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# *Caloplaca oxneri* (Teloschistaceae), a New Lichen Species from East Asia

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**Abstract** *Caloplaca oxneri* S. Kondratyuk et Søchting (syn. *Caloplaca phloginoides* Oxner nomen nudum) is described as new to science. It grows on bark of mainly deciduous trees in Russian Far East and Japan.

**Key words:** Lichens, systematics, Teloschistaceae, *Caloplaca*.

A study of Oxner's manuscripts and lichen specimens kept in the Central Scientific Archives of the National Academy of Science of Ukraine and in N. G. Kholodny Institute of Botany revealed many unpublished manuscripts. During editing of Oxner's manuscript "The lichens of family Caloplacaceae of the territory of the former Soviet Union" the first author compared taxa known to and described by Oxner in his publications and manuscripts with herbarium material kept in the lichenological herbarium of Kiew (KW).

Unfortunately some names, i.e. *Caloplaca altaica* Oxner, *C. barchalovii* Oxner, *C. phloginoides* Oxner, were not validly published in Oxner's "Keys for identification of genera and species of the family Caloplacaceae Zahlbr. of the flora of the USSR" (Oxner, 1990). No designated types of the taxa mentioned above were found in Kiew, but specimens matching Oxner's description (Oxner, 1990) of *C. phloginoides*, an isidiate species from Russian Far East, were found. Furthermore, the first author had an opportunity to collect a rich material of this taxon in Prymorsky Region of Russian Far East in 1989. Since *Caloplaca phloginoides* was not validly published by Oxner (1990), we propose it here as a new species under the name *Caloplaca oxneri*.

The Russian Far East is a region with a number of lichens having their distribution centres in warm-temperate to tropic-subtropical regions. Such taxa are *Coccocarpia* sp., *Teloschistes flavicans*, *Phaeographis dendritica*, *Parmelia delavayi*, *Pyxine sorediata*, *Pseudocyphellaria aurata*, *P. crocata*, *P. collata* and *Cladonia balfourii*. Biogeographical aspects of these species were discussed in detail by Tomin (1926), Oxner (1928, 1930, 1934, 1948, 1960) and Lazarenko (1935, 1939). The region of Russian Far East and Japan, or East and Southeast Asia in general is considered a possible centre of speciation for some lichen genera, i.e. *Asahinea* and *Cetrelia* (Randlane and Saag, 1989, 1991), *Phaeophyscia* (Moberg, 1994), and some species within *Xanthoria* (Poelt and Kondratyuk, 1996).

## *Caloplaca oxneri* S. Kondratyuk et Søchting sp. nov.

(Figs. 1A & 1B, 2)

*Caloplaca phloginoides* Oxner nomen nudum, in Oxner (1990). Keys for identification of genera and species of the family Caloplacaceae Zahlbr. of the flora of the lichens of the USSR, Kiev, Institute of Botany, p. 33.

*Similis C. herbidellae sed protuberantiae schistidia et phyllidia ferentes; apothecia semper inter protuberantias dispersae.*

*Typus.* Russia. Prymorsky region, Vladivostok town, vicinity of railway station Sadgorod, on oak (*Quercus mandshurica*), 17 September 1989, S. Kondr-

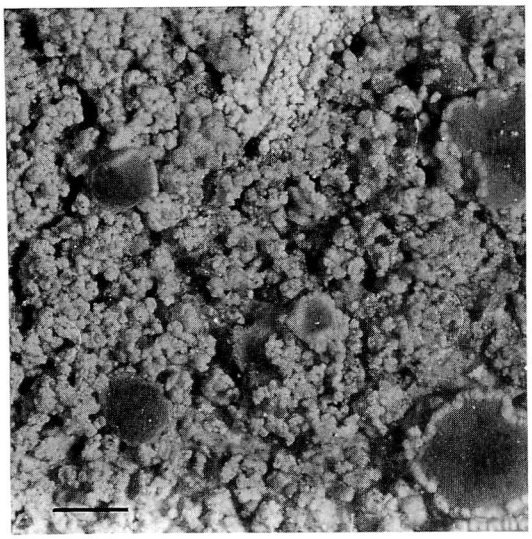

**Fig. 1.** Habit of *Caloplaca oxneri* with abundant schistidiate thallus and apothecia (holotype). Bar 1 mm.

atyuk (KW, holotypus; C, LD, BM, GZU, TSM, isotypi)

*External morphology.* Thallus crustose, forming irregular patches 2–3 cm (but sometimes up to 15 cm) across, thin and continuous, effuse, with thin areolae forming on the smooth thallus periphery. Areoles eventually fusing and producing very irregular terete to flattened erect or prostrate protuberances, which are branched and often isidium-like, but will generate blastidia or even phyllidia and schistidia, which can be up to 0.4 mm across. Colour brightly greenish-yellow or dirty yellow, more greyish between the protuberance. Hypothallus white, often well developed and conspicuous. Apothecia lecanorine to zeorine, occasional, scattered, sessile, 0.5–1.2(–1.7) mm across. Disc plane, yellow to more often orange brown, sometimes even dark brown or black brown. Thalline exciple concolorous with thallus or more brightly yellow, persistent and eventually often carved, 50–70(–120) $\mu$m thick. Proper exciple yellow to orange, 20–40 $\mu$m thick.

*Anatomy.* Thallus protuberances with algae, sometimes in a continuous layer, sometimes spread between thin-walled hyphae with almost spherical cells, 3–5(–7) $\mu$m. Cortex poorly differentiated, composed of a 2–3(–4) cells thick layer of the same type of hyphae as inside the protuberances, and covered by anthraquinone crystals. Thalline exciple in section 50–120 $\mu$m. Proper exciple c. 85–110 $\mu$m thick in the exposed part, and 50–70(–80) $\mu$m thick in the lateral part and basal part, consisting of prosoplectenchymatous tissue, with crystals on the outer exposed surface. Epithecium 16.5–23 $\mu$m, brightly yellowish-brown, with numerous yellowish brown crystals, K+ purple red. Hymenium colourless, with numerous oil drops and crystals, 90–105 $\mu$m tall. Hypothecium hyaline, rather thick, 70–90(–160) $\mu$m thick at the centre, with numerous crystals. Paraphyses usually branched once or twice or seldom simple, septate, apical cells almost unswollen,

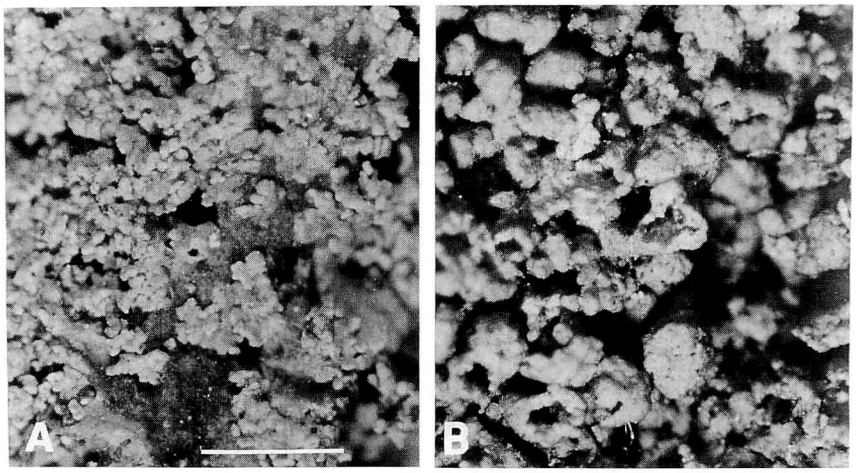


**Fig. 2.** Habit of *Caloplaca oxneri*. A. Showing the terete to flattened isidioid formations. B. Showing erect to prostrate isidium like protoberances generating blastidia and schsitidia (holotype). Bar 0.5 mm.

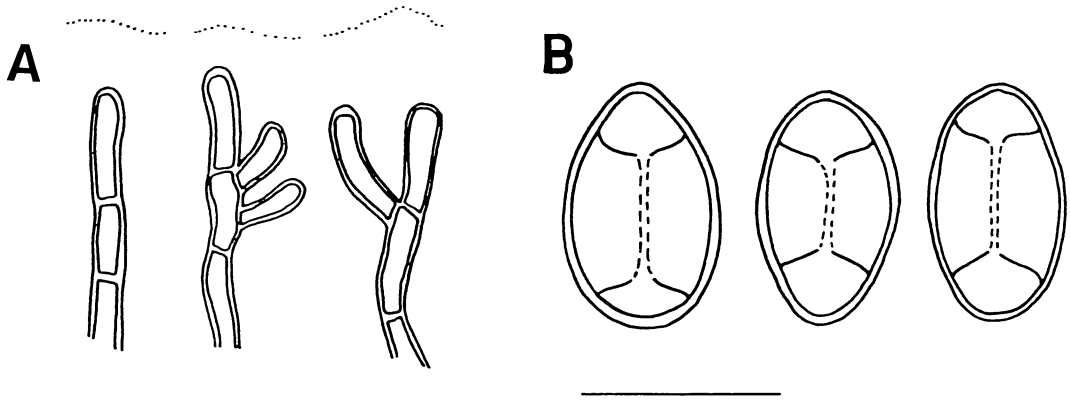


**Fig. 3.** Anatomy of *Caloplaca oxneri*. Drawings from cross section of apothecia (holotype). A. Apical portion of paraphyses. B. Ascospores. Bar 9 μm.

1.2–1.6(–3) μm. Asci 8-spored. Spores broadly ellipsoid, polarilocular, colourless, 13.5–18×6–7 μm. Conidiomata immersed, inconspicuous, concolorous with the disc of apothecia or a little darker, up to 270 μm across. Conidia simple, ellipsoid, straight, colourless, small, 2.5–3.0(3.5)×0.8–1.0 μm. Photobiont green, coccoid, (6–)9–12(–15) μm across.

*Chemistry.* Thallus K+ violet-red, disc C+ red.

*Distribution. Caloplaca oxneri* is known only from Russian Far East (Prymorski Region) and Japan.

*Habitat.* The species grows on bark of mainly deciduous trees i.e. *Quercus mongolica*, *Fraxinus* sp., *Acer sieboldianum*, *A. pseudo-sieboldianum*, *Tilia amurence*, *Betula* sp., *Ulmus japonicum*, as well as on *Pinus*. It thrives in small settlements, but occurs also in cities such as Vladivostok even near roads with very intense traffic. In the broad leaved forests of Prymorsky region, where it is probably very common, it is often associated with *Candelaria concolor*, *Phaeophyscia* cfr. *hispidula*, *Xanthoria ulophyllodes*, *X. oxneri*, *Pertusaria amara*, *Physcia* sp., *Physconia sp.*, *Rinodina* sp. and *Caloplaca chrysophthalma*. *Pertusaria amara* was often observed to overgrow thalli of *C. oxneri*.

*Selected specimens examined.* RUSSIA. PRYMORSK. Lazovsky district, in the vicinity of village Lazo, broad-leaved forest, on bark of *Tilia* sp., 22. 09. 1989, S. Kondratyuk (KW, CBG); settlement Chistovodnoe, on tree bark, mosses and plant debris, 5. 03. 1978, Zakharova (KW); Islands of Bay of Great Peter, Island of Popova, young forest Alneta, on *Fraxinus* sp., and on *Tilia* sp., 13. 09. 1989, S. Kondratyuk (KW, LD, GZU, LE, H, BM, UPS, TSN, C); Daljnegorsk, on bark of *Ulmus* 24. 06. 1978, Kondratyuk (KW); Vladivostok, near railway station "Okeanicheskaya", near forest service office, on oak, 17. 09. 1989, S. Kondratyuk (KW, C, LD); In Oriente Extremo. Ditio Ussuriensis. Distr. Wladiwostok, in loco "Bagataja Griva" dicto, prope st. Okeanskaja, ad corticaem *Tiliae amurensis* 4. 09. 1927, A. Oxner (KW); Ussurijski region, Reserve Mountain-Tajga Station "A. N. Timokhov Kljuch", 22. 10. 1935 A. S. Lazarenko (KW). Island of Petrova in Japan Sea, on trunks of trees, 27–29. 08. 1936, N. Kabanov (KW). JAPAN. HONSHU. Nagano-ken, Minami-sakugun, Kawakami-mura, on *Pinus*, c. 1500 m, 04. 09. 1993, E. I. Kärnefelt (LD 932307). Iwate-ken, Hanamaki Hot Spring, Hanamaki city. On bark; elevation about 200 m, 13 August 1971, H. Kashiwadani, no. 9279 (TNS). HOKKAIDO. Prov. Ishikari, Ebetsu, on bark of *Populus maximoviczii*, elevation about 10 m, 24 October 1971, H. Kashiwadani, no. 9404 (TNS).

*Discussion. Caloplaca oxneri* is characterized by its irregular thallus surface consisting of blastidia, phyllidia and schistidia which are concolorous with the basic thallus. This is in contrast to the somewhat similar *C. herbidella* (Hue) Magnusson, that has more vertical, coralloid isidia with intensifying rusty orange colour towards the apex and a pale greyish basic thallus. The apothecia in *C. herbidella* are

rare in very isidiate specimens, whereas *C. oxneri* always has scattered apothecia between the protuberances. From the corticolous species *C. bassiae* (Ach.) Zahlbr. *C. oxneri* differs by the absence of true isidia. *C. bassiae* has very well developed, vertical, cylindrical, simple or branched, isidia. Furthermore that species lacks algae in the apothecium (Kärnefelt, 1990).

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## 東アジア産ダイダイキノリ科地衣類の一新種 *Caloplaca oxneri*

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ダイダイゴケ属地衣類の1新種 *Caloplaca oxneri* S. Kondratyuk et Søchting を記載した．本種は極東ロシアと日本に分布し，主に落葉樹の樹皮に生育する．