

GROUP A

[Thallus corticolous, sterile, sorediate or isidiate]

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Pertusaria albopunctata A.W.Archer & Elix, *Australas. Lichenol.* 65: 30 (2009)

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 acid (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.

Pertusaria alectoronica Elix & A.W.Archer, *Australas. Lichenol.* 60: 20 (2007)

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 lignicolous lichen in central-western N.S.W.

b. Pertusaria alectoronica var. **thiophanica** Kantvilas, Elix & A.W.Archer, in A.W.Archer & Elix, *Australas. Lichenol.* 65: 31 (2009)

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 pseudoalectoronate (trace), beta-alectoronic 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.

***Pertusaria bagoensis* Elix & A.W.Archer, *Australasian Lichenology* 67: 14 (2010)**

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), 2,5-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), ± confluent acid (minor), ± 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).

Pertusaria bagoensis is characterised by the isidiate thallus, the presence of 2-chlorolichexanthone and its polychlorinated derivatives, stictic acid, perlatolic acid derivatives and by the absence of apothecia.

***Pertusaria balekensis* A.W.Archer & Elix, *Mycotaxon* 67: 158 (1998)**

T: Balek Wildlife Sanctuary, c. 15 km S of Madang, Madang Province, Papua New Guinea, alt. c. 20 m, 3 Sept. 1995, *A.Aptroot 36802*; 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.*).

***Pertusaria burburana* Elix & A.W.Archer, in J.A.Elix, A.Aptroot & A.W.Archer, *Mycotaxon* 64: 19 (1997)**

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.

N.S.W.: Mount Hyland Nature Reserve, 20 km N of Hernani, *J.A.Elix* 36568, 36661 (CANB).

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.

Pertusaria confluentica Jariangprasert & Elix, in J.A.Elix, S.Jariangprasert & A.W.Archer, *Telopea* 12: 265 (2008)

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.

Illustration: J.A.Elix, S.Jariangprasert & A.W.Archer, *op. cit.* 267, fig. 3.

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.

Qld: Stoney Ck, Girringun Natl Park, W of Ingham, *J. A.Elix* 38112, 38115 (CANB).

Pertusaria confluentica is characterised by the sterile sorediate thallus and the presence of lichexanthone and confluentic acid. Confluentic acid is not known from any other sorediate species of *Pertusaria*, but it does occur in the fertile *P. ewersii* A.W.Archer & Elix (*q.v.*).

Pertusaria cyathicola Elix, *Mycotaxon* 94: 223 (2005)

T: West Palm Glen Track, Norfolk Island National Park, Norfolk Island, 29°01'6"S, 167°56'55"E, alt. 140 m, 16 June 1992, *J.A.Elix* 29043; holo: CANB.

Thallus crustose, off-white to pale greyish white, slightly cracked and areolate, slightly wrinkled and dull, verruculose, soon developing soredia, lacking isidia. Soralia yellow to yellow-orange, numerous, conspicuous, discoid or subhemispherical, often constricted at the base, 0.5–2.0 mm wide; soredia farinose. Apothecia and pycnidia unknown.

Chemistry: containing stictic acid (major), constictic acid (minor), arthothelin (minor), thuringone (minor), 3-*O*-methylthiophanic acid (trace), peristictic acid (trace), substictic acid (trace), hypostictic acid (trace) and novostictic acid (trace).

This endemic species is known only from the type locality in Norfolk Island where it is corticolous on *Cyathea*.

Pertusaria cyathicola is characterised by the conspicuous yellow to yellow-orange soralia and the presence of arthothelin, thuringone, stictic acid and constictic acid as the major lichen substances. Morphologically, it closely resembles *P. erythrella* (*q.v.*), but that species has white soralia and it contains lichexanthone and the norstictic acid chemosyndrome.

Pertusaria flavoisidiata A.W.Archer & Elix, *Mycotaxon* 49: 144 (1993)

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.

Illustration: A.W.Archer & J.A.Elix, *op. cit.* 145, fig. 2.

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 thiophanic 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.

N.T.: Umbrawarra Gorge, 22 km SW of Pine Creek, *J.A.Elix* 28133 (CANB). Qld: Rainbow Falls, 36 km SE of Blackwater, *J.A.Elix* 34392 (CANB); Mauhinia Downs–Duaringa road, 34 km SW of Dauringa, *J.A.Elix* 34943 (CANB).

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 thiophanic and stictic acids.

Pertusaria flavopunctata A.W.Archer & Elix, in J.A.Elix, S.Jariangprasert & A.W.Archer, *Teloepa* 12: 266 (2008)

T: Hakea Walk, Washpool Natl Park, Gibraltar Ra., 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.

Illustration: J.A.Elix, S.Jariangprasert & A.W.Archer, *op. cit.* 267, fig. 4.

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 arthothelin (major), thuringione (major), 3-*O*-methylthiophanic acid (minor), and 4,5-dichloronorlichexanthone (trace).

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

Qld: Paluma Rainforest Walk, Paluma, *J.A.Elix* 37590 (CANB). N.S.W.: Tomaga River estuary, 15 km SE of Batemans Bay, *J.A.Elix* 23337 (CANB).

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

Pertusaria georgeana A.W.Archer & Elix, in A.W.Archer, *Biblioth. Lichenol.* 69: 68 (1997)

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*-methylolivetic acid

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

var. *occidentalis*: 2-*O*-methylconfluentic 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.

N.S.W.: Bomera, 7 km W of Premer, *J.A.Elix 36198* (CANB). A.C.T.: Kowen Forest, 16 km E of Canberra, *J.A.Elix 33213* (CANB).

b. *Pertusaria georgeana* var. *goonooensis* Elix & A.W.Archer, *Australas. Lichenol.* 61: 26 (2007)

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.

Illustration: J.A.Elix & A.W.Archer, *op. cit.* 28, fig. 1.

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

Chemistry: containing 4,5-dichlorolichexanthone (minor), 2,4-di-*O*-methylolivetic 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).

c. *Pertusaria georgeana* var. *methylstenosporica* A.W.Archer & Elix, *Australas. Lichenol.* 65: 31 (2009)

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.

d. *Pertusaria georgeana* var. *occidentalis* Elix & A.W.Archer, *Australas. Lichenol.* 65: 32 (2009)

T: Brookton Highway Nature Reserve, Darling Plateau, 25 km W of Brookton, W.A., 32°23'50"S, 116°44'03"E, alt. 285 m, on dead wood in open *Eucalyptus* woodland, 5 Apr. 2006, *J.A.Elix 38727*; holo: PERTH; iso: CANB.

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).

e. *Pertusaria georgeana* var. *victoriana* A.W.Archer & Elix, in J.A.Elix, S.Jariangprasert & A.W.Archer, *Telopea* 12: 266 (2008)

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.

Illustration: J.A.Elix, S.Jariangprasert & A.W.Archer, *op. cit.* 267, fig. 5.

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.

N.S.W.: Shingle Ridge, 5 km N of Molong along road to Yeoval, *J.A.Elix* 38542 (CANB); Spring Creek Track, Goobang Natl Park, 30 km NE of Parkes, *J.A.Elix* 39216, 39230 (CANB). A.C.T.: Canberra Nature Park, Aranda Bushland, 4 km W of Canberra, *J.A.Elix* 38800, 38804 (CANB). Vic.: Chiltern-Mount Pilot Natl Park, 2 km N of Chiltern, *J.A.Elix* 36923, 36927, 36957 (CANB).

Pertusaria isidiosa A.W.Archer, *Mycotaxon* 41: 228 (1991)

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*-methylperlatolic 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* 18214 (GZU).

Pertusaria isidiosa is characterised by asci with 2 ascospores and lichexanthone, 2'-*O*-methylperlatolic acid and stictic acid in the thallus. Thus, it is distinguished from *P. subisidiosa*, the only other fertile, isidiate, corticolous species in Australia, which has 4-spored asci and lacks lichexanthone.

Pertusaria maritima A.W.Archer & Elix, *Telopea* 6: 19 (1994)

T: near junction of tracks to Mutton Bird Point and Intermediate Hill, Lord Howe Island, 31°32'43"S, 159°04'48"E, 21 June 1992, *J.A.Elix* 32765; holo: CANB.

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 thiophanic acid (major), 2-chloro-6-*O*-methylnorlichexanthone (minor), stictic acid (minor), constictic acid (trace) and 4-chloro-6-*O*-methylnorlichexanthone (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). N.S.W.: Hat Head Natl Park, *A.W.Archer* P385 (NSW); Fishermans Bluff, Kattang Nature Reserve, *A.W.Archer* P607 (NSW); Birnie Lokout, Ku-ring-gai Chase Natl Park, *A.W.Archer* P.764 (NSW); Moree–Mungindi road, 13 km W of Garah, *J.A.Elix* 33948 (CANB).

Pertusaria maritima is characterised by the pale yellowish grey to yellow thallus with scattered, sunken, yellow soralia. It resembles the saxicolous *P. xanthoplaca*.

Pertusaria montpittensis A.W.Archer, in J.A.Elix, H.Streimann & A.W.Archer, *Proc. Linn. Soc. New South Wales* 113: 65 (1992)

T: Mount Bates summit trail, Mount Pitt Reserve, Norfolk Is., 29°00'S, 167°56'30"E, 7 Dec. 1984, *J.A.Elix* 18641; holo: 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 \pm skyrin (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 J.C.David, in J.C.David & D.L.Hawksworth, *Biblioth. Lichenol.* 57: 102 (1995)

T: Vacoas, Le Pétrin Nature Reserve, Mauritius, 11 June 1990, *D.L.Hawksworth s.n.*; holo: IMI 400607.

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 muricata 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 neutriconica Elix & A.W.Archer, *Australas. Lichenol.* 60: 22 (2007)

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.

Illustration: J.A.Elix & A.W.Archer, *op. cit.* 25, fig. 4.

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 neutricone (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 neutriconica is characterised by the sterile, isidiate thallus and the unique thalline chemistry. Neutricone, the major metabolite, is a very rare orcinol depsidone previously known only from *Phaeographis neutricosa* 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.

Pertusaria palumensis Elix & A.W.Archer, in A.W.Archer & J.A.Elix, *Nova Hedwigia* 89: 3 (2009)

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.

Pertusaria palumensis is characterised by the pale greyish green isidiate thallus and by its chemistry. It is distinguished from the morphologically similar *P. montpittensis* (*q.v.*) by the absence of the stictic acid chemosyndrome and the presence of 2,4,5-trichlorolichexanthone.

Pertusaria pilosula A.W.Archer & Elix, in A.W.Archer, *Biblioth. Lichenol.* 69: 127 (1997)

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.

Pertusaria pilosula is characterised by the isidiate thallus and the presence of 4,5-dichlorolichexanthone, 2'-*O*-methylperlatolic acid and stictic acid. The presence of stictic acid distinguishes it from the rather similar *P. georgeana*.

Pertusaria puffina A.W.Archer & Elix, *Telopea* 6: 22 (1994)

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.

Illustration: A.W.Archer & J.A.Elix, *op. cit.* 16, fig. 7.

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 (muscolous) 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.

Pertusaria roseola A.W. Archer & Elix, in J.A.Elix, S.Jariangprasert & A.W.Archer, *Telopea* 12: 269 (2008)

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 *Allocasuarina-Eucalyptus* woodland along stream, 1 May 2005, *J.A.Elix* 37038; holo: CANB.

Illustration: J.A.Elix, S.Jariangprasert & A.W.Archer, *op. cit.* 270, fig. 8.

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.

N.S.W.: Washpool Natl Park, Gibraltar Ra., 78 km E of Glenn Innes, *J.A.Elix* 37276, 37287 (CANB).

Pertusaria roseola is characterised by its isidiate thallus and the presence of norstictic acid. It differs from the chemically similar *P. erythrella* by having isidia in place of soralia and from the chemically similar *P. ramulifera* H.Magn. (Hawaiian Islands) by the shorter, predominantly simple isidia, in contrast to the longer, thicker structures of *P. ramulifera*.

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

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

Illustration: A.W.Archer, *op. cit.* 243, fig. 8.

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–; containing 2,5-dichlorolichexanthone (major), 2,4,5-trichlorolichexanthone (major), stictic acid (major), 2-chlorolichexanthone (minor), 2,4-dichlorolichexanthone (trace), constictic acid (trace), cryptostictic 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 asci and it contains lichexanthone.

Pertusaria umbricola A.W.Archer & Elix, in A.W.Archer, *Biblioth. Lichenol.* 69: 158 (1997)

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.

Pertusaria variabilis Elix & A.W.Archer, in J.A.Elix, S.Jariangprasert & A.W.Archer, *Telopea* 12: 270 (2008)

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.

Illustration: J.A.Elix, S.Jariangprasert & A.W.Archer, *op. cit.* 270, fig. 9.

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.

N.T.: type locality, *J.A. Elix* 37870, 37876 (CANB).

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.

Pertusaria wallamanensis Elix & A.W.Archer, in A.W.Archer & J.A.Elix, *Nova Hedwigia* 88: 5 (2009)

T: Stoney Ck, above Wallaman Falls, Giringun Natl Park, 51 km W of Ingham, Qld, 18°35'54"S, 145°47'51"E, 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. neotricone* (*q.v.*), but lacks neotricone. Moreover, the isidia of *P. wallamanensis* are smaller than those of *P. neotricone*. (0.5–1.0 mm tall).