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PIETER P. G. VAN DEN BOOM & LUCIANA ZEDDA

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Abstract

Boom, P. P. G. van den & Zedda, L.: *Lecania sipmanii*, a new epiphytic lichen species from Syria. – Willdenowia 30: 155-160. 2000. – ISSN 0511-9618.

Lecania sipmanii (Lecanorales, Bacidiaceae), an epiphytic lichen from Syria is described as a species new to science and illustrated. The new species belongs to the *L. polycycla* group and is mainly characterized by a small, areolate thallus, spores strongly constricted at the septum, paraplectenchymatic excipulum cells and hairs in the thalline margin of the apothecia. It was collected on dust-impregnated bark of *Salix* and *Populus* species.

Introduction

In two recent revisions of European species of *Lecania* Massal., only saxicolous taxa of the genus are treated (Mayrhofer 1988, Boom 1992) and a total of 20 species are known. Poelt (1969) included corticolous, terricolous and parasiticolous *Lecania* species and his key is only provisional. No further revision of corticolous species of the genus has been published since Poelt's overview. In some of the most important recent publications, a few corticolous species are treated. Four corticolous species are reported by Purvis & al. (1992) from the British Isles, viz. *L. chlorotiza* (Nyl.) P. James, *L. cyrtella* (Ach.) Th. Fr., *L. cyrtellina* (Nyl.) Sandst. and *L. fuscella* (Schaer.) Körb. In Wirth (1995), five corticolous species are treated from central Europe, viz. *L. koerberiana* Lahm, *L. fuscella*, *L. dubitans* (Nyl.) A. L. Sm., *L. cyrtella* and *L. cyrtellina*. Nimis (1993) reports four epiphytic species from Italy (*L. cyrtella*, *L. cyrtellina*, *L. koerberiana* and *L. fuscella*).

Lecania species from Mediterranean Asia or Middle East have been recorded poorly. *L. cyrtella* is reported from Lebanon (Khalife 1982). In Steiner (1921) *L. rabenhorstii* (Hepp.) Arn. and some varieties of this species are mentioned as a result of an expedition to Mesopotamia, Kurdistan and Syria in 1910. No epiphytic *Lecania* species are reported by Santesson (1942) and by Werner (1954-59, 1963, 1966) in their contributions on the lichen flora of Syria, Palestina and Lebanon. Steiner & Poelt (1987) described two lichenicolous *Lecania* species on *Caloplaca* spp. from Afghanistan, Iran and some other localities in Middle East. *L. cyrtella* is reported from Turkey by John & Nimis (1998) and Türk & Güner (1998), and from Cyprus by Litterski & Mayrhofer (1998). *L. fuscella* is known from Mediterranean Turkey (John 1996). Galun & Mukhtar

(1996) found in Israel *L. koerberiana*. The lichen flora of Syria is very poorly known in general and the present work is a contribution to its knowledge.

Material and methods

Specimens were collected in April 1999 by the second author during a 2-week botanical excursion throughout Syria. Anatomical observations of apothecia were conducted on hand-cut sections mounted in water, 10 % KOH and Lugol's iodine. The chemistry was studied by TLC (Thin Layer Chromatography) following Culberson (1972), Culberson & al. (1981) and White & James (1985), and using solvents B and G. Photomicrographs of sections of asci were taken with a Zeiss Axioplan microscope (interference contrast). Vouchers are in B and in the private herbaria of both authors (five specimens altogether).

Lecania sipmanii P. v. d. Boom & L. Zedda, sp. nova

Holotypus: Syria, Jerablus, close to the Turkish border, 36°49'15.9"N, 38°02'02"E, 450 m, abundant on *Salix* sp. in riverside vegetation along the Euphrat close to apple-tree cultivation, 3.4.1999, Zedda (B; isotypi: herb. Boom, herb. Zedda).

Thallus crustaceus, verruculosus, cinereo-viridis. *Cortex* 200 (-250) µm crassum. *Algae Chlorococcaceae*, 7-15 µm diametro. *Ascomata* sessilia, 0.2-0.4 mm in diametro; discus planus, margine crasso, persistente, hirsuto. *Hypothecium* 20-40 µm altum, hyalinum. *Hymenium* c. 50-60 µm altum. *Epihymenium* brunneum. *Parathecium* brunneum. *Excipulum* superne plectenchymaticum, cellulis lateralibus brunneis, basaliter incoloratis. *Paraphyses* simplices, septatae, 1.5-2 µm in diametro, apice leviter incrassatae (c. 3-6.5 µm). *Asci* intense amyloidei, clavati, octospori, 30-40 × 7-15 µm. *Ascospores* uniseptatae, hyalinae, in medio plerumque distincte constrictae, cellulis rotundatis 9-13 × 5-7 µm. *Pycnidia* pallide fusca. *Conidia* curva, 12-22 × 0.8 µm.

Thallus crustose, consisting of scattered to contiguous areoles, thin, up to 200 (-250) µm tall; upper surface of areoles verrucose, sometimes covered with minute hairs, up to c. 10 × 2 µm. *Cortex* without plectenchymatic cells, up to 30 µm thick and without epinecral layer. *Photobiont* chlorococcoid, cells mostly globose, 7-15 µm. *Apothecia* 0.2-0.4 mm diam., very numerous, crowded, sessile, lecanorine with a smooth to granular thalline raised margin, becoming sometimes incomplete and appearing lecideine and receded, very fine hairs sometimes present. *Disc* flat to slightly convex, blackish brown. *Hairs* 5-15 × 2-3 µm, simple, hyaline with granulate surface. *Hymenium* c. 35-60 µm tall. *Epihymenium* red brown K -, C -, N -. *Parathecium* brown. *Excipulum* paraplectenchymatous, lateral cells red brown becoming hyaline at base, outside sometimes densely hairy. *Paraphyses* hardly conglutinate, simple, septate; mid-hymenium cells 1.5-2 µm diam., apically occasionally branched; apical cells incrassate, sometimes subglobose, c. 3-7 µm wide, mostly with an external as well as internal reddish brown pigment. *Asci* narrowly clavate, tholus clearly amyloid, 8-spored, 30-40 × 7-15 µm (*Bacidia* type). *Ascospores* uniseptate, hyaline, strongly constricted at the septum, cells subglobose (diplococcoid), 9-13 × 5-7 µm. *Pycnidia* immersed, pale brownish. *Conidia* simple, 12-22 × 0.8 µm, filiform, curved to rarely sigmoid (Fig. 1-2).

Chemistry: All parts K -, C -, KC -, PD -, UV -; brown hyphal pigment K -, C -, N -. TLC: no compounds detected.

Etymology: *Lecania sipmanii* is named in honour of the lichenologist Dr Harrie Sipman for supporting the work of both authors.

Distribution and habitat

Lecania sipmanii is known only from the type locality, where it was found abundantly. The species might have been overlooked in the past because of its inconspicuous appearance. The type

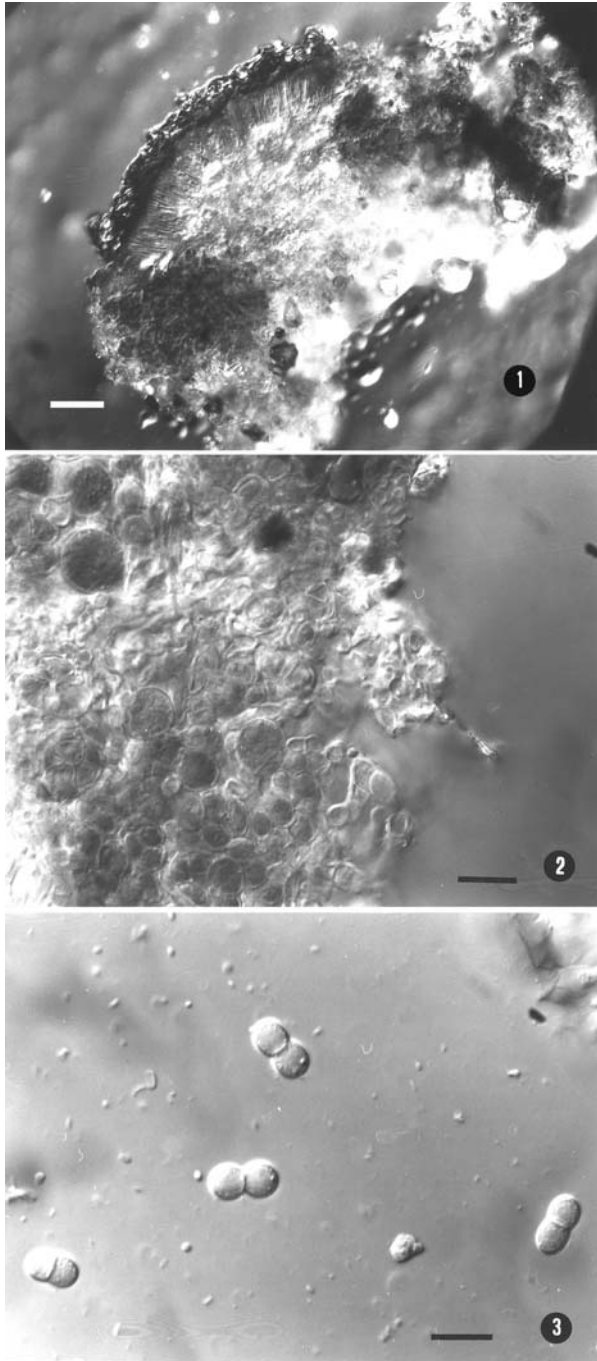


Fig. 1. *Lecania sipmanii* – 1: longitudinal section of apothecium (scale = 50 μm); 2: photobiont and hair in the excipulum in longitudinal section (scale = 10 μm); 3: ascospores constricted at the septum (scale = 10 μm). – From the type collection.

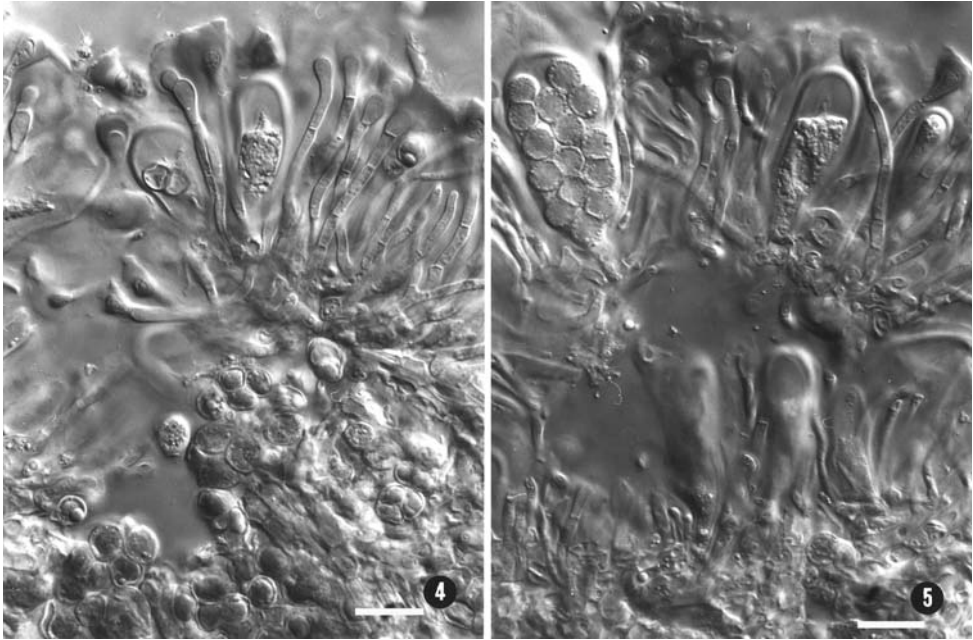


Fig. 2. *Lecania sipmanii* – 4: young asci (*Bacidia* type) and paraphyses with incrassate apical cells and pigment (scale = 10 µm); 5: mature ascus with ascospores, young asci and paraphyses (scale = 10 µm). – From the type collection.

material of *L. sipmanii* was collected on the trunk and branches of *Salix* sp., but in the same locality the species is also abundant on *Populus euphratica* Oliv. It should be particularly resistant to temporary inundations, since it was found on trees growing along the riverside of the Euphrat, also on the lowest parts of tree trunks, heavily covered by dust. In these conditions the thallus was often inconspicuous and only apothecia were abundant. In such cases it should be rather resistant to eutrophic conditions as well. In upper parts of tree trunks and on branches the species was associated with very few other lichen species, viz. *Caloplaca alnetorum* Giralt, Nimis & Poelt and a very small, unidentified *Lecanora* species, both much less common than *L. sipmanii*.

Additional specimens examined: SYRIA: Jerablus, close to the Turkish border, 36°49'15.9"N, 38°02'02"E, 450 m, abundant on *Populus euphratica* Oliv., in riverside vegetation along the Euphrat, 3.4.1999, Zedda 3700, 3701 (B, herb. Zedda).

Differences to related and similar species

Lecania sipmanii is closely related to the saxicolous species *L. polycycla* (Anzi) Lettau and *L. flavescens* Lyngbe and should belong therefore to the *L. polycycla* group. Paraphyses in this group are strongly swollen towards their apex, have an external pigmentation and are hardly conglutinate. The ascospores of the new species are, however, much more strongly constricted at the septum, so that both cells are subglobose (diplococcoid). The ascospores of *L. sipmanii* also resemble those of *L. diplococca*, a parasitic lichen species described from Afghanistan by Steiner & Poelt (1987), which is known only from *Pistacia* plants where it was found growing on *Caloplaca polycarpoides* (J. Steiner) M. Steiner & Poelt. Nevertheless, the ascospores of this lichenicolous *Lecania* species are smaller than in *L. sipmanii*. Furthermore *L. sipmanii* has only paraplectenchymatic excipulum cells, in contrast to *L. flavescens*, which has an excipulum com-

posed of anticlinal hyphae, and to *L. polycycla*, where oblong paraplectenchymatic hyphae are found.

Besides the morphological difference, also the ecology of *L. sipmanii* is different from that of the two aforementioned species of the *L. polycycla* group, since *L. sipmanii* is an epiphytic species, whereas *L. flavescens* and *L. polycycla* are saxicolous species known from calcareous and schistose rocks.

The thallus of *Lecania sipmanii* resembles that of *L. poeltii* P. v. d. Boom, Alonso & Egea and *L. inundata* (Hepp ex Koerb.) M. Mayrhofer. It is likely to be confused with *L. poeltii* because of the presence of the numerous hairs on the thalline margin of the apothecia and the dusty substrata on which both species have been found (Boom & al. 1996). However, *L. poeltii* differs also in having a pseudoparaplectenchymatic exciple, composed of anticlinal hyphae with stouter hairs, and it has ascospores only weakly constricted at the septum. In the field, *L. sipmanii* is most likely to be mistaken for *L. cyrtella*, a species known from W Asia, but the exciple of this latter species is very thin, often becoming excluded. *L. zinaidae* Oxn., a corticolous species also with uniseptate ascospores, is known only from S Ukraine (Oxner 1931), has smaller ascospores and an inconspicuous exciple, and is ecologically confined to the *Artemisia-Festuca* steppe.

The new species might be easily mistaken with species of *Rinodina* (e.g. *R. gennarii* Bagl., *R. oleae* Bagl. and *R. exigua* (Ach.) Gray) because of the similar nature of the thallus and apothecia. Therefore a microscopical investigation is always needed.

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References

- Boom, P. P. G. van den 1992: The saxicolous species of the lichen genus *Lecania* in the Netherlands, Belgium and Luxemburg. – *Nova Hedwigia* **54**: 229-254.
- , Alonso, F. L. & Egea, J. M. 1996: *Lecania poeltii*, a new lichen species from Portugal and northern Africa. – *Lichenologist* **28**: 395-399.
- Culberson, C. F. 1972: Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. – *J. Chromatogr.* **72**: 113-125.
- , Culberson, W. L. & Johnson, A. 1981: A standardized TLC analysis of β -Orcinol depsidones. – *Bryologist* **84**: 16-29.
- Galun, M. & Mukhtar, A. 1996: Checklist of the lichens of Israel. – *Bocconea* **6**: 149-171.
- John, V. 1996: Lichen checklist of Mediterranean Turkey. – *Bocconea* **6**: 173-216.
- & Nimis, P. L. 1998: Lichen flora of Amanos Mountain and the Province of Hatay. – *Turk. J. Bot.* **22**: 257-267.
- Khalife, S. 1982: Contribution à l'étude des lichens corticoles et terricoles du Libanon central. – *Bull. Soc. Linn. Provence* **34**: 91-106.
- Litterski, B. & Mayrhofer, H. 1998: Lichens and lichenicolous fungi of Cyprus. – *Stud. Geobot.* **16**: 57-70.
- Mayrhofer, M. 1988: Studien über die saxicolen Arten der Flechtengattung *Lecania* in Europa II. *Lecania* s.str. – *Bibl. Lichenol.* **28**.
- Nimis, P. L. 1993: The lichens of Italy. An annotated catalogue. – *Monogr. Mus. Regionale Sci. Nat. Torino* **12**.

- Oxner, A. M. 1931: About new species of *Lecania* from Ukraine. – Visn. Kyyivs'koho Bot. Sadu **12-13**: 151-153.
- Poelt, J. 1969: Bestimmungsschlüssel europäischer Flechten. – Lehre.
- Purvis, O. W., Coppins, B. J., Hawksworth, D. L., James, P. W. & Moore, D. M. 1992: The lichen flora of Great Britain and Ireland. – London.
- Santesson, R. 1942: Some lichens from Palestine and Syria. – Ark. Bot. **30(5)**: 1-5.
- Steiner, J. 1921: Lichenes aus Mesopotamien und Kurdistan sowie Syrien und Prinkipo. – Ann. Naturhist. Mus. Wien **34**.
- Steiner, M. & Poelt, J. 1987: Drei parasitische Flechten auf *Caloplaca polycarpoides*. – Pl. Syst. Evol. **155**: 133-141.
- Türk, A. O. & Güner, H. 1998: Lichens of the Thrace Region of Turkey. – Turk. J. Bot. **22**: 397-407.
- Werner, R. G. 1954-59, 1963: Notes de lichénologie libano-syrienne I-VII. – Bull. Soc. Bot. France **101**: 355-360, **102**: 350-357, **103**: 461-467, **104**: 321-326, **105**: 238-243, **106**: 332-337, **110**: 311-315.
- 1966: Notes de lichénologie libano-syrienne VIII et égyptienne. – Bull. Soc. Bot. France **113**: 74-83.
- White, F. J. & James, P. W. 1985: A new guide to microchemical techniques for the identification of the lichen substances. – Bull. Brit. Lichen Soc. **57 suppl.**: 1-41.
- Wirth, V. 1995: Flechtenflora. Bestimmung und ökologische Kennzeichnung der Flechten Südwestdeutschlands und angrenzender Gebiete. – Stuttgart.

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