GROUP J

[Thallus corticolous, pustulate or with sterile apothecial discs]

1 Thallus pustulate, usually with the medulla exposed within the pustules 2
1: Thallus with sterile discs 4

2: Thallus Pd–; KC+ violet; picrolichenic acid present ..... **P. lacerans**
2 Thallus Pd+ yellow or orange, KC– 3

3 Thallus K+ yellow then red, Pd+ yellow; norstictic acid present ..... **P. sublacerans**
3: Thallus K–, Pd+ orange, protocetraric acid present ..... **P. lacericans**

4 Disc K+ yellow or purple; KC– 5
4: Disc K-, KC+ violet or orange-red 7

5 Disc K+ purple, Pd–; hypothamnolic acid present ..... **P. novaezelandiae**
5: Disc K+ yellow, Pd+ yellow 6

6 Disc UV–; lichexanthone absent; thamnolic acid present ..... **P. thamnolica**
6 Disc UV+ yellow; lichexanthone present 7

7 Thamnolic acid present ..... **P. miscella**
7: Haemathamnolic acid present ..... **P. commutata**

8 Disc KC+ violet; picrolichenic acid present 9
8: Discs KC+ orange-red; lecanoric acid present ..... **P. velata**

9 Disc UV+ yellow; lichexanthone present ..... **P. clarkeana**
9: Disc UV–; lichexanthone absent ..... **P. truncata**

Pertusaria clarkeana A.W.Archer, *Mycotaxon* 53: 280 (1995)

Pertusaria confusa A.W.Archer, *Mycotaxon* 41: 224 (1991), *nom. illeg., non P. confusa* Zahlbr., *Cat. Lich. Univ.* 5: 134 (1928). T: Clarke Ra., 46 km SSW of Proserpine, Qld, 29 June 1986, *H.Streimann 37465*; holo: CANB; iso: B.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 183, fig. 69 (1997).

Thallus off-white to pale yellowish white, wrinkled and cracked. Soredia and isidia absent. Apothecia numerous and crowded, disciform, adnate or rarely slightly stipitate, 0.5–1.5 mm diam.; disc rounded, somewhat sunken, plane, white-pruinose; margin concolorous with the thallus. Asci clavate, rarely fertile. Ascospores 1 per ascus, sublachrymoid to elongate-ellipsoidal, smooth, (100–) 135–150 (–175) × 30–55 µm; ascospore wall c. 1 µm thick.

Chemistry: Thallus K–, KC+ violet, C–, Pd–; containing lichexanthone (minor to major), with picrolichenic acid (minor) and subpicrolichenic acid (minor), or rarely with picrolichenic acid (minor), superpicrolichenic acid (minor) and hyperpicrolichenic acid (minor).

An endemic, corticolous species in eastern Australia (Qld and N.S.W.); mainly in mangroves (*Avicennia*, *Bruguiera* and *Rhizophora*), but also on *Acacia*, *Argyrodendron* and *Casuarina*.

Qld: Lake Barrine Natl Park, *J.A.Elix 2639* (CANB); Noosa R., N of Tewantin, *J.Hafellner 19229* (GZU); Hinchinbrook Is., *G.N.Stevens 3925* (BRI). N.S.W.: 3 km SW of Evans R., Bundjalung Natl Park, *A.W.Archer P383* (NSW); Buckenbowra R. estuary, W of Batemans Bay, *J.A.Elix 21864* (CANB).

Pertusaria clarkeana is characterised by the sterile or 1-spored asci and the presence of lichexanthone and picrolichenic acid in the thallus. It resembles *P. velata* and *P. commutata*, but it is chemically distinct from those species.

A possible earlier name for this species is *P. velatoides* A.L.Sm. (1922), from New Caledonia. However, the type material of that taxon was not available for examination.

Pertusaria commutata Müll.Arg., *Flora* 67: 269 (1884)

T: Caracas, Venezuela, *Dr Ernst s.n.*; lecto: G, *fide* A.W.Archer, *Mycotaxon* 41: 253 (1991); isolecto: US.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 183, fig. 70 (1997).

Thallus off-white to pale grey, folded and cracked, smooth and dull. Soredia and isidia absent. Apothecia numerous and crowded, disciform, adnate, 0.4–0.8 mm diam.; disc coarsely white-pruinose. Ascospores 1 per ascus, ellipsoidal, smooth, single-walled, 100–135 (–150) × 35–50 µm.

Chemistry: Thallus K+ yellow, KC–, C–, Pd+ yellow; containing haemathamnolic acid (major), lichexanthone (variable), thamnolic acid (trace) and baeomycesic acid (trace).

A tropical to subtropical, corticolous species that is known from eastern Qld and N.S.W.; also in Brazil, Venezuela, south-eastern U.S.A. and China.

Qld: Chester R., E of McIlwraith Ra., *G.Butler 429* (CANB); Mt Farrenden, 26 km SSW of Charters Towers, *J.A.Elix 20588* (CANB); Three-Mile Ck, 5 km N of Townsville, *J.A.Elix 20042* (CANB). N.S.W.: Toonumbar S.F., *A.W.Archer P454* (NSW); Evans R., *A.W.Archer P389* (NSW).

The species is characterised by asci with a single ascospore and the presence of haema-thamnolic acid in the thallus. It resembles *P. velata*, but it is distinguished from that species by its chemistry.

Reports of *P. commutata* from Tas. are probably based on misidentifications of *P. novaezelandiae*, a common species in Tasmanian rainforest.

Pertusaria lacerans Müll.Arg., *Flora* 67: 270 (1884)

T: Apiahy, Brazil, May 1881, *J.I.Puiggari s.n.*; holo: G.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 194, fig. 73 (1997).

Thallus olive-green, somewhat areolate and cracked, smooth and glossy. Soredia and isidia absent. Pustules 0.2–1.0 mm diam., opening at the top to reveal the white medulla. Apothecia disciform, inconspicuous, immersed in larger pustules. Ascospores rare, 1 per ascus, elongate-ellipsoidal, smooth, 170–180 (–225) × 35–40 (–50) µm; wall c. 1 µm thick.

Chemistry: Thallus K–, KC+ violet, C–, Pd–; containing picrolichenic acid (major), subpicrolichenic acid (minor) and ±lichexanthone (trace to minor).

An uncommon, corticolous species in eastern Qld and N.S.W.; also in Papua New Guinea, Fiji and Brazil.

Qld: Calliope Range Lookout, 53 km E of Biloela, *J.A.Elix 34786* (CANB); Alma Gap, Cardwell Ra., 20 km NW of Cardwell, *J.A.Elix 15795* (CANB); Clarke Ra., 46 km SE of Proserpine, *J.A.Elix 20848* (CANB). N.S.W.: Sherwood Lookout, Toonumbar S.F., *A.W.Archer P376* (NSW).

The lichen is characterised by monosporous asci and picrolichenic acid in the thallus. It resembles *P. lacericans* and *P. sublacerans* (*q.v.*), but it is distinguished from those taxa by having picrolichenic acid rather than prototocetraric acid and norstictic acid, respectively.

Pertusaria lacericans A.W.Archer, *Mycotaxon* 41: 230 (1991)

T: Cattle Creek State Forest, Briggsvale, 12 km NNE of Dorrigo, N.S.W., 13 Oct. 1978, *D.Verdon 3843*; holo: CANB.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 194, fig. 74 (1997).

Thallus olive-green, somewhat areolate and cracked, smooth and glossy. Soredia and isidia absent. Pustules 0.2–1.0 mm diam., opening at the top to reveal the white medulla. Apothecia inconspicuous, disciform, immersed in larger pustules. Ascospores uncommon, 1 per ascus, elongate-ellipsoidal, smooth, 170–180 × 35–40 µm; ascospore wall c. 1 µm thick.

Chemistry: Thallus K–, KC–, C–, Pd+ orange; containing protocetraric acid (major).

An uncommon, endemic, corticolous species of montane rainforest in eastern Qld and N.S.W.

Qld: Bunya Mtns, c. 56 km NE of Dalby, *J.Hafellner 16744, 18928* (GZU). N.S.W.: Mt Banda Banda, 44 km NW of Wauchope, *D.Verdon 4049* (CANB); Wilson R., Mount Boss S.F., c. 37 km NW of Wauchope, *A.W.Archer P615* (NSW); Dorrigo Natl Park, 38 km WSW of Coffs Harbour, *A.W.Archer P868* (NSW).

Pertusaria lacericans is characterised by the pustulate apothecia and the presence of protocetraric acid in the thallus. It resembles *P. lacerans* and *P. sublacerans*, but it is distinguished from those species by having protocetraric acid in place of picrolichenic acid and norstictic acid, respectively.

Pertusaria miscella A.W.Archer, *Mycotaxon* 41: 232 (1991)

T: Clarke Ra., 46 km S of Proserpine, Qld, 20°50'S, 148°32'E, 29 June 1986, *J.A.Elix 20942*; holo: CANB.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 194, fig. 75 (1997).

Thallus off-white to very pale grey, thin, slightly wrinkled and cracked, smooth and glossy, lacking soredia and isidia. Apothecia conspicuous, disciform, scattered, the discs clustered on flattened verruciform swellings, subhemispherical or irregular in outline, concolorous with the thallus, 1–3 mm wide; disc white, plane or concave, sunken, 0.3–0.5 mm diam., epruinose; margin inrolled. Ascospores 1 per ascus, ellipsoidal, smooth, 100–130 × 30–40 (–50) µm; wall c. 1 µm thick.

Chemistry: Thallus K+ yellow, KC–, C–, Pd+ yellow; containing lichexanthone (major) and thamnolic acid (major).

An endemic, corticolous species known from two localities in north-eastern Qld.

Qld: Bambo Ra., 79 km SSE of Coen, *H.Streimann 56689* (CANB).

The species is characterised by disciform apothecia on verruciform swellings, monosporous asci and the presence of lichexanthone and thamnolic acid in the thallus.

Pertusaria novaezelandiae Szatala, *Borbásia* 1: 60 (1939)

T: L. Waikare-Moana, New Zealand, 1932, *J.Jablonszky*; holo: BP T298, *n.v.*

Illustrations: G.Kantvilas, *Lichenologist* 22: 291, figs 1, 3 (1990).

Thallus off-white to pale greyish white, thick, wrinkled and cracked, smooth and dull. Soredia and isidia absent. Apothecia disciform, 0.5–1.5 mm diam.; disc white-pruinose when fertile, occasionally sorediate. Ascospores 1 per ascus, ellipsoidal, (120–) 140–170 × 30–55 µm.

Chemistry: Thallus K+ violet, KC+ reddish violet, C–, Pd–, UV–; containing hypothamnolic acid (major) and ±conhypothamnolic acid (minor).

This corticolous species occurs mainly in *Nothofagus*-dominated rainforest in south-eastern Qld and in N.S.W., Vic. and Tas.; also in New Zealand.

Qld: Bunya Mtns, Oct. 1919, *J.B.Cleland* (NSW). N.S.W.: 4 km E of Robertson, *J.A.Elix 8891* (CANB); Chaelundi Mtn, 37 km N of Ebor, *D.Verdon 3877* (CANB). Vic.: Mallacoota Inlet, Mallacoota, *A.W.Archer P537* (NSW). Tas.: Mt Barrow, *G.Kantvilas 76/83* (HO).

This species is characterised by monosporous asci and the presence of hypothamnolic acid which is responsible for the K+ reddish violet reaction. It can be distinguished from *P. tropica* by the absence of lichexanthone and the more southerly distribution.

Pertusaria sublacerans A.W.Archer, *Mycotaxon* 41: 242 (1991)

T: summit of Intermediate Hill, Lord Howe Island, [31°33'S, 159°06'E], July 1911, *W.W.Watts s.n.*; holo: NSW L5219.

Illustration: A.W.Archer, *Biblioth. Lichenol.* 69: 194, fig. 78 (1997).

Thallus olive-green, thin, somewhat areolate and cracked, glossy, lacking soredia and isidia. Pustules numerous, subisidioid, finally hemispherical to subspherical, 0.5–1.5 mm diam., the upper part opening to reveal the white medulla. Apothecia disciform, somewhat sunken; disc 0.5–1.0 mm diam., white-pruinose. Ascospores uncommon, 1 per ascus, ellipsoidal, 150–175 × 60–70 µm; wall smooth, c. 1 µm thick.

Chemistry: Thallus K+ yellow then red, KC–, C–, Pd+ yellow; containing norstictic acid (major) and connorstictic acid (trace).

An uncommon, corticolous species in eastern Qld and N.S.W.; also in Papua New Guinea, Lord Howe Is. and Norfolk Is.

Qld: Lamins Hill Lookout, Atherton Tableland, *J.A.Elix 11930* (CANB); Forty-Mile Scrub Natl Park, *W.H.Ewers 8023 p.p.* (CANB). N.S.W.: beside Boambee Ck, 6 km S of Coffs Harbour, *A.W.Archer P891* (NSW); Brushy Mountain Rest Area, Werrikimbe Natl Park, *A.W.Archer P672* (NSW).

Pertusaria sublacerans is characterised by the olive-green, pustulate thallus containing norstictic acid. It is distinguished from the morphologically similar *P. lacerans* and *P. lacericans* (*q.v.*) which contain picrolichenic acid and protocetraric acid, respectively.

Pertusaria thamnolica A.W.Archer, *Mycotaxon* 44: 16 (1992)

T: E side of Mooney Mooney Ck, c. 8 km WSW of Gosford, N.S.W., 33°26'E, 151°15'S, 24 May 1991, *A.W.Archer P178*; holo: NSW; iso: CANB.

Illustration: A.W.Archer, *op. cit.* 15, fig. 4 (1992).

Thallus off-white to pale grey, areolate and cracked, smooth and dull. Soredia and isidia absent. Apothecia conspicuous, scattered, disciform; disc pale orange, white-pruinose, 0.5–1.5 mm diam., with thick inrolled margins. Ascospores 8 per ascus, uniseriate, ellipsoidal, smooth, 22–32 × 12–17 µm; ascospore wall c. 1 µm thick.

Chemistry: Thallus K+ yellow, KC–, C–, Pd+ yellow; containing thamnolic acid (major).

An uncommon, corticolous species in eastern N.S.W.; also in New Zealand.

N.S.W.: Old Lindesay Hwy, 7 km NE of Woodenbong, *A.W.Archer P401* (NSW); Gibraltar Range Natl Park, 60 km ENE of Glen Innes, *A.W.Archer P440* (NSW); Buckenbowra R., 7.5 km W of Batemans Bay, *J.A.Elix 22630* (CANB).

Pertusaria thamnolica is characterised by 8-spored asci and the presence of thamnolic acid. The latter feature distinguishes it from *P. truncata*.

Pertusaria truncata Kremp., *Verh. K.K. Zool.-Bot. Ges. Wien*, B, 26: 452 (1876)

T: [probably Wellington], New Zealand [*fide* G.Kantvilas, *Lichenologist* 22: 299, 1990], *C.Knight 46*; holo: M.

Pertusaria nothofagi Zahlbr., *Denkschr. Akad. Wiss. Wien Math.-Naturwiss. Kl.* 104: 337 (1941). T: Silver Peaks, near Dunedin, Otago, New Zealand, *J.S.Thomson ZA 281*; lecto: W, *fide* G.Kantvilas, *loc. cit.*; isolecto: CHR 374716.

Illustration: G.Kantvilas, *Lichenologist* 22: 291, fig. 1C.

Thallus pale greyish white to dull grey, thick and cracked, smooth. Soredia and isidia absent. Apothecia often numerous and conspicuous, disciform; disc pale orange-brown to grey, densely white-pruinose. Ascospores 8 per ascus, uniseriate, ellipsoidal, smooth, 19–27 × 12–15 µm.

Chemistry: Thallus K+ weak orange-brown, KC+ violet, C–, Pd–; containing picrolichenic acid (major), isohyperpicrolichenic acid (major), hyperpicrolichenic acid (minor) and subpicrolichenic acid (minor). The chemistry of *P. truncata* was reported in detail by Elix *et al.*, *Austral. J. Chem.* 44: 1487 (1991); *ibid.* 47: 1345 (1994).

Corticolous, usually on *Nothofagus*, in rainforest in Vic. and Tas.; especially common in Tas. and also in New Zealand.

Vic.: Mt Donna Buang, 5 km NNW of Warburton, *H.Streimann 36245* (CANB); Mt Boobyalla, 6 km N of Warburton, *R.Filson 7029* (MEL). Tas.: 35 km NNE of Savage R., *H.Streimann 40141* (CANB); near Picton, *G.C.Bratt 74/391* (HO); near Pencil Pine Ck, Cradle Mountain Natl Park, *W.A.Weber* (COLO L49471).

The species is characterised by asci with 8 small ascospores and the presence of picrolichenic acid in the thallus.

Pertusaria velata (Turner) Nyl., *Lich. Scand.* 179 (1861)

Parmelia velata Turner, *Trans. Linn. Soc. London* 9: 143 (1808). T: Sussex, England, 1805, *W.Borrer*; holo: BM, *n.v.*

Pertusaria rhodotropa Müll.Arg., *Bull. Herb. Boissier* 3: 637 (1895). T: Qld, *C.Knight 308 p.p.*; lecto: G, *fide* A.W.Archer, *Telopea* 4: 181 (1991).

Illustration: I.Yoshimura, *Lichen Flora of Japan in Colour* pl. 22, fig. 190 (1974).

Thallus greyish white to off-white, thick, slightly cracked and areolate, smooth to slightly wrinkled, dull. Soredia and isidia absent. Apothecia numerous, crowded, disciform, immature apothecia irregularly hemispherical or subspherical, constricted at the base, 0.5–1.0 mm diam., mature apothecia becoming flattened and exposing the pale to dark reddish orange discs, 0.5–0.8 mm diam., slightly to densely white-pruinose. Ascospores 1 per ascus, ellipsoidal, thin-walled, smooth, 110–155 (–175) × 30–45 (–50) µm.

Chemistry: Thallus K–, KC+ orange-red, C+ red, Pd–; containing lecanoric acid (major), gyrophoric acid (trace), orsellinic acid (trace) and ±lichexanthone (trace to major).

Corticolous and common in northern and eastern Australia (N.T., Qld and N.S.W.); a tropical to temperate species in both hemispheres, including Norfolk Is., New Zealand, Fiji, Vanuatu, New Caledonia and Papua New Guinea.

N.T.: Yapilaika, Melville Is., *H.Streimann 42437* (CANB). Qld: Four-Mile Ck, 6 km W of Cooktown, *J.A.Elix 17412* (CANB); Tin Can Bay, *J.A.Elix 22820* (CANB). N.S.W.: Diamond Ck, 22 km SW of Moruya, *D.Verdon 5082* (CANB, H); Park Beach, Coffs Harbour, *J.A.Elix 3428* (CANB).

The species is characterised by monosporous asci and the presence of lecanoric acid which gives the thallus a C+ red reaction.