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NEW AND NOTEWORTHY LICHEN-FORMING AND LICHENICOLOUS FUNGI 6

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Eighteen new to science species, i.e.: 13 taxa from South Korea (*Astroplaca loekoesiana* S. Y. Kondr., E. Farkas, J.-J. Woo et J.-S. Hur, *Buellia ulleungdoensis* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Candelariella hakulinenii* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Flavoplaca laszloana* S. Y. Kondr. et J.-S. Hur, *Lichenostigma epiporpidiae* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Mikhtomia geumohdoensis* S. Y. Kondr., Liu D. et J.-S. Hur, *Orientophila dodongensis* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Physcia orientostellaris* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Placynthiella hurii* S. Y. Kondr. et L. Lőkös, *Protoparmeliopsis kopachevskae* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Psoroglaena sunchonensis* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Rufoplaca kaernefeltiana* S. Y. Kondr., L. Lőkös et J.-S. Hur, *Vezdaea poeltiana* S. Y. Kondr., L. Lőkös, J. Halda et J.-S. Hur), two species from India (*Rusavskia indica* S. Y. Kondr. et D. K. Upreti, and *R. upretii* S. Y. Kondr., G. K. Mishra et S. Nayaka), and two species from Atlantic Europe, i.e.: Spain and Portugal (*Xanthoria schummii* S. Y. Kondr. and *X. lapalmaensis* F. Schumm et S. Y. Kondr.), as well as a lichenicolous fungus *Leptosphaeria oxneriae* Cl. Roux et S. Y. Kondr. from Asia (Russia and India) are described, illustrated and compared with closely related taxa. Forty species of lichen forming and lichenicolous fungi (i.e.: *Acarospora* cf. *rufescens*, *Agonimia allobata*, *A.* aff. *blumii*, *Anema decipiens*, *Anisomeridium* aff. *albisedum*, *Bacidia laurocerasi*, *Cercidospora* aff. *epipolytropa*, *C.* aff. *lobothallia*, *Dictyocatenulata alba*, *Fuscopannaria dissecta*, *Lecanora ussuriensis*, *Lecidella* aff. *carpatica*, *Lemmopsis arnoldiana*, *Leptosphaeria crozalsii*, *Lichenostigma* cf. *bolacinae*, *L.* aff. *rupicolae*, *Lichinella stipatula*, *L. cribellifera*, *L. iodopulchra*, *L.* aff. *myriospora*, *Melaspilea proximella*, *Micarea alabastrites*, *Opegrapha* aff. *thelotrematis*, *Orientophila leucerythrella*, *Pectenia plumbea*, *Placynthium tantaleum*, *Porpidia flavicunda*, *Psorula rufonigra*, *Pyrenocarpon* aff. *thelostomum*, *Pyrenodesmia duplicata*, *Pyrenopsis* aff. *haematina*, *Ramboldia haem-*

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atites, *Rhizoplaca subdiscrepans*, *Rimularia gibbosa*, *Rinodina oxydata*, *Staurothele frustulenta*, *Stigmidium* cf. *clauzadei*, *Strigula australiensis*, *Thelenella luridella, Vezdaea leprosa*) are for the first time recorded for Korea. Additional locality records for South Korea (74 species) and China (3 species) are also given.

Four new combinations, i.e.: *Orientophila chejuensis* (for *Caloplaca chejuensis* S. Y. Kondr. et Hur), *Orientophila diffluens* (for *Lecanora diffluens* Hue), *Orientophila leucerythrella* (for *Lecanora leucerythrella* Nyl.), and *Pyrenodesmia duplicata* (for *Lecanora duplicata* Vain.) are also proposed.

Key words: *Astroplaca*, *Buellia*, *Candelariella*, China, *Flavoplaca*, India, Japan, *Leptosphaeria*, *Lichenostigma*, *Mikhtomia*, new species, *Orientophila*, phylogenetic analysis, *Physcia, Placynthiella*, Portugal, *Protoparmeliopsis,* revision, *Rufoplaca, Rusavskia*, Spain, South Korea, taxonomy, *Vezdaea, Xanthoria*

INTRODUCTION

Part of novelties found in Ulleung-do and Geumoh-do Islands, as well as in a number of localities of Gangwon-do and Jeollanam-do Provinces of South Korea during field studies in 2016 was recently published (Kondratyuk *et al.* 2016*b*, *c*, *e*).

The aim of this communication to present legal descriptions of new set of taxa discovered in areas mentioned as well as to provide data on novelties and rare taxa found during revision as recent as previous collections kept in the KoLRI. Furthermore a number of taxa of the families Teloschistaceae, Candelariaceae, Physciaceae, Trapeliaceae appeared to be new from phylogenetic analysis of families mentioned are also included and discussed.

MATERIALS AND METHODS

The specimens collected in 2016 in various areas of South Korea, as well as collections of previous years kept in the KoLRI and other herbaria (BP, KW-L, LE, LWG, VBI) included in comparative study were examined using standard microscopical techniques and hand-sectioned under a dissecting microscope (Nikon SMZ 645; Nikon, Tokyo, Japan). Anatomical descriptions were based on observations of these preparations under a microscope (Nikon Eclipse E200; Nikon, Tokyo, Japan, and Zeiss Scope, A1; Carl Zeiss, Oberkochen, Germany) with digital camera AxioCam ERc 5s. Section of apothecia were tested with water and with K and IKI (10% aqueous potassium iodide) for identification.

For identification chemical substances of critical taxa standard TLC and HPTLC methods with solvent C were carried out (Arup *et al.* 1993, Orange *et al.* 2001).

NEW SPECIES FOR SCIENCE

Astroplaca loekoesiana S. Y. Kondr., E. Farkas, J.-J. Woo et J.-S. Hur, *spec. nova* (Figs 1–2)

MycoBank no.: MB 819922.

Similar to Astroplaca opaca, *but differs in having smaller and more yellowish thallus, shorter and narrower thalline lobes, wider thalline portions in the centre of thallus, in having medulla yellow in the upper portion and white in the lower portion, in having plane apothecia, higher hymenium, wider paraphysis tips, hyaline subhymenium, longer and wider ascospores, as well as less number of chemical compounds.*

Type: Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163000), 16.09.2016 (KoLRI 041238 – holotype); the same locality, (163086) (KoLRI 041327, BP – isotypes).

Thallus to 1.5 cm across, but may form larger aggregations, distinctly lobate in peripheral zone, and indistinctly areolate/lobate in the centre; dull yellowish to yellowish brownish or yellowish olivaceous; lobes to 2.5–3.5(–4.2) mm long and 0.4–1 mm wide in the middle part and distinctly widened towards the tips to 1–1.5(–2) mm wide, often secondary lobules as branches of main lobules to 0.8–2.8(–3.5) mm long and (0.3–)0.4–1.1(–1.7) mm wide observed, sometimes difficult to delimitate secondary lobules and main lobes, central irregular portions/areoles 1.5–2 mm across, apothecia black, lecideine, sessile.

In section thalline lobes to 450 μm thick; upper cortical layer to (25–)30–50(–70) μm thick, palisade paraplectenchymatous, cells more or less rounded and arranged in more or less regular vertical rows, cell lumina 5–7(–10) μm diam.; algal zone to 100–150 μm thick, rather thick; medullar to 250–300 μm thick, paraplectenchymatous throughout, with the upper yellow portion and lower white portion, or in lower portion or throughout in places somewhat dull orange or dirty reddish (with crystals similar to norstictic acid often observed).

Apothecia to 0.6 mm diam., and to 0.4 mm thick in section, lecideine, black, while biatorine in section; disc more or less plane, black; own margin concolourous with disc, black, somewhat uplifted above the disc level; in section true exciple to 60 μm thick in lateral and basal portion, hyaline, only outermost cell row brownish or yellowish brown, paraplectenchymatous cell lumina 8–15 μm across, very large; hymenium to 75 μm high, dark brown, paraphyses very lax, to 5–7 μm wide at the tips, dark brown; subhy-

menium 120–150 μm thick, hyaline of somewhat slightly yellowish or greyish; ascospores simple, colourless, rounded to ellipsoid, 10–12(–14) × 5–6 μm.

Chemistry: Medulla K+ violet in the upper yellow portion, while K– in lower white portion, UV–. Fragilin and two unknown substances detected (HPTLC).

Ecology: On hard limestone cliffs, often in places with periodically running water.

Distribution: So far known only from type collection in Gangwon-do Province in South Korea, Eastern Asia.

Etymology: It is named after our friend and colleague, a known Hungarian lichenologist László Lőkös (BP, Budapest) in recognition of his contribution to knowledge on Korean lichen flora, as well as in thanks of his cooperation and help during this work.

Taxonomic notes: In having convex thalline lobes in peripheral zone and shiny upper surface *Astroplaca loekoesiana* is similar to *Astroplaca opaca* (Fr.) Bagl., the type species of the genus *Astroplaca* Bagl., known mainly from Western and South Mediterranean Europe (Albania, Belgium, Bosnia-Herzegovina, Croatia, France, Germany, Greece, Italy, Montenegro, Spain, etc.) and North Africa (e.g. Tunisia), but differs in having somewhat shorter and somewhat narrower thalline lobes, especially towards the tips (1–1.5(–2) mm wide vs. to 3–4.5 mm wide), in having wider thalline portions in the centre of

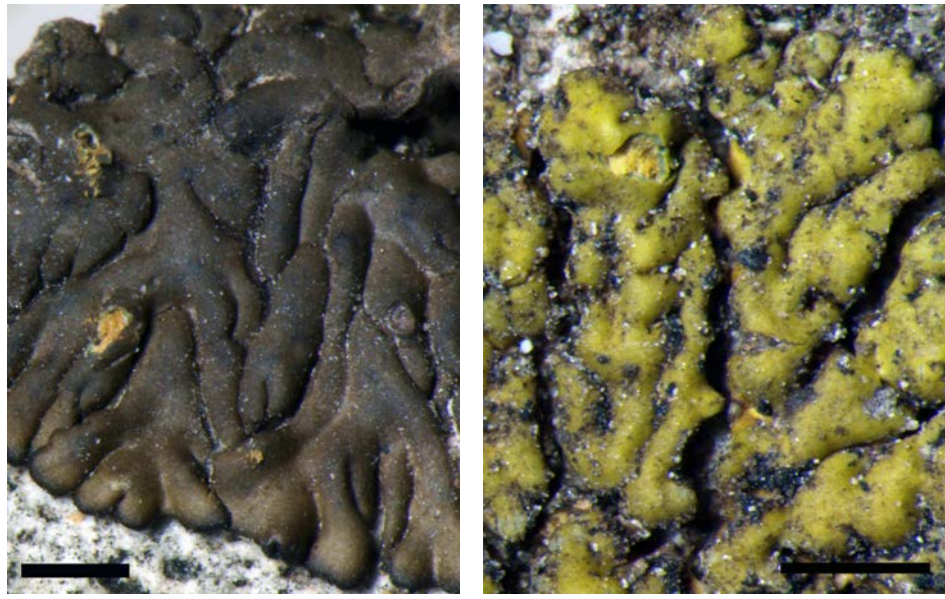

Fig. 1. Astroplaca opaca (left), and *A. loekoesiana* (right), general habit (BP). Scale 1 mm. (Photo of E. Farkas)

Fig. 2. Astroplaca loekoesiana (top, Republic of Korea), and *A. opaca* (bottom, Albania), general habit in field conditions. (Photo of L. Lőkös)

thallus (1.5–2 mm vs. 0.3–1.5 mm across); in having smaller and more yellowish (vs. to 40 mm diam., dark brown or yellowish brown, glossy) thallus, in having medulla yellow in the upper portion and white in the lower portion (yellow medulla, K+ violet only in the upper portion, lower part white, K–, vs. red-brown to yellow-brown), in having plane (vs. convex) apothecia, in having higher and dark brown hymenium (to 75 μm vs. *ca* 50 μm high, hyaline), in having wider paraphysis tips (5–7 μm vs. 4–5 μm wide), in having hyaline subhymenium (vs. red-brown), in having longer and wider ascospores (10–12(–14) × 5–6 μm vs. 9–11 × 4–5 μm, in having different chemical reactions (vs. K+ red, C+ reddish (after 1–2 min.), KC–, Pd–, I–), as well as in having different chemicals (fragilin and 2 unknown substances vs. emodin, erythrin, fragilin, 7-chloro-emodin and 2-chloro-derivatives) (Schneider 1979, Steiner *et al.* 1974).

The records of *Astroplaca opaca* from siliceous rocks at 350–360 m alt. from the Juwang Mts, South Korea (Aptroot and Moon 2014 as *Placolecis opaca*) seems to be doubtful.

From *Glyphopeltis ligustica* (B. de Lesd.) Timdal (syn.: *Xanthopsorella llimonae* H. Hertel, J. M. Egea et J. Poelt, *Astroplaca llimonae*) described from Spain (southwestern Europe) growing on overhanging (steep faces) hard siliceous (limeless) schists in Mediterranean and Atlantic Europe and South Africa (Bouly de Lesdain 1935, Brusse 1985, Nimis and Poelt 1987, Timdal 1988), *Astroplaca loekoesiana* differs in having much larger thallus (vs. to 15 mm diam.), in having plane (vs. convex) and smaller (vs. up to 1.8 mm in diam.) apothecia, in having distinctly widened towards the tips paraphyses to 5–7 μm wide (vs. not widened), in having dark brown (vs. greenish brown) hymenium, as well as in having longer ascospores (10–12(–14) × 5–6 μm vs. 7–9.5–11 × 4–5.5–6.0(–7.5) μm), and in having medulla K+ violet, while white underside K– (vs. thallus K–, C–, KC–), as well as in growing on limestone (vs. starting grow as parasite on *Peltula euploca*).

From *Xanthopsorella texana* (W. A. Weber) Kalb et Hafellner (syn.: *Xanthopsora texana* (W. A. Weber) G. Schneider et W. A. Weber), type species of the genus *Xanthopsorella* Kalb et Hafellner (syn.: *Xanthopsora* G. Schneider et W. A. Weber, non Spegazzini) known from vertical faces of limestone cliffs and on rocks of North America (Texas, USA) and Mexico), *Astroplaca loekoesiana* differs in having lobate thallus (vs. squamulose, forming rosettes up to 3–4 cm diam.), in having elongated lobes in peripheral portions of thallus closely attached to the substrate (vs. marginal squamules up to 5 mm diam., with ascending free margins), in having white underside (vs. lower corticated surface pale yellowish), in having different reactions of medulla (upper yellow portion of medulla K+ violet, and lower white portion K–, vs. medulla yellowish, K+ red, C+ reddish brown in spots, P+ cinnabar, UV–), in having plane

disc of apothecium (vs. convex apothecia), in having marginate apothecia (the margin inconspicuous, soon excluded), in having brownish hymenium (vs. reddish violet, I+ vinose-red), in having distinctly widened towards the tips paraphyses (vs. paraphyses cylindrical, not capitate, 2–3 μm thick), and in having much larger elongated ellipsoid ascospores (vs. 3–4 μm diam., spherical), and in the lack of parietin and unidentified antraquinones (after Huneck and Follmann 1976).

Specimens of *Astroplaca opaca* examined: Albania. Tirana County (Qarku i Tiranë): District of Tirana (Rrethi i Tiranës), Bërzhitë municipality, *ca* 1.75 km NE of Pellumbas, on calcareous rocks along the tourist path to Shpelle e Pellumbasit (Pellumbasit Cave). Lat.: 41° 15′ 25.4″ N; Long.: 19° 58′ 05.0″ E; Alt.: *ca* 620 m a.s.l. Coll.: Lőkös, L., 03.04.2016 [BP]. – Shkodër County (Qarku i Shkodrës), District of Shkodër (Rrethi i Shkodrës), Velipojë municipality, between Baks-Rrjollë and Kel Marashi, on calcareous rocks. Lat.: 41° 51′ 26.6″ N; Long.: 19° 29′ 47.9″ E; Alt.: *ca* 46 m a.s.l. Coll.: Lőkös, L., 09.10.2012 [BP].

Buellia ulleungdoensis S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova* (Figs 3–4)

MycoBank no.: MB 819923.

Similar to Buellia sequax*, but differs in having dull grey thallus, in having sometimes larger apothecia, as well as in having shorter ascospores with smooth surface and in the lack of norstictic acid.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, along the coast road (Ulleungsunhwan-ro, Nr. 926), on steep, siliceous, roadside rocks, growing together with *Flavoplaca laszloana*, *Placynthiella hurii* and *Rufoplaca kaernefeltiana*. Lat.: 37° 27′ 36.42″ N; Long.: 130° 52′ 07.96″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161974), 10.07.2016 (KoLRI 040211 sub *Buellia* – holotype); the same locality, growing together with *Flavoplaca laszloana, Placynthiella hurii* and *Catillaria* sp. (161941), (KoLRI 040178 sub *Flavoplaca* – isotype); the same locality, growing together with *Flavoplaca laszloana* and *Placynthiella hurii* (161947), (KoLRI 040184 sub *Buellia* – isotype).

Thallus very indistinct, areoles very scattered and distant to sometimes more or less aggregated, seen only at the largest magnification (×100 or more), often growing in rock cavities (it is very unlikely that thallus is endolithic because of siliceous nature of rock), dull grey; areoles 0.1–0.2(–0.5) mm across, very irregular; mainly can be recognised owing to more or less aggregated, lecideine, black apothecia. Hypothallus absent.

Apothecia 0.1–0.3(–0.45) mm diam., to 0.08–0.1 mm thick in section, black with very weakly pruinose, somewhat greyish disc, lecideine, at first immersed into thalline areoles, but soon becoming sessile, scattered, distant and mostly regularly rounded, rarely aggregated in small groups of 3(–5)

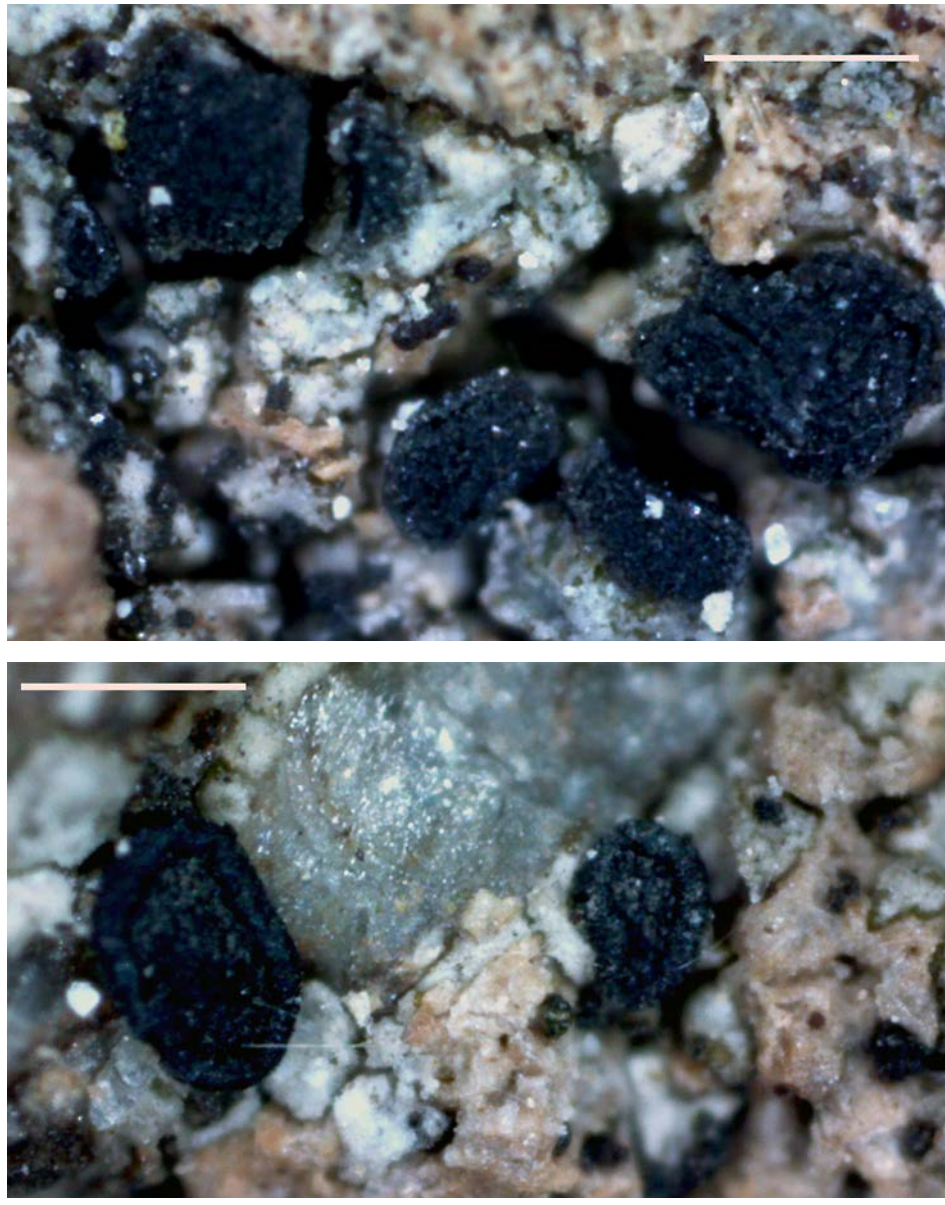

Fig. 3. *Buellia ulleungdoensis* (holotype), general habit. Scale 0.5 mm. (photo of S. Kondratyuk)

apothecia, where often irregular; own margin more or less distinct, seen only at the largest magnification (×100 or more), very thin, to 40 μm thick, but somewhat uplifted above disc level; disc plane to with slightly waved/ undulating surface or semiconvex. In section lecideine, true exciple black or

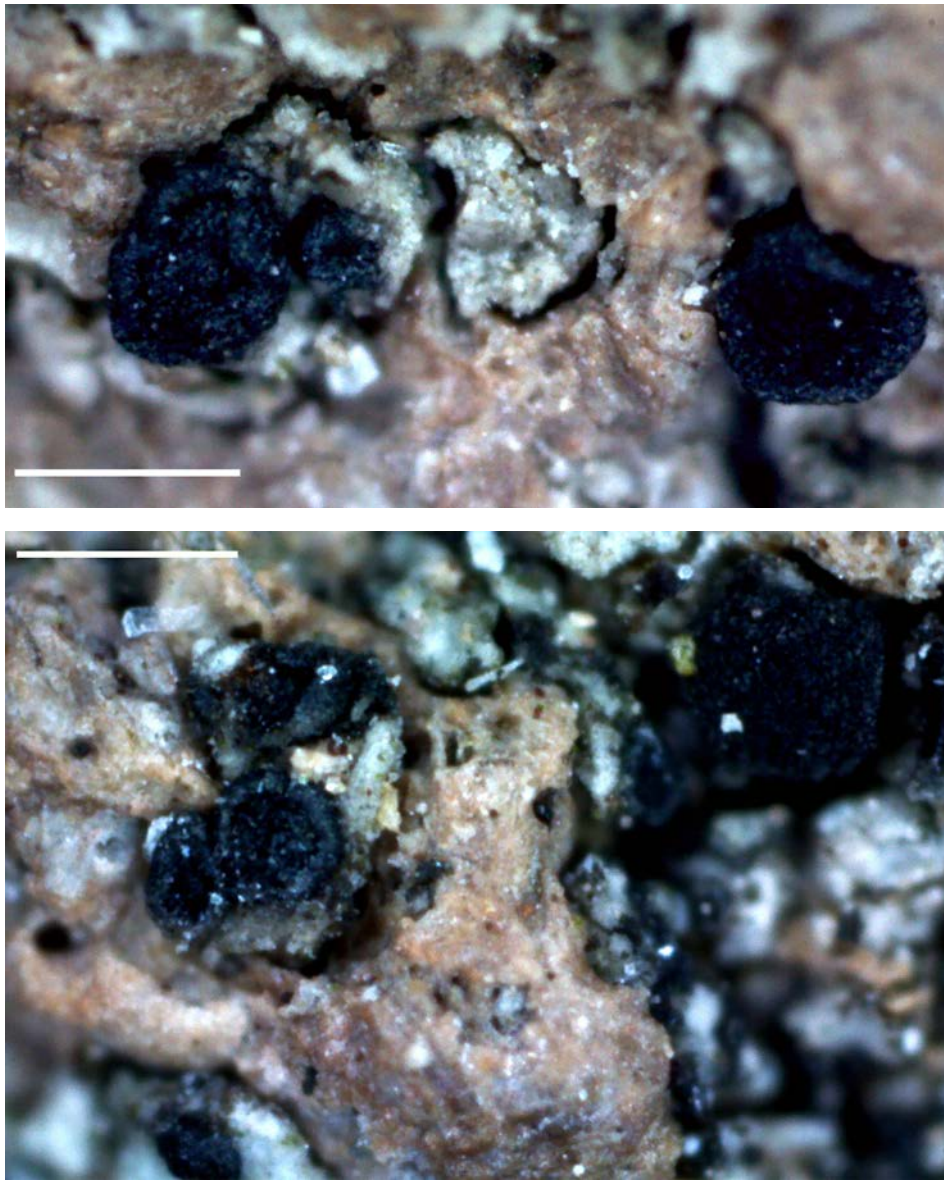

Fig. 4. Buellia ulleungdoensis (holotype), enlarged apothecia and thalline areoles. Scale 0.5 mm. (Photo of S. Kondratyuk)

blackish brown throughout, very thin, to 12–15(–25) μm thick in uppermost and lower lateral portions and to 20–30(–50) μm thick in basal portion; hymenium (40–)45–55 μm high, without oil droplets, hyaline to somewhat light brownish (sometimes even in very small size apothecia all ascospores overmature and somewhat light brownish hymenium were observed); paraphyses branched and swollen towards the tips, to 5–6 μm diam. in water (and to 4–6.5(–7) μm diam. in K), sometimes with distinct cups; subhymenium to 35(–50) μm thick, medium to dark brown; algae seen only below apothecium in thalline fragments, algal cells (5–)8–12 μm diam.; asci 8-spored, 35–40 × 8–12 μm; ascospores 1-septate, dark brown, sometimes with scarce granules on surface, but mostly with smooth surface, (7–)8–10(–12) × 4–5.5(–6) μm in water, and (7–)8–12(–14) × (3.8–)4–5(–7) μm in K* (50 measurements in each). Conidiomata and conidia unknown.

Chemistry: Not tested.

Ecology: Growing on siliceous rocks often very unstable on steep slopes, in the same localities with *Placynthiella hurii* and *Rufoplaca kaernefeltiana* (see also below under these taxa).

Distribution: So far known only from the type locality, Ulleung-do Island, South Korea, Eastern Asia.

Etymology: Species epithet refers to the type locality, i.e.: Ulleung-do Island, South Korea, Eastern Asia.

Taxonomic notes: Sometimes ascospores in K becoming somewhat wider in equatorial portion, but they are still narrower than in *Amandinea punctata*.

After having inconspicuous thallus and narrow ascospores (4.5–5.5 μm wide), *Buellia ulleungdoensis* is similar to *Buellia sequax* (Nyl.) Zahlbr. (syn.: *B. abstracta* (Nyl.) H. Olivier), a rare species known from Mediterranean and Atlantic Europe and North Africa, growing on granite pebbles and small stones, but differs in having dull grey thallus (vs. white, C+, Pd+, containing norstictic acid), in having sometimes larger apothecia (0.1–0.3(–0.45) mm vs. 0.1–0.2 mm diam.), as well as in having shorter ascospores with smooth surface ((7–)8–10(–12) × 4–5.5(–6) μm vs. 11–13 × 4.5–5.5 μm, surface minutely pored or wrinkled), and in the lack of norstictic acid.

Buellia ulleungdoensis is similar to *Amandinea punctata* (Hoffm.) Coppins et Scheid., a cosmopolitan species, growing on various substrates including rocks, but differs in having inconspicuous thallus and much narrower ascospores.

* As far some lichenologists often used K to see better details of apothecia and ascospores, consequently sometimes measurements of the ascospores are provided in K (not in water) we emphasise especially data on ascospore measurements in water and in K.

Candelariella hakulinenii S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova*
(Figs 5–6)

MycoBank no.: MB 819924.

Similar to Candelariella antennaria*, but differs in well-developed, thick, crustose or squamulose thallus, in having apothecia very rarely, in having grey thalline margin concolourous with thallus, in the lack of true exciple, in having much wider paraphysis tips, and in growing on siliceous rocks in coastal zones.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, seashore rocks, on basalt, growing together with *Flavoplaca laszloana*, *Psorotichia* sp. and *Orientophila leucerythrella*. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161919), 10.07.2016. (KoLRI 040156 sub *Candelariella* – holotype); the same locality, (161909), (KoLRI 040146 sub *Candelariella* – isotype); the same locality, growing together with *Flavoplaca laszloana* and *Pyrenopsis chejudoensis* (161910), (KoLRI 040147 sub *Candelariella* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Orientophila leucerythrella* and *Pyrenopsis chejudoensis*, (161911), (KoLRI 040148 sub *Candelariella* – isotype); the same locality, growing together with *Flavoplaca laszloana* and *Orientophila leucerythrella*, (161914), (KoLRI 040151 sub *Orientophila leucerythrella* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Pyrenopsis chejudoensis* and *Thelenella luridella*, (161915), (KoLRI 040152 sub *Phaeophyscia/Physciella* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Caloplaca pelodella* and *Phaeophyscia/Physciella*, (161917), (KoLRI 040154 sub *Phaeophyscia/Physciella* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Orientophila leucerythrella* and *Pyrenopsis chejudoensis*, (161918), (KoLRI 040155 sub *Pyrenopsis chejudoensis* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Pyrenopsis chejudoensis* and *Orientophila leucerythrella*, (161923), (KoLRI 040160 sub *Orientophila leucerythrella* – isotype); the same locality, growing together with *Lichinella* aff. *myriospora* and *Orientophila leucerythrella*, (161924), (KoLRI 040161 sub *Candelariella* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Lichinella* aff. *myriospora* and *Orientophila leucerythrella*, (161926), (KoLRI 040163 sub *Orientophila leucerythrella* – isotype).

Thallus to (0.4–)1–1.5 cm across or in larger aggregations, crustose, from very thin and closely attached continuous (nr. 161909, nr. 161910) in the peripheral portion to much thicker, cracked or areolate to squamulate in the centre, where consisting of more or less distant to closely aggregated squamules; squamules at first very small, (0.2–)0.3–0.4(–0.7) mm across, from rounded to irregular, somewhat semiconvex, usually seen only in the peripheral zone;

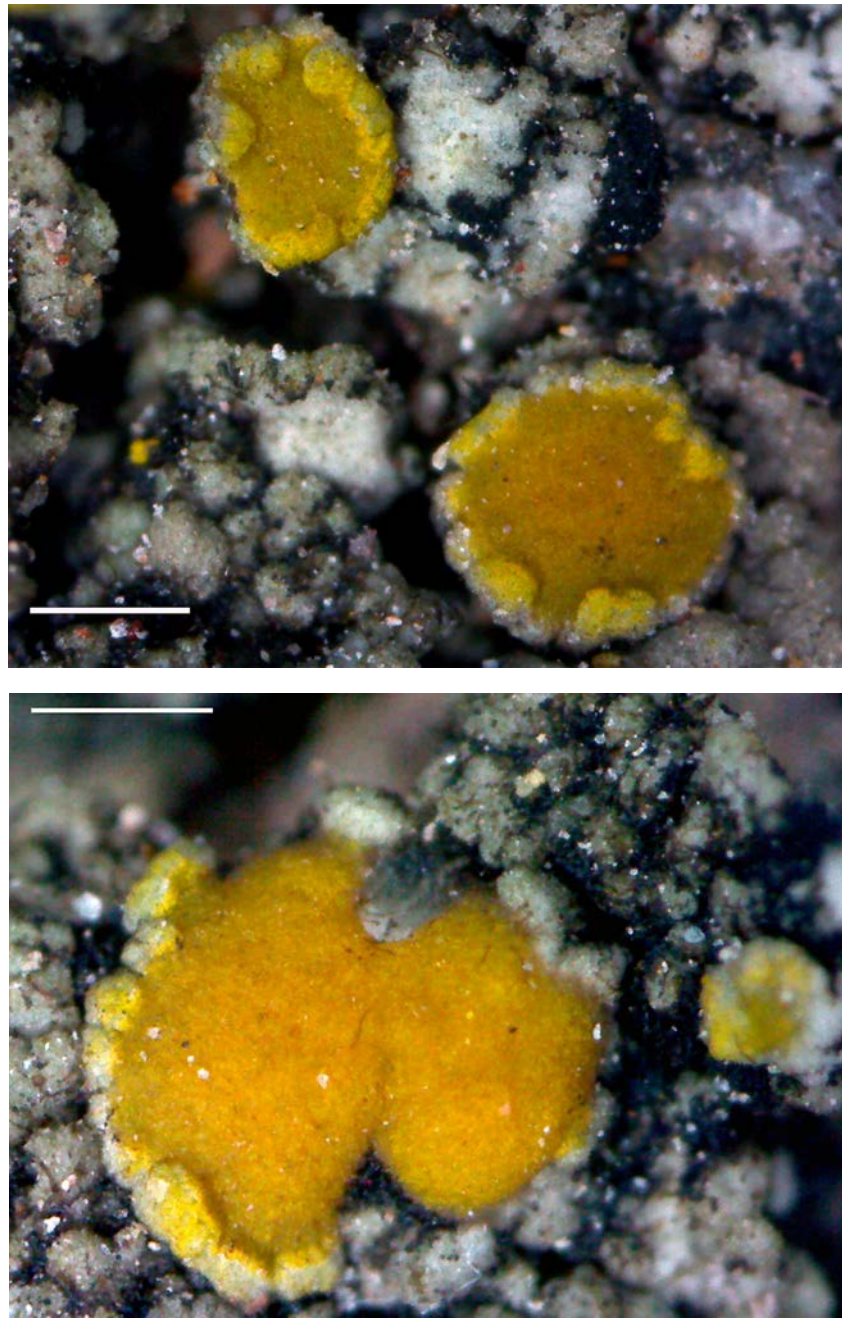

Fig. 5. Candelariella hakulinenii (holotype), enlarged portion with apothecia. Scale 0.5 mm. (Photo of S. Kondratyuk)

soon becoming aggregated in larger spots/squamules to (0.8–)1.3–2.5(–4) mm across, more or less rather distant from each other (with very wide cracks to 0.2–0.4(–0.5) mm wide between them), with very uneven upper surface, somewhat verruculose or microlobulate, usually the edges closely attached to the substrate, but sometimes (nr. 161911) with somewhat upwards folded edges and ascending, and edges are not attached to the substrate; squamule ends often dissected into smaller rounded portions to 0.1–0.15(–0.2) mm across; sometimes squamules of 0.8 mm across consist of two or three dissections to 0.4–0.5 mm long and 0.2–0.3 mm wide, but these portions are similarly flat and not dissected by deep cracks; upper surface grey to whitish grey, with yellow conidiomata and yellow discs of apothecia, often with fragments of cyanobacteria films (as far the specimen was collected with flash zone of supralitoral), which makes darker appearance of thallus and sometimes whitish portions of the lichen thallus well contrasting to blackish portions with cyanobacteria making somewhat tessellate appearance.

Thallus in section to 180(–270) μm thick, cortical layer to 20 μm thick, consisting of more or less horizontally orientated hyphae or paraplectenchymatous, somewhat brownish, sometimes with epinecral layer to 10 μm thick, algal zone to 80–90 μm thick, algal cells to (8–)10–15 μm diam./across.

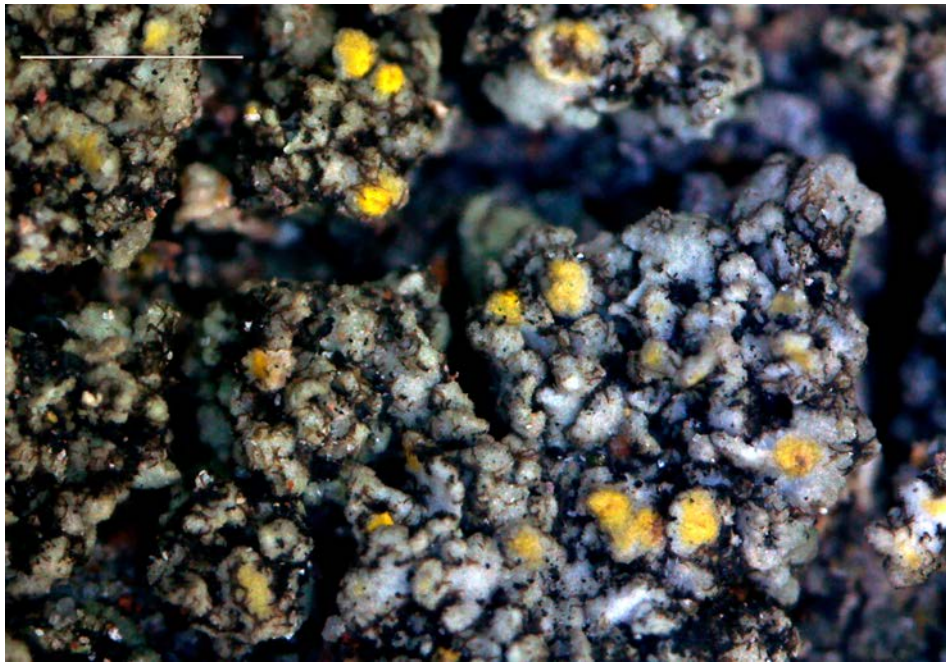

Fig. 6. Candelariella hakulinenii (KoLRI 161936), enlarged portion with thalline areole/squamule. Scale 1 mm. (Photo of S. Kondratyuk)

Apothecia to (0.4–)0.5–1.2 mm diam., and to 0.3 mm thick in section, rather rare and usually small (0.4–0.5 mm diam.), 1(–3) per areole, lecanorine to more or less zeorine, thalline margin to 0.1–0.15 mm wide, grey, very undulating to crenulate, sometimes seen only at the basis, disc dull yellow brownish, matt, epruinose; if zeorine, own margin bright yellow to 0.1 mm wide rarely observed; disc plane or somewhat undulating; in section, thalline exciple to 100–150 μm thick, true exciple not developed; hymenium to 70(–80) μm high; paraphyses distinctly swollen towards the tips, to 7–8(–9) μm diam. and moniliform, club-shaped (i.e. submoniliform and frequently branched near the apices); subhymenium to 70(–100) μm thick, hyaline with oil droplets to 4–6 μm diam.; asci 8-spored, *ca* 50 × 14 μm; ascospores (0–)1-septate, narrowly ellipsoid to somewhat curved, (12–)14–17(–18) × (4–)5–7(–8) μm (54 measurements).

Conidiomata with bright yellow ostiole, to 0.1–0.15 mm diam., rather often seen, in section conidiomata 130–150 μm diam., conidia widely bacilliform, 3.5–4.5 × 1.2–1.5 μm.

Ecology: Growing on siliceous rocks in coastal zone.

Etymology: It is named after the Finnish lichenologist Rainar Alarik Hakulinen (09.10.1918–29.12.1991), who provided important revision of the genus *Candelariella* in the 20th century (his PhD thesis was defended in 1954) and he introduced the now commonly accepted family Candelariaceae.

Distribution: It is hitherto known only from the type collection from Ulleung-do Island of South Korea, Eastern Asia.

Taxonomic notes: *Candelariella hakulinenii* is characterised by squamulose thallus with often aggregated in smooth crust, by lecanorine apothecia with thick thalline margin, while true exciple not developed, subhymenium inspersed with oil droplets, by 8-spored asci and long and wide ascospores.

Fertile material is very rare, it can be distinguished as *Candelariella* mainly after bright yellow conidiomata, while grey squamules or their aggregations may be confused with many other crustose lichens (of the families Verrucariaceae, Teloschistaceae, Thellenellaceae, etc.) growing in the same locality.

Candelariella hakulinenii is similar to *C. antennaria* Räsänen, a common species on bark of broad-leaved trees or on wood in North and South America, Asia and Australia, in having pale to dark grey or brownish grey, green-grey thallus, in having lecanorine apothecia with persistent thalline margin, in having inspersed with oil subhymenium (see Yakovchenko *et al.* 2012), in having club-shaped paraphyses (submoniliform paraphyses, which are frequently branched near the apices), in having 8-spored asci and in having wide ascospores; but differs in well-developed, thick, crustose or squamulose thallus (vs. variable from indistinct or a thin to thick amorphous crust to thick and more or less continuous, sometimes granular; to 5–15 μm thick (?), after

Yakovchenko *et al.* 2012), in having very rarely apothecia (vs. abundant), in having grey thalline margin concolourous with thallus (vs. yellow, and only outer part often greyish), in the lack of true exciple (vs. thin, not visible from the outside, to 27–40 μm wide, after Yakovchenko *et al.* 2012), in having much wider paraphysis tips (7–8(–9) μm vs. 3–6 μm wide after Westberg 2004, or to 7 μm wide after Yakovchenko *et al.* 2012), in having longer conidia (3.5–4.5 × 1.2–1.5 μm vs. 2.5–3 × 1.2–1.5 μm), and in growing on siliceous rocks in coastal zones, while measurements of ascospores somewhat overlap ((12–)14–17(–18) × (4–)5–7(–8) μm vs. 11–17 × 5–6.5 μm after Westberg 2004, (11–)12–17(–20) × 4–6(–7) μm after Yakovchenko *et al.* 2012).

Among *Candelariella* Müll. Arg. there is a small number of species, which are characterised by having a non-yellow thallus (Yakovchenko *et al.* 2012). The species are 8-spored, with lecanorine apothecia, growing on calcareous rocks (*C. plumbea* Poelt et Vězda, *C. oleaginescens* Rondon) or bark and wood (*C. viae-lacteae* G. Thor et V. Wirth, *C. antennaria* Räsänen and *C. boikoi* Khodos. et S. Y. Kondr.). *Candelariella subdeflexa* (Nyl.) Lettau, also with grey thallus and 8-spored asci, differs from the others by its biatorine apothecia. They are predominantly distributed in the temperate zone in open woodlands, forests and forest-steppes and steppes and prefer dry, exposed conditions.

Korean specimens grew in locality with much higher humidity, i.e. supralitoral conditions. However, they were collected in the same very exposed conditions of South-facing coastal slope of Ulleung-do Island, South Korea.

There are several keys to *Candelariella* species (Westberg 2007, Westberg and Sohrabi 2012, Westberg *et al.* 2011, Yakovchenko *et al.* 2016). After Westberg and Sohrabi (2012) *Candelariella hakulinenii* should be compared with two epiphytic species, i.e.: *C. antennaria*, and *C. viae-lacteae* having grey or indistinct thallus.

However, *Candelariella viae-lacteae* G. Thor and V. Wirth, known from Europe (Austria, Czech Republic, Germany, Greece, Hungary, Italy and Spain), has mainly granular thallus, consisting of crowded, rounded to 7–15 μm wide granules, appressed or erect, later erect and unbranched or coralloid (Malíček *et al.* 2014, Thor and Wirth 1990, Yakovchenko *et al.* 2012).

Candelariella hakulinenii is similar to *C. plumbea* in general, in having rather thick greyish to dirty greyish thallus consisting of highly uplifted squamule-like areoles, and in rarely present bright or dull yellow apothecia, but differs in having much thinner, more horizontally orientated, more closely attached (to substrate) thalline squamules (vs. thalline squamules usually uplifted, seem to be exfoliated, loosely attached to the substrate, usually forming bulky/multistored type of thallus) or upper surface of thallus more or less smooth (not verruculose owing to numerous overlapping smaller secondary lobules to 0.3–0.4 mm across with spherical/rounded marginal portions to

0.1(–0.2) mm across) (see BP specimens cited below), in having grey to whitish grey or greenish grey thallus (not being brownish grey); in having mainly lecanorine (vs. zeorine) apothecia, in having wider thalline exciple (vs. to 60 μm thick), in the lack of true exciple (vs. well-developed to 60 μm wide in the uppermost lateral portion and to 20 μm thick in lower lateral and basal portion, scleroplectenchymatous, hyphae lumina to 1.5 μm diam.), as well as in having wider ascospores (14–17 × 5–7 μm vs. 13–18 × 4–5 μm), in having very common/abundant yellow conidiomata (vs. rather rare), as well as in different substrate (growing on siliceous rocks vs. limestone) and distribution (coastal areas of Eastern Asia), in the lack of distinct blastidia (vs. granules to 0.1–0.25 mm across), and in the lack of blastidious mass on the upper surface.

The status of *Candelariella oleaginescens*, is somewhat unclear (Poelt and Vězda 1977, Thor and Wirth 1990), but it is distinguished from *C. plumbea* by e.g. the thinner areolate or squamulose thallus, the smaller apothecia and the longer ascospores.

Asian squamulose *Candelariella* species, i.e. *C. kansuensis* H. Magn. and *C. kansuensis* f. *frustulenta* H. Magn., characterised by deeply yellow squamules with shiny surface and very thick to 25–60 μm thick cortical layer according to keys of Westberg *et al.* (2011) and Yakovchenko *et al.* (2012) are very different from *C. hakulinenii*.

Candelariella hakulinenii specimens may be keyed out as *C. rhodax*, but the latter species (based on type specimen of *C. senior* Poelt (VBI 2884) in Vězda, Lich. sel. exs. 1184, from Romania, Dobrogea) differs from Korean material in having larger, rosette-like thallus (1.5 cm or more across), in having distinctly lobate thallus in peripheral zone (lobes to 1–2 mm long and 0.7–1.5(–2) mm wide, and areoles much closely attached to the substrate in the centre of thallus (0.7–1(–1.5) mm across, not squamule-like), and divided by deep cracks (to 0.1 mm wide) between areoles, as well as in having mainly yellow thallus only in peripheral zone and greyish-whitish (with whitish pruina) in the centre.

Squamule-like aggregations of *Candelariella hakulinenii* sometimes are very similar to thalline squamules of *Squamulea squamosa*, a species with which *Candelariella hakulinenii* often grows side by side. However, *Squamulea squamosa* differs in having yellow-brownish or yellow-greenish-brownish thallus, and yellow-orange or orange-brownish lecanorine apothecia, *Teloschistes*-type of asci and bipolar ascospores.

Additional specimen of *Candelariella hakulinenii* examined: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Mountain 18-1, seashore rocks, on basalt, growing together with *Flavoplaca laszloana*, *Orientophila leucerythrella* and *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 36.5″ N; Long.: 130° 51′ 27.9″ E; Alt.: 2 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161936), 10.07.2016 (KoLRI 040173 sub *Candelariella*).

Specimens of *Candelariella plumbea* examined: Hungary. Bükk Mts, Kemesnye (village), on limestone rocks growing together with *Caloplaca cirrochroa*, *Lecanora* sp., and *Lecania* sp. Coll.: Lőkös, L. (444a), 03.06.2008 (BP); the same locality, growing together with *Caloplaca cirrochroa*, *C. flavescens* and *Lecania* sp. (444b), (BP).

Specimen of *Candelariella rhodax* examined: Romania. Dobrogea, distr. Tulcea, in valle fluminis Casimcea inter pagos Gura Dobrogei et Tirgusor, alt. 50 m.s.m., ad saxa calcarea. Coll.: Vězda, A., 12.07.1973. (VBI 2884: Vězda, Lichenes selecti exsiccati, nr. 1184 sub *Candelariella senior* Poelt).

Flavoplaca laszloana S. Y. Kondr. et J.-S. Hur, *spec. nova* (Figs 7–8)

MycoBank no.: MB 819925.

Similar to Flavoplaca flavocitrina, *but differs in having thinner and much larger, more greenish yellow or lemon yellow thalline areoles/squamules, in having uplifted/exfoliated marginal portions dissolving in soredia and consoredia, in having rather scarce soredious mass and very rarely apothecia, and in growing on siliceous rocks in coastal zones, as well as in separate position after ITS phylogeny.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Moutain 18-1, seashore rocks, on basalt, growing together with *Orientophila leucerythrella*, *Candelariella hakulinenii* and *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 36.5″ N; Long.: 130° 51′ 27.9″ E; Alt.: 2 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161936), 10.07.2016 (KoLRI 040173 sub *Candelariella hakulinenii* – holotype); the same locality, growing together with *Orientophila leucerythrella* and *Pyrenopsis chejudoensis*, (161935), (KoLRI 040172 sub *Flavoplaca* – isotype).

Thallus (0.2–)0.5–1.5 cm across, at first regularly rounded, later becoming somewhat irregular, may form larger aggregations, crustose, upper surface green to greenish yellow or lemon yellow (to whitish grey or greyish in shaded conditions or in cracks of rocky substrate), while soralia and soredious mass dull yellowish (slightly brighter of thalline areoles/squamules); thalline areoles/squamules (0.2–)0.3–1.0(–1.2) mm across, at first areole-like, plane, with marginal portions/edges closely attached to the substrate, which later becoming squamule-like with undulating upper surface and characteristically uplifted or folded upwards marginal portions, of very wide variation as after measurements of areoles as in development/presence of soredious mass. Areoles mostly distant from each other, somewhat scattered, where rock surface between them the same as measurements of areoles, rarely aggregated and closely located to each other, extremely rarely form portions of

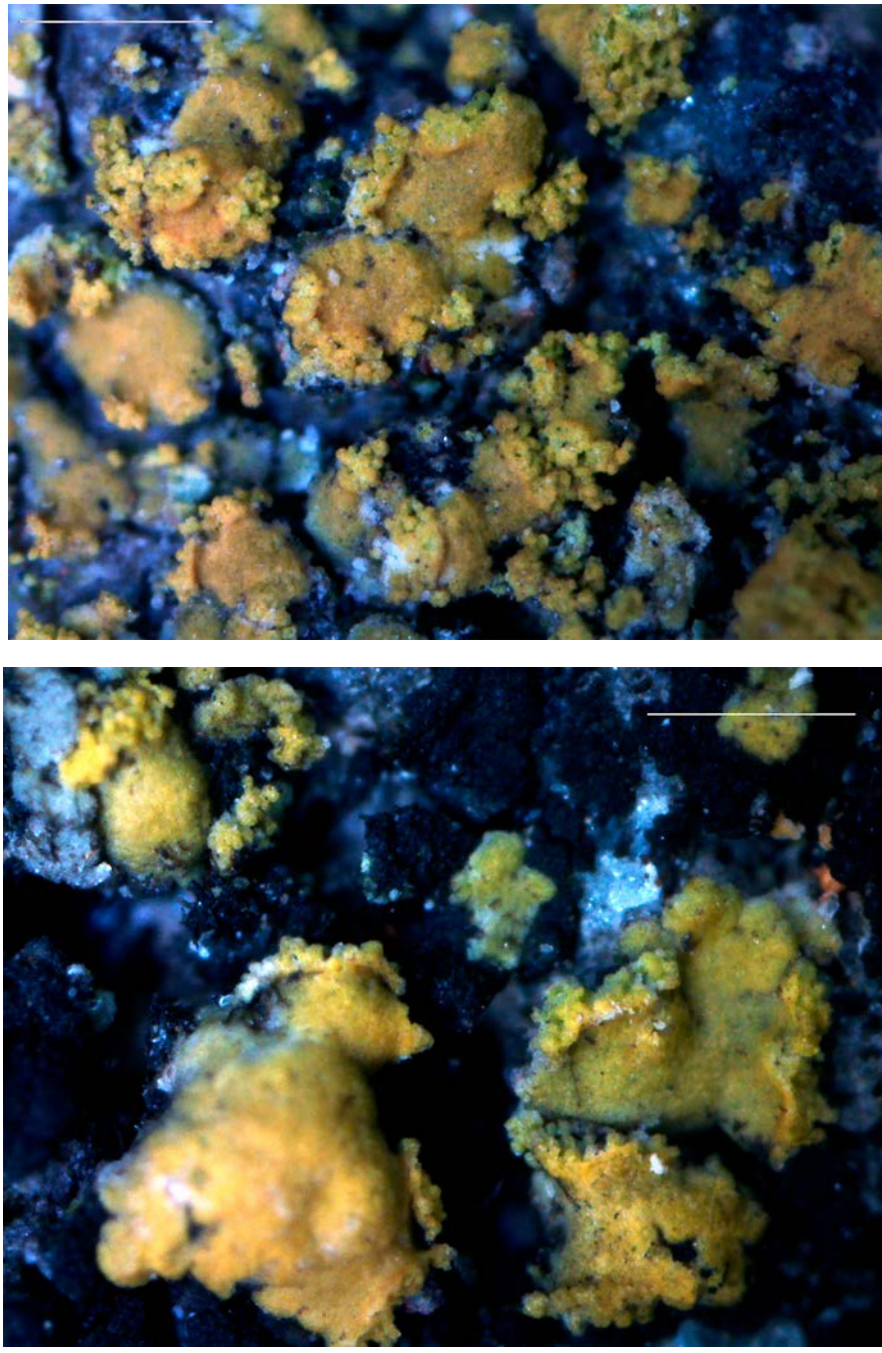

Fig. 7. Flavoplaca laszloana (KoLRI 161936 top, KoLRI 161923 bottom) enlarged portion of thalline areoles/squamules. Scale 0.5 mm. (Photo of S. Kondratyuk)

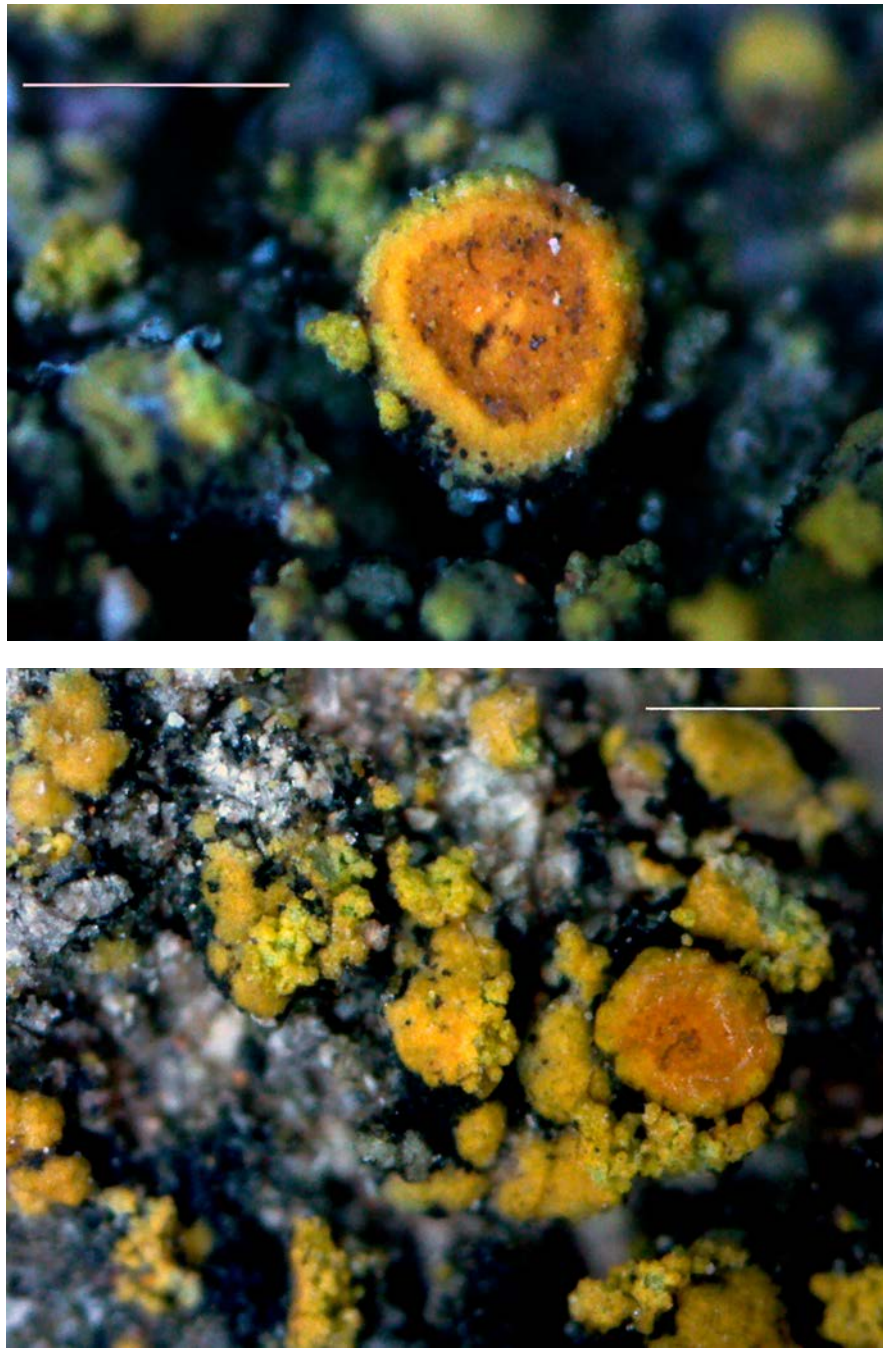

Fig. 8. Flavoplaca laszloana (KoLRI 161936) enlarged portion of thallus with apothecia. Scale 0.5 mm. (Photo of S. Kondratyuk)

somewhat continuous thallus to 3 mm across (especially in rock cavernulas), where only marginal uplifted portions forming portions with somewhat uplifted marginal soredious/blastidious mass to 0.1–0.2 mm across, also rarely areoles more or less aggregated in the centre of thallus and have eroded/soredious upper surface without well-developed soralia.

In section the thallus (90–)110–130(–150) μm thick, cortical layer 25–30 μm thick, paraplectenchymatous, cell lumina 3–5(–7) μm diam./across, hyaline, sometimes uppermost portion somewhat darker, greyish in places; algal zone to 75–100 μm thick, completely filled in by algal cells, continuous, algal cells 12–20 μm diam.; medulla to 25–30 μm thick below algal zone rather seldom observed.

Soralia 0.15–0.3(–0.4) mm diam./across, somewhat rounded to irregular, mostly at the edge of thalline areole and with characteristically uplifted thalline portions around soralia (folded upwards edges of soralia), mostly without soredia or soredia becoming somewhat soredious; or exfoliated and uplifted marginal portions of areoles/squamules dissolving into somewhat uplifted soredious mass (especially better developed in cracks of rocky substrate); soredious mass mostly poorly developed and scarce to sometimes well developed and uplifted (especially in rocky cracks). Soredia (15–)20–30(–32.5) μm diam., usually observed very rarely, more seldom in more or less uplifted irregular aggregations, mostly with hyaline hyphal wall (soredia-type sensu Poelt), or rarely with brownish yellow pigments in outer hyphal layer (blastidia-type sensu Poelt); conblastidia to (40–)45–55 μm diam./across, from more or less regularly rounded to somewhat irregularly ellipsoid, almost as same common as soredia.

Apothecia to 0.3 mm diam., extremely rare, lecanorine or zeorine, with greyish-whitish yellow thalline margin, seen only at the basis, own margin bright yellow to 0.1 mm wide and disc dull greyish yellow, plane or somewhat concave. Asci and ascospores not seen. Conidiomata and conidia not observed.

Chemistry: Cortical layer of thalline areoles/squamules (in section) and soredia and consoredia K+ purple; containing parietin.

Ecology: On siliceous rocks in coastal zones, where often growing together with *Orientophila leucerythrella*, *Pyrenopsis chejudoensis* and *Candelariella hakulinenii*, often overgrowing each other, as well as with members of the genera *Catillaria*, *Verrucaria*, etc.

Distribution: So far known only from the type locality, i.e.: Ulleung-do Island, South Korea, Eastern Asia, where it was locally very abundant.

Etymology: It is named after our friend and colleague, a known Hungarian lichenologist László Lőkös (BP, Budapest) in recognition of his contribu-

tion to the knowledge on the Korean lichen flora, as well as in thanks of his cooperation and help during this work.

Taxonomic notes: *Flavoplaca laszloana* is similar to *F. flavocitrina*, after having areolate sorediate thallus, where thalline areoles/squamules predominant and soredious mass very scarce, but differs in having thinner and much larger, more greenish yellow or lemon yellow thalline areoles/squamules, in having mostly uplifted/exfoliated marginal portions dissolving in soredia and consoredia (vs. soredia appearing from the medulla of marginal portions of very thick thalline areoles), in having rather scarce soredious mass and very rarely apothecia, and in growing on siliceous rocks in coastal zones, as well as in separate position after ITS phylogeny.

Similar material from the Russian Far East characterised by very badly developed thalline areoles with characteristically uplifted soredious mass, probably represents a still undescribed taxon, which differs from *Flavoplaca laszloana* as in stage of development of thalline areoles, as well as in better development of soredious mass, and in the position within the *Flavoplaca* clade of the subfamily Xanthorioideae of the Teloschistaceae after ITS phylogeny. Furthermore in contrast to the Russian Far East taxon *Flavoplaca laszloana* is characterised by the presence of greenish yellow or lemon yellow thallus well contrasting to the dull yellow soredious mass (vs. bright yellow soredious mass mostly observed).

It is also characterised by extremely rare occurrence of fertile stage and we still are looking for getting better collection for checking differences in apothecia.

ITS sequences were obtained for three voucher specimens of *Flavoplaca laszloana* (i.e. nr. 161877 (voucher SK G82), nr. 161901 (voucher SK H00), nr. 161224 (voucher SK F56), as well as nr. 161225 (voucher SK F57) and nr. 161226 (voucher SK F58)).

Flavoplaca laszloana is similar to *Orientophila chejuensis*, in having soredious mass appearing along uplifted marginal fragments of thalline areoles (and originally this material was included into *O. chejuensis*, see Kondratyuk *et al*. 2016*b*). However, in contrast to *Orientophila chejuensis*, *Flavoplaca laszloana* belongs to the *Flavoplaca* clade of the Xanthorioideae, while *O. chejuensis* is the member of the *Orientophila* clade of the subfamily Xanthorioideae of the Teloschistaceae.

Flavoplaca laszloana is similar to some species of the genus *Squamulea* (i.e.: *S. squamosa*, *S. subsoluta*) after having areoles of squamule-type, i.e. rather large size areoles with somewhat uplifted/exfoliated marginal portions. However, *Flavoplaca laszloana* differs from these species of the genus *Squamulea* in the lack of apothecia, in having soralia and soredia/consoredia, as well as in having lemon yellow (vs. brownish yellow or brownish orange-yellow) up-

per surface of thalline areole, and in positioning in the *Flavoplaca* clade of the Xanthorioideae, while species of the genus *Squamulea* are the member of the *Squamulea* clade of the subfamily Xanthorioideae of the Teloschistaceae.

Additional specimens examined (see also list of specimens under *Buellia ulleungdoensis*, *Candelariella hakulinenii, Orientophila leucerythrella*, *Placynthiella hurii*): Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, seashore rocks, on basalt, growing together with *Buellia* sp., *Pyrenopsis chejudoensis* and *Orientophila leucerythrella*. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161885), 10.07.2016 (KoLRI 040122 sub *Buellia*); the same locality, growing together with *Candelariella hakulinenii* and *Pyrenopsis chejudoensis*, (161891), (KoLRI 040128 sub *Flavoplaca*); the same locality, growing together with *Verrucaria* sp. (161892), (KoLRI 040128 sub *Verrucaria*); the same locality, growing together with *Candelariella hakulinenii*, *Pyrenopsis chejudoensis* and *Orientophila leucerythrella*, (161893), (KoLRI 040130 sub *Flavoplaca*); the same locality, growing together with *Pyrenopsis chejudoensis* and *Orientophila leucerythrella*, (161894), (KoLRI 040131 sub *Pyrenopsis chejudoensis*); the same locality, growing together with *Orientophila leucerythrella*, (161901), (KoLRI 040138; DNA voucher SK H00); the same locality, growing together with *Candelariella hakulinenii* and *Pyrenopsis chejudoensis*, (161922), (KoLRI 040159); the same locality, growing together with *Candelariella hakulinenii, Orientophila leucerythrella, Pyrenopsis chejudoensis* and *Catillaria* sp. (161923), (KoLRI 040160 sub *Orientophila leucerythrella*); the same locality, growing together with *Orientophila leucerythrella*, *Lecanora polytropa* and *Pyrenopsis chejudoensis*, (161925), (KoLRI 040162 sub *Pyrenopsis chejudoensis*); the same locality, growing together with *Orientophila leucerythrella* and *Pyrenopsis chejudoensis*, (161927), (KoLRI 040164 sub *Orientophila leucerythrella*); the same locality, growing together with *Pyrenopsis chejudoensis*, (161928), (KoLRI 040165 sub *Pyrenopsis chejudoensis*).

Leptosphaeria oxneriae Cl. Roux et S. Y. Kondr., *spec. nova*
(= *"Pyrenidium" epixanthorium*, ad int.)
(Fig. 9)

MycoBank no.: MB 819926.

Similar to Leptosphaeria clarkii*, but differs in having bigger and aggregated ascomata in characteristic swelling of host thalli, in having shorter ascospores, as well as in having different host and distribution.*

Type: Russia. Irkutsk region, valley of Irkutj river, [on bark of tree]. Coll.: Elenkin, A., 05.1902 (LE – holotype; KW-L, IMI, MARSSJ – isotypes).

Lichenicolous fungus on thalli of *Oxneria ulophyllodes*. Vegetative hyphae colourless and visible after colouration by cotton blue in lactophenol.

Ascomata (110–)120–180 μm in diam., 110–200 μm high; immersed into medulla of host thallus and seen only as very small ostiole to 30–50(–60) μm

diam., usually dark brown or blackish on surface of host thallus, usually aggregated (in groups to 16–30 ascomata together) in characteristic somewhat subconvex deformations (or swellings) to 0.8–1(–2) mm diam./across, within one host thalline lobe (somewhat similar to host lobe swellings caused by *Lichenochora obscuroides* with numerous immersed ascomata of the parasite, but without any changes of colouration of the host thallus).

Ascomata obpyriform to subglobose, in section brown to greyish brown or dark brown (especially at the ostiole), rarely to blackish brown, not setose, ostiolate, 40–60 μm diam. near the ostiole; peridium wall very thin, to (5–)7–10(–12) μm thick, usually the same thickness everywhere, and slightly thicker near the ostiole, up to 12–15(–20) μm thick, brown to dark brown, rarely somewhat reddish brown, composed of 1.5–2(–3) layers of vertically elongated cells, 3–4 μm diam. from one side and with widened second half to 7 μm diam. Periphyses in the ostiolar canal, well developed, numerous, 11–17 × 1–1.5 μm, rather short. Pseudoparaphyses below the ostiolar canal (sensu Roux and Triebel, or periphysoids according to other authors), 35–50 × 3.5–7 μm, short. Asci bitunicate, cylindrical, apices thick, 48–55 × 15–17 μm, 8-spored. Ascospores broadly fusiform, sometimes slightly unequal sized, consistently 3-septate from the early stage, concolourous or somewhat yellowish-greenish or at most with very light brown wall, smooth-walled, rather thin-walled, usually with somewhat wrinkled surface (or with somewhat shrunken cell content), usually hardly seen and remain stuck together after ascus broken, (13–)16–22(–27) × (5.5–)6–8(–8.5) μm (total 48 measurements).

Life form: lichenicolous on thalline lobes of foliose lichen *Oxneria ulophyllodes* growing on bark of trees.

Etymology: Species epithet refers to the generic position of the host.

Distribution: It is so far known from distant localities in Asian Russia (Siberia) and India.

Taxonomic notes: *Leptosphaeria oxneriae* is similar to the lichenicolous fungus *L. clarkii*, but differs in having bigger (120–180 μm vs. 75–125 μm diam.) and aggregated ascomata in characteristic swelling of host thalli (vs. ascomata scattered and arising solitarily), in having shorter ascospores, as well as in having different host (vs. *Peltigera* cf. *rufescens*) and distribution (Asia vs. Europe) (Hawksworth 1980).

From the key in Clauzade *et al.* (1989) *Leptosphaeria oxneriae* can be compared also with *L. ramalinae* (Desm.) Sacc., known from *Ramalina* thalli from France and Luxembourg. However, this species is characterised by a slightly smaller perithecia (about 125 μm diam.), much narrower asci (75–85 × 7–9 μm) and smaller ascospores with verrucose surface (13–16 × 4–6 μm according to Clauzade *et al.* 1989, and 14–16 × 4–5 μm according to Keissler 1930: 429 vs. (13–)16–22(–27) × (5.5–)6–8(–8.5) μm).

In forming convex deformations with crowded ascomata on host thalli *Leptosphaeria oxneriae* is very similar to *Pyrenidium actinellum* Nyl., but differs in having different structure of ascoma wall, in having 8-spored asci and thinner ascus wall (ascospores without the characteristics of *Pyrenidium*, i.e. without the apices thinner and paler and without obvious pores in the mid-

Fig. 9. Leptosphaeria oxneriae (holotype) enlarged portion of host thalline lobes with ascomata of lichenicolous fungus. Scale 0.5 mm. (Photo of S. Kondratyuk)

dle of each septum), as well as in having colourless, and smaller ascospores ((13–)16–22(–27) × (5.5–)6–8(–8.5) μm vs. dark brown, (19–)20–30(–34) × (7–)8–11(–12) μm in *P. actinellum*), as well as in different host (Hawksworth 1980).

From *Sagediopsis campsteriana* (Lindsay) D. Hawksw. et R. Sant., growing on *Ochrolechia* thalli, to which it can be keyed out from Hawksworth *et al.* (2010), *Leptosphaeria oxneriae* differs in having completely immersed and smaller ascomata ((110–)120–180 μm diam. vs. erumpent, 200–250 μm diam.), and in having much longer and especially wider ascospores ((13–)16–22(–27) × (5.5–)6–8(–8.5) μm vs. 12–18 × 4–6 μm), as well as in different distribution (Asia vs. Europe).

From *Cercidospora stereocaulorum* (Arnold) Hafellner, growing on *Stereocaulon dactylophyllum* thalli, *Leptosphaeria oxneriae* differs in having larger ascomata ((110–)120–180 μm vs. 75–125 μm diam.), in having only 8-spored asci (vs. 4(–6)-spored asci), and in having wider ascospores ((13–)16–22(–27) × (5.5–)6–8(–8.5) μm vs. 22–25 × (5–)5.5–6.5 μm).

From the little known "*Arthopyrenia*" *allogena* (Nyl.) Arnold *Leptosphaeria oxneriae* differs in having smaller ascomata ((110–)120–180 μm diam. vs. (150–)200–300 μm diam.), in having only colourless and 3-septate ascospores (vs. 1(–3)-septate, secondary septa thin and developing late, sometimes with a brownish tinge), as well as in different ecology (vs. growing on *Rhizocarpon umbilicatum* thalli), and distribution (vs. Europe, no recent records).

From the little known "*Sphaerulina*" *dolichotera* (Nyl.) Vouaux *Leptosphaeria oxneriae* differs in having brown ascomata (vs. golden), in having 3-septate (vs. 3–5 septate) and wider ascospores ((13–)16–22(–27) × (5.5–)6–8(–8.5) μm vs. 23–27 × 4–5 μm), as well as in different ecology (vs. growing on *Collema* thalli), and distribution (vs. Europe, no recent records).

Additional specimens examined: India: NW Himalaya, Kashmir, Achhabal, alt. 6,500 ft, on bark of willow tree, on thalli of *Xanthoria ulophyllodes* var. *subsorediosa* (Räsänen) Poelt et Petut. Coll.: Radhubir, H. C., Nov. 1949 (dupl., det V. Räsänen 1952) (LWG ex D. D. Awasthi herb. No. 545 – isotype of *Xanthoria substellaris* var. *subsorediosa* Räsänen); W Himalaya, Kashmir, Harwan Garden, alt. 5,400 ft, on bark of tree trunk, on thalli of *Xanthoria ulophyllodes* var. *subsorediosa* (Räsänen) Poelt et Petut. Coll.: (collector unmentioned) (70137), 5.06.1970 (LWG-06721 sub *Xanthoria ulophyllodes* var. *subsorediosa* (Räsänen) Poelt et Petut.).

Note: As far *Oxneria ulophyllodes* (Räsänen) S. Y. Kondr. et Kärnefelt is correct current position of *Xanthoria ulophyllodes* Räsänen (see Fedorenko *et al.* 2012), new combination for subspecies *subsorediosa* within the genus *Oxneria* is required/expected. However, material of this taxon is still under special revision and conclusion about its status will be published in separate paper on members of the genus *Oxneria* from India (Kondratyuk *et al.*, in prep.).

Lichenostigma epiporpidiae S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova*

MycoBank no.: MB 819927.

Similar to Lichenostigma epipolina, *but differs in having much narrower hyphae consisting of a single row of cells (not forming strains), in having dark brown and smaller, irregularly rounded ascomata, and in having smaller ascospores.*

Type: Republic of Korea. Jeollanam-do: Sinan-gun, Haui-myeon, Hungwang-ri seaside, Hauido, on siliceous rock, growing on thalli of *Porpidia*. Lat.: 34° 37′ 55.05″ N; Long.: 126° 00′ 44.03″ E; Alt.: *ca* 6 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130686), 28.06.2013 (KoLRI 019031 sub *Porpidia* – holotype).

Lichenicolous fungus growing on thalli of *Porpidia* somewhat close to apothecia or at the edge of apothecia, not causing any visible damage. Vegetative hyphae superficial, black, forming by a single row of cells (not forming strands) on the surface of the host thalli, especially close to apothecia or on the edges of apothecia, usually single and distant/separated from each other and not radially arranged on host thalli, rarely seen in groups.

Vegetative hyphae to 4–5 μm wide, with very rough/cracked surface, sometimes (nr. 130678) to 8(–13) μm wide, dark brown with distinct, darker grains on the surface, making to 3–4 lines/rows to 1–1.2 μm wide each.

Ascomata dark brown to blackish brown, superficial, subglobose, recognisable as thickenings of the vegetative hyphae to (15–)20–40 μm, initially as spherical or more or less regularly rounded formations to (15–)20–30 μm diam. becoming later 30–40 × 25–35 μm somewhat irregular or somewhat irregularly rounded or even seem to be grape-like consisting of smaller rounded portions to 20–25 μm diam., evolving in the central part of aggregated vegetative hyphae. Internal structure paraplectenchymatous, stromatic, hyphal cells more or less spherical, mostly 4–5 μm diam.; wall of the external cells dark brown, somewhat paler in the internal ones. Interascal filaments lacking. Asci usually only 1 per ascoma, subglobose. Ascospores 1-septate, brown, distinctly constricted at the septum, one cell wide of the second ("foot"-like or pear-like), both cells rounded (with rounded apices), while lower cells slightly elongated, rarely cell content collapsed, wall irregularly concave, without visible halo 6–7(–7.5) × 3.2–4(–4.5) μm. Anamorph unknown.

Life form: Lichenicolous on *Porpidia albocaerulescens*. This fungus growing on the thallus especially close to apothecia or at the edge of apothecia of the host blackening their surface with its hyphae and ascomata. Mostly it

causes no apparent damage or alterations in the host because of its mainly superficial development.

Distribution: So far known from scattered localities of South Korea, Eastern Asia.

Etymology: Species epithet refers to the genus *Porpidia*, the host of the lichenicolous fungus.

Taxonomic notes: *Lichenostigma epiporpidiae* differs from all other species of the *Lichenostigma* subgen. *Lichenogramma* in having very small ascospores and one row vegetative hyphae (not forming strains).

Lichenostigma epiporpidiae is in somewhat intermediate position between *L. cosmopolites* (on *Xanthoparmelia* spp.) and *L. epipolina* (on *Diplotomma epipolium*), as well as *L. semiimmersa* (on *Buellia elegans* and *B. zoharyi*).

Lichenostigma epiporpidiae is similar to *L. epipolina* Nav.-Ros., Calat. et Hafellner, a lichenicolous fungus growing on the thalli and occasionally on the apothecia of *Diplotomma epipolium* mostly without causing apparent damage or alterations in the host, known from Europe (Spain, Italy), Northern Africa (Tunisia) and arid Asia (Jordania, Afghanistan), but differs in having much narrower hyphae consisting of a single row of cells (not forming strains) (vs. strands simple or scarcely ramified 6–12(–20) μm wide and (20–)50–300 μm long, to 2–3 cells row closer to ascomata), in having dark brown and smaller irregularly rounded ascomata (20–45 μm across, vs. 35–65 × 35–50 μm, black, mostly subglobose), and in having smaller ascospores (6–7(–7.5) × 3.2–4(–4.5) μm vs. 10–12(–13) × 5.5–7(–8) μm).

Lichenostigma epiporpidiae is similar to *L. cosmopolites* Hafellner et Calat. (on *Xanthoparmelia* spp.), a cosmopolitan species, in having subglobose ascomata and vegetative strands formed mostly by a single row of cells, but differs in the lack of ramified or net-like strands and in having smaller ascospores.

Lichenostigma epiporpidiae is similar to *L. semiimmersa* Hafellner (on *Buellia elegans* and *B. zoharyi*), which has similar vegetative strands with single row of cells, and ellipsoid ascomata, while it differs in having smaller and dark brown ascospores (6–7(–7.5) × 3.2–4(–4.5) μm vs. 7–10 × 4–5 μm, hyaline).

Additional specimens examined (paratypes): Republic of Korea. Jeollanam-do: Sinan-gun, Haui-myeon, Haui-do Island, Unggok-ri seaside, on siliceous rock, growing on thalli of *Porpidia*. Lat.: 34° 36′ 07.07″ N; Long.: 126° 00′ 52.02″ E; Alt.: *ca* 20 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130678), 28.06.2013 (KoLRI 019023 sub *Porpidia*). – Jeollanam-do: Sinan-gun, Palgeum-do Island, on siliceous rock, growing on thalli of *Porpidia albocaerulescens*. Lat.: 35° 47′ 8.39″ N; Long.: 126° 08′ 11.54″ E; Alt.: *ca* 0 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110403), 02.06.2011 (KoLRI 012950 sub *Porpidia*).

Mikhtomia geumohdoensis S. Y. Kondr., Liu D. et J.-S. Hur, *spec. nova*
(Figs 10–11)

MycoBank no.: MB 819928.

Similar to Caloplaca ussuriensis*, but differs in having much smaller and thinner thallus, in the lack of yellow shade of the thallus, in having uplifted, usually regularly rounded, hemispherical, convex soredious mass, and in having lamp-like or torch-like soralia constricted at the basis, as well as in positioning in out position to all known species of the genus* Mikhtomia *after ITS phylogeny.*

Type: Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumodo Island, Simjang-ri, on bark of *Zelkova serrata*, growing together with *Hyperphyscia* and *Pyxine* spp. Lat.: 34° 30′ 52.5″ N; Long.: 127° 43′ 36.6″ E; Alt.: 71 m a.s.l. Coll.: Kondratyuk, S. Y. (160375), 10.06.2016 (KoLRI 38520 sub *Mikhtomia* – holotype); the same locality, (160368, 160383, 160393), (KoLRI 38513, KoLRI 38528, KoLRI 38538 sub *Mikhtomia* – isotypes); the same locality, growing together with *Hyperphyscia*, (160373, 160374), (KoLRI 38518, KoLRI 38519 sub *Mikhtomia* – isotypes); the same locality, growing together with *Hyperphyscia crocata*, (160363, 160364), (KoLRI 38508, KoLRI 38509 sub *Hyperphyscia crocata* – isotypes); the same locality, growing together with *Hyperphyscia crocata*, (160367, 160371, 160372), (KoLRI 38512, KoLRI 38516, KoLRI 38517 sub *Mikhtomia* – isotypes); the same locality, growing together with *Hyperphyscia* and *Dirinaria* spp. (160362), (KoLRI 38507 sub *Mikhtomia* – isotype); the same locality, growing together with *Hyperphyscia crocata* and *Dirinaria* sp. (160392), (KoLRI 38537 sub *Hyperphyscia crocata* – isotype); the same locality, growing together with *Hyperphyscia* and *Pyxine* spp. (160382), (KoLRI 38527 sub *Mikhtomia* – isotype); the same locality, growing together with *Phaeophyscia* sp. (160370, 160376), (KoLRI 38515, KoLRI 38521 sub *Mikhtomia* – isotypes); the same locality, growing together with *Rinodina* sp. (160378), (KoLRI 38523 sub *Mikhtomia* – isotype); the same locality, growing together with *Rinodina* sp. damaged by *Unguiculariopsis helmutii*, (160381, 160385), (KoLRI 38526, KoLRI 38530 sub *Unguiculariopsis helmutii* – isotypes); the same locality, growing together with *Rinodina* and *Dirinaria* spp. (160384), (KoLRI 38529 sub *Mikhtomia* – isotype); the same locality, growing together with *Buellia griseovirens*, (160386), (KoLRI 38531 sub *Mikhtomia* – isotype).

Thalli (0.2–)0.5–1 cm across, but usually form much larger aggregations, very thin at edge and somewhat thicker in the centre; consisting of scattered and distant minute flat areoles in peripheral portions to continuous in the centre or sometimes cracked into small "areoles" to 0.5–0.8 mm across, which seen only at the largest magnification (×100 and more); upper surface grey to

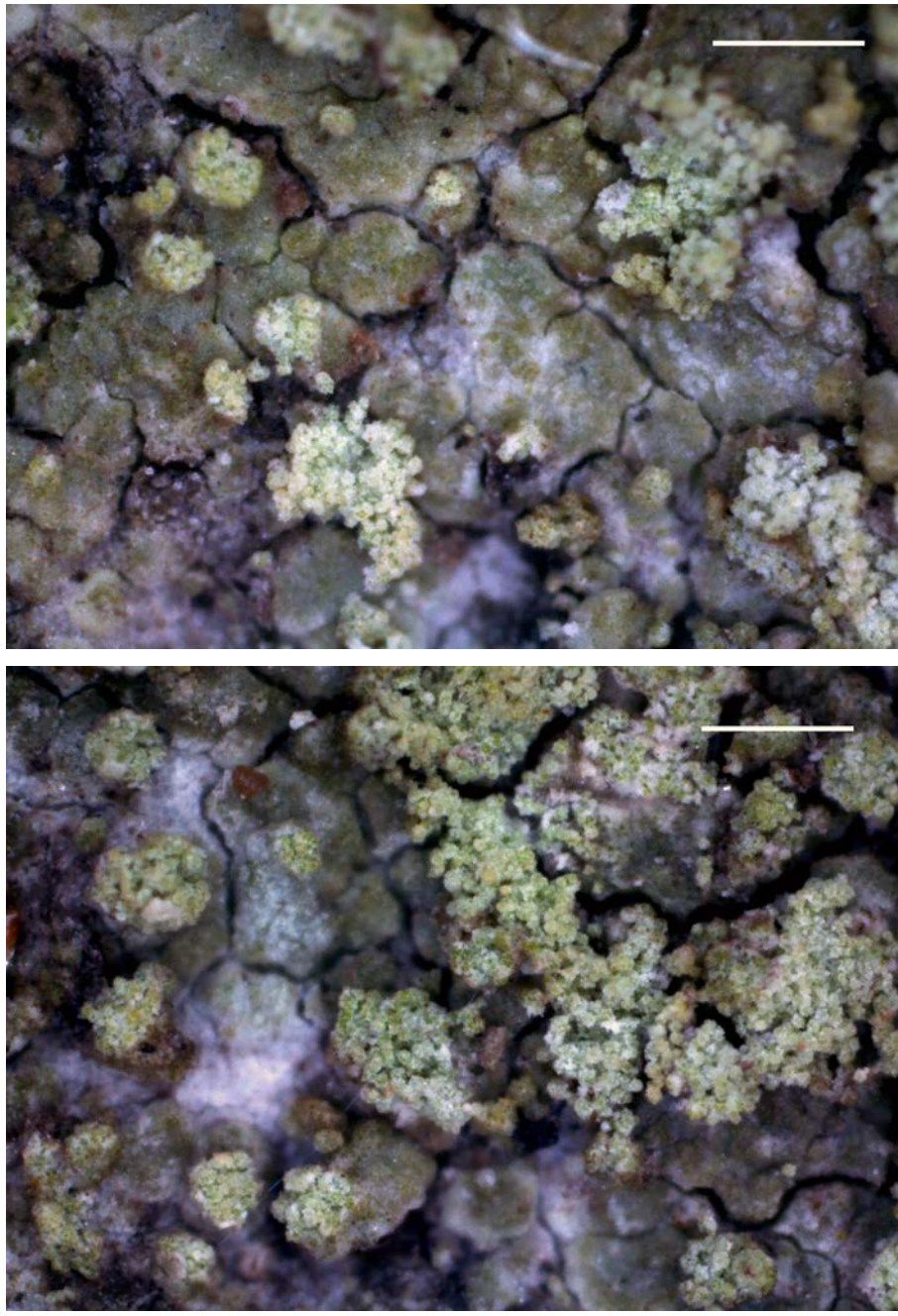

Fig. 10. Mikhtomia geumohdoensis (holotype), general habit. Scale 0.5 mm. (Photo of S. Kondratyuk)

whitish grey or greenish grey to dark grey or dark greenish grey in the centre, where rather well contrasting to whitish grey semiconvex soralia or soredious mass. Hypothallus whitish or whitish spots seen between thalline areoles.

Thallus in section to (40–)50–70 μm thick in the thickest central portion, towards the peripheral portion becoming thinner; cortical layer to 7–10 μm thick, paraplectenchymatous, cell lumina to 3–4(–7) μm across, hyaline or somewhat brownish part in some places, sometimes very thin, to 5 μm thick epinecral layer observed; completely filled in by algal zone, algal cells (7–)11–17(–21) μm in diam./across; medulla not developed or very rarely dirty whitish layer to 20 μm thick below algal zone observed.

Soralia 0.2–0.5(–0.7) mm diam. (in section to 150(–200) μm thick), distinctly constricted at the basis, lamp-like or torch-like, semiconvex (with semiconvex whitish grey soredious mass), initially as thalline protuberances to 0.1–0.15 mm diam., somewhat uplifted above thalline level and becoming soredious in their uppermost portion, regularly rounded and distant and scattered, semiconvex to convex, later becoming irregular and soredious mass becoming confluent; sometimes uplifted edges of protuberances seem to form "lecanorine"/thalline margin of soralia (like in some species of *Pertusaria*).

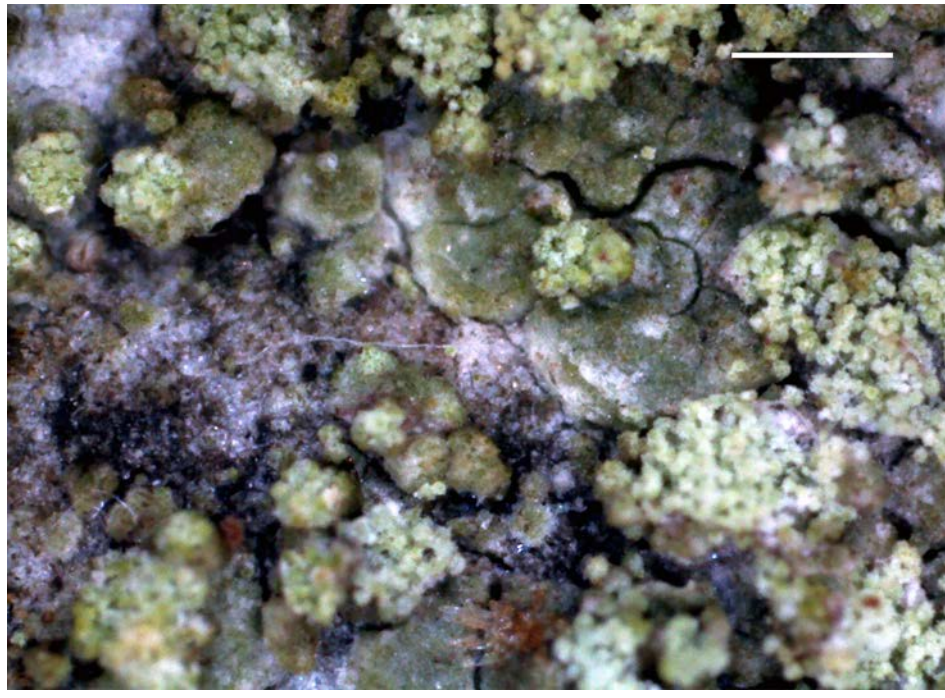

Fig. 11. Mikhtomia geumohdoensis (holotype), enlarged portion with thalline areoles and soralia. Scale 0.5 mm. (Photo of S. Kondratyuk)

Soredia small (12–)15–25(–35) μm diam., regularly rounded or spherical, whitish grey, while in places dull yellowish grey or yellowish-whitish grey, algal cells surrounded by hyphal layer to 2–3 μm thick. Formation of conblastidia (i.e. aggregations of soredia more than 35 μm diam./across) was observed very rarely.

Apothecia, conidiomata and conidia unknown.

Chemistry: All reactions negative, no substances were detected by HPLC.

Ecology: Growing on bark of deciduous trees (i.e.: *Zelkova* spp.), usually together with *Hyperphyscia crocata*, *Phaeophyscia adiastola* and *Ph. rubropulchra*.

Distribution: So far known from scattered localities of islands (Geumo-do and Ulleung-do) and mainland of southern part of South Korea, Eastern Asia.

Etymology: It is named after Geumo-do (or Geumoh-do) Island, South Korea, Eastern Asia, where the type collection was done.

Taxonomic notes: *Mikhtomia geumohdoensis* is similar to *Caloplaca ussuriensis*, but differs in having much smaller and thinner thallus, in the lack of yellow shade of thallus, in having uplifted usually regularly rounded, hemispherical, convex soredious mass, and in having lamp-like or torch-like soralia constricted at the basis, as well as in positioning in out position to all known species of the genus *Mikhtomia* after ITS phylogeny (see also Kondratyuk *et al.* 2017).

Material of *Mikhtomia geumohdoensis* may resemble at initial stages *Caloplaca alstrupii* Søchting, but thalline protuberances very soon becoming soredious or mainly seen with semiconvex or convex soredious mass (not closed in capsules/cavernulas as in *C. alstrupii*).

Korean material of *Mikhtomia geumohdoensis* was long period identified as "green soredious crust" or as "*Buellia* aff. *griseovirens*", because it was always collected only in sterile condition.

However, in contrast to *Buellia griseovirens* and similar Korean species *Amandinea trassii* thallus of *Mikhtomia geumohdoensis* is usually much smaller and in growing on bark of *Zelkova* (vs. mainly on bark of coniferous trees in conditions of South Korea). Furthermore *Mikhtomia geumohdoensis* differs in having lamp- or torch-like soralia with very uplifted and well-delimitated soredious mass (vs. more immersed and crater-like soralia), and in having persistently lighter, i.e. whitish or whitish-greyish soredious mass (vs. soredious mass becoming dark brownish grey or dark bluish blackish grey in places (see Kondratyuk *et al.* 2016*b*), as well as in positioning in the *Mikhtomia* clade of the subfamily Caloplacoideae of the Teloschistaceae after phylogenetic analysis based on ITS1/ITS2 nrDNA sequences.

All specimens for which we have today ITS1/ITS2 data (i.e.: nr. 160372 (voucher SK F44), nr. 160373 (voucher SK F46), nr. 160374 (voucher SK F20), nr. 160375 (voucher SK F21), nr. 160382 (voucher SK F23) from Geumoh-do and nr. 161182 (voucher SK F14) from the Jiri Mts) form separate branch with

the highest level of support within the *Mikhtomia* subphylum of the subfamily Caloplacoideae of the Teloschistaceae.

Soredious mass of *Mikhtomia geumohdoensis* was sometimes very similar to soredious mass of *Phaeophyscia adiastola*, when they grow side by side. However, later species is easily identified by presence of distinct foliose thallus with well-developed rhizines on underside.

Additional specimens examined: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Na-ri, parking place at Naribunji, on bark (*Zelkova serrata*). Lat.: 37° 31′ 14.10″ N; Long.: 130° 52′ 06.12″ E; Alt.: 355 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161781), 10.07.2016 (KoLRI 040002).* – Gyeongsangnam-do: Sancheong-gun, Sicheon-myeon, Naedae-ri, Jiri-san National Park, Georim Trail. Lat.: 35° 17′ 38.70″ N; Long.: 127° 41′ 55.55″ E; Alt.: 990 m a.s.l. Coll.: Kondratyuk, S. Y., Lee, B. G. and Lőkös, L. (161182, 161183), 30.06.2016 (KoLRI 039377, KoLRI 039378).

Orientophila dodongensis S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova* (Fig. 12)

MycoBank no.: MB 819929.

Similar to Orientophila jungakimae*, but differs in having only scattered and distant areoles, which do not form continuous film, in having larger apothecia, in having scleroplectenchymatous true exciple, and in having narrower ascospores, and in having wider ascospore septum, as well as in positioning in separate subbranch of the Teloschistaceae after ITS1/ITS2 phylogeny.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-gun, Ulleung-eup, Dodong-ri, Dodong Port, on siliceous rock, growing together with *Orientophila subscopularis*, *Flavoplaca laszloana*, *Hyperphyscia*/*Phaeophyscia* sp., *Candelariella hakulinenii*, *Lecanora polytropa*, *Amandinea* cf. *punctata*, and *Orientophila leucerythrella*. Lat.: 37° 28′ 59.9″ N; Long.: 130° 54′ 40.7″ E; Alt.: *ca* 20 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (162035), 11.07.2016 (KoLRI 040273 sub *Orientophila subscopularis* – holotype; DNA voucher SK H45); the same locality, growing together with *Orientophila yokjidoensis*, *Flavoplaca laszloana*, *Phaeophyscia* sp. and *Lecanora polytropa*, (162033), (KoLRI 040271 sub *Orientophila yokjidoensis* – isotype; DNA voucher SK H43).

Thallus 5–7 mm across, but mostly very indistinct, owing to that growing among other *Orientophila* species (i.e.: *O. subscopularis*, *O. yokjidoensis*, etc.); areolate, no lobate areoles in peripheral zone observed, consisting of very

* Specimen 161781 included to this species with hesitation, because after molecular data it belongs to another unidentified branch.

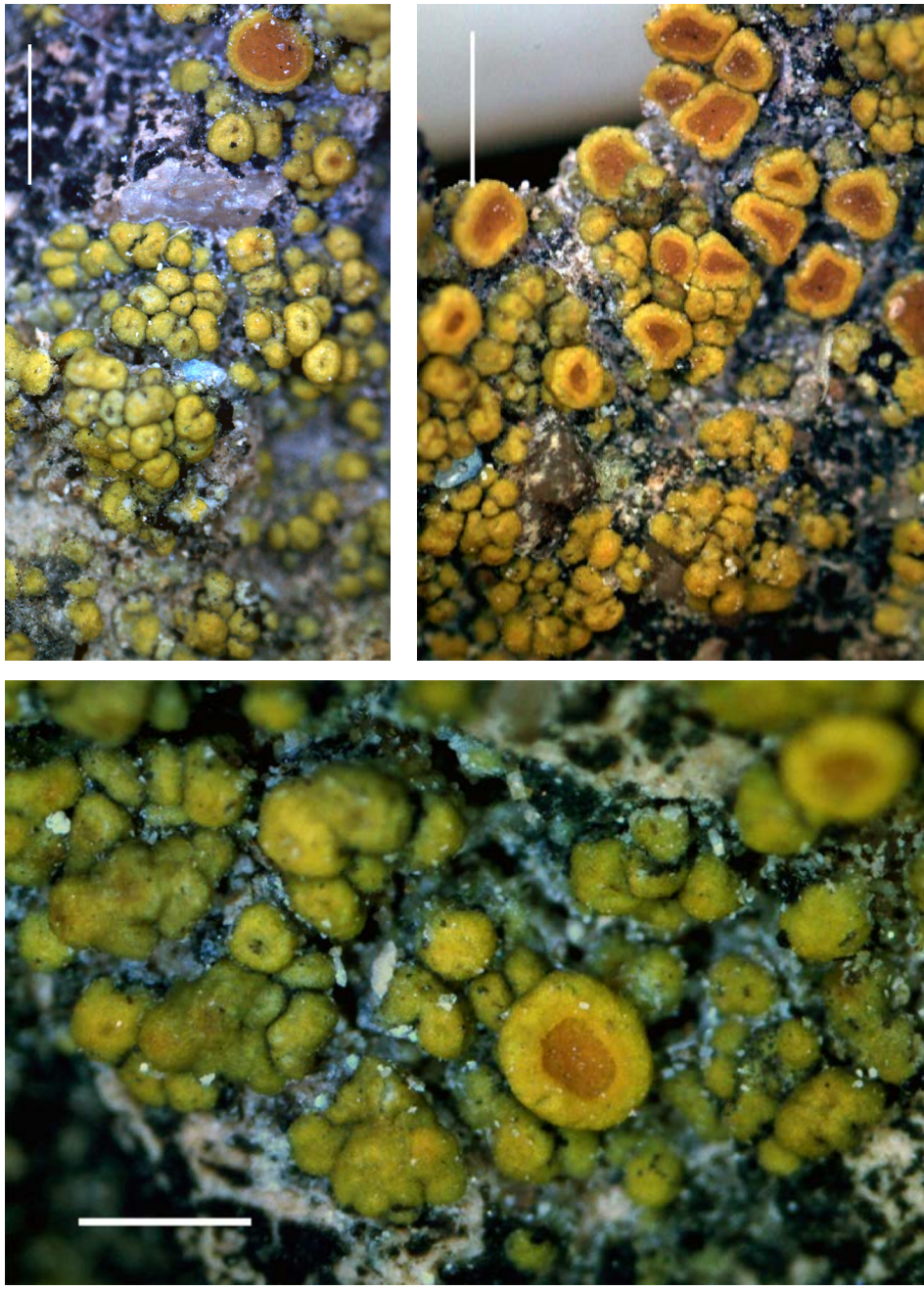

Fig. 12. Orientophila dodongensis (holotype), general habit. Scale 0.5 mm. (Photo of S. Kondratyuk)

scattered and distant semiconvex or convex areoles, dull yellow or lemon yellow; areoles 0.2–0.3(–0.4) mm diam./across, mostly convex, in section to 0.2–0.4(–0.6) mm thick, almost the same thick as in peripheral portion as in the centre, or slightly thicker in the centre; sometimes aggregated in small aggregation ("pseudoareoles") to 0.5–1(–1.5) mm across, somewhat rounded, warty, with 1(–2) apothecia per pseudoareoles, mostly distant and scattered, sometimes aggregated in complex thallus. Hypothallus not observed.

Apothecia 0.3–0.8(–1) mm diam., and to 0.28–0.38(–0.4) mm thick, much larger of thalline areoles, mostly situated separately between areoles or areole aggregations, single and regularly rounded, or in groups to 2(–4) and associated with thalline areoles, zeorine, with more or less plane, dull brownish yellow disc, very thin, to 40–60 μm wide (seen at ×100), dull or bright yellow or yellow-orange, usually permanent, own margin and with crenulate to disappearing dull whitish yellow or bright lemon yellow to greenish yellow thalline margin (seen at sides or basis); in section lecanorine, thalline exciple to 110–120 μm wide, completely filled in by algal layer, cortical layer very indistinct, better seen on underside to 18–20 μm thick, cell lumina somewhat rounded, 4–7 μm diam./across, sometimes with brownish outermost layer to 5–7 μm thick, algal zone to 90–110 μm thick, algal cells 10–20 μm diam.; true exciple 50–60(–80) μm thick in the uppermost lateral portion, to 20–30 μm thick in the lower lateral and basal portion, scleroplectenchymatous, with well developed matrix and hyphae lumina 1–2(–3) μm diam.; hymenium 55–70 μm high, hyaline without oil droplets; epihymenium 15–20 μm thick, yellow-brownish; subhymenium 40–50(–60) μm thick, hyaline, without oil droplets; asci 8-spored, with ascospores very variegated in size within the same ascus; ascospores bipolar, hyaline, mostly narrowly ellipsoid, (7–)8–11(–14) × 4–5.5(–6) μm in water and (5–)7–12(–15) × (3–)5–7(–8) μm in K, septum (2–)4–5(–6) μm wide in water and (2–)4–7(–8) μm wide in K.

Chemistry: Epihymenium, uppermost portion of true exciple and cortical layer of thalline exciple and thallus K+ purple, containing parietin.

Ecology: Growing on siliceous rock in coastal zones, growing together with *Orientophila subscopularis*, *Flavoplaca laszloana*, *Hyperphyscia*/*Phaeophyscia* sp., *Candelariella hakulinenii*, *Lecanora polytropa*, *Amandinea* cf. *punctata*, and *Orientophila leucerythrella*.

Distribution: So far known from South Korea and Japan (see below specimen *Orientophila* sp. 22 after Arup *et al.* 2013), Eastern Asia.

Etymology: It is named after Dodong village of Ulleung-do Island, South Korea, Eastern Asia, where the type collection was done.

Taxonomic notes: The genus *Orientophila* Arup, Søchting et Frödén originally included only two species, i.e.: *Orientophila loekoesii* (S. Y. Kondr. et J.-S. Hur) Arup, Søchting et Frödén, and *Orientophila subscopularis* Arup et Frisch

(Arup *et al.* 2013). It should be emphasised that voucher specimen of *O. loekoesii*, referred as "South Korea, Joshi 100320, LD holotype" (Arup *et al.* 2013: 22) was mentioned incorrectly; this specimen was not cited even among paratypes. The holotype specimen of *O. loekoesii* was collected by Wang, X. Y. and Ryu, R. Y. (110341), and it is deposited in the KoLRI 012919 (see Kondratyuk *et al.* 2012: 322). Furthermore Arup and colleagues have mentioned two more, still undescribed taxa as *Orientophila* sp. 21 and *Orientophila* sp. 22 (Arup *et al.* 2013).

Three more species of the genus *Orientophila*, i.e.: *O. fauriei* S. Y. Kondr., L. Lőkös et J.-S. Hur, *O. jungakimae* S. Y. Kondr., S.-O. Oh et J.-S. Hur, and *O. yokjidoensis* S. Y. Kondr., S.-O. Oh et J.-S. Hur were described last year (Kondratyuk *et al.* 2016*d*).

Further four species of this genus, i.e. *O. chejuensis*, *O. diffluens* (see below this description), *O. dodongensis*, and *O. leucerythrella* (see under "New to Korea taxa"), confirmed by ITS phylogeny of the Teloschistaceae are added in this paper.

Totally the genus *Orientophila* includes 9 species of which four species form separate subbranch of crustose taxa (*O. chejuensis*, *O. diffluens*, *O. fauriei* and *O. leucerythrella*), which positioned in sister position to subbranch with mainly lobate members of this genus.

After ITS1/ITS2 nrDNA sequences (nr. 162033 (voucher SK H43), nr. 162035 (voucher SK H45)) *Orientophila dodongensis* is positioned within the subclade of the *Orientophila* clade with the lobate taxa *O. subscopularis*, *O. jungakimae* and *O. yokjidoensis*, and the crustose lichen *O. loekoesii*.

According to our results of ITS phylogeny *Orientophila* sp. 22 (Arup *et al.* 2013) also belongs to *Orientophila dodongensis*.

From lobate species *O. subscopularis*, *O. jungakimae* and *O. yokjidoensis*, *Orientophila dodongensis* differs in having only areolate thallus, where areolae are mostly distant and scattered, and in the lack of lobate thalline portions in the peripheral zone, as well as in having mostly narrower ascospores (see below).

Orientophila dodongensis is similar to *O. jungakimae*, known so far only from South Korea, but differs in having only scattered and distant, small, semiconvex to convex areoles, which do not form continuous film (vs. thallus distinctly lobate and rosette-like), in having larger apothecia (0.3–0.8(–1) mm vs. 0.25–0.5 mm diam.), in having scleroplectenchymatous true exciple (vs. *Blastenia*-type sensu Kondratyuk *et al.* 2014*a*), and in having narrower ascospores (8–11 × 4–5.5 μm vs. (6–)7–11(–12) × 5.5–7 μm), and in having somewhat wider ascospore septum (4–5 μm vs. 3–4.5 μm wide) (Kondratyuk *et al.* 2016*d*), as well as in positioning in separate subbranch of the *Orientophila* branch of the subfamily Xanthorioideae of the Teloschistaceae after ITS1/ITS2 phylogeny.

Orientophila dodongensis is also similar to *O. subscopularis* Arup et Frisch, originally described from Japan, but now also known from South Korea, but

differs in having only scattered and distant, small, semiconvex to convex areoles, which do not form continuous film, and in the lack of lobate thalline portions in the peripheral zone (vs. distinctly lobate and rosette-forming thallus), in having much larger and zeorine apothecia, in having very thin and mostly crenulated and often disappearing (seen only at sides or basis) thalline margin, in having plane disc (vs. concave), in having scleroplectenchymatous true exciple (vs. *Blastenia*-type), in having lower hymenium (55–70 μm vs. 100–110 μm high), and thinner subhymenium (40–50 μm vs. *ca* 120 μm thick), as well as in having shorter and narrower ascospores (8–11 × 4–5.5 μm vs. 12–15 × 5.5–6.5 μm) (Arup *et al.* 2013), as well as in positioning in separate subbranch of the *Orientophila* branch of the subfamily Xanthorioideae of the Teloschistaceae after ITS1/ITS2 phylogeny.

Orientophila dodongensis is similar to *O. yokjidoensis* S. Y. Kondr., S.-O. Oh et J.-S. Hur, known so far only from South Korea, but differs in having only scattered and distant, small, semiconvex to convex areoles, which do not form continuous film, in having zeorine apothecia with disappearing thalline margin (vs. lecanorine apothecia with permanent and much thicker thalline margin), in having well-developed true exciple in basal portion (vs. indistinct or absent at the base), and in having narrower ascospores (8–11 × 4–5.5 μm vs. (7–)9–12(–13) × (5–)5.5–7 μm) (Kondratyuk *et al.* 2016*d*), as well as in positioning in separate subbranch of the *Orientophila* branch of the subfamily Xanthorioideae of the Teloschistaceae after ITS1/ITS2 phylogeny.

From crustose species *O. loekoesii* S. Y. Kondr. et J.-S. Hur, known so far only from South Korea, *Orientophila dodongensis* differs in having very indistinct and smaller thallus (vs. to 1.5–3 cm across), in having only areolate thallus, where areoles are mostly distant and scattered, which do not form continuous film (vs. the same convex areoles soon becoming densely aggregated and forming warty surface of continuous film of thallus), and in having somewhat shorter ascospores (8–11 × 4–5.5 μm vs. (9–)10–12(–14) × (4–)4.5–5.5(–6.5) μm) (Kondratyuk *et al.* 2012), as well as in positioning in separate subbranch of the *Orientophila* branch of the subfamily Xanthorioideae of the Teloschistaceae after ITS1/ITS2 phylogeny.

Orientophila dodongensis often grow together with *O. subscopularis* and *Flavoplaca laszloana*, among which only the latter differs in having somewhat semiconvex soredious mass.

NEW COMBINATIONS

Orientophila chejuensis (S. Y. Kondr. et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur, *comb. nova* – MycoBank no.: MB 819930. – Basionym: *Caloplaca chejuensis* S. Y. Kondr. et Hur, in Kondratyuk, Lőkös, Zarei-Darki and Hur, Acta

Bot. Hung. 54(3–4): 314 (2012). – Position of this taxon in the *Orientophila* clade of the subfamily Xanthorioideae of the Teloschistaceae is confirmed by three voucher specimens based on ITS phylogeny.

Orientophila diffluens (Hue) S. Y. Kondr., L. Lőkös et J.-S. Hur, *comb. nova* – MycoBank no.: MB 819931. – Basionym: *Lecanora diffluens* Hue, Annls Mycol. 13(2): 81 (1915). ≡ *Caloplaca diffluens* (Hue) Zahlbr., Cat. Lich. Univers. 7: 114 (1930) [1931]. – Position of this taxon in the *Orientophila* clade of the subfamily Xanthorioideae of the Teloschistaceae is confirmed by three voucher specimens based on ITS phylogeny.

Physcia orientostellaris S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova* (Figs 13–14)

MycoBank no.: MB 819932.

Similar to Physcia stellaris*, but differs in having saxicolous, mainly irregular thalli often aggregated in groups, in having almost the same narrow through the whole length, in having not so regularly radially orientated lobes, in having rather scarce and smaller apothecia, in having epruinose disc, in having* Catillaria*-type caps on paraphysis tips, in having shorter ascospores, and in positioning in separate branch after molecular phylogeny.*

Type: Republic of Korea. Jeollanam-do: Wando-gun, Bogil-myeon, Bogil Island, on rock. Lat.: 34° 09′ 26.40″ N; Long.: 126° 37′ 25.75″ E; Alt.: 5 m a.s.l. Coll.: Hur, J.-S. (41671), 31.12.2004 (KoLRI 002467 – holotype; DNA voucher as 41671 KoLRI).

Thallus epilithic, often aggregated in groups, emaculate, esoredious, white or whitish grey to light grey; thalline lobes to 3–5(–10) mm long, usually to 0.7–0.8 mm wide, somewhat semiconvex or with bent downwards lobe ends in marginal zone and seem to be semiconvex, slightly widened and flattened towards the tips to 1–1.5 mm wide, while almost through the total length the same 0.7–0.8 mm wide. Underside white, rhizines white along the edges or seldom and scarce in the middle of lobes, usually 0.4–0.6 mm long.

Thallus in section (150–)200–320 μm thick, upper cortical layer to 25 μm thick, with upper brownish portion to 15 μm thick, and inner portion to 10 μm thick hyaline, paraplectenchymatous; algal zone to 40–50(–60) μm thick, algal cells 10–20 μm in diam.; lower cortical layer to 30–45 μm thick, prosoplectenchymatous, hyphae orientated along the lobe length; medullary plectenchyma to 50–170 μm thick, without cavity.

Apothecia to 1.1(–1.5) mm diam., 0.4 mm thick in section, thalline exciple to 100 μm thick, cortical layer to 20–40 μm thick especially in lower lateral portion and on underside. Hymenium to 80 μm high; paraphyses with black-brown caps (*Catillaria*-type) to 3–4 μm diam.; ascospores elongated, narrowly fusiform with somewhat attenuated ends, while shortly ellipsoid also observed, often one ends narrower of the other, (somewhat *Pyrenidium*-like owing to much lighter ends), often overmature somewhat collapsed or loosing forms are often observed in section, (11–)12–18(–19) × 6–8(–9) μm in water, and (13–)14–19(–21) × (6–)7–9(–10) μm in K.

Conidiomata to 100–150 μm diam./across, often aggregated and seem to be in grape-like aggregations; conidia narrowly bacilliform, 2.5–3.5 × 0.7–0.9 μm.

Chemistry: Cortex K+ yellow, medulla K–. Atranorin.

Ecology: Growing on siliceous rocks especially often in coastal areas.

Distribution: So far it is confirmed for South Korean material. However, we suggest that it is rather common but overlooked in the Eastern Asian region.

Etymology: Species is named after its Eastern Asian distribution and similarities with *Physcia stellaris*.

Taxonomic notes: *Physcia orientostellaris* is similar to *Ph. stellaris* (L.) Ach., a corticolous species, growing on trunks and branches of various deciduous trees, eventually with some preference for *Populus tremula*, and very rarely registered on stones, known from arctic, boreal and temperate vegetation zones in Eurasia and North America, also in Africa, South America and Australia and which is characterised by the narrow lobes, the weakly creamy grey colour, the lack of distinct maculae, the abundant apothecia, very variable size in one and the same thallus, the K– medulla and the corticolous habitat, and in the lack of soralia.

However, *Physcia orientostellaris* differs from *Ph. stellaris* in having saxicolous mainly irregular thalli often aggregated in groups (vs. mainly corticolous, regularly orbicular, rarely confluent with other thalli in *Physcia stellaris*), in having almost the same narrow through the whole length (to 0.7–0.8 mm wide), (vs. very variable in width to 3 mm wide), in having not so regularly radially orientated lobes (vs lobes mainly regularly radiating), in having rather scarce and smaller apothecia (vs. usually abundant, very variable in size in one and the same thallus, to 4 mm diam.), in having epruinose disc (vs. disc often pruinose), in having *Catillaria*-type caps on paraphysis tips (vs. without caps, after our data), in having shorter ascospores ((11–)12–18(–19) × 6–8(–9) μm vs. (17–)18–21 × (8.5–)9–9.5(–10) μm from our data, see voucher below, and (14–)17.5–22.5(–28) × (6.5–)8–10(–12) μm after Ahti *et al.* 2002), and in positioning in separate monophyletic branch after molecular phylogeny based on ITS nr DNA sequences.

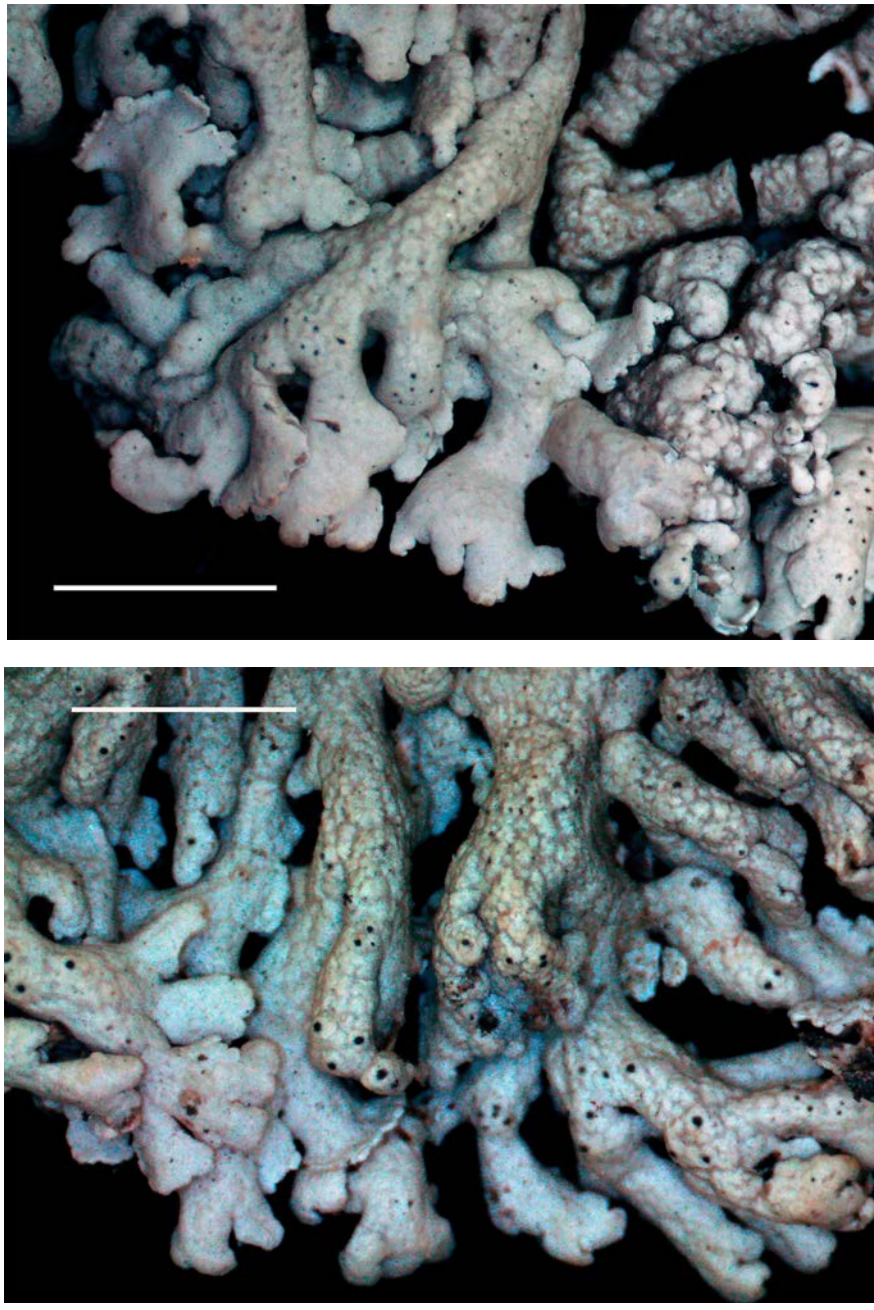

Fig. 13. Physcia orientostellaris (holotype), general habit of peripheral portion of thallus. Scale 2 mm. (Photo of S. Kondratyuk)

Fig. 14. Physcia orientostellaris (holotype), general habit of central portion of thallus. Scale 2 mm. (Photo of S. Kondratyuk)

In contrast to Kashiwadani's description of Japanese specimens of *Physcia stellaris* (Kashiwadani 1975), which according to our opinion could be conspecific with *Physcia orientostellaris*, algae are larger, thickness of thallus is also larger, and lower sides (underside) of thallus is whitish or yellowish (not pale brown), as well as rhizines are mainly shorter (to 0.5 mm long vs. to 1.5 mm long). We would like to emphasise that we suppose that Korean and Japanese material will be conspecific, but it should be revised especially.

Totally ITS nrDNA sequences were obtained for 6 specimens of the new taxon, i.e. (vouchers nr. 120788, nr. 41671, nr. 41642, nr. 41649, nr. 40912, and nr. 50213). All these sequences form separate a branch in sister position to three other branches of other species of the genus *Physcia*. It should be mentioned that data on *Physcia stellaris* in GenBank are rather heterogeneous at the moment and specimens of European or Northern Hemisphere material are present in three separate branches (additionally to *Physcia orientostellaris* branch) (i.e. mainly Asian *Physcia stellaris* group, *Physcia stellaris-Ph. biziana-Ph. leptalea* group, *Physcia stellaris-Ph. albicans* group). The further analysis of molecular data on *Physcia stellaris* aggregation is in progress and results will be published in separate publication.

Additional specimens examined: Republic of Korea. Gyeongsangnam-do: Namhae-gun, Seo-myeon, seaside at Seosang-ri, on rock. Lat.: 34° 48′ 51.18″ N; Long.: 127° 49′ 41.88″ E; Alt.: 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110208), 28.04.2011 (KoLRI 013422). – Gyeongsangnam-do: Namhae-gun, Changseon-myeon, Changseon Island, seaside at Jijok-ri, on rock. Lat.: 34° 50′ 27.31″ N; Long.: 127° 58′ 40.87″ E; Alt.: 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110251), 29.04.2011 (KoLRI 013465). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Sinyang-1-ri, seashore of Mojini-mongdol, on rock. Lat.: 33° 56′ 44.9″ N; Long.: 126° 20′ 03.01″ E; Alt.: 57 m, on rock. Coll.: Kondratyuk, S. Y. and Lőkös, L. (140885), 21.06.2014 (KoLRI 023396); the same locality, (140901-1), (KoLRI 023416). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, along the western coast, seashore rocks at Muk-ri, on siliceous rock. Lat.: 33° 56′ 32.5″ N; Long.: 126° 18′ 55.72″ E; Alt.: 10 m a.s.l. Coll.: Kondratyuk, S. Y. (141166), 22.06.2014 (KoLRI 023726). – Jeju-do: Jeju-do Island, Seogwipo-si, Seongsan-eup, Ojo-ri, coastal road, on rock. Lat.: 33° 27′ 53.45″ N; Long.: 126° 55′ 08.56″ E; Alt.: *ca* 10 m a.s.l. Coll.: Hur, J.-S. (040912), 29.08.2004 (KoLRI 001702; DNA voucher as 40912 KoLRI). – Jeollabuk-do: Gunsan-si, Okdo-myeon, Sinsi-do Island, Sinsido-ri, on rock. Lat.: 35° 49′ 08.8″ N; Long.: 126° 27′ 55.8″ E; Alt.: 19 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110822), 22.08.2011 (KoLRI 013831). – Jeollanam-do: Goheung-gun, Geumsan-myeon, Geogeum-do Island, on rock. Lat.: 34° 25′ 20.8″ N; Long.: 127° 08′ 43.1″ E; Alt.: 10 m a.s.l. Coll.: Hur, J.-S. (050213), 07.05.2005 (KoLRI 003117; DNA voucher as 50213 KoLRI). – Jeollanam-do: Goheung-gun, Geumsan-myeon, Geogeum-do Island, Ojeon-ri, Okryong coast, on rock. Lat.: 34° 26′ 16.9″ N; Long.: 127° 07′ 15.4″ E; Alt.: 6 m, on rock. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120036), 17.04.2012. (KoLRI 014627); the same locality, (120046), (KoLRI 014638). – Jeollanam-do: Goheung-gun, Geumsan-myeon, Geogeum-do Island, Sinpyeong-ri coast, on rock. Lat.: 34° 28′ 30.4″ N; Long.: 127° 14′ 03.6″ E; Alt.: 1 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120067), 17.04.2012 (KoLRI 014660). – Jeollanam-do: Goheung-gun, Doyang-eup, Sorok-do Island, Sorok-ri, on rock. Lat.: 34° 31′ 12.08″ N; Long.: 127° 07′

28.18″ E; Alt.: *ca* 20 m a.s.l. Coll.: Hur, J.-S. (030081), 23.03.2003 (KoLRI 000055). – Jeollanam-do: Goheung-gun, Yeongnam-myeon, Ucheon-ri, Yongam village, Yongbawi seaside, on rock. Lat.: 34° 35′ 45.9″ N; Long.: 127° 30′ 22.5″ E; Alt.: 10 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Han, G. S. (100312), 19.02.2010 (KoLRI 011822); the same locality, (100343), (KoLRI 011852). – Jeollanam-do: Jindo-gun, Hachodo Island, on rock. Lat.: 34° 19′ 0.50″ N; Long.: 126° 02′ 22.9″ E; Alt.: 3 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110901), 23.08.2011. (KoLRI 013893). – Jeollanam-do: Jindo-gun, Jeob-do Island, on rock. Lat.: 34° 23′ 41.14″ N; Long.: 126° 18′ 8.80″ E; Alt.: 1 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110505), 03.06.2011. (KoLRI 013549). – Jeollanam-do: Sinan-gun, Palgeum-myeon, Palgeum-do Island, on rock. Lat.: 34° 47′ 44.0″ N; Long.: 126° 10′ 13.1″ E; Alt.: 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110366), 02.06.2011 (KoLRI 012932). – Jeollanam-do: Sinan-gun, Heuksan-myeon, Heuksan-do Island, on rock. Lat.: 34° 40′ 54.1″ N; Long.: 125° 26′ 40.3″ E; Alt.: 3 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110522), 21.06.2011 (KoLRI 013566); the same locality, (110538), (KoLRI 013579). – Jeollanam-do: Sinan-gun, Sinui-myeon, Sinui-do Island, Hatae-gil seaside, on rock. Lat.: 34° 32′ 27.02′′N; Long.: 126° 02′ 11.01′′ E; Alt.: 11 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130574), 28.06.2013 (KoLRI 018919); the same locality, (130575), (KoLRI 0189209). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Jung-ri, Jungri Beach seaside, on rock. Lat.: 34° 09′ 47.06″ N; Long.: 126° 35′ 28.92″ E; Alt.: 13 m a.s.l. Coll. Joshi, Y., Jeon, H. S. and Jeong M. H. (100205), 06.02.2010. (KoLRI 011705). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Tong-ri, near Tongri Beach, on rock. Lat.: 34° 09′ 28.05″ N; Long.: 126° 35′ 9.00″ E; Alt.: 3 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M. H. (100192), 06.02.2010 (KoLRI 011692); the same locality, growing together with *Jasonhuria bogilana*, (100196), (KoLRI 011696 sub *Physcia*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, on rock. Lat.: 34° 09′ 17.52″ N; Long.: 126° 34′ 43.26″ E; Alt.: 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110591), 22.06.2011 (KoLRI 013625). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, on rock. Lat.: 34° 09′ 16.50″ N; Long.: 126° 34′ 44.40″ E; Alt.: 3 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110634), 22.06.2011 (KoLRI 013662); the same locality, (110636), (KoLRI 013664). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, on rock. Lat.: 34° 10′ 42.48″ N; Long.: 126° 32′ 02.22″ E; Alt.: 12 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110648), 23.06.2011 (KoLRI 013676); the same locality, (110655), (KoLRI 013683). – Jeollanam-do: Wando-gun, Cheongsan-do Island, Cheongsan-myeon, Eup-ri, on rock. Lat.: 34° 09″ 11.22″ N; Long.: 126° 52′ 49.26″ E; Alt.: 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110709), 23.06.2011 (KoLRI 013737). – Jeollanam-do: Wando-gun, Yaksan-myeon, Joyak-do Island, Deugam-ri, on rock. Lat.: 34° 21′ 38.8′′ N; Long.: 126° 53′ 34.07′′ E; Alt.: 5 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120126), 18.04.2012. (KoLRI 014720). – Jeollanam-do: Yeong-gwang, Baeksu-eup, Baekam-ri, west sea side, on rock growing together with *Aspicilia* sp. Lat.: 35° 19′ 34.4″ N; Long.: 126° 22′ 43.8″ E; Alt.: *ca* 6 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110304, 110310), 01.06.2011 (KoLRI 012901 sub *Aspicilia*, KoLRI 012897). – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Dumo-ri, Jickpo coast, on rock. Lat.: 34° 30′ 45.00″ N; Long.: 127° 44′ 14.8″ E; Alt.: 6 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120340), 26.04.2012. (KoLRI 015329); the same locality, growing together with *Pyxine* sp. (120373), (KoLRI 015362 sub *Physcia*). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on rock. Lat.: 34° 00′ 13.3″ N; Long.: 127° 19′ 29.2″ E; Alt.: 52 m a.s.l. Coll.: Hur, J.-S. (070062), 23.03.2007 (KoLRI 007049); the same locality, (070064), (KoLRI 007051). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on rock. Lat.: 34° 00′ 39.3″ N; Long.: 127° 19′ 05.57″ E; Alt.: 16 m a.s.l. Coll.: Hur, J.-S. (070081), 24.03.2007 (KoLRI 007068). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on rock. Lat.: 34° 00′ 38.2″ N; Long.: 127° 19′ 07.5″ E; Alt.: 10 m a.s.l. Coll.:

Hur, J.-S. (070119), 24.03.2007. (KoLRI 007106). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on rock. Lat.: 34° 00′ 31.7″ N; Long.: 127° 19′ 14.7″ E; Alt.: 92 m a.s.l. Coll.: Hur, J.-S. (070159), 24.03.2007 (KoLRI 007146).

Specimen of *Physcia stellaris* examined: Hungary. Buda Mts, Budapest, 2nd district, Cseppkő u. 23/B, on bark of *Malus*. Coll.: Lőkös, L., 24.06.2016 (KoLRI).

Placynthiella hurii S. Y. Kondr. et L. Lőkös, *spec. nova*
(Figs 15–16)

MycoBank no.: MB 819933.

Similar to Acarospora moenium, *after having whitish grey or light grey very uplifted irregular areoles, but differs in having smaller thalline areoles and in the lack of soredia, as well as in positioning in the* Placynthiella *branch of the Trapeliaceae after ITS1/ITS2 phylogeny.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, in front of Tonggumi mongdol Beach, on siliceous rock, growing together with *Flavoplaca laszloana*, *Verrucaria* and *Buellia* spp. Lat.: 37° 27′ 33.1″ N; Long.: 130° 52′ 05.5″ E; Alt.: *ca* 4 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161970), 10.07.2016 (KoLRI 040207 sub *Placynthiella* – holotype); the same locality, growing together with *Buellia* sp. (161940), (KoLRI 040177 sub *Buellia* – isotype; DNA voucher SK H04); the same locality, growing together with *Flavoplaca laszloana*, *Catillaria* sp. and *Rufoplaca kaernefeltiana*, (161941), (KoLRI 040178 sub *Flavoplaca laszloana* – isotype); the same locality, growing together with *Flavoplaca laszloana*, (161944), (KoLRI 040181 sub *Flavoplaca laszloana* – isotype); the same locality, growing together with *Amandinea* sp. and *Flavoplaca laszloana*, (161945), (KoLRI 040182 sub *Placynthiella* – isotype; DNA voucher SK H05); the same locality, growing together with *Acarospora ulleungdoensis*, *Rufoplaca kaernefeltiana* and *Buellia*, (161946), (KoLRI 040183 sub *Placynthiella* – isotype; DNA voucher SK H06); the same locality, growing together with *Amandinea* sp., *Flavoplaca laszloana* and *Verrucaria* sp. (161947), (KoLRI 040184 sub *Amandinea* – isotype); the same locality, growing together with *Acarospora ulleungdoensis* and *Rufoplaca kaernefeltiana*, (161955), (KoLRI 040192 sub *Placynthiella* – isotype; DNA voucher SK H11); the same locality, growing together with *Acarospora ulleungdoensis* and *Rufoplaca kaernefeltiana*, (161959), (KoLRI 040196 sub *Placynthiella* – isotype); the same locality, growing together with *Buellia* and *Rufoplaca kaernefeltiana*, (161969), (KoLRI 040206 sub *Placynthiella* – isotype; DNA voucher SK H13); the same locality, growing together with *Flavoplaca laszloana* and *Buellia*, (161974), (KoLRI 040211 sub *Buellia* – isotype).

Thallus to 0.5–1(–3) mm across, consisting of very scattered and distant areoles of two different morphotypes: i.e. the first morphotype: horizontally orientated, 0.3–0.5(–0.7) mm across, more or less plane and closely attached to the substrate, dull grey, very indistinct, almost not/or hardly differentiated from substrate areoles, and the second morphotype: differing from the first one in having distinct white pruina on areoles, but characterising by very variable areoles from very plane or with almost even or very slightly undulating surface seems to be very thick, convex areoles, sometimes of *Toninia*-like areoles varying from 0.3–0.4 mm to 0.5–0.8(–1.2) mm across, with well distinct white pruina (or aggregations of crystals see below) especially in the centre, from very scarce and scattered, more or less distant and regularly rounded to aggregated, of very varying shape, from convex almost rounded protuberances or highly uplifted warts, somewhat *Toninia*-like, to uplifted or ascending portions of irregular shape, often attached only by one side, sometimes dissected or mechanically broken/eaten; sometimes areoles of the second morphotype white or white-greyish with very narrow to 0.1 mm wide greyish or brownish greyish edge; the largest aggregations of the second morphotype (whitish) areoles usually to 0.5–1(–3) mm across and often seen along the rock cracks.

In section the plane, closely attached to the substrate areoles (of both the first and the second morphotypes), as well as the convex or wart-like areoles of the second morphotype found to be very thin, only in the first case attached by algal zone to the substrate, in other cases with hollow, but still very thin consisting only of cortical and algal layers. Total thickness of thallus varying between 80–90(–120) μm and 150–170 μm thick (in nr. 161947). Cortical layer in the first morphotype paraplectenchymatous with almost rounded cell lumina to 4–6(–10) μm diam. Very rarely soredia to 20 μm diam., with very thick hyphal wall to 5–7 μm thick, with cells/hyphae to 4–5 μm wide and algal cells (6–)8–14 μm diam. observed in the section of thalline areoles of the first morphotype. Sometimes the same soredia (to 20 μm diam.) form conblastidia to 35 μm diam. However, soredia were never observed in the sections of the second morphotype, and in general it is very questionable, if they belong to this taxon.

In the second morphotype the cortical layer up to 15–20(–25) μm thick, greyish or dull greyish owing to crystals, and in fact consisting only from aggregations of crystals to 15–20 μm across (better seen in K or C), while cellular structure of cortex observed only in very narrow layer to 5–7 μm thick between white depositions and algal zone and algal layer to 70–90(–110) μm thick. Algal cells 8–10(–14) μm diam./across. No hyphal formations below algal zone as on attached areoles, as exfoliated or forming protuberances thalline portions were found. In portions with white pruina/depositions well presented algal zone very densely filled in by algal cells and more intense dark green (and no soredia formation observed).

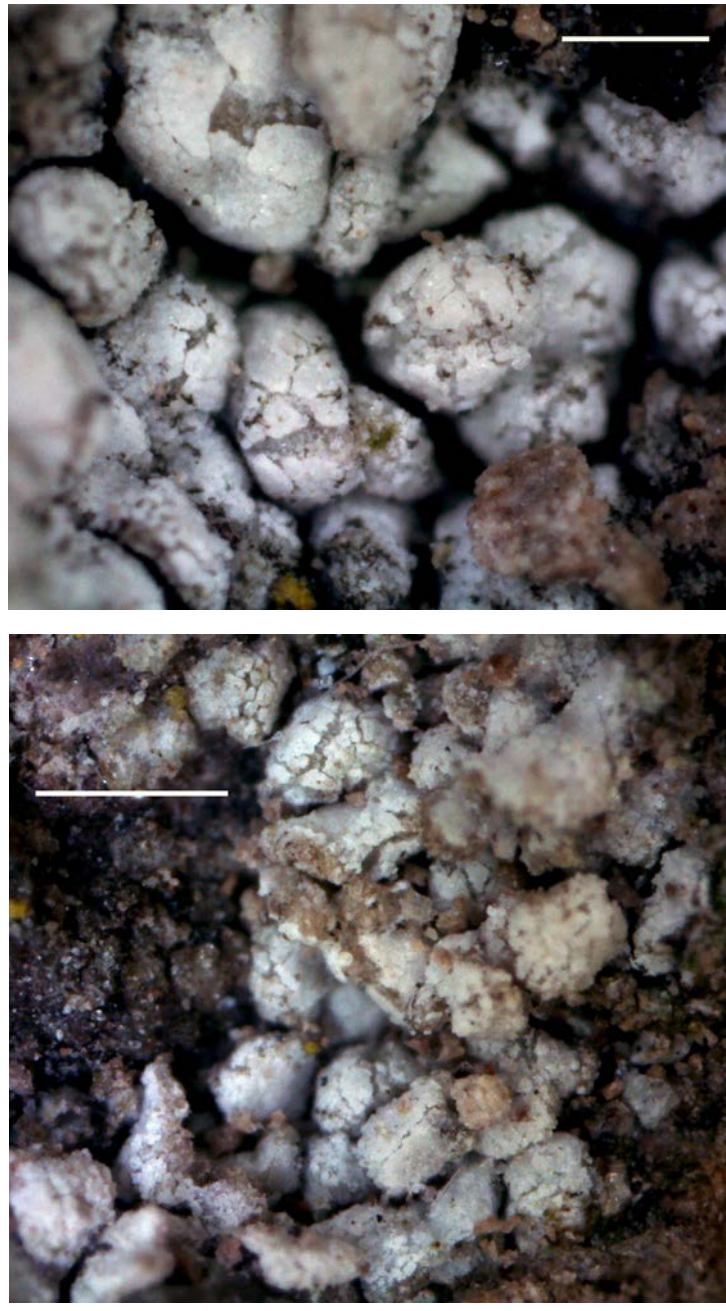

Fig. 15. Placynthiella hurii (holotype), general habit of aggregations of areoles of the second morphotype. Scale 0.5 mm. (Photo of S. Kondratyuk)

Apothecia and conidiomata not observed.

Chemistry: In section the cortical layer C+, becoming dull pink for short period; containing lecanoric and gyrophoric acids (TLC).

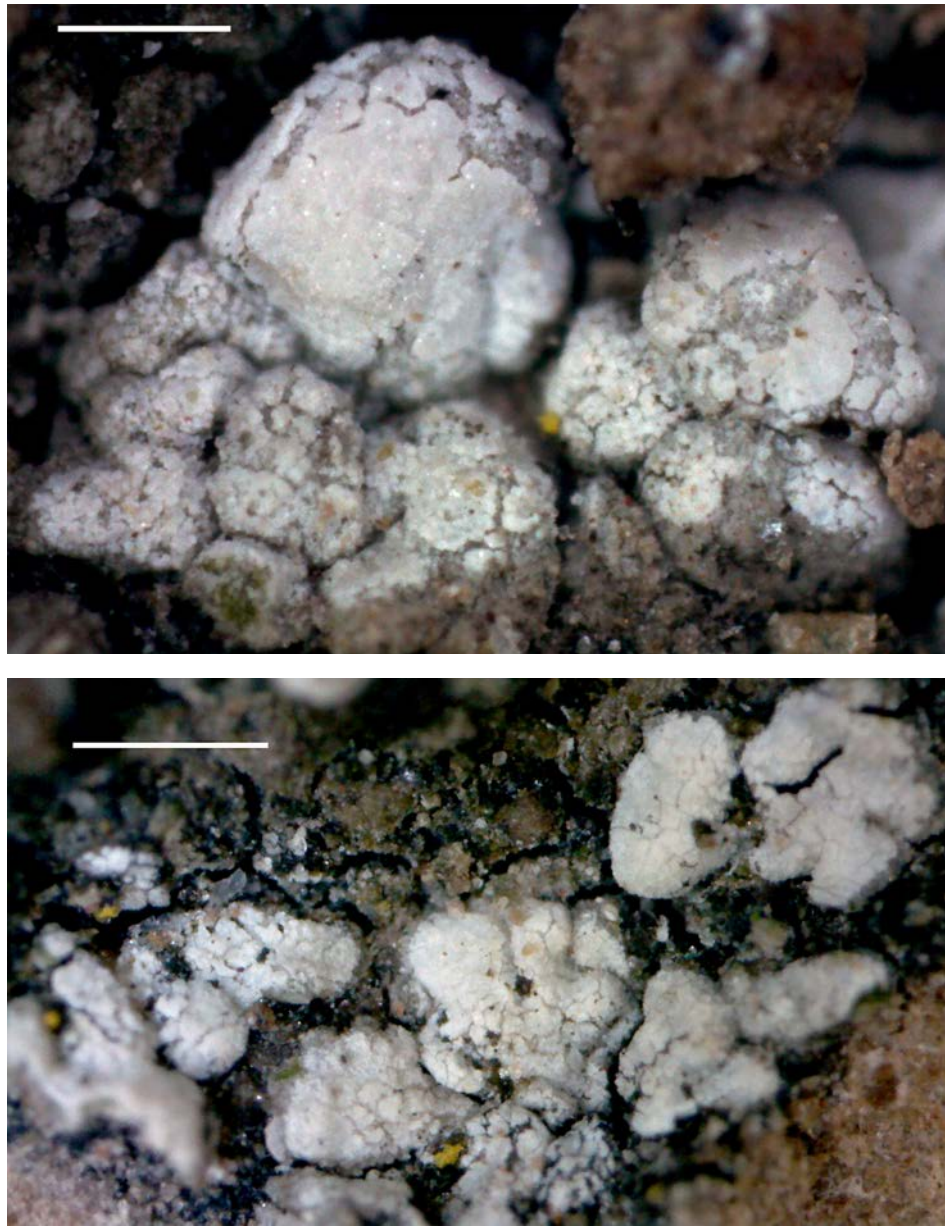

Fig 16. Placynthiella hurii (holotype), enlarged portions with areoles of the second morphotype. Scale 0.5 mm. (Photo of S. Kondratyuk)

Ecology: Growing mainly on very unstable portions of dust or soil between rock portions, rarely on rock surface (why it is problematic to collect).

Distribution: It is so far known only from scattered localities in Ulleungdo Island of South Korea, Eastern Asia. It is highly likely that this lichen is often overlooked, especially when it is represented only by the first morphotype, i.e. by horizontally orientated dull greyish, plane areoles *ca* 0.4 mm across closely attached to the substrate. They are usually separate and distant, or aggregated in very small groups (1–3 individual areoles together) (especially along the rock undulations). In this stage they are extremely hardly recognised. However, if they can be recognised it will be impossibly identified owing to the sterile stage. The second morphotype of thalline areoles (in contrast of the first one) is better distinct owing to whitish upper surface of areoles.

Etymology: It is named after our friend and colleague, a known South Korean lichenologist Jae-Seoun Hur (KoLRI, Sunchon) in recognition of his contribution to knowledge on Korean lichen flora, as well as in thanks of his cooperation and help during this work.

Taxonomic notes: *Placynthiella hurii* is similar to *Acarospora moenium* (Vain.) Räsänen, after having whitish grey or light grey very uplifted irregular areoles, but differs in having smaller thalline areoles and in the lack of soredia, as well as in positioning in the *Placynthiella* branch of the Trapeliaceae after ITS1/ITS2 phylogeny.

So far five ITS1/ITS2 nrDNA sequences for the following voucher specimens of *Placynthiella hurii* i.e.: nr. 161940 (DNA voucher SK H03), nr. 161945 (DNA voucher SK H05), nr. 161946 (DNA voucher SK H06), nr. 161955 (DNA voucher SK H11), nr. 161969 (DNA voucher SK H13), were included in the phylogenetic analysis of the Trapeliaceae. All these specimens mentioned form separate subbranch within the *Placynthiella* branch of the Trapeliaceae after ITS data set.

Sometimes areoles of the second morphotype are very similar to *Toninia*-like areoles, but differs in being very scarce, usually distant and if aggregated forming very minute thalli to 0.5–0.7(–1) mm across while single areoles very hardly seen.

When thalline areoles attached only by one side and another side ascending or vertically orientated sometimes fine granules along the edge may observe, which resemble soredious mass of *Acarospora moenium*. However, these particles/granules irregular, they concolourous with thallus, whitish grey or somewhat brownish grey (they are not regularly rounded, and do not appear from soralia-like formations or from the medulla).

On another side, small granules of crystals in cracks of white pruina of the second morphotype (see Fig. 16) also seem to be similar to soredious mass. However, these small granules of crystals are white and irregular in contrast

to regularly rounded or elongate granular blackish soredia encrusting the lower side of thalline squamules of *Acarospora moenium*.

Furthermore *Placynthiella hurii* differs from *Acarospora moenium* in having much thinner and white or whitish grey thalline areoles (vs. convex uplifted squamules and pale pink or pale grey), and in the lack of medulla, where soralia mainly produce regularly rounded or elongate granular blackish soredia 18–24 µm diam./across encrusting the lower side. However, it should be mentioned that after having undulating upper surface and being whitish colour owing to the rich cover of aggregations of crystals these two taxa are very similar.

Protoparmeliopsis kopachevskae S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova*
(Figs 17–18)

MycoBank no.: MB 819934.

Similar to Protoparmeliopsis muralis, *but differs in having grey to white-grey or grey-green uniformly thin thallus throughout, in having plane or somewhat subconcave thalline lobes, in having white outermost edges of lobe, in having thinner upper cortical layer, in having crystals insoluble in K, in having apothecium discs concolourous with thallus, as well as in the lack of isousnic acid.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-gun, Ulleung-eup, Dodong-ri, Dodong Port, on rock, growing together with *Anaptychia* and *Buellia* spp. Lat.: 37° 28′ 59.9″ N; Long.: 130° 54′ 40.7″ E; Alt.: *ca* 20 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161986), 11.07.2016 (KoLRI 040224 sub *Protoparmeliopsis* – holotype); the same locality, growing together with *Yoshimuria* aff. *spodoplaca*, *Anaptychia*, and *Catillaria* spp. (161997), (KoLRI 040235 sub *Yoshimuria* aff. *spodoplaca* – isotype); the same locality, growing together with *Catillaria*, *Verrucaria*, *Caloplaca* sp. and *Anaptychia*, (162002), (KoLRI 040240 sub *Protoparmeliopsis* – isotype); the same locality, growing together with *Scoliciosporum* sp. (162029), (KoLRI 040267 sub *Protoparmeliopsis* – isotype); the same locality, growing together with *Anaptychia* and *Yoshimuria* cf. *spodoplaca*, (162038), (KoLRI 040276 sub *Protoparmeliopsis* – isotype); the same locality, growing together with *Verrucaria* and *Caloplaca* cf. *pelodella*, (162047), (KoLRI 040285 sub *Protoparmeliopsis* – isotype).

Thallus to 3 cm across or in larger aggregations, distinctly lobate as in peripheral zone as in the central portion; upper surface greyish or whitish grey to grey-green, along edges of thalline lobes as well as along the thalline margin with white rim to 0.1 mm wide (sometimes some portions of thalline

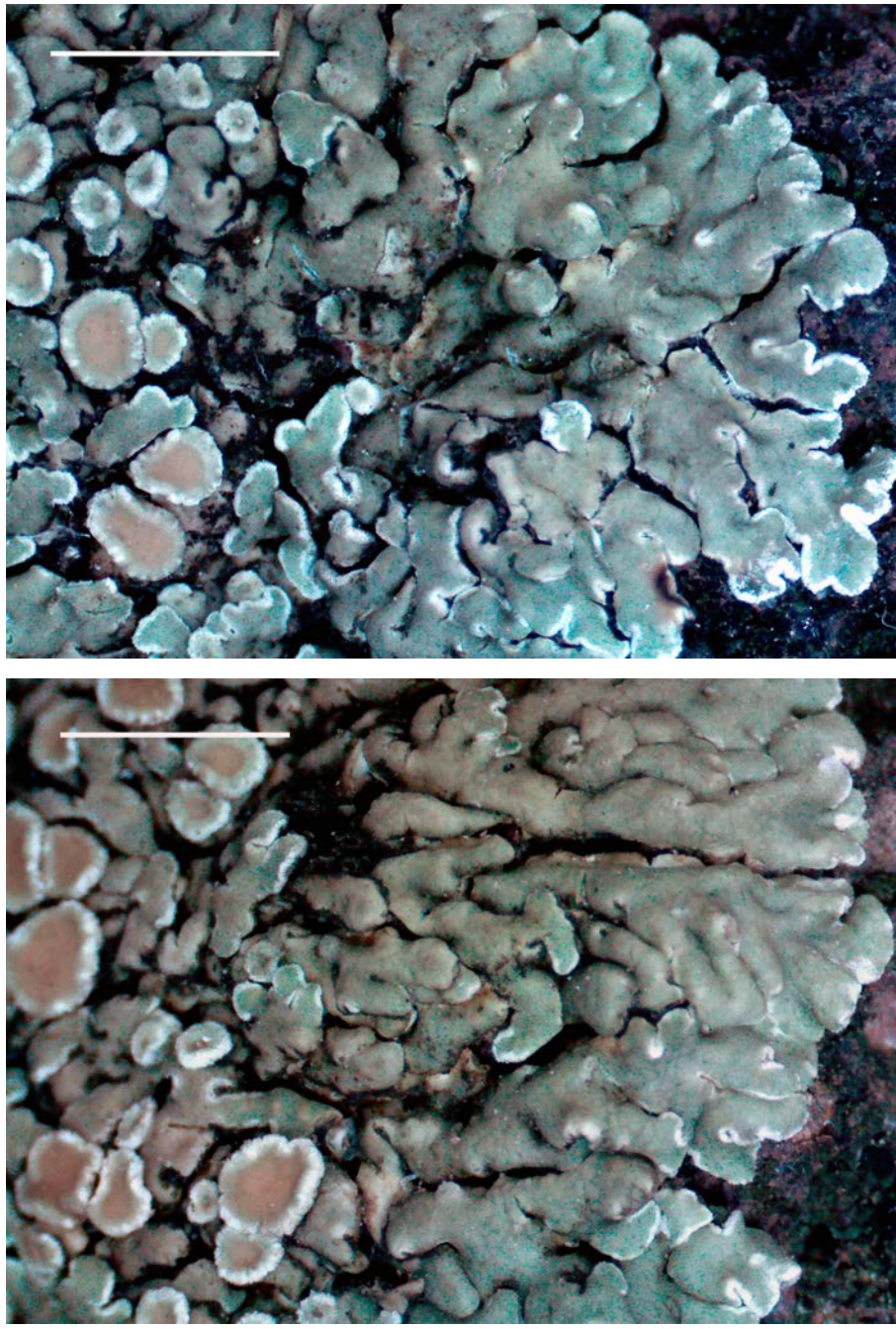

Fig. 17. Protoparmeliopsis kopachevskae (holotype), general habit. Scale 0.5 mm. (Photo of S. Kondratyuk)

margin or entire apothecia, as well as some portions of thalline lobes observed without the white rim); discs of apothecia characteristically concolourous with thallus, grey to greyish green. Lobes to 2(–3) mm long, and to (0.3–)0.5–0.6 mm wide, mostly widened towards the tips to 1 mm wide or dissected into secondary lobules to 0.4–0.5 mm wide and 0.5–0.7 mm long, somewhat strip-like, plane or somewhat subconcave, better seen in peripheral portion, while present also in the centre, but usually less distinct and overlapping each other, closely attached to the substrate by the whole surface and somewhat thinner towards the edges; total width of the lobe with all secondary lobules to 1.5–2(–2.5) mm wide.

Apothecia 0.5–1.5 mm diam., and to 0.27–0.3 mm thick in section, lecanorine, disc plane or sometimes subconvex, epruinose; discs and thalline margin (except whitish edge of thalline exciple) almost concolourous with thallus, grey or whitish grey or slightly different with whitish- or greyish-brownish shade, sessile, distinctly attenuated at the basis; in section lecanorine, thalline exciple to 150 μm wide, with well-developed cortical layer to 40–60 μm thick, palisade paraplectenchymatous (with hyphae orientated perpendicularly to thallus surface, cell lumina 5–6 μm diam./across, matrix well developed, better seen in K) with the uppermost portion to 20–30(–50) μm thick with epinecral zone and rich in fine crystals, irregular, 1–3(–5) μm across (insoluble in K) (corresponding whitish rim); algal zone to 80–90(–120) μm wide consisting of clusters 50–100 μm dim./across, algal cells to 10–15 μm diam.; true exciple to 30–40 μm wide in the uppermost lateral portion, 15–20 μm thick in lower lateral portion, and well developed to (70–)80–100(–150) μm thick in basal portion, scleroplectenchymatous, with well-developed matrix, hyphae lumina *ca* 1 μm diam.; hymenium to 45–55 μm high, hyaline; epihymenium not differentiated or to (7–)15–20(–25) μm thick, dull yellowish or yellowish-brownish; paraphyses somewhat indistinct in water, to 3 μm diam. (better seen in K to 2–2.5 μm diam.), almost not swollen towards the tips; subhymenium (50–)60–70 μm thick, hyaline; asci 8-spored, 35–45 × (11–)15–16 μm; ascospores simple, hyaline, from almost spherical to widely ellipsoid or elongated ellipsoid, 7–13 × (4–)5–6(–6.5) μm, becoming somewhat narrower in K or N, (6.5–)7–10(–13) × (3.8–)4.5–5.5(–6.5) μm.

Chemistry: Apothecium section N–, K– or epihymenium becoming colourless in K, paraphysis tips, epinecral layer and fine crystals of cortical layer of thalline exciple better seen in K, too; containing usnic acid (HPTLC).

Ecology: Growing on siliceous rocks of the coastal zone.

Distribution: So far known from scattered localities in South Korea, Eastern Asia.

Etymology: Species is named after the known Ukrainian lichenologist Ye. G. Kopachevska (Kyiv, Ukraine), who has provided important key to *Protoparmeliopsis* species of Eurasia in the 20th century.

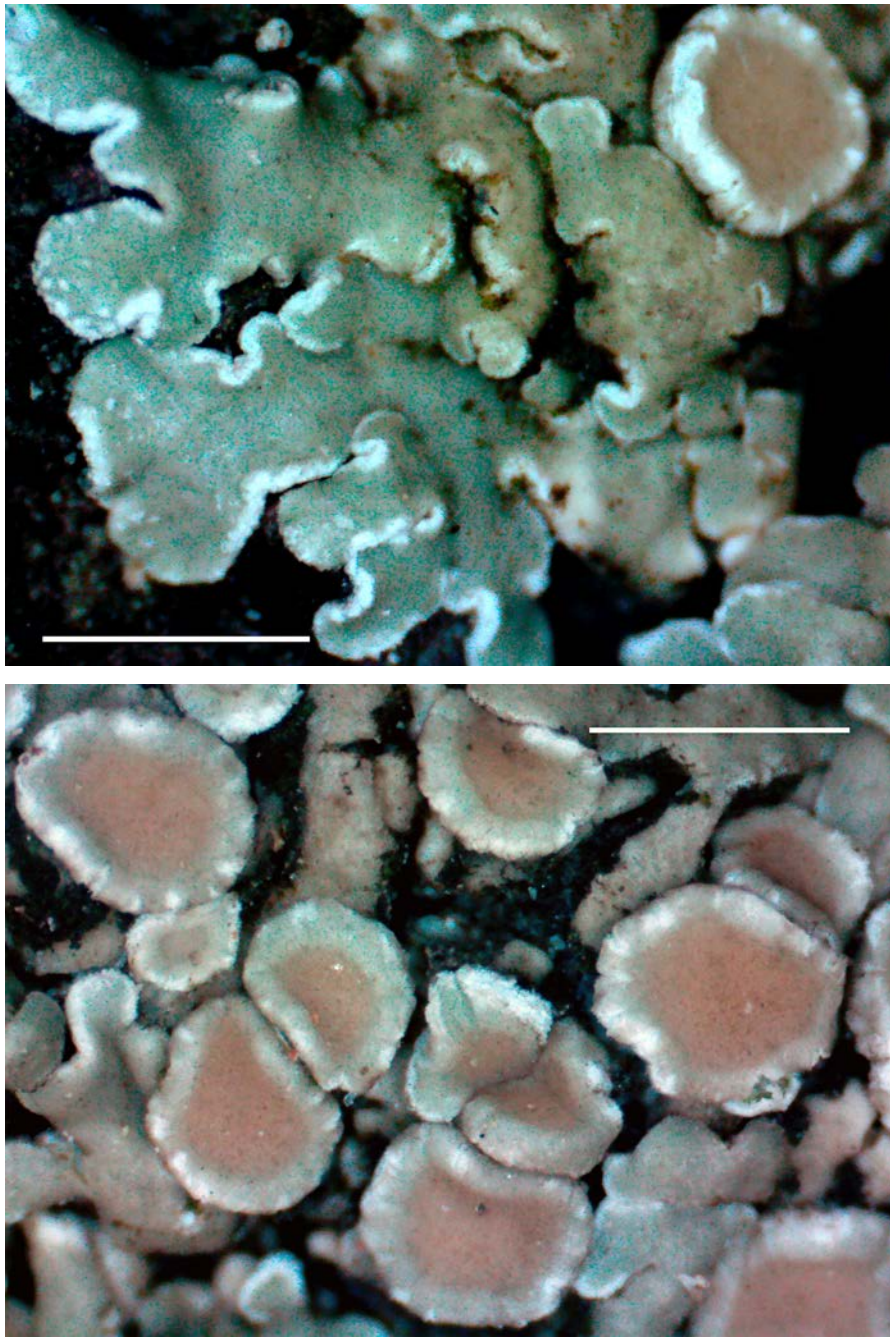

Fig. 18. Protoparmeliopsis kopachevskae (holotype), enlarged peripheral lobes (top) and apothecia (bottom). Scale 0.5 mm. (Photo of S. Kondratyuk)

Taxonomic notes: *Protoparmeliopsis kopachevskae* is similar to *P. muralis* (Schreb.) M. Choisy, a subcosmopolitan taxon known from Europe, Asia, North America, South America, Africa, Macaronesia, Oceania, and Australasia, growing on various siliceous and calcium containing rocks, probably representing a species complex, but differs in having grey to white-grey or grey-green (vs. greyish yellow green to pale brown-grey or orange-grey) and almost the same thin as in peripheral zone as in the centre of thallus (vs. 0.5–2 mm thick or more thick in the centre), in having thinner plane or somewhat subconcave thalline lobes (vs. convex thalline lobes), in having white outermost edges of lobe (vs. darkened blue-green to black the outermost edges and especially the extreme lobe tips), in having thinner upper cortical layer to 40–60 μm (vs. 50–75 μm thick), in having crystals insoluble in K (vs. inspersed with yellowish granules soluble in K), in having apothecium discs concolourous with thallus (vs. from yellow to pale or dark yellow-brown to black-brown) (see also Ryan *et al.* 2004), as well as in the lack of isousnic acid, and in forming separate phylogenetic branch after ITS1/ITS2 analysis.

The following specimens: nr. 161831 (as SK G68), nr. 161836 (as SK G69), nr. 161839 (as SK G73), nr. 161986 (voucher as SK H19), nr. 162029 (voucher as SK H38), nr. 162038 (as SK H46), were used as vouchers for ITS nrDNA sequences and they form separate branch from the *Protoparmeliopsis muralis* branch within the *Protoparmeliopsis* clade of the phylogenetic tree of the members of the Lecanoraceae after ITS1/ITS2 data set. Separate paper on results of the phylogenetic analysis of the Korean members of the Lecanoraceae is in progress (Kondratyuk *et al.*, in prep.) and it will be published elsewhere.

Additional specimens examined (see also under *Buellia badia* and *Candelariella coralliza* below): Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seomyeon, Taeha-ri, valley of Tae-hacheon, Seodal-gil, near Bogho waterfall, on rock, growing together with *Squamulea* cf. *subsoluta*, *Buellia* sp. Lat.: 37° 30′ 14.09″ N; Long.: 130° 50′ 07.83″ E; Alt.: 370 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L., (161831), 10.07.2016 (KoLRI 040056 sub *Protoparmeliopsis*); the same locality, growing together with *Squamulea squamosa* aggr., *Bacidina* cf. *egenula*, *Buellia/Rinodina* sp. (161835), (KoLRI 040060 sub *Squamulea*); the same locality, growing together with *Squamulea* cf. *squamosa*, *Buellia/Rinodina* sp. (161836), (KoLRI 040061 sub *Protoparmeliopsis*); the same locality, growing together with *Squamulea squamosa* and *Buellia*, (161839), (KoLRI 040064 sub *Protoparmeliopsis*).

Psoroglaena sunchonensis S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova* (Figs 19–21)

MycoBank no.: MB 819935.

Similar to Psoroglaena dictyospora, *but differs in having much larger thalline granules, in having epiphloeodal thallus, in having smaller, hyaline and regularly*

ovoid or spherical perithecioid ascomata, in having only hyaline exciple at sides and base, in having shorter periphyses, in having smaller but wider ascospores, which have 3(–5) transverse septa and one-two cells with a single longitudinal septum.

Type: Republic of Korea. Jeollanam-do: Suncheon-si, Samsan-dong, along river bank, on bark of *Salix alba*, growing together with *Endocarpon* sp., *Phaeophyscia adiastola*, *Physciella melanchra*, and *Amandinea trassii*. Lat.: 34° 58′ 37.41″ N; Long.: 127° 29′ 06.12″ E; Alt.: 19 m a.s.l. Coll.: Kondratyuk, S. Ya. (163608), 24.06.2016 (KoLRI 041853 – holotype); the same locality, (163609), (KoLRI 041854 – isotype); the same locality, growing together with *Endocarpon* sp. (163308), 02.10.2016 (KoLRI 041553 sub *Psoroglaena* – isotype); the same locality, growing together with *Endocarpon* sp. (163309), (KoLRI 041554 sub *Endocarpon* – isotype); the same locality, growing together with *Endocarpon* sp. (163310), (KoLRI 041555 sub *Psoroglaena* – isotype); the same locality, growing together with *Endocarpon* sp. and *Hyperphyscia*, (163313), (KoLRI 041558 sub *Psoroglaena* – isotype); the same locality, growing together with *Endocarpon* sp. (163323), (KoLRI 041568 sub *Endocarpon* – isotype); the same locality, growing together with *Endocarpon* sp. (163324), (KoLRI 041569 sub *Psoroglaena* – isotype); the same locality, growing together with *Endocarpon* sp. and *Phaeophyscia* sp. (163325), (KoLRI 041570 sub *Endocarpon* – isotype).

Thallus to (2–)3–5 mm across, indistinctly granular, not forming continuous crust (film), dull green or dirty bright green, always as more or less scattered and distant, seen as 0.2–0.3 mm across, very small scattered aggregations/microareoles, often overgrown by cyanobacteria or as separate grains *ca* 0.2 mm across; thalline granules very small, 40–60 μm diam./across, more or less regularly rounded or irregular to elongated ellipsoid, sometimes forming somewhat elongated or even seem to be branched lobe-like portions to 0.2(–0.3) mm long and 40–50 μm wide; usually indistinct, or can be recognised as bright green thalline granules in wet conditions, especially if they are more or less aggregated to 1–2.5 mm across (see Figs 19 and 21).

Ascomata perithecioid, white/hyaline, to (70–)100–120 μm diam., and (80–)100–110 μm high; solitary and very scattered and distant from each others or aggregated in small groups (see nr. 163325), mainly immersed and only whitish or somewhat pinkish, yellowish or greyish ostiolar portion seen at the largest magnification (×120), mostly indistinct in wet condition, and seem to be rather numerous and seen as whitish spots/dots in dry condition (at the largest magnification); exciple wall rather thick to 30(–40) μm thick, cell lumina in view from outside to 5–8(–10) μm across, cells very thin-walled, pseudoparenchymatous; periphyses to 1.5–2 μm diam. and to 8–12 μm long; asci (?) more than 4-spored, ascospores remaining more or less stuck together after releasing from ascus; ascospores hyaline, widely ellipsoid, submurifom,

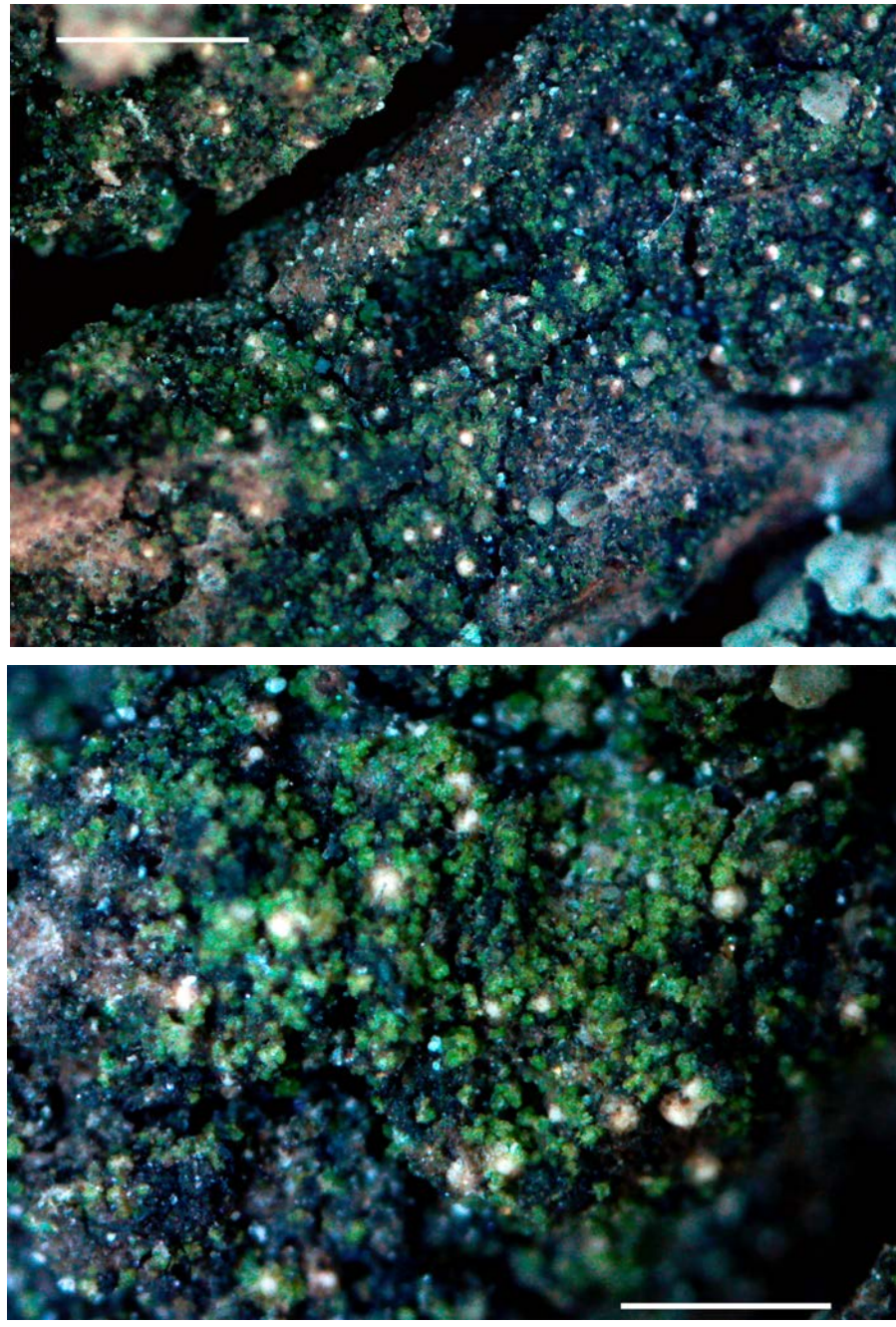

Fig. 19. Psoroglaena sunchonensis (holotype), general habit. Scale 1 mm (top), and 0.5 mm (bottom). (Photo of S. Kondratyuk)

with 3(–5) transverse septa and only one or two cells in the central line with a single longitudinal septum, 14–18 × 8–9 μm.

Ecology: Thallus usually dispersed among the other lichen thalli, especially among *Endocarpon* sp. thalli, as well as associated with *Phaeophyscia adiastola*, *Physciella melanchra*, *Amandinea trassii*, and some more still unidentified crustose sorediate lichens.

Distribution: So far known from the type locality (where it was rather abundant) in South Korea, Eastern Asia.

Etymology: Species epithet refers to the type locality, Sunchon city, Jeollanam-do Province of South Korea.

Taxonomic notes: After having submuriform ascospores *Psoroglaena sunchonensis* is similar to *P. dictyospora* (A. Orange) H. Harada, a species described originally from England (UK), Europe, and known from Europe (UK, Switzerland, Sweden, Spain, Czech Republic, Germany and Ukraine), and North America (USA), but differs in the lack of goniocysts and conical papillae on exposed surface; in having epiphloeodal (vs. partly immersed) thallus, in hav-

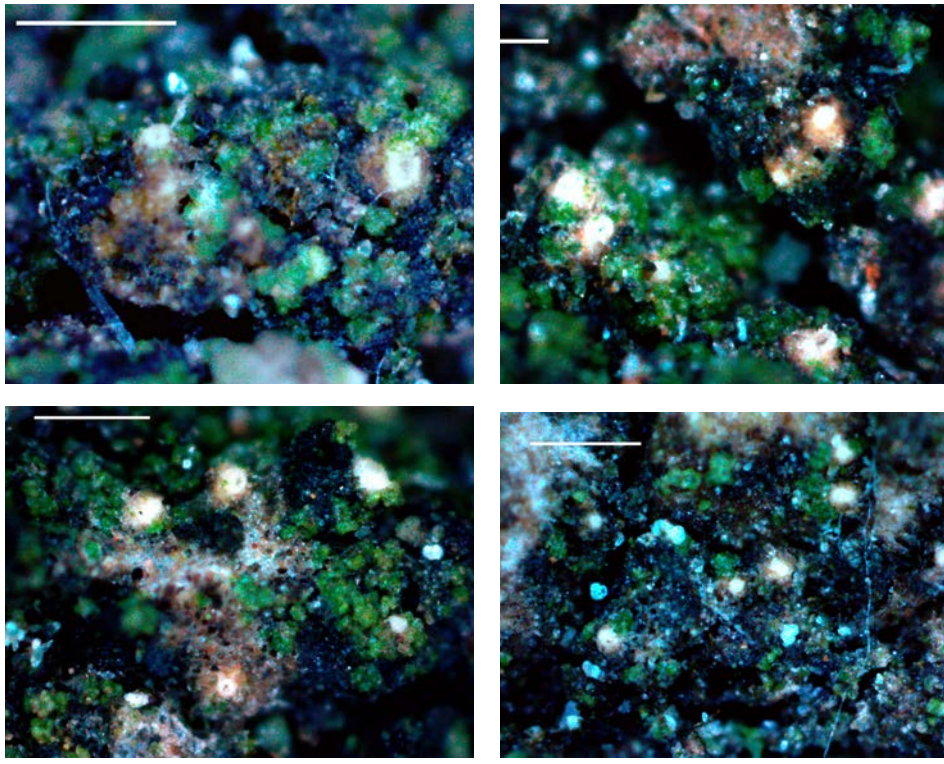

Fig. 20. Psoroglaena sunchonensis (holotype), enlarged portion with ascomata. Scale 0.5 mm. (Photo of S. Kondratyuk)

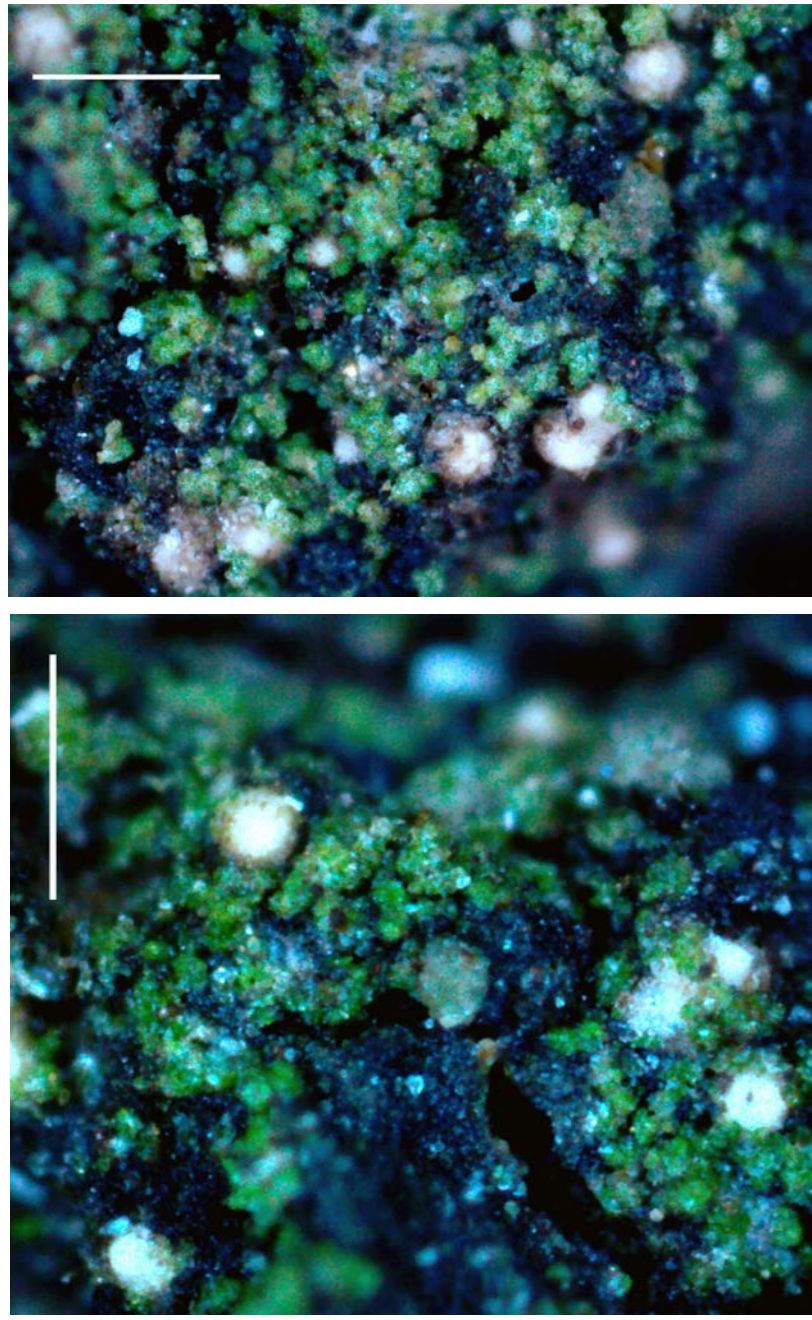

Fig. 21. Psoroglaena sunchonensis (holotype), enlarged portion with thalline granules. Scale 0.5 mm. (Photo of S. Kondratyuk)

ing smaller ((70–)100–120 μm vs. 140–220 μm diam.), hyaline (vs. pale orange-brown) and regularly ovoid or spherical (vs. slightly narrower towards the apex) perithecioid ascomata, in having only hyaline exciple at sides and base (vs. of two, more or less distinct layers, outer pale yellowish brown, inner colourless of textura angularis), while thickness (i.e. *ca* 20–30 μm thick) is the same, in having shorter periphyses (8–12 × 1.5–2 μm vs. to 30 × 2 μm), in having smaller but wider ascospores (14–18 × 8–9 μm vs. 17–21.5 × (6–)6.5–8 μm), which have 3(–5) transverse (vs. 5(–6)) septa and one-two (vs. 1–4) cells with a single longitudinal septum.

Material of *Psoroglaena sunchonensis* was collected several times in the type locality and in general can be rather easily recognised after dull green or dirty bright greenish granular thallus, especially in wet condition (after rain), while ascomata almost impossible to be recognised in field conditions owing to the small measurements.

From *Psoroglaena chirisanensis* L. Lőkös, S. Y. Kondr. et J.-S. Hur and *P. coreana* L. Lőkös, S. Y. Kondr. et J.-S. Hur, species described from South Korea and being rather common in mountainous and island conditions of this country, *P. sunchonensis* differs in having very indistinct granular thallus (vs. film-like more or less distinct), in having smaller (100–120 μm vs. 170–180 μm in diam.) ascomata, in having shorter periphyses (8–12 μm vs. 15–20 μm long), in having submuriform ascospores with 3(–5) transverse septa and one–two cells with a single longitudinal septum (vs. only transversely (1–)3-septate) ascospores, and in having smaller and wider ascospores (14–18 × 8–9 μm vs. 18–20 × 5.5–6.5(–7) μm).

Psoroglaena sunchonensis is similar to the epiphytic species *P. halmaturina* P. M. McCarthy et Kantvilas, recently described from South Australia (McCarthy and Kantvilas 2013), but differs in having hyaline perithecia (vs. blackish) and in having submuriform (vs. only with (5–)7 transverse septa) and smaller ascospores (14–18 × 8–9 μm vs. (25–)31(–36) × (5.5–)7(–10) μm).

Rufoplaca kaernefeltiana S. Y. Kondr., L. Lőkös et J.-S. Hur, *spec. nova* (Fig. 22)

MycoBank no.: MB 819936.

Similar to Rufoplaca oxfordensis*, but differs in having light yellow to dull yellow or yellowish-brownish, evenly coloured apothecia, in having wider ascospores, as well as in having much wider ascospore septum, as well as in positioning in out position to all known species of the genus* Rufoplaca *after ITS phylogeny.*

Type: Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, in front of Tonggumi mongdol Beach, on rock, growing together with *Flavoplaca laszloana*, *Acarospora ulleungdoensis*, *Buellia* sp., *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 33.1″ N; Long.: 130° 52′ 05.5″ E; Alt.: *ca* 4 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161975), 10.07.2016 (KoLRI 040212 – holotype); the same locality, growing together with *Placynthiella hurii*, *Acarospora ulleungdoensis*, *Buellia*, *Verrucaria* and *Flavoplaca laszloana*, (161946), (KoLRI 040183 sub *Placynthiella hurii* – isotype); the same locality, growing together with *Flavoplaca laszloana*, *Acarospora ulleungdoensis*, *Buellia*, *Pyrenopsis chejudoensis*, (161975), (KoLRI 04212 – isotype).

Thallus 0.5–1 cm across very indistinct, areolate, of very scattered, distant and very indistinct areoles, upper surface dark lead-grey or dark bluish grey to dark brownish grey or blackish green, well contrasting to bright or dull yellow own margin and dull brownish yellow discs; sometimes can be recognised only owing to dull yellowish-brownish seem to be biatorine apothecia. Areoles (0.2–)0.4–0.8 mm across, usually very distant and scattered, but rarely may be aggregated (especially in undulations of rocky substrate and forming to 1 cm across almost continuous, deeply cracked thallus), dark grey to whitish or bluish dark grey or somewhat tessellate whitish dark bluish grey colourations in the centre and somewhat dull whitish along the edges, with somewhat uplifted or upwards folded edges, and seem to be rather loosely attached to the substrate and easily to be exfoliated, often with black conidiomata in the centre, in general areoles very indistinct owing to dark colour; sometimes along the edges very indistinct formations similar to phyllidia to 0.1 mm across may be observed (see nr. 161946). It section thallus to 200 μm thick, where upper cortical layer to 30–40(–50) μm thick, in uppermost/outermost layer somewhat blackish or greyish, sometimes with distinct epinecral layer to 7(–10) μm thick, greyish or dirty hyaline, and colourless in inner portion, paraplectenchymatous, cells more or less rounded, lumina to 5–8(–10) μm across.

Apothecia 0.3–0.7 mm diam., in section to 0.3 mm thick, at first deeply immersed into thalline areoles and seem to be lecanorine with dark grey or dark bluish grey thalline margin/thallus around the immersed disc, soon becoming distinctly sessile with attenuated base, usually regularly rounded, scattered and distant from each other, rarely aggregated in groups to 2–3(–4) together to somewhat irregular, biatorine or zeorine, when seem to be biatorine with dull yellow to bright yellow own margin to 60–80 μm thick, somewhat lighter of disc and slightly uplifted above disc level, disc darker dull brownish yellow or yellowish brown, to zeorine, where thalline margin seen only at sides or at the basis of lateral portion or on underside, somewhat crenulate to 20–40 μm thick; in section distinctly zeorine with very thick entire algal layer below true exciple, to 50–70 μm thick, entire, with numerous algal cells to 12–20 μm

Fig. 22. Rufoplaca kaernefeltiana (holotype), general habit. Scale 0.5 mm. (Photo of S. Kondratyuk)

across; thalline exciple to 70–100 μm thick with very indistinct to 20–25 μm thick cortical layer with uppermost portion to 10 μm thick of epinecral layer, K–, lower portion paraplectenchymatous, K+ violet; true exciple to 80–90 μm wide in the uppermost lateral portion and to 15–20 μm thick in lower lateral and basal portions, somewhat *Blastenia*-type; hymenium to 70–90 μm thick, epihymenium to 10–15 μm thick yellow-brownish; paraphyses gradually widened towards the tips to 5(–6) μm wide in water (and to 5 μm wide in K); subhymenium 60–80 μm thick, hyaline, almost without oil (only very few, small oil droplets observed); asci 8-spored, 45–55 × 18–22 μm, sometimes with variegated measurements of ascospores within the same ascus; ascospores widely ellipsoid with somewhat rounded ends, sometimes to almost spherical, (10–)12–15(–16) × 7–8 μm in water and (8–)9–15(–16) × (6–)7–9(–10) μm in K, septum (4–)5–6(–7) μm wide in water and (3–)6–7(–9) μm wide in K.

Conidiomata blackish, completely immersed into thalline areoles, usually more often present on areoles than apothecia, conidia widely ellipsoid to widely bacilliform, (2–)2.5–3.5(–4) × 1.2–1.5(–1.7) μm.

Chemistry: Epihymenium K+ crimson purple, reaction very fast, cortical layer of thallus and thalline exciple K+ violet.

Ecology: Growing side by side or among thalli of other crustose lichens e.g. *Flavoplaca laszloana*, *Buellia* sp., *Lecidea* sp., *Acarospora ulleungdoensis*, and *Placynthiella hurii*.

Distribution: It is so far known from scattered localities in Ulleung-do Island, South Korea, Eastern Asia.

Etymology: It is named after well-known Swedish lichenologist Ingvar Kärnefelt (Lund, LD) in recognition of his enormous contributions to the taxonomy of the Teloschistaceae and Parmeliaceae.

Taxonomic notes: *Rufoplaca kaernefeltiana* is similar to *R. oxfordensis* (Fink) Arup, Søchting et Frödén, known from siliceous rocks in Europe and North America, but differs in having light yellow to dull yellow or yellowish-brownish, evenly coloured apothecia (vs. orange, sometimes with brownish portions), in having wider ascospores ((10–)12–15(–16) × 7–8 μm vs. (11–)12–13(–16) × (4–)5–7 μm), as well as in having much wider ascospore septum ((4–)5–6(–7) μm vs. 2–3 μm wide), as well as in positioning in out position to all known species of the genus *Rufoplaca* after ITS phylogeny.

After ITS it is positioned in out position to all species of the *Rufoplaca* branch for which molecular data hitherto available (i.e. *R. arenaria* (Pers) Arup, Søchting et Frödén, *R. oxfordensis*, *R. scotoplaca* (Nyl.) Arup, Søchting et Frödén, *R. subpallida* (H. Magn.) Arup, Søchting et Frödén, *R. tristiuscula* (H. Magn.) Arup, Søchting et Frödén). The combination *Rufoplaca germanica* (H. Magn.) Arup, Søchting et Frödén, is not confirmed by molecular data so far.

Rufoplaca kaernefeltiana is similar to "*Caloplaca*" *atroflava* (Turner) Mong., known from small size siliceous rocks in Europe and North America, but dif-

fers in having well-developed cortical layer of thalline areoles (vs. thin, indistinct), in the lack of hypothallus (vs. black, well developed), in having well-developed thalline exciple and thick algal layer below true exciple (vs. thalline exciple not developed), in having much wider uppermost cells of paraphyses (to 5(–6) μm vs. to 3 μm wide), and in having longer ascospores ((10–)12–15 (–16) × 7–8 μm vs. (9–)11–13(–17) × (5.5–)7–9(–10) μm), while ascospore septum is almost the same ((4–)5–6(–7) μm vs. 4–6 μm wide).

Rufoplaca kaernefeltiana is a rather indistinct lichen species, because apothecia are very small and usually scattered and distant, not aggregated, as well as thallus is very dark and consisting of small also scattered areoles. Apothecia are not distinct even if they are aggregated in groups to 10–15 within one thallus owing to their very small measurements.

Three specimens of *Rufoplaca kaernefeltiana* were included in the phylogenetic analysis of the Teloschistaceae based on ITS nrDNA sequences (i.e. nr. 162024, nr. 162040, nr. 162044). They form separate subbranch with very high level of support within the *Rufoplaca* monophyletic branch of the subfamily Caloplacoideae, which includes all *Rufoplaca* species for which ITS nrDNA data are so far available. Results on molecular phylogeny of the caloplacoid lichens are in preparation and they will be published in separate paper.

The main problem for the genus *Rufoplaca* is that only ITS data are provided for *R. subpallida*, the type species of this genus. No data on 28S LSU nrDNA and 12S SSU mtDNA sequences of this species is hitherto available for wide success.

Additional specimens examined (see also under *Placynthiella hurii*): Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, Seaside Trail near Dodong Port, on steep siliceous rocks, growing together with *Catillaria* sp. Lat.: 37° 29′ 00.16″ N; Long.: 130° 54′ 38.25″ E; Alt.: 10 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (162024, 162040), 11.07.2016 (KoLRI 040262, KoLRI 040278); the same locality, growing together with *Squamulea squamosa* s. l., *Buellia* and *Aspicilia* spp. (162044), (KoLRI 040282).

Rusavskia indica S. Y. Kondr. et D. K. Upreti, *spec. nova*
(Figs 23–24)

MycoBank no.: MB 819937.

Similar to Rusavskia sorediata, *but differs in having shorter and narrower thalline lobes, in having narrower marginal zone without isidia or soredia, in having isidia/schizidia, which are very unstable in early stages and can be easily damaged/broken, and leaving characteristic spots (funnel-like deepening in cortical layer), in having wider ascospores, in having wider ascospore septum, and in growing on different substrate.*

Type: [India:] Jammu and Kashmir: Anantnag district, Baltal, on rock. Alt.: 2,700 m a.s.l. Coll.: Singh, A. et al. 13917, 29.08.1982 (LWG – holotype).

Thallus to 0.6–0.8(–1.5) cm across, but may be aggregated in larger groups, foliose with rather badly developed lobes seen only in peripheral zone, while in the centre numerous isidia-like warts, very crumble, very sensitive to any mechanical damage of thallus forming upper surface totally covered by funnels (funnel-like deepening). Lobes better seen/developed only in peripheral zone 1–2 mm wide, very waved, undulating, at first single lobe to 3(–4) mm long, and 0.3–0.7 mm wide, more or less strip-like, flat, and distinctly branched or becoming slightly widened to 0.8–1.2 mm wide towards the tips, to completely indistinct and overlapping each other later, dull dark brownish yellow in the centre (when schizidia formation is not very successful) to variegated colouration (mixture of dark brownish yellow and bright dull yellow isidia and dull greenish-whitish or greyish-greenish yellow owing to funnel-like deepening, if isidia/schizidia are present), while dull yellow towards the tips; upper surface seem to be pseudocyphellate, of variegated colouration, dull deep brownish yellow.

Isidia/schizidia forming in zone close to the centre (on distance to *ca* 2–2.5 mm from the tips), of very wide range of measurements 0.08–0.15(–0.35) mm diam., more or less rounded to irregular, very convex; smaller and rounded isidia, 0.08–0.15 mm diam., often very crumble, and fallen down/eaten/destroyed mechanically, and surface seems to be soredious, while it is covered only by funnel-like deepening in cortical layer to 0.06–0.2(–0.3) mm diam./across; no soredia, or protuberances dissolving into soredia (as in typical *Rusavskia sorediata*), while larger isidia-like or lobule-like portions 0.2–0.3(–0.35) mm diam./across usually more or less stable and not damaged (in contrast to smaller isidias, see above).

In section thallus to 100–110 μm thick, only in places with undulating lower cortex it can be to twice thicker, usually compact (without hollow); upper cortical layer with very variegated thickness, i.e.: usually very thin to 5(–10) μm thick, of algal plectenchyma (sensu Kondratyuk and Kärnefelt 1997) or in places to (10–)15–20 μm thick and to (30–)50–100 μm wide (may be they reflect position of pseudocyphellae), paraplectenchymatous with very gelatinous cell wall, with well distinct matrix, cell lumina more or less regularly rounded, 3–6(–7) μm diam./across; medulla to 40–50 μm thick, mainly filled in by dense hyphae aggregations, rarely with hollow; lower cortex (15–)20–25 μm thick, mesodermatous paraplectenchymatous with distinct matrix, cell lumina 3–7(–9) μm diam./across, somewhat vertically elongated.

Apothecia to 1.5 mm diam., disc brownish or brownish yellow, lecanorine, thalline margin concolourous with thallus, dull yellow; in section zeo-

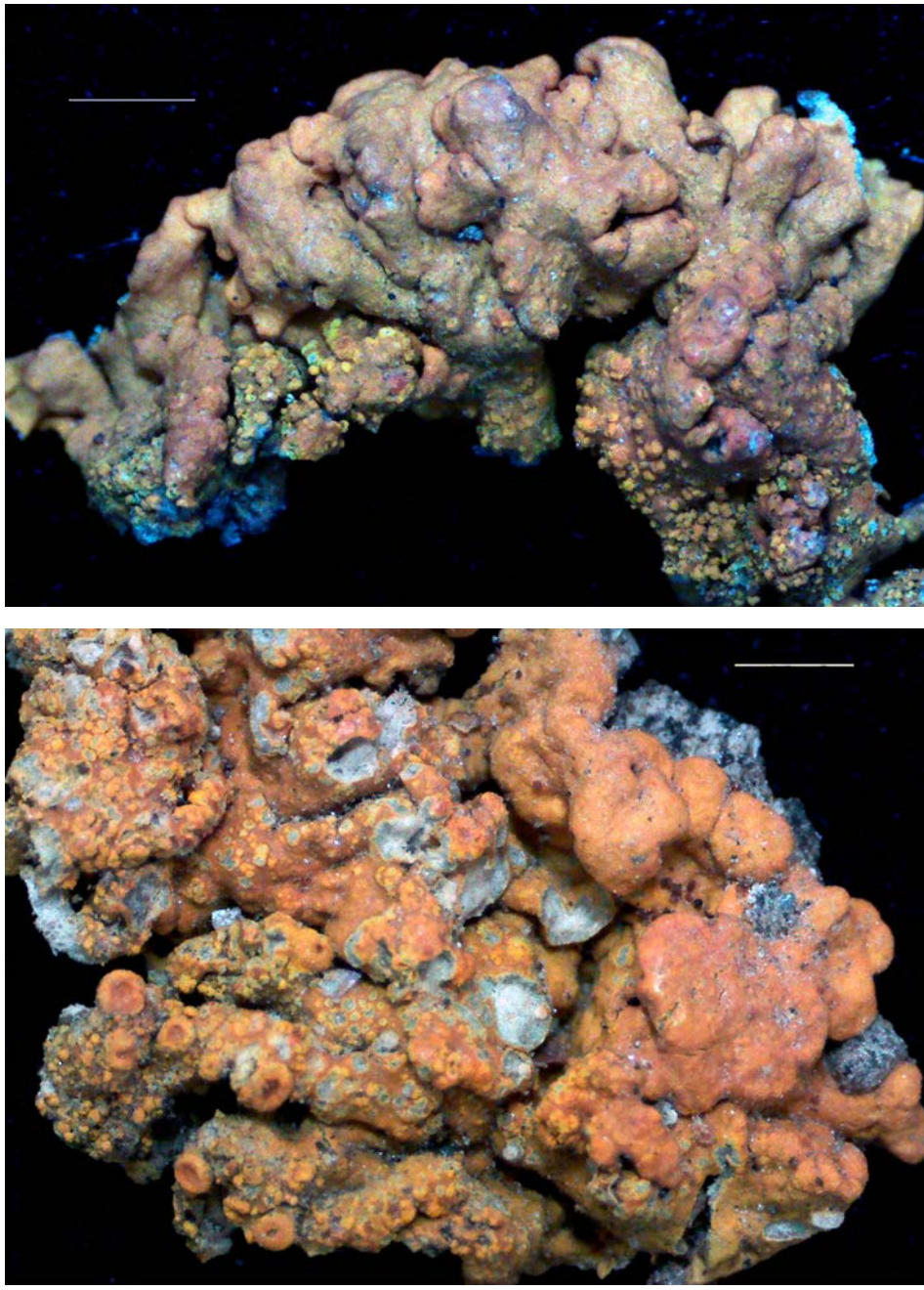

Fig. 23. Rusavskia indica (13917, LWG), general view of peripheral portion of thallus. Scale 1 mm. (Photo of S. Kondratyuk)

Fig. 24. Rusavskia indica (13917, LWG), enlarged portions of thallus with apothecia (top) and with isidious formations on upper surface (bottom). Scale 1 mm. (Photo of S. Kondratyuk)

rine, where thalline exciple to 100 μm thick, somewhat pressed by true exciple down, with cortical layer better seen on underside, to 20–30 μm thick, mesodermatous paraplectenchymatous, cell lumina to 4–5 μm diam./across; true exciple to 40–50(–70) μm thick in uppermost and lower lateral portions and to (40–)45–60 μm thick in basal portion, scleroplectenchymatous with distinct matrix, hyphae lumina to 2 μm diam.; hymenium 50–55 μm high; paraphyses slightly swollen towards the tips to 2.5 μm diam., or rarely swollen to 4 μm diam., richly branched towards the tips; subhymenium to 20–30 μm thick; asci 8-spored, but with (1–4–)8 bipolar ascospores and abortive single ascospores seen, usually ascospores very variable in size in the same ascus; ascospores very wide, and variable, 10–13 × 6.5–8(–9) μm in water and (9–11–)12–16(–17) × (7.5–)8–12(–13) μm in K, ascospore septum (2.5–)4–6(–7) μm wide in water and (3–)4–8 μm wide in K.

Chemistry: Cortical layer of thalline exciple, epihymenium K+ crimson purple, sometime blackish purple in places. Chemistry not studied.

Ecology: Growing on bark of coniferous trees, as well as on rock.

Distribution: It is known from scattered localities in India, Southern Asia.

Etymology: Species is named after the country of the type collection, i.e.: India.

Taxonomic notes: *Rusavskia indica* is similar to the arctic-Antarctic *R. sorediata* species complex, but differs in having shorter (to 3–4 mm vs. to 15 mm long) and narrower (0.3–07 mm vs. (0.5–)1–2.5 mm wide) thalline lobes, in having narrower marginal zone (to 2–2.5 mm vs. 3–5 mm wide) without isidia or soredia, in having isidia/schizidia, which very unstable in early stages and easily can be damaged/broken, and leaving characteristic spots (funnel-like deepening in cortical layer), and in having wider ascospores (10–13 × 6.5–8(–10) μm vs. 11–13 × 5.5–7 μm), in having wider ascospore septum (4–6 μm vs. 2–4 μm wide), and in growing on different substrate (epiphytic habit vs. epilithic, rarely on soil or bark), as well as in the lack of soredia and in the lack of protuberances dissolving into soredia.

Unfortunately we do not have freshly collected specimen in our disposition and it is impossible to include this taxon to molecular study at the moment.

After absence of any special apparatus to the substrate *Rusavskia indica* is probably a member of the *Rusavskia* clade of the subfamily Xanthorioideae of the Teloschistaceae, but after presence of pseudocyphellae this taxon may belong to the genus *Zeroviella* S. Y. Kondr. (Kondratyuk *et al*. 2015*d*). However, this conclusion can be done only after getting molecular data on this species.

After recognising characteristic features of this taxon a number of infraspecific taxa described for *Rusavskia sorediata* should be especially revised to check, if they belong to this taxon as well.

Additional specimens examined: India. Jammu and Kashmir, Anantnag distr., Baltal, *ca* 1,800 m alt., on rock. Coll.: Singh, A. and Upreti, D. K., 01.09.1982, 13966 (LWG), and 13971 (LWG); the same locality, on bark. Alt.: 2,700 m a.s.l. Coll.: Singh, A. and Upreti, D. K., 29.08.1982, 13946 (LWG). – Pahalgam, on way to Chandanwari, on rock. Alt.: *ca* 2,700 m a.s.l. Coll.: Dange, K., 29.06.1977, 77.324, 77.333, 77.313, 77.303, 77.370, 77.266, 77.361, 77.396, 77.275 (LWG-LWU). – Himachal Pradesh, Lahul Spiti district, Spiti Valley, 7 km before Pagma, from Kaza side, on exposed rocks. Alt.: *ca* 3,700 m a.s.l. Coll.: Upreti, D. K. and Divakar, P., 05.08.2002, 02-00104 (LWG). – Uttarakhand, Bageshwar district, near Pindari Glacier, Mirtoli to ridge of moraine, on rock. Alt.: *ca* 4,000 m a.s.l. Coll.: Awasthi, D. D., 11.06.1970, 7704 (LWG-AWAS). – Chamoli district, Badrinath, Mana village, on rocks, growing together with *Oxneria ulophyllodes*. Coll.: Shukla, V. and Joshi, Y., 21.06.2005. 05-005371 (LWG). – Andaman Islands, Middle Andaman, Long Island, sea level, on rock. Coll.: Singh, A., et al., 27.03.1961, 89405 (LWG).

Rusavskia upretii S. Y. Kondr., G. K. Mishra et S. Nayaka, *spec. nova* (Figs 25–27)

MycoBank no.: MB 819938.

Similar to Rusavskia sorediata, *but differs in having dispersed, scattered, and lax attached to substrate thalline lobes distinctly widened towards the peripheral portion, not forming regular rosette-like thalli, in having finger-like or lobule-like isidia forming spherical, uplifted gall-like aggregations, as well as in having rhizine-like holdfast*.

Type: [India]: Uttarakhand, Chamoli district, 10 km before Gamsali, way to Niti, 3,300 m alt., on rocks under *Cedrus deodara* forest. Coll.: Upreti, D. K. and Nayaka, S. (07-011218), 20.08.2007 (LWG – holotype); the same locality (07-011218′/B′) (LWG – isotype).

Thallus to 20–30 mm across, but mainly in larger aggregations, vivid yellow; thalline lobes plane (not convex), mainly rather small, seem to be formed during the secondary overgrowth, only rarely seen as fragments of rosette-like thalli. Lobes well developed in terminal/peripheral zone or as separate initial stages in seem to be overgrowing portions, to (3–)5–9(–12) mm long and *ca* 0.7–1(–1.5) mm wide in the centre, and markedly widened towards the tips to 2–3 mm wide, mainly overlapping by laminal portions, dissected into secondary horizontally orientated, plane (not convex!), somewhat strip-like, very irregularly branched and somewhat secondary lobules wave-like orientated; total width of the whole lobe in the terminal portion to 5(–7) mm wide. Upper surface flat with somewhat concave portions, deep yellow or somewhat variegated colouration with greenish yellow spots; very mosaic, usually warty and with funnel-like deepening (and mosaic colouration of yellow

Fig. 25. Rusavskia upretii (holotype), general habit (top, left), enlarged portions with peripheral lobes and isidious portions. (Photo of G. Mishra)

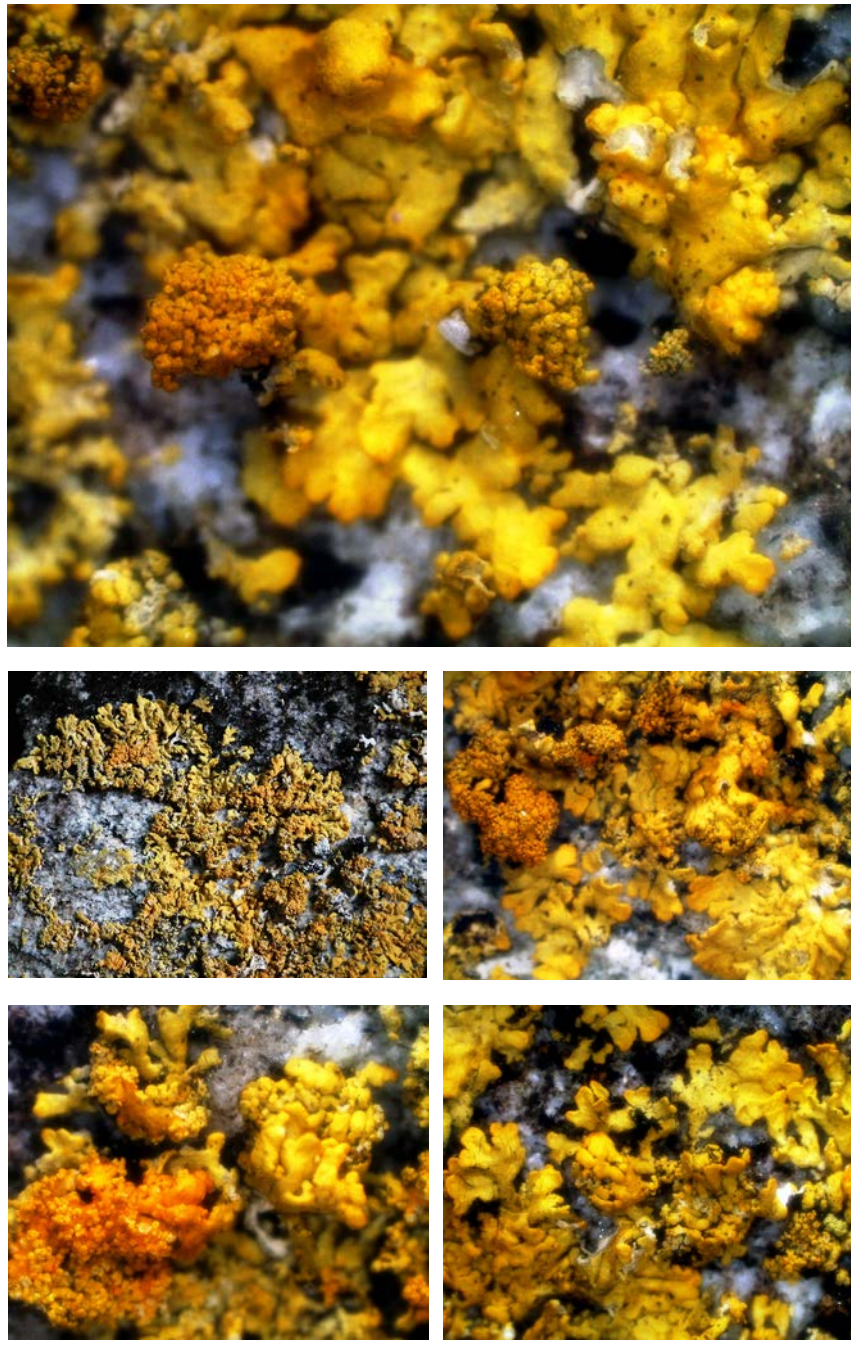

Fig. 26. Rusavskia upretii (isotype), general habit (centre, left) and enlarged spherical formations of densely packed isidia (the others). (Photo of G. Mishra)

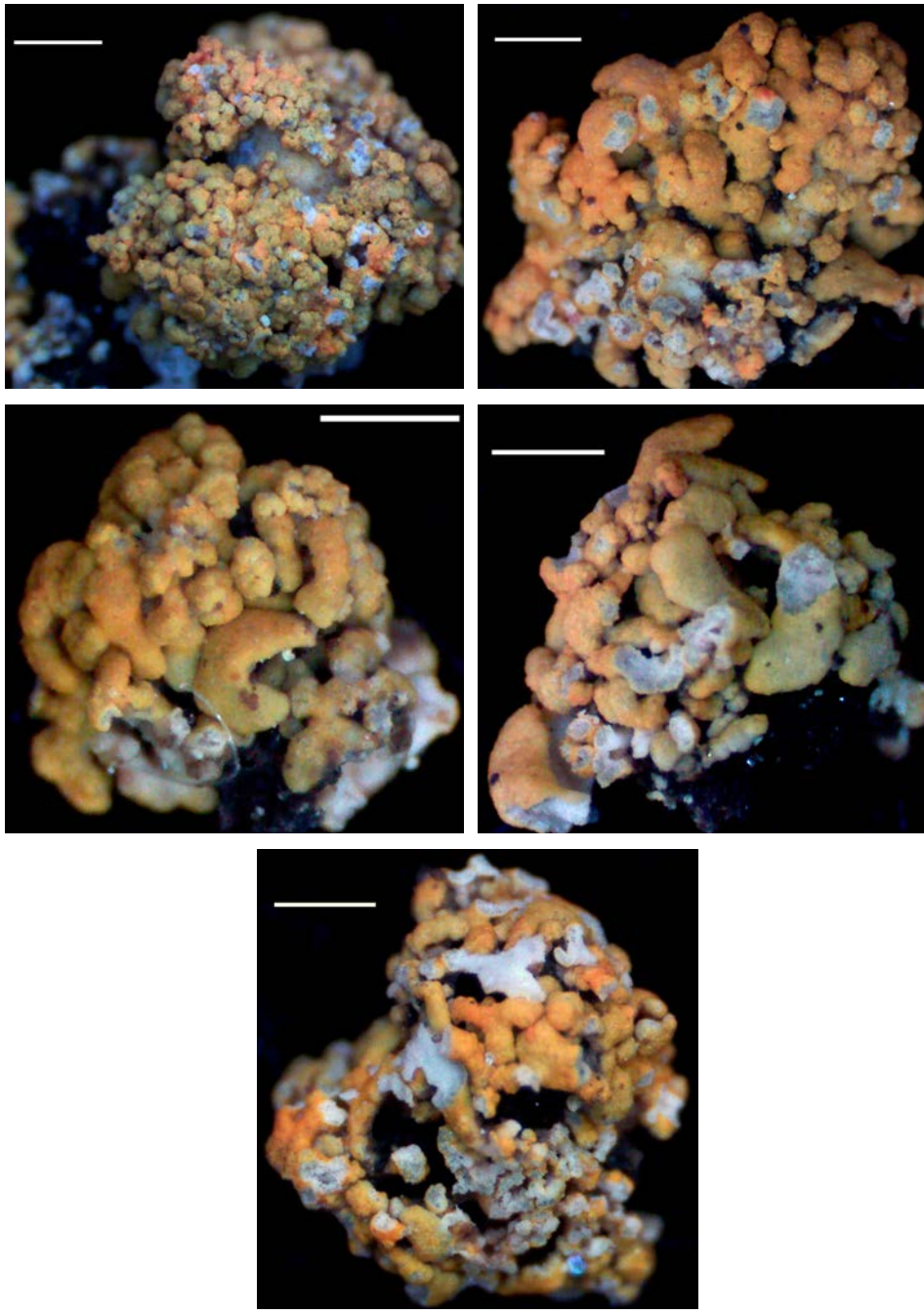

Fig. 27. Rusavskia upretii (isotype), enlarged spherical formations of densely packed isidia. Scale 0.5 mm (Photo of S. Kondratyuk)

upper (unbroken) surface and white or whitish-greyish or whitish-greenish in places, where medulla and algal layer naked), and seem to be soredious, owing to very crumble warts or isidioid formations, as well as with scattered convex formations highly uplifted above the level of thallus.

Thalline warts on upper surface of lobe scattered at first, but soon becoming densely aggregated, usually very crumble (as far it is almost impossible to find undamaged/uneaten surface), and with numerous funnel-like deepening with greenish or greyish white medulla and algal layer naked in places (in damaged/broken portions medullary cavity to 100–300(–400) μm thick often observed), seem to form surface dissolving into soredia, with granules to 60–80 μm diam./across, usually irregular and very indistinct, forming somewhat mosaic surface.

Isidia finger-like, to (0.1–)0.15–0.2(–0.25) mm wide, sometimes branched, sometimes distinctly radially built (rounded in damaged portions or in section), and to 0.5–0.7 mm long, but total length not seen or indistinct owing to forming dense convex aggregations and often being overlapping or damaged, or elongate somewhat convex lobule-like formations to 0.3(–0.4) mm wide and to 0.5–0.7 mm long (under view from outside), also densely aggregated in convex gall-like formations; convex formations (galls) to (1.5–)2–3(–4) mm diam./across from regularly rounded to irregularly elongated, to 1–1.5 mm thick/high, very convex and constricted at the basis, highly uplifted to 1–1.5(–2) mm high owing to stipe-like formation, spherical on undulated lobe; scattered or sometimes somewhat racemose and aggregated in groups, probably very crumble and seem to be consisted of blastidia or soredia.

Underside white, somewhat shiny, yellow to deep yellow only at the edge. Rhizine-like holdfasts, single to 100–120 μm diam./across, somewhat pressed in one direction were rarely seen (in the middle of lobe, not close to the lobe edge).

Apothecia and conidiomata not observed.

Chemistry: Not studied.

Ecology: Growing on siliceous rocks.

Distribution: So far it is known only from the type collection, from India, Southern Asia.

Etymology: It is named after the well-known Indian lichenologist Dalip K. Upreti (Lucknow, India) in recognition of his enormous contribution to Indian lichenology.

Taxonomic notes: The revision of the genus *Rusavskia* S. Y. Kondr. et Kärnefelt was hitherto based on European and Northern and Eastern Asian members of this genus (Kondratyuk 2004, Kondratyuk and Kärnefelt 2003, Kondratyuk *et al.* 2015*d*). Recently the genus *Zeroviella* S. Y. Kondr. was segregated from the *Rusavskia* clade of the subfamily Xanthorioideae of the Teloschistaceae based on three gene phylogeny (Kondratyuk *et al.* 2015*d*). Two

more members of this genus found to be new for science after revision of foliose representatives of the Teloschistaceae from the Indian continent.

Rusavskia upretii (as well as described above, at *R. indica*) is similar to *R. sorediata* (Vain.) S. Y. Kondr. et Kärnefelt in having undulating upper surface soon becoming warty usually very crumble and damaged/eaten with funnel-like deepening making impression to be soredious, while rather rarely dissolving into soredia indeed, but differs in having thallus formed by dispersed, scattered, thalline lobes, growing without any regular orientation and not forming regular rosette-like thalli (vs. very long and narrow radiating lobes forming regular rosette-like thalli in *R. sorediata*), in having shorter (5–9 mm vs. to 15 mm long) and distinctly widened towards the peripheral portion lobes, in having more or less lax attached to substrate thalline lobes (vs. usually closely attached to substrate in *R. sorediata*); in having finger-like or lobule-like isidia forming spherical, uplifted gall-like aggregations, as well as in having rhizine-like holdfast (vs. no special organs for attachment in *R. sorediata*).

After having flat, somewhat concave upper surface of thalline lobes *Rusavskia upretii* is very similar to the African species *Xanthoria africana* Almb., but differs in having shorter and narrower thalline lobes, which usually do not form regularly rounded, rosette-like and entire film-like thalli.

Rusavskia upretii is one more isidious taxon of the genus *Rusavskia* s. str. additionally to *R. sorediata* and *R. dasanensis* S. Y. Kondr., Galanina et J.-S. Hur, which may form such type of propagules, i.e. isidia-like formations aggregated in large spherical aggregations (Kondratyuk *et al.* 2013*c*).

Spherical isidious formations usually located on rather young portions of thallus, at first as semiconvex of elongated 0.1–0.2 mm wide and to 0.5 (–0.7) mm long isidia-like formations/isidia, which densely aggregated and ascending with irregularly uneven surface. Later formation of much larger (see above) gall-like aggregations is observed. However, in general isidious spherical aggregations are the same very crumble (as far it is almost impossible to find undamaged/uneaten surface) and very often they seem to have completely soredious/blastidious surface, while no regular soredia formation was observed in such cases.

The rhizine-like holdfasts on the lower surface of thalline lobes probably correspond the formation of spherical isidioid formation on upper surface. However, this hypothesis should be checked on more extensive collections in future.

After morphological characters, i.e. unique gall-like formations *Rusavskia upretii* is very unique among xanthorioid lichens with vegetative propagules.

Holotype and isotype specimens are rather large and were very promising for the further molecular study. However, our attempts on extracting DNA from these specimens were so far unsuccessful. The further molecular study of freshly collected specimens of this taxon will allow clarifying its status among other foliose members of the subfamily Xanthorioideae of the Teloschistaceae.

Vezdaea poeltiana S. Y. Kondr., L. Lőkös, J. Halda et J.-S. Hur, *spec. nova* (Figs 28–31)

MycoBank no.: MB 819939.

Similar to Vezdaea polyspora, *but differs in having larger ascomata and in having larger ascospores.*

Type: Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Simjang-ri, Geumo-do Island, on rock. Lat.: 34° 30′ 27.90″ N; Long.: 127° 46′ 16.38″ E; Alt.: 13 m a.s.l. Coll.: Halda, J. P. (160422), 10.06.2016 (KoLRI 038567 – holotype).

Thallus to 1–2 cm across or may form larger aggregations, indistinct or seen as extremely thin, film-like, somewhat greenish spot on rock surface. Hypothallus absent. Apothecia (0.3–)0.4–0.8 mm diam., distinctly attenuated at the basis, to (0.09–)0.1–0.2(–0.3) mm diam., cup-like or "wine glass"-like, dull lemon yellow, "disc" and the whole ascomata concolourous, own margin/ex-

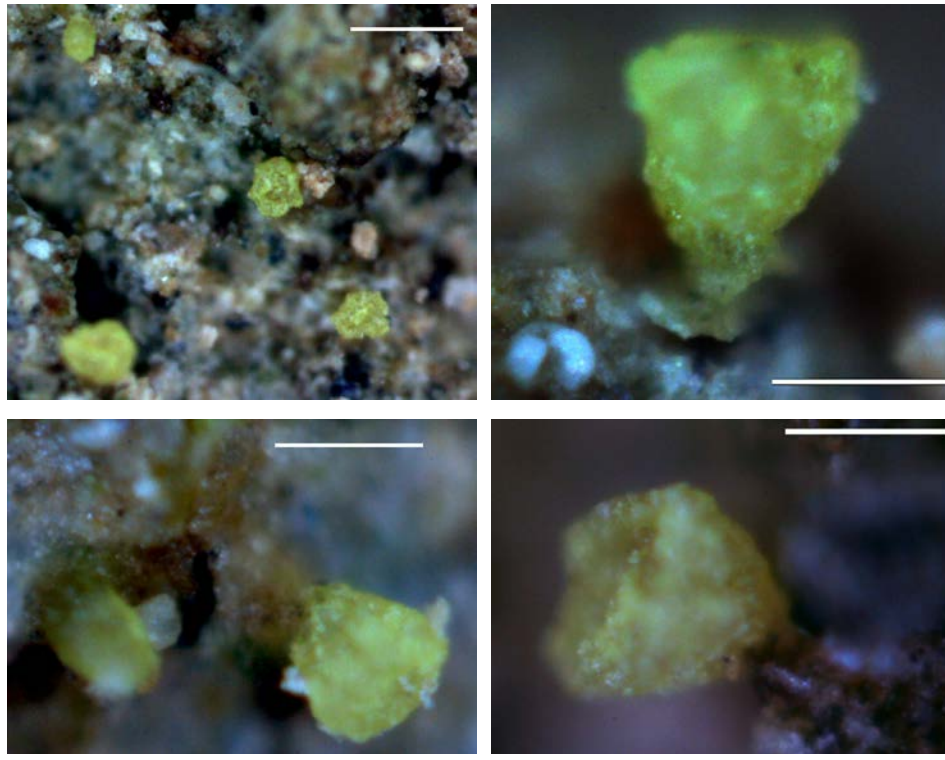

Fig. 28. Vezdaea poeltiana (holotype), general habit (top, left), and enlarged ascomata (the others). Scale 1mm (top, left) and 0.5 mm (the others). (Photo of S. Kondratyuk)

ciple absent, not developed, upper surface/"disc" of ascomata with somewhat cracks or undulations to 0.1–0.15 mm wide sometimes; algal cells in ascomata absent; asci multispored, (120–)150(–200)-spored, very long and narrow, cylindrical, 95–105 × 13–15 μm, with rather thick wall to 1.5–2.5 μm thick, the same thickness throughout, somewhat thicker in young asci and thickened at the tips; paraphyses very thin, to 0.8 μm diam., scarcely branched; ascospores simple, hyaline, elongated ellipsoid, (6–)6.5–8 × (1.9–)2.1–2.5(–3) μm.

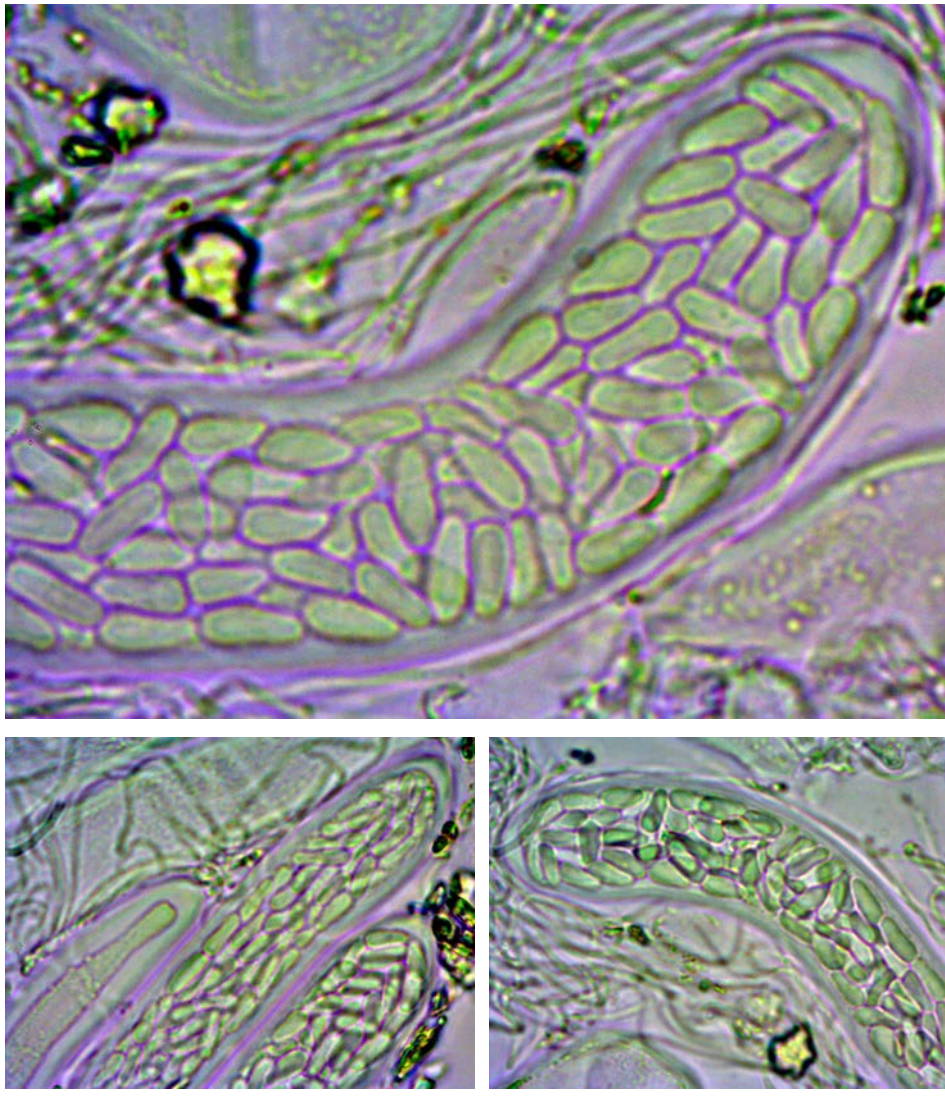

Fig. 29. Vezdaea poeltiana (holotype), enlarged asci with ascospores. (Photo of S. Kondratyuk)

Chemistry: Not studied.

Ecology: Growing on siliceous rock.

Distribution: So far known only from the type collection from Geumo-do Island, in southern part of South Korea, Eastern Asia.

Etymology: It is named after the well-known German lichenologist Josef Poelt, who was one of the authors describing the genus *Vezdaea* and made important contribution to our knowledge on species diversity of this genus.

Taxonomic notes: Among species of the genus *Vezdaea* Tscherm.-Woess et Poelt *Vezdaea poeltiana* is similar to *V. polyspora* Kalb et Vězda, a species known from Brazil, in having up to 200-spored asci, but differs in having larger ascomata ((0.3–)0.7–0.8 mm vs. ascocarp to 0.1–0.2 mm wide), in having larger ascospores ((6–)6.5–8 × (1.9–)2.1–2.5(–3) μm vs. 2.5 × 1–1.2 μm).

Among species with 8 ascospores and simple ascospores or small ascospores can be compared only with *V. leprosa* and *V. retigera*.

Among *Vezdaea* species this belongs to the *V. stipitata* group without any doubts, which is characterised distinctly stalked or constricted below, often turbinate at first apothecia, the stalk sometimes hidden among the goniocysts. However, species of this group, i.e. *V. leprosa* and *V. stipitata* differ in having 1-septate ascospores.

Furthermore *Vezdaea leprosa* (P. James) Vězda, growing on disturbed soils and decaying vegetation in transient, open habitats, including mine spoil tips, beneath roadside crash barriers, electricity pylons, lightening conductors, barbed wire fences and on coastal cliffs, particularly in heavy metal (zinc and lead) enriched situation, rarely on bark in the vicinity of fencing wire staples; frequent in suitable habitats in Europe, Madeira, North and South America

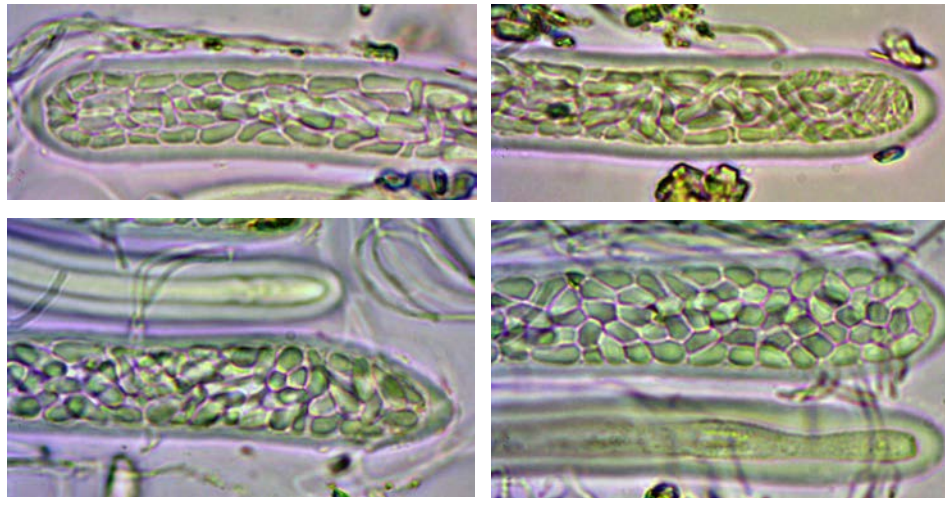

Fig. 30. Vezdaea poeltiana (holotype), enlarged asci with ascospores. (Photo of S. Kondratyuk)

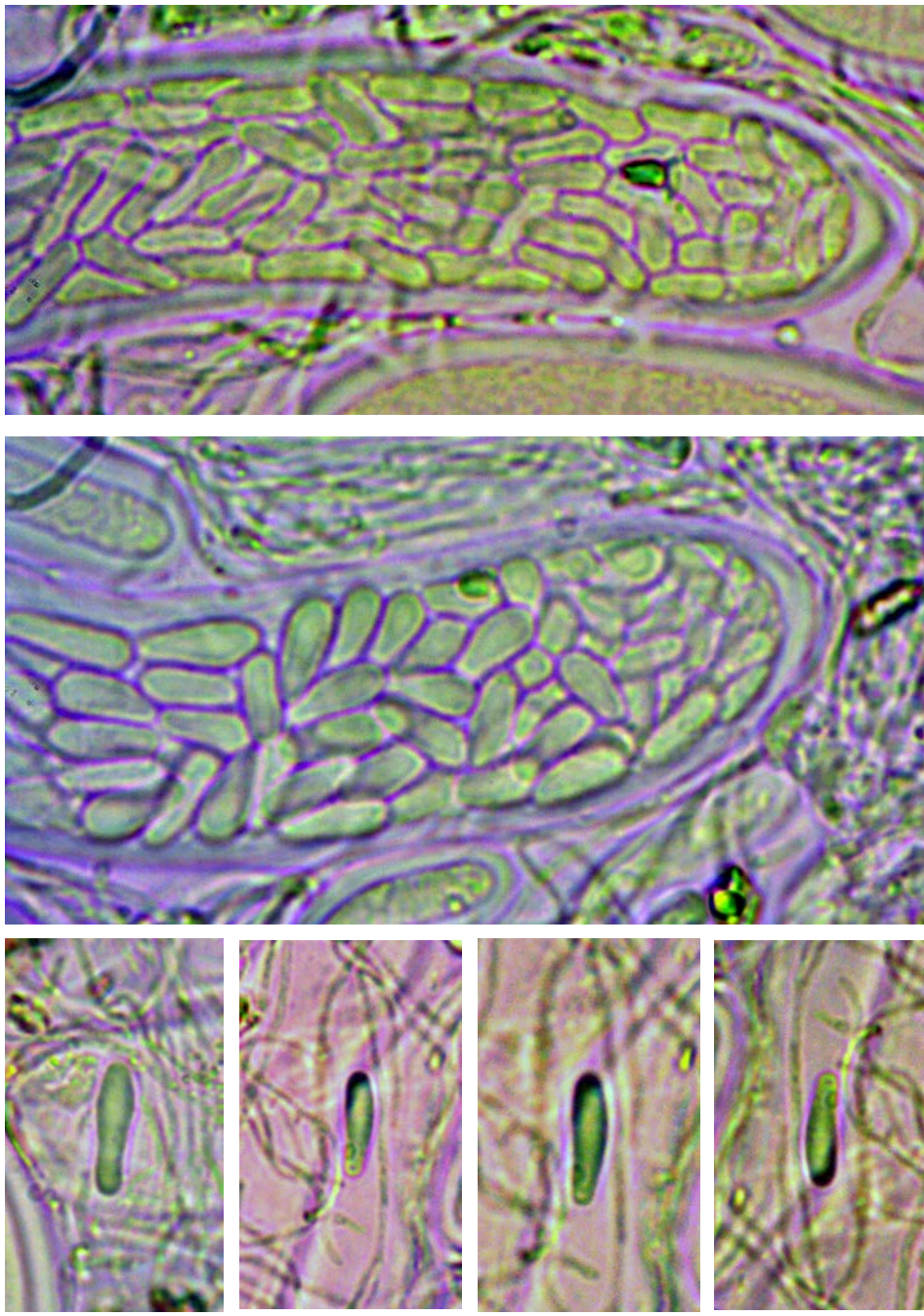

Fig. 31. Vezdaea poeltiana (holotype), enlarged asci and ascospores. (Photo of S. Kondratyuk)

and Asia, differs in having distinctly granular, with well-developed goniocysts dark to light green thallus, in having smaller apothecia ((0.3–)0.4–0.8 mm vs. 0.3–1 mm diam.), becoming convex to globose, pale flesh pink- or orange-brown apothecia, in having abundant, flexuose, not entwining individual asci and in having longer (and (0–)1-septate) ascospores (10–15.5 × 2.5–3 μm vs. (6–)6.5–8 × (1.9–)2.1–2.5(–3) μm).

Vezdaea stipitata Poelt et Döbbeler, overgrowing the thallus of *Polychidium muscicola* on *Fraxinus excelsior*, very rare in Europe, Macaronesia, North America and Asia species, differing from *V. leprosa* in having indistinct thallus, thin and filmy, scarcely apparent, goniocysts lacking, but differing from *V. poeltiana* in having paraphyses wanting or a few, slender, confirmed to the lower half of the hymenium, not clasping the asci, and in having larger (and 1-septate) ascospores (i.e.: (12.5–)13–15(–16) × 3–3.5 μm vs. (6–)6.5–8 × (1.9–) 2.1–2.5(–3) μm).

Vezdaea poeltiana is similar to *V. retigera* Poelt et Döbbeler, but differs in the lack of green when moist thallus, being more or less leprose, in small patches, in the lack of goniocysts with whort spines to 2 μm long, in having dull lemon yellow (vs. apothecia to pale flesh-tan, brownish when old), and cup-like ascomata (vs. hemispherical to semi-globose; in having narrower paraphyses (to 0.8 μm diam. vs. 0.5–1.5 μm wide), which not entwining individual asci, as well as in having much smaller ascospores ((6–)6.5–8 × (1.9–)2.1–2.5(–3) μm vs. (14–)15–22(–24) × 7–11(–13) μm).

Vezdaea poeltiana is similar to *Thelocarpon strasseri* Zahlbr., a rare European species growing on decaying wood, and differing from *T. lichenicola* in having ascomata taller than wide, in having greenish yellow apothecioid ascomata, in having branched paraphyses, but differs in having ascomata distinctly attenuated at the basis (vs. stalked, obconical-cylindrical), in having smaller ascomata ((0.3–)0.4–0.8 mm diam. vs. *ca* 0.1 mm diam.), in having irregularly branched paraphyses (vs. dichotomously branched), in having narrower paraphyses (to 0.8 μm diam. vs to 1.5 μm in original description (Zahlbruckner 1902); in having paraphyses not swollen towards the tips (vs. apices somewhat widened, forming a yellow, granular epithecium), as well as in the lack of exciple and subhymenium; in having longer asci (95–105 × 13–15 μm vs. 80–90 × 10–15 μm, wall I+ blue), while ascospores measurements are almost in the same range ((6–)6.5–8 × (1.9–)2.1–2.5(–3) μm vs. 5–7 × 1.7–3 μm after Chambers and Purvis 2009, or 6–7 × 2–3 after Zahlbruckner 1902).

Specimen of *Vezdaea leprosa* examined: Republic of Korea. Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwansa Temple, along stream valley, on siliceous rock, growing together with *Porina* sp. Lat.: 35° 00′ 18.55″ N; Long.: 127° 15′ 52.68″ E; Alt.: *ca* 170 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163208), 24.09.2016 (KoLRI 41453, sub *Vezdaea*). New to Korea!

Xanthoria lapalmaensis F. Schumm et S. Y. Kondr., *spec. nova*
(Figs 32–33)

MycoBank no.: MB 819941.

Similar to Xanthoria mediterranea, *but differs in having hemispherical pustulae-like formations additionally to isidia, in having* Xanthoria*-type hapters, as well as in having shorter ascospores and shorter and narrower conidia.*

Type: Spanien. Kanaren: La Palma (NE), Los Cancajos südlich von Santa Cruz, küstennahe Lavafelder beim Hotel Las Olas. Lat.: 28° 38′ 39.4″ N; Long.: 17° 45′ 32.6″ W; Alt.: *ca* 30 m a.s.l. Coll.: Schumm, F., 16.01.2007 (B ex Herb. Schumm 12998 – holotype).

Thallus, distinctly foliose, lobes to 3–6 mm long and to 3 mm wide, well developed especially in peripheral zone of thallus, upper surface deep egg-yellow to more or less orange yellow, well contrasting much darker (dull orange or dull brick-orange) central portion of thallus, more or less thin and with distinctly wrinkled upper surface, with small isidia-like formations to 0.1–0.15(–0.2) mm in diam./across in the central portion and with hemispherical pustulae-like formation to (0.2–)0.3–0.6(–0.7) mm diam. (if regularly

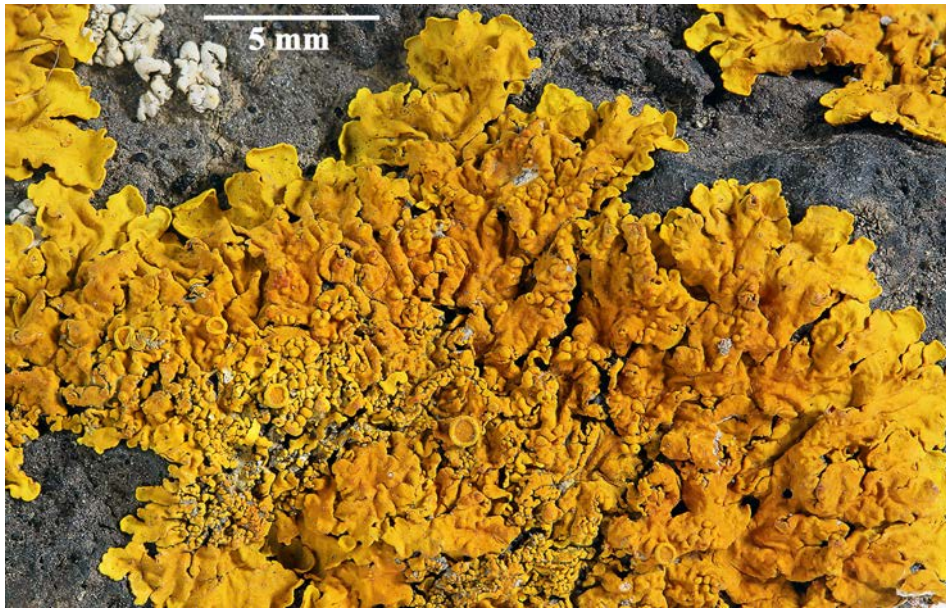

Fig. 32. Xanthoria lapalmaensis (holotype), general habit. Scale 5 mm. (Photo of F. Schumm)

rounded) or to 0.7 mm across (if elongated), and to 0.25–0.6 mm thick/high in section. Underside white, hapters to 0.1–0.15 mm diam. (*Xanthoria*-type sensu Kondratyuk and Poelt 1997) rarely observed along the thalline edges.

Thallus in section to 75–100(–120) μm thick, but sometimes (in places with conidiomata, etc.) can be to 220 μm thick; upper cortex 15–20 μm thick, paraplectenchymatous, cell lumina 4–7 μm diam.; algal zone 30–40 μm thick, algal cells 9–14 μm diam.; medulla very often with medullary plectenchyma or proso/scleroplectenchymatous portions to (20–)40–50(–60) μm diam./across, probably fixing position of the upper and lower cortical layers, rarely with hollow, in pustulae-like formations medulla with hollow in the lower part (between medulla and lower cortical layer); lower cortex (10–)13–15 μm thick, consisting of 1.5–2(–2.5) rows of cells, mesodermatous paraplectenchymatous, cell lumina rounded or vertically elongated, 4.5–6 μm diam./across.

Apothecia 0.6–2 mm diam., and to 0.3–0.4 mm thick in section, lecanorine, highly uplifted above thallus level, thalline margin to 0.2 mm thick highly uplifted above disc level (more or less *Xanthoria parietina*-type); in section zeorine, with very undulating underside, thalline exciple 50–80 μm wide, cortical layer to 30–40(–50) μm thick, well developed only on underside, mesodermatous paraplectenchymatous, cell lumina mainly elongate vertically, to 7–13(–17) μm across; algal cells to 9–14 μm diam.; true exciple to 100–150(–170) μm wide in the uppermost lateral portion and to 70 μm thick in lower lateral portion, and to 40 μm thick in basal portion, scleroplectenchymatous with well-developed matrix and hyphae lumina *ca* 1–1.5 μm diam.; hymenium to 70 μm high; paraphyses with intercalary oil cells to 3–5 μm diam., and 5–10(–12) μm long (better seen in K, and becoming red-brown); subhymenium to 50–70 μm thick, hyaline, without oil droplets; asci 8-spored, ascospores widely ellipsoid, somewhat similar to *Xanthodactylon*-type (see Kondratyuk *et al.* 2008) with very wide septum, 11–13(–14) × (6.5–)7–9 μm in water and (11–)13–15 × (7–)8–9 μm in K; ascospore septum 6–9 μm wide in water and (6–)8–9(–10) μm wide in K. Conidiomata to 0.3(–4) mm across (at view from outside, and to 170–220 μm diam. in section), as dark reddish or reddish orange spots on thallus surface, often somewhat collapsed; conidia lens-like or shortly ellipsoid, (1.5–)1.8–2.5(–3) × 0.8–1.2(–1.5) μm.

Ecology: Growing on siliceous rocks.

Distribution: So far known only from several localities of La Palma and Gran Canaria Islands of the Canary Islands, Spain and Madeira Island, Portugal.

Etymology: Species epithet refers to the type locality, i.e.: La Palma Island of the Canary Islands, Spain.

Taxonomic notes: *Xanthoria lapalmaensis* is similar to *X. mediterranea* Giralt, Nimis et Poelt, growing on calcium containing rocks and basalt in Eurasia (especially in the Mediterranean region) and in North Africa, including the

Fig. 33. Xanthoria lapalmaensis (Schumm 5333), enlarged portions with isidia and sphaerical formations (top), and (holotype) terminal portions of lobe (bottom). Scale 2 mm. (Photo of F. Schumm)

Canary Islands, after having well-developed, more or less thin and wrinkled thalline lobes in the peripheral zone, deep yellow to orange-yellow well contrasting to the darker central portion of thallus, and after measurements of the thalline lobes (3–6 mm long and to 3 mm wide), and in having isidia-like formations, which predominate in the central portion of thallus, but differs in having shorter thalline lobes (to 6 mm vs. 6–13 mm long), in having hemispherical pustulae-like formations additionally to isidia, in having *Xanthoria*-type hapters (vs. rhizines absent), as well as in having shorter ascospores (11–13(–14) × (6.5–)7–9 μm vs. 13–16 × 6–8 μm) (unfortunately data on ascospore septum for *X. mediterranea* are still missing), and in having shorter and narrower conidia (1.8–2.5 × 0.8–1.2 μm vs. 2.2–3 × 1.2–1.5(–1.8) μm).

Xanthoria lapalmaensis is similar to *X. stiligera* Giralt, Nimis et Poelt, growing on limestone and calcium containing rocks of the Mediterranean region of Eurasia and in North Africa, but differs in having wider thalline lobes, in having pustulae-like formations, in having longer and narrower ascospores (11–13(–14) × (6.5–)7–9 μm vs. 9–11 × 6–7 μm), in having wider ascospores septum (6–9 μm vs. 5–6 μm wide), as well as in having shorter conidia (1.8–2.5 × 0.8–1.2 μm vs. 2.5–3 × 1–1.2 μm).

Xanthoria lapalmaensis is similar to *X. calcicola* Oxner, growing on various rocks of the Mediterranean region of Eurasia and in North Africa, but differs in having smaller thalline lobes (vs. 10–15 mm long and 0.5–2 mm wide), in having narrower thalline lobes (0.09–0.10 mm vs. 0.20–0.40 mm thick), in having pustulae-like formations, in having smaller isidia (vs. wart-like, papilla-like and lobule-like, to 0.2–0.5 mm diam., and 0.2–0.4 mm long), in having shorter ascospores (11–13(–14) × (6.5–)7–9 μm vs. 11–17 × 6–9 μm), as well as in having narrower conidia (0.8–1.2 μm vs. 1.5–2 μm wide, after our data based on *Xanthoria calcicola* material from Ukraine, see also discussion under *Xanthoria schummii*).

Additional specimens examined: Portugal. Madeira: bei Portinho Flores zwischen Gaula und Canico de Baixo, on rocks growing together with *Phaeophyscia* sp., and *Candelariella* cf. *coralloidea*, where thalli of *Xanthoria* are often overgrown by *Candelariella* thalli. Lat.: 32° 39′ 06.5″ N; Long.: 16° 49′ 03.4″ W; Alt.: 45 m a.s.l. Coll.: Schumm, F., 16.04.2001 (B ex Herb. Schumm 8664). – Spain. Gran Canaria: am NE-Uferrand des Stausees Embalse de Cueve de las Ninas *ca* 8 km NE von Mogan. Seerand mit massenhaften *Riccia*-Beständen. Lat.: 27° 55′ 41.3″ N; Long.: 15° 40′ 04.8″ W; Alt.: 860 m a.s.l. Coll.: Schumm, F., Schwarz, U., 31.12.1998 (B ex Herb. Schumm 5333). – Spain. Gran Canaria: Stausees zwischen Fontanale und Pinos de Galdar *ca* 8 km westlich Teror; Schafweide auf Höhenrücken mit vereinzelten Felsen und Mandelbäumchen. Lat.: 28° 03′ 04.6″ N; Long.: 15° 37′ 07.7″ W; Alt.: 1295 m, a.s.l. Coll.: Schumm, F., Schwarz, U., 28.12.1998 (B ex Herb. Schumm 5305).

Specimens of *Xanthoria calcicola* examined: Portugal. Madeira: bei Portinho Flores zwischen Gaula und Canico de Baixo. Lat.: 32° 39′ 06.5″ N; Long.: 16° 49′ 03.4″ W; Alt.: 45 m a.s.l. Coll.: Schumm, F., 16.04.2001 (B ex Herb. Schumm 8671).

Specimens of *Xanthoria mediterranea* examined: Malta. Bingemma Chapel südlich von Zebbiegh, on limestone growing together with *Caloplaca* sp. Lat.: 35° 54′ 13.2″ N; Long.: 14° 22′ 37.9″ E; Alt.: 150 m a.s.l. Coll.: Schumm, F., Stapper, N., Lüth, M. and Frahm, J.-P., 12.03.2008 (B ex Herb. Schumm 13697).

Xanthoria schummii S. Y. Kondr., *spec. nova*
(Figs 34–35)

MycoBank no.: MB 819942.

Similar to Xanthoria calcicola*, but differs in having shorter and wider thalline lobes, in having characteristically irregularly overlapping horizontally orientated secondary lobules in the centre, in having thinner thallus in section, and in having scarce hapters on underside, and in having narrower conidia, as well as in the lack of isidia, and in the lack of the substances fallacinal and teloschistin.*

Type: Spanien. Kanarische Inseln: Gran Canaria, west-exponierter, trockener Felshang mit *Kleinia-Euphorbia*-Gebüsch, an der Strasse von Playa del Ingles nach San Bartolomé de Tirajana im Barranco de Fataga. Lat.: 27° 49′ 08.3″ N; Long.: 15° 34′ 40.1″ W; Alt.: 450 m a.s.l. Coll.: Schumm, F., 28.12.2000 (B ex Herb. Schumm 8043 – holotype); the same locality, (B ex Herb. Schumm 8045 – isotype).

Thallus 3–5 cm across, regularly rounded and more or less rosette-like, consisting of more or less horizontally orientated thalline lobes well developed from the centre to the peripheral zone, often with lobe ends characteristically bent downwards; sometimes somewhat lax lobe portions in peripheral zone and more or less more compact with overlapping secondary lobules in the centre; upper surface dull yellow brownish to slightly dull orange or dull orange-yellow in places (where a number of conidiomata aggregated), evenly coloured (no differences between peripheral and central portions). Lobes 7–9(–10) mm long and (2–)3.5–5(–8) mm wide towards the tips, and narrower to 2–3 mm wide towards the centre (well developed from the centre of thallus to peripheral zone and distinctly widened towards the tips), mainly horizontally orientated, only rarely somewhat uplifted in places or overlapping each other, consisting of several lobules dissected into 2–3 secondary lobules to 4–5 mm long and 3.5–5 mm wide, usually in the centre secondary lobes irregularly orientated and overlapping, convex or horizontally orientated; lobe edges sometimes dissected into small portions to 0.2 mm wide and 0.3–0.4 mm long, but these secondary lobules rather rare and indistinct; total length of the whole thalline lobe with all secondary lobules to 8–10 mm long and to-

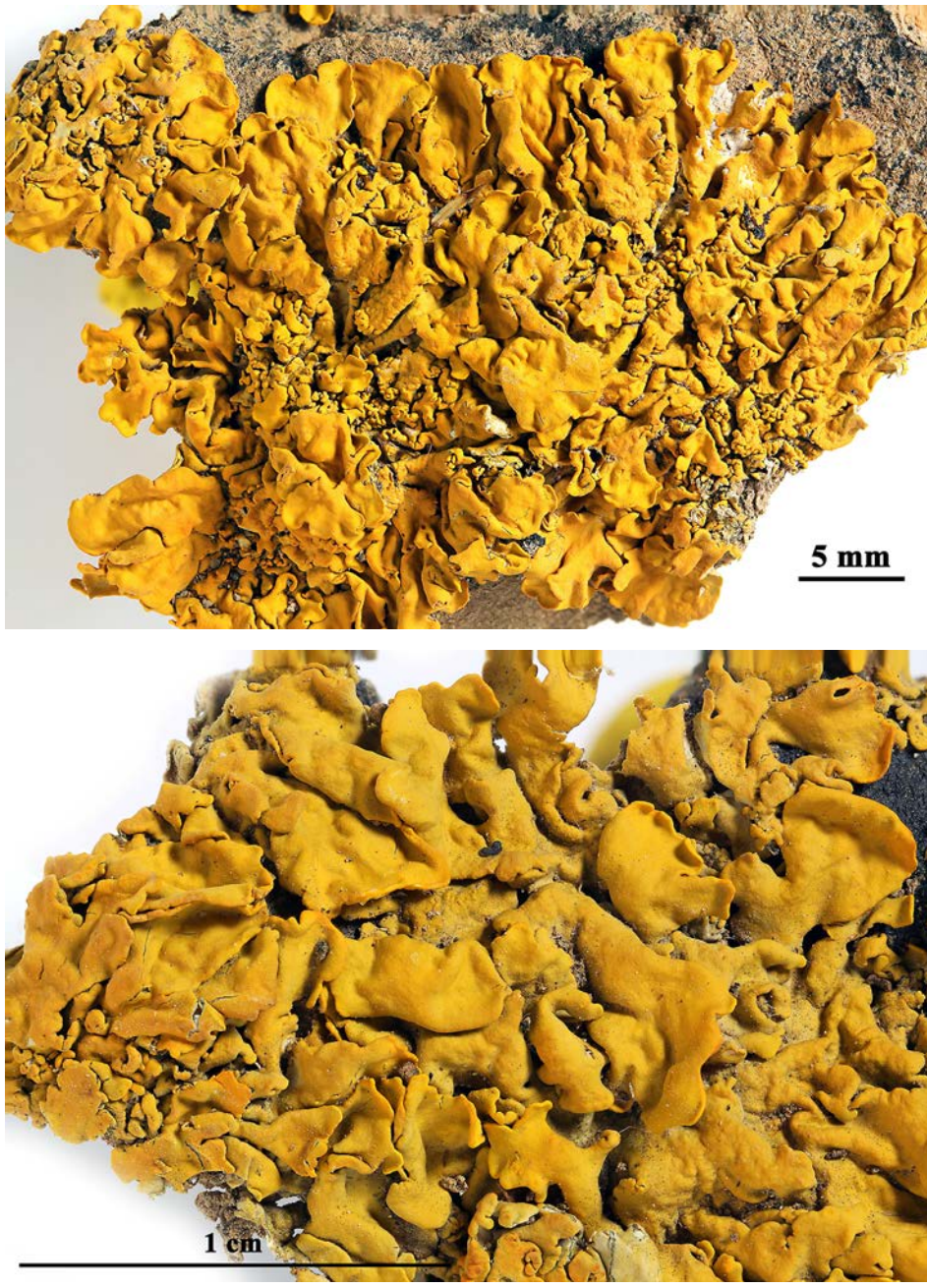

Fig. 34. Xanthoria schummii, general habit, (holotype, scale 5 mm – top) (isotype, scale 1 cm – bottom). (Photo of F. Schumm)

Fig. 35. Xanthoria schummii enlarged central portion of thallus (top), and underside of terminal portions of lobe (bottom). Scale 1 cm (top) and 2 mm (bottom). (Photo of F. Schumm)

tal width to 8–11 mm wide. Upper surface undulating making impression of very heavy and massive thick thalline lobe. Isidia or soredia absent.

Underside more or less with even surface (not undulating and without veins), deeply yellow especially in the peripheral portions of lobes while whitish in the centre, with distinct rim on underside along the edge (similarly to *Jackelixia streimannii*, see Kondratyuk *et al.* 2006) owing to which lobes seem to be much thicker (similarly also to *Oxneria huculica*, see Kondratyuk *et al.* 2010). Hapters of the *Xanthoria*-type (sensu Kondratyuk and Poelt 1997) rather short to 0.1(–0.2) mm long and to (0.05–)0.15–0.2(–0.3) mm wide, mostly very indistinct, sometimes aggregated in somewhat elongated groups to 0.6–0.8 mm across towards the tips or along the lobe edges observed on underside, sometimes seem to be similar to rhizines of the *Xanthodactylon*-type (sensu Kondratyuk *et al.* 2008, see also Kondratyuk and Galloway 1996).

In section thalline lobes are very variable in thickness from 80 to 250 μm thick, with mostly 150–200 μm thick; upper cortical layer to 20–30(–50) μm thick (better seen in K), very indistinct, in contrast to lower cortical layer very undulating, palisade paraplectenchymatous with more or less rounded cell lumina, and cells arranged in regular vertical rows, sometimes with somewhat deformed cells, with more or less yellow-brownish upper portion, cell lumina to 10–15 μm across; sometimes with epinecral layer to 5–15 μm thick (better seen in K); algal zone to 40–50 μm thick, more or less continuous, algal cells 9–20(–24) μm diam.; medulla to 40–70 μm thick sometimes with bunches of agglutinated thin hyphae to 20–35(–80) μm across, hyphae to 3–4 μm diam. (lumina 1.5–2 μm diam.) observed; sometimes completely filled in by dense groups of hyphae to 50 μm thick and orientated more or less in one direction or in various directions; lower cortex to 15–20(–25) μm thick, well developed, paraplectenchymatous, usually forming very even line, usually consisting of 2(–2.5) layers of cells, cells somewhat vertically elongated, cell lumina 5–7(–9) μm long/across, cell wall to 1–1.5 μm thick; sometimes epinecral layer to 3–5 (–7) μm thick on the bottom observed.

Conidiomata yellow-orange, somewhat brighter of thallus, conidia more less lens-like or narrowly ellipsoid, 1.8–2.2(–2.5) × 0.9–1 μm.

Chemistry: In thalline section only the upper cortical layer and the uppermost portion of algal zone K+ purple, while the other portions K–, containing parietin.

Ecology: Growing on siliceous rocks.

Distribution: So far it is known only from the type locality (from two separate herbarium specimens collected in the same locality), in Gran Canaria of the Canary Islands, Spain.

Etymology: It is named after the German lichenologist Dr Felix Schumm (Wangen, Germany), who has collected the type specimens as well as who

has kindly allowed us to investigate these and other lichen collections of the Teloschistaceae.

Taxonomic notes: Characteristic features of this taxon are that large size thalli do not have entire film in the centre, secondary lobules with downwards folded ends characteristically overlapping each other in the centre, as well as isidia and soredia absent.

Xanthoria schummii is similar to *X. calcicola* Oxner, after having large size thallus and in having well-developed thalline lobes rather thick and massive from the centre of thallus to peripheral zone and distinctly widened towards the tips, as well as in having sometimes small lobule-like portions along the lobe edges, but differs in having shorter (7–9(–10) mm vs. 10–15 mm long) and wider (3.5–5(–8) mm vs. 0.5–2 mm wide) thalline lobes, in the lack of entire film in the centre of thallus with characteristically irregularly overlapping horizontally orientated secondary lobules in the centre, in having horizontally orientated or slightly folded downwards (vs. uplifted) marginal portions of thalline lobes, in having thinner in section thallus (up to 0.25 mm thick vs. 0.2–0.4 mm thick), and in having scarce hapters of *Xanthoria*-type (sensu Kondratyuk and Poelt 1997) on underside (vs. any specialised organs of attachment to the substrate absent), and in having narrower conidia (0.9–1 μm vs. 1.5–2 μm wide, after our data based on *Xanthoria calcicola* material from Ukraine, unfortunately data on conidia of this species are still not published), as well as in the lack of isidia.

In spite of very optimistic population study of *Xanthoria calcicola* in some Scandinavian countries (Lindblom and Blom 2016), status of this taxon as well as a number of isidioid taxa, i.e.: *Xanthoria mediterranea* and *X. stiligera* in the Northern Hemisphere is still in need of the further special revision with inclusion of wide range of specimens. The *Xanthoria calcicola* aggr. is especially complex after molecular data provided by the Swiss group under leadership of R. Honegger. However, voucher specimens are not available for wide access so far and it is impossible to make link between molecular and morphological characters of the narrow sense species of this aggregation. Unfortunately all these data were submitted to the GenBank only as *Xanthoria* sp. with different numbers (mainly numbers of mycobiont cultures kept in laboratory conditions).

After having very large thallus and thalline lobes, *Xanthoria schummii* is similar to *X. parietina* and *X. juniperina* (as well as to *X. calcicola* aggr.), but in contrast to the latter taxa thalline lobes of *Xanthoria schummii* do not form entire film in the centre of thallus, they are well developed and well seen from the centre towards the tips of the lobes, as well as in the centre secondary thalline lobes to 3–5 mm wide irregularly orientated and overlapping, convex or horizontally orientated.

Generic status of this taxon will be questionable till the molecular data will be available. Unfortunately our attempts to extract DNA from specimens cited were unsuccessful. However, from morphological point of view *X. schummii* combines common characters with members of the genera *Xanthoria* and *Jackelixia* (especially after anatomy of upper cortical layer, thickness of thallus). However, it differs in having a unique type of attachment to the substrate, as well as in rather different conidia.

Xanthoria schummii can be compared with the Australian corticolous species *Jackelixia streimannii* (S. Y. Kondr. et Kärnefelt) S. Y. Kondr., Fedorenko, S. Stenroos, Kärnefelt et A. Thell (Kondratyuk *et al.* 2006), having thalline lobes with marginal portions folded downwards, and differing from other Australian taxa in having rather thick thallus, including a well-developed and rather dense medulla, and subconvex lobes, but differs in having much larger thallus (3–5 cm vs. 15–25 mm across), in having much wider and plane lobes (vs. more or less strip-like and seem to be semiconvex or convex), in having *Xanthoria*-type hapters (vs. *Xanthodactylon*-type of rhizines). Unfortunately we have only sterile specimens so far and we cannot compare such key characters for the members of the Teloschistaceae as type of tissue of true exciple, and data on ascospores. Furthermore, data on conidia of *Jackelixia streimannii* are still missing (see Kondratyuk *et al.* 2006).

From another foliose lichen with lobe edges distinctly folded downwards, i.e. *Oxneria huculica* S. Y. Kondr., known from the Northern Hemisphere from bark of various trees and more seldom from various rocks, lignum and twigs (Kondratyuk *et al.* 2010) *Xanthoria schummii* differs in having much longer and wider thalline lobes, in the lack of *Oxneria*-type rhizines, in the lack of *huculica*- and *ulophyllodes*-types of soralia, and in the lack of soredia, as well as in the lack of the substances fallacinal and teloschistin.

RARE OR NOTEWORTHY SPECIES

In the following section species new for Korea or China are marked by an asterisk, and lichenicolous fungi are marked by "!".

Absconditella baegasanensis L. Lőkös, S. Y. Kondr. et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Jeodong-ri, on rockwall along path to Bongrae waterfall, growing together with *Graphis* sp. and *Biatora longispora*. Lat.: 37° 29′ 52.10″ N; Long.: 130° 53′ 19.72″ E; Alt.: 285 m a.s.l. Coll.: Kondratyuk S. Y. and Lőkös, L. (161532), 09.07.2016 (KoLRI 039750). – Gyeongsangnam-do: Sancheong-gun, Sancheong-eup, along the tourist path to Ungseokbong. Lat.: 35° 22′ 51.15″ N; Long.: 127° 52′ 32.56″ E; Alt.: *ca* 270 m a.s.l. Coll.: Kondratyuk, S. Y. and

Lőkös, L. (150206), 22.06.2015. (KoLRI 033801 sub *Biatora longispora*). – It was described recently from two localities from the southern part of South Korea and from the Russian Far East (Kondratyuk *et al.* 2013*a*, 2015*a*).

****Acarospora*** cf. ***rufescens*** (Ach.) Kremp. – Republic of Korea. Jeju-do: Jeju-si, Chuja-do, Chuja-myeon, Yecho-ri, road of Mt Sindea observatory, on rock, growing together with *Lecanora lojkahugoi*. Lat.: 33° 57′ 09.9″ N; Long.: 126° 20′ 13.08″ E; Alt.: *ca* 56 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140979-3), 21.06.2014 (KoLRI 023529 sub *Caloplaca* cf. *coreana*). – Jeollanam-do: Sinan-gun, Hauido, Hami-myeon, Unggok-ri seaside, on rock. Lat.: 34° 36′ 07.07″ N; Long.: 126° 00′ 52.02″ E; Alt.: *ca* 20 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130657), 28.06.2013 (KoLRI 019002 sub *Porpidia albocaerulescens*). – New to Korea!

Acarospora ulleungdoensis S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeju-do: Seogwipo-si, Gangjeong-dong, Yeongtto waterfall, on rocks, growing together with *Endocarpon* sp. and *Acarospora* sp. Lat.: 33° 16′ 01.7″ N; Long.: 126° 29′ 49.0″ E; Alt.: *ca* 210 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140595), 19.06.2014 (KoLRI 022989 sub *Squamulea* aff. *squamosa*). – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Simjang-ri, roadside from Yeoan Elementary School, on rock, growing together with *Lecidella*/*Biatora* sp. Lat.: 34° 28′ 58.9″ N; Long.: 127° 48′ 15.4″ E; Alt.: *ca* 18 m a.s.l. Coll.: Woo, J.-J. (163674), 10.06.2016 (KoLRI 041919 sub *Squamulea squamosa*/*micromera*). – Jeollanam-do, Yeosu-si, Nam-myeon, Geumo-do Island, Simjang-ri, on rock, growing together with *Xanthoparmelia saxetii*. Lat.: 34° 28′ 55.67″ N; Long.: 127° 48′ 12.89″ E; Alt.: *ca* 10 m a.s.l. Coll.: Halda, J. P., Kondratyuk, S. Y., Woo, J.-J. and Lee, B. G. (160453), 10.06.2016 (KoLRI 038598 sub *Endocarpon nigromarginatum*); the same locality, (160454), (KoLRI 038599 sub *Endocarpon nigromarginatum*); the same locality, growing together with *Staurothele oxneri* (160455), (KoLRI 038599 sub *Endocarpon nigromarginatum*). – New, South Korean localities are added for the recently described species (Kondratyuk *et al.* 2016*b*).

****Agonimia allobata*** (Stizenb.) P. James – Republic of Korea. Jeollabuk-do: Jangsu-gun, Janggye-myeon, Mt Gusibong, Odong-ri seaside, on *Quercus* bark. Lat.: 35° 42′ 25.1″ N; Long.: 127° 39′ 23.0″ E; Alt.: *ca* 882 m a.s.l. Coll.: Woo, J.-J., Park, J. S. and Oh, S.-O. (150672) 03.07.2015 (KoLRI 035981 sub *Phaeophyscia adiastola*). – Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwangsa Temple, along stream valley, on *Prunus cerasus* bark. Lat.: 35° 00′ 27.40″ N; Long.: 127° 15′ 43.50″ E; Alt.: 155 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163276), 24.09.2016 (KoLRI 041521). – New to Korea!

****Agonimia*** aff. ***blumii*** S. Y. Kondr. – Republic of Korea. Jeollanam-do: Gurye-gun, Masan-myeon, Jiri Mts, Nogodan-Yeonhaceon, on siliceous rock, growing together with *Pertusaria subobductans*. Lat.: 35° 17′ 50.34″ N; Long.:

127° 33′ 11.88″ E; Alt.: *ca* 1,364 m a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Hur, J. Y. (091092), 13.10.2009 (KoLRI 011144 sub *Pertusaria subobductans*). – Jeollanam-do: Suncheon-si, Samsan-dong, along river bank, on concrete wall, growing together with *Caloplaca* and *Endocarpon*. Lat.: 34° 58′ 46.49″ N; Long.: 127° 29′ 10.35″ E; Alt.: 23 m a.s.l. Coll.: Kondratyuk, S. Y. (163299), 02.10.2016 (KoLRI 41544 sub *Caloplaca*); the same locality, on *Metasequoia* bark, growing together with *Amandinea* and *Dirinaria*, (163349), (KoLRI 41594 sub *Agonimia*). – Jeollanam-do: Suncheon-si, Yongdang-dong, along small stream, near waterfall close to tourist point, on siliceous rocks and *Alnus* bark. Lat.: 34° 57′ 55.88″ N; Long.: 127° 30′ 03.98″ E; Alt.: 110 m a.s.l. Coll.: Kondratyuk, S. Y. (163851), 20.11.2016 (KoLRI 42119). – New to Korea! Recently described from Russian Far East (Kondratyuk 2015).

Agonimia koreana Kashiw. et K. H. Moon – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Mt Hallasan, Hallasan National Park, Gwaneumsa trail, on bark. Lat.: 33° 24′ 39.08″ N; Long.: 126° 32′ 47.05″ E; Alt.: *ca* 739 m a.s.l. Coll.: Oh, S.-O., Jayalal, U., Park, J. S. and Hur, J.-S. (121018), 01.06.2012 (KoLRI 016048 sub *Tephromela atra*). – Gangwon-do: Jeongseon-gun, Buk-myeon, Mt Bannonsan, on rock, growing together with *Tephromela atra* and *Absconditella* sp. Lat.: 37° 26′ 38.22″ N; Long.: 128° 45′ 29.64″ E; Alt.: *ca* 1,051 m a.s.l. Coll.: Wang, X. Y., Jeon, H. S., Lü, L. and Ryu, J. A. (100792), 28.05.2010 (KoLRI 012485 sub *Aspicilia*). – It was known from South Korea only from the type locality (Sorak Mts) up to now (Kashiwadani 2008, Moon and Aptroot 2009).

Agonimia tristicula (Nyl.) Zahlbr. – Republic of Korea. Jeollabuk-do: Muju-gun, Seolcheon-myeon, Mt Sambong, on *Quercus* bark, growing together with *Mikhtomia subflavorubescens*. Lat.: 35° 52′ 31.1″ N; Long.: 127° 50′ 40.8″ E; Alt.: 1,178 m a.s.l. Coll.: Woo, J.-J. Jang, S. H. and Oh, S.-O. (150087), 18.06.2015 (KoLRI 035634 sub *Mikhtomia subflavorubescens*). – It was reported from South Korea (Sorak Mts) for the first time by Moon and Aptroot (2009).

Amandinea aff. ***trassii*** S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwangsa Temple, along stream valley, on bark of *Prunus cerasus*. Lat.: 35° 00′ 27.40″ N; Long.: 127° 15′ 43.50″ E; Alt.: *ca* 155 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163272), 24.09.2016 (KoLRI 41517). – Jeollanam-do: Wando-gun, Geumil-eup, Geumil-do, along seashore road (Geumil-ro), on bark of pine tree, growing together with *Dirinaria applanata*. Lat.: 34° 20′ 15.09″ N; Long.: 127° 03′ 13.04″ E; Alt.: *ca* 7 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120319), 19.04.2012 (KoLRI 014914 sub *Dirinaria applanata*). – The fourth South Korean locality (after Gangwon-do, Jeju-do and Gyeongsangbuk-do) of the recently described species (Kondratyuk *et al.* 2016*b*).

****Anema decipiens*** (A. Massal.) Forssell – Republic of Korea. Chungcheongbuk-do: Danyang-gun, Danyang-eup, Nodong-ri, Dabyangnodong-

gil, on calcareous rock. Lat.: 36° 58′ 46.9″ N; Long.: 128° 22′ 26.2″ E; Alt.: *ca* 137 m a.s.l. Coll.: Park, J. S., Woo, J.-J. and Lee, B. G. (152821), 05.09.2015 (KoLRI 037130); the same locality, (152819) (KoLRI 037128). – Jeju-do: Seogwipo-si, Pyoseon-myeon, Pyoseon-ri, rocky seashore, on siliceous rock, growing together with *Agonimia cavernicola*. Lat.: 33° 19′ 21.0″ N; Long.: 126° 50′ 49.03″ E; Alt.: *ca* 69 m a.s.l.; Oh, S.-O., Park, J. S. and Hur, J.-S. (140520), 19.06.2014 (KoLRI 022913 sub *Rusavskia*). – New to Korea!

****Anisomeridium*** aff. ***albisedum*** (Nyl.) R. C. Harris – Republic of Korea. Jeollanam-do: Boseong-gun, Boseong-eup, Bongsan-ri, Bosung Green Tea Farm, along path near car parking, on bark (*Cryptomeria japonica*). Lat.: 34° 42′ 54.17″ N; Long.: 127° 04′ 54.49″ E; Alt.: 245 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (162900), 23.07.2016 (KoLRI 041138). – New to Korea! – Note: Our material differs from *A. albisedum* (according to original description) in having hyaline ascomata without any involucrellum. However, it should be mentioned that data on ascospores of this taxon are very different in Nylander (1890) (*vs*. 9–19 × 2.5–3.5 μm) and in Harris (1995) (*vs*. 9–13(–15) × 4–5 μm) (note that width of ascospores even not overlapping!).

****Bacidia laurocerasi*** (Duby) Zahlbr. – Republic of Korea. Gangwon-do: Jeongseon-gun, Bukpyeong-myeon, Mt Baekseokbong, on bark. Lat.: 37° 28′ 1.31″ N; Long.: 128° 39′ 35.30″ E; Alt.: *ca* 519 m a.s.l. Coll.: Park, J. S., Woo, J.-J. and Lee, B. G. (152854), 06.09.2015 (KoLRI 037163). – New to Korea!

Bacidina cf. ***arnoldiana*** (Körb.) V. Wirth et Vězda – Republic of Korea. Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwangsa Temple, along stream valley, on bark, growing together with *Fellhanera* sp. Lat.: 35° 00′ 27.40″ N; Long.: 127° 15′ 43.50″ E; Alt.: 155 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163278), 24.09.2016 (KoLRI 041523). – It was reported from South Korea for the first time by Aptroot and Moon (2014) from siliceous rocks in the same county (Jeollanam-do)!

Bacidina egenula (Nyl.) Vězda – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Taeha-ri, valley of Tae-hacheon, Seodal-gil, near Bogho waterfall, on beton kerb, growing together with *Psoroglaena coreana*, and *Verrucaria* sp. Lat.: 37° 30′ 14.09″ N; Long.: 130° 50′ 07.83″ E; Alt.: 370 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161845), 10.07.2016 (KoLRI 040045). – It was reported from South Korea (Changseon Island) for the first time by Zhang *et al.* (2012).

Biatora fallax Hepp – Republic of Korea. Gangwon-do: Taebaek-si, Mt Hambaek, on *Quercus* bark. Lat.: 37° 10′ 23.5″ N; Long.: 128° 54′ 56.0″ E; Alt.: *ca* 1,403 m a.s.l. Coll.: Hur, J.-S. (070724), 19.06.2007 (KoLRI 007577). – Second record from South Korea, it was reported at first byAptroot and Moon (2015).

Biatora ivanpisutii S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongbuk-do: Jeckem-si, Deoksan-myeon, on bark. Lat.: 36° 52′

35.64″ N; Long.: 128° 12′ 40.84″ E; Alt.: *ca* 741 m a.s.l. Coll.: Lee, B. G. and Woo, J.-J. (loc. 29), 19.06.2016 (KoLRI, Forest project 2016). – Second South Korean locality for the recently described species (Kondratyuk et al. 2016*b*).

Biatora pseudosambuci (S. Y. Kondr., L. Lőkös et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongbuk-do: Jeckem-si, Deoksan-myeon, on bark. Lat.: 36° 52′ 35.64″ N; Long.: 128° 12′ 40.84″ E; Alt.: *ca* 741 m a.s.l. Coll.: Lee, B. G., Woo, J.-J. (loc. 25), 19.06.2016 (KoLRI, Forest project 2016). – Jeollanam-do: Suncheon-si, Maegok-dong, Sunchon National University, park in front of building 3 of Humanitarian Faculty, on bark of *Chamaecyparis*. Lat.: 34° 58′ 12.81″ N; Long.: 127° 28′ 37.29″ E; Alt.: 58 m a.s.l. Coll.: Kondratyuk, S. Y. (163434), 10.10.2016 (KoLRI 41679 sub *Amandinea*). – Further records of the recently described species from South Korea (Kondratyuk *et al.* 2016*a* as *Lecanora pseudosambuci*).

Biatora aff. ***subduplex*** (Nyl.) Printzen – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Mt Hallasan, Hallasan National Park, Arail-dong, around Gwaneumsa Temple. Lat.: 33° 24′ 02.80″ N; Long.: 126° 32′ 25.28″ E; Alt.: 868 m a.s.l. Coll.: Halda, J. (151555), 20.07.2012 (KoLRI 035248). – It was reported from South Korea recently from Goheung-gun (Kondratyuk *et al.* 2016*a*). It is new for Cheju-do Island.

Buellia badia (Fr.) A. Massal. – Republic of Korea. Gangwon-do: Hongcheon-gun, Nae-myeon, Mt Eungboksan, Tongbaram Valley, on siliceous rock. Lat.: 37° 51′ 42.06″ N; Long.: 128° 31′ 29.34″ E; Alt.: *ca* 730 a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Ryu, J. A. (090696), 23.05.2009 (KoLRI 010365 sub *Aspicilia*). – Jeollabuk-do: Muju-gun, Mupung-myeon, Mt Daedeok, on siliceous rock, growing together with *Candelariella coralliza* and *Aspicilia* sp. Lat.: 35° 54′ 44.4″ N; Long.: 127° 53′ 14.6″ E; Alt.: 1,185 m a.s.l. Coll.: Woo, J.-J., Jang, S. H. and Oh, S.-O. (150167), 19.06.2015 (KoLRI 035715 sub *Candelariella*); the same locality, growing together with *Endocarpon*, *Aspilicia* and *Candelariella coralliza*. (150171), (KoLRI 035719 sub *Endocarpon*). – Jeollabuk-do: Muju-gun, Mupung-myeon, Mt Daedeok, on siliceous rock, growing together with *Protoparmeliopsis kopachevskae*, and *Candelariella coralliza*. Lat.: 35° 54′ 52.8″ N; Long.: 127° 53′ 16.6″ E; Alt.: 1,239 m a.s.l. Coll.: Woo, J.-J., Jang, S. H. and Oh, S.-O. (150177), 19.06.2015 (KoLRI 035725 sub *Protoparmeliopsis*). – Jeollanam-do: Jangheung-gun, Gwansan-eup, Okdang-ri, Cheongwansan Mts, along the tourist track No. 2, near the temple, on siliceous rock, growing together with *Rhizocarpon*, *Verrucaria* spp. Lat.: 34° 32′ 55.65″ N; Long.: 126° 55′ 43.11″ E; Alt.: *ca* 154 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150402), 23.06.2015 (KoLRI 033997 sub *Buellia* cf. *spuria*). – Jeollanam-do: Sinan-gun, Bigeum-myeon, Bigeum-do Island, Mt Sunwangsan, on rock, growing together with *Endocarpon*. Lat.: 34° 44′ 13.7″ N; Long.: 125° 55′ 54.05″ E; Alt.: *ca* 55 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130150-1), 05.06.2013 (KoLRI 018492 sub

Aspicilia). – It was reported from South Korea from Bogil-do Island (Joshi and Hur 2013, Joshi *et al.* 2010*a*) and from Goheung-gun (Aptroot and Moon 2014 as *Monerolechia badia*). Further five localities are added.

Buellia chujadoensis L. Lőkös, S. Y. Kondr. et J.-S. Hur – Republic of Korea. Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, Port of Yecho-ri, on siliceous rock. Lat.: 33° 57′ 23.5″ N; Long.: 126° 20′ 03.02″ E; Alt.: *ca* 40 m a.s.l. Coll.: Halda, J. P. (141094), 21.06.2014 (KoLRI 023652 sub *B. spuria*); the same locality, growing together with *Rinodina milvina*, (141099), (KoLRI 023657 sub *B. spuria*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, Mt Dondaesan, on rock, growing together with *Lecanora lojkahugoi* and *Buellia* sp. Lat.: 33° 56′ 53.9″ N; Long.: 126° 19′ 26.7″ E; Alt.: *ca* 164 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140772), 20.06.2014 (KoLRI 023246 sub *Buellia*). – It was described recently from South Korea from Chuja-do Island, but it was also reported from other islands (Bogil-do, Cheju-do, Geoje-do, Salyang-do) (Kondratyuk *et al.* 2015*b*). Three additional records are added from Chuja-do Island.

Buellia extremorientalis (S. Y. Kondr., L. Lőkös et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangnam-do: Sancheong-gun, Sicheon-myeon, Jiri Mts, Jungsan-ri, on bark. Lat.: 35° 19′ 01.0″ N; Long.: 127° 44′ 30.1″ E; Alt.: *ca* 1,160 m a.s.l. Coll.: Hur, J.-S. (060636) 15.09.2006 (KoLRI 005007 sub *Buellia*). – It was described recently from South Korea from three provinces (Chungcheongnam-do, Gangwon-do, Ulsan-do) as *Hafellia extremorientalis* (Kondratyuk *et al.* 2015*b*).

Buellia pseudosubnexa (S. Y. Kondr., L. Lőkös et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gangwon-do: Jeongseon-gun, Gangneung-si, tourist pass toward peak Seokbyeongsan. Lat.: 37° 34′ 38.58″ N; Long.: 128° 51′ 23.94″ E; Alt.: *ca* 760 m a.s.l., on bark, growing together with *Pertusaria* spp. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150931), 10.07.2015 (KoLRI 034164 sub *Hafellia*). – Gangwon-do: Jeongseon-gun, Gangneung-si, tourist pass toward peak Seokbyeongsan, on bark. Lat.: 37° 34′ 36.55″ N; Long.: 128° 51′ 47.16″ E; Alt.: *ca* 840 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151047), 10.07.2015 (KoLRI 034280 sub *Hafellia*). – Jeju-do: Cheju-do Island, Jeju-si, Mt Hallasan, Hallasan National Park, Seongpanak trail, on bark, growing together with *Rinodina* and *Lecanora* spp. Lat.: 33° 22′ 48.44″ N; Long.: 126° 35′ 26.70″ E; Alt.: 1,025 m a.s.l. Coll.: Kondratyuk, S. (212659), Lőkös, L., Oh, S.-O. and Joshi, S. (121887), 06.07.2012 (KoLRI 016866 sub *Rinodina*). – It was described recently from South Korea from four provinces (Gangwon-do, Gyeongsangbuk-do, Gyeongsangnam-do, Jeollanam-do) as *Hafellia pseudosubnexa* (Kondratyuk *et al.* 2015*b*). New to Cheju-do Island.

Caeruleum heppii (Körb.) K. Knudsen et Arcadia – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Seongsan-eup, Goseong-ri, Seopjicoji,

on rock, growing together with *Caloplaca pelodella*, *Psorotichia*, *Verrucaria*. Lat.: 33° 19′ 21.0″ N; Long.: 126° 50′ 49.03″ E; Alt.: *ca* 69 m a.s.l. Coll.: Kondratyuk, S. Y. (140303), 19.06.2014 (KoLRI 022663 sub *Mikhtomia multicolor*). – The third South Korean record after Geumil-do Island and the Jiri Mts (Kondratyuk *et al.* 2013*a* as *Myriospora heppii*, Kondratyuk *et al.* 2016*a*). New for Cheju-do Island!

Caloplaca fusanii (Hue) Zahlbr. – Republic of Korea. Jeollanam-do: Suncheon-si, Seungju-eup, Seonamsa. Lat.: 34° 59′ 39″ N; Long.: 127° 19′ 56″ E; Alt.: 205 m a.s.l. Coll.: Liu, D. (160578), 11.04.2016 (KoLRI 038723). – Recent confirmation of the old record of Hue (1915) from South Korea.

Caloplaca kedrovopadensis S. Y. Kondr. et J.-S. Hur – Republic of Korea. Jeollanam-do: Gurae-gun, Sandong-myeon, Jiri Mts, Seungsamjae station to Nogodan, on bark. Lat.: 35° 17′ 46.50″ N; Long.: 127° 31′ 27.00″ E; Alt.: 1,314 m a.s.l. Coll.: Kondratyuk, S. (21160), Wang, X. Y. and Ryu, J. A. (111008), 11.10.2011 (KoLRI 014083). – It was reported from the Jiri Mts (South Korea) recently (Kondratyuk *et al.* 2016*a*). Additional record from the same collection.

Caloplaca micromera (Hue) Zahlbr. – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Simjang-ri, on rock. Lat.: 34° 30′ 52.5″ N; Long.: 127° 43′ 36.6″ E; Alt.: *ca* 71 m a.s.l. Coll.: Woo, J.-J. (163677), 10.06.2016 (KoLRI 041922 sub *Caloplaca*); the same locality, growing together with *Orientophila leucerythrella*, *Rinodina oxydata*, (163680) (KoLRI 41925). – It was reported from South Korea recently from siliceous seashore rocks in Daebu-do and Cheju-do islands (Kondratyuk *et al.* 2013*a*, 2015*a*). It is the third record from similar habitat. (New name for this lichen see in Kondratyuk *et al*. 2017).

Caloplaca neobaltistanica S. Y. Kondr. et J.-S. Hur – China. Xinjiang Province: Urumqi city, Mt Tian, on trunk, growing together with *Leptogium* and *Lecidella*. Lat.: 43° 53′ 20.9″ N; Long.: 88° 07′ 05.7″ E; Alt.: *ca* 1,962 m a.s.l. Coll.: Oh, S.-O. and Hur, J.-S. (CH-130102), 15.07.2013 (KoLRI 019179 sub *Leptogium*). – Additional record of the recently described taxon (Kondratyuk *et al.* 2015*a*, 2016*b*) from the same collection from China. (New name for this lichen see in Kondratyuk *et al*. 2017).

Caloplaca subconcilians S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Namseongjiung-ro, on siliceous rock, growing together with *Verrucaria* sp. Lat.: 33° 13′ 56.1″ N; Long.: 126° 29′ 24.1″ E; Alt.: 13 m a.s.l. Coll.: Oh, S.-O. and Liu, D. (152541), 20.08.2015 (KoLRI 036763 sub *Mikhtomia multicolor*). – Jeju-do: Seogwipo-si, Namwon-eup, Wimi-ri, on rock, growing together with *Lepraria* sp. Lat.: 33° 16′ 13.26″ N; Long.: 126° 39′ 39.00″ E; Alt.: *ca* 10 m a.s.l. Coll.: Joshi, Y. and Wang, X. Y. (091406), 29.05.2009 (KoLRI 011049). – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Simjang-ri, Simpo coast, on siliceous rock. Lat.: 34° 29′ 50.57″ N; Long.: 127° 46′ 08.88″ E; Alt.: *ca* 20 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A.

(120468), 27.04.2012 (KoLRI 015458 sub *Caloplaca*). – Jeollanam-do: Wando-gun, Saengil-myeon, Saengil-do Island, Geumgok beach coast, on rock. Lat.: 34° 18′ 40.02″ N; Long.: 126° 57′ 54.03″ E; Alt.: 4 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120229), 18.04.2012 (KoLRI 014824 sub *Pertusaria subobductans*). – It was reported from South Korea from several localities (Kondratyuk *et al.* 2013*a*, 2015*a*, *b*, 2016*a*). It seems to be widely distributed in the southern archipelago of South Korea and also in the mainland.

Candelariella coralliza (Nyl.) H. Magn. – Republic of Korea. Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, Mt Dondae, on siliceous rock. Lat.: 33° 56′ 53.9″ N; Long.: 126° 19′ 26.7″ E; Alt.: *ca* 164 m a.s.l. Coll.: Lőkös, L. (140756-3), 20.06.2014 (KoLRI 023232 sub *Aspicilia*); the same locality. Coll.: Joshi, Y. and So, J.-E. (140767), 20.06.2014 (KoLRI 023241 sub *Pertusaria*). – Jeollabuk-do: Muju-gun, Mupung-myeon, Mt Daedeok, on siliceous rock, growing together with *Buellia badia* and *Aspicilia* sp. Lat.: 35° 54′ 44.4″ N; Long.: 127° 53′ 14.6″ E; Alt.: 1,185 m a.s.l. Coll.: Woo, J.-J., Jang, S. H. and Oh, S.-O. (150167), 19.06.2015 (KoLRI 035715 sub *Candelariella*); the same locality, growing together with *Endocarpon*, *Aspilicia* and *Buellia badia*. (150171), (KoLRI 035719 sub *Endocarpon*). – Jeollabuk-do: Muju-gun, Mupung-myeon, Mt Daedeok, on siliceous rock, growing together with *Protoparmeliopsis kopachevskae*, and *Buellia badia*. Lat.: 35° 54′ 52.8″ N; Long.: 127° 53′ 16.6″ E; Alt.: 1,239 m a.s.l. Coll.: Woo, J.-J., Jang, S. H. and Oh, S.-O. (150177), 19.06.2015 (KoLRI 035725 sub *Protoparmeliopsis*). – Jeollanam-do: Sinan-gun, Heuksan-myeon, Heuksan-do Island, on siliceous rock, growing together with *Aspicilia* cf. *caesiocinerea*. Lat.: 34° 39′ 52.92″ N; Long.: 125° 26′ 11.34″ E; Alt.: 5 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110550), 21.06.2011 (KoLRI 013589). – It was known from four islands from South Korea (Kondratyuk *et al.* 2015*a*, 2016*a*). A mainland locality and a further island locality are added.

Candelariella vitellina (Hoffm.) Müll. Arg. – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, Seaside Trail near Dodong Port, on steep siliceous rocks. Lat.: 37° 29′ 00.16″ N; Long.: 130° 54′ 38.25″ E; Alt.: 10 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161976), 11.07.2016. (KoLRI 040213); the same locality, growing together with *Lepraria* sp. (162021), (KoLRI 040259 sub *Candelariella*); the same locality, growing together with species of the genera *Diploschistes, Scoliciosporum* and *Amandinea*, (162026), (KoLRI 040264 sub *Diploschistes*). – Common species with rather few records in South Korea (Kim 1979, 1980, 1981, Hur *et al.* 2005, Moon 2013). New to Ulleung-do Island.

Catillaria ulleungdoensis S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, coastal road cliff, on rock, growing together with *Fuscidea* cf. *coreana*. Lat.: 37° 32′ 29.6″ N; Long.: 130° 51′ 47.7″ E; Alt.: *ca* 13 m a.s.l. Coll.:

Lee, B. G. (162738), 07.07.2016 (KoLRI 040976 sub *Catillaria*). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, in front of Gwaneum island ticket box, mountain 1, on rock, growing together with *Opegrapha ulleungdoensis* and *Lecania* sp. Lat.: 37° 32′ 29.0″ N; Long.: 130° 54′ 58.5″ E; Alt.: *ca* 13 m a.s.l. Coll.: Lee, B. G. (162748), 07.07.2016 (KoLRI 040986 sub *Lecania*). – It was described recently from Ulleung-do Island, South Korea (Kondratyuk *et al.* 2016*b*).

! Cercidospora caudata Kernst. – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, seaside trail near Dodong Port, on steep siliceous rocks, growing on *Caloplaca*. Lat.: 37° 29′ 00.16″ N; Long.: 130° 54′ 38.25″ E; Alt.: 10 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (162005), 11.07.2016 (KoLRI 040243). – It was reported recently from South Korea (Cheju-do, Chuja-do) from the host *Jasonhuria bogilana* (Joshi *et al.* 2015).

****! Cercidospora*** aff. ***epipolytropa*** (Mudd) Arnold – Republic of Korea. Jeju-do: Jeju-si, Chuja-do, Chuja-myeon, Yecho-ri, road of Mt Sindea observatory, on rock, in thalli of *Jasonhuria bogilana*, growing together with *Pyxine*. Lat.: 33° 57′ 09.9″ N; Long.: 126° 20′ 13.08″ E; Alt.: *ca* 56 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140981-1), 21.06.2014 (KoLRI 023534 sub *Pyxine*). – New to Korea!.

****! Cercidospora*** aff. ***lobothallia*** Nav.-Ros. et Calat. – Republic of Korea. Incheon: Ongjingun, Deokjeok-myeon, Deokjeok-do, Seopori wharf, on rock, *Aspicilia* damaged in parts by lichenicolous fungus *Cercidospora* sp. Lat.: 37° 12′ 45.09″ N; Long.: 126° 06′ 44.05″ E; Alt.: *ca* 1 m a.s.l. Coll.: Oh, S.-O. and Park, J. S. (130489), 14.06.2013 (KoLRI 018834 sub *Aspicilia subgoettweigensis*). – New to Korea!

Circinaria leprosescens (Sandst.) A. Nordin, Savić et Tibell – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Simjang-ri, along seashore, on siliceous rock. Lat.: 34° 28′ 55.67″ N; Long.: 127° 48′ 12.89″ E; Alt.: *ca* 10 m a.s.l. Coll.: Halda, J. P., Kondratyuk, S. Y., Woo, J.-J. and Lee, B. G. (160451), 10.06.2016 (KoLRI 038596 sub *Physciella melanchra*); the same locality, (160452), (KoLRI 038597 sub *Xanthoparmelia saxetii*). – Additional South Korean record for the recently reported species (Aptroot and Moon 2014, Kondratyuk *et al.* 2016*c*).

Cresponea proximata (Nyl.) Egea et Torrente – Republic of Korea. Gangwon-do: Hongcheon-gun, Seseok-myeon, deciduous forest, on bark. Lat.: 37° 46′ 38.62″ N; Long.: 128° 13′ 33.22″ E; Alt.: *ca* 770 m a.s.l. Coll.: Lee, B. G., Park, J. S. and Liu, D., 12.06.2016 (KoLRI, Forest project 2016). – It was reported from South Korea by Joshi *et al.* (2011), Moon (2013) and Kondratyuk *et al.* (2016*a*).

! Dactylospora glaucomarioides (Tuck.) Hafellner – Republic of Korea. Jeju-do: Jeju-si, Cheju-do Island, Mt Hallasan, Hallasan National Park,

Arail-dong, along Gwaneumsa Temple trail, along the tourist path, on bark (*Quercus*), on *Ochrolechia akagiensis*, growing together with "*Caloplaca*" *oxneri* (see also Kondratyuk *et al.* 2017). Lat.: 33° 23′ 32.2″ N; Long.: 126° 32′ 16.0″ E; Alt.: 1,128 m a.s.l. Coll.: Kondratyuk, S., Oh, S.-O. and Kusama, Y. (121644), 08.08.2012 (KoLRI 017098 sub *Ochrolechia akagiensis*). – It was reported from North Korea (Kumgangsan Mts) by Huneck *et al.* (1994), and from mainland South Korea by Joshi *et al.* (2010*b*). New to Cheju-do Island.

Dibaeis yurii (S. Y. Kondr., L. Lőkös, S.-O. Oh et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gangwon-do: Jeongseon-gun, Bukpyeong-myeon, Mt Baekseokbong, on acidic soil. Lat.: 37° 28′ 15.8″ N; Long.: 128° 39′ 41.1″ E; Alt.: 440 m a.s.l. Coll.: Woo, J.-J. (152807), 06.09.2015 (KoLRI 037116). – Jeollabuk-do: Namwon-si, Sandong-myeon and Unbong-eup, Mt Gonam, on siliceous rock. Lat.: 35° 28′ 44.9″ N; Long.: 127° 30′ 48.6″ E; Alt.: 621 m a.s.l. Coll.: Woo, J.-J. and Oh, S.-O. (152255), 18.07.2015 (KoLRI 036178). – Jeollanam-do: Sinan-gun, Haui-myeon, Haui-do, Unggok-ri seaside, on soil. Lat.: 34° 36′ 07.03″ N; Long.: 126° 00′ 52.07″ E; Alt.: *ca* 32 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130647), 28.06.2013 (KoLRI 018992 sub *Cladonia* sp.). – Jeollanam-do: Suncheon-si, Sunchon, along Jobi-gil road, on siliceous rock, growing together with *Cladonia* sp. and *Lepraria* sp. Lat.: 34° 58′ 29.62″ N; Long.: 127° 28′ 34.20″ E; Alt.: *ca* 71 m a.s.l. Coll.: Kondratyuk, S. Y. (163445), 09.10.2016 (KoLRI 41690); the same locality, growing together with *Cladonia* sp. (163446) (KoLRI 41691); the same locality, (163447) (KoLRI 41692); the same locality, (163448) (KoLRI 41693); the same locality, (163449) (KoLRI 41694); the same locality, growing together with *Cladonia* sp. (163450) (KoLRI 41695); the same locality, (163451) (KoLRI 41696). – It was recently reported from South Korea at four localities in Gyeongsangbuk-do, Gyeongsangnam-do, and Chuja-do Island (Kondratyuk *et al.* 2015*c*, 2016*a*). Now it seems to be widespread in Korea.

****Dictyocatenulata alba*** Finley et E. F. Morris – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Mt Halla, Yeongsil Trail. Lat.: 33° 21′ 19.11″ N; Long.: 126° 29′ 58.63″ E; Alt.: 1,353 m a.s.l. Coll.: Halda, J. P., Oh, S.-O. and Liu, D. (151593), 21.07.2015 (KoLRI 035286). – New to Korea! – Note: Easily recognisable hyphomycetous lichen species by the characteristic stipitate cream synnemata. Known from Canada, the USA, Cuba, Panama, India and Japan (Diederich *et al.* 2008). Usually it grows on bark of deciduous trees, but it was observed also on rocks. *Cheiromycina globosa* differs with unicellular, globose conidia; *Dictyocatenulata alba* has distinct synnemata of a variable height and muriform conidia.

! Endococcus xanthoparmeliae Y. Joshi, S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangnam-do: Namhae-gun, Nam-myeon, Honghyeon-ri, Haebyeon, on siliceous rock, on *Xanthoparmelia coreana* dam-

aged by *Lichenostigma* too, growing together with *Pertusaria flavicans*, *Caloplaca subconcilians*. Lat.: 34° 43′ 30.90″ N; Long.: 127° 53′ 40.68″ E; Alt.: *ca* 16 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110242), 28.04.2011 (KoLRI 013456 sub *Pertusaria flavicans*). – Jeollanam-do: Jangheung-gun, Gwansan-eup, Okdang-ri, Cheongwansan Mts, along the tourist track No. 2, on siliceous rock, on *Xanthoparmelia coreana* thalli. Lat.: 34° 32′ 34.31″ N; Long.: 126° 55′ 21.61″ E; Alt.: 390 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150312), 23.06.2015 (KoLRI 033907). – It was described recently from South Korea from Cheju-do and Chuja-do islands (Joshi *et al.* 2015). Two mainland localities are added.

Fellhanera subtilis (Vězda) Diederich et Sérus. – Republic of Korea. Jeollanam-do: Hwasun-si, Iseo-myeon, on bark. Lat.: 35° 06′ 58.65″ N; Long.: 127° 05′ 15.93″ E; Alt.: *ca* 354 m a.s.l. Coll.: Lee, B. G. and Woo, J.-J., 13.05.2016 (KoLRI, Forest project 2016). – It was reported from South Korea recently from Cheju-do Island (Aptroot and Moon 2014, Kondratyuk *et al.* 2015*a*).

Fuscidea coreana S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Sinyang-1-ri, around grave of Hwangkyeonghan, on siliceous rock. Lat.: 33° 56′ 50.4″ N; Long.: 126° 20′ 21.05″ E; Alt.: 116 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140998), 21.06.2014 (KoLRI 023554 sub *Buellia spuria*). – Jeollanam-do: Sinan-gun, Haui-myeon, Haui-do Island, Unggok-ri, seaside, on siliceous rock. Lat.: 34° 36′ 07.07″ N; Long.: 126° 00′ 52.02″ E; Alt.: 20 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130683), 28.06.2013 (KoLRI-019028 sub *Pertusaria subobductans*). – Jeollanam-do: Sinan-gun, Palgeum-myeon, Palgeum-do Island, on siliceous rock, growing together with *Catillaria* sp. Lat.: 34° 47′ 05.03″ N; Long.: 126° 08′ 06.92″ E; Alt.: 1 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110387), 02.06.2011 (KoLRI 012940 sub *Fuscidea*). – Jeollanam-do: Wando-gun, Bogil-do Island, Bogil-myeon, Buhwang-ri, Mt Gyeokja, from Keungiljiae to Suribong, on siliceous rock, growing together with *Halecania subalpivaga*. Lat.: 34° 08′ 34.3″ N; Long.: 126° 33′ 25.7″ E; Alt.: *ca* 255 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100087), (KoLRI 011583); the same locality, (100089), (KoLRI 011585). – Jeollanam-do: Yeosu-si, Hwayang-myeon, Imok-ri, Baelga coast, on siliceous rock, growing together with *Aspicilia*. Lat.: 34° 39′ 00.26″ N; Long.: 127° 34′ 05.67″ E; Alt.: 12 m a.s.l. Coll.: Jayalal, U., Park J. S. and Ryu, J. A. (120701), 28.04.2012 (KoLRI 015696 sub *Aspicilia*). – Several new, South Korean localities are added for the recently described species (Kondratyuk *et al.* 2015*b*, 2016*a*, *b*).

****Fuscopannaria dissecta*** P. M. Jørg. – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Mt Halla, Yeongsil Trail. Lat.: 33° 21′ 12.19″ N; Long.: 126° 29′ 51.54″ E; Alt.: 1,308 m a.s.l. Coll.: Halda, J. P., Oh, S.-O. and Liu, D. (151679, 151681, 151695), 21.07.2015 (KoLRI 035372, KoLRI 035374, KoLRI 035388). – New to Korea! – Note: Easily recognisable species by pale brown, widespreading, irregular patches consisting of deeply dissected squamules.

Known only from Japan (Jørgensen 2000). It grows on debris in moist localities at high altitudes. *F. laceratula* differs in not white pruinose lobe margins and absence of terpenoids and fatty acids.

Gyalidea austrocoreana S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, in front of Tonggumi mongdol Beach), on rock, growing together with *Flavoplaca laszloana*, *Acarospora ulleungdoensis*, *Buellia* sp., *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 33.1″ N; Long.: 130° 52′ 05.5″ E; Alt.: *ca* 4 m a.s.l., Coll.: Kondratyuk, S. Y. and Lőkös, L. (161975), 10.07.2016 (KoLRI 040212); Gyeongsangbuk-do: Ulleung-do Island, Ulleung-do, Seo-myeon, Namyang-ri, on rock. Lat.: 37° 29′ 31.9″ N; Long.: 130° 53′ 07.3″ E; Alt.: *ca* 576 m a.s.l. Coll.: Lee, B. G. (162781), 08.07.2016 (KoLRI 041019). – Jeju-do: Jeju-do Island, Seogwipo-si, Namwon-eup, Wimi-ri, on rock, growing together with *Endocarpon* sp. Lat.: 33° 16′ 13,3″ N; Long.: 126° 39′ 30.0″ E; Alt.: *ca* 10 m a.s.l. Coll.: Hur, J.-S., Wang, X. Y. and Joshi, Y. (091405), 29.05.2009 (KoLRI 011048 sub *Gyalidea*). – It was recently described from type locality i.e.: Republic of Korea. Jeollanam-do Prov., Goheung-gun Co., Bongnae-myeon, Queinaro-do (Wenaro) Island, Mt Bongra (Kondratyuk *et al.* 2016*b*). Additional localities are provided.

! Halecania santessonii M. P. Andreev – Republic of Korea. Gangwon-do: Yanggu-gun, Nam-myeon, on siliceous rock, on thalli of *Porpidia albocaerulescens*. Lat.: 38° 01′ 54.35″ N; Long.: 128° 00′ 08.38″ E; Alt.: *ca* 577 m a.s.l. Coll.: Park, J. S. and Liu, D. (loc. 9), 11.06.2016 (KoLRI, Forest project 2016). – It was reported from South Korea recently from several localities (Kondratyuk *et al.* 2016*b*).

Halecania subalpivaga S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gangwon-do: Chuncheon-si, Buksan-myeon, Mt Maebong, Jogyo-ri, on rock, growing together with *Scoliciosporum umbrinum*. Lat.: 37° 54′ 55.4″ N; Long.: 127° 58′ 29.2″ E; Alt.: *ca* 606 m a.s.l. Coll.: Wang, X. Y., Jeon, H. S., Lü, L. and Ryu, J. A. (100679), 26.05.2010 (KoLRI 012409 sub *Pertusaria*). – Gangwon-do: Yangyang-gun, Seo-myeon, Galjeongokbong, on siliceous rock. Lat.: 37° 52′ 52.80″ N; Long.: 128° 26′ 50.94″ E; Alt.: *ca* 1,101 m a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Ryu, J. A. (090623), 22.05.2009 (KoLRI 010294 sub *Aspicilia*). – Gyeongsangnam-do: Hamyang-gun, Seosang-myeon, Mt Baekun, on siliceous rock, growing together with *Polysporina* cf. *golubkovae*. Lat.: 35° 36′ 20.10″ N; Long.: 127° 39′ 39.48″ E; Alt.: *ca* 917 m a.s.l. Coll.: Wang, X. Y., Jeon, H. S. and Han, G. S. (100381), 24.06.2010 (KoLRI 012024 sub *Aspicilia*). – Jeollanam-do: Gurye-gun, Masan-myeon, Jiri Mts, Nogodan-Yeonhaceon, on siliceous rock, growing together with *Pertusaria subobductans* and *Agonimia* aff. *blumii*. Lat.: 35° 17′ 50.34″ N; Long.: 127° 33′ 11.88″ E; Alt.: *ca* 1,364 m a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Hur, J. Y. (091092), 13.10.2009 (KoLRI 011144 sub *Pertusaria*

subobductans). – Jeollanam-do: Jangheung-gun, Gwansan-eup, Okdang-ri, Cheongwansan Mts, along the tourist track No. 2, on siliceous rock. Lat.: 34° 32′ 26.63″ N; Long.: 126° 55′ 13.67″ E; Alt.: 456 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150318), 23.06.2015 (KoLRI 033913 sub *Aspicilia*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Buhwang-ri, Mt Gyeokjasan, between Keungiljae and Suribong, on siliceous rock. Lat.: 34° 08′ 38.76″ N; Long.: 126° 33′ 0.18″ E; Alt.: *ca* 289 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100099), 05.02.2010 (KoLRI 011595 sub *Pertusaria subobductans*). – Jeollanam-do: Wando-gun, Saengil-myeon, Saengil-do Island, Geumgok beach coast, on siliceous rock. Lat.: 34° 20′ 02.02″ N; Long.: 126° 57′ 51.02″ E; Alt.: 7 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120205), 18.04.2012 (KoLRI 014800 sub *Aspicilia* cf *caesiocinerea*). – It was described recently from South Korea from the Cheongwansan Mts (Kondratyuk *et al.* 2015*b*, 2016*a*). Several additional records are added.

Ivanpisutia oxneri S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongbuk-do: Goesan-gun, Cheongcheon-myeon, on bark. Lat.: 36° 39′ 51.56″ N; Long.: 127° 42′ 57.12″ E; Alt.: *ca* 205 m a.s.l. Coll.: Lee, B. G. and Woo, J.-J. (loc. 13), 18.06.2016 (KoLRI, Forest project 2016). – Gangwon-do: Chuncheon-si, Namsan-myeon, Mt Gunbong, on bark. Lat.: 37° 14′ 12.7″ N; Long.: 129° 17′ 41.4″ E; Alt.: 216 m a.s.l. Coll.: Lee, B. G. (152129), 11.07.2015 (KoLRI 035137 sub *Lecanora*). – Gangwon-do: Chuncheon-si, Namsan-myeon, Mt Gunbong, on bark (*Cornus controversa*). Lat.: 37° 14′ 09.7″ N; Long.: 129° 17′ 22.9″ E; Alt.: 308 m a.s.l. Coll.: Lee, B. G. (152145), 11.07.2015 (KoLRI 035154 sub *Lecanora*). – Gangwon-do: Yangyang-gun, Seo-myeon, Hwangi-ri, Mt Jobong, on bark. Lat.: 37° 56′ 06.42″ N; Long.: 128° 33′ 44.82″ E; Alt.: *ca* 980 m a.s.l. Coll.: Joshi, Y., Wang, X. Y., Ryu, J. A. and Hur, J. Y. (090309), 14.05.2009 (KoLRI 010044 sub *Biatora longispora*). – Jeollabuk-do: Jinan-gun, Sungsu-myeon, on bark. Lat.: 35° 41′ 33.54″ N; Long.: 129° 21′ 12.75″ E; Alt.: 725 m a.s.l. Coll.: Lee, B. G. [‘Jinan 10’] and Woo, J.-J., 22.05.2016 (KoLRI). – Jeollabuk-do: Muju-gun, Seolcheon-myeon, Mt Deogyusan, on bark, growing together with *Rinodina* and *Pertusaria* spp. and *Lecanora imshaugii*. Lat.: 35° 48′ 01.7″ N; Long.: 127° 43′ 29.2″ E; Alt.: *ca* 1,437 m a.s.l. Coll.: Hur, J.-S. (060556), 10.08.2006 (KoLRI 004928 sub *Lecanora imshaugii*). – It was recently reported from South Korea from several localities (Kondratyuk *et al.* 2015*b*, 2016*a*).

Lecanactis subdilleniana S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, between Naesujeon and Soekpo waterfall, at a rockwall, on siliceous rocks. Lat.: 37° 31′ 19.51″ N; Long.: 130° 54′ 16.03″ E; Alt.: 415 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161766), 09.07.2016 (KoLRI 039984). – Jeollanam-do: Jangheung-gun, Gwansan-eup, Okdang-ri, Cheongwansan Mts, along the tourist track No. 2, on siliceous rocks. Lat.: 34° 32′ 22.93″ N; Long.: 126° 55′

11.16″ E; Alt.: *ca* 495 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150382), 23.06.2015 (KoLRI 033977 sub *Pertusaria flavicans*). – It was reported from South Korea from the Cheongwansan Mts and from Chuja-do Island (Kondratyuk *et al.* 2015*b*, 2016*a*).

Lecania rinodinoides S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangnam-do: Sancheong-gun, Sancheong-eup, along the tourist path to Ungseokbong, on siliceous rock, growing together with *Rinodina* aff. *fimbriata*. Lat.: 35° 22′ 51.15″ N; Long.: 127° 52′ 32.56″ E; Alt.: *ca* 270 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150220, 150221), 22.06.2015 (KoLRI 033815, KoLRI 033816 sub *Buellia* sp.). – It was described from a collection from Anjoa-do Island (Jeollanam-do, Sinan-gun, South Korea), then it was reported from several localities (Kondratyuk *et al.* 2013*a*, 2015*a*, *b*, 2016*a*, *b*). It seems to be widely distributed in Korea.

Lecanora layana Lendemer – Republic of Korea. Gangwon-do: Jeongseon-gun, Gangneung-si, tourist pass toward peak Seokbeongsan, on bark of *Quercus mongolica*, growing together with *Rinodina* sp. Lat.: 37° 34′ 36.55″ N; Long.: 128° 51′ 47.16″ E; Alt.: *ca* 840 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151050), 10.07.2015 (KoLRI 034283 sub *Phaeophyscia adiastola* damaged by *Taeniolella*). – Additional South Korean record for a recently reported species (Kondratyuk *et al.* 2016*b*).

****Lecanora ussuriensis*** S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Jeodong-ri, Jeodong tunnel coastal cliff, on rock, growing together with *Lecanora polytropa*, *Caloplaca* sp. Lat.: 37° 31′ 16.3″ N; Long.: 130° 54′ 37.8″ E; Alt.: *ca* 25 m a.s.l. Coll.: Lee, B. G. (162782), 09.07.2016 (KoLRI 041020); the same locality, growing together with *Lecanora polytropa* and *Caloplaca* aff. *diffluens*, (162792) (KoLRI 041030 sub *Lecanora polytropa*); the same locality, (162796) (KoLRI 041034). – New to Korea! Recently described from Russian Far East (Kondratyuk *et al.* 2014*b*).

****Lecidella*** aff. ***carpathica*** Körb. – Republic of Korea. Jeollanam-do: Suncheon-si, Yongdang-dong, Mt top behind the artificial lake, growing on siliceous rock together with *Absconditella baegasanensis*. Lat.: 34° 58′ 20.69″ N; Long.: 127° 30′ 02.58″ E; Alt.: 194 m a.s.l. Coll.: Kondratyuk, S. Y. (164032),17.12.2016 (KoLRI 042300 sub *Lecidella*). – New to Korea!

Lecidella oceanica L. L. Zhang et X. Y. Wang – China. Liaoning province: Dalian county, Lvshun city, Dongjia village, on siliceous rock. Lat.: 38° 56′ 58.1″ N; Long.: 121° 07′ 44.3″ E; Alt.: *ca* 52 m a.s.l. Coll.: Oh, S.-O. and Hur, J.-S. (CH-120075), 27.07.2012 (KoLRI 016685 sub *Lecidella*). – It was reported from China recently (Zhao *et al.* 2015).

****Lemmopsis arnoldiana*** (Hepp) Zahlbr. – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along riv-

er, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163014), 16.09.2016 (KoLRI 041252); the same locality, growing together with *Pterygiopsis* aff. *affinis* (163024), 16.09.2016 (KoLRI 041262); the same locality, (163025), 16.09.2016 (KoLRI 041263). – New to Korea and new to Asia!

! Leptosphaeria crozalsii Vouaux – Republic of Korea. Gyeongsangnam-do: Sancheong-gun, Sancheong-eup, along the tourist path to Ungseokbong, on siliceous rock, growing together with *Lecania rinodinoides*, *Verrucaria fuscella*. Lat.: 35° 22′ 51.15″ N; Long.: 127° 52′ 32.56″ E; Alt.: *ca* 270 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (150221) 22.06.2015 (KoLRI 033816 sub *Rinodina* aff. *fimbriata*). – New to Korea! After Navarro-Rosines (unpublished) this taxon requires the transfer into *Pyrenidium*. However, from our observation *L. crozalsii* has concolourous dark brown ascospores (not *Pyrenidium*-type of ascospores).

! Lichenochora obscuroides (Linds.) Triebel et Rambold – Republic of Korea. Chungcheongbuk-do: Yeongdong-gun, Sangchon-myeon, Gungchon-ri, on bark (*Quercus*), on *Phaeophyscia*, growing together with *Coenogonium luteum*. Lat.: 36° 06′ 16.5″ N; Long.: 127° 58′ 00.7″ E; Alt.: 888 m a.s.l. Coll.: Woo, J.-J., Park, G. S. and Oh, S.-O. (150523), 02.07.2015 (KoLRI 035842 sub *Coenogonium luteum*). – Gangwon-do: Jeongseon-gun, Gangneung-si, tourist pass toward peak Seokbeongsan, on bark of *Quercus mongolica*, growing on *Phaeophyscia adiastola*. Lat.: 37° 34′ 36.55″ N; Long.: 128° 51′ 47.16″ E; Alt.: *ca* 840 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151091), 10.07.2015 (KoLRI 034324 sub *Phaeophyscia adiastola*). – Gangwon-do: Yangyang-gun, Seomyeon, Hwangi-ri, Mt Jobong, on bark, on thalli of *Phaeophyscia*, growing together with *Pertusaria ophthalmiza*, *Candelaria concolor*, *Agonimia* sp. Lat.: 37° 56′ 06.42″ N; Long.: 127° 33′ 44.82″ E; Alt.: 980 m a.s.l. Coll.: Joshi, Y., Wang, X. Y., Ryu, J. A. and Hur, J. Y. (090242), 14.05.2009 (KoLRI 009997 sub *Pertusaria ophthalmiza*). – It was reported from several localities in South Korea (Kondratyuk *et al*. 2013*a*).

! Lichenoconium cf. ***erodens*** M. S. Christ et D. Hawksw. – China. Daxinganling, Heihe county, Mt Xifeng, on *Betula* bark, growing on *Lecanora* cf. *symmicta* growing together with *Melanelia* sp. Lat.: 50° 30′ 4.26″ N; Long.: 126° 50.524′E; Alt.: *ca* 421 m a.s.l. Coll.: Hur, J.-S. and Wang, X. Y. (CH-090284), 17.08.2009 (KoLRI 010898 sub *Lecanora*). – It was reported from China from several localities in Yunnan (Hawksworth and Cole 2003).

! Lichenodiplis lecanorae (Vouaux) Duko et D. Hawksw. – Republic of Korea. Gyeongsangbuk-do: Uljin-gun, Giseong-myeon, Mangyang 1-gil, seashore rocks, on granitic rock, growing on *Lecanora* aff. *ussuriensis*. Lat.: 36° 50′ 05.29″ N; Long.: 129° 26′ 35.54″ E; Alt.: *ca* 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151436), 12.07.2015 (KoLRI 034669). – It was recently reported

from South Korea from Heuksan-do and Sinui-do islands (Kondratyuk *et al.* 2013*a*, 2016*a*).

! Lichenostigma alpinum (R. Sant., Alstrup et D. Hawksw.) Ertz et Diederich (= *Phaeosporobolus alpinum*) – Republic of Korea. Gangwon-do: Hongcheon-gun, Nae-myeon, Mt Eungboksan, Tongbaram Valley, on siliceous rock. Lat.: 37° 51′ 42.06″ N; Long.: 128° 31′ 29.34″ E; Alt.: *ca* 730 a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Ryu, J. A. (090689), 23.05.2009 (KoLRI 010358 sub *Ochrolechia parellula*). – Gyeongsangnam-do: Hadong-gun, Hwagae-myeon, Jiri Mts, Byeoksoryeong-Seseok, on siliceous rock. Lat.: 35° 19′ 40.74″ N; Long.: 127° 39′ 31.32″ E; Alt.: *ca* 1,346 m a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Hur, J. Y. (091361), 15.10.2009 (KoLRI 011289 sub *Ochrolechia parellula*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Sinyang-1-ri, around grave of Hwangkyeonghan, on siliceous rock. Lat.: 33° 56′ 50.4″ N; Long.: 126° 20′ 21.05″ E; Alt.: 116 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (141002), 21.06.2014 (KoLRI 023558 sub *Pertusaria*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, road of Mt Sindea observatory, on siliceous rock, on *Pertusaria*. Lat.: 33° 57′ 09.9″ N; Long.: 126° 20′ 13.08″ E; Alt.: 56 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Hur, J.-S. (141028), 21.06.2014 (KoLRI 023584 sub *Ochrolechia parellula*). – Jeollanam-do: Gurye-gun, Masan-myeon, Jiri Mts, Nogodan-Yeonhaceon, on siliceous rock, growing together with *Halecania subalpivaga*. Lat.: 35° 17′ 50.34″ N; Long.: 127° 33′ 11.88″ E; Alt.: *ca* 1,364 m a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Hur, J. Y. (091074), 13.10.2009 (010542 sub *Ochrolechia parellula*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Buhwang-ri, Mt Gyeokjasan, between Keungiljae and Suribong, on siliceous rock, on thalli of *Pertusaria*, growing together with *Porpidia* sp. and *Ochrolechia parellula*. Lat.: 34° 08′ 36.83″ N; Long.: 126° 32′ 18.50″ E; Alt.: *ca* 314 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100114), 05.02.2010 (KoLRI 011609 sub *Ochrolechia*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Yesong-ri, Mt Gyeokjasan, between Keungiljae and Suribong, on siliceous rock, on *Pertusaria subobductans*, growing together with *Ochrolechia* partly damaged by *Lichenostigma*. Lat.: 34° 08′ 33.20″ N; Long.: 126° 33′ 23.58″ E; Alt.: *ca* 289 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100092), 05.02.2010 (KoLRI 011588 sub *Pertusaria subobductans*). – Jeollanam-do: Wando-gun, Cheongsan-myeon, Cheongsan-do Island, Eup-ri, on siliceous rock. Lat.: 34° 09′ 11.22″ N; Long.: 126° 52′ 49.26″ E; Alt.: *ca* 2 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110733), 23.06.2011 (013758 sub *Ochrolechia parellula*). – Jeollanam-do: Wando-gun, Saengil-myeon, Saengil-do Island, Geumgok-ri coast, on siliceous rock. Lat.: 34° 20′ 02.02″ N; Long.: 126° 57′ 51.02″ E; Alt.: 7 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120202), 18.04.2012 (014797 sub *Ochrolechia parellula*). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on rock, growing together with *Marfloraea amara*. Lat.: 34° 00′ 38.2″ N; Long.: 127° 19′

07.5″ E; Alt.: *ca* 10 m a.s.l. Coll.: Hur, J.-S. (070117), 24.03.2007 (KoLRI 007104 sub *Marfloraea* (*Pertusaria*) *amara*). – It was recently reported from South Korea from Bogil-do Island (Kondratyuk *et al.* 2016*a* as *Phaeosporobolus alpinum*).

***! Lichenostigma** cf. **bolacinae** Nav.-Ros., Calat. et Hafellner – Republic of Korea. Jeju-do: Jeju-si, Chuja-do, Chuja-myeon, Sinyang-1-ri, seashore of Mojini-mongdol, on siliceous rock, on *Brownliella kobeana* thalli. Lat.: 33° 56′ 44.9″ N; Long.: 126° 20′ 03.01″ E; Alt.: *ca* 57 m a.s.l. Coll.: Kondratyuk, S. Y. (SK-07) and Lőkös, L. (140916), 21.06.2014 (KoLRI 023444 sub *Brownliella kobeana*); the same locality, in thallus of *Brownliella kobeana*, growing together with *Xanthoparmelia coreana* and *Buellia spuria* (140926-3) (KoLRI 023461 sub *Brownliella kobeana*); the same locality, growing together with *Loekoesia austrocoreana*, *Aspicilia* sp. and *Buellia spuria*). Coll.: Joshi, Y. and So, J.-E. (140948) (KoLRI 023489 sub *Brownliella kobeana*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Jeongdong-ri seaside, on rock, in thallus of *Brownliella kobeana*, growing together with *Diploschistes*, *Xanthoparmelia saxeti*. Lat.: 34° 10′ 04.1″ N; Long.: 126° 31′ 00.8″ E; Alt.: *ca* 11 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100256-1), 05.02.2010 (KoLRI 011765 sub *Brownliella kobeana*). – New to Korea! *Brownliella kobeana* is for the first time recorded as host for this lichenicolous fungus.

! Lichenostigma cosmopolites Hafellner et Calat. – Republic of Korea. Jeollanam-do: Goheung-gun, Geumsanmyeon, Geogeum-do Island, Sinpyeong-ri coast, on siliceous rock, on *Xanthoparmelia coreana*, growing together with *Buellia stellulata*, *Jasonhuria bogilana*, *Aspicilia* sp., and *Polycoccum rubellianae*. Lat.: 34° 28′ 30.4″ N; Long.: 127° 14′ 03.6″ E; Alt.: 1 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120073), 17.04.2012 (KoLRI 140666 sub *Buellia stellulata*). – Jeollanam-do: Sinan-gun, Sinui-myeon, Sinui-do Island, on siliceous rock, on *Xanthoparmelia coreana*. Lat.: 34° 32′ 25.05″ N; Long.: 126° 01′ 59.05″ E; Alt.: 57 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130634), 28.06.2013 (KoLRI 018979 sub *Aspicilia*). – It was recently reported from South Korea from Cheju-do Island (Joshi *et al.* 2015) and from Mt Bannonsan (Gangwon-do) (Kondratyuk *et al.* 2016*a*).

***! Lichenostigma** aff**. rupicolae** Fern.-Brime et Nav.-Ros. – Republic of Korea. Jeju-do: Jeju-si, Chuja-do, Chuja-myeon, Sinyang-1-ri, seashore of Mojini-mongdol, on siliceous rock, in thallus of *Pertusaria astomoides*, growing together with *Pertusaria astomoides*, *Buellia* sp. and *Ramalina* sp. Lat.: 33° 56′ 44.9″ N; Long.: 126° 20′ 03.01″ E; Alt.: *ca* 57 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140956), 21.06.2014 (KoLRI 023499 sub *Pertusaria subobductans*). – Jeollabuk-do: Jeongeup-si, Naejang-dong, Naejang Mt, on rock, in thallus of *Rimularia* sp. Lat.: 35° 29′ 38.2″ N; Long.: 126° 54′ 39.27″ E; Alt.: *ca* 565 m a.s.l. Coll.: Hur, J.-S. (050024), 08.01.2005 (KoLRI 002927 sub *Rimularia* sp.). – Jeollanam-do: Sinan-gun, Hauido, Haui-myeon, Unggok-ri seaside, on siliceous rock, in

thallus of *Pertusaria astomoides*. Lat.: 34° 36′ 07.07″ N; Long.: 126° 00′ 52.02″ E; Alt.: *ca* 20 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130683), 28.06.2013 (KoLRI 019028 sub *Pertusaria astomoides*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Buhwang-ri, Mt Gyeokjasan, between Keungiljae and Suribong, on siliceous rock, in thallus of *Pertusaria subobductans* growing together with *Phaeosporobolus alpinum*. Lat.: 34° 08′ 33.2″ N; Long.: 126° 33′ 23.6″ E; Alt.: *ca* 289 m a.s.l. Coll.: Joshi, Y., Jeon, H. S. and Jeong, M.-H. (100092), 05.02.2010 (KoLRI 011588 sub *Pertusaria subobductans*). – Jeollanam-do: Wando-gun, Bogil-myeon, Bogil-do Island, Buhwang-ri, on rock. Lat.: 34° 09′ 16.5″ N; Long.: 126° 34′ 44.4″ E; Alt.: *ca* 3 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110638), 22.06.2011 (KoLRI 013666 sub *Pertusaria astomoides*). – New to Korea!

****Lichinella cribellifera*** (Nyl.) P. P. Moreno et Egea – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163014), 16.09.2016 (KoLRI 041252). – New to Korea!

****Lichinella iodopulchra*** (Croz.) P. P. Moreno et Egea – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163010), 16.09.2016 (KoLRI 041248). – New to Korea!

****Lichinella*** aff. ***myriospora*** (Zahlbr.) P. P. Moreno et Egea – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, seashore rocks, on basalt, growing together with *Candelariella*. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161908), 10.07.2016 (KoLRI 040145); the same locality, (161924) (KoLRI 040161 sub *Candelariella*). – New to Korea!

****Lichinella stipatula*** Nyl. – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163014), 16.09.2016 (KoLRI 041252). – New to Korea!

Loekoesia austrocoreana (S. Y. Kondr., L. Lőkös et J. S. Hur) S. Y. Kondr., J. Kim, A. S. Kondr., S.-O. Oh et J.-S. Hur – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Usil coastside road, on siliceous rock. Lat.: 34° 30′ 40.01″ N; Long.: 127° 46′ 38.07″ E; Alt.: 1 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120448, 120449), 26.04.2012 (KoLRI 015438, KoLRI 015439). – Additional South Korean record to the recently described species (Kondratyuk *et al.* 2013*b* as *Caloplaca austrocoreana*).

Maronea constans (Nyl.) Hepp – Republic of Korea. Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Song-

gwangsa Temple, along stream valley, on bark, growing together with *B. pseudosambuci*, *Biatora* sp., *Graphis*, *Rinodina* and *Phaeophyscia* sp. Lat.: 35° 00′ 10.7″ N; Long.: 127° 16′ 07.0″ E; Alt.: 80 m a.s.l. Coll.: Woo, J.-J. (164044), 16.12.2016 (KoLRI 042312 sub *Maronea*). – It was reported from South Korea at first by Aptroot and Moon (2014) from Cheju-do Island.

Melanophloea coreana S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongnam-do: Taean-gun, Anmyeon-eup, Anmyeon Island, Bangpo beach, on siliceous rock. Lat.: 36° 30′ 13.7″ N; Long.: 126° 20′ 06.6″ E; Alt.: 5 m a.s.l. Coll.: Hur, J.-S. (061243), 05.11.2006 (KoLRI 005631). – Gangwon-do: Chuncheon-si, Buksan-myeon, Jogyo-ri, Mt Maebong, on siliceous rock. Lat.: 37° 54′ 38.28″ N; Long.: 127° 58′ 54.48″ E; Alt.: *ca* 610 m a.s.l. Coll.: Wang, X. Y., Jeon, H. S., Lü, L. and Ryu, J. A. (100588), 26.05.2010 (KoLRI 012341 sub *Aspicilia*). – Gangwon-do: Samcheok-si, Geundeok-myeon, Gungchon-ri, Gungshon Seashore, on siliceous rock. Lat.: 37° 19′ 41.4″ N; Long.: 129° 16′ 21.1″ E; Alt.: 43 m a.s.l. Coll.: Park, J. S. (151831), (KoLRI 034834 sub *Lecanora* sp.). – Jeju-do: Cheju do Island, Seogwipo-si, Seongsan-eup, Goseong-ri, Seopjicoji, on siliceous rock. Lat.: 33° 19′ 21.0″ N; Long.: 126° 50′ 49.03″ E; Alt.: *ca* 69 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140502), 19.06.2014 (KoLRI 022902 sub *Ochrolechia*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, Mt Dondae, on siliceous rock. Lat.: 33° 56′ 53.9″ N; Long.: 126° 19′ 26.7″ E; Alt.: *ca* 164 m a.s.l. Coll.: Halda, J. (140825-1), 20.06.2014 (KoLRI 023311 sub *Aspicilia* sp.). – Jeollanam-do: Sinan-gun, Aphae-eup, Aphae-do Island, seaside, on siliceous rock. Lat.: 34° 54′ 27.4″ N; Long.: 126° 18′ 58.7″ E; Alt.: 8 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130374), 07.06.2013 (KoLRI 018719 sub *Aspicilia*). – Additional South Korean records to the recently described species (Kondratyuk *et al.* 2015*b*, 2016*b*).

****Melaspilea proximella*** (Nyl.) Nyl. – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Mt Hallasan, Hallasan National Park, Arail-dong, along Gwaneumsa Temple trail, along the tourist path, on bark (*Betula*). Lat.: 33° 22′ 42.9″ N; Long.: 126° 31′ 52.4″ E; Alt.: 1,452 m a.s.l. Coll.: Kondratyuk, S. Y., Oh, S.-O. and Kusama, Y. (121787), 08.08.2012 (KoLRI 017153 sub *Melaspilea*). – New to Korea! – Note: This species is still in need of the further collection. Our specimen differs in different host (vs. *Juniperus* bark). Additionally we have not observed polar flagella in young ascospores, which are characteristic for this species.

****Micarea alabastrites*** (Nyl.) Coppins – Republic of Korea. Jeju-do: Jeju-si, Nohyeong-dong, Temple Cheonwang, on siliceous rock, growing together with *Porina distans*. Lat.: 33° 24′ 39.4″ N; Long.: 126° 29′ 38.05″ E; Alt.: *ca* 681 m a.s.l. Coll.: Halda, J. P. (140740), 20.06.2014 (KoLRI 023199 sub *Micarea*). – New to Korea!

Micarea peliocarpa (Anzi) Coppins – Republic of Korea. Jeollabuk-do: Namwon-si, Ayeong-myeon, Gusang-ri, Mt Bonghwa, on bark (*Pinus*). Lat.: 35° 32′ 07.0″ N; Long.: 127° 34′ 16.4″ E; Alt.: 688 m a.s.l. Coll.: Woo, J.-J. and Oh, S.-O. (152200), 17.07.2015 (KoLRI 036123 sub *Biatora* sp.). – It was first reported from South Korea from Cheju-do Island (Kondratyuk *et al.* 2013*a*).

! Muellerella pygmaea (Körb.) D. Hawksw. var. ***pygmaea*** – Republic of Korea. Gyeonggi-do: Ansan-si, Danwon-gu, Daebudong-dong, Daebu-do Island, on siliceous rock, on *Pertusaria* thalli growing together with *Verrucaria*, *Pertusaria* sp. damaged by *Lichenostigma* and *Halecania* spp. Lat.: 37° 14′ 51.90″ N; Long.: 126° 28′ 56.46″ E; Alt.: 5 m a.s.l. Coll.: Wang, X. Y., Ryu, J. A. and Guo, W. (101272), 01.10.2010 (KoLRI 012656 sub *Pertusaria*). – Gyeonggi-do: Incheon, Ongjin-gun, Deokjeok-myeon, Deokjeok-do, Buk-ri, Neungdong seaside, on siliceous rock, on *Pertusaria subobductans* growing together with *Lecidella oceanica*. Lat.: 37° 15′ 52.06″ N; Long.: 126° 06′ 02.09″ E; Alt.: 20 m a.s.l. Coll.: Oh, S.-O. and Park, J. S. (130477), 14.06.2013 (KoLRI 018822 sub *Pertusaria subobductans*). – Gyeongsangbuk-do: Uljin-gun, Giseong-myeon, Mangyang 1-gil, seashore rocks, on granitic rock, growing on thallus of *Lecanora* aff. *ussuriensis*. Lat.: 36° 50′ 05.29″ N; Long.: 129° 26′ 35.54″ E; Alt.: *ca* 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151474), 12.07.2015 (KoLRI 034707 sub *Lecanora*). – Gyeongsangnam-do: Tongyeong-si, Yokji-myeon, Yokji-do Island, Seosan-ri, Udong beach, on siliceous rock, on thalli of *Pertusaria subobductans*. Lat.: 34° 37′ 05.07″ N; Long.: 128° 14′ 38.00″ E; Alt.: *ca* 8 m a.s.l. Coll.: Oh, S.-O., Jayalal, U., Park, J. S. and Ryu, J. A. (120876), 11.05.2012 (KoLRI 015874 sub *Pertusaria subobductans*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Sinyang-1-ri, around grave of Hwangkyeonghan, on siliceous rock, on *Pertusaria* growing together with *Mikhtomia multicolor*, and *Lecania* sp. Lat.: 33° 56′ 50.4″ N; Long.: 126° 20′ 21.05″ E; Alt.: 116 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Hur, J.-S. (140977), 21.06.2014 (KoLRI 023524 sub *Mikhtomia multicolor*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Sinyang-1-ri, seashore of Mojini-mongdol, on siliceous seashore rock, on *Pertusaria astomoides* growing together with *Mikhtomia multicolor*. Lat.: 33° 56′ 44.9″ N; Long.: 126° 20′ 03.01″ E; Alt.: *ca* 57 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140942), 21.06.2014 (023482 sub *Pertusaria astomoides*). – Jeju-do: Jeju-si, Chuja-do Island, Chuja-myeon, Yecho-ri, road of Mt Sindea observatory, on siliceous rock, on *Pertusaria subobductans* growing together with *Yoshimuria spodoplaca*, *Lecanora lojkahugoi*, *Mikhtomia multicolor*, *Rinodina* and *Lecanora*. Lat.: 33° 57′ 09.9″ N; Long.: 126° 20′ 13.08″ E; Alt.: 56 m a.s.l. Coll.: Joshi, Y. and So, J.-E. (140979-2), 21.06.2014 (KoLRI 023528 sub *Pertusaria subobductans*); the same locality, Coll.: Oh, S.-O., Park, J. S. and Hur, J.-S. (141024), 21.06.2014 (KoLRI 023580 sub *Pertusaria subobductans*). – Jeollanam-do: Sinan-gun, Bigeum-myeon Imja-do Island, nearby wharf Jinri, on siliceous rock, on *Pertusaria subobductans* damaged also by *Li-*

chenostigma. Lat.: 35° 05′ 21.1″ N; Long.: 126° 07′ 17.6″ E; Alt.: 11 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130242), 06.06.2013 (KoLRI 018587 sub *Pertusaria subobductans*). – Jeollanam-do: Sinan-gun, Palgeum-myeon, Palgeum-do Island, on siliceous rock, on *Pertusaria subobductans*. Lat.: 34° 47′ 08.39″ N; Long.: 126° 08′ 11.54″ E; Alt.: *ca* 1 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110391), 02.06.2011 (KoLRI 012943 sub *Pertusaria subobductans*). – Jeollanam-do: Yeosu-si, Samsan-myeon, Geomun-do Island, on siliceous rock. Lat.: 34° 00′ 39.2″ N; Long.: 127° 19′ 04.9″ E; Alt.: *ca* 8 m a.s.l. Coll.: Hur, J.-S. (070104), 24.03.2007 (KoLRI 007091 sub *Pertusaria astomoides*). – It was recently reported from South Korea from Yokji-do Island (Kondratyuk *et al.* 2016*a*).

Opegrapha briancoppinsii S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongbuk-do: Goesan-gun, Cheongcheon-myeon, on rock, on *Porpidia albocaerulescens*, growing together with *Porina* and green steril crust. Lat.: 36° 39′ 51.56″ N; Long.: 127° 42′ 57.12″ E; Alt.: *ca* 205 m a.s.l. Coll.: Lee, B. G. and Woo, J.-J. (loc. 4), 18.06.2016 (KoLRI, Forest project 2016); the same locality, *Porpidia albocaerulescens*, growing together with *Porina*, (loc. 5) (KoLRI, Forest project 2016). – The fourth South Korean record of the recently described species (Kondratyuk *et al.* 2016*b*).

Opegrapha calcarea Sm. – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Namseongjiung-ro, on siliceous rock. Lat.: 33° 13′ 56.1″ N; Long.: 126° 29′ 24.1″ E; Alt.: 13 m a.s.l. Coll.: Oh, S.-O. and Liu, D. (152539), 20.08.2015 (KoLRI 036761 sub *Lecanora*). – It was reported from South Korea by Kondratyuk *et al.* (2013*a*, 2016*a*).

! Opegrapha aff. ***thelotrematis*** Coppins – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Jeodong-ri, Jeongmae Hwagok shelter, on tree bark, growing on thallus of *Graphis* sp. Lat.: 37° 31′ 01.9″ N; Long.: 130° 54′ 08.7″ E; Alt.: 347 m a.s.l. Coll.: Park, J. S. (162170), 09.07.2016 (KoLRI 040408 sub *Graphis*). – New to Korea!

Opegrapha ulleungdoensis S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, coastal road cliff, on rock, growing together with *Caloplaca* sp. 99, *Caloplaca* sp. Lat.: 37° 32′ 29.6″ N; Long.: 130° 51′ 47.7″ E; Alt.: *ca* 13 m a.s.l. Coll.: Lee, B. G. (162742), 07.07.2016 (KoLRI 040980 sub *Opegrapha*); the same locality, growing together with *Yoshimuria galbina*, *Caloplaca* sp., *Orientophila fauriei*, *Lecanora* sp. and *Lecania* sp. (162738) (KoLRI 040976 sub *Opegrapha*). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, in front of Gwaneum island ticket box, mountain 1, on rock, growing together with *Catillaria ulleungdoensis* and *Lecania* sp. Lat.: 37° 32′ 29.0″ N; Long.: 130° 54′ 58.5″ E; Alt.: *ca* 13 m a.s.l. Coll.: Lee, B. G. (162748), 07.07.2016 (KoLRI 040986 sub *Lecania*). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Jeodong-ri, Jeodong tunnel coastal cliff, on rock. Lat.: 37° 31′ 16.3″ N; Long.:

130° 54′ 37.8″ E; Alt.: *ca* 25 m a.s.l. Coll.: Lee, B. G. (162803), 09.07.2016 (KoLRI 041041 sub *Opegrapha*). – It was described and reported recently from Ulleung-do Island, South Korea (Kondratyuk *et al.* 2016*b*).

Orientophila jungakimae S. Y. Kondr., S.-O. Oh et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, Dodong port, on rock. Lat.: 37° 28′ 59.9″ N; Long.: 130° 54′ 40.7″ E; Alt.: *ca* 20 m a.s.l. Coll.: Lee, B. G. (162853), 11.07.2016 (KoLRI 041091 sub *Orientophila*). – It was described and reported recently from the islands of the southern archipelago of South Korea (Kondratyuk *et al.* 2016*d*).

****Orientophila leucerythrella*** (Nyl.) S. Y. Kondr., L. Lőkös et J.-S. Hur, *comb. nova* (Figs 36–37) – MycoBank no.: MB 819943. – Basionym: *Lecanora leucerythrella* Nyl., Lich. Japon.: 38 (1890). ≡ *Caloplaca leucerythrella* (Nyl.) Zahlbr., Cat. Lich. Univers. 7: 155 (1930) [1931]. (As far original description of *Lecanora leucerythrella* was very poor Nylander (1890: 38) (measurements only for apothecia – up to 0.5 mm diam., and for ascospores (11–12 × 5–6 μm) were mentioned), we are including description of this taxon based on Korean specimens cited.)

Thallus (0.5–)1–1.5 cm across, probably may form larger aggregations, often more or less regularly rounded, dull light grey to dull whitish or whitish grey or dull grey yellowish owing to numerous yellow spots of juvenile apothecia and conidiomata, crustose, more or less evenly continuous to uneven, warty, sometimes with thicker portion, which seem to be separate areoles to 0.5 mm across, but deep cracks (to rock surface) not observed, to indistinctly cracked, some portions are thicker, some still very thin, but not areolate; with well contrasting dull yellow orange or dull orange apothecia. Hypothallus not observed.

Apothecia 0.2–0.4(–0.6) mm diam., in section to 0.2–0.28 mm thick, as juvenile immersed into the thallus, but soon becoming sessile, distinctly attenuated at the basis; disc plane or somewhat undulating, seem to be biatorine to zeorine or lecanorine, own margin to 40–60 μm thick often concolourous with disc, dull yellow orange, observed between greenish grey or whitish to dull whitish grey thalline margin, mostly seen at sides or on underside, and dull yellow orange or dull orange disc; thalline margin in zeorine apothecia better seen/better developed in cases, when apothecia are in some undulations or cracks of substrate; disc more or less plane or somewhat concave; in section thalline exciple to 70–80(–120) μm thick, better developed on underside, with cortical layer to 20 μm thick, somewhat indistinct paraplectenchymatous, algal zone with abundant number of algal cells to 60–70 μm thick, algal cells 8–17(–19) μm diam.; true exciple very thin in lateral portion to (20–)30–50(–70) μm thick in uppermost and to 15–20 μm thick in lower lateral portions, to (10–)15–25(–30) μm thick in basal portion of *Blastenia*-type, consisting of ra-

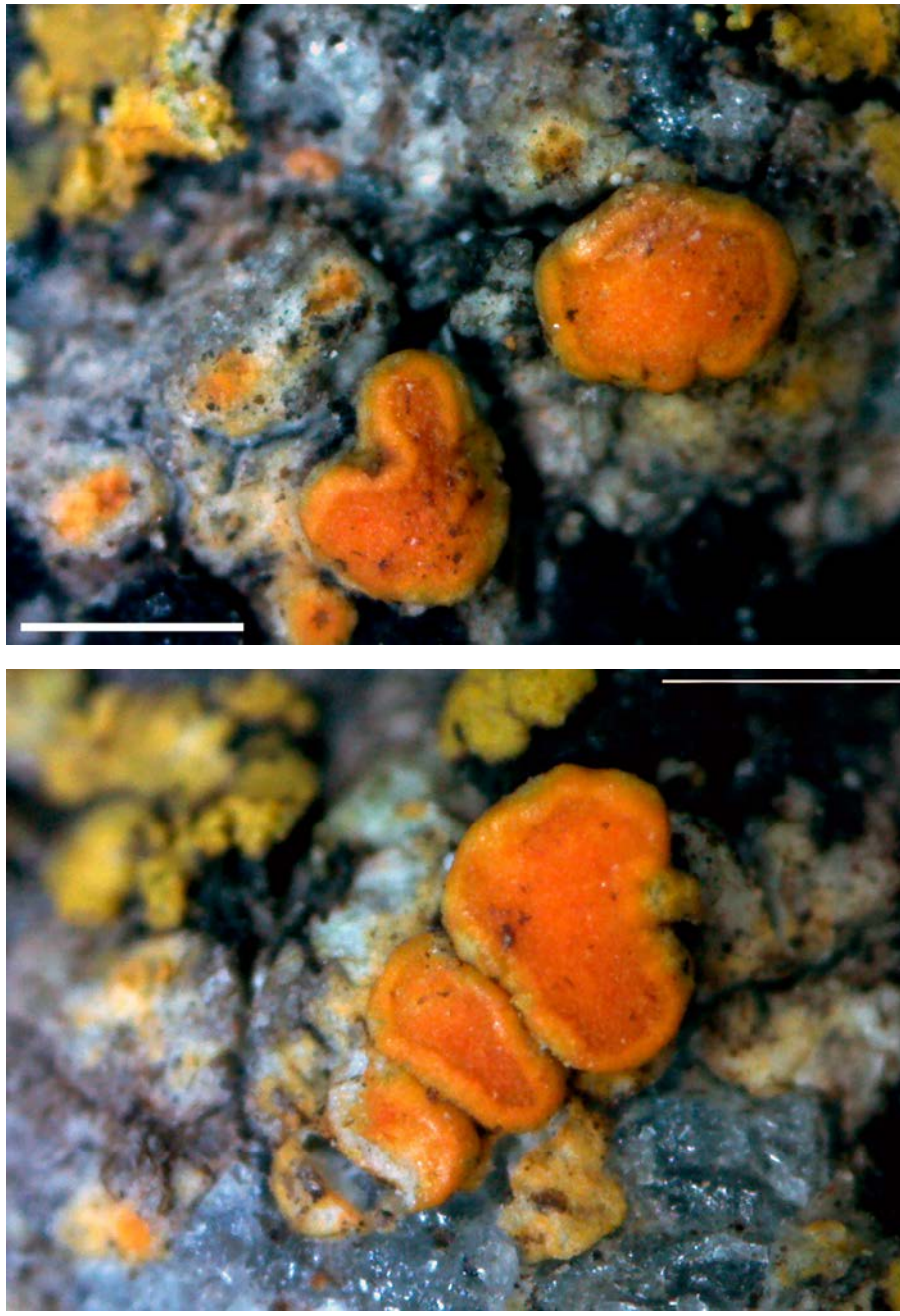

Fig. 36. Orientophila leucerythrella (KoLRI 161923) enlarged portions of thallus with apothecia. Scale 0.5 mm. (Photo of S. Kondratyuk)

diating hyphae or somewhat more gelatinised in lateral portion, scleroplectenchymatous with matrix and hyphae lumina 1–1.5 μm diam.; hymenium to 70–90 μm high, without oil droplets; paraphyses richly branched in the upper portions, tips to 4–5 μm diam. in water (and in K); subhymenium to 40–50(–80) μm thick, without oil droplets; paraphyses slightly swollen towards the tips, to 3–4 μm wide; asci 8-spored; ascospores usually very numerous, while young and sometimes undeveloped predominant, bipolar ascospores observed rarely, widely ellipsoid with rather narrow septum, (8–)11–13(–15) × (4–)5–6.5(–8) μm in water and, (7–)11–13(–15) × (4.5–)5.5–7(–8) μm in K (more

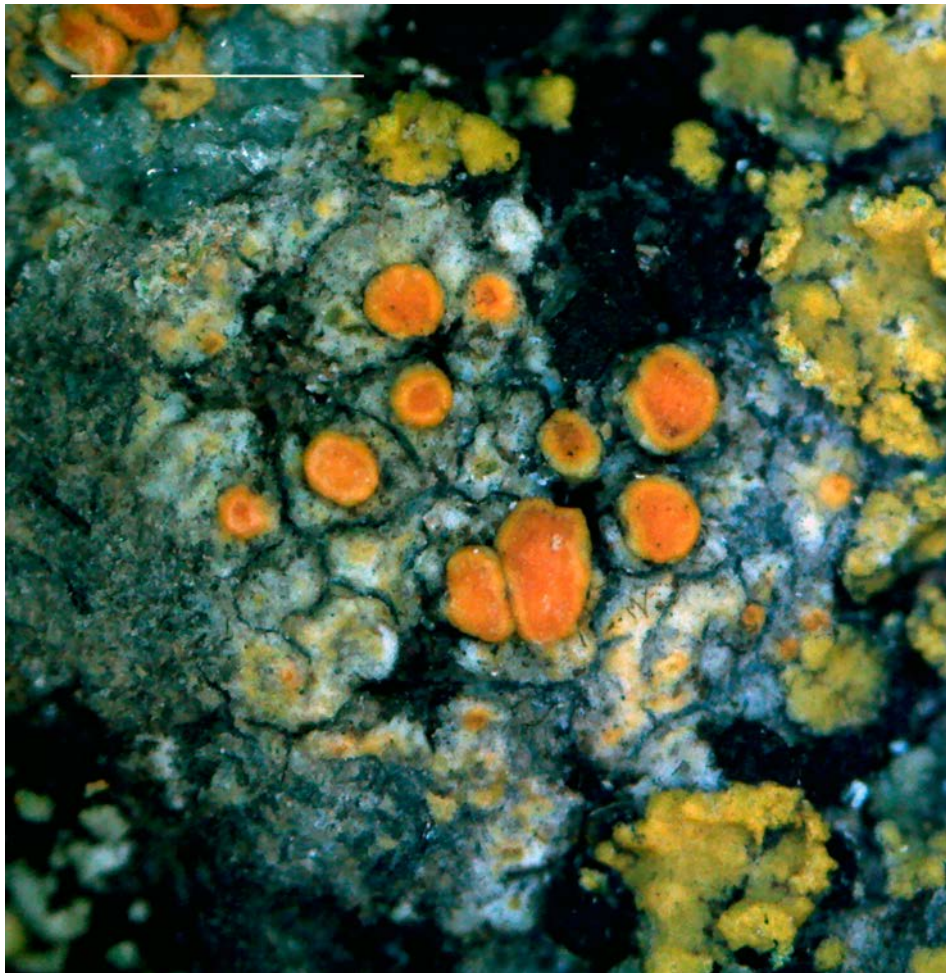

Fig. 37. Orientophila leucerythrella (KoLRI 161923) growing together with *Flavoplaca laszloana*, general habit. Scale 1 mm. (Photo of S. Kondratyuk)

than 75 measurements each); ascospore septum (2–)4–5(–5.5–8) μm in water and (3–)5–6.5(–7) μm wide in K. Conidiomata bright yellow, immersed in thallus; conidia narrowly bacilliform, 4.5–6 × 0.8–0.9 μm.

Chemistry: Epihymenium/whole hymenium, outermost portion of true exciple and cortical layer of thalline exciple K+ purple; cortical layer of thallus K+ more or less darker violetish purple.

Ecology: On siliceous rocks in coastal zones often growing among other crustose lichens, like *Flavoplaca laszloana*, *Rufoplaca kaernefeltiana*, and *Pyrenopsis chejudoensis*, as well as *Phaeophyscia* sp.

Distribution: So far known from scattered localities within the Eastern Asian region. It is for the first time recorded from Korea, while it was described from Japan.

Taxonomic notes: *Orientophila leucerythrella* is similar to *Caloplaca flavovirescens* (see also Kondratyuk *et al.* 2017) of the subfamily Caloplacoideae of the Teloschistaceae, but differs in having hymenium and subhymenium not inspersed with oil, and in having much smaller ascospores, as well as in positioning in the *Orientophila* branch of the subfamily Xanthorioideae of the Teloschistaceae. *Orientophila leucerythrella* is characterised also by rather long, narrowly bacilliform conidia, while data on conidia of *Caloplaca flavovirescens* are still missing.

It is interesting to note that not all young ascospores of *Orientophila leucerythrella* becoming bipolar in K. This phenomenon was observed for the first time in the member of Teloschistaceae.

Position of this taxon in the *Orientophila* clade of the subfamily Xanthorioideae of the Teloschistaceae is confirmed by seven voucher specimens (i.e.: nr. 161881 (DNA voucher SK G86), nr. 161883 (DNA voucher SK G88), nr. 161887 (DNA voucher SK G90), nr. 161888 (DNA voucher SK G91), nr. 161896 (DNA voucher SK G94), nr. 161898 (DNA voucher SK G95), and nr. 161907 (DNA voucher SK G99)) based on ITS phylogeny.

Specimens examined (see also ubder *Candelariella hakulinenii* and *Flavoplaca laszloana*): Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, seashore rocks, on basalt, growing together with *Flavoplaca laszloana* and *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161881), 10.07.2016 (KoLRI 040118 sub *Orientophila leucerythrella*; DNA voucher SK G86); the same locality, growing together with *Flavoplaca laszloana*, (161883), (KoLRI 040120 sub *Orientophila leucerythrella*; DNA voucher SK G88); the same locality, growing together with *Flavoplaca laszloana* and *Pyrenopsis chejudoensis*, (161887), (KoLRI 040124 sub *Orientophila leucerythrella*; DNA voucher SK G90); the same locality, growing together with *Pyrenopsis chejudoensis*, (161888), (KoLRI 040125 sub *Orientophila leucerythrella*;

DNA voucher SK G91); the same locality, growing together with *Flavoplaca laszloana* and *Pyrenopsis chejudoensis*, (161896) (KoLRI 040133 sub *Orientophila leucerythrella*; DNA voucher SK G94); the same locality, growing together with *Phaeophyscia* sp., *Flavoplaca laszloana* and *Pyrenopsis chejudoensis*, (161898), (KoLRI 040135 sub *Orientophila leucerythrella*; DNA voucher SK G95); the same locality, growing together with *Flavoplaca laszloana* and *Pyrenopsis chejudoensis*, (161907), (KoLRI 040144 sub *Orientophila leucerythrella*; DNA voucher SK G99).

Orientophila yokjidoensis S. Y. Kondr., S.-O. Oh et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, Dodong port, on rock, growing together with *Amandinea punctata*. Lat.: 37° 28′ 59.9″ N; Long.: 130° 54′ 40.7″ E; Alt.: *ca* 20 m a.s.l. Coll.: Lee, B. G. (162851), 11.07.2016 (KoLRI 041089 sub *Lecanora polytropa*). – It was described recently from scattered localities on islands in the southern archipelago of South Korea (Kondratyuk *et al.* 2016*d*).

****Pectenia plumbea*** (Lightf.) P. M. Jørg., L. Lindblom, Wedin et S. Ekman (= *Degelia plumbea* (Lightf.) P. M. Jørg. et P. James) – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Mt Halla, Yeongsil Trail. Lat.: 33° 21′ 12.19″ N; Long.: 126° 29′ 51.54″ E; Alt.: 1,308 m a.s.l. Coll.: Halda, J. P., Oh, S.-O. and Liu, D. (151673), 21.07.2015 (KoLRI 035366). – New to Korea! – Note: Easily recognisable species by monophyllous, blue-grey, plate-like thallus. Known from oceanic W Europe, Macaronesia, eastern N America, Asia, Africa. Overgrowing mosses on stones and trees. Easily recognised by the thick, monophyllous, placodioid, lead-blue, orbicular thallus. Sometimes it consists of small, often imbricate lobes. *P. atlantica* differs with fewer, flattened isidia. *P. ligulata* is characteristic by the less rounded and expanded schizidia.

****Placynthium tantaleum*** (Hepp) Hue – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, Jeongseon church, on calcareous rock. Lat.: 37° 22′ 17.3″ N; Long.: 128° 40′ 25.2″ E; Alt.: *ca* 319 m a.s.l. Coll.: Park, J. S., Woo, J.-J. and Lee, B. G. (152865), 06.09.2015 (KoLRI 037174); the same locality, growing together with *Caloplaca* sp. Coll.: Lee, B. G. (152783), 06.09.2015 (KoLRI 037770 sub *Caloplaca*). – New to Korea!

Polysporina golubkovae S. Y. Kondr., L. Lőkös, J. S. Park et J.-S. Hur – Republic of Korea. Gyeongsangnam-do: Hamyang-gun, Seosang-myeon, Mt Baekun, on siliceous rock, growing together with *Halecania subalpivaga* and *Aspicilia*. Lat.: 35° 36′ 20.10″ N; Long.: 127° 39′ 39.48″ E; Alt.: 917 m a.s.l. Coll.: Wang, X. Y., Jeon, H. S. and Han, G. S. (100381), 24.06.2010 (KoLRI 012024 sub *Aspicilia*); the same locality, (100418), 24.06.2010 (KoLRI 012045 sub *Aspicilia*). – It was recently described from two localities of South Korea (Kondratyuk *et al.* 2016*a*).

Porina distans Vězda et Vivant – Republic of Korea. Jeollanam-do: Suncheon-si, Sunchon, along Jobi-gil road, on siliceous rock, growing togeth-

er with *Dibaeis yurii*, and *Cladonia* sp. Lat.: 34° 58′ 29.62″ N; Long.: 127° 28′ 34.20″ E; Alt.: *ca* 71 m a.s.l. Coll.: Kondratyuk, S. Y. (163452), 09.10.2016 (KoLRI 041697); the same locality, growing together with *Dibaeis yurii*, (163453) (KoLRI 041698). – It was reported recently from Cheju-do Island and from Gangwon-do province, South Korea (Kondratyuk *et al.* 2015*a*, 2016*a*).

***Porpidia flavicunda** (Ach.) Gowan – Republic of Korea. Jeju-do: Seogwipo-si, Mt Halla, Yeongsil Trail, on rock. Lat.: 34° 21′ 34.26″ N; Long.: 126° 30′ 49.87″ E; Alt.: *ca* 1,670 m a.s.l. Coll.: Kondratyuk, S. Y., Lőkös, L., Oh, S.-O. and Joshi, S. (121809), 04.07.2012 (KoLRI 016745). – New to Korea!

Protoparmeliopsis chejuensis S. Y. Kondr. et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, coastal road cliff, on rock, growing together with *Verrucaria* sp. Lat.: 37° 32′ 29.6″ N; Long.: 130° 51′ 47.7″ E; Alt.: *ca* 13 m a.s.l. Coll.: Lee, B. G. (162746), 07.07.2016 (KoLRI 040984 sub *Protoparmeliopsis*). – It was described and reported several times from Cheju-do Island, South Korea (Kondratyuk *et al.* 2013*a*, 2015*a*, 2016*a*, *b*, Wang *et al.* 2016).

Protoparmeliopsis zerovii S. Y. Kondr. – Republic of Korea. Chungcheongbuk-do: Danyang-gun, Danseong-myeon, 584 Daejam-ri, on rock. Lat.: 36° 54′ 20.8″ N; Long.: 128° 18′ 42.9″ E; Alt.: 207 m a.s.l. Coll.: Park, J. S. (152825), 06.09.2015 (KoLRI 037134 sub *Lecanora* sp.). – Gangwon-do: Hongcheon-gun, Nae-myeon, Mt Eungboksan, Tongbaram Valley, on rock. Lat.: 37° 51′ 42.06″ N; Long.: 128° 31′ 29.34″ E; Alt.: *ca* 730 a.s.l. Coll.: Joshi, Y., Wang, X. Y. and Ryu, J. A. (090703), 23.05.2009 (KoLRI 010372). – Gyeongsangnam-do: Sancheong-gun, Sancheong-eup, Jiri Mts, Mt Ungseokbong, on siliceous rock. Lat.: 35° 22′ 49.02″ N; Long.: 127° 52′ 27.60″ E; Alt.: *ca* 260 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (101293), 11.10.2010 (KoLRI 012668 sub *Lecanora*). – Gyeongsangnam-do: Yangsan-si, Wondong-myeon, Mt Cheontaesan, on siliceous rock. Lat.: 36° 09′ 14.5″ N; Long.: 127° 36′ 59.6″ E; Alt.: *ca* 214 m a.s.l. Coll.: Joshi, Y. and Wang, X. Y. (061161), 03.11.2006 (KoLRI 005549). – It was recently described from South Korea from Mt Cheontaesan (Kondratyuk *et al.* 2016*a*).

Psoroglaena chirisanensis L. Lőkös, S. Y. Kondr. et J.-S. Hur – Republic of Korea. Gangwon-do: Jeongseon-gun, Nam-myeon, Nakdong-ri, Seonpyeong-gil, roadside trees along river, on siliceous rock. Lat.: 37° 19′ 16.28″ N; Long.: 128° 42′ 53.84″ E; Alt.: 360 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163171), 16.09.2016 (KoLRI 041416). – Jeollanam-do: Suncheon-si, Maegok-dong, in old fruit garden, on bark (*Punica granatum*?). Lat.: 34° 57′ 29.63″ N; Long.: 127° 30′ 10.41″ E; Alt.: *ca* 176 m a.s.l. Coll.: Kondratyuk, S. Y. (160675 old, 163636), 24.06.2016 (KoLRI 041881). – It was recently described from South Korea from the Jiri Mts (Kondratyuk *et al.* 2016*a*).

Psorotichia cf. ***gyelnikii*** S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Seongsan-eup, Goseong-ri,

Seopjicoji, on siliceous rock. Lat.: 33° 19′ 21.0″ N; Long.: 126° 50′ 49.03″ E; Alt.: *ca* 69 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (140295), 19.06.2014 (KoLRI 022655); the same locality, (140391) (KoLRI 022770 sub *Caloplaca pelodella*); the same locality, growing together with *Verrucaria* sp. (140392) (KoLRI 022773 sub *Caloplaca pelodella*); the same locality, growing together with *Caloplaca pelodella*, (140393-2) (KoLRI 022776 sub *Psorotichia*); the same locality, Coll.: Halda, J. P. (140441) (KoLRI 022838). – Jeju-do: Cheju-do Island, Seogwipo-si, Gangjeong-dong, Yeongtto waterfall, on siliceous rocks. Lat.: 33° 16′ 01.7″ N; Long.: 126° 29′ 49.00″ E; Alt.: *ca* 210 m a.s.l. Coll.: Halda, J. P. (140446), 19.06.2014 (KoLRI 022843); the same locality, (140448) (KoLRI 022845); the same locality, growing together with *Pyrenopsis* aff. *haematina*, (140450) (KoLRI 022847 sub *Psorotichia*). – It was recently described from South Korea from Cheju-do Island (Kondratyuk *et al.* 2016*b*).

****Psorula rufonigra*** (Tuck.) Gotth. Schneid. (Fig. 38) – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Hangyeong-myeon, Sinchang-ri, around Singaemul Park nearby coast, on rock, together with *Spilonema revertens*. Lat.: 33° 20′ 31.91″ N; Long.: 126° 10′ 13.00″ E; Alt.: 2 m a.s.l. Coll.: Lőkös, L., 05.07.2012 (BP). – New to Korea! *Spilonema revertens* has already been reported by Aptroot and Moon (2014) from the Juwang Mts, this second record of *S. revertens* is new for Cheju-do Island.

Pterygiopsis affinis (A. Massal.) Henssen – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (063014), 16.09.2016 (KoLRI 041252); the same locality, growing together with *Lemmopsis arnoldiana* (163024), 16.09.2016 (KoLRI 041262); the same locality, (163025), 16.09.2016 (KoLRI 041263). – It was reported from South Korea by Schultz and Moon (2011) and Joshi and Hur (2013).

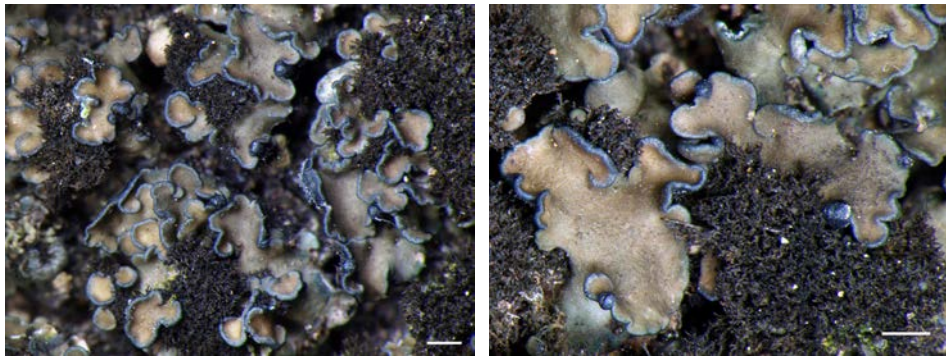

Fig. 38. Psorula rufonigra growing together with *Spilonema revertens*, general habit (BP). Scale 500 μm. (Photo of E. Farkas)

****Pyrenocarpon*** aff. ***thelostomum*** (J. Harriman) Coppins et Aptroot – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163009), 16.09.2016 (KoLRI 041247). – New to Korea! The Korean specimen differs from type specimen in having wider ascospores!

****Pyrenodesmia duplicata*** (Vain.) S. Y. Kondr., L. Lőkös et J.-S. Hur, *comb. nova* – MycoBank no.: MB 819945. – Basionym: *Lecanora duplicata* Vain., Meddn Soc. Fauna Flora fenn. 2: 55 (1878). ≡ *Caloplaca duplicata* (Vain.) H. Olivier, Mém. Soc. Natn. Sci. Nat. Cherbourg 37: 124 (1909). – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, along the coast road (Ulleungsunhwan-ro, Nr. 926), on steep, siliceous, roadside rocks, growing together with *Flavoplaca laszloana*, *Acarospora ulleungdoensis*, *Buellia ulleungdoensis* and *Rufoplaca kaernefeltiana*. Lat.: 37° 27′ 36.42″ N; Long.: 130° 52′ 07.96″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161957), 10.07.2016. (KoLRI 040197 sub *Rufoplaca*; DNA voucher SK H12). – It is for the first time recorded for South Korea. Position of this taxon within the *Pyrenodesmia* clade of the subfamily Caloplacoideae of the Teloschistaceae is confirmed by three specimens based on ITS phylogeny.

Pyrenopsis chejudoensis L. Lőkös, S. Y. Kondr. et J.-S. Hur – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, on basaltic seashore rocks. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161875), 10.07.2016 (KoLRI 040112); the same locality, growing together with *Candelariella hakulinenii*, *Flavoplaca laszloana*, *Thelenella luridella*, (161915) (KoLRI 040152 sub *Phaeophyscia*/*Physciella*); the same locality, (161934) (KoLRI 040171). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, along the coast road (Ulleungsunhwan-ro, Nr. 926), on steep, siliceous, roadside rocks, growing together with *Squamulea squamosa*, *Phaeophyscia*, *Verrucaria*, *Psorotichia* and *Catillaria* spp. Lat.: 37° 27′ 36.42″ N; Long.: 130° 52′ 07.96″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161964), 10.07.2016 (KoLRI 040201). – Jeju-do: Cheju-do Island, Jeju-si, Gujwa-eup, Gimnyeong-ri, Gimnyeong Port, on siliceous rock, growing together with *Fauriea chujaensis*. Lat.: 33° 33′ 26.0″ N; Long.: 126° 43′ 56.9″ E; Alt.: *ca* 6 m a.s.l. Coll.: Hur, J.-S. (040889), 29.08.2004 (KoLRI 001676 sub *Fauriea chujaensis*). – Jeju-do: Cheju-do Island, Jeju-si, Hangyeong-myeon, Sinchang-ri, seashore road, on siliceous rock. Lat.: 33° 20′ 31.60″ N; Long.: 126° 10′ 12.08″ E; Alt.: *ca* 82 m a.s.l. Coll.: Kondratyuk, S. Y. (140273), 18.06.2014 (KoLRI 022636 sub *Squamulea squamosa*). – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Simjang-ri, roadside from Yeoan Elementary school, on rocks, in coastal zones. Lat.: 34° 28′ 58.9″ N; Long.: 127° 48′ 15.4″ E; Alt.: *ca* 18 m a.s.l. Coll.: Kondratyuk, S. Y. (160340), 10.06.2016 (KoLRI 038485 sub *Staurothele oxneri*).

– Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Yusong-ri, Mando beach, on siliceous rock, growing with *Aspicilia*). Lat.: 34° 31′ 36.92″ N; Long.: 127° 46′ 12.90″ E; Alt.: *ca* 18 m a.s.l.; Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120566), 24.04.2012 (KoLRI 015558 sub *Aspicilia*). – Additional South Korean records for the recently described species (Kondratyuk *et al.* 2016*a*).

****Pyrenopsis*** aff. ***haematina*** P. M. Jørg. et Henssen – Republic of Korea. Jeju-do: Seogwipo-si, Gangjeong-dong, Yeongtto waterfall, on rocks, growing together with *Psorotichia*. Lat.: 33° 16′ 01.7″ N; Long.: 126° 29′ 49.00″ E; Alt.: *ca* 210 m a.s.l. Coll.: Halda, J. (140450), 19.06.2014 (KoLRI 022847 sub *Psorotichia*). – New to Korea! – Note: In contrast to *Pyrenopsis haematina*, colour of thallus of the Korean specimen is brown or brown-black when wet (*vs*. red or reddish when wet), apothecia smaller, ascospores larger, in having larger algal cells.

Pyrenopsis triptococca Nyl. – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Hangyeong-myeon, Sinchang-ri, seashore road, on rock, growing together with *Caloplaca* aff. *diffluens*, and *Buellia* sp. Lat.: 33° 20′ 31.6″ N; Long.: 126° 10′ 12.08″ E; Alt.: *ca* 82 m a.s.l. Coll.: Kondratyuk, S. Y. (140277), 18.06.2014 (KoLRI 022638 sub *Protoparmeliopsis chejuensis*); the same locality, growing together with *Buellia* sp. (140278) (KoLRI 022639 sub *Protoparmeliopsis chejuensis*). – Jeju-do: Cheju-do Island, Seogwipo-si, Namwon-eup, Wimiri, on rock. Lat.: 33° 16′ 13.3″ N; Long.: 126° 39′ 30.0″ E; Alt.: *ca* 10 m a.s.l. Coll.: Hur, J.-S., Wang, X. Y. and Joshi. Y. (091419), 29.05.2009 (KoLRI 011062); the same locality, (091421) (KoLRI 011064). – Jeju-do: Cheju-do Island, Seogwipo-si, Seongsan-eup, Goseong-ri, Seopjicoji, on rock, growing together with *Squamulea squamosa*, and *Agonimia cavernicola*. Lat.: 33° 19′ 21.0″ N; Long.: 126° 50′ 49.03″ E; Alt.: *ca* 69 m a.s.l. Coll.: Kondratyuk, S. Y. (140298), 19.06.2014 (KoLRI 022658 sub *Protoparmeliopsis chejuensis*); the same locality, growing together with *Rusavskia mandschurica*, *Squamulea squamosa, Dermatocarpon* and *Phaeophyscia* spp. (140340) (KoLRI 022706 sub *Squamulea squamosa*). – Jeollanam-do, Sinan-gun, Bigeum-myeon, Imja-do, nearby wharf Jinri, on rock. Lat.: 35° 05′ 21.1″ N; Long.: 126° 07′ 17.06″ E; Alt.: *ca* 11 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Woo, J.-J. (130219), 06.06.2013 (KoLRI 018564). – It was reported at first from South Korea by Schultz and Moon (2011).

****Ramboldia haematites*** (Fée) Kalb, Lumbsch et Elix – Republic of Korea. Jeollanam-do: Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwangsa Temple, along stream valley, on bark (*Prunus cerasus*). Lat.: 35° 00′ 27.40″ N; Long.: 127° 15′ 43.50″ E; Alt.: *ca* 155 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163275), 24.09.2016 (KoLRI 041520, BP). – Jeollanam-do: Suncheon-si, Seungju-eup, Jogyesan Mts, Seonamsa Temple, in stream valley, on bark of deciduous tree. Lat.: 34° 59′ 33.1″ N; Long.: 127° 20′ 30.3″ E; Alt.: 161 m a.s.l. Coll.: Woo, J.-J., 09.02.2017 (KoLRI). – Jeollanam-do: Suncheon-si, Seungju-eup, Jogyesan Mts, Seonamsa Temple, in stream valley, on bark of roadside deciduous tree (*Prunus*). Lat.: 34° 59′ 38.7″ N; Long.: 127° 20′ 07.4″ E;

Alt.: 190 m a.s.l. Coll.: Woo, J.-J., 09.02.2017 (KoLRI). – It was reported recently from bark (*Camellia*, *Castanea*, *Prunus*) at several localitites in Honshu and Kyushu, Japan (Yamamoto *et al.* 2013). New to Korea!

****Rhizoplaca subdiscrepans*** (Nyl.) R. Sant. – Republic of Korea. Gangwon-do: Inje-gun, Buk-myeon, Baekdam Temple, on siliceous rock. Lat.: 38° 10′ 25.8″ N; Long.: 128° 22′ 21.6″ E; Alt.: 465 m a.s.l. Coll.: Hur, J.-S. (041557), 11.10.2004 (KoLRI 002352); the same locality, (041558) (KoLRI 002353). – Gangwon-do: Jeongseon-gun, Jeongseon-eup, Mt Gariwang, on siliceous rock. Lat.: 37° 24′ 05.0″ N; Long.: 128° 32′ 39.5″ E; Alt.: 937 m a.s.l. Coll.: Hur, J.-S. (080055), 10.05.2008 (KoLRI 008298). – New to Korea!

Rimularia geumodoensis (S. Y. Kondr., L. Lőkös et J.-S. Hur) S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Chungcheongbuk-do: Yeongdong-gun, Sangchon-myeon, Mt Samdobong, Mulhan-ri, on rock, growing together with *Trapeliopsis* sp. Lat.: 36° 01′ 22.0″ N; Long.: 127° 52′ 37.5″ E; Alt.: *ca* 1,179 m a.s.l. Coll.: Woo, J.-J., Park, G. S. and Oh, S.-O. (150501), 01.07.2015 (KoLRI 035820 sub *Rimularia*) – Additional South Korean record for the recently described species (Kondratyuk *et al.* 2016*b* as *Aspicilia geumodoensis*, Kondratyuk *et al.* 2016*c*).

****Rimularia gibbosa*** (Ach.) Coppins, Hertel et Rambold – Republic of Korea. Chungcheongbuk-do: Yeongdong-gun, Sangchon-myeon, Mulhan-ri, Mt Samdobony, on siliceous rock, growing together with *Fuscidea coreana*, *Lecanora lojkahugoi*, *Parmelia shinanoana*. Lat.: 36° 01′ 22.0″ N; Long.: 127° 52′ 37.5″ E; Alt.: *ca* 1,179 m a.s.l. Coll.: Woo, J.-J., Park, G. S. and Oh, S.-O. (150500), 01.07.2015 (KoLRI 035819). – New to Korea!

Rinodina fimbriata Körb. – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Simjang-ri, on rock, growing together with *Squamulea* aff. *squamosa* and *Buellia* sp. Lat.: 34° 30′ 52.57″ N; Long.: 127° 43′ 36.19″ E; Alt.: *ca* 51 m a.s.l. Coll.: Halda, J. P. (160473), 10.06.2016 (KoLRI 038618 sub *Squamulea* aff. *squamosa*). – It was reported from South Korea from Cheju-do Island (Kondratyuk *et al.* 2013*a*).

Rinodina aff. ***occulta*** (Körb.) Sheard – Republic of Korea. Gyeongsangnam-do: Geoje-si, Geoje-do Island, seaside, or rock. Lat.: 34° 51′ 04.22″ N; Long.: 128° 44′ 0.41″ E; Alt.: *ca* 1 m a.s.l. Coll.: Wang, X. Y. and Ryu, J. A. (110103), 21.04.2011 (KoLRI 013320 sub *Aspicilia*). – It was recently reported from South Korea from Bogil-do Island (Kondratyuk *et al.* 2016*b*).

****Rinodina oxydata*** (A. Massal.) A. Massal. – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Simjang-ri, on rock, growing together with *Orientophila leucerythrella*, *Rinodina oxydata*. Lat.: 34° 30′ 52.5″ N; Long.: 127° 43′ 36.6″ E; Alt.: *ca* 71 m a.s.l. Coll.: Woo, J.-J. (163680), 10.06.2016 (KoLRI 41925 sub *Caloplaca micromera*) (see also Kondratyuk *et al*. 2017). – New to Korea!

Rinodina polyspora Th. Fr. – Republic of Korea. Jeju-do: Cheju-do Island, Seogwipo-si, Jungmun-dong, Cheonjeyeon falls, on bark. Lat.: 33° 14′

48.8″ N; Long.: 126° 33′ 15.8″ E; Alt.: 39 m a.s.l. Coll.: Park, J. S., Lee, B. G. and Woo, J.-J. (152904), 18.08.2015 (KoLRI 037877 sub *Biatora*). – It was reported from South Korea from Mt Hallasan (Kondratyuk *et al.* 2013*a*).

Ropalospora chlorantha (Tuck.) S. Ekman – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Mt Hallasan, Hallasan National Park, Gwaneumsa trail, on bark. Lat.: 33° 24′ 39.08″ N; Long.: 126° 32′ 47.05″ E; Alt.: 739 m a.s.l. Coll.: Oh, S.-O., Jayalal, U., Park, J. S. and Hur, J.-S. (121001), 01.06.2012 (KoLRI 016031). – It was recently reported from South Korea from several localities (Kondratyuk *et al.* 2016*a*).

Rusavskia coreana S. Y. Kondr. et J.-S. Hur – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, Jeongseon church, on rocks, growing together with *Caloplaca*. Lat.: 37° 22′ 17.3″ N; Long.: 128° 40′ 25.2″ E; Alt.: 319 m a.s.l. Coll.: Woo, J.-J. (152810), 06.09.2015 (KoLRI 037119 sub *Rusavskia*); the same locality, growing together with *Collema*, *Psorotichia* spp., (152811), (KoLRI 037120 sub *Collema*); the same locality, growing together with *Dermatocarpon*, *Phylliscum japonicum*, *Collema* and *Endocarpon*, (152812), (KoLRI 037121). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Ulleung-eup, Dodong-ri, Dodong port, on rock, growing together with *Rusavskia mandschurica*, *Flavoplaca laszloana* and *Lecanora* sp. Lat.: 37° 28′ 59.9″ N; Long.: 130° 54′ 40.7″ E; Alt.: *ca* 20 m a.s.l. Coll.: Lee, B. G. (162848), 11.07.2016 (KoLRI 041086 sub *Rusavskia coreana*). – It was recently described and reported from Korea only from Cheju-do Island (Kondratyuk *et al.* 2015*a*).

****Staurothele frustulenta*** Vain. – Republic of Korea. Gangwon-do: Jeongseon-gun, Jeongseon-eup, Aesan-ri, limestone rocky wall along river, on calcareous rocks. Lat.: 37° 22′ 18.66″ N; Long.: 128° 40′ 27.76″ E; Alt.: 325 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163007), 16.09.2016 (KoLRI 041245). – New to Korea!

Staurothele oxneri S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Simjang-ri, along seashore, on siliceous rock, growing together with *Acarospora ulleungdoensis*, *Xanthoparmelia saxetii*. Lat.: 34° 28′ 55.67″ N; Long.: 127° 48′ 12.89″ E; Alt.: *ca* 10 m a.s.l. Coll.: Halda, J. P., Kondratyuk, S. Y., Woo, J.-J. and Lee, B. G. (160453), 10.06.2016 (KoLRI 038598 sub *Endocarpon nigromarginatum*); the same locality, growing together with *Acarospora ulleungdoensis*, (160454) (KoLRI 038599 sub *Endocarpon nigromarginatum*); the same locality, growing together with *Acarospora ulleungdoensis*, (160455) (KoLRI 038600 sub *Endocarpon nigromarginatum*). – Additional records from Geumo-do Island (South Korea) for the recently described species (Kondratyuk *et al.* 2016*b*).

*! ***Stigmidium*** cf. ***clauzadei*** Cl. Roux et Nav.-Ros. – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do, Simjang-ri, on rock, growing on thalli of *Endocarpon*. Lat.: 34° 30′ 52.5″ N; Long.: 127° 43′ 36.6″ E; Alt.:

ca 71 m a.s.l. Coll.: Woo, J.-J. (163681), 10.06.2016 (KoLRI 41926 sub *Caloplaca*). – New to Korea!

! Stigmidium coarctatae S. Y. Kondr., L. Lőkös et J.-S. Hur – Republic of Korea. Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, on siliceous rock, growing on *Trapelia coarctata*, together with *Catillaria ulleungdoensis*, *Scoliciosporum umbrinum*. Lat.: 34° 30′ 27.14″ N; Long.: 127° 46′ 12.94″ E; Alt.: *ca* 33 m a.s.l. Coll.: Halda, J. P. (160432), 10.06.2016 (KoLRI 038577 sub *Trapelia coarctata*); the same locality, (160433) (KoLRI 38578 sub *Trapelia coarctata*). – It was described recently from South Korea from Ulleung-do Island (Kondratyuk *et al.* 2016*b*).

****Strigula australiensis*** P. M. McCarthy – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Dodong-ri, Bongne waterfall, on rock. Lat.: 37° 29′ 53.0″ N; Long.: 130° 53′ 12.6″ E; Alt.: *ca* 314 m a.s.l. Coll.: Lee, B. G. (162808), 09.07.2016 (KoLRI 041046). – New to Korea, new to Asia!

Strigula stigmatella (Ach.) R. C. Harris – Republic of Korea. Gangwon-do: Jeongseon-gun, Gangneung-si, tourist pass toward peak Seokbeongsan, on bark of *Quercus mongolica*, growing together with *Rinodina* sp. Lat.: 37° 34′ 36.55″ N; Long.: 128° 51′ 47.16″ E; Alt.: *ca* 840 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (151093), 10.07.2015 (KoLRI 034326 sub *Phaeophyscia*). – It was recently reported from the Odae-san Mts (Gangwon-do, South Korea) (Aptroot and Moon 2015).

****Thelenella luridella*** (Nyl.) H. Mayrhofer – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Buk-myeon, Cheonbu-ri, coastal road cliff, on siliceous rock. Lat.: 37° 32′ 29.6″ N; Long.: 130° 54′ 47.2″ E; Alt.: *ca* 8 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161216), 07.07.2016 (KoLRI 039411); the same locality, (161236) (KoLRI 039431); the same locality, (161272) (KoLRI 039470). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, Turtle Rock, seashore rocks, on basalt, growing together with *Candelariella hakulinenii*, *Flavoplaca laszloana*, *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 36.62″ N; Long.: 130° 51′ 27.69″ E; Alt.: 5 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (161915), 10.07.2016 (KoLRI 040152 sub *Phaeophyscia*/*Physciella*). – Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Taeha-ri, nr. 41. Lat.: 37° 30′ 14.0″ N; Long.: 130° 49′ 48.9″ E; Alt.: 241 m a.s.l. Coll.: Lee, B. G. (162842), 10.07.2016 (KoLRI 041080). – New to Korea!

Thelopsis loekoesii S. Y. Kondr., J. Halda et J.-S. Hur – Republic of Korea. Jeollanam-do, Suncheon-si, Songgwang-myeon, Jogyesan Mts, Sinpyeong-ri, near Songgwangsa Temple, along stream valley, on bark of *Prunus cerasus*, together with *Rimelia* and *Dirinaria applanata*. Lat.: 35° 00′ 27.40″ N; Long.: 127° 15′ 43.50″ E; Alt.: 155 m a.s.l. Coll.: Kondratyuk, S. Y. and Lőkös, L. (163251), 24.09.2016 (KoLRI 041496). – Jeollanam-do, Suncheon-si, Songgwang-myeon, Jogyesan Mts, Hugok-ri, along lake bank and Hugok-gil road. Lat.: 35° 00′

43.46″ N; Long.: 127° 13′ 42.9″ E; Alt.: *ca* 122 m a.s.l. Coll.: Kondratyuk, S. Y. (163508),15.10.2016 (KoLRI 041753). – It was recently described from South Korea from the Jiri Mts and from Mt Seokbyeongsan (Gangwon-do) (Kondratyuk *et al.* 2016*b*). It was known from *Pinus densiflora* and *P. thunbergii* bark only, now it is reported from deciduous tree.

Toninia aromatica (Turner) A. Massl. – Republic of Korea. Gyeongsangbuk-do: Ulleung-do Island, Ulleung-gun, Seo-myeon, Namyang-ri, in front of Tonggumi mongdol Beach, on siliceous rock, growing together with *Candelariella hakulinenii*, *Flavoplaca laszloana*, *Orientophila leucerythrella*, *Phaeophyscia*, *Pyrenopsis chejudoensis*. Lat.: 37° 27′ 33.1″ N; Long.: 130° 52′ 05.5″ E; Alt.: *ca* 4 m a.s.l. Coll.: Lee, B. G. (162829), 10.07.2016 (KoLRI 041067 sub *Placopyrenium fuscellum*). – It was reported from South Korea at first from Cheju-do Island (Kondratyuk *et al.* 2013*a*).

Trapelia placodioides Coppins et P. James – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Hangyeong-myeon, Sinchang-ri, seashore road, on siliceous rock, growing together with *Acarospora* sp. and *Agonimia* cf. *coreana*. Lat.: 33° 20′ 31.6″ N; Long.: 126° 10′ 12.08″ E; Alt.: 82 m a.s.l. Coll.: Oh, S.-O., Park, J. S. and Hur, J.-S. (140232), 18.06.2014 (KoLRI 022594 sub *Acarospora*). – Jeollanam-do: Yeosu-si, Nam-myeon, Geumo-do Island, Dumo-ri, Jickpo coast, on siliceous rock. Lat.: 34° 30′ 46.08″ N; Long.: 127° 44′ 16.04″ E; Alt.: 30 m a.s.l. Coll.: Jayalal, U., Park, J. S. and Ryu, J. A. (120438), 26.04.2012 (KoLRI 015428). – It was recently reported from South Korea by Aptroot and Moon (2014) and Kondratyuk *et al.* (2015*a*, 2016*b*).

Verrucaria internigrescens (Nyl.) Erichsen – Republic of Korea. Jeju-do: Cheju-do Island, Jeju-si, Hangyeong-myeon, Sinchang-ri, around Singaemul Park nearby coast, on siliceous rock, growing together with *Squamulea squamosa*. Lat.: 33° 20′ 31.91″ N; Long.: 126° 10′ 13.00″ E; Alt.: *ca* 2 m a.s.l. Coll.: Kondratyuk, S. Y., Lőkös, L., Oh, S.-O., Jayalal, U., Joshi, S., Park, J. S. and Hur, J.-S. (121552), 05.07.2012 (KoLRI 016598 sub *Squamulea squamosa*). – It was reported from South Korea at first by Moon and Aptroot (2009).

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