

F. Schumm (2025):

Images of Lichens Vol. 22
Baeomyces, Dibaeis, Icmadophila,
Phyllobaeis



— 10 μm K&J -

In this book, I include illustrations of some Baeomyces in my Herbarium. The numbers in [...] are the numbers of the bags in my private lichen herbarium F. Schumm in Wangen out of which the images are taken.

For the descriptions I consulted and used mainly:

Awasthi, DD. (1991): A key to the Microlihens of India, Nepal and Sri Lanka. - Bibliotheca Lichenologica Band 40.

Brodo, I., Sharnoff, S. (2001): Lichens of North America.- Yale University Press.

Gierl, C. & Kalb, K. (1993): Die Flechtengattung *Dibaeis*. Eine Übersicht über die rosafrüchtigen Arten von *Baeomyces* sens. lat. nebst Anmerkungen zu *Phyllobaeis* gen. nov. - Herzogia 9: 593-645.

I often used also the excellent descriptions that are provided in Prof. Nimis ITALIC 7.0 under the URL:

<https://italic.units.it/>

and the Australian Lichenslist under the Url:

https://www.anbg.gov.au/abrs/lichenlist/lichenchecklist_e_o.html

F. Schumm, 06.2025

Baeomyces heteromorphus Nyl. ex C. Bab. & Mitt., in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 351 (1859) [1860]
= *Tubercularia heteromorpha* (Nyl. ex C. Bab. & Mitt.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

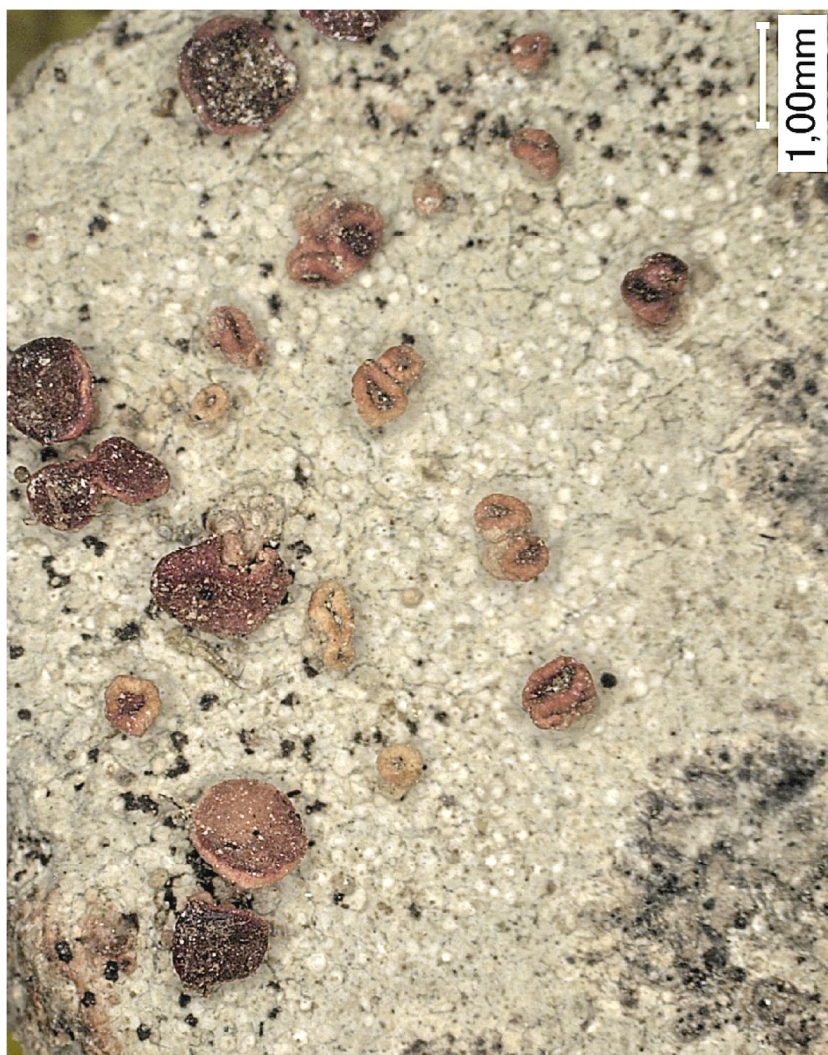
[6229], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay in Intavas am Fuß des Mt. Kitanglad, 08°11.883' N, 124°56.721' E, 1270 m. Leg. F. Schumm & U. Schwarz, 18.08.1999, det. A. Aptroot 2009.

Apothecia stalked, disk rather flat, with discernable margins.

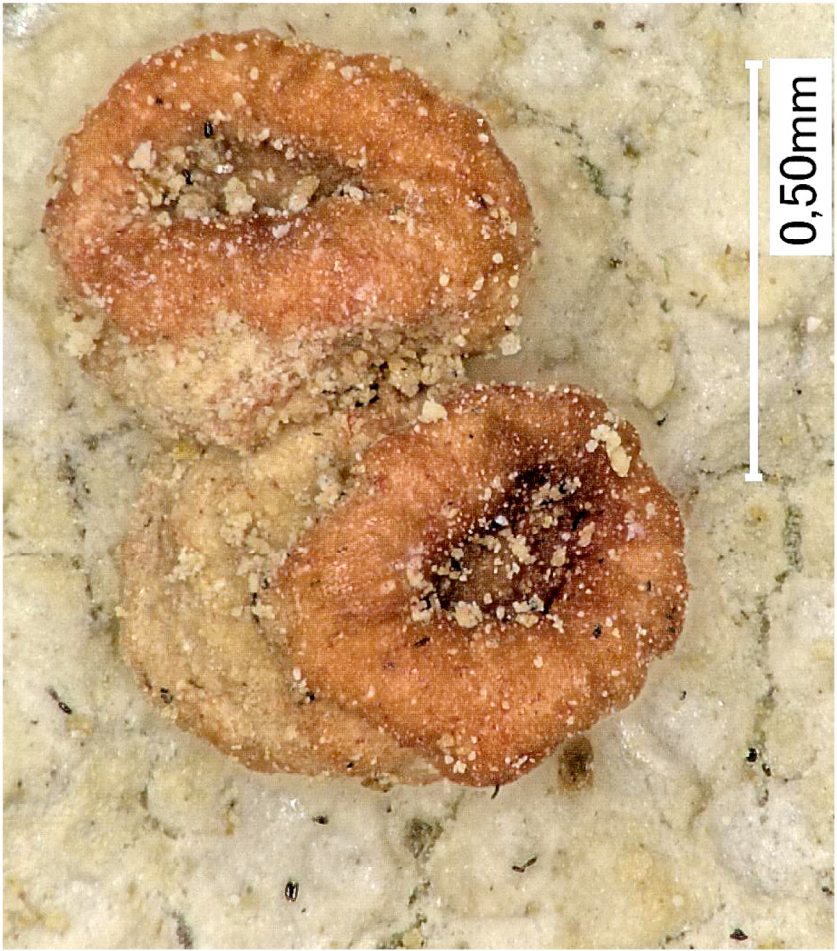
Primary thallus crustose to small-squamulose; squamules contiguous, crowded and overlapping, smooth to verruculose to cracked and ±areolate upon drying, with hyphae visible between areoles or scattered squamules at edge of thallus, dull to glossy, chalky white (rare) to pale to grey green or bright green, greener when moist, often buff to pale ochre to yellow ochre after long storage, spuriously maculate on verruculose specimens stained by clay, esorediate, with or without schizidia. Apothecia sessile to short- or long-stipitate, biatorine, solitary and terminal to clustered (clusters to 5 mm wide) at tips of branched stipes to numerous and sessile along length of ±unbranched stipes, (0.1–) 0.2–2 (–2.5) mm diam.; stipe terete (when immature) to irregularly laterally compressed, simple to branched, usually 3–7 (–10) mm long, variably lichenised; margin continuous with and concolorous with core of stipe, cream to buff, rarely pale pink, semi-translucent when wet, becoming minutely furrowed and subcrenulate or flexuose to undulate and recurved in large apothecia; disc plane to strongly convex and undulate-distorted with age, very rarely cerebriform, brownish pink to red-brown to fuscous brown, smooth to scabrid. Ascospores ellipsoidal to oval-ellipsoidal, (7–) 8.5–11 (–13.5) × (2.5–) 3–4 (–4.5) µm. Pycnidia not seen. CHEMISTRY: Thallus K⁺ yellow then deep red, P⁺ orange, UV–; containing norstictic acid (major), connorstictic acid (minor), subnorstictic acid (±trace), gyrophoric acid (±minor or trace, in apothecium), crustinic acid (±faint trace, in apothecium) and salazinic acid (±faint trace, very rare). - Occurs in Australia. Widespread and often locally common in moist sites, in full sun to partial shade, on soils (often clay-rich), pebbles and gravels and associated bryophytes and litter, acidic and siliceous rocks. Also common and widespread in New Zealand, and reported from high altitudes in New Guinea.



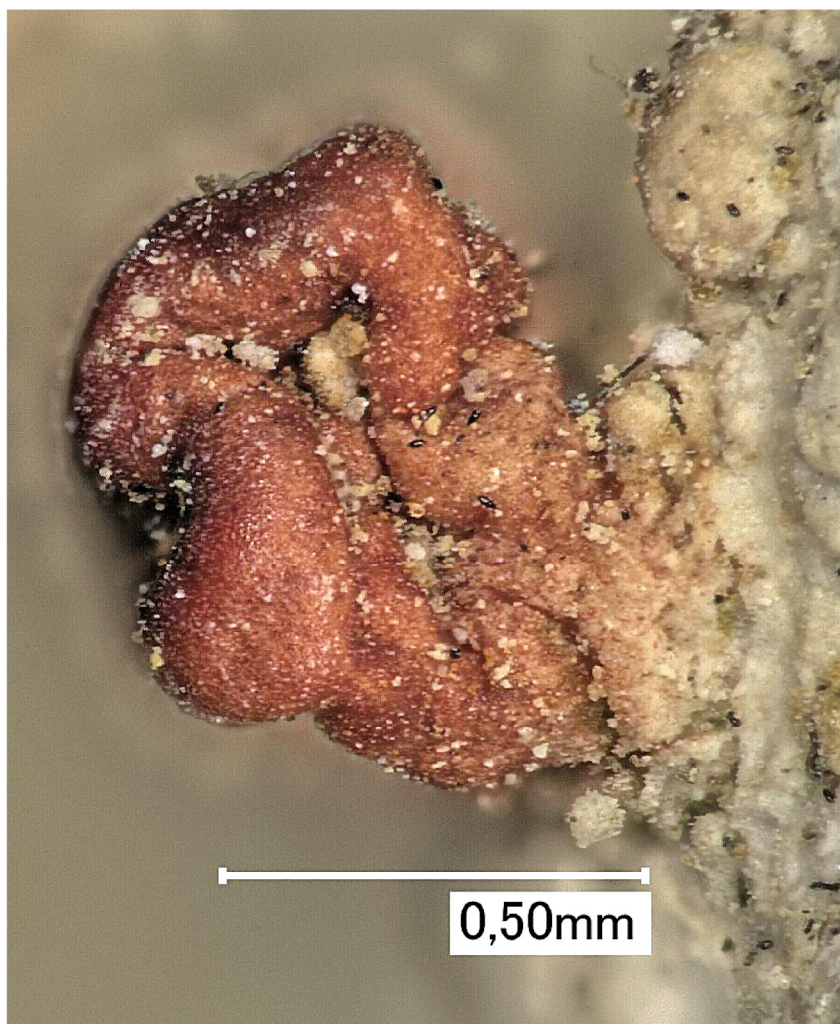
Baeomyces heteromorphus



Baeomyces heteromorphus



Baeomyces heteromorphus



Baeomyces heteromorphus

Baeomyces heteromorphus Nyl. ex C. Bab. & Mitt., in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 351 (1859) [1860]
= *Tubercularia heteromorpha* (Nyl. ex C. Bab. & Mitt.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

[16289], Australia, New South Wales, Brown Mountain near Cooma, Fred Piper Memorial Lookout, 36°34' S, 149°27' E, 910 m, growing on soil. Leg. F. Schumm & E. Stocker-Wörgötter, 13.11.2009, det. F. Schumm.

Apothecia stalked, disk rather flat, with discernable margins.

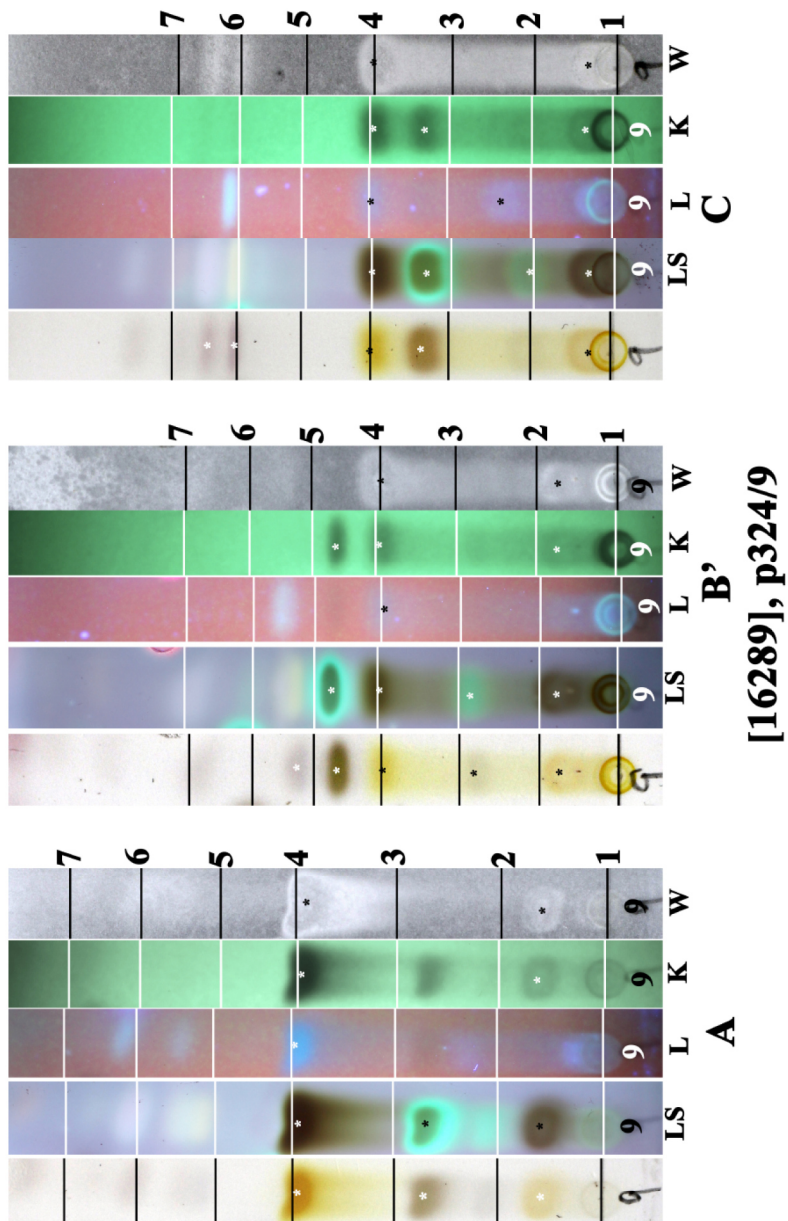
Primary thallus crustose to small-squamulose; squamules contiguous, crowded and overlapping, smooth to verruculose to cracked and ±areolate upon drying, with hyphae visible between areoles or scattered squamules at edge of thallus, dull to glossy, chalky white (rare) to pale to grey green or bright green, greener when moist, often buff to pale ochre to yellow ochre after long storage, spuriously maculate on verruculose specimens stained by clay, esorediate, with or without schizidia. Apothecia sessile to short- or long-stipitate, biatorine, solitary and terminal to clustered (clusters to 5 mm wide) at tips of branched stipes to numerous and sessile along length of ±unbranched stipes, (0.1–) 0.2–2 (–2.5) mm diam.; stipe terete (when immature) to irregularly laterally compressed, simple to branched, usually 3–7 (–10) mm long, variably lichenised; margin continuous with and concolorous with core of stipe, cream to buff, rarely pale pink, semi-translucent when wet, becoming minutely furrowed and subcrenulate or flexuose to undulate and recurved in large apothecia; disc plane to strongly convex and undulate-distorted with age, very rarely cerebriform, brownish pink to red-brown to fuscous brown, smooth to scabrid. Ascospores ellipsoidal to oval-ellipsoidal, (7–) 8.5–11 (–13.5) × (2.5–) 3–4 (–4.5) µm. Pycnidia not seen. CHEMISTRY: Thallus K⁺ yellow then deep red, P⁺ orange, UV–; containing norstictic acid (major), connorstictic acid (minor), subnorstictic acid (±trace), gyrophoric acid (±minor or trace, in apothecium), crustinic acid (±faint trace, in apothecium) and salazinic acid (±faint trace, very rare). - Occurs in Australia. Widespread and often locally common in moist sites, in full sun to partial shade, on soils (often clay-rich), pebbles and gravels and associated bryophytes and litter, acidic and siliceous rocks. Also common and widespread in New Zealand, and reported from high altitudes in New Guinea.



Baeomyces heteromorphus



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1: gyrophoric acid, 2: crustinic acid, 3: norstictic acid, 4: connorstictic acid, 5: norstictic acid, 6: crustinic acid, 7: gyrophoric acid,

Baeomyces heteromorphus

Baeomyces heteromorphus Nyl. ex C. Bab. & Mitt., in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 351 (1859) [1860]
= *Tubercularia heteromorpha* (Nyl. ex C. Bab. & Mitt.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

[18946] Australia, New South Wales, Saddle, Mt. Dromedary, 13 km south-west of Narooma, 36°18' S, 150°02' E, 780 m, growing on soil along the margin of wet sclerophyll forest. Leg. J. A. Elix (21572) & H. Streimann, 14.07.1987. Chemistry: norstictic acid (major), connorstictic acid (trace), unknown (traces) by HPLC anal. G.A. Jenkins. Ex J. A. ELIX: LICHENES AUSTRALASICI EXSICCATI NO. 151. - Thallus K+ yellow then red, P+ orange, UV-. Ascospores c. 8-11 x 3-4 µm, hyaline, 8/ascus, 1-celled.

Primary thallus crustose to small-squamulose; squamules contiguous, crowded and overlapping, smooth to verruculose to cracked and ±areolate upon drying, with hyphae visible between areoles or scattered squamules at edge of thallus, dull to glossy, chalky white (rare) to pale to grey green or bright green, greener when moist, often buff to pale ochre to yellow ochre after long storage, spuriously maculate on verruculose specimens stained by clay, esorediate, with or without schizidia. Apothecia sessile to short- or long-stipitate, biatorine, solitary and terminal to clustered (clusters to 5 mm wide) at tips of branched stipes to numerous and sessile along length of ±unbranched stipes, (0.1–) 0.2–2 (–2.5) mm diam.; stipe terete (when immature) to irregularly laterally compressed, simple to branched, usually 3–7 (–10) mm long, variably lichenised; margin continuous with and concolorous with core of stipe, cream to buff, rarely pale pink, semi-translucent when wet, becoming minutely furrowed and subcrenulate or flexuose to undulate and recurved in large apothecia; disc plane to strongly convex and undulate-distorted with age, very rarely cerebriform, brownish pink to red-brown to fuscous brown, smooth to scabrid. Ascospores ellipsoidal to oval-ellipsoidal, (7–) 8.5–11 (–13.5) × (2.5–) 3–4 (–4.5) µm. Pycnidia not seen. CHEMISTRY: Thallus K+ yellow then deep red, P+ orange, UV–; containing norstictic acid (major), connorstictic acid (minor), subnorstictic acid (±trace), gyrophoric acid (±minor or trace, in apothecium), crustinic acid (±faint trace, in apothecium) and salazinic acid (±faint trace, very rare). - Occurs in Australia. Widespread and often locally common in moist sites, in full sun to partial shade, on soils

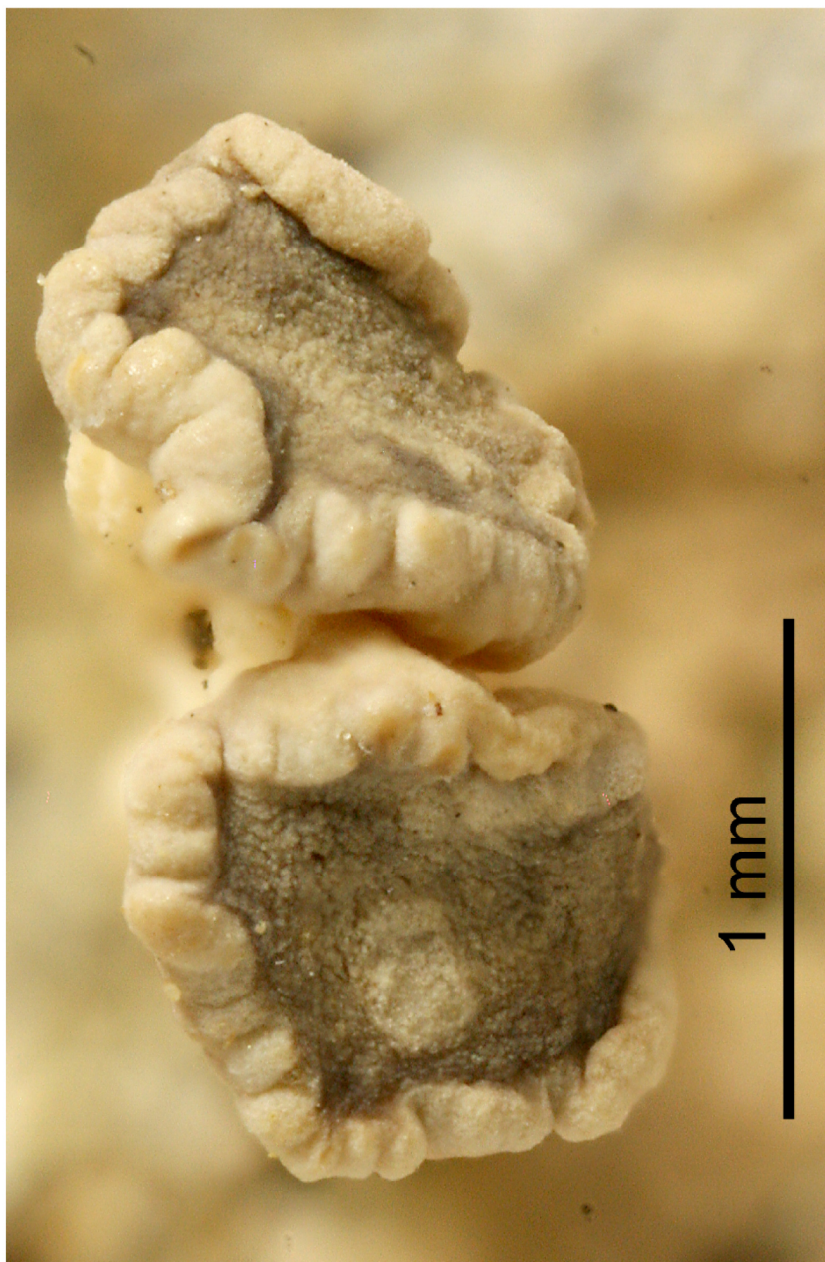
(often clay-rich), pebbles and gravels and associated bryophytes and litter, acidic and siliceous rocks. Also common and widespread in New Zealand, and reported from high altitudes in New Guinea.



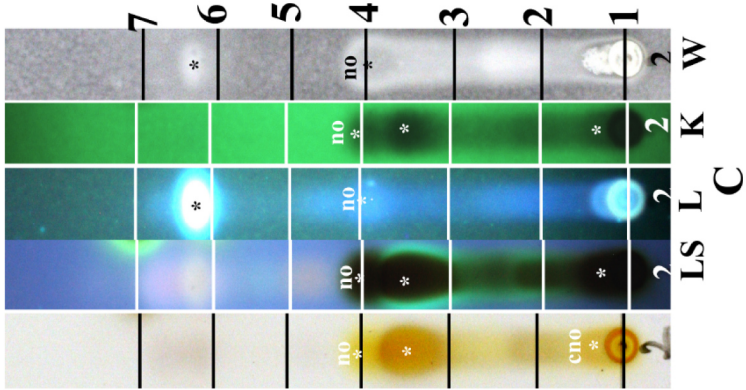
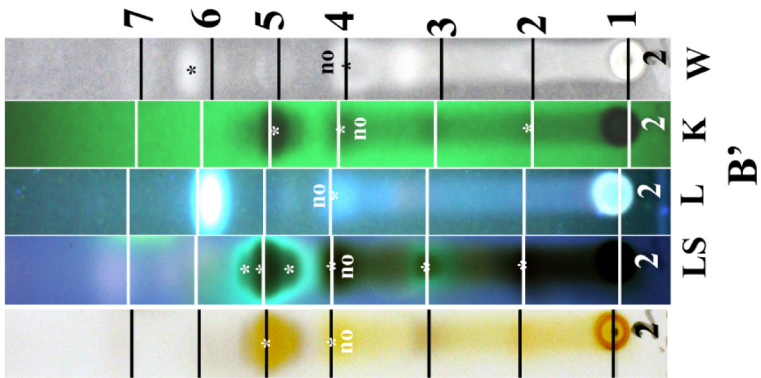
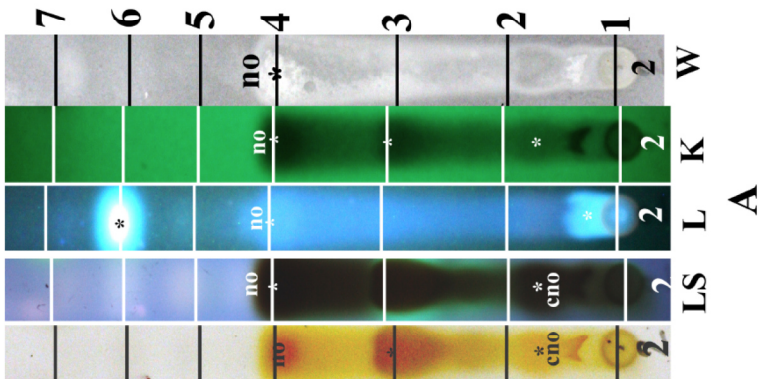
Baeomyces heteromorphus



Baeomyces heteromorphus



Baeomyces heteromorphus



[18946], p285/2

no: norstictic acid, cno: connorstictic acid

Baeomyces heteromorphus

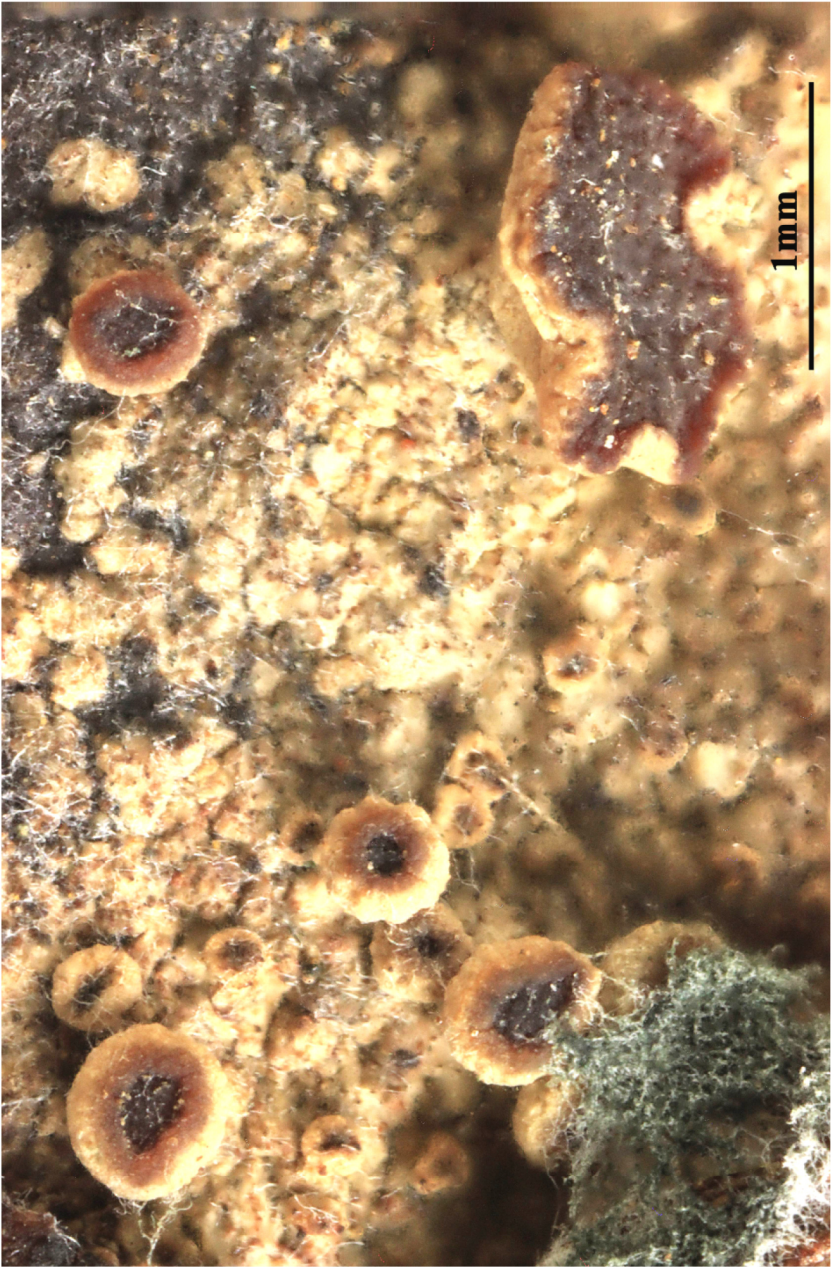
Baeomyces heteromorphus Nyl. ex C. Bab. & Mitt., in Hooker, Bot. Antarct. Voy., III, Fl. Tasman. 2: 351 (1859) [1860]
= *Tubercularia heteromorpha* (Nyl. ex C. Bab. & Mitt.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

[5018], Indonesien, Java, Dieng-Plateau nordwestlich von Yogyakarta, bei javanischen Tempeln aus dem 9. Jh. in der Basis eines kesselartigen 1,5 qkm großen Kraters, ca. 2000 m. Leg. D. & F. Schumm, 29.12.1988, det. A. Aptroot. 2009.

Primary thallus crustose to small-squamulose; squamules contiguous, crowded and overlapping, smooth to verruculose to cracked and $\pm$ areolate upon drying, with hyphae visible between areoles or scattered squamules at edge of thallus, dull to glossy, chalky white (rare) to pale to grey green or bright green, greener when moist, often buff to pale ochre to yellow ochre after long storage, spuriously maculate on verruculose specimens stained by clay, esorediate, with or without schizidia. Apothecia sessile to short- or long-stipitate, biatorine, solitary and terminal to clustered (clusters to 5 mm wide) at tips of branched stipes to numerous and sessile along length of $\pm$ unbranched stipes, (0.1–) 0.2–2 (–2.5) mm diam.; stipe terete (when immature) to irregularly laterally compressed, simple to branched, usually 3–7 (–10) mm long, variably lichenised; margin continuous with and concolorous with core of stipe, cream to buff, rarely pale pink, semi-translucent when wet, becoming minutely furrowed and subcrenulate or flexuose to undulate and recurved in large apothecia; disc plane to strongly convex and undulate-distorted with age, very rarely cerebriform, brownish pink to red-brown to fuscous brown, smooth to scabrid. Ascospores ellipsoidal to oval-ellipsoidal, (7–) 8.5–11 (–13.5) $\times$ (2.5–) 3–4 (–4.5) μ m. Pycnidia not seen. CHEMISTRY: Thallus K⁺ yellow then deep red, P⁺ orange, UV–; containing norstictic acid (major), connorstictic acid (minor), subnorstictic acid ($\pm$ trace), gyrophoric acid ($\pm$ minor or trace, in apothecium), crustinic acid ($\pm$ faint trace, in apothecium) and salazinic acid ($\pm$ faint trace, very rare). - Occurs in Australia. Widespread and often locally common in moist sites, in full sun to partial shade, on soils (often clay-rich), pebbles and gravels and associated bryophytes and litter, acidic and siliceous rocks. Also common and widespread in New Zealand, and reported from high altitudes in New Guinea.



Baeomyces heteromorphus



Baeomyces heteromorphus

- Baeomyces placophyllus*** Ach., Methodus, Sectio post. (Stockholmiaë): 323 (1803)
 = *Biatora placophylla* (Ach.) Fr., Lich. eur. reform. (Lund): 257 (1831)
 = *Lecidea placophylla* (Ach.) Link, Grundr. Krauterkr. 3: 200 (1833)
 = *Lichen placophyllus* (Ach.) Lam., Encycl. Méth., Bot. Suppl. (Paris) 3(1): 367 (1813)
 = *Ludovicia placophylla* (Ach.) Trevis., Revta Period. Lav. Regia Accad. Sci., Padova 5: 71 (1857)
 = *Patellaria placophylla* (Ach.) Spreng., Syst. veg., Edn 16 4(1): 269 (1827)
 = *Sphyridium placophyllum* (Ach.) Th. Fr., Nova Acta R. Soc. Scient. upsal., Ser. 3 3: 277 (1861) [1860]
 = *Tubercularia placophylla* (Ach.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

[16639], Germany, Rheinland-Pfalz, Naturpark Pfälzer Wald, ca. 2 km südlich von Hofstätten, am Weg zum Annweiler Forsthaus, 49.260193° N, 7.891891° E, 291 m. Leg. et det. Schumm, 03.09.2010 (BLAMExkursion).

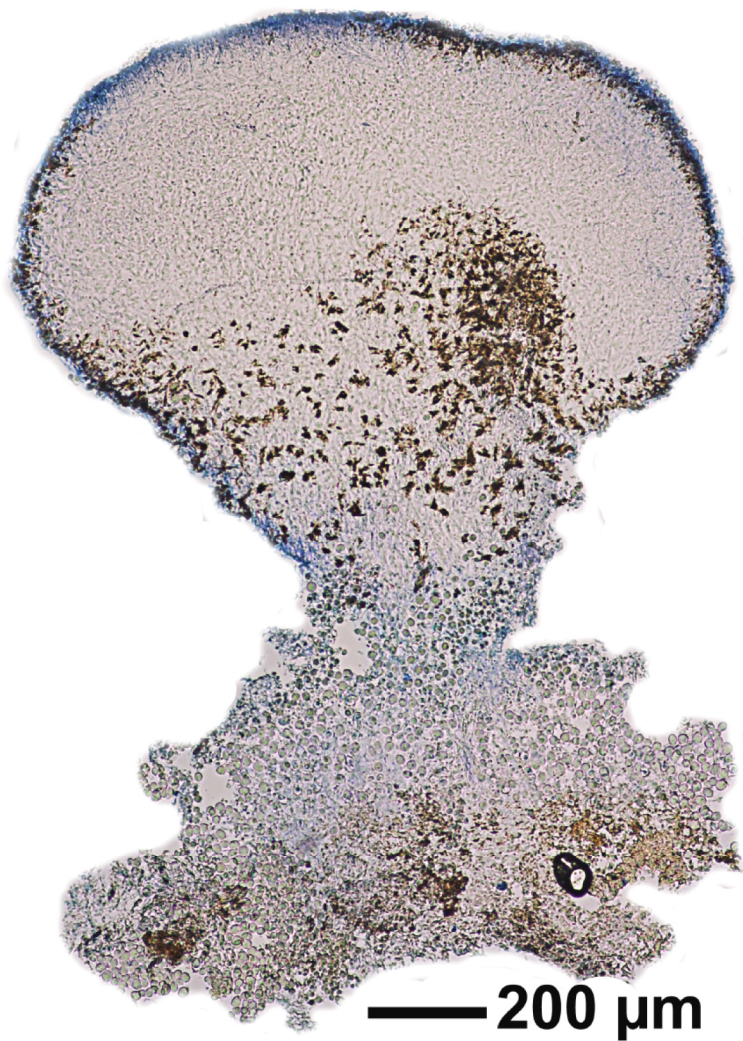
Primary thallus crustose-placodioid, well-delimited, glaucous grey-green to brownish, turning bright green when wet, thick, forming up to 12 cm wide rosettes, the central parts subsquamulose, often covered in peltate, light-coloured, fragile, up to 0.6 mm wide schizidia leaving shallow scars when they fall off, the margins with radiating, up to 6 mm broad, flattened, contiguous, lobes which are often raised at tips. Apothecia frequent, biatorine, emarginate, with an ochraceous to reddish brown, flat, often marginally reflexed disc, up to 4(-5) mm across, terminal on furrowed, subfruticose, solid, up to 6 mm tall and to 2 mm thick stipes which are corticate and sometimes microsquamulose in lower part. Epithecium yellowish brown, C+ red; hymenium colourless, 70-120(-150) µm high, K/I-; paraphyses 2-2.5 µm thick at mid-level, slender, simple or sparingly branched towards the tips, not anastomosing, the apical cell c. 3 µm wide; hypothecium pale. Asci 8-spored, cylindrical, thin-walled, the apex truncated, with a single functional wall layer, with a poorly differentiated, non-amyloid tholus. Ascospores 1(-2)-celled, hyaline, fusiform, 8-14(-16) x (2-)3-4(-5.5) µm. Photobi-



Baeomyces placophyllus



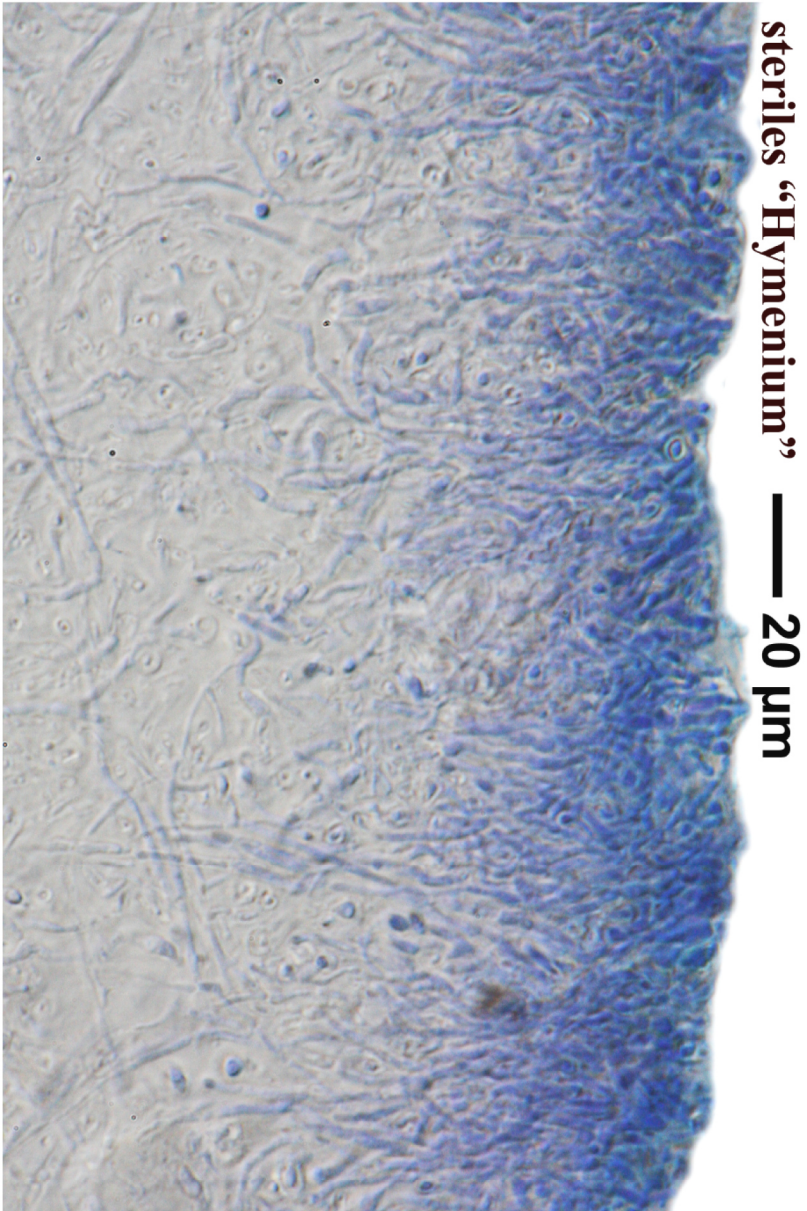
Baeomyces placophyllus



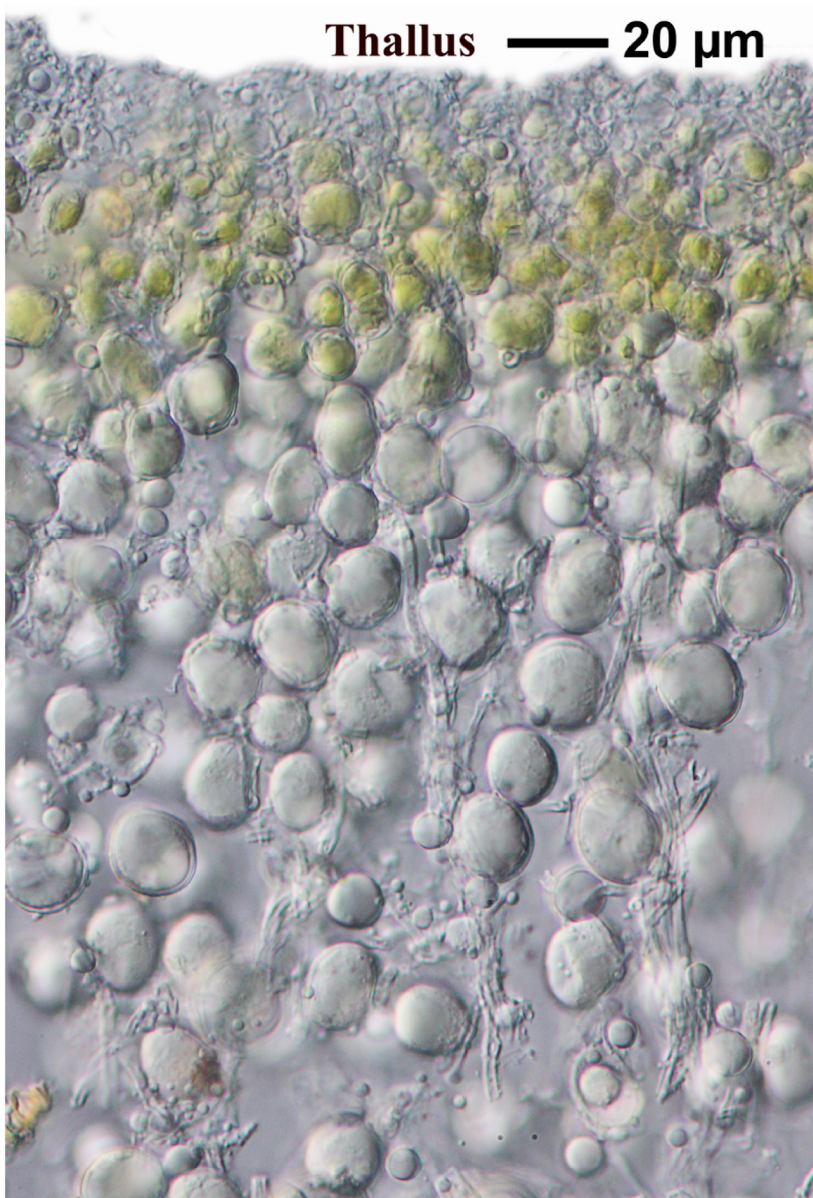
Baeomyces placophyllus



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Baeomyces placophyllus



Baeomyces placophyllus

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 = *Lecidea placophylla* (Ach.) Link, Grundr. Krauterkr. 3: 200 (1833)
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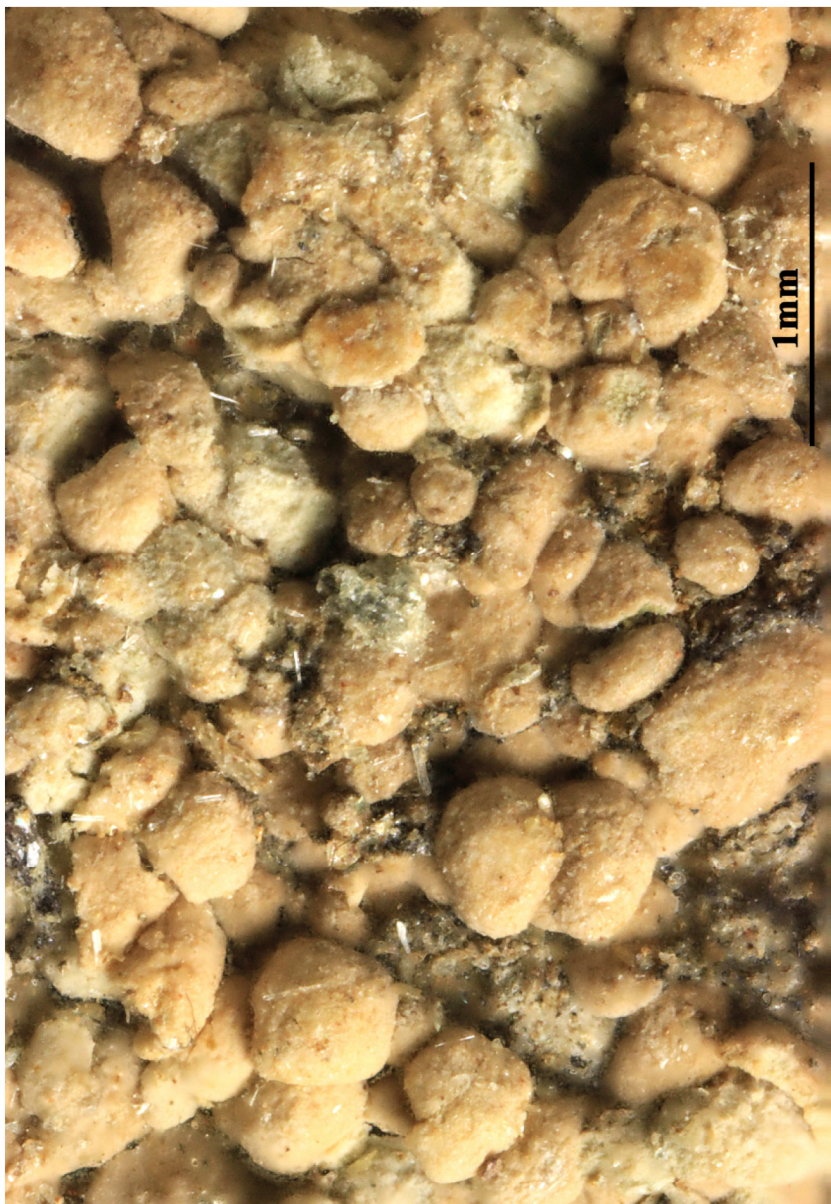
[20899], Austria, Kärnten, Eastern Alps, High Tauern, Glockner Group, 3.6 km NNW of the centre of Heiligenbluth, path from the scenic route "Großglockner Hochalpenstraße" to Guttalm, 47°04'08" N, 12°49'11" E, 1925 m, on earth. Leg. R. Türk (no 54461), 26.8.2014, det. R. Türk. ExW. Obermayer: Lichenotheca Graecensis Nr. 443.

Primary thallus crustose-placodioid, well-delimited, glaucous grey-green to brownish, turning bright green when wet, thick, forming up to 12 cm wide rosettes, the central parts subsquamulose, often covered in peltate, light-coloured, fragile, up to 0.6 mm wide schizidia leaving shallow scars when they fall off, the margins with radiating, up to 6 mm broad, flattened, contiguous, lobes which are often raised at tips. Apothecia frequent, biatorine, emarginate, with an ochraceous to reddish brown, flat, often marginally reflexed disc, up to 4(-5) mm across, terminal on furrowed, subfruticose, solid, up to 6 mm tall and to 2 mm thick stipes which are corticate and sometimes microsquamulose in lower part. Epithecium yellowish brown, C+ red; hymenium colourless, 70-120(-150) µm high, K/I-; paraphyses 2-2.5 µm thick at mid-level, slender, simple or sparingly branched towards the tips, not anastomosing, the apical cell c. 3 µm wide; hypothecium pale. Asci 8-spored, cylindrical, thin-walled, the apex truncated, with a single functional wall layer, with a poorly differentiated, non-amyloid tholus. Ascospores 1(-2)-celled, hyaline, fusiform, 8-14(-16) x (2-)3-4(-5.5) µm. Photobiont chlorococcoid. Spot tests: thallus K+ yellow, C-, KC+ orange, P+ orange, UV+ pale yellow; mature apothecia C+ red. Chemistry: thallus with the stictic acid complex, incl. traces of norstictic acid and an unidentified substance; gyrophoric and lecanoric acids in mature apo-

thecia. - Note: an arctic-alpine to boreal-montane, probably circumpolar lichen.



Baeomyces placophyllus



Baeomyces placophyllus

- Baeomyces rufus*** (Huds.) Rebent., Prodr. fl. neomarch. (Berolini): 315 (1804)
- = *Baeomyces rufus* f. *subsquamulosus* (Nyl.) Frey, Rabenh. Krypt.-Fl., Edn 2 (Leipzig) 9(4.1): 45 (1932)
- = *Baeomyces rufus* var. *prostii* Harm.
- = *Baeomyces rufus* var. *subsquamulosus* Nyl., Flora, Regensburg 60: 463 (1877)
- = *Baeomyces rupestris* var. *rufus* (Huds.) Ach., Methodus, Sectio post. (Stockholmiae): 322 (1803)
- = *Lichen rufus* Huds., Fl. Angl.: 443 (1762)
- = *Patellaria rufa* (Huds.) Spreng., Syst. veg., Edn 16 4(1): 269 (1827)
- = *Sphyridium byssoides* f. *rufum* (Huds.) Th. Fr., Lich. Scand. (Upsaliae)(2): 328 (1874)
- = *Sphyridium byssoides* var. *subsquamulosum* (Nyl.) Arnold, Flora, Regensburg 67(22): 423 (1884)

[6983], Germany, Baden-Württemberg, Kreis Göppingen, Marbachtal bei Zell-Börtlingen, auf Sandboden in Bachnähe, luftfeucht, lichtoffen, ca. 350 m, TK 7223. Leg. F. Schumm & U. Schwarz 24.04.2000, det. F. Schumm, 2000.

Thallus K+ gelb, C-, P+ gelb (Stictinsäure); Apothecien C+ rot (Gyrophor- und Lecanorsäure). Sporen hyalin, 1-zellig, 8/Ascus, ca 7-9 x 3 µm. Ascus J- und K&J-.

Primary thallus crustose, grey-green to greenish white, more rarely brownish, thick, continuous to areolate-subsquamulose, forming up to 20 cm wide patches, the areoles convex, contiguous, to 1 mm broad, with a warty to smooth cortex, esorediate or often powdery-sorediate, the soredia greenish grey; schizidia rare, <0.3 mm across. Apothecia frequent, biatorine, emarginate, with a red-brown, flat to convex, marginally often in-rolled disc, up to 2.5 mm across, single or coalescing, rarely sessile, usually brought on erect, fruticose, smooth, flattened to subcylindrical, often longitudinally fissured, ecorticate or basally corticate, white stipes which are 2-6(-9) mm tall. Epithecium brownish, C+ red; hymenium colourless, 75-130 µm high, K/I-; paraphyses simple to sparingly branched in upper part, slender, (1-)1.5-2 µm thick, the apical cell only slightly wider; hypothecium pale. Asci 8-spored, cylindrical, thin-walled, the apex truncated, with a single functional wall layer, with a poorly differentiated, non-amyloid tholus. Ascospores 1(-2)-celled,

hyaline, fusiform, (7.5-)8-12(-14) x (2.5-)3-4(-5) μm . Pycnidia rare. Conidia bacilliform, 4-5 x c. 1 μm . Photobiont chlorococcoid. Spot tests: thallus K+ yellow, C-, KC+ yellow, P+ orange-yellow, UV+ pale yellow; mature apothecia C+ red. Chemistry: thallus with stictic acid (major), norstictic acid and an unidentified substance (traces); mature apothecia with gyrophoric and lecanoric acids. - Note: a holarctic early coloniser of acid soils with high clay content, also found on weathered siliceous rocks.



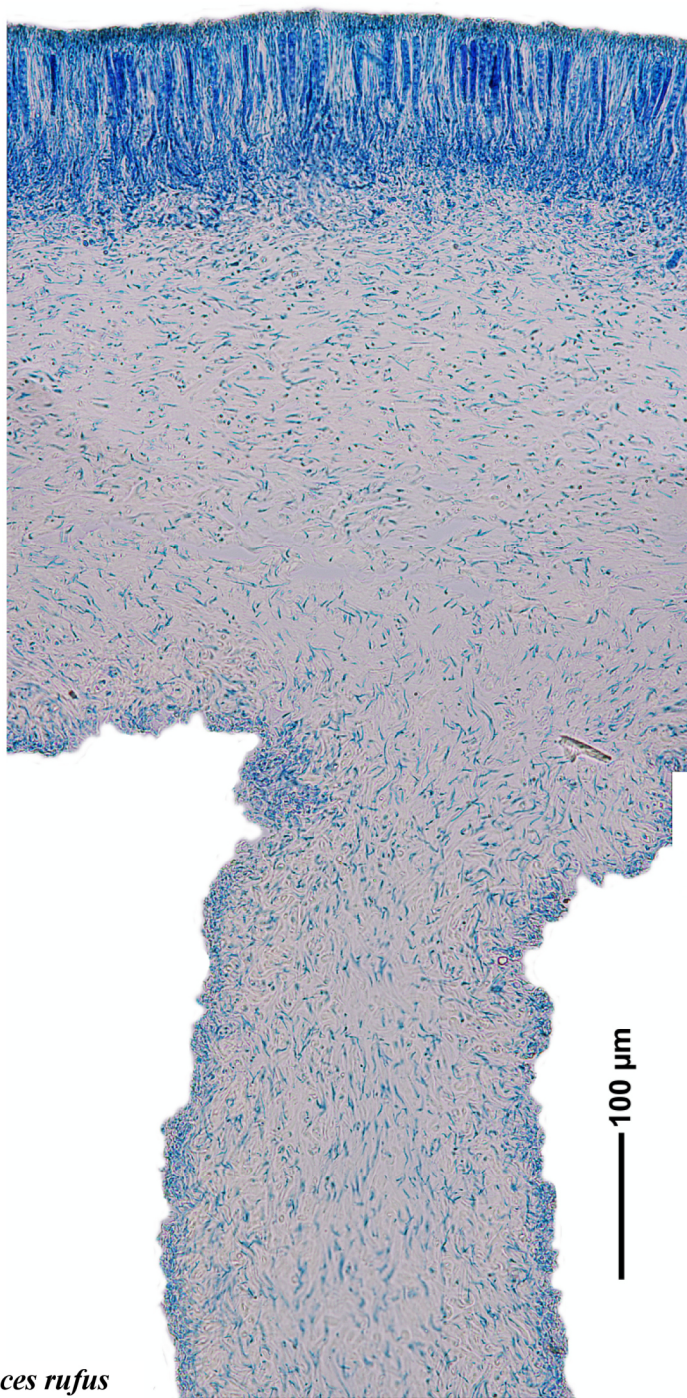
Baeomyces rufus



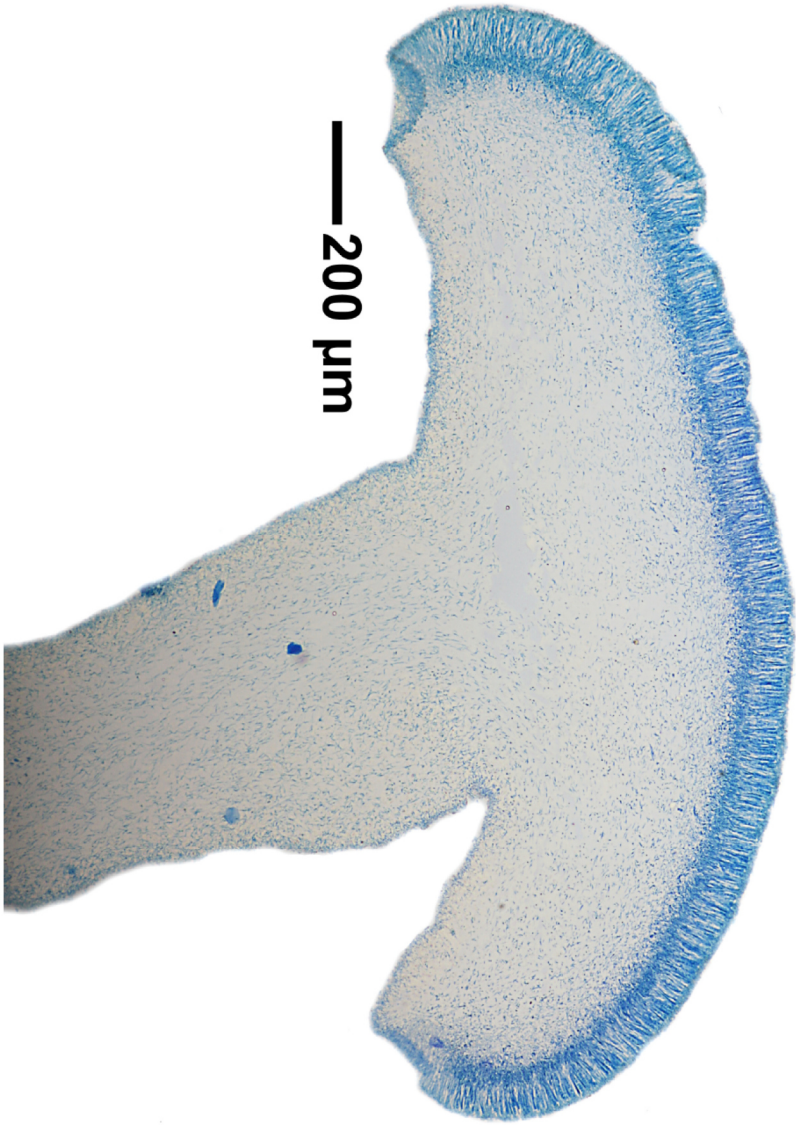
Baeomyces rufus



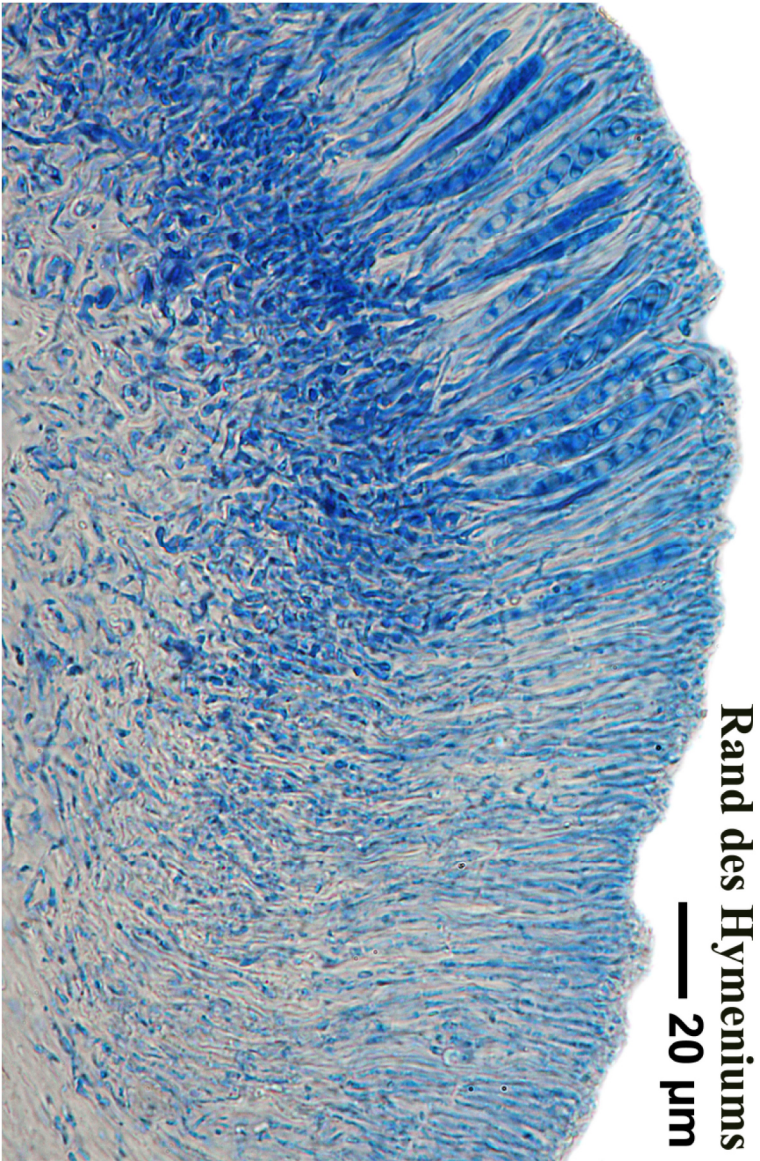
Baeomyces rufus

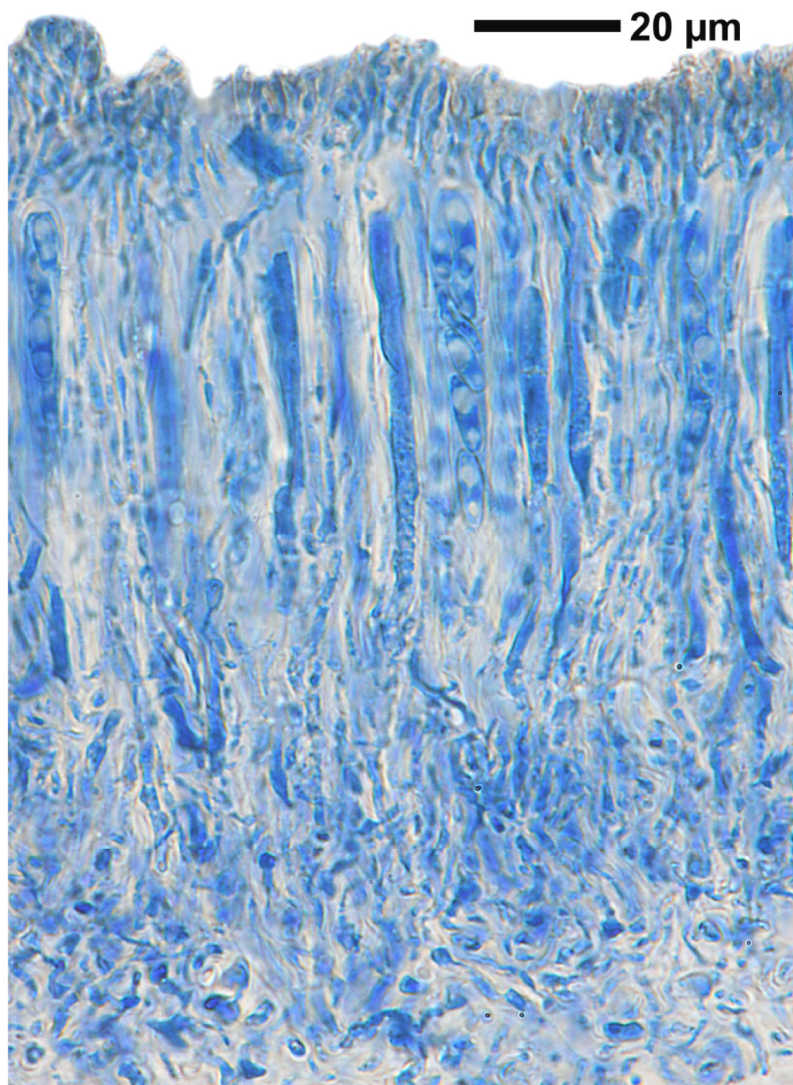


Baeomyces rufus



Baeomyces rufus





Baeomyces rufus



Baeomyces rufus

Dibaeis absoluta (Tuck.) Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 613 (1993)
 = *Baeomyces absolutus* Tuck., *Amer. J. Sci. Arts* 28: 201 (1859)
 = *Tubercularia absoluta* (Tuck.) Kuntze, *Revis. gen. pl.* (Leipzig) 2: 877 (1891)

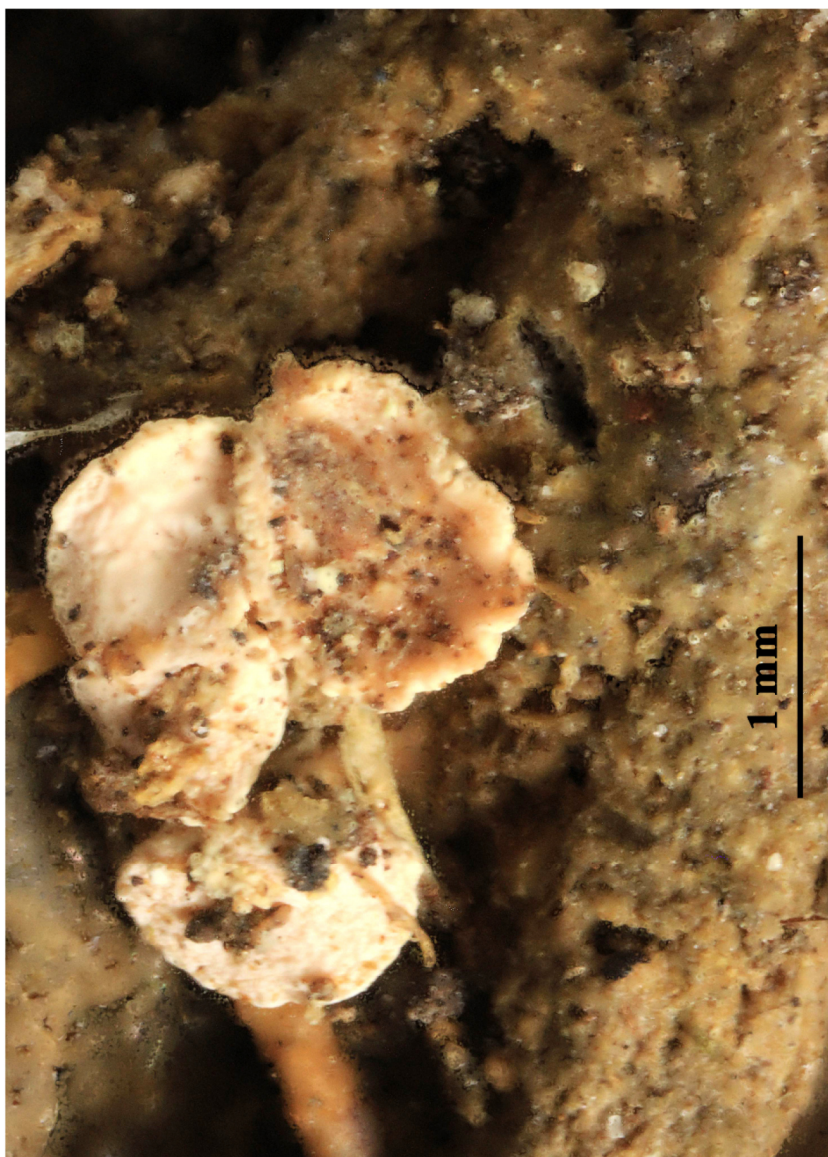
[6038], Philippines, Mindanao, Provinz Cotabato, Mt. Apo, tropischer Bergregenwald zwischen Marbel-River-Campsite und Lake Venado, 07°00.165-07°00.181 N, 125°14.767-125°16.166 E, 1490 m - 2200 m, (2000 m). Leg. F. Schumm & U. Schwarz, 10.08.1999, det F Schumm, 22.02.2000, conf. A. Aptroot, 2009. -

Podetien und Scheibe K+ gelb; Sporen hyalin, 1-zellig, zu 8, schmalelliptisch, 10.2-13.2 x 4.3-5.1 µm.

Primary thallus crustose to minutely squamulose, thin and smooth to verruculose and scurfy, pruinose or not, continuous to areolate, dirty white to buff to green to pale yellow-green or yellowish buff with age. Apothecia solitary to clustered, sessile when young, becoming very shortly stipitate; stipe 0.3–0.5 mm tall, ±corticate, granular to ±smooth, ±pruinose, patchily lichenised basally, cream to buff to pale flesh-pink; disc flesh- to rose-pink or white with pruina, concave to plane to weakly convex or undulate as it proliferates with age; margin very pale pink to almost buff to white, thick, smooth and inrolled initially, becoming contorted and cracked to undulate and crenulate with age, usually paler than disc and visible as a distinct border on upper surface; underside of apothecia ridged and furrowed with age. Ascospores ellipsoidal to narrowly ovoid, simple or rarely 1-septate, (11–) 12–15 (–15.5) × (4–) 4.5–6.5 (–8) µm (Australian specimens). Pycnidia not seen. CHEMISTRY: Primary thallus K– or K+ pale yellow, UV+ white; apothecia (disc and stipe) K+ yellow, P+ yellow-orange; containing baeomycesic acid (major), squamatic acid (±trace), consquamatic acid (±trace, rare), barbatic acid (minor/trace, in apothecia) and ursolic acid (±trace). - Occurs in coastal ranges of eastern Australia grows on rock or soil, rarely over bryophytes, often near waterfalls. Widespread but rare in tropical to cool-temperate rainforest. Also known from North, Central and South America, Japan, Philippines, Sabah, New Guinea and the South Island, New Zealand.



Dibaeis absoluta



Dibaeis absoluta

Dibaeis absoluta (Tuck.) Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 613 (1993)
= *Baeomyces absolutus* Tuck., *Amer. J. Sci. Arts* 28: 201 (1859)
= *Tubercularia absoluta* (Tuck.) Kuntze, *Revis. gen. pl.* (Leipzig) 2: 877 (1891)

[6354], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay, tropischer Regenwald am Mt. Kitanglad ab Zwischen-Campsite, 08°09.637' N, 124°55.871' E, alt.: 1870-2800. Leg. F. Schumm & U. Schwarz, 19.08.1999, det. A. Aptroot, 2009.

Primary thallus crustose to minutely squamulose, thin and smooth to verruculose and scurfy, pruinose or not, continuous to areolate, dirty white to buff to green to pale yellow-green or yellowish buff with age. Apothecia solitary to clustered, sessile when young, becoming very shortly stipitate; stipe 0.3–0.5 mm tall, ±corticate, granular to ±smooth, ±pruinose, patchily lichenised basally, cream to buff to pale flesh-pink; disc flesh- to rose-pink or white with pruina, concave to plane to weakly convex or undulate as it proliferates with age; margin very pale pink to almost buff to white, thick, smooth and inrolled initially, becoming contorted and cracked to undulate and crenulate with age, usually paler than disc and visible as a distinct border on upper surface; underside of apothecia ridged and furrowed with age. Ascospores ellipsoidal to narrowly ovoid, simple or rarely 1-septate, (11–) 12–15 (–15.5) × (4–) 4.5–6.5 (–8) µm (Australian specimens). Pycnidia not seen. CHEMISTRY: Primary thallus K– or K+ pale yellow, UV+ white; apothecia (disc and stipe) K+ yellow, P+ yellow-orange; containing baeomycesic acid (major), squamatic acid (±trace), consquamatic acid (±trace, rare), barbatic acid (minor/trace, in apothecia) and ursolic acid (±trace). - Occurs in coastal ranges of eastern Australia grows on rock or soil, rarely over bryophytes, often near waterfalls. Widespread but rare in tropical to cool-temperate rainforest. Also known from North, Central and South America, Japan, Philippines, Sabah, New Guinea and the South Island, New Zealand.



Dibaeis absoluta



Dibaeis absoluta

- Dibaeis arcuata*** (Stirt.) Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 617 (1993)
 = *Baeomyces arcuatus* Stirt., J. Linn. Soc., Bot. 14(no. 78): 460 (1875)
 = *Baeomyces fungoides* (Sw.) Ach., *Methodus*, Sectio post. (Stockholmiae): 320 (1803)
 = *Baeomyces ramalinellus* Nyl., *Annls Sci. Nat., Bot., sér.* 4 3: 146 (1855)
 = *Baeomyces roseus* f. *fungoides* (Sw.) Tuck., *Syn. N. Amer. Lich.* (Boston) 2: 7 (1888)
 = *Baeomyces roseus* var. *fungoides* (Sw.) Tuck., *Syn. N. Amer. Lich.* (Boston) 2: 7 (1888)
 = *Dibaeis fungoides* (Sw.) Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 622 (1993)
 = *Lichen fungoides* Sw., *Prodr.*: 146 (1788)
 = *Tubercularia fungoides* (Sw.) Kuntze, *Revis. gen. pl.* (Leipzig) 2: 877 (1891)

[17153], Venezuela, Tacira, Distr. Jauregui, bei Boca de Monte, zwischen Bailadores und Progonero, an einem steilen, bergfeuchten Erdanriß, 3000 m, 8°05' N, 71°50' W. Leg. K. & A. Kalb, 13.08.1989, det. K. Kalb. EX K. KALB: LICHENES NEOTROPICI 478. - Verteilt als *Baeomyces fungoides*(Sw.) Ach. Chemie: Baeomycessäure, anal. K. Kalb.

Primary thallus variable, thin and smooth to thick and minutely warty, to 0.3 (–0.5) mm thick above substratum, ±glossy to dull and scurfy, rimose to areolate with white hyphae visible between areoles, white to pale ash grey to very pale green to buff to pale ochre or soil-coloured (due to soil leachates) to green-grey, rarely lead-grey in deep shade, spuriously maculate if thallus between warts is discoloured by leachates, in deep shade almost as a thin hyphal 'wash' over the photobiont, ±densely pruinose. Soredia initially in small round soralia, coalescing into larger irregular patches to 11 × 9 mm, farinose to granular, chalky white (especially in Tasmanian material) to pale grey-green or discoloured by lichenicolous fungi. Apothecia stipitate, solitary to clustered, solitary on each stipe or very rarely bifurcate with 2 discs; stipe to 6–12 (–14) mm tall and 0.5–1.5 mm wide, round in cross-section when young, often irregularly laterally compressed with age, rarely fissured or splitting, sometimes fusing with adjoining stipe, variably lichenised, often strongly sorediate in basal half and densely pruinose adjacent to disc to wholly white-pruinose and scurfy; older stipes often eroding to expose white to rose-pink internal tissue; disc to 5 mm diam., pale to bright rose-pink to pinkish orange to flesh-pink,

always darker than stipe, often densely pruinose, smooth to scabrid to lightly fissured or warted, plane when young and narrower than stipe diameter, soon convex and $\pm$ club-shaped or hemispherical to distorted-hemispherical with 'sunken' patches, always immarginate, sometimes fusing with disc of adjacent apothecium. Ascospores fusiform, simple or rarely 1-septate, straight or rarely weakly curved, (14–) 17–23 (–26.5) $\times$ (2–) 2.5–3 (–4) μm (Australian specimens). Pycnidia not seen. CHEMISTRY: Primary thallus and soralia K– or K+ pale yellow, UV+ white; apothecia (disc and stipe) K+ yellow, P+ yellow-orange; containing baeomycesic acid (major), squamatic acid ($\pm$ trace), consquamatic acid ($\pm$ trace), barbatic acid ($\pm$ faint trace) and ursolic acid ($\pm$ trace). - Occurs in Australia, also throughout New Zealand.



Dibaeis arcuata



Dibaeis arcuata

- Dibaeis baeomyces*** (L. f.) Rambold & Hertel, *Bibliotheca Lichenol.* 53: 231 (1993)
 = *Baeomyces roseus* Pers., *Ann. Bot. (Usteri)* 7: 19 (1794)
 = *Baeomycetomyces rosei* E.A. Thomas ex Cif. & Tomas., *Atti Ist. bot. Univ. Lab. crittog. Pavia, sér. 5* 10(2): 272 (1954)
 = *Dibaeis baeomyces* (L. f.) Rambold & Hertel, *Herzogia* 9(3-4): 619 (1993)
 = *Dibaeis rosea* (Pers.) Clem., *Gen. fung. (Minneapolis)*: 175 (1909)
 = *Lichen baeomyces* L. f., *Suppl. Pl.*: 450 (1781)
 = *Tubercularia baeomyces* (L. f.) Baumg., *Fl. Lips.*: 583 (1790)
 = *Verrucaria baeomyces* (L. f.) Willd. [as 'beomyces'], *Fl. berol. prod.*: 365 (1787)

[84], Germany, Baden-Württemberg, Rems-Murr-Kreis, Stetten an der Rems, Wegböschung im Wald zwischen Calluna, TK:7222. Leg. E. Putzler, 17.05.1949, det. E. Putzler. -Thallus P+ gelb, K-; Apothecien K-.

Thallus in small patches, or becoming more wide-spreading; basal crust smooth, ± shiny, margin ± determinate, without marginal lobes or squamules, whitish pale grey or sometimes green-grey; schizidia scattered, coarse, rounded, or flattened, pink-white, shiny, varying in texture and size, 0.1-0.3 mm on fertile thalli, to 1 mm on sterile thalli, sometimes farinose sorediate; photobiont cells 5-8 µm diam., mostly globose. Apothecia to 3 mm diam., stalked, 2-5 mm tall, stipe white or pink, ecorticate for the most part, more or less hollow; disc bright rose-pink, domed; epithecium with fine crystals dissolving in K; hymenium 120-140 µm, I+ blue. Asci 125 x 6 µm, with a thin KI+ blue apical cap. Ascospores 10-26 x 2-3 µm, fusiform. Pycnidia 200 µm diam.; wall colourless or brown above; conidia 3.8-5 x 0.8-1 µm. Thallus C-, K+ yellow-orange, KC+ orange, P+ orange, UV+ orange (mainly apothecia and schizidia); baeomycesic, squamatic ± barbatic acids and atranorin. On mineral or peaty soil on acid heaths and moors, usually sterile. Throughout the British Isles, Europe, N. America, Greenland, Asia, Africa. - Sometimes confused with *Jcmadophila ericetorum*, which has larger, flatter, nearly sessile apothecia, a thallus that contains perlatolic and thamnolic acids, and ellipsoid photobiont cells.



Dibaeis baeomyces



Dibaeis baeomyces

- Dibaeis baeomyces*** (L. f.) Rambold & Hertel, Biblthca Lichenol. 53: 231 (1993)
 = *Baeomyces roseus* Pers., Ann. Bot. (Usteri) 7: 19 (1794)
 = *Baeomycetomyces rosei* E.A. Thomas ex Cif. & Tomas., Atti Ist. bot. Univ. Lab. crittog. Pavia, sér. 5 10(2): 272 (1954)
 = *Dibaeis baeomyces* (L. f.) Rambold & Hertel, Herzogia 9(3-4): 619 (1993)
 = *Dibaeis rosea* (Pers.) Clem., Gen. fung. (Minneapolis): 175 (1909)
 = *Lichen baeomyces* L. f., Suppl. Pl.: 450 (1781)
 = *Tubercularia baeomyces* (L. f.) Baumg., Fl. Lips.: 583 (1790)
 = *Verrucaria baeomyces* (L. f.) Willd. [as 'beomyces'], Fl. berol. prod.: 365 (1787)

[85], Germany, Baden-Württemberg, Rems-Murr-Kreis, Stetten im Remstal, Böschung eines Waldweges im Gemeindewald, TK: 7222. Leg. Erich Putzler, 17.07.1948, det. J. Poelt. - Thallus P+ gelb.

Thallus in small patches, or becoming more wide-spreading; basal crust smooth, ± shiny, margin ± determinate, without marginal lobes or squamules, whitish pale grey or sometimes green-grey; schizidia scattered, coarse, rounded, or flattened, pink-white, shiny, varying in texture and size, 0.1-0.3 mm on fertile thalli, to 1 mm on sterile thalli, sometimes farinose soresiate; photobiont cells 5-8 µm diam., mostly globose. Apothecia to 3 mm diam., stalked, 2-5 mm tall, stipe white or pink, ecorticate for the most part, more or less hollow; disc bright rose-pink, domed; epithecium with fine crystals dissolving in K; hymenium 120-140 µm, I+ blue. Asci 125 x 6 µm, with a thin KI+ blue apical cap. Ascospores 10-26 x 2-3 µm, fusiform. Pycnidia 200 µm diam.; wall colourless or brown above; conidia 3.8-5 x 0.8-1 µm. Thallus C-, K+ yellow-orange, KC+ orange, P+ orange, UV+ orange (mainly apothecia and schizidia); baeomycesic, squamatic ± barbatic acids and atranorin. On mineral or peaty soil on acid heaths and moors, usually sterile. Throughout the British Isles, Europe, N. America, Greenland, Asia, Africa. - Sometimes confused with *Jcmadophila ericetorum*, which has larger, flatter, nearly sessile apothecia, a thallus that contains perlatic and thamnic acids, and ellipsoid photobiont cells.



Dibaeis baeomyces



Dibaeis baeomyces

- Dibaeis baeomyces*** (L. f.) Rambold & Hertel, Biblthca Lichenol. 53: 231 (1993)
 = *Baeomyces roseus* Pers., Ann. Bot. (Usteri) 7: 19 (1794)
 = *Baeomycetomyces rosei* E.A. Thomas ex Cif. & Tomas., Atti Ist. bot. Univ. Lab. crittog. Pavia, sér. 5 10(2): 272 (1954)
 = *Dibaeis baeomyces* (L. f.) Rambold & Hertel, Herzogia 9(3-4): 619 (1993)
 = *Dibaeis rosea* (Pers.) Clem., Gen. fung. (Minneapolis): 175 (1909)
 = *Lichen baeomyces* L. f., Suppl. Pl.: 450 (1781)
 = *Tubercularia baeomyces* (L. f.) Baumg., Fl. Lips.: 583 (1790)
 = *Verrucaria baeomyces* (L. f.) Willd. [as 'beomyces'], Fl. berol. prod.: 365 (1787)

[8865], USA, Maine, Washington Co.: an der Strasse Nr. 187 an der Küste bei Jonesport, 44°33.979' N, 67°34.339, 20' W, sandiger Straßenrand. Leg. F. Schumm, 21.08.2001, det. F. Schumm.

Thallus in small patches, or becoming more wide-spreading; basal crust smooth, ± shiny, margin ± determinate, without marginal lobes or squamules, whitish pale grey or sometimes green-grey; schizidia scattered, coarse, rounded, or flattened, pink-white, shiny, varying in texture and size, 0.1-0.3 mm on fertile thalli, to 1 mm on sterile thalli, sometimes farinose sorediate; photobiont cells 5-8 µm diam., mostly globose. Apothecia to 3 mm diam., stalked, 2-5 mm tall, stipe white or pink, ecorticate for the most part, more or less hollow; disc bright rose-pink, domed; epithecium with fine crystals dissolving in K; hymenium 120-140 µm, I+ blue. Asci 125 x 6 µm, with a thin KI+ blue apical cap. Ascospores 10-26 x 2-3 µm, fusiform. Pycnidia 200 µm diam.; wall colourless or brown above; conidia 3.8-5 x 0.8-1 µm. Thallus C-, K+ yellow-orange, KC+ orange, P+ orange, UV+ orange (mainly apothecia and schizidia); baeomycesic, squamatic ± barbatic acids and atranorin. On mineral or peaty soil on acid heaths and moors, usually sterile. Throughout the British Isles, Europe, N. America, Greenland, Asia, Africa. - Sometimes confused with *Jcmadophila ericetorum*, which has larger, flatter, nearly sessile apothecia, a thallus that contains perlatic and thamnolic acids, and ellipsoid photobiont cells.



Dibaëis baeomyces



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- Dibaeis baeomyces*** (L. f.) Rambold & Hertel, Biblthca Lichenol. 53: 231 (1993)
 = *Baeomyces roseus* Pers., Ann. Bot. (Usteri) 7: 19 (1794)
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 = *Dibaeis baeomyces* (L. f.) Rambold & Hertel, Herzogia 9(3-4): 619 (1993)
 = *Dibaeis rosea* (Pers.) Clem., Gen. fung. (Minneapolis): 175 (1909)
 = *Lichen baeomyces* L. f., Suppl. Pl.: 450 (1781)
 = *Tubercularia baeomyces* (L. f.) Baumg., Fl. Lips.: 583 (1790)
 = *Verrucaria baeomyces* (L. f.) Willd. [as 'beomyces'], Fl. berol. prod.: 365 (1787)

[1991], Germany, Baden-Württemberg, Kreis Göppingen, Zell bei Börtlingen, am Rand eines Waldweges im Waldteil "Ob dem See", ca 410 m, TK: 7223.leg. et det. F. Schumm, 01.01.1972.

Thallus in small patches, or becoming more wide-spreading; basal crust smooth, ± shiny, margin ± determinate, without marginal lobes or squamules, whitish pale grey or sometimes green-grey; schizidia scattered, coarse, rounded, or flattened, pink-white, shiny, varying in texture and size, 0.1-0.3 mm on fertile thalli, to 1 mm on sterile thalli, sometimes farinose soresiate; photobiont cells 5-8 µm diam., mostly globose. Apothecia to 3 mm diam., stalked, 2-5 mm tall, stipe white or pink, ecorticate for the most part, more or less hollow; disc bright rose-pink, domed; epithecium with fine crystals dissolving in K; hymenium 120-140 µm, I+ blue. Asci 125 x 6 µm, with a thin KI+ blue apical cap. Ascospores 10-26 x 2-3 µm, fusiform. Pycnidia 200 µm diam.; wall colourless or brown above; conidia 3.8-5 x 0.8-1 µm. Thallus C-, K+ yellow-orange, KC+ orange, P+ orange, UV+ orange (mainly apothecia and schizidia); baeomycesic, squamatic ± barbatic acids and atranorin. On mineral or peaty soil on acid heaths and moors, usually sterile. Throughout the British Isles, Europe, N. America, Greenland, Asia, Africa. - Sometimes confused with *Jcmadophila ericetorum*, which has larger, flatter, nearly sessile apothecia, a thallus that contains perlatolic and thamnolic acids, and ellipsoid photobiont cells.



Dibaeis baeomyces



Dibaëis baeomyces

Dibaeis holstii (Müll. Arg.) Kalb & Gierl, in Gierl & Kalb, Herzogia 9(3-4): 625 (1993)
= *Baeomyces holstii* Müll. Arg. 1894

[14891], Philippinen, Mindanao, Provinz Bukidnon, westlich Malabalay, tropischer Regenwald am Mt. Kitanglad ab Zwischen-Campsite, 08°09.637' N, 124°55.871' E, 1870-2800 m. Leg. F. Schumm & U. Schwarz, 19.08.1999, det. A. Aptroot, 2009.

Thallus: beige oder hellgrau bis grau, kornig, mit regelmaßiger Struktur, sehen zerlaufen, Kornchengroße max. 0,04 mm, Lager unregelmäßig dicht, d. h. an einigen Lagerstellen Substrat noch gut sichtbar, andere Teile dicht bedeckt, charakteristisch aufsitzend sind fast kugelige, helle Glomeruli, die mindestens doppelt so groß sind wie die Lagerwarzen, max. aber 0.7 mm. Podetium: deutlich entwickelt, Farbe wie Lager, 1-4 mm lang und 0.3 - 0.6 mm breit, leicht langserieft, unregelmäßig berindet, sehen wenig kornig, manchmal mit einigen abstehenden Schuppchen. Apothecium: rosafarben, zu langlichen Köpfchen gewölbt, oft ohne Übergang aus dem Podetium hervorgehend, (an einen Streichholzkopf erinnernd), 0.5 - 2 mm hoch und ebenso breit, glatt, fast kugelförmig mit sanften Einbuchtungen. Sporen: Länge (15) $19,7, \mu\text{m} \pm 3.39$ (26) μm , Breite $3.5 \pm 0.6 \mu\text{m}$, Längen-BreitenVerhältnis 6 : 1, hyalin, unseptiert, einzellig, spindelförmig, langlich, oft an einem Ende spitz ausgezogen, am anderen Ende abgerundet. Ascus: ca. 100 μm lang, 8 μm breit, achtsporig. Hymenium: ca. 130 μm hoch, davon 12 μm mit aufgelagerten Flechtenstoffen, Fruchtkörper im Längsschnitt innen immer arachnoid. Chemie: Baeomyces-saure, Squamatsaure, selten Barbatsaure, Lager und Fruchtkörper K + schmutziggelb. Substrat: Erde. Verbreitung: Hawaii-Inseln, Ostafrika, Siidafrika, Zentralamerika; 1000 m bis 3000 m.

- Kurz-Charakteristik: helles, feinkörniges Lager, aufsitzende Warzen bis 0.7 mm groß, rosa Fruchtkörper, die an Streichholzköpfe erinnern.



Dibaeis holstii



Dibaeis holstii

Dibaeis holstii (Müll. Arg.) Kalb & Gierl, in Gierl & Kalb, Herzogia 9(3-4): 625 (1993)
= *Baeomyces holstii* Müll. Arg. 1894

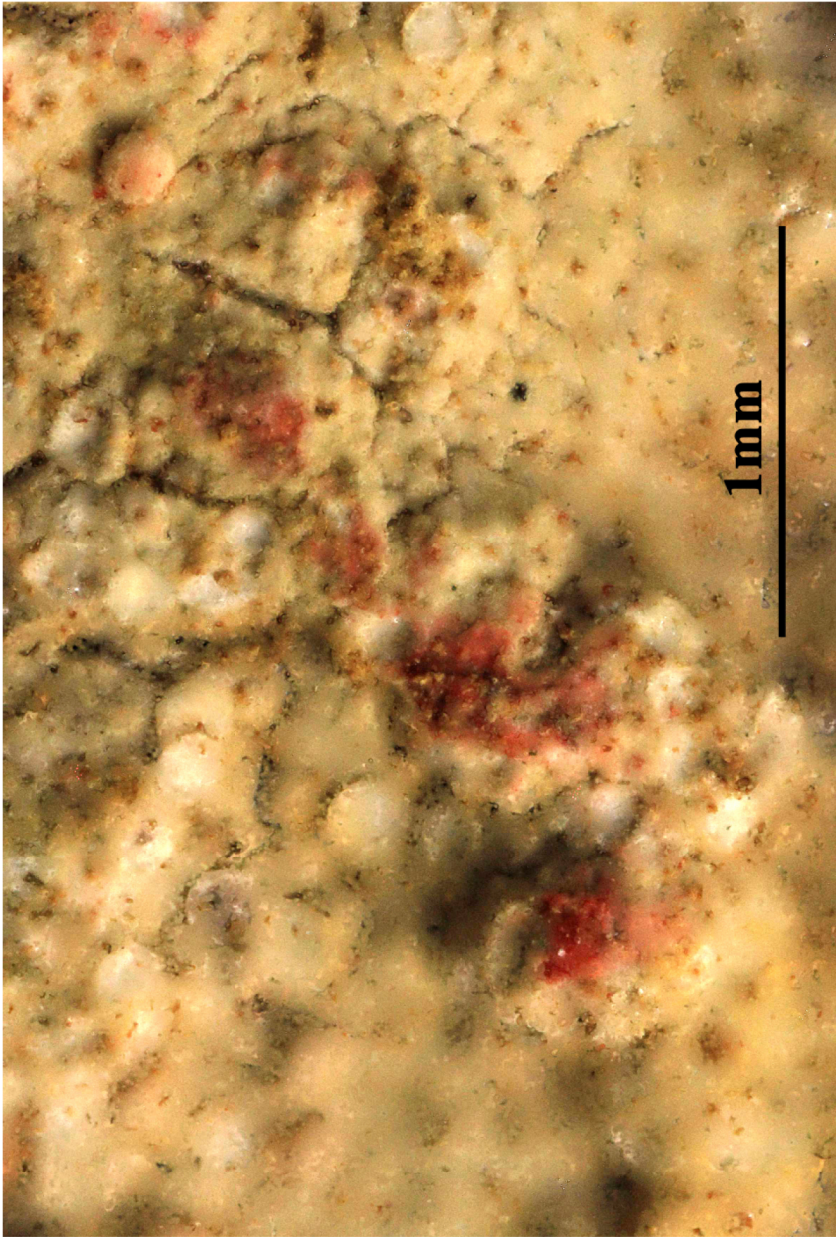
[6504], Philippinen, Mindanao, Prov. Misamis Oriental, südwestlich Gingoog City, Barangay Lunutan, 08°42.510' N, 125°01.241' E, 1120 und am Weg auf den Mt. Lumot (Via Haruhay Trail) bis zum Zwischen-camp im trop. Bergregenwaö 08°40.713' N, 125°01.649' E, :168 m. Leg. O. L. Bernabe & F. Schumm & U. Schwarz, 24.08.1999 (13), det. A. Aptroot, 2009.

Thallus: beige oder hellgrau bis grau, kornig, mit regelmaßiger Struktur, sehen zerlaufen, Kornchengroße max. 0,04 mm, Lager unregelmäßig dicht, d. h. an einigen Lagerstellen Substrat noch gut sichtbar, andere Teile dicht bedeckt, charakteristisch aufsitzend sind fast kugelige, helle Glomeruli, die mindestens doppelt so groß sind wie die Lagerwarzen, max. aber 0.7 mm. Podetium: deutlich entwickelt, Farbe wie Lager, 1-4 mm lang und 0.3 - 0.6 mm breit, leicht langserieft, unregelmäßig berindet, sehen wenig kornig, manchmal mit einigen abstehenden Schuppchen. Apothecium: rosafarben, zu langlichen Köpfchen gewölbt, oft ohne Übergang aus dem Podetium hervorgehend, (an einen Streichholzkopf erinnernd), 0.5 - 2 mm hoch und ebenso breit, glatt, fast kugelförmig mit sanften Einbuchtungen. Sporen: Länge (15) $19,7, \mu\text{m} \pm 3.39$ (26) μm , Breite $3.5 \pm 0.6 \mu\text{m}$, Längen-BreitenVerhältnis 6 : 1, hyalin, unseptiert, einzellig, spindelförmig, langlich, oft an einem Ende spitz ausgezogen, am anderen Ende abgerundet. Ascus: ca. 100 μm lang, 8 μm breit, achtsporig. Hymenium: ca. 130 μm hoch, davon 12 μm mit aufgelagerten Flechtenstoffen, Fruchtkörper im Längsschnitt innen immer arachnoid. Chemie: Baeomyces-säure, Squamatsäure, selten Barbatsäure, Lager und Fruchtkörper K + schmutziggelb. Substrat: Erde. Verbreitung: Hawaii-Inseln, Ostafrika, Südafrika, Zentralamerika; 1000 m bis 3000 m.

- Kurz-Charakteristik: helles, feinkörniges Lager, aufsitzende Warzen bis 0.7 mm groß, rosa Fruchtkörper, die an Streichholzköpfe erinnern.



Dibaeis holstii



Dibaëis holstii

Dibaeis sorediata Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 615 (1993)

[ABL50967], Brazil, Alagoas, Quebrangulo, Pedra Talhada plot N1. On soil in Atlantic rain forest. 9°15' S, 36°25'35" W, 600 m. Leg. M. Cáceres, A. Aptroot (no 50967) & J.G. Cavalcante, 25.07.2019. Det. A. Aptroot, 2019.

Primary thallus thin and ±smooth over rock or fine soils to verruculose over bryophytes, paler than underlying substratum, pale ochre to dull green (bright lettuce-green when wet) with white hyphae visible between lichenised patches (clusters of photobiont cells visible at ×20 when wet), sorediate. Soralia initially small, orbicular and verruciform to capitate, eventually to 0.5–1 (–1.5) mm tall, coalescing into patches 2–4 mm wide, pale greenish white, paler than primary thallus, farinose to granular, rich in photobiont cells thus giving upper layer a distinct green tinge, with or without abundant colourless crystals. Secondary thallus absent to abundant. Apothecia sessile and adnate to shortly stipitate, to 0.3 (–0.5) mm diam.; stipe robust, short, non-lichenised, thick, smooth to scurfy or farinose, concolorous with primary thallus to buff to dirty white to pale rose-pink where internal tissue is exposed, relatively regular in cross-section, neither strongly furrowed nor markedly tapered; disc pale flesh-pink to rose-pink, darker than margin, usually densely pruinose, smooth to scabrid, shallowly concave to ±plane to slightly convex and undulate-distorted to ±cracked and fissured with age; margin usually concolorous with stipe, ±pruinose, smooth when young to undulate and cracked with age, sometimes fusing with margin of adjacent apothecia. Ascospores ellipsoidal to narrowly ovoid, 0 (–1)-septate, (9.5–) 10.5–12 (–15.5) × (3–) 3.5–4.5 (–5.5) µm (Australian specimens). Pycnidia not seen. CHEMISTRY: Primary thallus and soralia K– or K+ pale yellow, UV+ white; apothecia (disc and stipe) K+ yellow, P+ yellow-orange; containing baecomycetic acid (major), squamatic acid (±trace), consquamatic acid (±trace), barbatic acid (±faint trace) and ursolic acid (±trace). - Occurs in Australia in wet-tropical and subtropical rainforest of coastal and adjacent ranges, grows on moist soils of roadsides, creek banks and old termite nests or on rocks in shaded, sheltered sites. Also known from Réunion and Nepal.



Dibaeis soorediata



Dibaeis soreliata

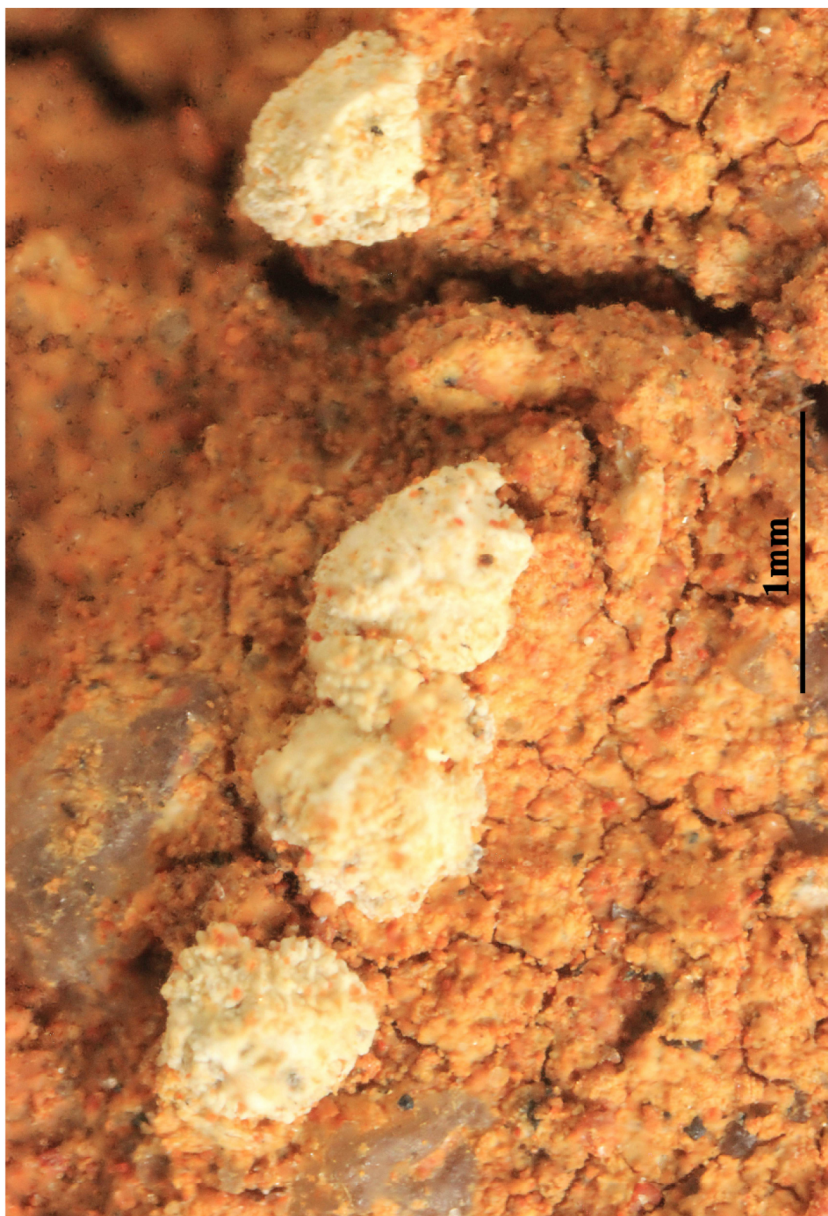
Dibaeis sorediata Kalb & Gierl, in Gierl & Kalb, Herzogia 9(3-4): 615 (1993)

[5807], Madagaskar, Zentral-Madagaskar, Ambalavao (zwischen Ihosy und Fianaratsoa); ca. 1100 m; auf nackter Erde. Leg. F. Schumm. 01.01.1993, det. A. Aptroot, 2009.

Primary thallus thin and $\pm$ smooth over rock or fine soils to verruculose over bryophytes, paler than underlying substratum, pale ochre to dull green (bright lettuce-green when wet) with white hyphae visible between lichenised patches (clusters of photobiont cells visible at $\times 20$ when wet), sorediate. Soralia initially small, orbicular and verruciform to capitate, eventually to 0.5–1 (–1.5) mm tall, coalescing into patches 2–4 mm wide, pale greenish white, paler than primary thallus, farinose to granular, rich in photobiont cells thus giving upper layer a distinct green tinge, with or without abundant colourless crystals. Secondary thallus absent to abundant. Apothecia sessile and adnate to shortly stipitate, to 0.3 (–0.5) mm diam.; stipe robust, short, non-lichenised, thick, smooth to scurfy or farinose, concolorous with primary thallus to buff to dirty white to pale rose-pink where internal tissue is exposed, relatively regular in cross-section, neither strongly furrowed nor markedly tapered; disc pale flesh-pink to rose-pink, darker than margin, usually densely pruinose, smooth to scabrid, shallowly concave to $\pm$ plane to slightly convex and undulate-distorted to $\pm$ cracked and fissured with age; margin usually concolorous with stipe, $\pm$ pruinose, smooth when young to undulate and cracked with age, sometimes fusing with margin of adjacent apothecia. Ascospores ellipsoidal to narrowly ovoid, 0 (–1)-septate, (9.5–) 10.5–12 (–15.5) $\times$ (3–) 3.5–4.5 (–5.5) μ m (Australian specimens). Pycnidia not seen. CHEMISTRY: Primary thallus and soralia K– or K+ pale yellow, UV+ white; apothecia (disc and stipe) K+ yellow, P+ yellow-orange; containing baecomycetic acid (major), squamatic acid ($\pm$ trace), consquamatic acid ($\pm$ trace), barbatic acid ($\pm$ faint trace) and ursolic acid ($\pm$ trace). - Occurs in Australia in wet-tropical and subtropical rainforest of coastal and adjacent ranges, grows on moist soils of roadsides, creek banks and old termite nests or on rocks in shaded, sheltered sites. Also known from Réunion and Nepal.



Dibaeis sorediata



Dibaeis soreliata

- Icmadophila ericetorum*** (L.) Zahlbr., Wiss. Mittellung. Bosnien und der Hercegov. 3: 605 (1895)
- = *Baeomyces aeruginosus* (Scop.) DC. [as 'aeruginosa'], in Lamarck & de Candolle, Fl. franç., Edn 3 (Paris) 2: 343 (1805)
- = *Baeomyces aeruginosus* var. *truncicola* Mérat, Nouv. Fl. Environs Paris, Edn 2 1: 168 (1821)
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- = *Baeomyces icmadophilus* (L. f.) Bory, Dict. Class. Hist. Nat. 2: 286 (1822)
- = *Biatora aeruginosa* (Scop.) Hepp, Flecht. Europ.: no. 137 (1853)
- = *Biatora icmadophila* (L. f.) Fr., K. svenska Vetensk-Akad. Handl., ser. 3: 273 (1822)
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- = *Icmadophila aeruginosa* (Scop.) Trevis., Revta Period. Lav. Imp. Reale Acad., Padova 1(3): 267 (1852) [1851-52]
- = *Icmadophila ericetorum* var. *stipitata* B. de Lesd., Bull. Soc. bot. Fr. 69: 766 (1922)
- = *Lecania aeruginosa* (Scop.) Stizenb., Ber. Tät. St Gall. naturw. Ges.: 171 (1862) [1861-62]
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- = *Lecidea icmadophila* (L. f.) Ach., Methodus, Sectio prior (Stockholmiae): 58 (1803)
- = *Lecidea icmadophila* var. *aeruginosa* (Scop.) Ach., Methodus, Sectio prior (Stockholmiae): 59 (1803)
- = *Lichen aeruginosus* Scop., Fl. carniol., Edn 2 (Wien) 2: 361 (1772)
- = *Lichen ericetorum* L., Sp. pl. 2: 1141 (1753)
- = *Lichen icmadophila* L. f., Suppl. Pl.: 450 (1781)
- = *Lichen icmadophila* (L. f.) J.F. Gmel., Syst. Nat., Edn 13 2(2): 1358 (1792)
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- = *Tubercularia icmadophila* (L. f.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)
- = *Tupia aeruginosa* (Scop.) L. Marchand, in Hall, Vrolik & Mulder, Bijdr. Natuurk. Wetensch. 5: 191 (1830)

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- = *Zeora icmadophila* (L. f.) Flot., Übers. Arbeiten Veränd. Schles. Ges. Vaterl. Kultur [27]: 124 (1850) [1849]
- = *Zeora icmadophila f. aeruginosa* (Scop.) Flot., Linnaea 22: 379 (1849)

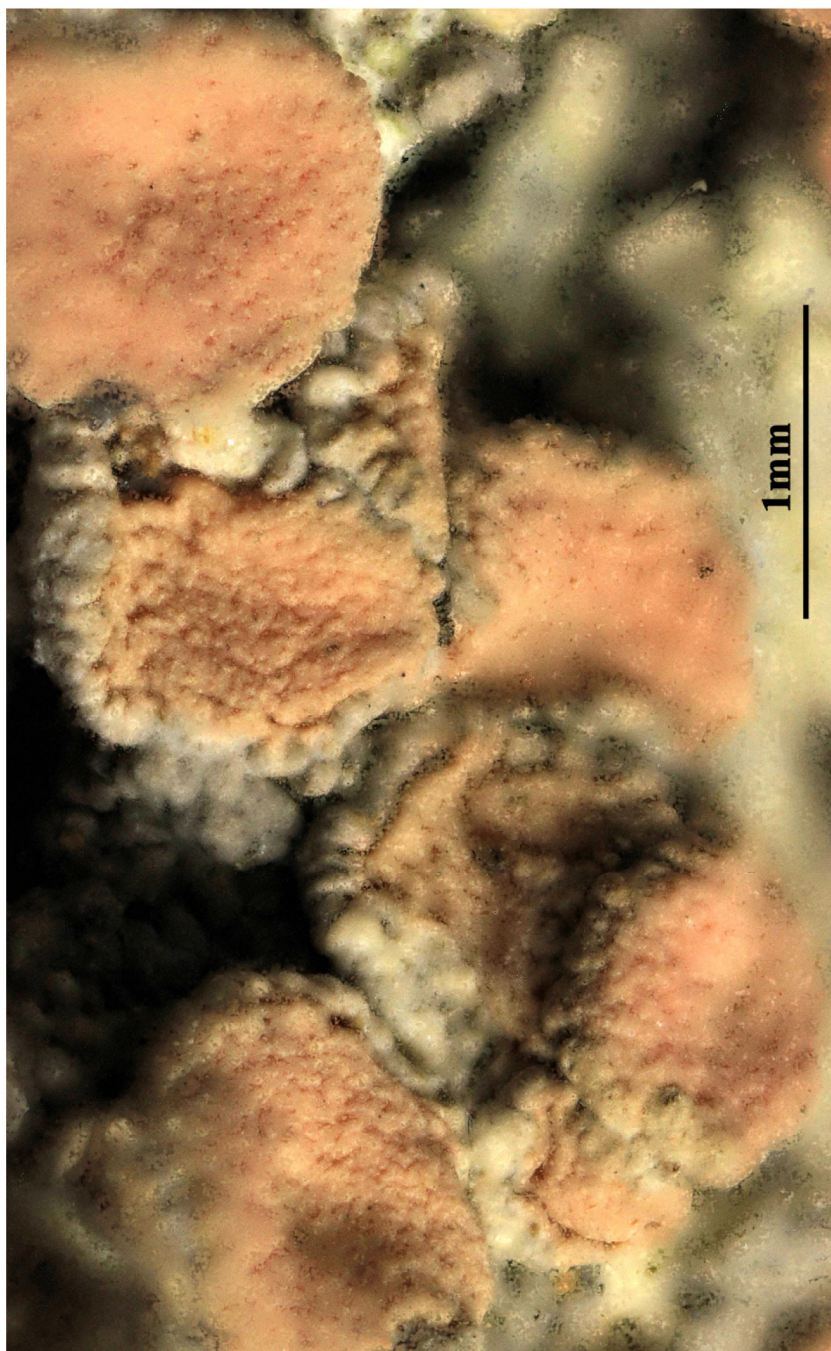
[565], Österreich, Land Salzburg, Steir. Salzkammergut, Mitterndorf bei der Sonnenalm. Leg. D. & F. Schumm, 06.1967, det. F. Schumm.

Thallus crustose, episubstratic, pale green, glaucous green or whitish grey, brighter green when wet, continuous, consisting of a soft layer of 100-300 µm thick, ecorticate, soredia-like to wart-like granules. Apothecia biatorine, round to irregular in outline, strongly constricted to substipitate, 1-2(-3.5) mm across, with a flesh-coloured to pale orange-pink, sometimes faintly white-pruinose, smooth to finally wrinkled, flat to convex disc, and a thin, smooth, sometimes irregularly lobulate, often paler, sometimes whitish-pruinose, finally often excluded proper margin. Proper exciple of intricately interwoven hyphae, extending below the hymenium; epithecium reddish brown, with many small crystals, K+ orange-red; hymenium colourless, 120-160 µm high, I+ blue; paraphyses simple or sparingly branched in upper part, slender, c. 1 µm thick at mid-level, the apical cells swollen, up to 5 µm wide; hypothecium colourless, the central part with colourless crystals not dissolving in K. Asci (6-)8-spored, narrowly cylindrical, K/I- except for a thin K/I+ dark blue cap in the apical wall, *Icmadophila*-type. Ascospores 1(-3)-septate, hyaline, fusiform-elongate, 12-28(-30) x 4-6(-7) µm. Pycnidia pale, immersed, with a colourless wall, the conidiogenous cells enteroblastic, short-cylindrical. Conidia simple, hyaline, bacilli-form, 3.5-4.5 x 0.5-1 µm. Photobiont chlorococcoid (*Coccomyxa*), the cells ellipsoid, 5-8 x 3-4 µm, with a large parietal chloroplast, surrounded by a gelatinous layer. Spot tests: thallus K+ orange turning brownish orange, C-, KC+ orange, P+ orange, UV+ glaucous; apothecia K+ and P+ orange-red, UV-. Chemistry: thallus with thamnolic and perlatolic acid, apothecia with thamnolic acid only. - Note: a cool-temperate to boreal-montane, circumpolar species found on decaying wood and muribund bryophytes, usually in upland areas.

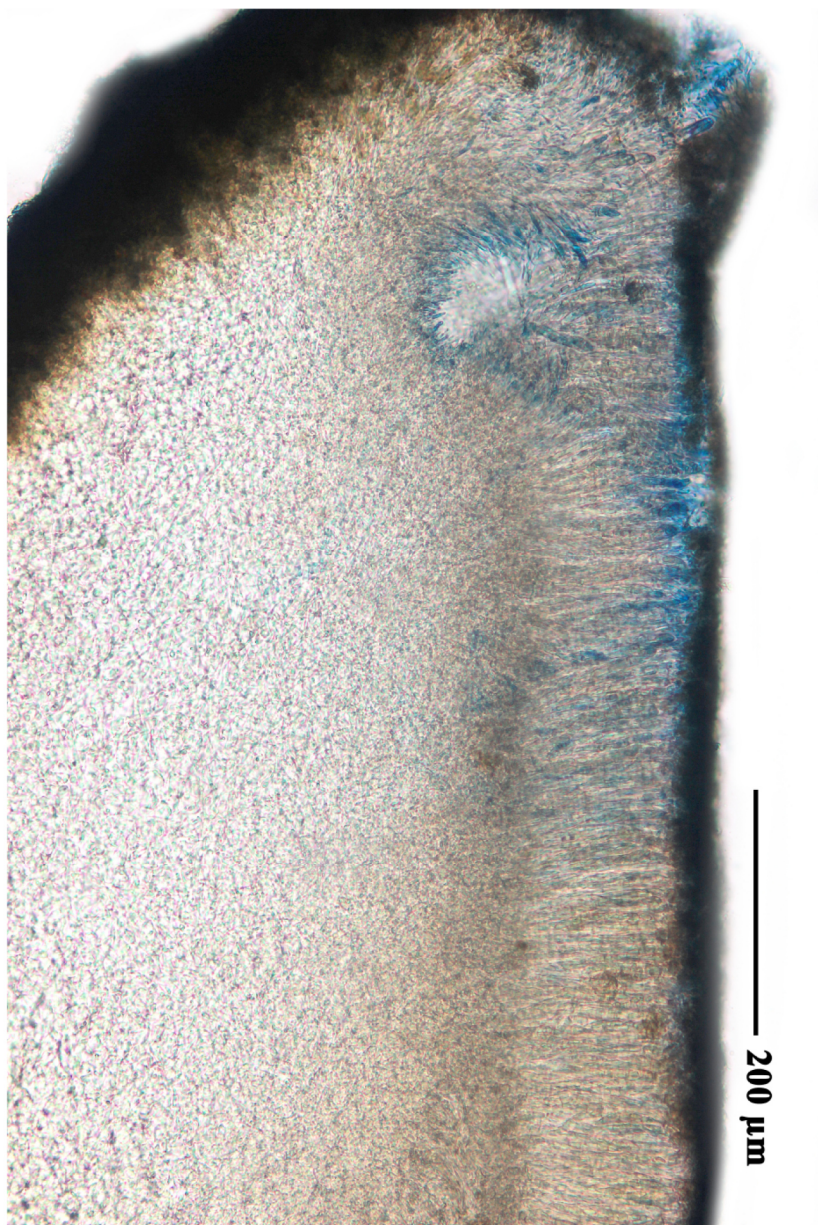
Icmadophila ericetorum



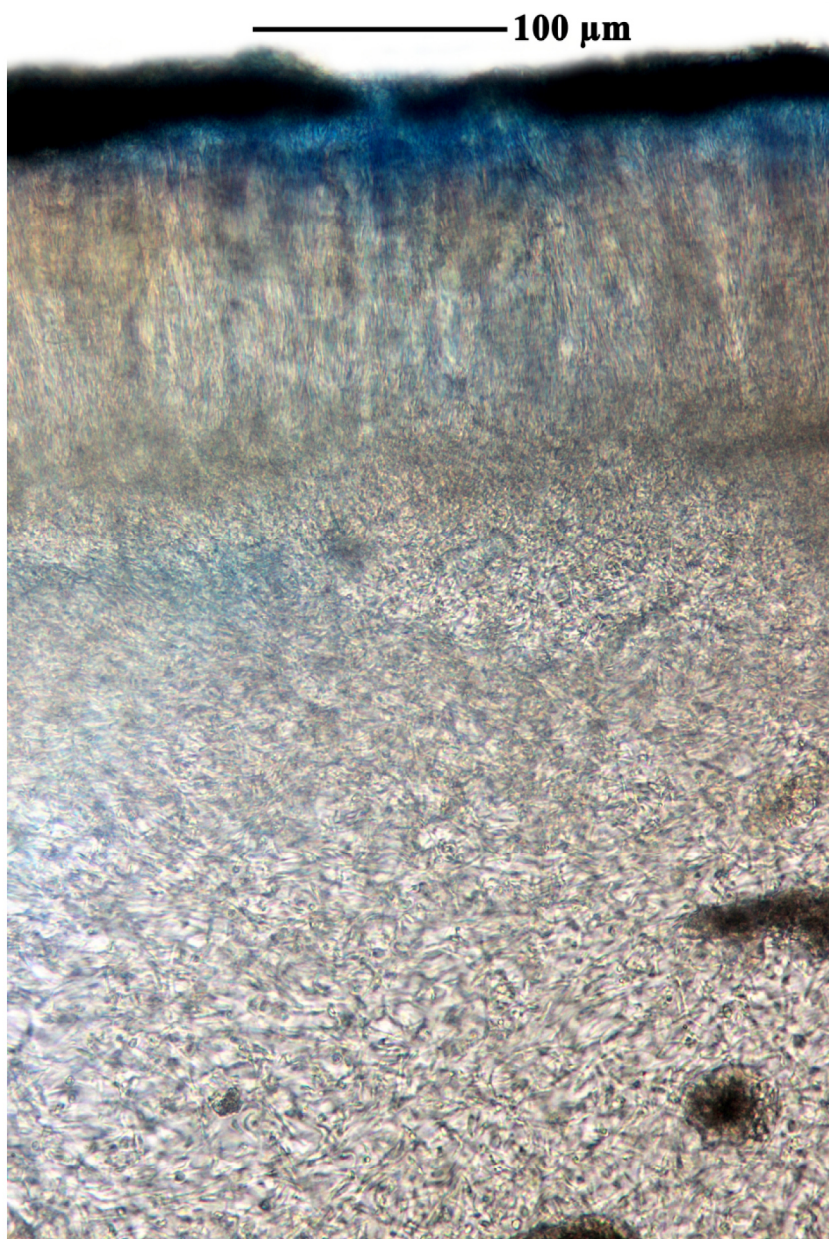
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[568], GERMANY: Baden-Württemberg, Schwarzwald, Kreis Calw, Wildbad, im Rennbachtal, TK:7217. Leg. E. Erich Putzler, 28.04.1949, E. Putzler.

Thallus crustose, episubstratic, pale green, glaucous green or whitish grey, brighter green when wet, continuous, consisting of a soft layer of 100-300 µm thick, ecorticate, soredia-like to wart-like granules. Apothecia biatorine, round to irregular in outline, strongly constricted to substipitate, 1-2(-3.5) mm across, with a flesh-coloured to pale orange-pink, sometimes faintly white-pruinose, smooth to finally wrinkled, flat to convex disc, and a thin, smooth, sometimes irregularly lobulate, often paler, sometimes whitish-pruinose, finally often excluded proper margin. Proper exciple of intricately interwoven hyphae, extending below the hymenium; epithecium reddish brown, with many small crystals, K+ orange-red; hymenium colourless, 120-160 µm high, I+ blue; paraphyses simple or sparingly branched in upper part, slender, c. 1 µm thick at mid-level, the apical cells swollen, up to 5 µm wide; hypothecium colourless, the central part with colourless crystals not dissolving in K. Asci (6-)8-spored, narrowly cylindrical, K/I- except for a thin K/I+ dark blue cap in the apical wall, *Icmadophila*-type. Ascospores 1(-3)-septate, hyaline, fusiform-elongate, 12-28(-30) x 4-6(-7) µm. Pycnidia pale, immersed, with a colourless wall, the conidiogenous cells enteroblastic, short-cylindrical. Conidia simple, hyaline, bacilli-form, 3.5-4.5 x 0.5-1 µm. Photobiont chlorococcoid (*Coccomyxa*), the cells ellipsoid, 5-8 x 3-4 µm, with a large parietal chloroplast, surrounded by a gelatinous layer. Spot tests: thallus K+ orange turning brownish orange, C-, KC+ orange, P+ orange, UV+ glaucous; apothecia K+ and P+ orange-red, UV-. Chemistry: thallus with thamnolic and perlatolic acid, apothecia with thamnolic acid only. - Note: a cool-temperate to boreal-montane, circumpolar species found on decaying wood and muribund bryophytes, usually in upland areas.

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[569], Italien, Südtirol, Vigo di Fassa, Vajolettal, bei der Cardecchia Hütte, 1949 m. Leg. F. Schumm, 06.1963, det. F. Schumm, 1999. - Sporen 2-4 zellig, hyalin, 20-26 x 4-8 µm.

Thallus crustose, episubstratic, pale green, glaucous green or whitish grey, brighter green when wet, continuous, consisting of a soft layer of 100-300 µm thick, ecorticate, soredia-like to wart-like granules. Apothecia biatorine, round to irregular in outline, strongly constricted to substipitate, 1-2(-3.5) mm across, with a flesh-coloured to pale orange-pink, sometimes faintly white-pruinose, smooth to finally wrinkled, flat to convex disc, and a thin, smooth, sometimes irregularly lobulate, often paler, sometimes whitish-pruinose, finally often excluded proper margin. Proper exciple of intricately interwoven hyphae, extending below the hymenium; epithecium reddish brown, with many small crystals, K+ orange-red; hymenium colourless, 120-160 µm high, I+ blue; paraphyses simple or sparingly branched in upper part, slender, c. 1 µm thick at mid-level, the apical cells swollen, up to 5 µm wide; hypothecium colourless, the central part with colourless crystals not dissolving in K. Asci (6-)8-spored, narrowly cylindrical, K/I- except for a thin K/I+ dark blue cap in the apical wall, *Icmadophila*-type. Ascospores 1(-3)-septate, hyaline, fusiform-elongate, 12-28(-30) x 4-6(-7) µm. Pycnidia pale, immersed, with a colourless wall, the conidiogenous cells enteroblastic, short-cylindrical. Conidia simple, hyaline, bacilli-form, 3.5-4.5 x 0.5-1 µm. Photobiont chlorococcoid (*Coccomyxa*), the cells ellipsoid, 5-8 x 3-4 µm, with a large parietal chloroplast, surrounded by a gelatinous layer. Spot tests: thallus K+ orange turning brownish orange, C-, KC+ orange, P+ orange, UV+ glaucous; apothecia K+ and P+ orange-red, UV-. Chemistry: thallus with thamnolic and perlatolic acid, apothecia with thamnolic acid only. - Note: a cool-temperate to boreal-montane, circumpolar species found on decaying wood and muribund bryophytes, usually in upland areas.

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- = *Zeora icmadophila* f. *aeruginosa* (Scop.) Flot., Linnaea 22: 379 (1849)

[572], Österreich, Land Salzburg, Tennengebirge (bei Bischofshofen), Anton-Proksch-Haus bei Werfenweng, Ladenberghöhe, ca. 1630 m. Leg. F. Schumm 24.08.1967. det. F. Schumm, 1967.

Thallus crustose, episubstratic, pale green, glaucous green or whitish grey, brighter green when wet, continuous, consisting of a soft layer of 100-300 µm thick, ecorticate, soredia-like to wart-like granules. Apothecia biatorine, round to irregular in outline, strongly constricted to substipitate, 1-2(-3.5) mm across, with a flesh-coloured to pale orange-pink, sometimes faintly white-pruinose, smooth to finally wrinkled, flat to convex disc, and a thin, smooth, sometimes irregularly lobulate, often paler, sometimes whitish-pruinose, finally often excluded proper margin. Proper exciple of intricately interwoven hyphae, extending below the hymenium; epithecium reddish brown, with many small crystals, K+ orange-red; hymenium colourless, 120-160 µm high, I+ blue; paraphyses simple or sparingly branched in upper part, slender, c. 1 µm thick at mid-level, the apical cells swollen, up to 5 µm wide; hypothecium colourless, the central part with colourless crystals not dissolving in K. Asci (6-)8-spored, narrowly cylindrical, K/I- except for a thin K/I+ dark blue cap in the apical wall, *Icmadophila*-type. Ascospores 1(-3)-septate, hyaline, fusiform-elongate, 12-28(-30) x 4-6(-7) µm. Pycnidia pale, immersed, with a colourless wall, the conidiogenous cells enteroblastic, short-cylindrical. Conidia simple, hyaline, bacilli-form, 3.5-4.5 x 0.5-1 µm. Photobiont chlorococcoid (*Coccomyxa*), the cells ellipsoid, 5-8 x 3-4 µm, with a large parietal chloroplast, surrounded by a gelatinous layer. Spot tests: thallus K+ orange turning brownish orange, C-, KC+ orange, P+ orange, UV+ glaucous; apothecia K+ and P+ orange-red, UV-. Chemistry: thallus with thamnolic and perlatolic acid, apothecia with thamnolic acid only. - Note: a cool-temperate to boreal-montane, circumpolar species found on decaying wood and muribund bryophytes, usually in upland areas.

Icmadophila ericetorum



Icmadophila ericetorum



Icmadophila ericetorum

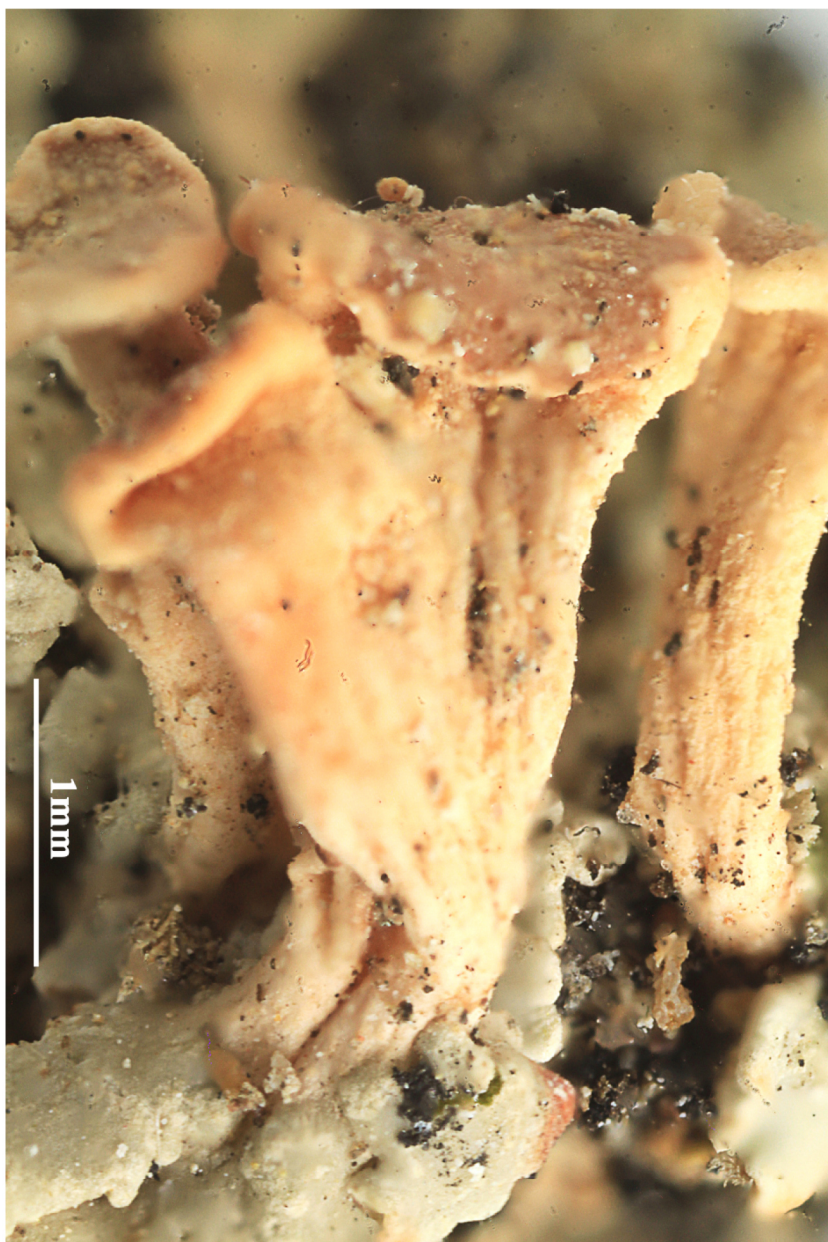
- Phyllobaeis erythrella*** (Mont.) Kalb, in Gierl & Kalb, *Herzogia* 9(3-4): 610 (1993)
 = *Baeomyces erythrellus* (Mont.) Nyl., *Mém. Soc. Imp. Sci. Nat. Cherbourg* 5: 94 (1858) [1857]
 = *Baeomyces imbricatus* var. *erythrellus* (Mont.) B.G. de Vries, in Vries & Sipman, *Proc. K. Ned. Akad. Wet., Ser. C, Biol. Med. Sci.* 87(2): 242 (1984)
 = *Biatora erythrella* Mont., *Annls Sci. Nat., Bot., sér. 2* 8: 356 (1837)
 = *Tubercularia erythrella* (Mont.) Kuntze, *Revis. gen. pl.* (Leipzig) 2: 877 (1891)

[ABL78541], Brazil, Santa Catarina, Garuva, Quiriri, track to summit area on exposed siliceous soil along track. 26°01' S, 48°59' W, 900-1200 m. Leg. A. Aptroot (no 78541), 30 March 2019, det. A. Aptroot. 2019. -

Primary thallus squamules about as long as wide, crenulated; mostly below 3000 Thallus squamulose, attached to ascending, corticate, whitish grey, apothecia stalked on over 2 mm long unbranched non-corticate podetia. Soredia and isidia absent. Photobiont chlorococcoid. Apothecia terminal, lecideine, pink. Ascospores simple, hyaline, ellipsoid. Chemistry: norstictic acid.



Phyllobaeis erythrella



Phyllobaeis erythrella

- Phyllobaeis imbricata*** (Hook.) Kalb & Gierl, in Gierl & Kalb, Herzogia 9(3-4): 610 (1993)
 = *Baeomyces imbricatus* Hook., in Kunth, Syn. pl. (Paris) 1: 33 (1822)
 = *Ludovicia imbricata* (Hook.) Trevis., Revta Period. Lav. Regia Accad. Sci., Padova 5: 71 (1857)
 = *Tubercularia imbricata* (Hook.) Kuntze, Revis. gen. pl. (Leipzig) 2: 877 (1891)

[17154], Venezuela, Tachira, Distr. Jauregui, bei Boca de Monte, zwischen Bailadores und Progonero, an Absätzen eines steilen, bergfeuchten Erdanrisses, zwischen Moosen, 3000 m, 8°05' N, 71°50' W. Leg. K. & A. Kalb, 13.08.1989. EX K. KALB: LICHENES NEOTROPICI 479, - verteilt als *Baeomyces imbricatus* Hook. Chemie: Norstictinsäure und Gyrophorsäure, anal. K. Kalb.

Primary thallus squamules much longer than wide and deeply lobed; mostly above 3000 m.



Phyllobaeis imbricata



Phyllobaeis imbricata

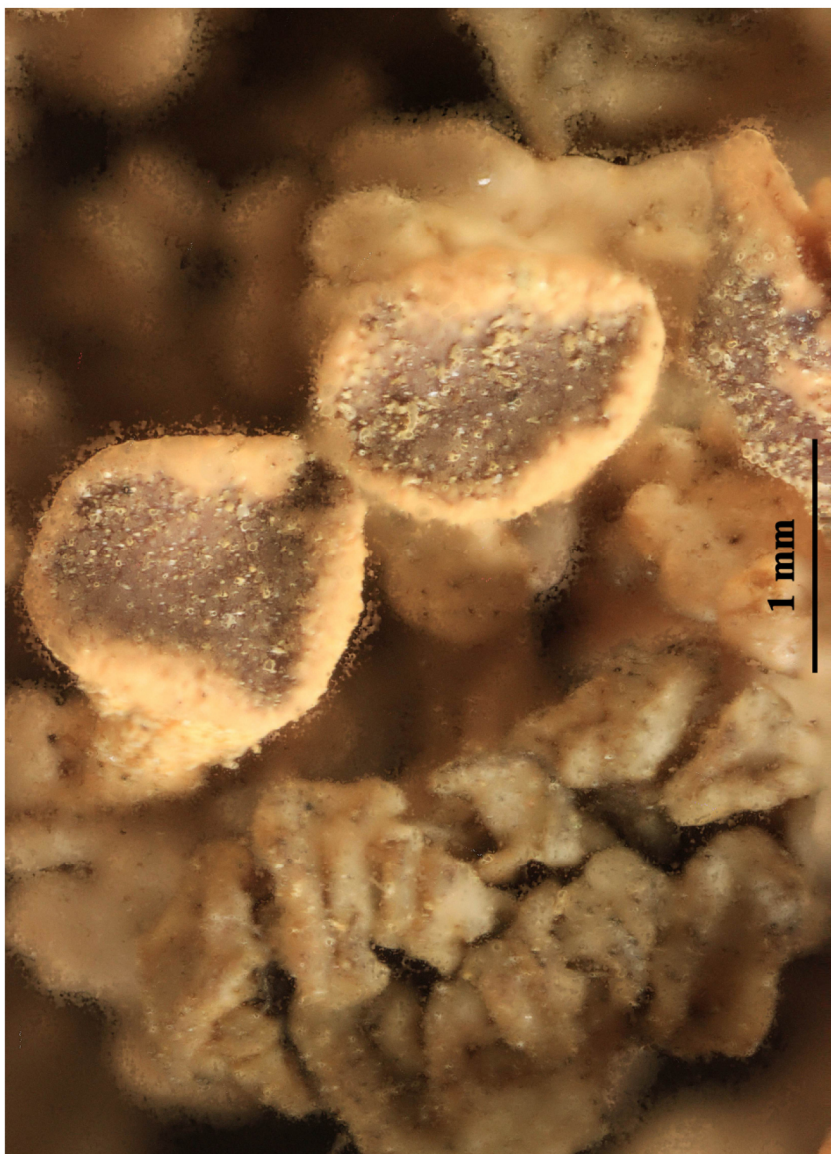
- Phyllobaeis imbricata*** (Hook.) Kalb & Gierl, in Gierl & Kalb, *Herzogia* 9(3-4): 610 (1993)
 = *Baeomyces imbricatus* Hook., in Kunth, *Syn. pl.* (Paris) 1: 33 (1822)
 = *Ludovicia imbricata* (Hook.) Trevis., *Revta Period. Lav. Regia Accad. Sci.*, Padova 5: 71 (1857)
 = *Tubercularia imbricata* (Hook.) Kuntze, *Revis. gen. pl.* (Leipzig) 2: 877 (1891)

[17232], Venezuela/Merida. Distr. Rangel: Zwischen Laguna Mucubaji und Pico Mucunuque, etwa 15 km südöstlich von Apartaderos. Am Boden in Paramo-Vegetationslücken, 3500 m. 8°45' N, 70°45' W. Leg. K. & A. Kalb & López-Figueiras, 07.08.1989, det. W. Obermayer. Ex K. Kalb: Lichenes Neotropici Nr. 594. - Chemie: Norstictinsäure (major), Connorstictinsäure (minor), Gyrophorsäure (major), Lecanorsäure (trace) (anal. K.Kalb, TLC).

Primary thallus squamules much longer than wide and deeply lobed; mostly above 3000 m.



Phyllobaeis imbricata



Phyllobaeis imbricata

Phyllobaeis rhodochroa (Kremp.) Kalb, in Gierl & Kalb, Herzogia 9(3-4): 610 (1993)
= *Baeomyces rhodochrous* Kremp., Flora, Regensburg 59: 58 (1876)

[18355], Brasilien/ Minas Gerais. Serra da Mantiqueira. Erdstraße zwischen Camanducaia und Vila Monte Verde; an einer feuchten, lehmigen Wegböschung. 1400 m, 22°50'S, 46°00' W. Leg. K. Kalb und S. Schwenzl, 19.05.1979. Ex K. KALB: LICHENES NEOTROPICI NR. 164. - Chemie: Norstictinsäure (IR-Spectrum), anal. S. Huneck. Verteilt als *Baeomyces rhodochrous* Krempelh.

Podetia under 2 mm high, Ascospores 1-septate.

Ex Krempelhuber (1876):Thallus albidus vel albido - glaucescens, squamulosus, squamulis minntis adscendentibus imibricatis crenatis, crustam continuam efformantbus; apothecia dispersa, possim approximata, disco roseo plano marginato (lat. ca. 1.5-2.5 mm.), sessilia vel breviter stipitata (stipite firmo, glabro, dico pallidiore); sporae 8/ascus, in ascis cylindraceis, ellipsoideae, hyalinae, 1-septatae, valde minutae, long. 4.5 x 1.6-2 µm; hypothecium pallidum, paraphyses filiformes, conspieuae. Ad terrain argillaceam. Species jam sporis suis, quae minutissimae, inter species generis Baeomycis hujusque notas, ab omnibus congeneribns diversa et praeterea ab affine Baeom. roseo apotheciis plerumque sessilibus vel breviter stipitatis thalloque minute et imbricate squamuloso satis distincta. Apotheciorum stipites non ultra 1.2 mm longi; margines squamulorum apothecia ferentium hydrate Kalico intense rubescunt.



Phyllobaeis rhodochroa



Phyllobaeis rhodochroa

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