TEPHROMELA

John A. Elix

[From *Flora of Australia* volume 57 (2009)]

Tephromela M.Choisy, *Bull. Soc. Bot. France* 76: 522 (1929); from the Greek *tephra* (ash) and *mela* (jet-black), in reference to the colours of the thallus and the apothecial disc, respectively.

Type: *T. atra* (Huds.) Hafellner

Thallus crustose (lacking in lichenicolous species), warted or cracked and areolate, white, pale grey or yellow-green, corticate; hypothallus present or absent, when present occasionally visible between the areolae and forming a dark border to the thallus. Soredia and isidia present or absent; lobules absent. Photobiont a unicellular green alga; cells 6–12 µm diam., forming a continuous layer 25–120 µm thick. Medulla white, sometimes chalky, frequently containing lichen substances. Lower cortex absent. Ascomata apothecia, lecanorine, aspicilioid, biatorine or sublecideine, usually sessile, rarely stipitate, simple, constricted at the base, laminal or developing on margins between the areolae; disc black, ±round, weakly concave to strongly convex; thalline exciple present or reduced; proper exciple thin, ±inconspicuous. Epihymenium usually with violet, brown or greenish pigments, N+ red. Hymenium colourless below, violet to green above, amyloid. Hypothecium pale yellow to dark brown. Paraphyses simple or sparingly branched, 3–5 µm wide, thick-walled, with a gelatinous coating, swelling strongly in water; apices swollen or not, often green to violet-black. Asci clavate, 8-spored, *Bacidia*-type, with a large well-developed amyloid tholus containing an ocular chamber tipped by a pointed axial mass. Ascospores simple, rarely 1-septate, colourless, ellipsoidal, ovoid or subglobose, ±thick-walled, but without a distinct perispore, 7–14 × 5–9 µm. Conidiomata pycnidial, immersed; wall colourless except for green pigmentation around the ostiole; conidia formed pleurogenously; conidiophores of type VI (*sensu* Vobis, 1980). Conidia colourless, cylindrical to filiform, ±straight, 6–24 × 0.8–2.0 µm.

Tephromela is a cosmopolitan genus of c. 40 species, 14 of which are known in Australia. These lichens are found in temperate to tropical regions where they grow on bark, wood, rock or on other lichens.

The familial position of *Tephromela* has yet to be resolved. Preliminary molecular data (Miadłikowska *et al.*, 2006) confirm a sister relationship with *Mycoblastus* Norman (Mycoblastaceae), but the genera differ markedly in their ascospores and secondary chemistry. Molecular data on additional taxa are required to establish whether the two genera should be referred to separate families.

G.Vobis, Bau und Entwicklung der Flechten-Pycnidien und ihrer Conidien, *Biblioth. Lichenol.* 14: 1–141 (1980); H.Hertel & G.Rambold, *Lecidea* sect. *Armeniacae*: lecideoide Arten der Flechtengattungen *Lecanora* und *Tephromela* (Lecanorales), *Bot. Jahrb. Syst.* 107: 469–501 (1985); H.Hertel, Bemerkenswerte Funde südhemispharischer, saxicoler Arten der Sammelgattung *Lecidea*, *Mitt. Bot. Staatssamml. München* 23: 321–340 (1987); H.Hertel, New records of lecideoid lichens from the Southern Hemisphere, *Mitt. Bot. Staatssamml. München* 28: 211–238 (1989); G.Rambold, A monograph of the saxicolous lecideoid lichens of Australia (excl. Tasmania), *Biblioth. Lichenol.* 34: 1–345 (1989); T.H.Nash III, K.Kalb & G.Rambold, *Tephromela*, *Lichen Fl. Greater Sonoran Desert Region* 2: 530–532 (2004); K.Kalb, New or otherwise interesting lichens II, *Biblioth. Lichenol.* 88: 301–329 (2004); J.A.Elix & K.Kalb, Two new species of *Tephromela* (Lecanoraceae, lichenized Ascomycota) from Australia, *Australas. Lichenol.* 58: 27–31 (2006); J.Miadłikowska, F.Kauff, V.Hofstetter, E.Franker, M.Grube, J.Hafellner, V.Reeb, B.P.Hodkinson, M.Kukwa, R.Lücking, G.Hestmark, M.G.Otalora, A.Rauhut, B.Büdel, C.Scheidegger, E.Timdal, S.Stenroos, I.Brodo, G.B.Perlmutter, D.Ertz, P.Diederich, J.C.Lendemer, P.May, C.L.Schoch, A.E.Arnold,

C.Gueidan, E.Tripp, R.Yahr, C.Robertson & F.Lutzoni, New insights into classification and evolution of the Lecanoromycetes (Pezizomycotina, Ascomycota) from phylogenetic analyses of three ribosomal RNA- and two protein coding genes, *Mycologia* 98: 1088–1103 (2006); K.Kalb, New or otherwise interesting lichens III, *Biblioth. Lichenol.* 95: 297–316 (2007); K.Kalb, New or otherwise interesting lichens IV, *Sauteria* 15: 239–247 (2008); J.A.Elix & K.Kalb, Additional new lichen taxa (lichenized Ascomycota) from Australia, *Australas. Lichenol.* 63: 30–36 (2008).

1 Thallus lichenicolous on *Dirinaria* spp. ..... **7. T. cerasina**
1: Thallus not lichenicolous 2

2 Thallus sorediate or isidiate *(1:)* 3
2: Thallus lacking soredia and isidia 4

3 Thallus sorediate *(2)* ..... **12. T. sorediata**
3: Thallus isidiate ..... **9. T. isidiosa**

4 Medulla UV–, KC–; only atranorin present *(2:)* 5
4: Medulla UV+ blue-white, KC– or KC+ pink or red; additional substances present 6

5 Thallus saxicolous; ascospores ovoid to subglobose, 6.5–12.0 × 6–9 µm *(4)* ..... **10. T. korundensis**
5: Thallus corticolous; ascospores ellipsoidal, 9–11 × 6.0–6.5 µm. ..... **5. T. brisbanensis**

6 Medulla KC–; pannaric acid and pannaric acid 6-methyl ester present *(4:)* ..... **8. T. connivens**
6: Medulla KC+ pink or red; pannaric acid and pannaric acid 6-methyl ester absent. 7

7 Thallus with perlatolic and glomelliferic acids (major), saxicolous *(6:)* ..... **2. T. arafurensis**
7: Thallus with stenosporonic, colensoic, alectoronic, physodic or α-collatolic acids (major), corticolous, lignicolous or saxicolous. 8

8 Thallus with physodic, colensoic or norcolensoic acids (major) *(7:)* 9
8: Thallus with stenosporonic, alectoronic or α-collatolic acids (major) 11

9 Thallus with colensoic and norcolensoic acids (major), corticolous *(8)* ..... ……**6. T. bunyana**
9: Thallus with physodic acid (major), corticolous, lignicolous or saxicolous ..... ……10

10 Thallus corticolous or lignicolous; ascospores 8–12 × 6.0–8.5 µm *(9:)* ..... **11. T. physodica**
10: Thallus saxicolous; ascospores 7.5–8.0 × 5.0–6.5 µm ..... **14. T. territoriensis**

11 Thallus with stenosporonic acid (major), saxicolous; thalline exciple thick *(8:)* ..... **13. T. stenosporonica**
11: Thallus with alectoronic or α-collatolic acids (major), corticolous, lignicolous or saxicolous; thalline exciple thin ..... ……12

12 Thallus with alectoronic acid (major) and α-collatolic acid (trace or absent) *(11:)* .... **1. T. alectoronica**
12: Thallus with α-collatolic acid (major) and alecotoronic acid (minor or absent) ..... ……13

13 Hymenium not inspersed; thallus ±smooth *(12:)* ..... **3. T. atra**
13: Hymenium inspersed; thallus bullate..... …… **4. T. austrolitoralis**