

*PHAEOPHYSCIA ESSLINGERI* SP. NOV. (PHYSICIACEAE,  
LICHEN-FORMING ASCOMYCOTA) – A NEW LICHEN  
SPECIES FROM EASTERN ASIA, WITH A WORLD-WIDE  
KEY TO THE HAIRY SPECIES OF THE GENUS

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**Abstract:** *Phaeophyscia esslingeri*, a new species for science, is described from South Korea, Eastern Asia, compared with closely related taxa and illustrated with photographs. It is similar to *Phaeophyscia hirtella*, but differs by larger and light grey thallus, wider lobes, apothecia without a corona of dark rhizines around the base, shorter cortical hairs, and wider ascospores. Status of the hairy taxa of the genus *Phaeophyscia* from Eastern Asia is discussed. A world-wide key to hairy species of the genus *Phaeophyscia* is also included.

**Key words:** identification key, lichen-forming fungi, new species, South Korea, taxonomy

## INTRODUCTION

Situation with the species concept of members of the genus *Phaeophyscia* as well as the foliose representatives of Physciaceae in the Eastern Asian region is more or less stable after careful revision done by KASHIWADANI (1975, 1984) and MOBERG (1995), and after PARK (1990) and HUR *et al.* (2005) in South Korea. However, some novelties were recently published (HU and CHEN 2003, KONDRATYUK *et al.* 2013, 2014, 2015a, b, 2016a, b, etc.).

During a recent excursion to Gangwon-do Province of the Republic of Korea lichen specimens macroscopically similar to *Physcia stellaris* or *P. aipolia*, growing on trunks of solitary trees in open situations along the river, were collected. During identification in the laboratory they were found to be members of the very specific hairy group of the genus *Phaeophyscia*. However, it was found to be still an undescribed taxon.

The aim of this paper is to provide the description of this taxon, which is described below under the name *Phaeophyscia esslingerii*.

## MATERIAL AND METHODS

More than 100 *Phaeophyscia* specimens, collected during the last decade and deposited in the Korean Lichen Research Institute, Sunchon National University, South Korea (KoLRI), the Hungarian Natural History Museum (BP), and the Lichen Herbarium in the M. H. Kholodny Institute of Botany of National Academy of Sciences of Ukraine (KW-L) have been examined using standard microscopical techniques, and hand-sectioned under a dissecting microscope (Nikon SMZ 645; Nikon, Tokyo, Japan). Anatomical characters were observed using a Nikon Eclipse E200 microscope and a Zeiss Scope, complemented with a digital camera AxioCam ERc 5s. Sections of apothecia were tested with water, K, and IKI (10% potassium iodide). HPTLC analysis for chemical substances was applied in solvent system C according to Arup *et al.* (1993).

## RESULTS AND DISCUSSION

*Phaeophyscia esslingerii* S. Y. Kondr., L. Lőkös, J.-J. Woo et J.-S. Hur, *sp. nov.*  
(Figs 1–4)

Mycobank nr.: MB 819385.

Similar to *Phaeophyscia hirtella*, but differs in having larger and light grey thallus, much wider and overlapping lobes, apothecia without dark rhizines around the base, much shorter cortical hairs, and wider ascospores.

Type: Republic of Korea. Gangwon-do, Jeongseon-gun, Nam-myeon, Nakdong-ri, Seonpyeong-gil, roadside trees along river, on bark of *Populus nigra*. Lat.: 37° 19' 16.28" N; Long.: 128° 42' 53.84" E; Alt.: 360 m a.s.l. Coll.: Kondratyuk, S. Y., Lőkös, L. (163154\_1), 16.09.2016 (holotype: KoLRI 041397, isotype: BP); the same locality, (163154\_2) (isotype: KoLRI 041397); the same locality, on bark of *Robinia pseudo-acacia*, (163165) (isotype: KoLRI 041410); the same locality, growing together with *Phaeophyscia* sp. (163109) (isotype: KoLRI 41450).

Description: Thallus to 7(–10) cm across, more or less rounded; lobes to 15–20 mm long and 4–7 mm wide, distinctly widened towards the tips, rather indistinct towards the centre, overlapping each other by marginal portions, better seen in peripheral zone, with somewhat undulating or uplifted rounded marginal portions; central portion sometimes somewhat knobby or warty or with microlobules to 0.2–0.3 mm across, more or less rounded; with white or hyaline hairs on upper surface of marginal peripheral zone of lobes, which sometimes can be sparse and/or broken; underside pale brown to dark brown or white towards the

tips; underside with black rhizines (with whitish tips) to 0.3–0.5(–0.9) mm long, rather thin to (35–)40–50  $\mu\text{m}$  diam., somewhat brush-like, widened towards the tips. Thallus in section to 180–200  $\mu\text{m}$  thick, cortical layer to 35–40  $\mu\text{m}$  thick, paraplectenchymatous, separate cells to 7–10  $\mu\text{m}$  across observed; algal zone to (25–)40–80(–90)  $\mu\text{m}$  thick, algal cells to (10–)12–22  $\mu\text{m}$  across; medulla to 75–80  $\mu\text{m}$  thick, white, lower cortical layer to 20–25(–30)  $\mu\text{m}$  thick, light brown to dark brown, paraplectenchymatous, cells more or less rounded 7–12  $\mu\text{m}$  across, somewhat smaller and darker (dark brown) towards the outer layer.

Apothecia to 1–4.5 mm diam., (in section to 0.35 mm thick), more or less rounded, on upper portion of thalline margin of apothecia with hairs to (40–)70–150(–220)  $\mu\text{m}$  long, and to 20–30  $\mu\text{m}$  diam. at the basis (better seen and more often on young apothecia, sparse on mature apothecia); in section lecanorine, thalline exciple to 150  $\mu\text{m}$  thick, cortical layer to (20–)40–60  $\mu\text{m}$  thick, paraplectenchymatous; true exciple to 25–30  $\mu\text{m}$  thick in lateral portion and disappearing in basal portion or to 15–20  $\mu\text{m}$  thick if present; hymenium to 80  $\mu\text{m}$  high; epihymenium 15–20  $\mu\text{m}$  thick, yellowish brown, tips of paraphyses to 2.5–3  $\mu\text{m}$  diam., ascospores *Physcia*-type, 1-septate, rarely 0-septate ascospores observed too, greenish-blackish to dark brown, more or less attenuated at the ends and distinctly widened at the septum, (17–)18–25  $\times$  10–12(–14)  $\mu\text{m}$  in water (40 measurements), and becoming somewhat wider in K, 18–27(–28)  $\times$  (11–)12–15(–15.5)  $\mu\text{m}$  in K (40 measurements).

Conidiomata on some thalli rather abundant as brownish spots, to 0.1 mm across, single and distant or aggregated; in section to 80–150  $\mu\text{m}$  in diam. and high; conidia lens-like or widely ellipsoid with attenuated ends, 2.5–3.5  $\times$  1.3–1.8  $\mu\text{m}$ .

Chemistry: Cortical layer and medulla K–, C–, KC–. No substances were detected by HPTLC.

Distribution: It is hitherto known only from the type locality, where it is found to be rather abundant.

Etymology: It is named after the known American lichenologist Theodore Lee Esslinger (born in 1944), who had important contribution to taxonomy of the genus *Phaeophyscia*, and especially to taxonomy of the “hairy” species of this genus.

Taxonomic notes: Based on having cortical hairs on lobe tips and apothecial margin *Phaeophyscia esslingeri* is in intermediate position between two North American taxa, i.e. *P. culbersonii* Essl., and *P. hirtella* Essl., as well as the Eastern Asian *P. hirtuosa* (Krempelh.) Essl.\* (known from Japan, Russia, and China).

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\* It should be mentioned that the original description of *Phaeophyscia hirtuosa* (as *Physcia hirtuosa* in KREMPELHUBER 1873) was very poor and without any measurements of thallus, thalline lobes, etc., except ascospores measurements. KASHIWADANI (1975) has not seen/investigated the type specimens of *P. hirtuosa*, while *Physcia japonica* (Hue) Vain. was put in synonymy with *Phaeophyscia hirtuosa*.

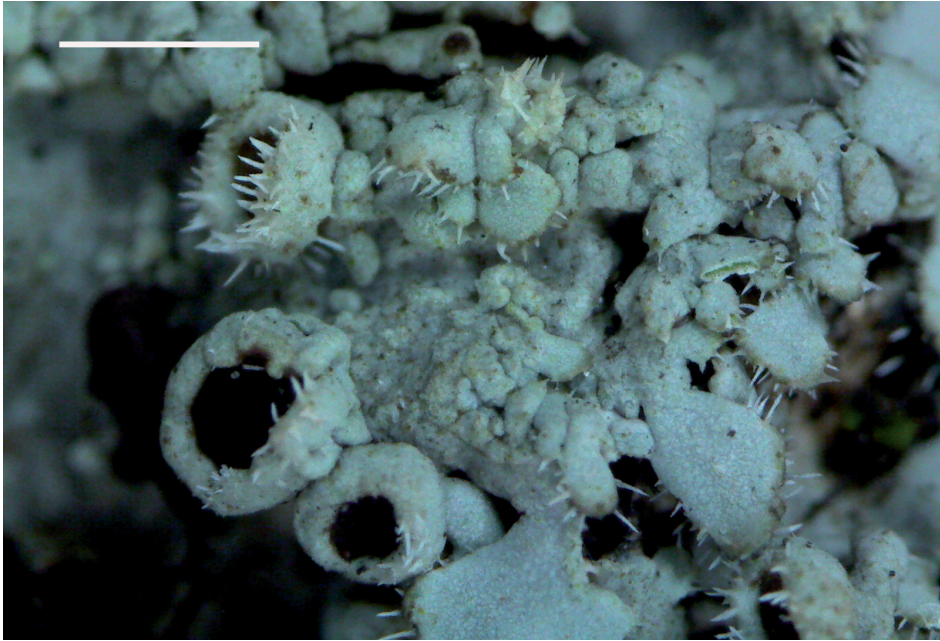


Fig. 1. General habit of *Phaeophyscia esslingeri* (holotype). Scale 1 mm.

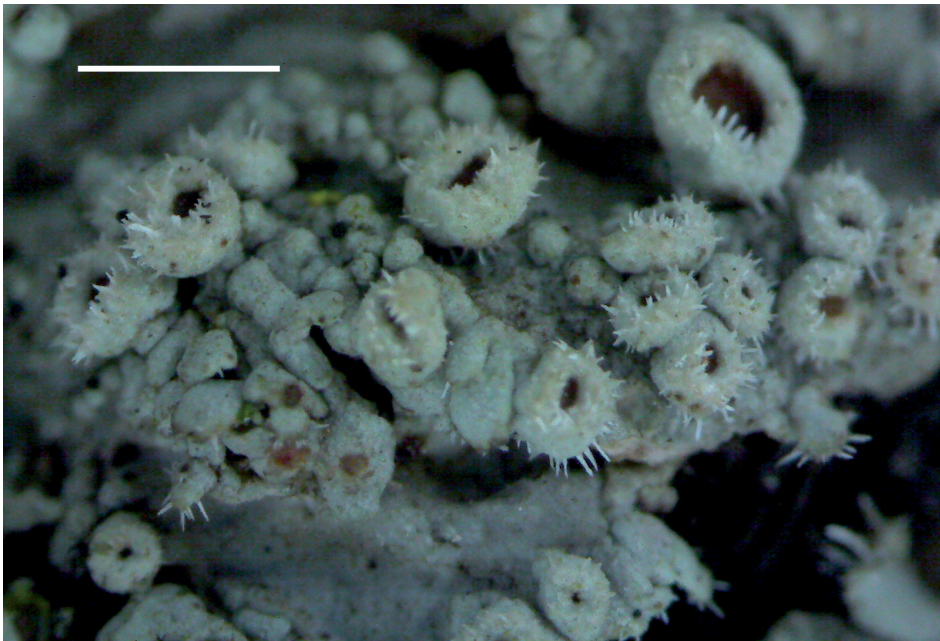


Fig. 2. General habit of *Phaeophyscia esslingeri* (holotype). Scale 1 mm.



However, cortical hairs of *P. esslingeri* are found to be shorter than in *P. hirtella* and *P. hirtuosa*, while they are longer than in *P. culbersonii* Essl.

*Phaeophyscia esslingeri* differs from *P. hirtella* in having larger and light grey thallus (to 7(–10) cm across vs. 1–3(–4) cm in diameter, greenish grey to dark grey or occasionally somewhat brownish); in having much wider and overlapping lobes (4–7 mm wide vs. (0.3–)0.5–1(–1.5) mm wide, more or less linear and distant from each other), in having slightly shorter cortical hairs on lobe tips and apothecial margin ((40–)70–150(–220)  $\mu\text{m}$  vs. 0.05–0.2(–0.35) mm long), in having apothecia without a corona of dark rhizines around the base, and in having wider ascospores ((17–)18–25  $\times$  10–12(–14)  $\mu\text{m}$  vs. 18–22.5  $\times$  8–10  $\mu\text{m}$ ), as well as in the lack of maculation of upper surface of thallus.

Furthermore, in having rather large thallus (to 5–10 cm across), apothecia of the same size (to 4 mm diam.), “hairy” apothecia, and thalline lobes, and in the lack of soredia or isidia, *Phaeophyscia esslingeri* is similar to the Eastern Asian species *P. hirtuosa*, usually growing on trunks of solitary trees or forest trees in open situations, as well as known from single asbestos roofs. It differs in having light grey upper side of thallus (vs. grey-brown to dark brown), much wider thalline lobes (vs. to 2 mm wide (after MOBERG 1995), or 0.5–3.5 mm wide (after KASHIWADANI 1975), or (0.5–)1–3(–3.5) mm wide (after URBANAVICHYUS 2008)); in having subconvex thalline lobes with edges folded somewhat downward (vs. mainly concave lobes with ascending tips), in having shorter white cortical hairs on lobe tips and apothecial margin ((40–)70–150(–220)  $\mu\text{m}$  vs. 0.2–0.3(–0.5) mm long (after KASHIWADANI 1984 and ESSLINGER 1978), and 0.5–1 mm long (after URBANAVICHYUS 2008), hyaline or darkening), in having brown lower side (vs. black), in having much shorter rhizinae (to 0.3–0.5(–0.9) mm long vs. to 5 mm long (after KASHIWADANI 1975)), in having much larger algal cells (12–22  $\mu\text{m}$  vs. 5–8  $\mu\text{m}$  diam.), and in the lack of “corona” of black rhizines on the lower part of thalline margin of apothecia, in having somewhat wider ascospores ((17–)18–25  $\times$  10–12(–14)  $\mu\text{m}$  vs. (17–)19–23(–27)  $\times$  (7.5–)9–11(–12)  $\mu\text{m}$  (after MOBERG 1995), while 20–25  $\times$  8–12  $\mu\text{m}$  (after KASHIWADANI 1975)), in the lack of prominent (distinctly projecting) marginal rhizinae (similar to eyelashes after URBANAVICHYUS 2008), as well as in the lack of projecting rhizinae appearing on the upper side, and in the lack of chemical substances (vs. small amount of atranorin, zeorin, leucotylin, Physcia-1 and Physcia-2 sensu KASHIWADANI 1975).

*Phaeophyscia esslingeri* is similar to the North American species *P. culbersonii* Essl. – growing on bark or cactus stems, less often on rock – in having *Physcia*-type ascospores, cortical hairs, and in the lack of a corona of dark rhizines on lower portion of thalline margin of apothecia, but differs in having larger whit-

ish grey thallus (to 7(–10) cm across vs. to 3–4 cm in diam., mostly grey-brown), in having much broader thalline lobes (4–7 mm wide vs. 0.6–1.5 mm broad), in the lack of epinecral layer (vs. more or less continuous and distinctive epinecral layer, which is distinctly patchy on the lobe ends (and therefore very pruina-like), in having longer cortical hairs on the lobe tips ((40–)70–150(–220)  $\mu\text{m}$  vs. up to 10–12  $\mu\text{m}$  long), in the lack of soledia, in having larger apothecia (to 4.5 mm vs. to 1.5 mm in diam.), in having almost the same ascospores ((17–)18–25  $\times$  10–12(–14)  $\mu\text{m}$  vs. (16–)18–25(–27)  $\times$  8–12  $\mu\text{m}$ ) and in having smaller and widely ellipsoid conidia (2.5–3.5  $\times$  1.3–1.8  $\mu\text{m}$  vs. (7–)8–12  $\times$  1  $\mu\text{m}$ , cylindrical although frequently slightly bent near the middle) (ESSLINGER 2004).

*Phaeophyscia esslingeri* is similar to the Japanese species *P. spinellosa* Kashiw., a newly described taxon known hitherto from Japan and Korea, to which KASHIWADANI (1984) included mainly all previous Japanese records of *Phaeophyscia ciliata*, in having large and whitish grey thallus, but it differs from *P. spinellosa* in having single-layer thallus more closely attached to the substratum (vs. richly irregularly dissected lobes seem to be curled or multilayered and loosely attached to the substrate); in having wider and convex thalline lobes (to 4–7 mm vs. to 1–2 mm wide, usually concave), in having pale brown or dark brown underside (vs. black), in having shorter and usually indistinct rhizines (to 0.3–0.5(–0.9) mm long vs. to 2 mm long, well distinct on uplifted lobe tips), in having larger apothecia (to 4.5 mm vs. to 2–3 mm across/diam.), in the lack of “corona” of black rhizines on underside of apothecia, and in having larger ascospores ((17–)18–25  $\times$  10–12(–14)  $\mu\text{m}$  vs. 15–18(–20)  $\times$  7–11  $\mu\text{m}$ ) (KASHIWADANI 1984).

Similarly to *Phaeophyscia hirtuosa*, *P. esslingeri* is closely related to *P. hirsuta* (Mereschk.) Essl. and *P. insignis* (Mereschk.) Essl., which both are Northern Hemisphere taxa, because they all have apothecia with retrorse hairs and black lower surface of lobes. However, *Phaeophyscia esslingeri*, similarly to *P. hirtuosa*, can be clearly separated from the latter two species by the absence of soledia (see also in the key below).

*Phaeophyscia esslingeri* is similar to the North American and Japanese species *P. imbricata* (Vain.) Essl., known from montane deciduous broad-leaved forests in having secondary lobules, both paraplectenchymatous cortical layers and dark brown lower cortical layer, and in having *Physcia*-type ascospores, but it differs from *P. imbricata* in having larger thallus (to 7(–10) cm across vs. 1–3 cm diam.), wider thalline lobes (4–7 mm wide vs. 0.5–2 mm wide), in having lobules on the upper surface of central portions of thallus (vs. lobules marginal), shorter rhizines (0.3–0.5(–0.9) mm long vs. ca 3 mm long), in having larger algal cells (vs. 5–8  $\mu\text{m}$  diam.), larger apothecia (to 4.5 mm diam. vs. to 2 mm diam.), retrorsely hairy thalline margin in both the upper and lower part of apothecia (vs. hairy only at the basis), in having retrorse hair on the upper surface of thal-



Fig. 3. Enlarged portion with apothecia of *Phaeophyscia esslingerii* (holotype). Scale 0.5 mm.



Fig. 4. Enlarged portion with apothecia and conidiomata of *Phaeophyscia esslingerii* (holotype). Scale 0.5 mm.

line lobes, in having wider ascospores ((17–)18–25 × 10–12(–14) μm vs. 18–23 × 8–10 μm) (data after KASHIWADANI 1975) or (18–)20–24(–27) × 9–11.5(–13.5) (after ESSLINGER 1978)).

Based on having dark lower surface, white medulla, and the lack of asexual propagules, *Phaeophyscia esslingeri* could be keyed out as *P. ciliata* (Hoffm.) Moberg, very common members of the genus *Phaeophyscia* in the Northern Hemisphere, occurring on bark or on moss over rocks. It differs in having larger thallus (to 7(–10) cm across vs. usually less than 4 cm across), wider thalline lobes (4–7 mm wide vs. (0.2–)0.5–1.5(–2) mm broad), in having cortical hairs on lobe tips and apothecial margin (vs. the lack of cortical hairs).

From the recently described Chinese species, *Phaeophyscia hunana* G. R. Hu et J. B. Chen, which was occasionally observed with sparse white cortical hairs (HU and CHEN 2003) it differs in having larger thallus (to 7(–10) cm vs. 2 cm in diam.), much wider lobes (4–7 mm vs. 0.3–0.5(–0.8) mm wide), in having white medulla (vs. medulla red, K+ purple), brown lower cortical layer (vs. lower surface black), in having larger apothecia (to 4.5 mm vs. 0.4–1(–2) mm in diam.) in the lack of black rhizines around the basis of the apothecia, and in the lack of skyrin. Unfortunately, mature asci and ascospores, as well as conidiomata and conidia have not been seen by the authors of the original description (HU and CHEN 2003).

However, KASHIWADANI (1975) provided detailed comments in the same paper on the type specimens of two infraspecific taxa of *Physcia japonica* (Hue) Vain., i.e.: *P. japonica* var. *denigrata* Vain. and *P. japonica* var. *glaucocinerea* Vain., which were carefully studied. From Kashiwadani's comments it is clear that the specimen of *P. japonica* var. *denigrata* (holotype preserved in TUR) may belong to *Phaeophyscia hirtella*, while *Physcia japonica* var. *glaucocinerea* Vain. is a member of the *Phaeophyscia hirtuosa* complex.

ESSLINGER (1978) included the isotype of *Phaeophyscia hirtuosa* (FH) in his revision, but he did not discuss measurements of ascospores of the type specimen, while he accepted Kashiwadani's opinion that *Phaeophyscia japonica* is a synonym of *P. hirtuosa*. However, results of ascospore measurements of the two taxa provided in original descriptions are very different. So KREMPELHUBER (1873) mentioned ascospores 17–19 × 6–7 μm, while HUE (1900) provided ascospore measurements for *Phaeophyscia japonica* (as *Physcia setosa* Nyl. f. *japonica* Hue) as 22–27 × 8–14 μm.

The probable conclusion that *Phaeophyscia japonica* and *Phaeophyscia hirtuosa* are conspecific was based only on the presence of the mainly whitish hairs (as setae in HUE 1900) of the same length, i.e. 0.2–0.5 mm long, while their size was not mentioned in the original Krempelhuber's description. It was mentioned by Esslinger as a confirmation that the North American taxon, i.e. *Phaeophyscia hirtella* had much shorter hairs.



However, as far as ascospore measurements of the type specimen of *Phaeophyscia hirtuosa* were not especially checked and discussed, it is still possible that the Chinese *Phaeophyscia hirtuosa* and the Japanese material of "*Physcia japonica*" are not conspecific. Therefore we propose to have two names for the Japanese and Chinese material until this question is not clarified. This illustrates that the question about the status of these two Eastern Asian taxa is still open.

Other specimens examined (paratypes): Republic of Korea. Gangwon-do, Jeongseon-gun, Nam-myeon, Nakdong-ri, Seonpyeong-gil, roadside trees along river, on bark of *Populus nigra*, growing together with *Phaeophyscia* sp. Lat.: 37° 19' 16.28" N; Long.: 128° 42' 53.84" E; Alt.: 360 m a.s.l. Coll.: Kondratyuk, S. Y., Lőkös, L., 16.09.2016. 163154\_3 (KoLRI 041399 sub *Phaeophyscia* sp.; BP); the same locality, growing together with *Phaeophyscia* sp., *Rinodina* sp., and *Candelaria concolor* 163153 (KoLRI 41396 sub *Rinodina*); the same locality on bark of *Robinia pseudo-acacia*, growing together with *Phaeophyscia adiaastola*, 163162 (KoLRI 041407 sub *Phaeophyscia adiaastola*); the same locality, growing together with *Lecanora* sp., *Candelaria concolor*, 163166 (KoLRI 041411 sub *Lecanora*); the same locality, on bark of *Robinia pseudo-acacia*, growing together with *Phaeophyscia adiaastola*, and *Endocarpon* damaged by lichenicolous fungus, 163104 (KoLRI 041345 sub *Endocarpon*); the same locality, growing together with *Phaeophyscia adiaastola*, and *Endocarpon* damaged by lichenicolous fungus, 163106 (KoLRI 041347 sub *Endocarpon*); the same locality, growing together with *Phaeophyscia adiaastola*, and *Lecanora*, 163111 (KoLRI 041352 sub *Lecanora*); the same locality, growing together with *Phaeophyscia adiaastola*, and *Candelaria concolor*, 163112 (KoLRI 041353 sub *Phaeophyscia adiaastola*); the same locality, growing together with *Phaeophyscia adiaastola*, 163114 (KoLRI 041355 sub *Phaeophyscia esslingeri*); the same locality, growing together with *Phaeophyscia adiaastola*, and *Endocarpon* sp., 163132 (KoLRI 041373 sub *Endocarpon*); the same locality, growing together with *Phaeophyscia adiaastola*, *Candelaria concolor*, and *Endocarpon* damaged by lichenicolous fungus, 163133 (KoLRI 041374); the same locality, growing together with *Phaeophyscia adiaastola*, *Candelaria concolor*, and species of the genera *Endocarpon* and *Lecanora*, 163135 (KoLRI 041376 sub *Lecanora*); the same locality, growing together with *Phaeophyscia adiaastola*, *Candelaria concolor*, and *Agonimia* sp., 163136 (KoLRI 041377 sub *Agonimia*); the same locality, growing together with *Phaeophyscia adiaastola*, *Candelaria concolor*, *Endocarpon* sp., and *Agonimia* sp., 163137 (KoLRI 041378 sub *Endocarpon*); the same locality, growing together with *Phaeophyscia adiaastola*, *Candelaria concolor*, and *Endocarpon* sp. damaged by lichenicolous fungus, 163138 (KoLRI 041379 sub *Endocarpon*).

**World-wide key to the hairy species of the genus *Phaeophyscia***  
(having cortical hairs on lobe tips and upper part of apothecial margins)\*

- |    |  |   |
|----|--|---|
| 1  | Medulla not pigmented, white .....   | 2   |
| –  | Medulla pigmented orange-red .....   | 10  |
| 2  | Thallus with soredia or isidia .....   | 3   |
| –  | Thallus without soredia or isidia .....  | 7   |
| 3  | Cortical hairs on lobe tips very tiny (up to 10–12 $\mu\text{m}$ long and 1 cell thick) .....  |   |
|    | ..... <i>Phaeophyscia culbersonii</i> Essl.  |   |
| –  | Cortical hairs much larger (50–500 $\mu\text{m}$ long and tapered from a slightly wider base), pale or darkening, sometimes also present on soredia or isidia .....  | 4   |
| 4  | Hyaline or darkening hairs on isidia, much rarely on lobe surface; soredia/isidia on the lobe margins .....  | <i>Phaeophyscia kairamoi</i> (Vain.) Moberg       |
| –  | Hyaline hairs on upper surface of thalline lobe close to tips; thallus with soredia .....  | 5   |
| 5  | Soralia laminal capitate, usually broader than a lobe .....  |   |
|    | ..... <i>Phaeophyscia insignis</i> (Mereschk.) Moberg  |   |
| –  | Soralia marginal .....   | 6   |
| 6  | Soralia lip-like at tips of ascending lobes .....  | <i>Phaeophyscia hirsuta</i> (Mereschk.) Moberg    |
| –  | Soralia elongated along the lobe ends (marginal). Cortical layer often with distinct epinecral layer, sometimes with uneven development making impression of patchiness .....  |   |
|    | ..... <i>Phaeophyscia cernoborskyi</i> (Nádv.) Essl.   |   |
| 7  | Thallus large, to 4–7 cm across, lobes to 4 mm wide, overlapping by marginal portions .....  | 8   |
| –  | Thallus small to 1–3 cm across, lobes to 0.5–1 mm wide, more or less linear. Hairs on upper portion of thalline exciple of apothecium 0.05–0.2(0.35) mm long. Cortical hairs sparse to numerous, the same long. Maculation on upper surface of thallus present ..... |   |
|    | ..... <i>Phaeophyscia hirtella</i> Essl.   |   |
| 8  | Ascospores small, 15–18(–20) $\times$ 7–11 $\mu\text{m}$ ; cortical hairs on apothecial margin constantly very sparse to almost absent; maculation on upper surface of thallus absent; on rocks .....  |   |
|    | ..... <i>Phaeophyscia spinellosa</i> Kashiw.   |   |
| –  | Ascospores usually larger; cortical hairs on apothecial margin more or less dense; maculation on upper surface of thallus present; on bark of deciduous broad-leaved trees or conifers .....   | 9   |
| 9  | Hairs on upper portion of thalline exciple of apothecium 0.2–0.3(–0.5) mm long, hyaline or darkening. Cortical hairs on the lobe ends absent. Maculation on upper surface of thallus present .....   | <i>Phaeophyscia hirtuosa</i> (Krempelh.) Essl.**  |
| –  | Hairs (40–)70–150(–220) $\mu\text{m}$ long. Cortical hairs present while sometimes sparse and indistinct. Maculation on upper surface of thallus absent .....  |   |
|    | ..... <i>Phaeophyscia esslingeri</i> S. Y. Kondr., L. Lőkös, J.-J. Woo et J.-S. Hur  |   |
| 10 | Ascospores <i>Pachysporaria</i> -type .....  | <i>Phaeophyscia endococcinoides</i> (Poelt) Essl. |
| –  | Ascospores <i>Physcia</i> -type .....  | <i>Phaeophyscia erythrocarpa</i> (Tuck.) Essl.    |

\* All species of *Phaeophyscia* may have a “corona” of dark or black rhizines around the base of apothecia; these should not be confused with hyaline or white cortical hairs, which occur on both the upper part as well as the lower parts of the exciple.

\*\* Status of Eastern Asian material is still unclear and correct name for this taxon still requires confirmation, see discussion in the text above.

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**Összefoglaló:** A *Phaeophyscia esslingeri* tudományra új zuzmófajt Dél-Koreából (Kelet-Ázsia) írtuk le. Kinézetre hasonló a *P. hirtella*-hoz, de a nagyobb méretű és világosszürke színű telepe, a rövidebb felszíni szőrök a telep szélein, a sötét rhizinákból álló ún. korona hiánya az apotéciumok alján, továbbá a szélesebb aszkospórák alapján jól elkülöníthető attól. Részletesen tárgyaljuk más, közel rokon taxonoktól való megkülönböztető bélyegeit. A fajleírást a holotípusról készített fotók és egy határozókulcs egészíti ki.

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