GROUP A

[Thallus corticolous, sterile, sorediate or isidiate]

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T: Zillie Falls, 12 km by road NE of Millaa Millaa, Qld, 17°28'29"S, 145°39'22"E, alt. 705 m, on fallen tree in remnant rainforest, 2 July 2006. J.A.Elix 39499; holo: BRI.
Illustration: A.W.Archer & J.A.Elix, op. cit. 36, fig. 1.
Thallus pale olive-green, thin, somewhat discontinuous, smooth and dull, lacking isidia, sorediate; soredia in well-defined soralia. Soralia white, scattered, sessile, becoming subhemispherical, occasionally forming sterile, sorediate discs 0.3–0.8 mm diam. Apothecia not seen.
Chemistry: Stictic acid (major), constictic aid (minor), peristictic acid (trace), cryptostictic acid (trace), ± substictic acid (trace), ± hypostictic (trace), norstictic acid (trace).
Occurs on the branches of trees in and at the margins of tropical and subtropical, montane rainforest in eastern Qld.
Qld: Cherry Plains Picnic Area, Bunya Mountains Natl Park. J.A.Elix 38810 (CANB); Millaa Millaa Falls, 4 km S of Millaa Millaa, J.A.Elix 39311 (CANB).
The species is characterised by the sorediate thallus, the absence of apothecia and the presence of the stictic acid chemosyndrome. It resembles P. leucosorodes Nyl. (q.v.) in morphology, but that species contains thamnolic acid.

T: Goonoo S.F., 23 km NNE of Dubbo, N.S.W., 32°04'16"S, 148°42'53"E, alt. 330 m, on dead wood, 11 Oct. 2005. J.A.Elix 36767; holo: NSW; iso: CANB.
Thallus pale grey-green to grey-white, thick, cracked-areolate, verrucose, dull to slightly shiny, lacking soredia, isidiate. Isidia numerous, simple and cylindrical at first, becoming densely coralloid-branched, dark grey-green; apices ±swollen and becoming dark brown to black-tipped, 0.5–2.0 mm tall, 0.1–0.2 mm diam. Apothecia and pycnidia not seen.
The species is characterised by the sterile, isidiate thallus and the presence of alectoronic acid, a very rare compound in the genus Pertusaria.
Thallus on dead wood, containing 4,5-dichlorolichexanthone, not thiophanic acid............a. var. alectoronica
Thallus on bark, not containing 4,5-dichlorolichexanthone, containing thiophanic acid......b. var. thiophanica

a. Pertusaria alectoronica Elix & A.W.Archer var. alectoronica
Illustration: J.A.Elix & A.W.Archer, op. cit. 24, fig. 1.
Chemistry: Cortex K–; medulla K–, C–, KC+ red, P–; containing alectoronic acid (major), 4,5-dichlorolichexanthone (minor).
A very rare, endemic lichenicolous lichen in central-western N.S.W.

T: summit of Mt Killiecrankie, Flinders Island, Tas., 39°49'S, 147°52'E, alt. 310 m, on bark of Banksia marginata in sheltered scrub among large boulders, 22 Jan. 2006. G.Kantvilas 28/06; holo: HO.
Illustration: A.W.Archer & J.A.Elix, op. cit. 36, fig. 2.
Chemistry: containing alectoronic acid (major), thiophanic acid (minor), methyl pseudoaleuronate (trace), beta-aleuronate acid (trace).
This very rare corticolous lichen is known only from the type locality in Flinders Island, Bass Strait, Tas.
While this lichen is morphologically identical to var. *alectoronica*, the latter differs chemically in containing 4,5-dichlorolichexanthone (minor) in addition to alectoronic acid (major), while lacking thiophanic acid, and it occurs on lignin rather than on bark.


T: Scrub Rd, Bago Bluff National Park, 7 km W of Wauchope, 31°28’45”S, 152’39’36”E, alt. 25 m, N.S.W. 8.viii.2008, J.A. Elix 43284; holo: CANB.

Illustrations: J.A.Elix & A.W.Archer, op. cit. 19, figs 1, 2.

Thallus off-white, thin, smooth and dull, not sorediate, isidiate. Isidia crowded, cylindrical, simple or rarely terminally branched, 0.3–0.5 mm tall, 0.05–0.08 mm thick. Apothecia not seen.

Chemistry: containing 2-chlorolichexanthone (minor), 2,4-dichlorolichexanthone (minor), 2,4,5-trichlorolichexanthone (minor), ± 2,5-dichloro-3-O-methylnorlichexanthone (minor), stictic acid (major), peristictic acid (minor), cryptostictic acid (minor–trace), ± norstictic acid (minor), ± constictic acid (minor–trace), ± confluentic acid (minor–trace), ± 2′-O-methylperlatolic acid (major–minor), ± 2-O-methylperlatolic acid (minor).

This endemic species is known from the bark of *Acacia* and *Eucalyptus* in coastal forests and woodland in north-eastern Qld and northern N.S.W.

Qld: Rocky Pt, 13 km NE of Mossman, J.A.Elix 43416 (CANB). N.S.W.: Scrub Rd, Bago Bluff Natl Park, 7 km W of Wauchope, J.A.Elix 43279, 43285, 43286 (CANB).


T: Balek Wildlife Sanctuary, c. 15 km S of Madang, Madang Province, Papua New Guinea, alt. c. 20 m, 3 Sept. 1995, A.Aptroot 3680; holo: CANB; iso: herb. Aptroot.

Illustration: A.W. Archer & J.A. Elix, op. cit. 159, fig. 5.

Thallus yellowish fawn, thin, smooth and glossy, slightly cracked, sorediate, lacking isidia. Soralia conspicuous, numerous, scattered, concolorous with the thallus, 0.3–0.6 mm wide, occasionally slightly substipitate and up to 0.6 mm tall. Apothecia not seen.

Chemistry: containing 4,5-dichlorolichexanthone (minor), stictic acid (major), constictic acid (minor), with traces of substictic, peristictic and cryptostictic acids.

A very rare species on bark in south-eastern Qld; corticolous and saxicolous. More common in Papua New Guinea where it is corticolous and saxicolous.

Qld: Burtons Well Walking Track to Mt Kiangarow, Bunya Mountains Natl Park, J.A. Elix 37653 (CANB).

The species is characterised by the sterile sorediate thallus and the presence of 4,5-dichlorolichexanthone and stictic acid. It is the sorediate counterpart of the chemically similar isidiate *P. montpittensis* (q.v.).


T: Burbura logging site, c. 30 km NNW of Madang, Madang Province, Papua New Guinea, alt 70 m, in virgin rainforest, 29 July 1992, P.Diederich 11929; holo: LG.

Thallus pale olive-green, thin, smooth and glossy, lacking soredia, isidiate. Isidia numerous, short, simple, smooth, 0.2–0.3 mm tall, c. 0.1 mm wide. Apothecia not seen.

Chemistry: K–, KC–, C–, Pd–; containing 2′-O-methylperlatolic acid.

A rare corticolous species on *Doryphora* in northern N.S.W.; also in Papua New Guinea.
The species is characterised by the sterile isidiate thallus and the presence of 2’-O-methylperlatolic acid. It is the isidiate counterpart of the chemically similar sorediate species, *P. uttaraditensis* Jariangprasert from Thailand.


T: Mossman–Mount Molloy road, 1 km S of Lions Lookout, 20 km N of Mount Molloy, Qld, 16°32’05”S, 145°22’59”E, alt. 390 m, 4 Aug 2006, J.A.Elix 36883; holo: CANB.


Thallus pale olive-green, somewhat roughened, dull, sorediate, lacking isidia. Soralia white, conspicuous, sessile, flattened, 0.8–1.5 mm diam. Apothecia unknown.

Chemistry: containing lichexanthone (major), confluentic acid (major), ± 2’-O-methylmicrophyllinic acid, ± 2 two unknowns (minor).

An uncommon corticolous species in rainforest in north-eastern Qld; also in Thailand.


T: Wangi Falls, Litchfield Park, 40 km SW of Batchelor, N.T., 13°10’S, 130°41’E, 3 Aug 1991, J.A.Elix 27615; holo: CANB.


Thallus thin, pale to dull yellow, smooth. Soredia absent. Isidia scattered, inconspicuous, usually simple, occasionally branched, concolorous with the thallus, 0.2–0.3 mm tall, c. 0.05 mm wide. Apothecia not seen.

Chemistry: Thallus K–, KC+ orange, C+ weak orange, Pd–; containing thiophaninic acid (major), stictic acid (major), constictic (major), 2-chloro-6-O-methylnorlichexanthone (minor), cryptostictic acid (trace), menegazziaic acid (trace) and 4-chloro-6-O-methylnorlichexanthone (trace).

An uncommon, corticolous species in northern N.T. and Qld; also in Papua New Guinea.
The lichen is characterised by the thin, yellowish thallus with inconspicuous, yellow isidia. It is distinguished from other corticolous isidiate taxa in Australia by the presence of thiophaninic and stictic acids.


T: Hakea Walk, Washpool Natl Park, Gibraltar Rd., 78 km E of Glen Innes, N.S.W., 29°28′10″S, 152°21′01″E, alt. 895 m, 2 May 2005, J.A.Elix 37278; holo: CANB.


Thallus pale yellow-green, scurfy and cracked, lacking isidia, sorediate. Soralia conspicuous, sessile or slightly raised, scattered, composed of bright yellow to yellow-green soredia, 0.5–1.0 mm diam. Apothecia not seen.

Chemistry: containing arthrothelin (major), thuringione (major), 3-0-methylthiophanic acid (minor), and 4,5-dichloronorlichexanthone (trace).

An uncommon corticolous species in eastern Qld and N.S.W.


**Pertusaria flavopunctata** is characterised by the conspicuous yellow-green soralia and the presence of arthrothelin and thuringione [2,4,5-trichloro-3-O-methylnorlichexanthone] as major compounds. Arthrothelin occurs in other *Pertusaria* species, but *P. flavopunctata* is the first to contain thuringione as a major compound.


T: Carnarvon Hwy, 88 km ENE of St. George, Qld, 27°23′S, 148°53′E, 18 Aug. 1993, J.A.Elix 33995; holo: CANB.

Thallus off-white to dull fawn or pale olive-green, dull to somewhat glossy, smooth to subtuberculate. Soredia absent. Isidia inconspicuous, numerous, simple, rarely branching, concolorous with the thallus, 0.1–0.2 mm tall, c. 0.05 mm wide, occasionally becoming blastidiate and coarsely sorediate with age. Apothecia not seen.

Chemistry: Thallus K–, KC–, C–, Pd–; containing 4,5-dichlorolichexanthone (minor) and a depside.

**Pertusaria georgeana** is characterised by the isidiate thallus and the presence of 4,5-dichlorolichexanthone in the thallus. It resembles *P. montpittensis*, but the latter contains stictic acid. The absence of stictic acid also separates *P. georgeana* from *P. pilosula*.

Five varieties are distinguished based on depsides in their thalli:

var. *georgeana*: 2-O-methylperlatolic acid

var. *goonooensis*: 2,4-di-O-methylolivetoric acid

var. *methylstenosporica*: 2-O-methylperlatolic acid and 2-O-methylstenosporic acid

var. *occidentalis*: 2-O-methylconfuentific acid

var. *victoriana*: planaic acid

**a. Pertusaria georgeana** A.W.Archer & Elix var. *georgeana*

Illustration: A.W.Archer, *op. cit.* 61, fig. 17.

Chemistry: containing 4,5-dichlorolichexanthone (minor) and 2-O-methylperlatolic acid.
This endemic, corticolous lichen is known only from the type locality in south-central Qld, N.S.W. and the A.C.T.


* T: Modriguy Forest Rd, Goonoo State Forest, 5 km E of Modriguy, 23 km NNE of Dubbo, N.S.W., 32°04'16"S, 148°42'53"E, alt. 330 m, on dead wood, 11 Oct. 2005, J.A.Elix 36764; holo: CANB.


Isidia globose at first, proliferating or becoming blastidiate and coarsely sorediate with age.

Chemistry: containing 4,5-dichlorolichexanthone (minor), 2,4-di-O-methylolivetoric acid (major), 2-O-methylperlatolic acid (minor).

A rare corticolous and lignicolous variety known only from central-western N.S.W.

N.S.W.: type locality, base of *Eucalyptus*, J.A.Elix 36750, 36751, 36752, 36956 (CANB); loc. id., on dead wood, J.A.Elix 36765 (CANB).


* T: Denmire Creek, 32 km ESE of Gilgandra, Goonoo State Forest, N.S.W., 31°55'43"S, 148°59'32"E, alt. 370 m, on dead branch of *Eucalyptus* in open *Eucalyptus* woodland, 12 Oct. 2005, J.A.Elix 38214; holo: CANB.

Illustration: A.W.Archer & J.A.Elix, *op. cit.* 37, fig. 4.

Isidia becoming coarsely sorediate with age.

Chemistry: 4,5-dichlorolichexanthone (minor), 2-O-methylperlatolic acid (major) and 2-O-methylstenosporic acid (submajor).

A very rare lichen in central-western N.S.W.


Illustration: J.A.Elix & A.W.Archer, *op. cit.* 37, fig. 4.

Isidia globose at first, proliferating or becoming blastidiate and coarsely sorediate with age.

Chemistry: 4,5-dichlorolichexanthone (minor), 2-O-methylconfluentic acid (major) and planaic acid (minor or trace).

Occurs on dead wood and on the bases of *Eucalyptus* trees in open *Eucalyptus* woodland in south-western W.A.

W.A.: type locality, on dead wood, J.A.Elix 38720 (CANB, HO, PERTH).


* T: Reef Hills State Park, 7 km SSW of Benalla, Vic., 36°36'53"S, 145°56'03"E, alt. 155 m, on stump in open *Eucalyptus* woodland, 5 May 2006, J.A.Elix 36957; holo: CANB; iso: MEL.


Isidia simple, rarely branched.

Chemistry: 4,5-dichlorolichexanthone (minor) and planaic acid (major).

This lignicolous variety is known from woodland in N.S.W., A.C.T. and Vic.


T: Weyba Ck, SW of Noosa Heads, c. 70 km SE of Gympie, Qld, 26°24'S, 153°05'E, 27 July 1986, *J.Hafellner 17951*; holo: GZU.

Illustration: A.W.Archer, *op. cit.* 229, fig. 5.

Thallus yellowish white, thin, dull. Soredia absent. Isidia initially simple, becoming coralloid, to 0.4 mm long, c. 0.05 mm wide, scattered to dense. Apothecia verruciform, hemispherical, constricted at the base, sometimes confluent, shortly isidiate, 0.8–1.5 mm diam. Ostioles inconspicuous, pale. Ascospores 2 per ascus, fusiform, smooth, 100–112 × 30–35 µm.

Chemistry: Thallus K–, KC–, C–, Pd–; containing lichexanthone (major), 2’-O-methyl-perlatolic acid (major), stictic acid (major) and constictic acid (trace).

This endemic, corticolous species is known from mangroves in south-eastern Qld.

Qld: North Stradbroke Is., *J.Hafellner 19214, 19240* (GZU); Tandora, c. 25 km ENE of Maryborough, *J.Hafellner 19240* (GZU).


Illustration: A.W.Archer & J.A.Elix, *op. cit.* 16, fig. 5.

Thallus pale yellowish grey to pale yellow, thin, somewhat areolate and cracked, smooth and dull. Isidia absent. Soralia yellow, scattered, slightly immersed, 0.2–0.5 mm diam. Apothecia not seen.

Chemistry: Thallus K–, KC+ orange, C+ orange, Pd–; containing thiophaninic acid (major), 2-chloro-6-O-methyllichexanthone (minor), stictic acid (minor), constictic acid (trace) and 4-chloro-6-O-methyllichexanthone (trace).

This predominantly coastal, corticolous species is found in south-eastern Qld, eastern N.S.W. and Lord Howe Is.

Qld: 5 km E of Injune, *J.A.Elix 34021, 34022, 34023* (CANB).


Illustration: J.A.Elix, H.Streimann & A.W.Archer, *op. cit.* 66, fig. 2A.

Thallus pale olive-green to pale yellow-grey, thin, continuous, smooth and glossy. Soredia absent, copiously isidiate especially towards the centre of the thallus. Isidia concolorous with the thallus, usually simple, otherwise branched or becoming coralloid, occasionally narrow at the base and swelling at the tip, 0.4–1.0 mm tall, 0.2–0.5 mm wide. Apothecia not seen.
Chemistry: Thallus K−, KC−, C−, Pd−; containing stictic acid (major), 4,5-dichloro-lichexanthone (minor), constictic acid (minor), cryptostictic acid (minor), menegazziaic acid (minor) and ±askyrin (minor to major).

Rare and corticolous in eastern Qld; also in Lord Howe Is. (corticolous and saxicolous), Norfolk Is., Papua New Guinea and Tonga.

Qld: Ingham–Kangaroo Hills road, 36 km SW of Ingham, J.A.Elix 20413 (CANB); Pine Mountain S.F., 24 km SSW of Calliope, J.A.Elix 34799 (CANB); Springbrook, H.T.Lumbsch 5391h (Herb. H.T.Lumbsch).

The species is characterised by the typically short simple isidia and the chemistry which distinguishes it from the Hawaiian *P. ramulifera* H.Magn. (containing norstictic acid) and from the isidiate *P. muricata*.

### Pertusaria muricata


Illustration: J.C.David & D.L.Hawksworth, *op. cit.* 109, fig. 2.

Thallus pale fawn, thin, somewhat cracked, smooth and dull. Soredia absent. Isidia numerous and crowded, concolorous with the thallus, simple, rarely branched or becoming coralloid, 0.2–0.8 mm tall, 0.05–0.10 mm wide. Apothecia not seen.

Chemistry: Thallus K−, KC−, C−, Pd−; containing stictic acid (major), constictic acid (minor) and cryptostictic acid (trace).

A rare, corticolous species in north-eastern Qld; also in Mauritius, Papua New Guinea and New Zealand.

Qld: Cardwell Ra., 24 km WNW of Cardwell, H.Streimann 28576 (CANB).

*Pertusaria neotriconica* is characterised by the sterile, isidiate thallus and the presence of stictic acid as the major lichen substance. The chemistry distinguishes it from other isidiate, Australian taxa.

### Pertusaria neotriconica


T: Mount Hyland Nature Reserve, 20 km N of Hernani, N.S.W., 30°10’44”S, 152°25’19”E, alt. 1340 m, on base of tree in temperate rainforest, 30 Apr. 2005, J.A.Elix 36570; holo: NSW; iso: CANB.


Thallus creamy white to pale glaucous, thick, cracked-areolate, verrucose, dull to slightly glossy, lacking soredia, isidiate. Isidia numerous, simple, cylindrical, very fragile, concolorous with the thallus, 0.5–1.0 mm tall, 0.05–0.10 mm diam. Apothecia and pycnidia not seen.

Chemistry: Cortex K+ yellow; medulla K+ yellow then red, C−, KC−, P+ deep orange-red; containing neotricone (major), norstictic acid (minor), salazinic acid (minor), norperistictic acid (minor), protocetraric acid (minor).

This corticolous lichen is known from the type locality in northern N.S.W. and eastern Vic.

**N.S.W.:** type locality, J.A.Elix 36584, 36599 (CANB). **Vic.:** Drummer Rainforest Walk, 10 km E of Cann River, J.A.Elix 43565 (CANB).

*Pertusaria neotriconica* is characterised by the sterile, isidiate thallus and the unique thalline chemistry. Neotricone, the major metabolite, is a very rare orcinol depsidone previously known only from *Phaeographis neotricosa* Redinger and *Usnea* sp.

This species closely resembles *P. muricata* and *P. umbricola*, but all three can be distinguished by chemistry, *P. muricata* containing the stictic acid chemosyndrome, and *P. umbricola* containing protocetraric acid as the major metabolite.

T: Little Crystal Creek, 12 km E of Paluma, Qld, 19°00’56”S, 146°15’59”E, alt. 330 m, 24 July 2006, J.A. Elix 38052; holo: CANB.

Illustration: A.W.Archer & J.A.Elix, *op. cit.* fig. 3.

Thallus pale greyish green, smooth, isidiate; soredia absent. Isidia numerous, crowded, concolorous with the thallus, irregularly cylindrical, occasionally swollen in the middle, 0.3–0.5 mm tall, 0.10–0.25 mm diam. Apothecia not seen.

Chemistry: containing 4,5-dichlorolichexanthone (major) and 2,4,5-trichlorolichexanthone (minor).

This corticolous species is known only from the type locality in north-eastern Qld.


T: Hungry Head, 25 km SSW of Coffs Harbour, N.S.W., 30°31’S, 153°01’E, alt. 5 m, 25 Nov. 1996, A.W.Archer P876; holo: NSW.

Illustration: A.W.Archer, *op. cit.* 132, fig. 44.

Thallus pale olive-green, smooth and glossy. Soredia absent. Isidia numerous, crowded, simple, concolorous with the thallus, 0.4–0.8 mm tall, 0.5–1.0 mm wide. Apothecia not seen.

Chemistry: Thallus K+ yellow, KC–, C–, Pd+ orange-red; containing 2’-O-methylperlatolic acid (major), stictic acid (major), 4,5-dichlorolichexanthone (minor) and constictic acid (minor).

This endemic, corticolous species is known only from the type locality in north-eastern N.S.W.


T: track to Mutton Bird Pt, Lord Howe Is., 31°32’45”S, 159°05’00”E, 21 June 1992, J.A.Elix 32823; holo: CANB.


Thallus dull yellow, thin, cracked, smooth and glossy. Isidia absent. Soralia numerous, scattered, white to off-white, disciform, 0.4–0.8 mm diam. Apothecia not seen.

Chemistry: Thallus K–, KC–, C–, Pd–; containing 2,4-dichlorolichexanthone (major), 2,5-dichlorolichexanthone (major), 2,4,5-trichlorolichexanthone (major), stictic acid (major), 2-chlorolichexanthone (minor) and constictic acid (minor).

A rare, corticolous and saxicolous species in south-eastern Qld, eastern N.S.W.; also in Papua New Guinea (muscicolous) and Lord Howe Island.

Qld: summit of Mt Kiangarow, Bunya Mountains Natl Park, 68 km N of Dalby, J.A.Elix 37645 (CANB). N.S.W.: Mount Boss S.F., 37 km NW of Wauchope, A.W.Archer P669 (NSW).

The distinctive chemistry separates lichen from other sterile sorediate Australian *Pertusaria* species.

T: Diehard Creek, Mann River Nature Reserve, 50 km E of Glenn Innes, N.S.W., 29°40'29"S, 152°05'19"E, alt. 595 m, on vine in *Allocasuaria-Eucalyptus* woodland along stream, 1 May 2005, J.A.Elix 37038; holo: CANB.


Thallus pale pink to pale orange, smooth and dull, isidiate, lacking soralia. Isidia simple, 0.10–0.25 mm tall, c. 0.05 mm diam., almost completely covering the thallus. Apothecia unknown.

**Chemistry:** Containing norstictic acid (major) and connorstictic acid (minor-trace). An uncommon corticolous species in north-eastern N.S.W.; also in Papua New Guinea.


T: North Stradbroke Is., Qld, 27°29'S, 153°26'E, 10 Aug. 1986, J.Hafellner 19204; holo: GZU.


Thallus pale cream-white, thin, continuous, smooth and dull. Soredia absent. Isidia simple, concolorous with the thallus, profuse, 0.1–0.3 mm tall, 0.05–0.10 mm wide. Apothecia inconspicuous, verruciform, isidiate, concolorous with the thallus, scattered, flattened-hemispherical, not constricted at the base, 0.5–0.7 mm diam. Ostiole conspicuous, black, 0.1–0.2 mm diam., 1 per verruca. Ascospores 4 per ascus, uniseriate, ellipsoidal, rough, 80–95 × 30–35 µm.

**Chemistry:** Thallus *K*-, *KC*-, *C*-, *Pd*+ orange; containing 2,5-dichlorolichexanthone (major), 2,4,5-trichlorolichexanthone (major), stictic acid (major), 2-chlorolichexanthone (trace), constictic acid (trace) and menegazziaic acid (trace).

An uncommon, coastal, corticolous species in eastern Qld and N.S.W.; also in New Zealand. Qld: Pine Mtn, 24 km NE of Rockhampton, J.A.Elix 34700 (CANB). N.S.W.: Temagog, 22 km N of Kempsey, J.A.Elix 33167 (CANB); Kattang Nature Reserve, 5 km E of Laurieton, A.W.Archer P608 (NSW); Yuragir Natl Park, 40 km ESE of Grafton, A.W.Archer P382 (NSW).

This species is characterised by the isidiate thallus and ascomatal verrucae, asci with 4 rough-walled ascospores and the distinctive chemistry. It resembles *P. isidiosa*, but that species has 2-spored ascii and it contains lichexanthone.


T: Paluma–Hidden Valley road, Mount Spec State Forest, 41 km SSW of Ingham, Qld, 19°01'S, 146°09'E, 27 Oct. 1995, H.Streimann 57985; holo: CANB.

Illustration: A.W.Archer, *op. cit.* 163, fig. 62.

Thallus pale fawn, thin, smooth and dull. Soredia absent. Isidia numerous, concolorous with the thallus, simple, rarely branched, 0.3–0.8 mm tall, 0.05–0.10 mm wide. Apothecia not seen.

**Chemistry:** Thallus *K*-, *KC*-, *C*-, *Pd*+ orange; containing protocetraric acid (major), conprotocetraric acid (trace) and ±virensic acid (trace).

A rare, corticolous species known only from north-eastern Qld and Papua New Guinea.
**Pertusaria umbricola** is characterised by the sterile, isidiate thallus containing protocetraric acid.


T: Gungarre Forest Walk, South Alligator, Kakadu Natl Park, N.T., 12°40′36″S, 132°28′44″E, alt. 30 m, on dead branches in lowland rainforest, 10 Aug. 2005, J.A.Elix 37897; holo: CANB.

Thallus white, smooth and dull, lacking isidia, sorediate. Soralia flattened, inconspicuous, white to off-white, scattered to occasionally confluent, 0.2–0.5 mm diam. Apothecia unknown.

**Chemistry:** containing methyl 2′-O-methylmicrophyllinate (major), ± lichexanthone (major), ± psoromic acid (minor).

A very rare corticolous species in northern N.T.; endemic.

**Pertusaria variabilis** is characterised by the sorediate thallus, the absence of apothecia and the presence of methyl 2′-O-methylmicrophyllinate. This is the only known occurrence of that compound in the genus.


T: Stoney Ck, above Wallaman Falls, Girringun Natl Park, 51 km W of Ingham, Qld, 18°35′54″S, 145°47′51″, alt. 545 m, on dead tree in rainforest margin, 25 July 2006, J.A.Elix 38113; holo: CANB.
Illustration: A.W.Archer & J.A.Elix, *op. cit.* 6, fig. 5.

Thallus pale fawn, smooth, isidiate, lacking soredia. Isidia dense, crowded, concolorous with the thallus, short, simple, cylindrical, 0.1–0.2 (–0.3) mm tall, 0.05–0.10 mm diam. Apothecia not seen.

**Chemistry:** containing protocetraric acid (major), norstictic acid (minor) and salazinic acid (minor).

This rare corticolous lichen is known from north-eastern Qld and north-eastern N.S.W.

N.S.W.: Limeburners Creek Nature Reserve, Queens Head area, 15 km S of Crescent Head, J.A.Elix 43598 (CANB).

**Pertusaria wallamanensis** is characterised by the small isidia and its distinctive chemistry. It resembles *P. neotriconica* (*q.v.*), but lacks neotricone. Moreover, the isidia of *P. wallamanensis* are smaller than those of *P. neotriconica*. (0.5–1.0 mm tall).