

Observations on some Tasmanian species of the lichen genus *Megalaria* (Lecanorales: Megalariaceae)

G. Kantvilas

Tasmanian Herbarium, Private Bag 4, Hobart, Tasmania, 7001, Australia; e-mail: g.kantvilas@tmag.tas.gov.au

Abstract

Three species of *Megalaria* Hafellner (Lecanorales: Megalariaceae) are described and discussed, with special emphasis on apothecial pigments and ascospore size: *Megalaria laureri* (Th.Fr.) Hafellner, *M. melaloma* (C.Knight) Kantvilas *comb. nov.* and *M. subtasmanica* Kantvilas *sp. nov.* The names *Catillaria tasmanica* Räsänen, *Patellaea scutata* Rodway and *Patellaria biclipea* Shirley are considered synonyms of *Megalaria melaloma*.

Muelleria 26(2): 64-71 (2008)

Introduction

The genus *Megalaria* (Lecanorales: Megalariaceae) was introduced by Hafellner (1984) to accommodate the distinctive crustose lichen, *M. grossa* (Pers. ex Nyl.) Hafellner. This widespread species had previously been included within *Catillaria* A.Massal. and *Catinaria* Vain., but study of the ascus structure of these genera revealed that *M. grossa* was clearly different, having an ascus with an amyloid tholus penetrated almost completely by a conical to barrel-shaped, non-amyloid axial body (masse axiale). In contrast, *Catillaria* and *Catinaria* have asci with a uniformly amyloid tholus, although additional anatomical differences further separate these superficially similar genera.

The introduction of a new genus led to the reappraisal of other species included within obviously heterogenous groups such as *Catillaria* as generally applied in the sense of A. Zahlbruckner; that is, essentially crustose lichens with lecideine apothecia and one-septate, hyaline ascospores. Thus, other species were soon added to *Megalaria* by Schreiner and Hafellner (1992), Hafellner in Nimis (1993), Ekman and Tønsberg (1996), Fryday (2004a, 2004b), Galloway (2004), Kalb (2007) and Lendemmer (2007). Ekman and Tønsberg (1996) discussed the delimitation of the genus, which they characterised by the crustose thallus, lecideine apothecia with a proper excipulum of radiating hyphae lacking enlarged cells at the outer edge, the presence of greenish, K+ green, N+ reddish pigments in the epithecium, simple or sparingly branched paraphyses, one-septate, ellipsoid, hyaline, non-halonate, single-walled ascospores, and an ascus with an amyloid tholus pierced by a conical to barrel-shaped axial body surrounded by a narrow, usually more intensely amyloid adjacent zone. The photobiont of *Megalaria* is thought to be the chlorococcoid algal genus *Dictyochloropsis* Geitler (Tschermak-Woess 1984). A good general account of the genus is also offered by Galloway (2007).

A related genus, *Tasmidella* Kantvilas, Hafellner & Elix, was described by Kantvilas *et al.* (1999). It differs from *Megalaria* primarily by having simple, double-walled ascospores and bacilliform to filiform (rather than ellipsoid to ampulliform) conidia. These authors (*op. cit.*) also discuss the systematic position of *Megalaria* and *Tasmidella*, maintaining

both in the family Megalariaceae. More recently, Kalb (2007) segregated the genus *Catillochroma* Kalb from *Megalaria*, on the basis of its having a layered excipulum with a prosoplectenchymatous outer layer and an inner layer of interwoven hyphae interspersed with crystals. Two species of this genus are represented in the Tasmanian flora and were previously included within *Megalaria*: *C. melanotropa* (Nyl.) Kalb and *C. pulvereae* (Borrer) Kalb.

Megalaria is a genus of cool, moist, oceanic climates (Ekman & Tønsberg 1996). It appears to be well represented in cool temperate areas of the Southern Hemisphere, where it occurs chiefly as a wet forest epiphyte, but also on rocks, soil, wood and bark in other vegetation types. Two taxa from Campbell Island were described recently by Fryday (2004a), whereas Galloway (2007) deals with 11 taxa from New Zealand (some of which are now placed in *Catillochroma*). Collections of *Megalaria* are well represented in Australian herbaria, usually under a variety of 'dust-bin' names such as *Catillaria*, and a glance at the early Australian lichen literature indicates that several species of the genus have been described in the past (under *Lecidea*, *Patellaria*, *Catillaria* and other genera). To unscramble this plethora of names and collections will require a long and demanding study. The aim of the present paper is more limited in focus, being to ascribe names to three of the more common and widespread species that are frequently cited in the course of Tasmanian floristic, ecological or conservation studies, and to account for some of the older names in the literature that have fallen into disuse.

Material and Methods

The study is based on specimens collected by the author and housed in the Tasmanian Herbarium (HO), with some duplicates distributed to BM, CANB, GZU and herb. Vězda. Anatomical investigations were conducted on hand-cut sections of thalli and apothecia mounted in water, 10% KOH (K), Lugol's iodine, concentrated HNO₃ (N) and concentrated HCl (H). Measurements of ascospores are based on 100–200 observations each and are presented in the format: lowest value–mean–highest value. Chemical constituents were examined by thin-layer chromatography using standard methods (Orange *et al.* 2001). Terminology for apothecial pigments and the

procedures for their identification and characterisation follows Meyer and Printzen (2000). Nomenclature of ascus types follows generally acceptable accounts (e.g. Hafellner 1984, Purvis *et al.* 1992).

Taxonomy

1. *Megalaria laureri* (Th.Fr.) Hafellner, in P.L. Nimis, *The Lichens of Italy*: 429 (1993).

Thallus crustose, effuse to patchy, smooth to rather unevenly warty, or composed of tiny, scattered granules to c. 0.2 mm wide, whitish grey, lacking isidia or soredia, ecorticate, mostly delimited by a black prothallus; photobiont a unicellular green alga with cells globose, 6–14 µm diam.

Apothecia to 0.9 mm diam., scattered or in irregular clusters of 2–3, superficial, highly basally constricted to sometimes almost subpedicellate; disc plane at first, later convex, matt, black or rarely brown-black, epruinose; margin concolorous with the disc, persistent but sometimes obscured in oldest, most convex apothecia. *Excipulum* in section 60–80 µm thick, composed of radiating, branched and anastomosing, conglutinated hyphae 1.5–2 µm thick, at the outer edge with a thin, ±discontinuous band of grey-green to blackish green pigment, K±intensifying greenish, N+ crimson, within with a dilute to very concentrated purple-pink pigment, ±intensifying in K, N+ pale orange, extending beneath and subtending the hymenium and hypothecium. *Hypothecium* 40–100 µm thick, not interspersed with oil droplets, purple-brown to purple-pink, K+ intensifying pink, N+ pale orange above, dilute greenish grey, K±intensifying green, N+ crimson below. *Hymenium* 70–90 µm thick, not interspersed, mostly hyaline but overlain with a continuous or patchy layer to c. 20 µm thick of blackish green and purple-pink pigments (as in the excipulum). *Asci* 8-spored, clavate, 60–85 × 14–22 µm, with a well developed amyloid tholus penetrated almost entirely by a conical masse axiale bordered by a narrow, more intensely amyloid zone (i.e. approximating the *Biatora*-type); ocular chamber usually not developed. *Paraphyses* lax in K, simple or occasionally branched and anastomosing, 1–2 µm wide; apices capitate, 4–5 µm wide, persistently conglutinated with epihymenial pigments (as above). *Ascospores* ellipsoid to ovate, 1–

septate, (15–)16–19.6–24(–26) × 7–8.6–10 μm. *Pycnidia* not observed. Figs. 1A, 2A.

Chemistry: no substances detected by t.l.c.

Remarks: *Megalaria laureri* was first recorded for Tasmania by Wetmore (1963) on the basis of a dubious statement by Almborn (1948), and has been maintained in various checklists since (e.g. Kantvilas 1994, McCarthy 2008). However, no Tasmanian specimens of the species have been available for study until now, and it is likely that the concept of the species employed by Almborn (1948) is different to that in use today. The record from Queensland (McCarthy 2008) cannot be confirmed.

This species is recognised by the distinctive pigments in its excipulum, hypothecium and epihymenium. The dominant, purple-pink pigment approximates 'atra-red' of Meyer and Printzen (2000); this intensifies pinkish in K, is ± unchanged in H and reacts N+ orange. Also present in the epihymenium and the hypothecium is 'cinereorufa-green': K±green intensifying, H±blue-green, N+ crimson. In very occasional sections, a thin band of 'hypnorum-blue' may also be present in the upper part of the hypothecium: K+ turquoise, H±violet-blue, unchanged in N. The pigments may occur in discrete patches or overlay each other, so their detection is not always straightforward. Although

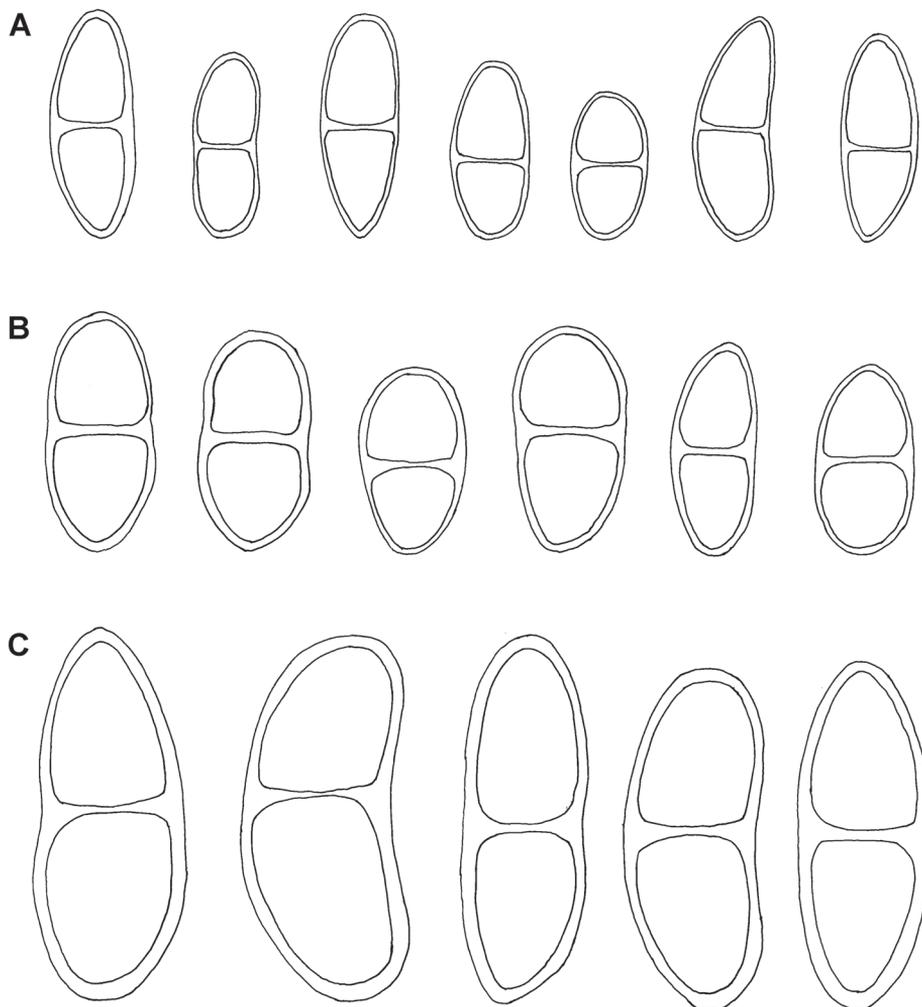


Figure 1. Comparison of ascospores of *Megalaria* species. A: *M. laureri* (Kantvilas 91/87); B: *M. melaloma* (Kantvilas 214/99); C: *M. subtasmanica* (Kantvilas 57/87). Scale = 10 μm.

all these pigments may also occur in other species of *Megalaria* to some degree, the predominance of the 'atra-red' pigment is highly characteristic.

Additional descriptive data for this species are given by Coppins (1992) (for Great Britain, under *Catillaria*) and by Brodo *et al.* (2001) (for North America). Whereas Tasmanian specimens have the same pigments and general habit, their ascospores are relatively longer and broader [cf. 12–18 × 5–7 μm (Coppins 1992); 13–18(–24) × 5–7(–8) μm (Brodo *et al.* 2001)]. Thus the identification of the Tasmanian specimens is provisional at this stage.

Distribution and ecology: *Megalaria laureri* is widespread albeit often localised in temperate areas of the Northern Hemisphere. It appears to be uncommon in Tasmania where it is known from only two collections: one from the trunk of *Banksia* in wet eucalypt forest and the other from a young trunk of *Nothofagus cunninghamii* (Hook.) Oerst. in cool temperate rainforest.

Specimens examined: TASMANIA. Yarrington Tier, 42°32'S 147°18'E, 620 m alt., 8.xi.1987, G. Kantvilas 91/87 (GZU, HO); Montana Falls, 41°34'S 146°36'E, 290 m alt., 26.xi.1988, J.A. Curnow 2063 (CANB, HO, M). **UNITED STATES OF AMERICA: MICHIGAN.** Alger County, W of Kingston Lake, 16.ix.1970, R.C. Harris 6055 (HO, MSC).

2. *Megalaria melaloma* (Knight) Kantvilas *comb. nov.*

Lecidea melaloma Knight, *Trans. Linn. Soc. London*, ser. 2, 2: 45 (1882); *Catillaria melaloma* (Knight) Zahlbr., *Cat. Lich. Univ.* 4: 21 (1926).

Type: New South Wales [in the neighbourhood of

Sydney], C. Knight [vol. 204, p. 24, no. 24] (WELT-holotype!).

= *Catillaria tasmanica* Räsänen, *Ann. Bot. Soc. Zool.-Bot. Fenn.* "Vanamo" 21: 3 (1944). Type: Australia, Tasmania, prope cataractam Newton [New Town Falls], ad corticem arborum, 1887, R.A. Bastow (G-holotype!).

= *Patellaea scutata* Rodway, *Pap. Proc. R. Soc. Tasm.* (1924): 93 (1925). Type: Tasmania, Cascades, on bark of *Bedfordia salicina*, 27 June 1896, L. Rodway (HO-holotype!).

= ? *Patellaria biclipea* Shirley, *Pap. Proc. R. Soc. Tasm.* (1893): 217 (1894); *Megalospora biclipea* (Shirley) Zahlbr., *Cat. Lich. Univ.* 4: 86 (1926). Type: [Tasmania] St Crispin's, W.A. *Weymouth 155a* (Type specimen not located).

Thallus crustose, 50–100(–150) μm thick, generally smooth, effuse and continuous, sometimes cracked, abraded, rather gnarled and scurfy, whitish cream, glaucous grey to pale brownish, not delimited, lacking isidia or soredia, ecorticate; photobiont a unicellular green alga with cells globose, 7–10(–16) μm diam.

Apothecia 0.8–1(–1.5) mm diam., scattered, superficial, basally constricted; disc plane at first, later convex, matt, typically jet-black but sometimes pale greyish, brown or piebald, epruinose; margin persistent except in oldest, most convex apothecia, often rather glossy, typically concolorous with the disc, or darker when the disc is pale, rarely a little brownish at the sides. *Excipulum* in section 40–80 μm thick, composed of radiating, branched and anastomosing, conglutinated hyphae to c. 2 μm thick, with a grey-green, olive-green to bluish green, K±intensifying greenish, N+ crimson pigment at the edge, sometimes extending within in

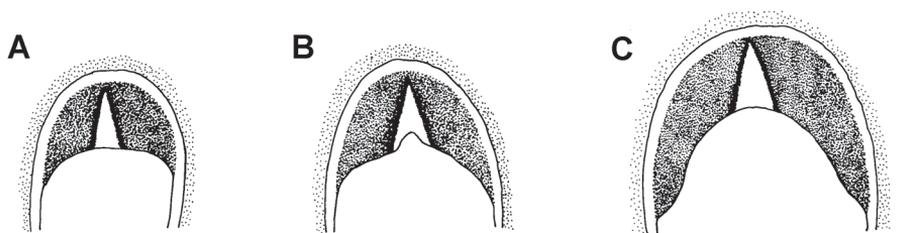


Figure 2. Comparison of the ascus apex of *Megalaria* species, observed in dilute Lugols' iodine after pre-treatment with 10% KOH (amyloid tissues stippled). A: *M. laureri* (Kantvilas 91/87); B: *M. melaloma* (Kantvilas 207/80); C: *M. subtasmanica* (Kantvilas 264/93). Scale = 10 μm.

streaks; dilute patches of a purple-brown to pinkish pigment, \pm unchanged or intensifying in K, N+ pale orange sometimes also present. *Hypothecium* 80–200 μm thick, interspersed with oil droplets, hyaline to pale straw-coloured and typically K \pm pale yellowish in the lower part, in the upper part with a band c. 30–50 μm thick, diffusely pigmented greyish green to olive-brown (as in the excipulum). *Hymenium* 80–120 μm thick, not interspersed, mostly hyaline but overlain with a continuous or patchy layer 5–20 μm thick of blackish green, greenish blue to olive-green pigment (as in the excipulum), K \pm unchanged or intensifying greenish, N+ crimson. *Asci* 8-spored, clavate, 65–105 \times 20–30 μm , with a well-developed amyloid tholus penetrated \pm entirely by a conical masse axiale and bordered by a narrow, more intensely amyloid zone (i.e. \pm of the *Biatora*-type); ocular chamber blunt, not prominent. *Paraphyses* lax in K, simple or occasionally branched and anastomosing, 1.5–2 μm wide, with apices unpigmented, generally not capitate or sometimes swollen to 4 μm . *Ascospores* ellipsoid to ovate, 1-septate, (15–)16–22.5–28(–31) \times (7–)8–10.1–12(–14) μm . *Pycnidia* not observed. Figs. 1B, 2B.

Chemistry: atranorin detected occasionally by t.l.c.

Notes on type specimens: Knight's type of *Lecidea melaloma* is an excellent and typical example of this taxon. The type specimen of *Catillaria tasmanica* studied consists of fourteen fragments of bark bearing a mixture of several lichen species, including two species of *Megalaria*. These differ clearly by their ascospore size, but are superficially indistinguishable, both having jet-black, glossy apothecia with a persistent margin, and a thin to moderately thick, whitish thallus; they also have identical apothecial pigmentation. One of the taxa is identical to *M. melaloma* whereas the other is the species described below as *M. s ubtasmanica* Kantvilas. Unfortunately it seems inappropriate to retain the epithet 'tasmanica' for the latter, even though it is the better represented of the two lichens in this specimen: the original description of *C. tasmanica* (Räsänen 1944) explicitly gives the spore measurements as 26–30 \times 12–14 μm , indicating that the author was intending to describe what is now recognised as *M. melaloma*.

Rodway's *Patellaea scutata* was described as a non-lichenised fungus (Rodway 1925). The type specimen is a particularly abundant and well-developed collection of *M. melaloma*.

Shirley's type specimen of *Patellaria biclipea*, collected by the prolific Tasmanian cryptogam collector, W.A. Weymouth, has not been located, despite extensive searches of likely herbaria (Kantvilas 1988). However, the description (Shirley 1894) matches *M. melaloma* perfectly, and that taxon occurs in great abundance at the same locality today.

Remarks: *Megalaria melaloma* is characterised by the generally smooth, crustose thallus, the epruinose, usually jet-black apothecia with concolorous disc and margin, the essentially hyaline or at most dilutely pigmented excipulum and hypothecium, the predominance of greenish pigments in the epithecium and excipulum, the eight-spored asci and the relatively small ascospores. The last two characters separate *M. melaloma* from *M. subtasmanica* (see below), which has distinctly larger ascospores (mostly 30–44 \times 12–20 μm) that occur 2–6 per ascus. The lack of opaque, essentially blackish green pigments in the hypothecium and excipulum distinguish it from several other species, including the common and cosmopolitan *M. grossa*, which is widespread in Tasmania and mainland Australia.

Megalaria species in general are well characterised by their thallus morphology, apothecial pigmentation and ascospore size, characters that are usually cited in even the briefest of published descriptions. No other known taxa appear to combine the same characters as does *M. melaloma*, although the existence of some older, as yet overlooked published name for such a common and conspicuous species cannot be discounted. Thus, further synonyms may well come to light as investigations of the early collections of Australasian lichens continue.

The greenish pigmentation found in the epithecium and excipulum approximates 'cinereorufa-green' of Meyer and Printzen (2000); it reacts N+ crimson-red, H+ blue-green and intensifies greenish in K. Although the appearance of the pigment in section varies from an almost blackish green to a quite dilute pale greenish or with hints of olive or brown, these variations appear to be due to concentration alone. Sometimes the pigment may appear to have quite strong turquoise-bluish tones, but nevertheless reacts the same in K, H and N. In some specimens, additional dilute tinges of a pinkish or purple-brown pigment may also be present,

but in this taxon, it does not appear to be of taxonomic significance. This pigment approximates 'atra-red' (Meyer & Printzen 2000) and reacts N+ orange, but is \pm unchanged in K and H.

The thallus chemistry of the species is ambiguous. Some specimens, especially those with a thicker, paler thallus, contain trace amounts of atranorin, but this compound has a sporadic occurrence in many crustose lichens and especially those growing in exposed, well-lit conditions. Thallus chemistry does not appear to be a useful character in *Megalaria* taxonomy in general (Ekman & Tønsberg 1996), with the exception of those taxa recently transferred to the genus *Catillochroma* by Kalb (2007).

Ekman and Tønsberg (1996) discuss the variation in ascus structure between *M. grossa* (the type species of the genus) and other taxa included in *Megalaria* or, currently, the related genus *Catillochroma*. In *M. melaloma* and the other species treated in the present paper (*M. laureri* and *M. subtasmanica*), the ascus approximates the *Biatora*-type. There is a well-developed, amyloid tholus almost completely penetrated by a conical masse axiale with an acute apex. Using very dilute Lugol's solution after pretreatment with K, a narrow, more intensely amyloid zone is evident adjacent to the masse axiale, although the internal differentiation of the tholus can be difficult to discern. The ocular chamber is relatively short and blunt to \pm absent (see Figs 2A–C).

Distribution and ecology: *Megalaria melaloma* is a common and widespread epiphyte in a wide range of wet forest types, including *Nothofagus*-dominated cool temperate rainforests and *Eucalyptus*-dominated sclerophyll forests. Although apparently preferring hosts with smooth bark (for example *Acacia*, *Atherosperma*, *Pittosporum*, *Pomaderris*), it may also occur on more fibrous substrata such as on *Bedfordia* or species of Myrtaceae. Rarely it has been found on rocks or charcoal. It is typically a component of a rich association of crustose and small foliose lichens, including *Thelotrema lepadinum* (Ach.) Ach., and species of *Parmelia*, *Pertusaria* and *Mycoblastus*. Also commonly present in such lichen communities are several species with a superficially similar appearance to *M. melaloma* (i.e. with a whitish crustose thallus and black, lecideine apothecia), including *Megalaria subtasmanica* Kantvilas, *Bacidia wellingtonii* (Stirt.) D.J.Galloway, *Sarrameana albidoplumbea* (Hook.f.

& Taylor) Farkas and *Hafellia* species; to distinguish these lichens unequivocally requires microscopic examination of apothecial sections and squashes.

Specimens studied are from Tasmania, Victoria, the A.C.T. and New South Wales, indicating a south-eastern Australian distribution.

Selected specimens examined (total = 35): **TASMANIA.** South Sister, near summit, 41°32'S 148°10'E, 800 m alt., 10.xi.2004, *G. Kantvilas* 369/04 (HO); St Crispins Well, 27.v.1987, *G. Kantvilas* 66/87 (HO); Waterworks Gully, 42°55'S 147°19'E, viii.1917, *L. Rodway* (HO); Bermuda Road, 43°04'S 146°57'E, 440 m alt., 25.x.1990, *G. Kantvilas* 584/90 & *J. Jarman* (HO, IMI); Western Creek Track, 41°41'S 146°28'E, 980 m alt., 20.xi.2005, *G. Kantvilas* 345/05 (HO); Little Fisher River, 41°45'S 146°20'E, 820 m alt., 23.iv.1982, *G. Kantvilas* 111/82 (BM, HO); Telopea Road near Ben Nevis, 870 m alt., 5.xi.1980, *G. Kantvilas* 544/80 (herb. Vězda, HO); track to Lady Barron Falls, 42°42'S 146°42'E, 250 m alt., 19.v.1973, *G.C. Bratt* 73/535 (HO). **NEW SOUTH WALES.** Braidwood district, SE of Rossi, 19.xii.1967, *W.A. Weber* & *D. McVean* L-49319 (COLO, HO); Mt William, Barrington Tops N.P., 32°04'30"S 151°28'00"E, 1400 m alt., 30.vi.1988, *G. Kantvilas* 286/88 (HO, NSW); Parkers Gap, 35°35'S 149°27'E, 11.v.1986, *G. Kantvilas* s.n. (HO). **AUSTRALIAN CAPITAL TERRITORY.** head of Blundells Creek, 35°19'S 148°51'E, 800 m alt., 17.iv.1994, *G. Kantvilas* 74/94 (HO). **VICTORIA.** Mt Donna Buang, 37°42'S 145°41'E, 1200 m alt., 23.xii.1993, *G. Kantvilas* 113/93, *P.M. McCarthy* & *S. Louwhoff* (HO). Errinundra Plateau, Goonmirk Rd, 37°16'29"S 148°53'06"E, 1125 m alt., 16.iv.2008, *G. Kantvilas* 146/08 & *J. Elix* (HO, MEL); Baw Baw NP, Mushroom Rocks, 37°53'S 146°21'E, 1200 m alt., 13.iv.2008, *G. Kantvilas* 142/08 (HO, MEL); Morewell NP, Fosters Gully, 38°21'S 146°23'E, 200–300m alt., 12.iv.2008, *G. Kantvilas* 157/08 (HO, MEL).

3. *Megalaria subtasmanica* Kantvilas sp. nov.

Thallo crustaceo, effuso, apotheciis nigris, typice ad marginem pigmento viridulo tinctis, excipulo hypothecioque interne praecipue hyalinis, a *Megalariae melalomae* similissima sed ascosporis maioribus, (24–)30–44(–46) μ m longis, 12–20(–21) μ m latis differens.

Type: AUSTRALIA: TASMANIA. Little Fisher River, 41°45'S 146°20'E, on *Atherosperma moschatum* in rainforest, 850 m alt., 15.v.1987, *G. Kantvilas* 57/87 (HO–holotype).

Thallus crustose, effuse to c. 100 μ m thick, continuous, smooth to shallowly cracked to rather scurfy, typically whitish cream, occasionally dull pale brownish, not delimited, lacking soredia or isidia, ecorticate; photobiont a unicellular green alga with cells globose, 6–10 μ m diam.

Apothecia to 1(–1.3) mm diam., scattered, superficial, basally constricted; disc plane to convex, matt, usually jet-black, occasionally dark brown, brown-grey or ±piebald, epruinose; margin typically concolorous with the disc, persistent, often somewhat glossy. *Excipulum* in section 60–120 µm thick, composed of radiating, anastomosing, highly gelatinised hyphae 1–1.5 µm thick, mostly hyaline within, but with patchy dilute pigments, especially towards the outer edge and adjacent to the hymenium; pigment mostly grey-green, olive-brown to blue-green, K±unchanged or intensifying greenish, N+ crimson, sometimes also with a purple-brown to pinkish pigment, ±unchanged in K, N+ pale orange. *Hypothecium* to 200 µm thick, occasionally interspersed with oil droplets, typically hyaline to dilute straw-coloured and K+ weakly yellowish, sometimes with a subhymenial upper band to c.80 µm thick, pigmented greenish or olive brownish (as in the excipulum). *Hymenium* 120–160 µm thick, not or only very rarely interspersed with scattered oil droplets, hyaline but overlain by a continuous to patchy epihymenial layer 10–15 µm thick of olive-green to blackish green pigment, K±intensifying greenish, N+ crimson (as in the excipulum). *Asci* elongate-clavate, at first 8-spored but typically with a few spores soon aborted and therefore generally (2–)4–6-spored, 110–140 × 26–42 µm (very few intact asci observed), with a well-developed amyloid tholus penetrated ±entirely by a conical masse axiale and bordered by a narrow, more intensely amyloid zone (i.e. ±of the *Biatora*-type); ocular chamber not developed. *Paraphyses* lax in K, simple to very sparsely branched, 1–2 µm thick; apices usually neither pigmented nor swollen, sometimes expanded to 3–4 µm and distinctly greenish. *Ascospores* ellipsoid to ovate, sometimes fabiform, (24–)30–35.1–44(–46) × 12–14.6–20(–21) µm. *Pycnidia* not observed.

Chemistry: atranorin detected occasionally by t.l.c.

Etymology: The specific epithet refers to the close similarity of the new species with *Catillaria tasmanica* (= *Megalaria melaloma*), the name that has been frequently misapplied to the species in Tasmanian literature.

Remarks: Given the abundance of this taxon in herbarium collections, and its conspicuous nature in the field, it is surprising that no existing name could be found in the literature. Even more remarkable is the fact that its sympatric look-alike, *M. melaloma*, has

been described previously no fewer than four times. These two taxa share a ±smooth thallus and identical apothecial pigmentation, dominated by ‘cinereorufagreen’ with traces of ‘atra-red’ (Meyer & Printzen 2000). A particularly notable character is the chiefly hyaline excipulum and hypothecium that, together with the pigment, separate these species from most other species of the genus. *Megalaria subtasmanica* and *M. melaloma* differ from each other by their ascospore size. In the former, the asci are correspondingly larger and the hymenium taller. The size character is consistent and has been confirmed in several hundred observations spanning scores of apothecial sections and specimens. In both species, the asci approximate the *Biatora*-type (see under *M. melaloma*) (Fig. 2).

Distribution and ecology: *Megalaria subtasmanica* is a common epiphyte of cool temperate rainforest and wet eucalypt forest. It colonises understorey trees and shrubs, including those with smooth bark (e.g. *Acacia*, *Pomaderris*), fibrous bark (members of the Asteraceae) and papery bark (Myrtaceae). Like *M. melaloma*, with which it frequently occurs in closely intermixed colonies (to the extent that most herbarium collections of these species are usually mixed), it is a member of a rich assemblage of foliose and crustose lichens.

The species is known at present from Tasmania, King Island and the south-west of Western Australia, but it can be expected to be more widespread.

Selected specimens examined (total = 24): **TASMANIA.** Nye Bay, 43°04'S 145°41'E. 20 m alt., 4.ii.1986, A. Moscal 12059 (HO); creek crossing Strickland Avenue, 42°56'S 147°16'E, 19.vi.1963, G.C. Bratt 278 & M.H. Bratt (HO); Millhouses Falls, Huon Road, 42°58'S 147°12'E, 420 m alt., 3.iii.1893, W.A. Weymouth 286c (HO); Savage River Pipeline Road by 14.5 km peg, 41°16'S 145°19'E, 8.xii.1993, G. Kantvilas 264/93 (HO); Yarlinton Tier, 42°32'S 147°18'E, 620 m alt., 30.xi.1988, G. Kantvilas 585/88 (HO); King Solomon Cave, 41°33'S 146°15'E, 400 m alt., 27.xi.1988, J.A. Curnow 2156 (CANB, HO); King Island, Yarra Creek Crossing, 40°00'S 144°05'E, 80 m alt., 6.iv.1999, A. Rozefelds s.n. (HO). **WESTERN AUSTRALIA.** Beedelup Falls, 34°25'S 115°52'E, 140 m alt., 11.x.1992, G. Kantvilas 335/92 & J. Jarman (HO, PERTH); 100-Year-Old Forest, c. 13 km SSW of Manjimup, 34°21'S 116°04'E, 12.x.1992, G. Kantvilas 370/92 & J. Jarman (HO, PERTH).

Acknowledgement

The loan of comparative and type material from WELT and G is gratefully acknowledged. Jean Jarman is thanked for preparing scans of the line drawings.

References

- Almborn, O. (1948). Distribution and ecology of some South Scandinavian lichens. *Botaniska Notiser Supplement* **1(2)**, 1–252.
- Brodo, I.M., Sharnoff, S.D. and Sharnoff, S. (2001). *Lichens of North America*. Yale University Press: New Haven & London.
- Coppins, B.J. (1992). 'Catillaria Massal (1852)', in O.W. Purvis, B.J. Coppins, D.L. Hawksworth, P.W. James, P.W. & D.M. Moore (eds), *The Lichen Flora of Great Britain and Ireland*, pp. 166–171. Natural History Museum Publications: London.
- Ekman, S. and Tønsberg, T. (1996). A new species of *Megalaria* from the North American West Coast, and notes on generic circumscription. *Bryologist* **99**, 34–40.
- Fryday, A.M. (2004a). New species and records of lichenized fungi from Campbell Island and Auckland Islands, New Zealand. *Bibliotheca Lichenologica* **88**, 127–146.
- Fryday, A.M. (2004b). A new species of *Fuscopannaria* with a green photobiont, and other taxonomic innovations and new records of lichenized fungi from Alaska. *Bryologist* **107**, 173–179.
- Galloway, D.J. (2004). New lichen taxa and names in the New Zealand mycobiota. *New Zealand Journal of Botany* **42**, 105–120.
- Galloway, D.J. (2007). *Flora of New Zealand Lichens*. (Revised 2nd edn.), Volume One. Manaaki Whenua Press: Lincoln.
- Hafellner, J. (1984). Studien in Richtung einer natürlicheren Gliederung der Sammelfamilien Lecanoraceae und Lecideaceae. *Beihefte zur Nova Hedwigia* **79**, 241–371.
- Kalb, K. (2007). New or otherwise interesting lichens. III. *Bibliotheca Lichenologica* **95**, 297–316.
- Kantvilas, G. (1988). A re-examination of John Shirley's collection of Tasmanian lichens. *Papers and Proceedings of the Royal Society of Tasmania* **122**, 59–67.
- Kantvilas, G. (1994). A revised checklist of the Tasmanian lichen flora. *Muelleria* **8**, 155–175.
- Kantvilas, G., Hafellner, J. and Elix, J.A. (1999). *Tasmidella*, a new lichen genus from Tasmania, with a revised circumscription of the family Megalariaceae. *Lichenologist* **31**, 213–225.
- Lendemer, J. C. (2007). *Megalaria beechingii* (lichenized Ascomycota), a new species from eastern North America. *Opuscula Philolichenum* **4**, 39–44.
- McCarthy, P.M. (2008). *Checklist of the Lichens of Australia and its Island Territories*. ABRIS: Canberra. Version 3 March 2008. <http://www.anbg.gov.au/abrs/lichenlist/introduction.html>
- Meyer, B. and Printzen, C. (2000). Proposal for a standardized nomenclature and characterization of insoluble lichen pigments. *Lichenologist* **32**, 571–583.
- Nimis, P.L. (1993). *The Lichens of Italy. An annotated catalogue*. Monografia XII. Museo Regionale di Scienze Naturali: Torino.
- Orange, A., James, P.W. and White, F.J. (2001). *Microchemical Methods for the Identification of Lichens*. British Lichen Society: London.
- Purvis, O.W., Coppins, B.J., Hawksworth, D.L., James, P.W. and Moore, D.M. (eds) (1992). *The Lichen Flora of Great Britain and Ireland*. Natural History Museum Publications: London.
- Räsänen, V. (1944). Lichenes novi II. *Annales Botanici Societatis Zoologicae Botanicae Fennicae Vanamo* **21**, 1–7.
- Rodway, L. (1925). Tasmanian discomycetes. *Papers and Proceedings of the Royal Society of Tasmania* (**1924**), 90–122.
- Schreiner, E. and Hafellner, J. (1992). Sorediöse, corticole Krustenflechten im Ostalpenraum. I. *Bibliotheca Lichenologica* **45**, 1–291.
- Shirley, J. (1894). Notes on Tasmanian lichens. *Papers and Proceedings of the Royal Society of Tasmania* (**1894**), 214–219.
- Tschermak-Woess, E. (1984). über die weite Verbreitung lichenisierter Sippen von *Dictyochloropsis* und die systematische Stellung von *Myrmecia reticulata* (Chlorophyta). *Plant Systematics and Evolution* **147**, 299–322.
- Wetmore, C.M. (1963). Catalogue of the lichens of Tasmania. *Revue Bryologique et Lichénologique* **32**, 223–264.