocyphellae white(2:).....	12
11:	Pseudocyphellae yellow.....	24
12	Upper surface pseudocyphellate(11).....	13
12:	Upper surface lacking pseudocyphellae.....	17
13	Lobes with isidia or phyllidia(12).....	14
13:	Lobes lacking isidia and phyllidia.....	16
14	Lobes with marginal phyllidia; upper surface patchily tomentose(13).....	7. P. brattii
14:	Lobes with marginal isidia; upper surface without patchy tomentum.....	15
15	Isidia not associated with laminal pseudocyphellae; laminal pseudocyphellae not becoming sorediate(14:).....	30. P. punctillaris
15:	Isidia also associated with laminal pseudocyphellae; laminal pseudocyphellae becoming sorediate.....	2. P. argyracea

16	Lobes dichotomously branched; upper surface plane to shallowly dimpled, not faveolate(13:)	35. <i>P. semilanata</i>
16:	Lobes subdichotomously to irregularly branched; upper surface wrinkled-faveolate	31. <i>P. rigida</i>
17	Thallus with soredia, isidia or phyllidia(12:)	18
17:	Thallus lacking soredia, isidia and phyllidia	23
18	Thallus sorediate(17)	19
18:	Thallus phyllidiate or isidiolate	22
19	Upper surface smooth or punctate-impressed, without faveolae or distinct interconnecting ridges; two hopane diols present(18)	20
19:	Upper surface faveolate, with distinct interconnecting ridges; hopane-triol present	21
20	Upper surface smooth to undulate; pseudocypbellae on lower surface rare or absent(19)	22. <i>P. intricata</i>
20:	Upper surface punctate-impressed; pseudocypbellae on lower surface conspicuous, especially at centre	20. <i>P. haywardiorum</i>
21	Lobes rounded; soralia laminal, ±reticulate, not eroding margins and not appearing yellowish below(19:)	4. <i>P. bartlettii</i>
21:	Lobes ±elongate; soralia marginal, punctiform or linear-confluent, eroding margins and appearing yellowish below	14. <i>P. dozyana</i>
22	Thallus phyllidiate(18:)	21. <i>P. insculpta</i>
22:	Thallus isidiolate	13. <i>P. dissimilis</i>
23	Lobes very narrow, 0.5–1.5 (–3) mm wide, densely entangled(17:)	34. <i>P. sayeri</i>
23:	Lobes broader, 3–8 (–12) mm wide, not densely entangled	5. <i>P. beccarii</i>
24	Thallus sorediate, isidiolate or phyllidiate(11:)	25
24:	Thallus lacking soredia, isidia and phyllidia	28
25	Thallus sorediate(24)	10. <i>P. crocata</i>
25:	Thallus phyllidiate or isidiolate	26
26	Thallus isidiolate(25:)	12. <i>P. desfontainii</i>
26:	Thallus phyllidiate	27
27:	Phyllidia to 3 mm long, finger-like, not eroding yellow at apices(26:)	11. <i>P. crocatoides</i>
27:	Phyllidia to 1.5 mm long (often much less), ±coralloid, eroding apically exposing yellow medulla	25. <i>P. neglecta</i>
28:	Upper surface tomentose at the centre(24:)	36. <i>P. sericeofulva</i>
28:	Upper surface uniformly glabrous	16. <i>P. gilva</i>
29	Photobiont a unicellular green alga(1:)	30
29:	Photobiont <i>Nostoc</i>	37
30	Thallus lacking soredia, isidia and phyllidia(29)	31
30:	Thallus sorediate, isidiolate or phyllidiate	32
31	Lobes thick; apices occasionally minutely tomentose (×10 lens); apothecial disc never white-pruinose; ascospores acicular, colourless(30)	33. <i>P. rubrina</i>
31:	Lobes thin; apices never minutely tomentose; apothecial disc occasionally finely white-tomentose; ascospores ellipsoidal, olive or brown	18. <i>P. glaucescens</i>
32	Thallus sorediate(30:)	33
32:	Thallus isidiolate or phyllidiate, lacking soredia	34
33	Upper surface white, silky-tomentose from margins to centre; marginal soralia not eroding lower surface(32)	32. <i>P. rubella</i>
33:	Upper surface glabrous or rarely minutely tomentose at margins only; labriform marginal soralia prominent, eroding lower surface	3. <i>P. aurata</i>
34	Medulla often appearing orange-red at thallus breaks and fractures and at apices of phyllidia or isidia(32:)	35
34:	Medulla pure yellow, not appearing orange-red at breaks in thallus	36
35	Acetone extract purple-red; lobes rounded; thallus phyllidiate(34)	9. <i>P. coronata</i>
35:	Acetone extract yellow; lobes ragged, linear-elongate; thallus isidiolate	8. <i>P. colensoi</i>

- 36 Apothecia sessile; exciple whitish buff, lacking photobiont cells; isidia marginal and spreading onto lamina, becoming phyllidiate, not eroding; ascospores colourless(34:)**27. P. pickeringii**
- 36: Apothecia pedicellate; exciple concolorous with thallus, containing photobiont cells; isidia marginal or along laminal cracks and tears, minutely coralloid, eroding and appearing pseudosorediate; ascospores pale to dark red-brown.....**28. P. poculifera**
- 37 Thallus lacking soredia and phyllidia(29:)**23. P. jamesii**
- 37: Thallus sorediate or phyllidiate 38
- 38 Thallus sorediate(37:) **1. P. ardesiaca**
- 38: Thallus phyllidiate**26. P. nermula**