



## DIBAEIS <sup>1</sup>

Gintaras Kantvilas <sup>2</sup>

*Dibaeis* Clem., *Gen. Fungi*: 78 (1909).

Type: *D. rosea* (Pers.) Clem.

Thallus crustose, smooth and continuous to rather verruculose, typically a shade of white or greenish white, ecorticate, with or without soredia. Photobiont a unicellular green alga with globose to broadly ellipsoid cells, 9–16 × 8–12 μm. Ascromata apothecia, biatorine, sessile and basally constricted or elevated on distinct stalks. Proper exciple greyish pink, persistent or becoming excluded, in section cupulate. Disc pale grey-pink to bright rose-pink, sometimes whitish pruinose, funnel-shaped, plane or convex, sometimes very markedly so and the apothecia then ± club-shaped. Hypothecium hyaline, composed of loosely entangled, branched hyphae 1–1.5(–2) μm thick. Hymenium hyaline, very weakly I+ pale blue, KI+ pale blue. Paraphyses 1.5–2.5 μm thick, loosely entangled, branched, occasionally anastomosed; apices sometimes slightly expanded to 3 μm wide. Asci 8-spored, of the *lcmadophila*-type: narrowly cylindrical with a rather extended basal “tail”, and with a slightly thickened tholus lacking any internal differentiation and amyloid only at the very outermost apical part; ascoplasm apically rounded or truncate, lacking an ocular chamber. Ascospores hyaline, simple or occasionally spuriously septate with 1–3 plasma bridges, ellipsoid, thin-walled, non-halonate, usually vacuolate when young. Conidiomata pycnidia, immersed. Conidia bacilliform, not seen in Tasmanian specimens. Chemistry: the depsides, baeomycesic acid and squamatic acid occur in all species; some also contain barbatic acid in the apothecia.

A genus of about 17 species, widely distributed throughout the world, but with its greatest diversity in the tropics. Together with *Knightiella*, *Knightiellastrum*, *Siphula*, *Siphulella*, *Thamnolia* and several other small genera not found in Tasmania, *Dibaeis* is classified in the family *lcmadophilaceae*. Species of *Dibaeis* are typically early colonisers of rocks and soil, and were originally included in the genus *Baeomyces*, which has a similar ecology but is now known to be unrelated.

Key references: Gierl & Kalb (1993); Johnston (2001); Kantvilas (2018).

1	Thallus sorediate; apothecia globose to club-shaped, distinctly stalked; ascospores narrowly fusiform	2 <i>D. arcuata</i>
	Thallus without soredia; apothecia sessile or with a very short stalk < 1mm tall; ascospores ellipsoid	2
2(1)	Thallus very thin, pale greenish grey; ascospores 10–17 × 3–7 μm	1 <i>D. absoluta</i>
	Thallus thick, chalky white; ascospores 13.5–26 × 7–12 μm	3 <i>D. inundata</i>

### 1 *Dibaeis absoluta* (Tuck.) Kalb & Gierl

In C. Gierl & K. Kalb, *Herzogia* 9: 613 (1993); —*Baeomyces absolutus* Tuck., *Amer. J. Sci. Arts*, ser. 2, 28: 201 (1859).

Thallus pale greenish, very thin, smooth to scurfy, esorediate. Apothecia to 2 mm wide, subsessile or on short stalks 0.3–1 mm tall; disc pale greyish pink, sometimes whitish pruinose, plane, deeply concave or weakly convex, wrinkled and verruculose, sometimes proliferating to produce convoluted brain-like clusters;

1 This work can be cited as: Kantvilas G (2023). *Dibaeis*, version 2023:1. In MF de Salas (Ed.) *Flora of Tasmania Online*. 3 pp. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery: Hobart). <https://flora.tmag.tas.gov.au/lichen-genera/dibaeis/>

2 Tasmanian Herbarium, Tasmanian Museum & Art Gallery, PO Box 5058, UTAS LPO, Sandy Bay, TAS 7005, Australia.

proper exciple mostly persistent, smooth or radially cracked, concolorous with the disc or a little paler. Ascospores simple, ellipsoid to fusiform, sometimes with somewhat attenuated apices, (10–)10.5–13.4–16(–17) × (3–)4.5–5.4–6.5(–7) μm.

Chemistry: baeomycesic acid, squamatic acid (± trace), barbatic acid (± trace); thallus K± pale yellow, KC–, C–, P± pale yellow, UV+ pale yellow.

Rare in Tasmania and known from just a few localities where it grows on stones in wet forest. Also known from mainland Australia, New Zealand, south-east Asia and the Americas. It is readily distinguished from the common and widespread *D. arcuata*, which has a sorediate thallus and prominently stalked apothecia, and from *D. inundata*, which has a thicker thallus and larger spores.

Liffey Falls Track, 41°41'S 146°47'E, 400 m, 1969, G.C. Bratt 69/734A & J.A. Cashin (HO); Lower Pieman Dam Rd near Huskisson River, 41°44'S 145°27'E, 260 m, 1989, G. Kantvilas 177/89 (HO).

## 2 *Dibaeis arcuata* (Stirt.) Kalb & Gierl

In C. Gierl & K. Kalb, *Herzogia* 9: 617 (1993); —*Baeomyces arcuatus* Stirt., *J. Linn. Soc. Bot.* 14: 460 (1875).

Thallus chalky white, greenish white or dull greenish grey, thin and smooth to rather thick and verruculose, typically reflecting the texture of the substratum, sorediate; soredia whitish, farinose to granular, initially in discrete, roundish soralia that soon coalesce into irregular patches, sometimes eventually covering most of the thallus. Apothecia to 3 mm wide, markedly elevated above the thallus on well-developed, longitudinally striate, straight or curved stalks 5–10 mm tall; disc rose-pink to orange-pink, especially vivid when moist and fresh, later often pale brownish, markedly convex, globose to club-shaped, smooth to puckered and dimpled, often with a central depression, epruinose or sometimes whitish-pruinose; proper exciple excluded from the earliest stages. Ascospores narrowly fusiform, mostly with attenuated apices, (13–)14–18.1–24(–25) × 2–2.9–3.5(–4) μm.

Chemistry: baeomycesic acid, squamatic acid (± trace), barbatic acid (± trace); thallus K± pale yellow, KC–, C–, P± pale yellow, UV+ pale yellow.

Widespread and common in Tasmania, especially in wetter areas, and similarly widespread in temperate Australia and New Zealand. This species is a primary coloniser of soil and pebbles and is commonly seen along the margins of roads and tracks. The bright pinkish apothecial disc usually becomes so convex that it recurves over the stalk, making the apothecia appear like small, pink mushrooms. *Dibaeis arcuata* frequently occurs together with *Baeomyces heteromorphus* (Nyl.) C.Bab. & Mitten, which is distinguished by its esorediate, greenish thallus containing norstictic acid and the stalked apothecia with a plane, brownish disc surrounded by a distinct paler margin. *Dibaeis arcuata* is frequently sterile, but, in such cases, the conspicuous whitish soralia are diagnostic. Such sterile specimens are particularly common in gaps in alpine heathland where they bind the peaty soil between stones and small shrubs. In earlier literature, *D. arcuata* was known by the name *D. fungoides* (Sw.) Kalb & Gierl (≡ *Baeomyces fungoides*), a taxon described from the West Indies and restricted to the Neotropics.

Mt Field, 42°39'S 146°35'E, 1962, J.E.S. Townrow (HO); Yolande River, 42°02'S 145°29'E, 1972, G.C. Bratt 72/123 & M.H. Bratt (HO); Weindorfers Forest, 41°38'S 145°56'E, 1040 m, 1992, G. Kantvilas 471/92, B. Fuhrer & J. Jarman (HO).

## 3 *Dibaeis inundata* Kantvilas

*Herzogia* 31: 563 (2018). Type: Tasmania, c. 2 km N of Serpentine Dam, 42°46'S 145°59'E, 330 m, on submerged rocks in a stream bed at the edge of rainforest, 11 February 2018, G. Kantvilas 6/18 (holo—HO!; iso—BM!, CANB!, MSC!).

“*Dibaeis cretacea*” *nom. nud.*, in C. Gierl & K. Kalb, *Herzogia* 9: 631 (1993).

Thallus chalky white, often with a glaucous tinge when fresh or wet, mostly 0.25–1 mm thick, rimose, smooth and effuse to unevenly lumpy, wrinkled and puckered, esorediate. Apothecia 1–5(–8) mm wide,

sessile and strongly basally constricted, or on a short stalk to c. 0.5 mm tall; disc when wet typically bright pink or orange-pink, drying to white or pinkish white, plane to  $\pm$  globose when moist, drying to become wrinkled, dimpled, concave or rather convoluted, sometimes regenerating in clusters on eroded, senescent apothecia; proper exciple inapparent and obscured when wet, in dry apothecia visible as a paler, rather poorly defined, smooth, wrinkled, crenulate or radially fissured rim c. 0.5 mm wide surrounding the disc. Ascospores subglobose to ellipsoid, frequently with slightly attenuated apices, (13.5–)14–18.1–25(–26)  $\times$  7–9.3–11(–12)  $\mu$ m.

Chemistry: baeomycesic acid (major) and squamatic acid (minor or trace); thallus K $\pm$  pale yellow, KC–, C–, P $\pm$  pale yellow, UV+ pale yellow.

Known only from Tasmania and found mostly in the south-west on metamorphosed Precambrian sediments and Ordovician conglomerate, especially at higher elevations. It colonises rocks in seepage channels, shallow streams or, less commonly, at the margins of small lakes. It can cover an entire water course – bedrock and larger cobbles – or be restricted to seepage cracks. It never extends above a level where it is not covered by running water for at least some time. This species can be referred to as a “landscape” lichen, in that it can be so extensive that it literally “colours” the landscape. In the south-west, *Dibaeis inundata* has been spotted from low-flying aircraft as conspicuous white stains on rocky escarpments where water seeps semi-permanently. The thick, chalky thallus and relatively large ascospores easily distinguish it from the somewhat similar *D. absoluta*.

Crossing River, Port Davey Track, 180 m, 1984, G. Kantvilas 498/84 (BM, HO); Cradle Mtn, track to Lake Rodway, 41°41'S 145°58'E, 1000 m, 1995, G. Kantvilas 91/95 (HO); Crest Range, 43°17'31"S 146°30'26"E, 960 m, 2016, G. Kantvilas 213/16 (HO).

## REFERENCES

- 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.
- Johnston J (2001) Icmadophilaceae. *Flora of Australia* **58A** 17–23.
- Kantvilas G (2018) A new species of *Dibaeis* from Australia (Tasmania), with notes on the family Icmadophilaceae. *Herzogia* **31** 562–570.

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