

Ocellularia wirthii (Ascomycota, Ostropales), a new
species from New South Wales, Australia

Ocellularia wirthii (Ascomycota, Ostropales), eine neue Art
aus Neusüdwales, Australien

**Armin MANGOLD, John A. ELIX &
H. Thorsten LUMBSCH,**

Key words: Flora of Australia, lichens, new species, Ostropales, Thelotrema-
ceae.

Schlagwörter: Flechten, Flora Australiens, neue Arten, Ostropales, Thelotrema-
ceae.

Summary: The new species *Ocellularia wirthii* is described from New South
Wales, Australia, where it occurs in temperate to subtropical rainforests
and wet sclerophyll forests. It is characterized by hyaline, transversely
septate, amyloid ascospores, a distinct, entire columella and the presence
of the psoromic acid chemosyndrome.

Zusammenfassung: Die neue Art *Ocellularia wirthii* wird beschrieben aus Neusüdwales in
Australien, wo sie in temperierten bis subtropischen Regenwäldern und feuchten Skle-
rophyllwäldern vorkommt. Sie ist gekennzeichnet durch hyaline, transversal-sep-
tierte, amyloide Ascosporen, ein deutlich ausgebildete, einfache Columella und den
Besitz des Psoromsäure-Chemosyndroms.

Introduction

Thelotremoid lichens include lichen-forming ascomycetes with crustose
thalli, immersed-erumpent, rounded ascomata with unbranched to slightly
branched paraphyses, mostly distoseptate ascospores, and usually a trentepoh-
lioid photobiont. At present the group includes more than 1000 species (FRISCH
et al. 2006, HALE 1981) and has recently undergone major reorganization of the
generic and family concepts. It was previously treated as the Thelotrema-
ceae. Traditionally, Thelotrema-
ceae was divided into large groups based on their
ascospore septation and pigmentation following MÜLLER ARGOVIENSIS (1887).

For a long period this was recognized as being artificial and subsequently HALE (1980), suggested a revised classification based on schematic use of excipular characters, such as pigmentation of the exciple and the presence of lateral paraphyses. This classification also turned out to be too coarse, so FRISCH et al. (2006) undertook a major revision of generic concepts in the Thelotremales. These authors proposed a classification based on combinations of several morphological character complexes. Phylogenetic studies employing DNA sequence data revealed that Thelotremales is not monophyletic, but nested within Graphidaceae (STAIGER et al. 2006; MANGOLD et al. 2007). Hence, we treat the former Thelotremales as a synonym of Graphidaceae and taxa previously classified in the former family are now referred to an informal group termed the thelotremoid lichens. In connection with our studies on the thelotremoid lichens in Australia we came across specimens of the genus *Ocellularia* that represented an undescribed species, which is discussed below.

Material and Methods

Material of the following herbaria was studied: B, CANB, F, G, GZU, H, NSW, UPS, US, and the private herbarium of Klaus KALB. Thalli and apothecia were cut using a razor blade and a freezing microtome, and examined in water and lactophenol cotton blue. Thin-layer chromatography was carried out using solvent system B' (LUMBSCH 2002) and high performance liquid chromatography following FEIGE et al. (1993).

Results and Discussion

Ocellularia wirthii MANGOLD, ELIX & LUMBSCH, sp. nov.

Ocellulariae endomelaenae similis sed ab hac specie ascosporis minoribus et columellae tortuosae differt.

Type: Australia, New South Wales, Mt. Warning NP, track from summit to parking lot, MANGOLD 19 z (NSW – holotype, CANB – isotype).

Etymology: The new species is named after the German lichenologist Volkmar WIRTH.

Thallus epi- to hypophloedal, moderately thick, up to c. 300 µm high, pale greenish-grey to pale yellowish-grey, dull to slightly shiny, smooth, verrucose to verruculose, rarely continuous. Cortex usually present, continuous, up to c. 25 µm thick, formed by conglomerated periclinial hyphae. Algal layer well developed, continuous, calcium oxalate crystals usually frequent in ascomata regions, small and clustered. Isidia and soredia absent. Ascomata conspicuous, becoming moderately large, up to c. 500 µm in diam., solitary, perithecioid when young, becoming urceolate and moderately emergent. Pores up to c. 200 µm in diam.,

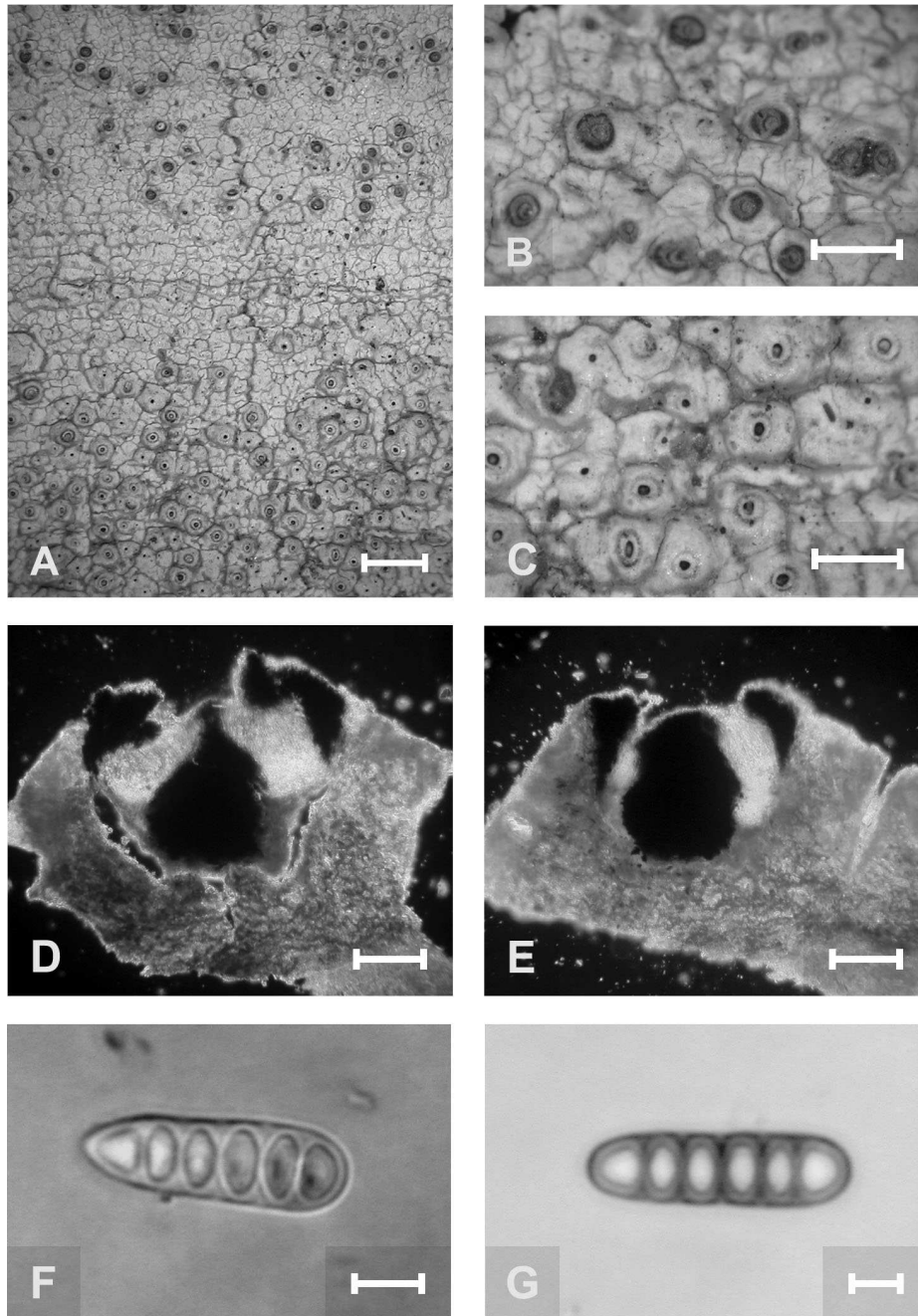


Fig. 1: Habitus, ascomata and ascospores of *Ocellularia wirthii*. A - C: Habitus; D, E: Ascoma sections; F, G: Ascospores (showing amyloid reaction in G); [Mangold 19 z, NSW-holotype]; Bars: A=1mm; B, C=500µm; D, E=100µm; F, G=5µm.

roundish, entire, proper exciple not visible from the outside. Disc and columella visible in mature ascomata, epruinose to slightly pruinose, conspicuously darkish-grey. Thalline rim margin becoming moderately thick, roundish, entire, concolorous with thallus in younger ascomata to distinctly brownish or dark grey with age, often with a brighter zone towards the pore forming a distinct ring-like structure, sometimes depressed, thalline rim incurved. Proper exciple fused, dark yellow-brown to brown, dark brown to distinctly carbonized in the upper parts, non-amyloid. Hymenium up to c. 120 μm high, hyaline, moderately conglutinated, paraphyses slightly interwoven, unbranched, slightly thickened apically, lateral paraphyses lacking, columellar structures present, well-developed, entire, carbonized, up to 200 μm wide, replacing large parts of the hymenium, covered by grayish to pale brownish granules. Epihymenium mostly indistinct, hyaline, uncovered or rarely with grayish granules. Asci 4-8-spored, tholus thick, becoming moderately thick with maturity. Ascospores transversely septate with moderately thin cell walls and thick endospore, non-halonate, hyaline, amyloid, oblong to ellipsoid with roundish to narrowed-roundish ends, loci \pm lentiform with hemispherical end cells, transverse septae thick, distinct, regular, 18-25 \times 5-8 μm , with 5-7(8) loci. Pycnidia not seen.

Chemistry: Thallus K+ yellowish, C-, PD+ yellow; containing psoromic (major), 2'-O-demethylpsoromic and subpsoromic (traces) acids.

The new species is characterized by moderately small, hyaline, transversely septate, amyloid ascospores, a well-developed, epruinose to indistinctly pruinose columella and the presence of the psoromic acid chemosyndrome. Morphologically it can readily be recognized by the conspicuously dark ascomata with a dark brown to blackish thalline margin and columella. Similar species include the psoromic acid containing taxa *Ocellularia terebrata*, *O. minutula* and *O. endomelaena*. The latter species differs in having a partly free proper exciple, complex columella and larger ascospores (up to 35 μm long with up to 10 loci). *Ocellularia minutula* and *O. terebrata* can be readily distinguished from *O. wirthii* by the weakly developed, or the absence of a columella, respectively.

Ocellularia wirthii is corticolous and occurs at altitudes between 40 and 1200 m in temperate to subtropical rainforests and wet sclerophyll forests. It was also found in secondary forests and disturbed forests. Most specimens were collected in forests on steep slopes, but it also occurs in lowland forests. While the distribution center of most Australian *Ocellularia* species is in tropical, northern Queensland, a few species are known from the warm-temperate and subtropical regions.

Specimens examined: Australia, New South Wales, Border Ranges NP, NE of Wiangaree, Brindle Creek, 28 23'S, 153 04'E, HAFELLNER 16591 (GZU); Mt. Warning NP, W of Murwillumbah, HALE, 831870, 832427, 830985, 830975 (US); Mt. Warning NP., track from summit to parking lot, MANGOLD 19 zk, 19 m (F); Nightcap Forest Drive, 1 km W of Minyon Falls, N of Lismore, HALE 832197,

832118 (US); Dorrigo NP., Sassafras Creek Track, MANGOLD 25 b, c, h, i, k (F); Doyles River SF, Oxley Hwy., 95 km SE Walcha, HALE 58614, 58894 (US); Macquarie Pass NP, 9 km ENE of Robertson, 34 34'S, 150 41'E, STREIMANN & CURNOW 35764 (CANB); Styx River SF, 85 km E of Armidale, 30 34'S, 152 20'E, KALB 21663 & WILLIAMS (hb. KALB); Wilson Primitive Res., 55 km NNW of Wauchope, HALE 59340 (US); Werrikimbe NP, Beech Plateau, 30 km NW of Port Macquarie, 31 12'S, 152 19'E, STREIMANN 64004 (B, CANB); Wallingat SF, Sugar Creek Flora Res., 16 km SW of Forster, 32 20'S, 152 26'E, STREIMANN 44230 (B, CANB), 44242a (CANB); Barrington Tops SF, Moppy Lookout, 40km WNW of Gloucester, 31 53'S, 151 32'E, STREIMANN 44417 (B, CANB); Bulahdelah Distr., Myall River SF, E of Stroud, Jarrah Rd., 32 25'S, 152 06'E, KALB 18067 & FILSON (hb. KALB); below Katoomba Falls, trail to Giant Stairway, HALE 58715, 58735 (US), Katoomba, WILSON, 9. 1889/9 (G, H); 5.4 km ESE of Katoomba, Valley of Waters Creek, 33 44'S, 150 22'E, Tibell 12241 (UPS); Blue Mnts., below Veil Falls near Blackheath, HALE 58699 (US); Mt. Wilson, A.G.H. 155652 (NSW); Royal NP, S of Sydney, Bola Creek, E of Waterfall, 34 08'S, 151 02'E, KALB 21705, 21727, 21730, 21731 (hb. KALB); Waterfall NP., 1886, WILSON (G, H).

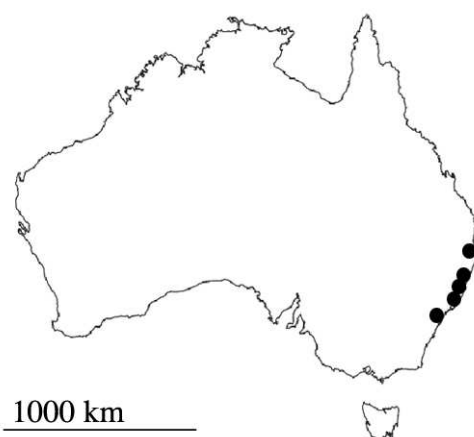


Fig. 2: Known distribution of *Ocellularia wirthii*

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addresses:

Armin MANGOLD
Universität Duisburg-Essen
Botanisches Institut
Universitätsstraße 5
D-45117 Essen
Germany
email: arminmangold@gmail.com

Armin MANGOLD
H. Thorsten LUMBSCH
The Field Museum
Department of Botany
1400 S. Lake Shore Drive
Chicago, IL 60605
USA

John A. ELIX
Australian National University
Faculty of Science, Department of Chemistry
Canberra, ACT 0200
Australia
email: john.elix@anu.edu.au

