Folia Cryptog. Estonica, Fasc. 48: 17–23 (2011)

Four new *Caloplaca* species (Teloschistaceae, Ascomycotina)

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Abstract: Four new species of the genus *Caloplaca, C. kiewkaensis* L.S. Yakovczenko, I.A. Galanina & S.Y. Kondr., *C. letrouitioides* S.Y. Kondr., Elix & Kärnefelt, *C. trassii* I.A. Galanina & S.Y. Kondr., and *C. ussuriensis* Oxner, S.Y. Kondr. & Elix from Asia and Australia are described as new to science and compared with closely related species.

Kokkuvõte: Neli uut kuldsambliku (*Caloplaca,* Teloschistaceae, Ascomycotina) liiki

Kirjeldatakse neli teadusele uut kuldsambliku (*Caloplaca*) liiki (*C. kiewkaensis* L.S. Yakovczenko, I.A. Galanina & S.Y. Kondr., *C. letrouitioides* S.Y. Kondr., Elix & Kärnefelt, *C. trassii* I.A. Galanina & S.Y. Kondr. ja *C. ussuriensis* Oxner, S.Y. Kondr. & Elix) Aasiast ja Austraaliast ning võrreldakse neid lähedaste liikidega.

INTRODUCTION

During studies of lichen communities in oak forests of Russian Far East (Galanina, 2008) and a comparative study of Australian representatives of *Caloplaca* (Kondratyuk et al., 2007, 2009a, b, 2010, 2011; Lumbsch et al., 2011), four new species were discovered, which are described here. The herbarium specimens are deposited in the following herbaria: Australian National Herbarium (CANB), herbarium of Korean Lichen Research Institute (KoLRI), lichen herbarium of National Academy of Sciences of Ukraine (KW–L), Botanical Museum, Lund University (LD), V.L. Komarov Botanical Institute (LE), Royal Botanic Gardens of Melbourne (MEL), Natural History Museum, University of Tartu (TU) and Botanical Garden-Institute, Vladivostok (VBGI).

RESULTS

Caloplaca kiewkaensis L.S. Yakovczenko, I.A. Galanina & S.Y. Kondr. sp. nov.

Caloplacae sibiricae similis, sed thallo melius evoluto, apotheciis maioribus et multo crassioribus, discis apotheciorum multo obscurioribus, hymenio altiore et septo apothecii multo latiore differt.

MycoBank number – MB 56118

Type – Russia: Far East, Primorsky region, Lazo district, in the vicinity of Kiewka settlement, 42°50'09.10"N, 133°42'40.63"E, *Quercus mongolica* forest, c. 1.5 km from the sea shore (study plot 75), on the bark of oak growing together with *Caloplaca flavorubescens* aggr. (= as *Caloplaca gordejevii*), 20.09.2003, *I. A. Galanina* [s.p. K-2] (VBGI – holotype, KW–L – isotype).

Illustration – Fig. 1.

Description – *Thallus* to 1–1.5 cm wide, rather thin, continuous, reflecting the surface of the substrate, whitish grey to grey or in part whitish yellow-grey with pink-violet spots due to pycnidia. Hypothallus not seen.

Apothecia 0.2–0.8 mm diam., 0.3–0.38 mm thick in section, numerous, scattered or rarely aggregated, rounded, very thick, wart-like or sandwich-like, biatorine at first with a whitish yellow or pale yellow-orange proper margin and pale or dark yellowish brown disc, then from distinctly zeorine with grey or whitish grey thalline exciple concolorous with the thallus apparent on the underside, to biatorine with a dull yellow to orange yellow or brownish yellow, smooth, true exciple, and pale or dull yellowish brown, soon becoming brown black to aeruginose black disc.

In section zeorine, thalline exciple (37–)40–70 µm thick, usually below the subhymenium level, with scleroplectenchymatous cortical layer to 25–36 µm thick, algal zone 50(–75) µm thick; true exciple 100–140(–170) µm wide in the uppermost lateral portion with a bright or dull yellow to yellow straw, golden or brownish orange outermost layer, 30–45 µm thick in the lower lateral portion and 40–50 µm thick in the basal portion, consisting of radially orientated, conglutinated hyphae similar to scleroplectenchyma, but sometimes ±paraplectenchymatous possibly due to irregular oil agglomerations; hymenium 70–80 µm high, somewhat greyish owing to numerous rounded or irregular agglomerations of oil droplets [see below under subhymenium]; epihymenium 15–25(–30) µm thick, brownish or amber-brown to blackish or aeruginose-black with pigment granules apparent; paraphyses very thin, with slightly swollen uppermost cells 5–6 µm diam., with a distinct aeruginose-black pigment [paraphyses better seen in K, 2.5(–3.5) µm diam.]; subhymenium (50–)100–120 µm thick, somewhat greyish due to numerous, rounded oil droplets 3.5–6 µm diam. and irregular oil aggregations [both better seen in K]; asci (1-3-6-)8-spored; ascospores broadly ellipsoid with rounded ends to almost spherical, with rather thick cell walls at the poles, colourless or becoming somewhat greyish, (12–)13–17(–19) × (7.5–)8.5–10 µm in water and 11–19 × 8.5–12(–13) µm in K, septum rather wide (5–)6–8.5(–10) µm wide in water and 5–10(–12) µm wide in K. *Pycnidia* with mature conidia not seen.

Fig. 1. *Caloplaca kiewkaensis*, holotype, general habit (scale = 1 mm).

Chemistry – Cortical layer of thallus and thalline exciple, outer layer of the lateral portion of true exciple and epihymenium K+ purple or epihymenium K+ purple-black in places.

Ecology – On wood and bark of *Quercus mongolica*.

Etymology – The species epithet refers to the type locality, the Kiewka settlement in Lazo district, Primorsky region, Russia.

Distribution – So far known from several localities in Primorsky region, Far East, Russia (Eastern Asia).

Notes – *Caloplaca kiewkaensis* could be keyed to the epiphytic, arctic *C. sibirica* H. Magn. known from Eurasia and Greenland (Kondratyuk et al., 2004). However, *C. kiewkaensis* differs from *C. sibirica* by a more developed thallus, larger (0.2–0.8 mm vs. 0.3–0.5 mm diam.) and much thicker (in section 0.35–0.38 mm vs. 0.2 mm thick) apothecia, much darker apothecial discs (dull yellowish brown to black vs. orange-yellow), a higher hymenium (70–80 µm vs. 65–70 µm high) and much broader ascospore septum (6–8.5 µm vs. 3–6 µm wide).

Caloplaca kiewkaensis is also similar to *C. letrouitioides* S. Y. Kondr., Elix & Kärnefelt, described below, with both having a very thin, smooth, greyish or greyish-white thallus without isidia and soredia, an extremely thick proper margin rising above the level of the disc as well as medium sized ascospores with a broad septum. However, *C. kiewkaensis* differs from *C. letrouitioides* by thicker and distinctly zeorine apothecia (biatorine in *C. letrouitioides*), a scleroplectenchymatous true exciple, 8-spored asci ((2-)4-spored in *C. letrouitioides*) with numerous oil droplets and aggregations in subhymenium, somewhat wider ascospores (13–17 × 8.5–10 µm vs. 13–15 × 7–9 µm) and narrower ascospore septum (6–8.5 µm vs. 8–11 µm wide).

The thin smooth thallus and biatorine apothecia with a well developed proper margin are reminiscent of many species of *Letrouitia* (e.g. *L. domingensis* (Pers.) Hafellner & Bellem., *L. transgressa* (Malme) Hafellner & Bellem.) but both *C. kiewkaensis* and *C. letrouitioides* differ in having bipolar ascospores.

Numerous oil droplets and irregular oil agglomerations in the hymenium and subhymenium of *C. kiewkaensis* resemble the Australian epiphytic *C. bastowii* S.Y.Kondr. & Kärnefelt and epilithic *C. kilcundaensis* S.Y. Kondr. &

Kärnefelt. However, *C. kiewkaensis* differs from the latter species by its much thicker apothecia which are biatorine or have a thalline exciple only on underside, a darker thallus, much wider ascospores and in distribution (Kondratyuk et al. 2009a, b). Numerous ascus content separately of ascal wall in K was for the first time observed for the members of the Teloschistaceae.

Specimens examined – **Russia**: Primorsky region, Krasnoarmejsky district, 'Udegejskaya legenda' National Park, Mikhailovsky 'prizhim', steep rock outcrop at the left bank of Bolshaya Ussurka River in the upper its part, point 393, 45°45'15.3"N 135°19'07.4"E, 198 m alt., on wood, 8.11.2009, Yakovchenko (VBGI); Islands of Bay of Great Peter, Island of Popova, mixed deciduous forest of parkland type, on *Quercus mongolica* bark, growing together with *Caloplaca oxneri*, 14.09.1989, S. Kondratyuk (KW–L–68226 sub *C. oxneri*).

Caloplaca letrouitioides S.Y. Kondr., Elix & Kärnefelt sp. nov.

Ex thallo diluto laevique et apotheciis biatorinis cum margine genuina evolutissima speciebus Letroutiae similis, sed ascosporis bipolaris differt.

MycoBank number – MB 563119

Type – Australia: Victoria, Gunnamatta Beach, 1976, *R. Filson 15871* (MEL – holotype).

Illustration – Fig. 2.

Description – *Thallus* to several cm wide, grey to whitish grey, very thin, smooth with a flat to slightly uneven surface, spots with blackish edges present or absent. Hypothallus not seen.

Apothecia 0.4–0.9 mm wide, common, scattered or ±aggregated in small groups, biatorine, margin yellow to yellow orange, very thick (0.15–0.18 mm wide) and elevated (up to 0.8–1 mm high in section) above the disc; disc flat to slightly concave, brown to brownish orange; in section biatorine (algae completely absent in the apothecium), true exciple very thick to 150–180 µm thick in the uppermost part and to 100 µm thick in lower lateral portion, consisting of radiating to ±palisade, separate hyphae, 3–5 µm diam, and with lumina 1–1.5 µm diam., hyaline with a 8–10 µm wide, brownish orange outer layer, (30–)40–100 µm wide in the basal portion, ±pseudoprosoplectenchymatous, cell lumina 1.5–3 µm wide; hymenium 45–55(–65) µm high, hyaline; epihymenium 10–15 µm high, brownish orange; subhymenium 40–100(–110) µm thick, hyaline becoming brownish in the lower portion; paraphyses usually sparsely branched, of uniform width (apical cells not expanded), 1.5–2 µm diam.; asci (2-)4-spored, very rarely with 1, 3 or 5 mature ascospores and usually containing aborted, hyaline ascospores in the same ascus; ascospores elongated to cylindrical ellipsoid, with rounded ends, (12–)13–15(–16) × 7–9 µm, septum (4–)6–8(–9) µm wide in water and (14–)16–17(–20) × (7–)9–11(–15) µm, septum 8–11(–12) µm wide in K. Spermogonia dark reddish, spermatia not seen.

Fig. 2. *C. letrouitioides*, holotype, general habit (scale = 1 mm).

Chemistry – Epithecium and outer portions of the true exciple K+ reddish purple.

Ecology – The species occurs on bark of thin twigs.

Etymology – The epithet is derived from its superficial resemblance to *Letrouitia* species.

Distribution – At present this species is known only from the type collection.

Notes – This species differs from the other representatives of *Caloplaca* by a very thin, smooth, greyish or greyish-white thallus lacking isidia and soredia, the distinctly biatorine apothecia with extremely thick proper margins rising above the level of the disc as well as the (2-)4-spored asci and medium sized ascospores with a broad septum.

The thin, smooth thallus and biatorine apothecia with very well developed proper margins are reminiscent of many species of *Letrouitia*, e.g. *L. domingensis* (Pers.) Hafellner & Bellem. and *L. transgressa* (Malme) Hafellner & Bellem., but *C. letrouitioides* differs by bipolar ascospores.

It differs from other species of *Caloplaca* by a combination of characters, i.e. (2-)4-spored asci, the medium size ascospores with rather broad septa as well as the anatomical characters of the apothecia mentioned above (i.e. the well developed true exciple, the unexpanded paraphyses tips and the lack of algae in the apothecia).

***Caloplaca trassii* I.A. Galanina & S.Y. Kondr. sp. nov.**

Lecanorae subfuscatae similis, sed ascosporis bipolaris differt.

MycoBank number – MB 563120

Type – Russia: Far East, Primorsky region, Lazo district, in the vicinity of Kiewka settlement, 42°50'09.10"N 133°42'40.63"E, *Quercus mongolica* forest, about 1.5 km from the sea shore, (study plot 75), on the bark of oak, 15.09.2003, *I. A. Galanina* [s.p. K-2] (LE – holotype, VBGI, TU, KW–L – isotypes).

Illustration – Fig. 3.

Description – *Thallus* 5–10 mm wide, entire, not cracked, with a somewhat uneven surface, weakly and irregularly verrucose or with highly elevated aggregations of verrucae exfoliating from the substrate, verruca 0.7–1.5 mm high, 0.2–0.3 mm wide (with 3–5 apothecia per aggregation), dark grey or brownish grey. Hypothallus absent, although when bordering other crustose lichens a black line often present. In section thallus 120–240 µm thick, cortical layer 14–19(–24) µm thick, hyaline, textura intricata, algal zone 50–75(–100) µm thick.

Apothecia 0.3–0.7 mm diam., 0.17 mm thick in section, usually 1(–3) apothecia per thalline verruca, ±immersed in thalline verrucae at first, then sessile, lecanorine, thalline margin entire, persistent, 0.07–0.09 mm wide, grey or brownish grey, concolorous with thallus; disc brown to dark brown or cherry-blossom brown; apothecia distinctly zeorine in section; thalline exciple to 72 µm wide, cortical layer (10–)17–19 µm thick, algal zone to 50 µm thick in the uppermost part at the level of the epihymenium; true exciple 24–36 µm wide in the uppermost portion, to 24 µm thick in the lower lateral portion and 12 µm thick in basal portion (but well separated from the subhymenium); hymenium 70–80 µm high; epihymenium to 24 µm thick, brownish to dirty yellowish brown; subhymenium 50–60(–70) µm thick, hyaline; paraphyses not widened towards the tips, 2.5(–3.5) µm diam., with uppermost portion 15–20 µm long becoming brownish, richly branched and often agglutinated; asci 8-spored; ascospores elongated ellipsoid, distinctly widened at the septum, (9.5–)12–15.5 × (5–)5.5–7 µm in water and 12–17 × 5.5–7.5 µm in K; ascospores septum 2–5(–7) µm wide in water and 4–5(–8) µm wide in K.

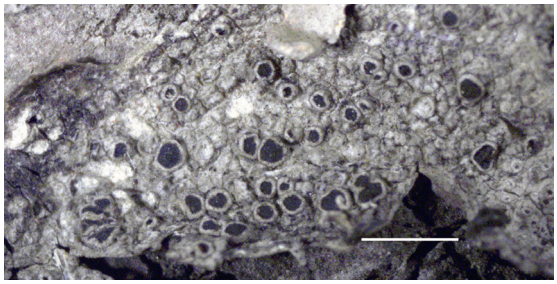

Fig. 3. *C. trassii*, general habit (scale = 2 mm).

Chemistry – Thallus and epihymenium K– or epihymenium K+ greenish brown and paler with time.

Ecology – On the bark of *Quercus mongolica*.

Distribution – So far known from several distant localities in Far East Russia (Eastern Asia). It is probably not a rare species but has evidently been overlooked in the field and during preliminary determination of material (mistaken for a *Lecanora*).

Etymology – Named in honour of the Estonian lichenologist and phytosociologist, Hans Trass, in recognition of his contribution to the knowledge of Eurasian lichens and plant communities.

Notes – *Caloplaca trassii* differs from *C. suspiciosa* (Nyl.) H. Magn., a rather widely distributed epiphyte species in Eurasia, by a thinner cortex in the thalline exciple (20–24 µm vs. 32–50 µm thick), paraphyses of uniform thickness (not swollen towards the tips), longer ascospores (12–15.5 µm vs. 10–12 µm long), the K– reaction of the thalline exciple, the absence of an algal zone below the apothecium and in lacking a bluish coloured epihymenium.

Caloplaca trassii differs from the North American epiphyte, *C. diphasia* (Tuck.) Wetmore, by the entire thallus (cracked in *C. diphasia*), the smaller epruinose apothecia (0.3–0.7 mm vs. 0.8–1.2 mm diam. with pale yellowish pruina), the grey or brownish, K– thalline margin (yellowish and K+ yellow or K+ violet in *C. diphasia*), and in narrower ascospores (5–7 µm vs. 7–10(–11) µm wide) and narrower ascospore septum (2–5 µm vs. 4–7 µm wide).

Caloplaca trassii differs from *C. brunneola* Wetmore, another North American species, by lecanorine rather than biatorine apothecia, larger ascospores (12–15.5 × 5–7 µm vs. 10–12.5 × 4–5.5 µm), paraphyses of uniform thickness without brown caps, and in lacking an algal layer below the basal portion of the true exciple.

The Australian *C. filsonii* Hafellner, S.Y. Kondr. & Kärnefelt (Kondratyuk et al. 2007) differs from *C. trassii* by a thallus of ±uniform thickness – not becoming much thicker and verruculose in the central portion – and by the much narrower ascospores (3–5.5 µm vs. 5.5–7 µm wide) with narrower septum (1–2 µm 2–4.8 µm wide).

Caloplaca trassii differs from *C. camptidia* (Tuck.) Zahlbr., widely distributed in subtropical and tropical America, as well as *C. ochrolechioides* S.Y. Kondr., Kärnefelt & Elix and *C. yammeraensis* S.Y. Kondr., Kärnefelt & Elix from Australia by distinctly epruinose apothecia. In addition, *C. trassii* differs from *C. ochrolechioides* in having a much paler whitish grey thallus, lecanorine apothecia (biatorine in *C. ochrolechioides*), and a thinner true exciple in the basal portion. *C. yammeraensis* differs from *C. trassii* by minute thalline shizidia, as well as much larger ascospores and broader ascospore septum.

Caloplaca spadicea (Tuck.) Zahlbr. known from Hawaii and Nepal, is superficially similar to both *C. camptidia* and *C. ochrolechioides*. However *C. spadicea* is characterized by the presence of three-septate ascospore and a minutely isidiate thallus (Wetmore, 1994).

Caloplaca trassii is also similar to the recently described Australian *C. tomnashii* S.Y. Kondr., Elix & Kärnefelt in having a small grey thallus and lecanorine apothecia with black or blackish discs as well as rather long, narrow ascospores. However, *C. trassii* differs from *C. tomnashii* by its narrower ascospore septum (2–5 µm vs. 6–8 µm wide), wider apothecial thalline margin (70–90 µm vs. 35–40 µm wide), a narrower true exciple in the basal portion (to 10–12 µm vs. 50–70 µm thick) and thinner cortical layer of the thalline exciple [15–20 µm vs. 20–30(–40) µm thick] as well as in distribution (Lumbsch et al., 2011).

Superficially *C. trassii* is so similar to species belonging to the *Lecanora subfusca* group that it is commonly misplaced there until the spores are examined.

Specimens examined – **Russia**: Primorsky region, Oktiabrsky district, 10 km SE of Korfovka settlement, oak-beach forest (with *Betula davurica* Pall., *Lespedeza bicolor* Turcz. and *Corylus heterophylla* Fisch. ex Trautv.), on bark of *Quercus mongolica*, 11.08.2006, *Galanina* (LE, VBGI); the top of the hill in the vicinity of Korfovka settlement, oak forests among 'Manchurian prairie', on the bark of *Quercus mongolica*, 10.08.2006, *Galanina* (VBGI, KW–L); Khankaysky district, outcrop (about 30 m high) of W bank of Khanka Lake in the vicinity of Turiy Rog settlement, oak-beach grass-shrubby forest, on the bark of *Quercus mongolica*, 14.08.2006 *Galanina* (VBGI, KoLRI); Islands of Bay of Great Peter, Island of Popova, mixed deciduous forest of parkland type, on *Quercus mongolica* bark, growing together with *Caloplaca oxneri*, 14.09.1989, S. Kondratyuk (KW–L–68227 sub *C. oxneri*).

Caloplaca ussuriensis Oxner, S.Y. Kondr. & Elix sp. nov.

Caloplacae chrysophthalmae similis, sed thallo multo crasso, distincte rimoso/aerolato, paraphysibus apicem versus etumidis, excipulo diluto et contento fragilini magis differt.

MycoBank number – MB 563121

Type – Russia: Primorsky region, in the vicinity of Okeanicheskaya railway station, 'Sad-gorod' locality, on *Acer pseudosieboldianum*, growing together with *Caloplaca oxnerii* and *C. cerina*, 3.09.1927, A. Oxner (KW–L – holotype, LE, CANB, LD – isotypes).

Illustration – Fig. 4.

Description – *Thallus* 2–3 cm wide, rather thick, smooth to distinctly cracked by rather broad cracks (up to 0.07 mm wide), areoles 0.5–1.5(–2.5) mm wide; upper surface whitish, dull greyish-white to grey, greenish grey-brown or dull greenish yellow with contrasting bright yellow, dull yellow or dull brownish yellow soralia. Soralia 0.2–0.5 mm wide, initially rounded or irregular, usually at the margins of areoles, then becoming confluent and forming spectacular elongated, fissure-like soralia ca. 0.3 mm wide

and 1 mm long; sorediose mass convex, yellow to greenish yellow or dull brownish yellow. Soredia 20–30 µm diam., spherical, but often aggregated in elongated or irregular shape aggregation to 30–50(–70) µm wide. Thallus very thin at the periphery to rather thick in the centre; in section 70–150(–200) µm thick, to 100 µm thick when soralia develop; cortical layer usually 20–35 µm thick, but sometimes to 50 µm thick in places.

Apothecia 0.5–1 mm diam., in section to 0.3 mm high, initially zeorine with the thalline margin well developed towards the base, true exciple 50–70 µm wide, dull yellow to almost colourless (especially in older herbarium specimens), disc brown to dark brown; in section zeorine or lecanorine, thalline exciple well developed, 60–70 µm thick but the cortical layer well developed only on the underside, 20–30 µm thick, paraplectenchymatous; algal zone to 80 µm thick, better developed in the lateral portion; true exciple 30–40 µm wide in the uppermost lateral position, 15–20 µm thick in the lower lateral and basal portions, ±'textura intricata' or poorly developed scleroplectenchyma with cell lumina 1–1.5 µm diam.; hymenium to 70 µm high; paraphyses without swollen tips, to 2 µm diam.; subhymenium 60–70 µm thick, appearing brownish or dark due to numerous, minute, oil droplets to 2 µm diam. (better seen in K); asci 8 spored; ascospores broadly ellipsoid to almost spherical or elongated and fusiform, (10–)11–16 × (6–)7–8 µm in water and (11–)13–17(–19) × 8–10(–11) µm in K, with a rather wide septum (4–)5–7 µm wide in water and (5–)6–8(–10) µm wide in K.

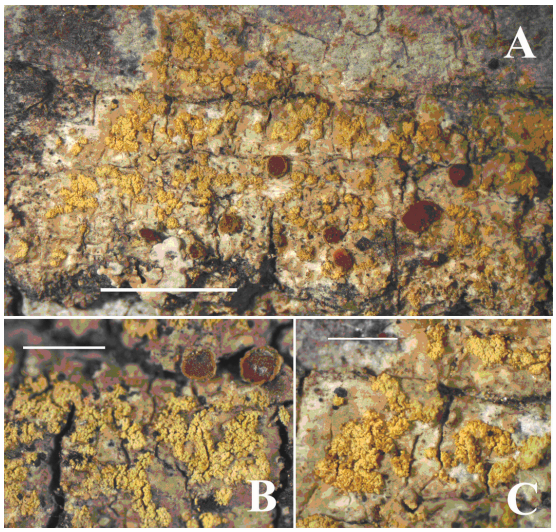

Fig. 4. *Caloplaca ussuriensis*, holotype, general habit, A and B fertile, and C sterile fragments (scale A = 4 mm, B and C = 1 mm).

Chemistry – Contains fragilin (major), parietin (major/minor), emodin (minor), 7-chloroemodin (trace), erythroglaucin (trace), 7-chloroparietinic acid (trace), physcoin bysanthrone (minor), physcoin 9-anthrone (trace), physcoin 10-anthrone (trace).

Ecology – *Caloplaca ussuriensis* regularly grows together with *C. oxneri* S.Y. Kondr. & Søchting so it often appears that the one thallus produces both isidia and soredia. The thalli of both species (especially after long storage in herbaria, e.g. Oxner's collections) are the same colour. However, when growing side by side, *C. oxneri* differs by characteristic ascending thalline fragments exposing the white medulla, while upper surface of *C. ussuriensis* is always entire and medulla not apparent (except for soralia). *Caloplaca cerina* (Ehrh. ex Hedwig) Th.Fr. is also sometimes associated with *C. ussuriensis*, but differs by its bright yellowish discs with a greyish thalline margin (in contrast to the darker brown discs in *C. ussuriensis*) as well as in lacking of soralia.

Etymology – The species epithet derives from the historical name of the Primorsky region (i.e. the Ussurijsk region), as name first proposed by A. Oxner in the 1920s and 1930s.

Notes – *Caloplaca ussuriensis* is similar to *C. chrysophthalma* Degel., but differs in having a much thicker, distinctly cracked-areolated thallus, numerous oil droplets in the subhymenium, more or less 'textura intricata' tissue in the true exciple (scleroplectenchymatous in *C. chrysophthalma*), paraphyses not swollen towards the tips (4–6.5 µm wide in *C. chrysophthalma*), a thinner exciple as well as higher concentrations of fragilin and detectable quantity of emodin, 7-chloroemodin, erythroglaucin, 7-chloroparietinic acid, physcoin bysanthrone, physcoin 9-anthrone, and physcoin 10-anthrone. The dimensions of the ascospores and ascospore septa are very similar for these two species.

Caloplaca oxneri would appear to be closely related to *C. ussuriensis* but differs in having phyllidia and schistidia rather than well developed soralia and convex sorediose mass (Kondratyuk et al., 1996).

Specimens examined – **Russia**: Primorsky region, Vladivostok, vicinity of railway station 'Sad-gorod', on oak (*Quercus mongolica*), growing together with *Caloplaca oxnerii*, 17.09.1989, Kondratyuk 1990 (KW–L); Vladivostok, near railway station 'Okeanicheskaya', near forest service office, on oak, growing together with *Caloplaca oxnerii*, 17.09.1989, Kondratyuk (KW–L). – Lazovsky district, in the vicinity of village Lago, broad-leaved forest, on bark of *Tilia* sp., growing together with *Caloplaca oxnerii*, 22.09.1989, Kondratyuk (KW–L). – Islands of Bay of Great Peter, Island of Popova, young forest Alneta, on *Fraxinus* sp., and on *Tilia* sp., 13.09.1989, Kondratyuk (KW–L), the same locality 14.09.1989, Kondratyuk (KW–L). – Khankaysky district, 2 km to N of Rubinovka village, in the valley of Malokanka River, oak forest (*Quercus mongolica*) upper of steppe south slope, on the bark of oak, 4.05.2007, Galanina (VBGI), the same locality forest of *Salex* in the valley of river, on the bark of *Salix* sp., 4.05.2007 Galanina (VBGI); 3 km to Dvoryanka village along the Komisarovka River, oak forest with rock outcrops at the top of mountain, on the bark of *Quercus mongolica*, 20.08.2007, Galanina (VBGI).

ACKNOWLEDGMENTS

SK is thankful to the State Agency on Science, Innovation and Information of Ukraine for financial support. Drs Eric Steen Hansen and Ulf Arup are thanked for suggestions and improvements to the manuscript, and Dr Torbjörn Tyler for providing us with Latin diagnoses.

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