



## BAEOMYCES <sup>1</sup>

Gintaras Kantvilas <sup>2</sup>

*Baeomyces* Pers., *Ann. Bot.* 1: 19 (1794).

Type: *B. rufus* (Huds.) Rebert.

Thallus crustose to squamulose, with a poorly differentiated cortex of horizontally orientated hyphae. Photobiont a unicellular green alga with globose cells 7–13 µm diam. Ascomata apothecia, biatorine, subsessile to distinctly stalked. Proper exciple thick and prominent, concolorous with or paler than the disc, sometimes becoming excluded, in section cupulate, hyaline, composed of short-celled, densely packed hyphae. Hymenium ± hyaline, non-amyloid. Asci narrowly cylindrical, 8-spored, of the *Baeomyces*-type: non-amyloid, with a thin but distinct tholus, an apically rounded or truncate ascoplasm and lacking an ocular chamber. Paraphyses simple to sparsely branched; apices not swollen. Ascospores simple, hyaline, narrowly ellipsoid, non-halonate, thin-walled. Conidiomata pycnidia, immersed. Conidia bacilliform. Chemistry: usually depsidones.

A cosmopolitan genus of about eight species, found mostly on soil, stones, peat or litter in disturbed sites. Until relatively recently, the genus included several additional species now classified in the genus *Dibaeis* (Icmadophilaceae). Although superficially similar with respect to the gross morphology of the thallus and apothecia, and anatomical details such as the paraphyses and ascospores, these two genera have different asci. In the Icmadophilaceae, the ascus has a weakly amyloid cap and the apex of the ascoplasm is rounded or forms a short, beak-like ocular chamber.

Key references: Galloway (1980); Johnston (2001); Platt & Spatafora (1999); Rambold *et al.* (1993).

- 1 Thallus containing norstictic acid, typically forming a contiguous, verruculose crust lacking soredia and isidia; schizidia very rare  
Thallus containing stictic acid, squamulose, with schizidia and/or coarse, granular soredia

1 *B. heteromorphus*  
2 *B. rufus*

### 1 *Baeomyces heteromorphus* Nyl. ex C. Bab. & Mitten

In J.D. Hooker, *Fl. Tasmaniae* 2: 351 (1859); *Tubercularia heteromorpha* (Nyl. ex C. Bab. & Mitten) Kuntze, *Revis. Gen. Pl.* 2: 877 (1891). Type: Tasmania, supra terram argillaceum, R.C. Gunn s.n. (lecto, *vide* Galloway 1980—BM!; isolecto—H-NYL!).

Thallus crustose, smooth to verruculose to areolate-subsquamulose, pale greyish white to greenish grey, often pale pinkish grey in storage, to c. 700 µm thick, undelimited, lacking a prothallus, forming wide-spreading patches to 50 cm or more wide; soredia and isidia absent; schizidia rare, seen only in damaged thalli. Apothecia 0.1–2.5(–3) mm wide, roundish, subsessile or, more commonly, distinctly stalked, occurring singly or in corymbose or racemose clusters; stipe to 7 mm tall, simple or branched, smooth or longitudinally furrowed, variously lichenised, usually with at least some gnarled thalline tissue at the base; disc pale greyish pink to reddish brown, persistently concave to plane, or becoming undulate to convex; proper

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

exciple paler than the disc, whitish, pale grey or pale pink-grey, entire, becoming reflexed and inapparent in older apothecia, in section 60–120 µm thick. Hypothecium hyaline to pale yellowish, 50–80 µm thick, subtended by an often massive subhypothecial layer of loosely interwoven hyphae. Hymenium 90–110 µm thick, hyaline, overlain by a yellow-brown epithecium that dissolves in K; asci 70–95 × 5–8 µm; paraphyses 1.5–2 µm thick. Ascospores (7–)8.5–10.7–13(–15) × 3–4–5 µm. Pycnidia not found.

Chemistry: norstictic and connorstictic acids, sometimes associated with traces of other compounds; thallus K+ yellow→red, KC–, C–, P+ orange, UV–.

Widespread and very common on soil, peat, stones and wood, especially in higher rainfall areas or in locally moist microhabitats, ranging from lowland to alpine elevations. This species is one of the first colonisers and consolidators of freshly exposed earth such as in road cuttings, along tracks and on the root mounds of overturned stumps. It is likewise common in mainland Australia, New Zealand and on Macquarie Island. *Baeomyces heteromorphus* is easily recognised by the rather thick, crustose, greenish grey thallus containing norstictic acid (detectable in squash preparations by the development of red, needle-like crystals with the addition of K), and by the stalked apothecia. The common, somewhat similar *Dibaeis arcuata*, with which this species frequently grows, is easily distinguished by its paler, greyish white, sorediate thallus that contains baeomycesic and squamatic acids, and the bright pink, club-shaped, immarginate apothecia supported on a smooth, unfurrowed stipe. *Baeomyces heteromorphus* is frequently infected by parasites such as *Arthrgraphis grisea* Th. Fr. and *Dactylospora athallina* (Müll. Arg.) Hafellner, both recognised by their tiny, blackish, lecideine apothecia.

Sandfly, 42°59'S 147°11'E, 1911, L. Rodway (HO); Mother Cummings Peak, 41°40'S 146°33'E, 855 m, 1986, A. Moscal 12373 (HO); Western Explorer Road, 41°28'S 145°05'E, 220 m, 2003, G. Kantvilas 560/03 (HO).

## 2 *Baeomyces rufus* (Huds.) Rebert.

*Prodr. Fl. Neomarch.*: 315 (1804); —*Lichen rufus* Huds., *Flora Anglica*: 443 (1762).

Thallus composed of scattered to contiguous, decumbent or ascending squamules 0.2–0.4 mm wide, pale green to green-grey; prothallus whitish, visible at the thallus margins and between the squamules; schizidia and/or coarse, granular soredia usually abundant. Apothecia not seen in Tasmanian material; only incipient apothecial initials present.

Chemistry: stictic, constictic, peristictic and 3-O-methylconsalazinic acids, with traces of norstictic and cryptostictic acids; thallus K+ yellow, KC–, C–, P+ orange, UV–.

Widespread in the temperate and boreal zones of the Northern Hemisphere but rather uncommon (or overlooked) in Tasmania where it has been collected from peaty soil at high elevations. It is distinguished from *B. heteromorphus* with certainty only by thallus chemistry, although the schizidiate-sorediate, rather squamulose thallus is distinctive. Nearly all Tasmanian specimens are infected with the lichenicolous lichen, *Epilichen scabrosus* (Ach.) Clem., visible as small patches of vividly yellow thallus with black, lecideine apothecia.

Meredith Range. c. 3.5 km SE of Mt Meredith, 41°35'S 145°17'E, 750 m, 2011, G. Kantvilas 76/11 (HO); Anderson Bluff, South Picton Range, 43°13'S 146°35'E, 1060 m, 1999, G. Kantvilas 23/99A (HO); Mt Wedge, 42°51'S 146°18'E, 1140 m, 2022, G. Kantvilas 128/22A (HO).

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