

# Notes on Lecania in Eastern Europe and Central Asia

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The examination of type specimens of the lichen genus *Lecania* originating from Central Asia and Eastern Europe showed that *L. alexandrae* Tomin is a synonym of *L. ephedrae* Elenkin, *L. prasinooides* Elenkin is a synonym of *L. cyrtella* (Ach.) Th.Fr. and *L. diplococca* M.Steiner & Poelt is a synonym of *L. bullata* Oxner. *L. globulosa* Savicz is a synonym of *Micarea nitschkeana* (Lahm ex Rabenh.) Harm. and *L. zinaidae* Oxner is a synonym of *Arthonia apatetica* (A. Massal.) Th.Fr. The lichenicolous *Lecania* species *L. ferganae* Oxner and *L. triseptata* (Vain.) Zahlbr. are accepted. The latter species is reported for the first time from Russia. Additional specimens of *L. cyrtella* (Ach.) Th.Fr., *L. fuscella* (Schaer.) Körb., *L. inundata* (Körb.) M.Mayrhofer, *L. polycycla* (Anzi) Lettau and *L. turicensis* (Hepp) Müll.Arg. from the Southern Ukraine are recorded.

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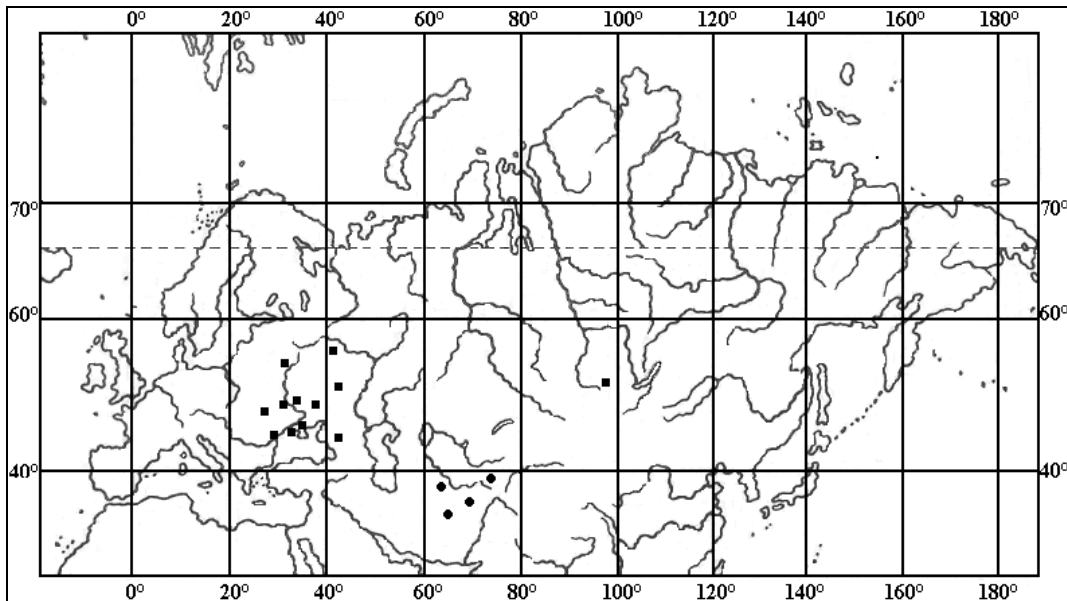
The genus *Lecania* in Europe and adjacent regions has received ample attention recently, by Mayrhofer (1988), v.d. Boom (1992), Etayo & v.d. Boom (1995), v.d. Boom & Zedda (2000), v.d. Boom et al. (1994), v.d. Boom et al. (1996) and Sérusiaux et al. (1999). A key of the corticolous species was published by Poelt (1969). However, eastern European collections are poorly represented in these investigations. The data about *Lecania* species of the former SSSR countries were summarized by Makarevich (1971) and Navrotska & Oxner (1993). Elenkin (1905, 1907), Tomin (1918) and Oxner (1929, 1931, 1939) described several new species. Khodosovtsev (1999) recognized 12 species of *Lecania* in the Black Sea steppes of the Ukraine. For the present study several *Lecania* type specimens, originating from Eastern Europe and Central Asia were located and studied.

## Materials and methods

The investigated specimens are kept in KW, KHER, LE and herb. v.d. Boom. Anatomical observations were made from hand sections mounted in water, 10 % KOH or Lugol's Iodine solution. Measurements of algae, hyphae, paraphyses, conidia, asci and spores were made in water at 400× or 1000× magnification.

## *Lecania bullata* Oxner

*Journ. Inst. Bot. Acad. Sci. RSS Ukraine* 20 (28): 122 (1939). – Type: RSS Turkmenica, Montes Kopet-dagh, in viciniis pag. Firjuza, distr. Aschhabad, 1928, leg. A. Lazarenko 19a (KW lectotype, here selected).



**Figure 1.** The distribution of *Lecania ephedrae* (■) and *Lecania bullata* Oxner (◆).

*Lecania diplococca* M. Steiner & Poelt, *Pl. Syst. Evol.*, 155: 137 (1987). – Type: Afghanistan, prov. Samangan, Kotal-I-Mirza, 1970, M. Steiner (Ste 43, 50) (GZU holotype).

Thallus crustose, consisting of contiguous, small, flat areoles, 0.2–0.3 mm wide, whitish to dusty-whitish, often invisible, growing on *Caloplaca polycarpoides* and *C. holocarpa* agg. Apothecia 0.3–0.5 mm in diam., dispersed; disc flat to slightly convex, blackish-brown to black, surrounded by a light-grey thalline margin, without hyaline hairs; thalline excipulum 35–45 µm wide, with a cortical zone, (15–)25–30(–35) µm thick, paraplectenchymatous, cells (4.5–)5–6(–7) µm in diam; hypothecium hyaline, 55–65 µm high; hymenium 50–70 µm high, hyaline; epithecium up to 10–15 µm high, reddish brown, K–, N–, with crystals which dissolve in K. Asci 8-spored, of the *Bacidia*-type; spores hyaline, 1-septate, strongly constricted at the septum (diplococcoid), 8–11(–12) × 4.5–6 µm; paraphyses c. 2 µm thick with swollen apical

cells up to 4–5(–6) µm wide, brown-walled, K–, N–. Spot tests K–, C–, KC–, Pd–.

**Ecology.** Lichenicolous on *Caloplaca polycarpoides* and species of the *C. holocarpa* complex, on twigs of shrubs and trees (*Pistacea vera*) in arid regions, sometimes autonomous. Associated species are *Candelariella deflexa* and *Lecanora umbrina*.

**Distribution.** Afghanistan, Turkmenistan and Kirghizia (Figure 1).

**Notes.** The description of *L. bullata* (Oxner 1939) is based on two specimens kept in KW. The specimen from Turkmenistan (KW n.19a) consists of small branches of a shrub, dominated by *Caloplaca polycarpoides*. *L. bullata* grows on the lobes of this species and partly on the substrate alongside the *Caloplaca* (or on dead parts of the *Caloplaca*). The specimen from Kirghizia (KW n. 19b) consists of tree bark with thalli of the *C. holocarpa* complex. *L. bullata* grows on the yellowish

areoles and the prothallus of *Caloplaca* as well as autonomously. We are unable to find any significant difference between *Lecania bullata* and *L. diplococca*. Poelt was apparently unaware of Oxner's description of *L. bullata* because it was not mentioned in the protologue of *L. diplococca* (Steiner & Poelt 1987).

*Additional specimen examined:* **Kirghizia.** 'Distr. Djelalabad, In promontoriis jugi Ferghanensis, Pag. Gum-chana, in silvis, 1928, A. Lazarenko 19b' (KW paratype).

### **Lecania cyrtella** (Ach.) Th.Fr.

*Lichenogr. Scandin. I:* 294 (1871). – *Lecidea cyrtella* Ach., *Method. Lich.:* 67 (1803).

*Lecania prasinoidea* Elenkin, *Lich. Florae Rossiae Mediae, fasc. 2:* 237 (1907). – Type: Russia, Moscow region, near Lubertsi, at the base of deciduous trees, 1903, A. A. Elenkin (LE lectotype, here selected).

*Lecania prasinoidea* var. *suaveolens* Elenkin, *Lich. Florae Rossiae Mediae, fasc. 2:* 237 (1907). Type not indicated.

**Notes.** The thallus of *L. cyrtella* is very thin, rather smooth to granular uneven, matt to shiny. The thallus of *L. prasinoidea*, on the contrary, resembles *Micarea prasina* (Elenkin 1907). However, in the type specimen of *L. prasinoidea* we found the thallus of *L. cyrtella* together with the typical, small apothecia. In addition, there is a powdery-granular to blastidiate thallus, consisting of greyish-green, bluish-grey to bluish-green goniocysts. This belongs neither to a *Lecania*, nor to any species of *Micarea*. The goniocysts are c. 20–25 µm in diam., contain trebouxoid algae of 8–15 µm in diam., and the pigmented hyphae give a clear K<sup>+</sup> violet reaction. These characters strongly suggest a species of *Rinodina* from the *R. colobina* group. In Western Europe, *L. cyrtella* is often found in *Xanthorion* communities associated with the rarely fertile *Rinodina*

*pityrea* or *R. colobina*. Both have a powdery-granulate to blastidiate thallus. There is no type specimen of *Lecania prasinoidea* var. *suaveolens* available. However, the protologue of *L. prasinoidea* (in Russian) is based on many collections, which clearly refer to *L. cyrtella*, and the description for var. *suaveolens*, "apothecia for a long time with a flat disc and a thin whitish margin", clearly refers to *L. cyrtella*.

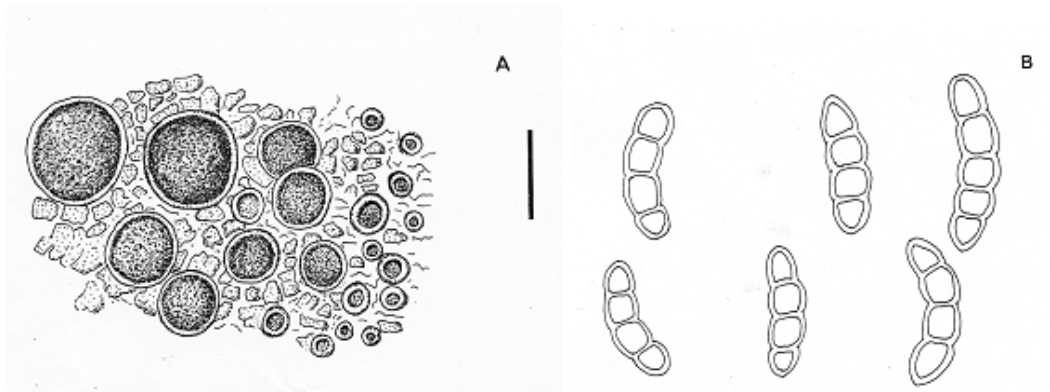
*Additional specimens examined:* **Ukraine.** *Kherson:* Veliko-Aleksandrowsky distr., Kalinindorf, petrophytic steppe, on *Thymus*, 1994, Khodosovtsev (KHER, herb. v.d. Boom); Chaplinsky distr., Askania-Nova biosphere reserve, on *Ephedra distachya*, 1991, Khodosovtsev (KHER, herb. v.d. Boom); *Nikolayev:* Snigerevsky distr., Yakovlevka, near river Visun, steppe slope, on *Thymus*, 1992, Khodosovtsev (KHER, herb. v.d. Boom); *Crimea:* Kerch peninsula, Leninsky distr., Maryevka, Mt. Opuk, on *Thymus*, 1994, Khodosovtsev (KHER, herb. v.d. Boom).

### **Lecania ephedrae** Elenkin

*Bull. Jard. Impér. Botan. St. Petersb. 5(3):* 2 (1905). – *Lecania koerberiana* var. *ephedrae* Elenkin, *nom. nud. Bull. Jard. Impér. Botan. St. Petersb. 1:* 96 (1901). – Type: Russia, 'Ad ramulos Ephedrae cl., leg. Meyer, anno 1830, prope pagum Balachani in Caucaso legit' (LE holotype).

*Lecania alexandrae* Tomin, *Mem. Instit. Agronom. Woronesch 3:* 128 (1918). – Type: [handwriting on label unreadable] (LE lectotype, here selected).

*Lecania alexandrae* f. *sperkii* Oxner, *Bull. Jard. Botan. Kieff 5–6:* 90 (1927). – Type: Ukraine, near Kiev, Sirets, forest, on bark of *Populus*, 1927, leg. Oxner (KW lectotype, here selected).



**Figure 2.** *Lecania ephedrae*: A, habitus; B, spores. Scales: A = 1 mm; B = 10 µm.

Thallus thin, continuous to slightly cracked or areolate, whitish-grey, dusty-grey to grey-yellowish (in the herbarium), often growing in orbicular patches of 10–22 mm in diam. (on smooth bark of *Populus*); in section ecorticate, without epinecral layer, filled with clusters of crystals throughout; hypothallus often present, whitish grey; algal layer up to 70 µm high, algal cells 7–12 µm in diam. Apothecia (0.5–) 0.7–1.6(–2.5) mm in diam., often aggregated in the centre of the thallus. Disc at first urceolate to flat, rarely slightly convex, brown to brown-black, without pruina or more rarely slightly white-pruinose; thalline margin entire, dusty-grey, initially well developed, becoming thinner, 80–100(–130) µm wide; cortex prosoplectenchymatous (*nylanderiana*-type), up to 30–50(–60) µm thick, with thin outer rim with weakly conglutinated, paraplectenchymatous cells, lumina c. 2 µm; algal layer 50–70 µm high; proper exciple sometimes developed, c. 25 µm wide towards the outer rim, c. 10 µm high at its inner part; hymenium up to 150 µm high; hypothecium hyaline, 25–35 µm high; epithecium reddish brown (K–, N–); paraphyses slightly bound and weakly conglutinated in a hyaline, gelatinous matrix, rarely sparingly branched or forked, apical cells abruptly swollen, often globose, 4–9 µm

in diam., often with dark reddish brown apical caps, rarely sparingly branched or forked; mid-hymenium cells relative thin, 1–1.5(–2) µm wide; asci clavate to broadly-clavate, 8-spored, 35–50 × 15–20 µm, with thin, strongly amyloid outer wall layer, tholus somewhat more strongly amyloid next to the axial mass, of the *Bacidia*-type; spores (11–)14–17(–20) × 4–6(–7) µm, 3(–4)-septate, mostly slightly to strongly curved, rarely straight, mostly ±constricted at the septa. Pycnidia few, immersed, c. 50 µ in diam., upper part visible as a dark brown dot; conidiogenous cells branched at base, elongate, c. 10 × 2 µm; conidia filiform, slightly to strongly curved, c. 10–18 × 0.8 µm. Spot tests K–, C–, KC–, Pd– (Figure 2).

**Ecology.** The holotype was growing with *Xanthoria parietina* as the only accompanying species. The type of *Lecania alexandrae* was accompanied by the *Caloplaca holocarpa* complex and *Lecanora* cf. *populicola*.

**Distribution.** *L. ephedrae* is known from eastern Europe (Russia, Ukraine) with an isolated location in Russian Asia (East Sayani) (Sedelnikova 1996) (Figure 1).

**Notes.** In the key of Poelt (1969), *L. ephedrae* and *L. alexandrae* were distinguished by the nature of the substratum and the colour of the thallus. The idea that they are conspecific is not new. Oxner wrote (1927: 90) that Tomin's *Lecania* from Smolensk region (Tomin 1918) belongs to Elenkin's *Lecania* from Meyer's Caucasus collections on *Ephedra* twigs (Elenkin 1905). For the differences between the related species *L. ephedrae*, *L. fuscella* and *L. koerberiana*, see table 1.

*Additional specimens examined:* **Ukraine.** *Kherson:* Golopristsansky distr., Black Sea biosphere reserve, Ivano-Ribalchanskiy uchastok, on *Populus*, 1992, Khodosovtsev (KHER, herb. v.d. Boom). *Chaplinka distr.,* Askania-Nova, Bolshoy Chapelsky Pod, 1924, Oxner (KW).

***Lecania ferganae* Oxner**

*Bull. Jard. Botan. Kieff* 9: 62 (1929). – Type:

‘Asia media, Kirgisisca Distr., Dschelalabad, in promontoriis jugi ferganensis, in calcares ad pagum Czarwak, leg. A. Lazarenko, 1928’ (KW holotype).

Thallus endokapylic, developed within calcicolous *Placidium* species. Apothecia dispersed (only 5 apothecia found), 0.3–0.5 mm in diam., arising on the edge of the host squamules; disc brown to blackish brown, concave to convex, slightly pruinose, surrounded by a dusty-grey margin; thalline margin 25–50 µm thick, with numerous algal clusters, sometimes poorly developed; upper cortex thin, gelatinous, c. 6–10(–15) µm thick, with unclear paraplectenchymatic cells, 3.5–4 µm in diam.; proper exciple sometimes well developed, 10–15 µm wide in central parts to 35–45 µm in upper parts, with swollen apical reddish-brown pigmented cells up to 4.5–5.5 µm in diam.; epithecium 8–15 µm thick, reddish-brown with clusters of hyaline crystals, which do not dissolve in K; hymenium hyaline,

**Table 1.** Characters distinguishing the corticolous *Lecania* species with 3-septate spores.

Character	<i>L. ephedrae</i>	<i>L. fuscella</i>	<i>L. koerberiana</i>
Thallus	Thin, cracked-areolate, whitish-grey to grey yellowish	Effuse, thin, areolate-granular, brownish-grey	Thin, farinose, often immersed, whitish-grey to greyish
Apothecia	Brown to brownish-black, epruinose, rarely slightly pruinose, (0.5–) 0.7–1.6(–2.5) mm in diam., ± (strongly) constricted at base	Pale to moderately brown, or dark brown, often pruinose, 0.3–1 mm in diam., sessile, ± constricted at base	Reddish brown to blackish, 0.3–0.6 mm in diam., epruinose, immersed to adnate
Exciple	Well developed, becoming thinner, cortex prosoplectenchymatous	Thin, sometimes almost lacking, cortex not developed	Thin, often lacking, cortex not developed
Paraphyses	Weakly conglutinated, apices to 9 µm in diam.	Strongly conglutinated, apices to 4 µm in diam.	Weakly conglutinated, apices to 7 µm in diam.
Asci	8-spored	8–12(–16)-spored	8-spored
Spores	(11–)14–17(–20) × 4–6(–7) µm, ± strongly curved, rarely straight, often constricted at the septum	12–18(–22) × 4–7 µm, straight, sometimes curved, rarely constricted at the septum	12–15 × 4–5 µm, often slightly curved, rarely constricted at the septum

**Table 2.** Distinguishing characters of the lichenicolous *Lecania* species in Eastern Europe and Central Asia.

Character	<i>L. ferganae</i>	<i>L. triseptata</i>	<i>L. bullata</i>
Thallus	Endokapylic in calcicolous <i>Placidium</i> species	Endokapylic in corticolous <i>Caloplaca polycarpoides</i>	Epicalyptic on thallus of corticolous <i>Caloplaca</i> spp.
Apothecia	Brown to brownish-black, slightly pruinose, 0.3–0.5 mm in diam., sessile	Brownish-black, epruinose, 0.3–1.0 mm in diam., sessile to stalked	Brownish-black to blackish, epruinose, 0.3–0.5 mm in diam., sessile
Exciple	Well developed, becoming thinner, cortex weakly paraplectenchymatous	Thin, sometimes lacking, cortex weakly paraplectenchymatous	Well developed becoming thinner, cortex clearly paraplectenchymatous
Paraphyses	Weakly conglutinated, apices to 8 µm wide	Not conglutinated, apices to 8 µm wide	Weakly conglutinated, apices to 6 µm wide
Spores	(14–)17–23(–25) × (3.5–)4–5(6) µm, straight to slightly curved, (2–)3–septate	14–18 × 3.5–5.5 µm, straight, or curved, 3-septate	8–12 × 4.5–6.0 µm, diplococcoid, 1-septate

50–60 µm high; hypothecium 40–50 µm thick, hyaline; underside of hypothecium with 55–65 µm thick medullary layer, containing gelatinous, prosoplectenchymatous hyphae, intermingled with the host tissue below; paraphyses 1.6–1.8(–2.0) µm thick with strongly swollen apical cells, (4.0–)5.5–6.5(–7) µm in diam., with reddish-brown pigmented caps, K–, N–; asci 38–50 × 12–14 µm, 8-spored, of the *Bacidia*-type; spores (2–)3-septate, straight to slightly curved when young, (14–)17–23(–25) × (3.5–)4–5(–5.8) µm. Pycnidia not found.

**Ecology.** Lichenicolous on a calcicolous *Placidium* species.

**Distribution.** Known from a single collection from Kirghizia (Middle Asia).

**Notes.** According to Oxner (1929) this species is closely related to *Lecania nylanderiana*. However, the latter species has a different anatomy of the exciple cortex containing

prosoplectenchymatous cells; it has an autonomous thallus and grows on calcareous rocks. *Lecania ferganae* is probably a specific lichenicolous fungus on *Placidium* species. Another species with a paraplectenchymatous cortex of the thalline margin and 3-septate spores, resembling this species is *Lecania triseptata* (Table 2). *Lecania suavis* also has 3-septate spores but can be distinguished by a well developed, areolate-warted, autonomous thallus and a saxicolous substrate preference (calciferous rock or mortar).

#### ***Lecania fuscella* (Schaer.) Körb.**

A description with notes on the ecology and distribution is given by Purvis et al. (1992) and Wirth (1995).

**Notes.** This species resembles *L. ephedrae*, especially when pruina is lacking on the apothecia. (Table 1). Of this species, formerly supposed to be widely distributed in the

northern parts of the Ukraine (Navrotska & Oxner, 1993), we have only confirmed a few specimens. It should be noted that literature records of '*L. fuscella*' are often based on misinterpretations of the much more common *Lecania naegelii*.

*Specimens examined:* **Ukraine.** *Kherson:* Berislavsky distr., near Kazatskoye, Shilova balka, on *Thymus*, 1995, Khodosovtsev (KHER, herb. v.d. Boom); *Nikolayev:* Snigirevka distr., near Snigirevka, on plant debris, 1994, Khodosovtsev (KHER, herb. v.d. Boom).

***Lecania inundata* (Körb.) M. Mayrhofer** in Nimis & Poelt

A description with notes on the ecology and distribution of *L. inundata* can be found in Mayrhofer (1988), Purvis et al. (1992), Wirth (1995) and van den Boom (1992).

**Notes.** This species is usually saxicolous, but in the Ukrainian semi-desert steppes it was found on small twigs of shrubs. It is characterized by the nodular, granular-verrucose thallus areoles and flat to moderately convex apothecia, which have a relatively thick thalline margin. It is distinguished by these characters from *L. cyrtella*. No specimens are cited in Mayrhofer (1988) from the Ukraine but it has recently been reported by Khodosovtsev (1999).

*Specimens examined:* **Ukraine.** *Kherson:* Golopristansky distr., Black Sea biosphere reserve, Yagorlitskiy Kut peninsula, on *Halocnemum strobilaceum*, 1992, Khodosovtsev (KHER); Black Sea biosphere reserve, Solenoozerniy, on *H. strobilaceum*, 1992, Khodosovtsev (KHER, herb. v.d. Boom); Genichesky distr., Sivash lake, Chongar peninsula, on *H. strobilaceum*, 1995, Khodosovtsev (KHER); Zelenovsky island, on *H. strobilaceum*, 2000, Moisienko & Pavlov

(KHER). **Portugal.** *Serra de Monchique:* S of Caldas, on *Quercus rotundifolia* (roadside), 1993, v.d. Boom 14818 (herb. v.d. Boom). **Greece.** *Nomos Samos:* Ikaria Island, near chapel Ag. Giorgios, on *Juniperus macrocarpa*, 2002, T. Raus & H. Sipman 48397 (B).

***Lecania polycycla* (Anzi) Lettau**

*Hedwigia* 52: 199 (1912).

A full, illustrated description with notes on the ecology and distribution was given by Mayrhofer (1988).

**Notes.** This species is easily recognized by the characteristic spores which are usually constricted at the septum, and the  $\pm$ free paraphyses with strongly capitate dark pigmented upper cells. The grouped, brownish black to black apothecia resemble *Catillaria lenticularis*. *Lecania polycycla* has recently been published as new to the Ukraine (Khodosovtsev & Redchenko 2002).

*Specimen examined:* **Ukraine.** *Crimea:* Yalta region, nature reserve 'Cape Martian', coast of Black Sea, on limestone, 2000, Khodosovtsev (KHER, herb. v.d. Boom).

***Lecania triseptata* (Vain.) Zahlbr.**

*Cat. Lich. Univ.* 5: 748 (1928).

A full, illustrated description of this species was given by Steiner & Poelt (1987).

**Notes.** This species resembles *Lecania koerberiana* but differs by its endokapyllic thallus growing on species of the *Caloplaca polycarpoides* group (Steiner & Poelt 1987). It was reported from Iran, Afghanistan, Tadjikistan and the former Czechoslovakia (Steiner & Poelt 1987), but in the recent checklists of the Czech Republic (Vězda & Liška 1999) and Slovakia (Pišút et al. 1996) no

information about this species is given. *L. triseptata* is new to Russia. For differences with the other treated lichenicolous *Lecania* species, see Table 2.

*Specimen examined:* **Russia.** Astrachanskaya oblast: Vladimirsky region, near Nizhniy Baskunchak, steppes, 1962, Kopachevskaya & Zubez (KW, KHER, herb. v.d. Boom).

### ***Lecania turicensis* (Hepp) Müll.Arg.**

A description with notes on ecology and distribution of *L. turicensis* can be found in Mayrhofer (1988), Purvis et al. (1992), Wirth (1995) and van den Boom (1992).

**Notes.** No specimens are cited in Mayrhofer (1988) from the Ukraine but it has recently been reported by Khodosovtsev (1999).

*Specimens examined:* **Ukraine.** Kherson: Belozersky distr., vill Fedorovka, slope to Inguletz river, on limestone, 1995, Khodosovtsev (KHER, herb. v.d. Boom); Belozersky distr., Antonovka, steppe slope to Dniper, on limestone, 1992, Khodosovtsev (KHER, herb. v.d. Boom); *Odessa:* Tiligulsky liman, Volkovo, on limestone, 1996, Khodosovtsev (KHER, herb. v.d. Boom).

### **Excluded from the genus *Lecania***

*Lecania zinaiidae* Oxner, *Visn. Kiev. Bot. Sadu* 12/13: 151 (1931). – Type: Ukraine, Kherson region, Skadovsky distr., on *Halocnemum strobilaceum*, 1930, Oxner (KW holotype) = ***Arthonia apatetica*** (A.Massal.) Th.Fr.

Thallus forming small patches, 1–2 mm wide, areolate, rarely with scattered areoles, grey to greenish-grey, 0.1–0.5 mm thick, no cortex or epinecral layer developed, small crystals (to 4 µm in diam.) scattered throughout; upper surface smooth to somewhat uneven. Apothecia arthonioid, rounded, convex, black, 0.1–0.3 mm in diam., sometimes clustered;

epithecium brownish, sometimes with a reddish tinge, K+ dark greenish, N–; hymenium (25–) 30–40 µm high, hyaline; hypothecium poorly developed, 35–45 µm thick, hyaline to pale yellowish; algae layer reaching the underside of the hypothecium; paraphysoids branched, with pale brown pigmented upper parts and apices with thin, well-defined, dark brown caps, 2.5–3 µm wide, upper mid-hymenium cells 1.5–2 µm in diam., lower parts rather scanty developed. Asci 8-spored, 32–38 × 15–20 µm, of the *Arthonia*-type; spores 1-septate, oblong to slightly ovoid, lower cell somewhat narrower (9–)10–12(–14) × (3.5–) 4.5–5.5(–6) µm. Thallus K–, C–, Pd–, J– (Figure 3).

**Ecology.** On twigs of *Halocnemum strobilaceum* in the Ukrainian steppes.

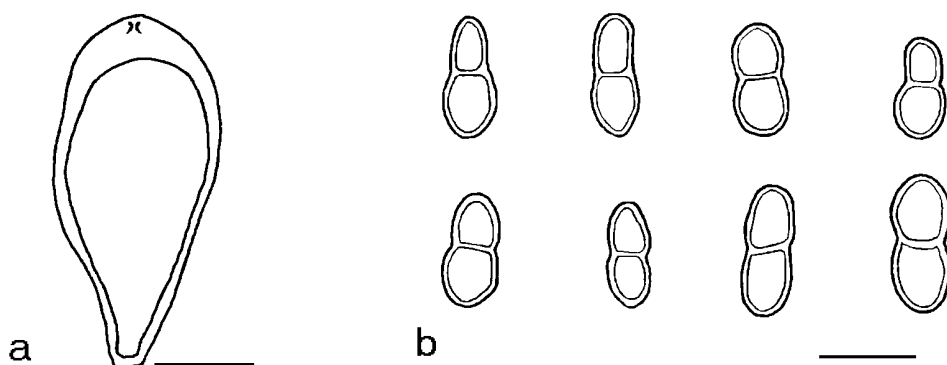
*Notes:* Recent reports of ‘*Lecania zinaiidae*’ on small twigs in the southern Ukraine (Kondratyuk & Navrotska, 1992; Khodosovtsev, 1999) refer to forms of *Lecania cyrtella* with brown-blackish apothecia or different *Arthonia* species.

*Specimens examined:* **Ukraine.** Kherson: Genichesky distr., Kuyuk-Tuk island, on *Halocnemum strobilaceum*, 1994, Khodosovtsev (KHER). **Italy.** Calabria: 15 km S of Crotone, on *Olea europea* in an orchard, 1986, P. v.d. Boom 4687 (herb. v.d. Boom). **Portugal.** Trás-os-Montes: NW of Bragança, Zeive, on *Quercus*, 1997, P. van den Boom 19574 (herb. v.d. Boom).

*Lecania globulosa* Savicz, Bull. Jard. Impér. Botan. St. Petersb. 16: 53 (1911), non *L. globulosa* (Flörke) v.d. Boom & Sérus. – Type: Russia, Novgorodskaya oblast, near Borovichi town (not seen, probably lost) = ***Micarea nitschkeana*** (Lahm ex Rabenh.) Harm.

**Notes.** According to the diagnosis (Makarevich 1971), this species has subglobose, blackish, biatorine apothecia, 0.1–0.2 mm in diam., 3–septate spores 8–15 × 2–3(–4) µm and a dark





**Figure 3.** *Arthonia apatetica*: a, ascus; b, spores. Scale: a & b = 10 µm.

epithecium which is K+ intensively violet, on *Pinus* twigs. This description matches *Micarea nitschkeana* and therefore we consider *L. globulosa* Savicz to be a synonym of this species.

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