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FAURIEA, A NEW GENUS OF THE LECANOROID CALOPLACOID LICHENS (TELOSCHISTACEAE, LICHEN-FORMING ASCOMYCETES)

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The robust monophyletic branch having the highest level of bootstrap support in the phylogenetical tree of the Teloschistaceae based on combined data set of ITS, LSU nrDNA and 12S SSU mtDNA sequences, which does not belong to any other earlier proposed genera of the subfamily Caloplacoideae, is described as the new genus *Fauriea* S. Y. Kondr., L. Lőkös et J.-S. Hur, *gen. nova* for lecanoroid South Korean *Caloplaca chujaensis*, and newly described Eastern Chinese *Fauriea orientochinensis*. Descriptions of the new genus *Fauriea* and the species *Fauriea orientochinensis*, a comparison with closely related taxa and a discussion of their position are provided. New name *Tayloriellina* is proposed for the genus of the subfamily Brownlielloideae *Tayloriella* S. Y. Kondr., Kärnefelt, A. Thell, Elix et Hur (nom. illeg., non *Tayloriella* Kylin, Rhodomebaceae, Rhodophyta). New combinations for type species of the genera *Fauriea* and *Tayloriellina* (i.e.: *Fauriea chujaensis* (basionym: *Caloplaca chujaensis* S. Y. Kondr., L. Lőkös et J.-S. Hur), and *Tayloriellina erythrosticta* (basionym: *Lecanora erythrosticta* Taylor)) are proposed. *Fauriea chejuensis* and *Biatora pseudosambuci* are for the first time recorded for China.

Key words: *Biatora pseudosambuci*, Caloplacoideae, *Fauriea*, *Fauriea orientochinensis*

INTRODUCTION

Taxonomy of the Teloschistaceae has dramatically changed since 2012 based on molecular phylogeny (Arup *et al.* 2013*a*, Fedorenko *et al.* 2012, Gaya *et al.* 2012, 2015, Kondratyuk *et al.* 2013*a*, *b*, 2014*a*, *b*, 2015*b*, *c*, *d*). Three subphyla, i.e. subfamilies Teloschistoideae, Caloplacoideae and Xanthorioideae proposed in 2012–2013 years (Arup *et al.* 2013*b*, Gaya *et al.* 2012) are recently added by new one, i.e. subfamily Brownlielloideae (Kondratyuk *et al.* 2015*b*).

Number of accepted genera of the Teloschistaceae evolved from 10 in Kärnefelt (1989) to 29 (Arup *et al.* 2013*a*), and to 80 (see Kondratyuk *et al.* 2015*d*). New genera of the Teloschistoid and Xanthorioid lichens are also recently described (Søchting *et al.* 2014*a*, *b*, Kondratyuk *et al.* 2015*d*).

The aim of this paper is to provide legal description for robust monophyletic group of the subfamily Caloplacoideae, which does not belong to any other earlier described genera of this subfamily. The new genus *Fauriea* for the Eastern Asian species *Caloplaca chujaensis*, and the newly described Eastern Chinese species *Fauriea orientochinensis* are proposed, as well as the new name *Tayloriellina* for the genus of the subfamily Brownlielloideae and the new combination for its type species are provided.

MATERIAL AND METHODS

Specimens were examined using standard microscopical techniques, i.e. hand-sectioning under Nikon SMZ-645 dissecting microscope (Nikon Corp., Tokyo, Japan), sections were observed under Nikon E-200 and Olympus BX-51 microscope (same as above). Spot test reactions were performed on thalli under a compound microscope. Chemicals were extracted in analytical grade acetone in a 1 mL Eppendorf tube. Thin layer chromatography (TLC) was performed using a glass plate coated with TLC Silica gel 60, in solvent system A (toluene : dioxin : acetic acid = 180:45:5) (Orange *et al.* 2010).

Total DNA was extracted directly from the thalli according to Ekman (1999) and was purified with DNeasy Plant Mini Kit (QIAGEN, Germany). The nuclear ribosomal RNA gene region including the internal transcribed spacers 1 and 2 and the 5.8S subunit (ITS) was amplified using the primers ITS1F (Gardes and Bruns 1993) and ITS4 (White *et al.* 1990), the 28S LSU using the primer LR5 (Vilgalys and Hester 1990), and the 12S mtSSU using the primers mtSSU1-mtSSU3R and mtSSU2R (Fedorenko *et al.* 2009, 2012).

The amplification was done using a Takara JP/TP600 PCR machine (Takara Bio Inc., Japan). One initial cycle of 5 min at 94 °C was followed by 30 cycles of the following steps: 30 seconds at 94 °C, 39 seconds at 57 °C and 1 min at 72 °C. Amplifications were ended with a final cycle at 72 °C for 10 min. PCR products were then sent to the sequencing facilities of the Genotech Cooperation, Seoul, South Korea for cleaning and sequencing. The sequencing was carried out using the fluorescent marker BigDye and an ABI 3730xl sequencing machine (Applied Biosystems, Carlsbad, CA, USA).

The consensus sequence was aligned with all related species sequences retrieved from the GenBank database (Table 1). The consensus sequences were then deposited into GenBank under the accession numbers KX793095–KX793103. Phylogenetical analysis was performed using the ITS region and

LSU gene of nrDNA and 12S SSU mtDNA sequences of the treated fungi retrieved from the GenBank database and the 5 lichen-forming fungi investigated in this study. Sequence alignment was conducted in BioEdit and a phylogenetical tree was generated by the maximum parsimony (MP), minimum evolution (ME), and maximum likelihood (ML) analysis methods performed in Mega 5.0 (Tamura *et al.* 2011) with the number of bootstrap trials set to 1,000.

Nine sequences on nrDNA and mtDNA are for the first time submitted to GenBank for the following taxa: *Fauriea chujaensis* and *F. orientochinensis*.

RESULTS AND DISCUSSION

Description of taxa

Fauriea S. Y. Kondr., L. Lőkös et J.-S. Hur, *gen. nova*

Mycobank no.: MB 817961

Thallus crustose, continuous; grey to whitish grey or lead-grey in places; apothecia seem to be lecanorine, immersed into thallus to semi-immersed, disc dark brown, true exciple scleroplectenchymatous to mesodermatous paraplectenchymatous, cortical layer paraplectenchymatous; ascospores bipolar. Conidiomata not seen. Thallus and epihymenium K–; anthraquinones absent.

Type species: *Fauriea chujaensis* (S. Y. Kondr., L. Lőkös et Hur) S. Y. Kondr., L. Lőkös, J. Kim, A. S. Kondratiuk, S.-O. Oh et J.-S. Hur.

Thallus crustose, continuous/entire (not areolate); grey to whitish grey or lead-grey in places; with of *Lecanora* type apothecia with brown or dark brown disc. Hypothallus black or absent. Apothecia at first immersed into thallus, later semi-immersed or seen in thalline warts, seem to be lecanorine, to sunken into the thallus, true lecanorine; thalline margin whitish grey, disc dark brown, true margin if developed entire, light brown or transparent brown; in section true exciple scleroplectenchymatous to mesodermatous paraplectenchymatous; cortical layer of thalline exciple paraplectenchymatous; paraphyses broom-like branched, the uppermost portions becoming brownish; asci 8-spored; bipolar ascospores narrowly ellipsoid, slightly widened at the septum; ascospore septum of medium width. Conidiomata not seen. Chemistry: thallus and epihymenium K–; anthraquinones absent.

Ecology: On siliceous rocks in the coastal zone, often growing together with other members of the genus *Caloplaca* (*C. yeosuensis* S. Y. Kondr. et J.-S. Hur, *C.* aff. *diffluens* (Hue) Zahlbr., *C. sideritis* (Tuck.) Zahlbr.), as well as

members of the genera *Lecanora*, *Ramalina*, *Phaeophyscia*, etc., or on bark of *Pinus* trees, where often associated with *Amandinea punctata* (Hoff.) Coppins et Scheid. and *Biatora pseudosambuci* (S. Y. Kondr., L. Lőkös et Hur) S. Y. Kondr. (see Kondratyuk *et al.* 2016).

Distribution: So far it is known from several collections from islands and coastal part of mainland of South Korea and Eastern China. *Fauriea chujaensis* (as well as *Biatora pseudosambuci*) is for the first time recorded from China here.

Etymology: It is named after the known French botanist Urbain Jean Faurie (1847–1915), who provided important collections of lichens, mosses and vascular plants of the Eastern Asian region.

Taxonomic notes: The genus *Fauriea* is positioned in one clade with the genus *Rufoplaca* Arup, Søchting et Frödén and the *Caloplaca furax g*roup. However, this clade has very weak support, while the two mentioned genera and the *Caloplaca furax* group have shown very high level of bootstrap support, as after ITS nrDNA, mtDNA sequences, as well as after combined data set (Fig. 3). Unfortunately we were not able to include into our analysis recently described *Caloplaca lecapustulata* Aptroot et M. Cáceres and *C. lecanorocarpa* Aptroot et M. Cáceres, because there no data on nrLSU and mtSSU sequences so far available. However, it should be mentioned that after our phylogenetical analysis these two species show the closest relation (as being sister branch) to the genus *Huneckia*, as it was shown by Aptroot and Cáceres (2016). However, after including these data to our matrix, unexpectedly the *Faureria* clade forms sister branch to these two branches as well. However, as it was emphasised above the position of the two lecanoroid species (*Caloplaca lecapustulata* Aptroot et M. Cáceres and *C. lecanorocarpa*) in the subfamily Caloplacoideae is hitherto confirmed only by nrITS data.

Macroscopically the representatives of the genus *Fauriea* is similar to some species of the genus *Pyrenodesmia*, i.e. *P. variabilis* (Pers.) A. Massal., a Northern Hemisphere lichen growing on calcareous rocks. However, *Fauriea chujaensis* differs from *Pyrenodesmia variabilis* in having continuous/entire thallus, in having smaller apothecia, in having narrower ascospores, and in having much wider ascospore septum, as well as in the lack of the white pruina on apothecium discs and in the lack of K+ and C+ reactions of thallus and epihymenium (see also Kondratyuk *et al.* 2015*a*).

Unfortunately there are hitherto no molecular data on '*Caloplaca*' *atroalba* (Tuck.) Zahlbr., a North American lichen growing on non-calcareous or calcareous rocks in having crustose, grey thallus without asexual propagules and brown apothecium discs, to which *Fauriea chujaensis* is similar. However, *Fauriea chujaensis* differs from *Caloplaca atroalba* in having only grey and continuous/entire crustose thallus, in having smaller apothecia, and in having

smaller and especially much narrower ascospores, and in having much wider ascospore septum, as well as in the lack of K+ and C+ reactions of thallus and epihymenium.

After having mainly immersed or semi-immersed apothecia *Fauriea chujaensis* may resemble to some species of the genus *Aspicilia* A. Massal., but microscopical study of ascospores easily confirms its position in the family Teloschistaceae.

Fauriea chujaensis is similar to *Caloplaca sideritis* with which it sometimes grows side by side, in having similar greyish crustose thallus and lecanorine apothecia with dark grey or grey thalline margins, but it differs from *C. sideritis* in the lack of yellowish apothecium disc and in the lack of K+ and C+ reaction of epithecium and thalline cortical layer.

From species of the genus *Lecanora* Ach. with which *Fauriea chujaensis* often growing side by side it differs in having immersed to semi-immersed (not constricted at the basis when uplifted in thalline warts) apothecia, in having black hypothallus, as well as in having *Teloschistes*-type of asci and bipolar ascospores.

Fauriea orientochinensis S. Y. Kondr., X. Y. Wang et J.-S. Hur, *sp. nova* (Figs 1–2)

Mycobank no.: MB 817962

Similar to Fauriea chujaensis, *but differs in having much thicker while smaller, thallus, in having more often prominent and more regularly developed usually lecanorine apothecia, in having better developed thalline margin, in having lower cortical layer of thallus and thalline exciple, in having higher hymenium, in having thicker and lacking oil subhymenium, and in having longer ascospores and in having epiphyte substrate.*

Type: China, Shandong Prov., Rongcheng Co., Mt Chengshantou, on *Pinus* bark, growing together with *Amandinea punctata*. Lat.: 37° 25′ 03.0″ N; Long.: 122° 40′ 38.3″ E; Alt.: 20 m a.s.l. Coll.: Wang, X. Y. and Hur, J.-S. (CH-110011), 18.07.2011 (KoLRI 013954 sub *Fauriea orientochinensis* – holotype); the same locality, growing as small addition among *Amandinea punctata* thalli, (CH-110015), (KoLRI 013957 sub *Fauriea orientochinensis* – isotype); the same locality, growing with *Biatora pseudosambuci*, (CH-110017), (KoLRI 013959 sub *Fauriea orientochinensis* – isotype).

Thallus to 0.5–3 cm across, but may form larger aggregations; crustose, continuous/entire (not areolate), whitish grey to light grey or somewhat dirty

whitish grey, often with dust particles and aerophytic algae, very uneven owing to substrate surface (*Pinus* tree bark), from very thin in the peripheral portion to rather thick, distinctly wrinkled in the centre; often badly seen in the centre owing to the numerous lecanorine apothecia with dull dark brown to dark violetish brown discs. Thallus in section to 250(–350) μm thick, cortical layer somewhat indistinct, while epinecral layer to 10 μm thick more or less regularly present; algal zone to 40–70 μm thick, algal cells to 9–19(–22) μm in diam. Hypothallus not observed.

Apothecia (0.3–)0.5–0.7(–1) mm in diam., and to 0.4 mm thick, but often mainly small to 0.4(–0.5) mm in diam, lecanorine, rarely zeorine (see only at the largest magnification) (within the same thallus), immersed into thallus and very indistinct, irregularly rounded, crowded at first, only a few apothecia per thallus seem to be sessile, but still sunken into the thallus and while; thalline margin white grey or light grey, almost not uplifted above the level of thallus and very indistinct at first later better seen and slightly uplifted above the level of thallus, concolorous with thallus, seems to be variable in thickness, while 0.08–0.12 mm thick, usually permanent; disc plane or slightly concave, rarely somewhat semi-convex or undulating, dull brown to dark brown or violet brown within the same thallus; in section thalline exciple to 60–80 μm thick, with cortical layer to 10–15 μm thick, paraplectenchymatous, cell lumina to 4–5 μm in diam., often with considerable portion of epinecral layer in places, sometimes outermost layer slightly brownish; true exciple to 15–20 μm thick in lateral and basal portion, rarely to 40(–70) μm wide in the uppermost lateral portion, *Blastenia*-type (i.e. consisting of radiating hyphae); hymenium to 100–110 μm high, hyaline; epihymenium to 20–30 μm thick, yellowish brown, paraphyses almost unswollen towards the tips to 2.5–3.5 μm in diam., in the upper portion becoming distinctly yellowish-brownish or straw light brownish; subhymneium to 100–130 μm thick, hyaline or straw or light brownish in places, without oil; asci 8-spored; ascospores widely ellipsoid to widely fusiform, sometimes with more or less attenuated ends, (10–)12–15(–16) × 5–6(–7) μm in water and somewhat becoming larger in K, (8–)11–16(–17) × (4–)4.5–6(–7) μm; ascospore septum 3–5 μm thick in water and becoming wider to 4–7 μm wide in K.

Chemistry: Thallus, true exciple and epihymenium K–, while the yellowish-brownish upper portion of paraphyses becoming better seen in K.

Ecology: On bark of *Pinus* trees.

Distribution: So far it is known only from the type locality in China, Eastern Asia.

Etymology: Species epithet refers to the eastern part of China, where the type collection was done.

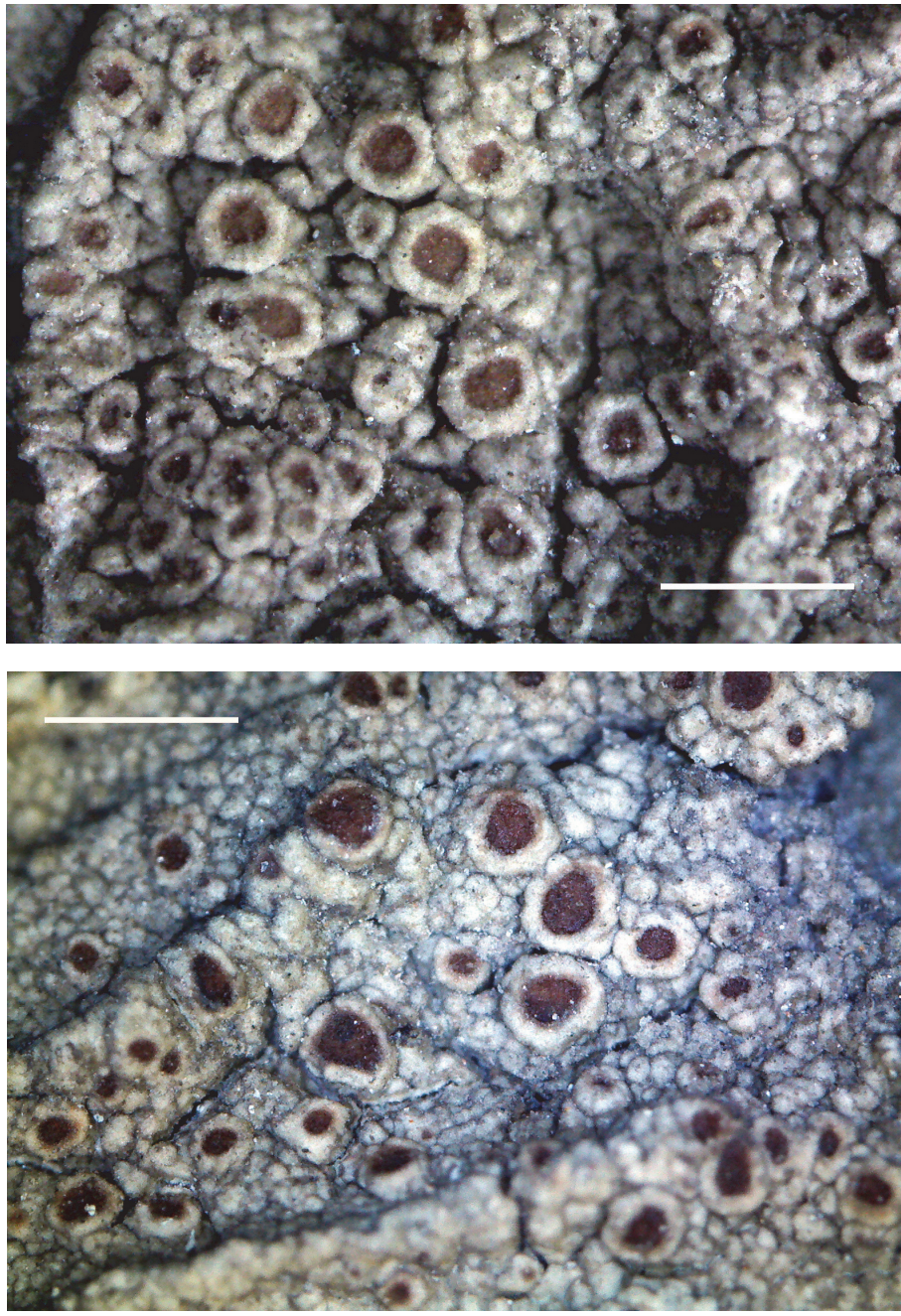

Fig. 1. Fauriea orientochinensis (holotype), general habit. Scale: 1 mm (photo: S. Kondratyuk)

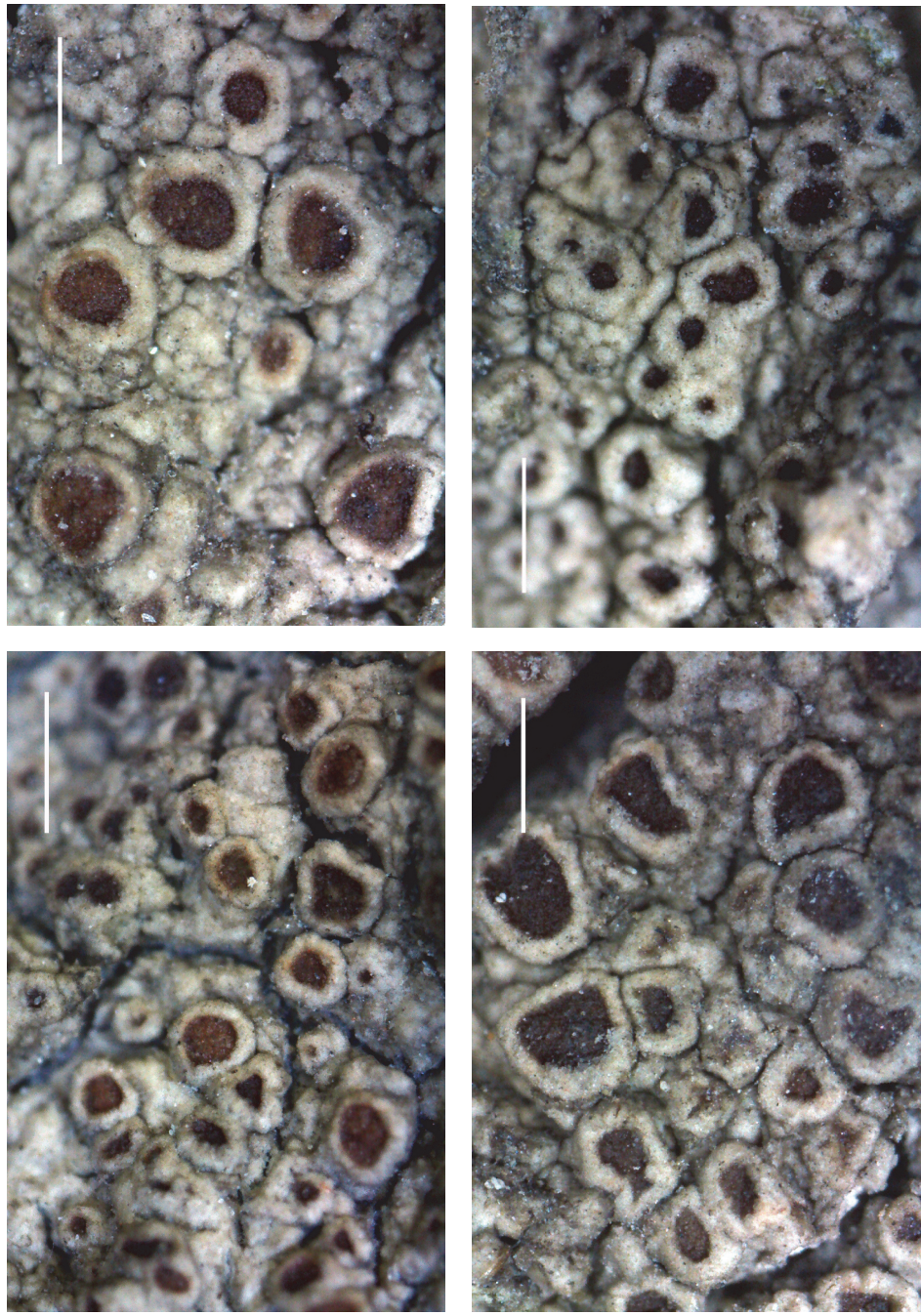

Fig. 2. Fauriea orientochinensis (holotype) enlarged portion of thallus with lecanorine apothecia. Scale: 0.5 mm (photo: S. Kondratyuk)

Taxonomic notes: *Fauriea orientochinensis* is similar to *F. chujaensis* S. Y. Kondr., L. Lőkös et J.-S. Hur, very common in South Korea, Eastern Asia species growing on siliceous rocks in coastal zone of islands and mainland of this country, in having crustose, continuous/entire (not areolate) thallus, and in having numerous *Lecanora*-type apothecia with brown or dark brown disc apothecia not being constricted at the basis, but differs in having much thicker while smaller (0.5–3 cm vs. or 3–5 cm across or more) thallus, in having more often prominent and more regularly developed usually lecanorine apothecia (only sometimes being zeorine), in having better developed thalline margin, in having lower cortical layer of thallus and thalline exciple (to 10 μm vs. 20–25 μm thick), in having higher hymenium (100–110 μm vs. 70–80 μm high), in having thicker and lacking oil subhymenium (100–130 μm vs. 50–60 μm thick, with oil droplets), and in having longer ascospores ((10–)12–15(–16) × 5–6(–7) μm vs. (8–)11–13(–16) × (5–)5.5–6(–7) μm) and in epiphyte substrate.

Similarly to *Fauriea chujaensis* apothecia of *F. orientochinensis* are almost sunken into the thallus, not sessile, mainly not well defined, sometimes as regularly rounded typical of the *Lecanora subfuscata* type. Only rarely and only at the highest magnification apothecia found to be zeorine, where true exciple dull light brownish, and disc dark brown.

Table 1
Specimens included in the phylogenetical analysis with GenBank numbers

Species name	Voucher details / references	ITS	LSU	mt DNA
Blastenia crenularia	Gaya *et al.* (2012)	JQ301711		JQ301489
Blastenia ferruginea		KC179416	KC179163	KC179493
Blastenia subochracea	Arup *et al.* (2013*a*)	KC179418		
Brigantiaea ferruginea	SK779, Kondratyuk *et al.* (2013*b*)	KF264622		KF264684
Brigantiaea ferruginea	SK780, Kondratyuk *et al.* (2013*b*)	KF264623		KF264685
Bryoplaca jungermanniae	Arup *et al.* (2013*a*)	KC179420		
Bryoplaca sinapisperma	Arup *et al.* (2013*a*)	KC179421		KC179495
Bryoplaca tetraspora	Arup *et al.* (2013*a*)	KC179422		
Caloplaca cerina	FNM185, Fedorenko *et al.* (2009, 2012)	EU681284		EU680863
Caloplaca cerina	Gaya *et al.* (2012)		JQ301549	
'*Caloplaca*' *furax*		HQ644341		
'*Caloplaca*' *furax*	Gaya *et al.* (2012)	JQ301622		
Caloplaca pelodella	SK714, Kondratyuk *et al.* (2013*b*)	KF264629		KF264689
'*Caloplaca*' *phaeothamnos*		JN813419		
Caloplaca stillicidiorum	Gaya *et al.* (2008)	EU639607		
Caloplaca thracopontica		HM538525		
Eilifdahlia dahlii	SK956, Kondratyuk *et al.* (2014*a*)	KJ021221	KJ021252	KJ021277
Eilifdahlia dahlii	SK959, Kondratyuk *et al.* (2014*a*)	KJ021318	KJ021253	KJ021279
Eilifdahlia wirthii	SK262, Kondratyuk *et al.* (2014*a*)	KJ021319	KJ021254	KJ021280
Elenkiniana ehrenbergii	Søchting and Figueras (2006)	DQ888715		
Elenkiniana gloriae	SK750, Kondratyuk *et al.* (2014*a*)	KJ021323		

Table 1 (continued)

Species name	Voucher details / references	ITS	LSU	mt DNA
Elenkiniana gloriae	SK611, Kondratyuk *et al.* (2014*a*)	KJ021321	KJ021256	KJ021282
Elenkiniana gloriae	SK613, Kondratyuk *et al.* (2014*a*)	KJ021322		KJ021283
Fauriea orientochinensis	SK709, China, CH 110017 KoLRI 013959	KX793095	KX793098	KX793101
Fauriea orientochinensis	SK710, China, CH 110015 KoLRI 013957	KX793096	KX793099	KX793102
Fauriea chujaensis	SKD07, S Korea, Jeju-do, Jeju-si, Chuja-do Island, 33° 56′ 38.66″N, 126° 18′ 47.10″E, 10 m alt., Kondratyuk, S. (141138) 22.06.2014, KoLRI 023698 – isotype	KX793097	KX793100	KX793103
Franwilsia bastowii	SK810, Kondratyuk *et al.* (2014*a*)	KJ021324	KJ021257	KJ021284
Franwilsia kilcundaensis	SK920, Kondratyuk *et al.* (2014*a*)	KJ021326	KJ021259	KJ021286
Franwilsia renatae	SK235, Kondratyuk *et al.* (2014*a*)	KJ021329		KJ021289
Fulgensia fulgens	SK735, Kondratyuk *et al.* (2014*a*)	KJ021335		KJ021295
Fulgensia cranfieldii	SK983, Kondratyuk *et al.* (2014*a*)	KJ021333	KJ021262	KJ021292
Fulgensia poeltii	Gaya *et al.* (2008)	EU639586		
Fulgogasparrea decipioides	SK689, Kondratyuk *et al.* (2013*b*)	KF264644		KF264695
Gyalolechia canariensis	Gaya *et al.* (2008)	EU639587		
Gyalolechia canariensis	SK583, Kondratyuk *et al.* (2014*a*)	KJ021332		
Gyalolechia aurea	Arup *et al.* (2013*a*)	KC179434	KC179196	KC179530
Huneckia rheinigera	SK3204, Kondratyuk *et al.* (2014*a*)	KJ021222		
Huneckia pollinii	SK3206, Kondratyuk *et al.* (2014*a*)	KJ021336	KJ021265	KJ021296
Huneckia pollinii	SK870, Kondratyuk *et al.* (2014*a*)	KJ021337	KJ021266	KJ021297
Ioplaca pindarensis	Gaya *et al.* (2012)	JQ301672		
Jasonhuria bogilana	KoLRI 120454, Kondratyuk *et al.* (2015*d*)	KT220196	KT220205	KT220214
Jasonhuria bogilana	KoLRI 120469, Kondratyuk *et al.* (2015*d*)	KT220197	KT220206	KT220215
Jasonhuria bogilana	KoLRI 120641, Kondratyuk *et al.* (2015*d*)	KT220198	KT220207	KT220216
Jasonhuria bogilana	KoLRI 120647, Kondratyuk *et al.* (2015*d*)	KT220199	KT220208	KT220217
Josefpoeltia sorediosa	SK991, Kondratyuk *et al.* (2013*b*)	KF264645	KF264673	KF264696
Kaernefia kaernefeltii	SK921, Kondratyuk *et al.* (2013*b*)	KF264652	KF264680	KF264703
Leproplaca obliterans	Arup *et al.* (2013*a*)	KC179449	KC179207	
Leproplaca xantholyta	Arup *et al.* (2013*a*)	KC179451	KC179208	KC179542
Leproplaca xantholyta	Gaya *et al.* (2012)	JQ301670	JQ301565	
Loekoesia austrocoreana	KoLRI 120511, Kondratyuk *et al.* (2015*d*)	KT220200	KT220209	KT220218
Loekoesia austrocoreana	KoLRI 120523, Kondratyuk *et al.* (2015*d*)	KT220201	KT220210	KT220219
Loekoesia austrocoreana	SK261, Kondratyuk *et al.* (2015*d*)	KT220202	KT220211	KT220220
Marchantiana maulensis	SK994, Kondratyuk *et al.* (2014*a*)	KJ023182	KJ023184	
Marchantiana occidentalis	SK981, Kondratyuk *et al.* (2014*a*)	KJ021227	KJ021268	KJ021303
Marchantiana occidentalis	SK982, Kondratyuk *et al.* (2014*a*)	KJ021228	KJ021269	KJ021304
Mikhtomia gordejevii	SK80515, Kondratyuk *et al.* (2014*a*)	KJ021231		KJ021307

Table 1 (continued)

Species name	Voucher details / references	ITS	LSU	mt DNA
Mikhtomia gordejevii	SK80646, Kondratyuk *et al.* (2014*a*)	KJ021232		KJ021308
Mikhtomia oxnerii	SK90117, Kondratyuk *et al.* (2014*a*)	KJ021233		KJ021311
Mikhtomia oxnerii	SK90755, Kondratyuk *et al.* (2014*a*)	KJ021234		KJ021312
Olegblumia demissa	SK C65, Kondratyuk *et al.* (2015*d*)	KT220203	KT220212	KT220221
Olegblumia demissa	Arup and Grube (1999)	AF353960		
Olegblumia demissa	Arup *et al.* (2013*a*)		KC179172	KC179505
Olegblumia demissa	Arup and Grube (1999)	AF353962		
Olegblumia demissa	Arup and Grube (1999)	AF353961		
Oxneria alfredii	FNM 152, Fedorenko *et al.* (2009)	FNM 152		
Pyrenodesmia alociza	SK747, Kondratyuk *et al.* (2014*a*)	KJ021239		KJ021313
Pyrenodesmia teicholyta	Vondrák *et al.* (2012)	JN641791		
Pyrenodesmia teicholyta	Arup *et al.* (2013*a*)		KC179176	
Pyrenodesmia variabilis	Gaya *et al.* (2003)	AY233224		
Rufoplaca scotoplaca	Arup *et al.* (2013*a*)	KC179457	KC179235	KC179573
Rufoplaca tristiuscula	Arup *et al.* (2013*a*)	KC179460	KC179237	KC179575
Seirophora californica	Arup *et al.* (2013*a*)	KC179643		
Seirophora lacunosa	SK B07, Kondratyuk *et al.* (2015*d*)	KT220204	KT220213	KT220222
Seirophora villosa	Martin and Winka (2000)	AF098407		
Teloschistes flavicans	FNM-139, Fedorenko *et al.* (2009, 2012)	EU681363		EU680955
Teloschistes flavicans	Arup *et al.* (2013*a*)	KC179317	KC179255	KC179594
Usnochroma carphinea	Arup *et al.* (2013*a*)	KC179468	KC179259	KC179598
Usnochroma carphinea		EU639595		
Usnochroma carphinea	Gaya *et al.* (2012)		JQ301548	
Usnochroma scoriophila	Gaya *et al.* (2012)	JQ301664	JQ301560	
Variospora alpigena	Arup and Grube (1999)	AF353956		
Variospora latzelii	Vondrák *et al.* (unpubl.)	JN813418		
Variospora velana	Arup *et al.* (2013*a*)	KC179476	KC179265	KC179605
Xanthocarpia ochracea	SK637, Kondratyuk *et al.* (2014*b*)	KJ133483		
Xanthoria parietina	FNM-177, Fedorenko *et al.* (2009, 2012)	EU681289		EU680868
Xanthoria parietina	Gaya *et al.* (2012)		JQ301589	
Yoshimuria cerussata	SK768, Kondratyuk *et al.* (2014*a*)	KJ021248		
Yoshimuria galbina	SK704, Kondratyuk *et al.* (2014*a*)			KJ023197
Yoshimuria spodoplaca	SK725, Kondratyuk *et al.* (2014*a*)	KJ021249		KJ023194

New combinations

Fauriea chujaensis (S. Y. Kondr., L. Lőkös et Hur) S. Y. Kondr., L. Lőkös, J. Kim, A. S. Kondratiuk, S.-O. Oh et J.-S. Hur., *comb. nova* [Mycobank no.: MB 817963] – Basionym: *Caloplaca chujaensis* S. Y. Kondr., L. Lőkös et J.-S. Hur in Kondratyuk *et al.* Acta Bot. Hung. 57(1–2): 86 (2015).

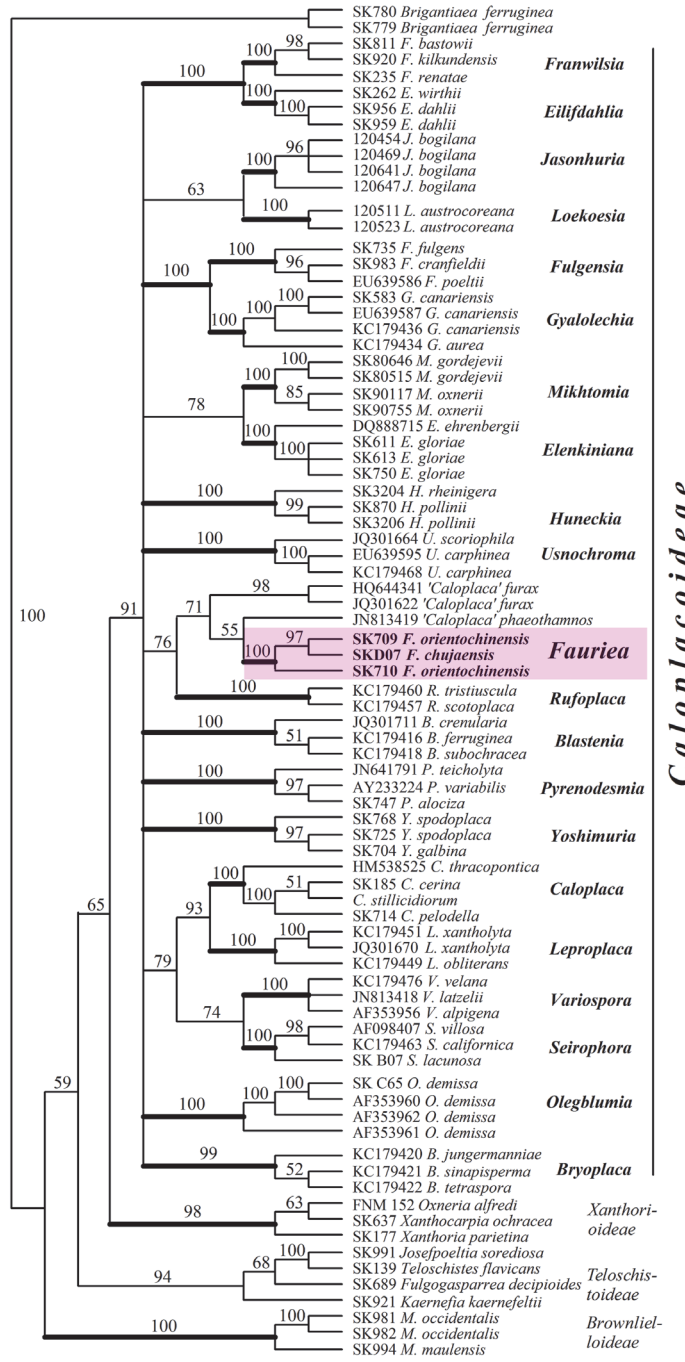

Fig. 3. Phylogenetic tree of the caloplacoid lichens based on combined data set

Type: Republic of Korea. Jeju-do Province: Jeju-si, Chuja-do Island, Chuja-myeon, small gorge with steep shaded walls at Muk-ri, along the western coast. Lat.: 33° 56′ 38.66″ N; Long.: 126° 18′ 47.10″ E; Alt.: *ca* 10 m a.s.l., on siliceous rock, growing together with *Caloplaca siderites*. Coll.: Kondratyuk, S. Y. [site 15], L. Lőkös and J. Halda (141135), 22.06.2014 (KoLRI 023695 – holotype).

Specimen of *Fauriea chujaensis* examined: China, Shandong Prov., Rongcheng Co., Mt Chengshantou, on rock, growing together with *Ramalina sekika*. Lat.: 37° 25′ 03.0″ N; Long.: 122° 40′ 38.3″ E; Alt.: 20 m a.s.l. Coll.: Wang, X. Y. and Hur, J.-S. (CH-110018), 18.07.2011 (KoLRI 013960 sub *Ramalina sekika*). – It is for the first timer recorded for China.

As far the name *Tayloriella* S. Y. Kondr., Kärnefelt., A. Thell, Elix et Hur (Kondratyuk *et al.* 2015*b*) found to be a later homonym of the genus *Tayloriella* Kylin (Rhodomebaceae, Rhodophyta), a new name *Tayloriellina* for this lichen genus of the subfamily Brownlielloideae as well as new combination for type species of this genus is consequently proposed.

Tayloriellina S. Y. Kondr., Kärnefelt., A. Thell, Elix et Hur, *nom. nov.* [Mycobank no.: MB 817964] – Syn.: *Tayloriella* S. Y. Kondr., Kärnefelt., A. Thell, Elix et Hur, in Kondratyuk, Kärnefelt., Thell, Elix, Kim, Kondratiuk et Hur, Acta Bot. Hung. 57(3-4): 336 (2015), nom. inval. non *Tayloriella* Kylin (Rhodomebaceae, Rhodophyta). – Type species: *Tayloriellina erythrosticta* (Taylor) S. Y. Kondr., Kärnefelt., A. Thell, Elix, J. Kim, A. S. Kondr. et Hur.

Tayloriellina erythrosticta (Taylor) S. Y. Kondr., Kärnefelt., A. Thell, Elix, J. Kim, A. S. Kondr. et Hur, *comb. nova* [Mycobank no.: MB 817965] – Basionym*: Lecanora erythrosticta* Taylor, London J. Bot. 6: 161 (1847). – Syn.: *Caloplaca erythtosticta* (Taylor) Zahlbr., Cat. Lich. Univers. 7: 116 (1930) [1931]. ≡ *Tayloriella erythrosticta* (Taylor) S. Y. Kondr., Kärnefelt., A. Thell, Elix, J. Kim, A. S. Kondr. et Hur, in Kondratyuk, Kärnefelt., Thell, Elix, Kim, Kondratiuk et Hur, Acta Bot. Hung. 57(3–4): 341 (2015), nom. inval.

CONCLUSIONS

The further data on molecular characters of crustose members of the Teloschistaceae will allow clarifying species diversity of genus described here, as well as its diagnostic characters.

Status of a number of phylogenetical branches, which are positioned within the clades *Mikhtomia* s. lat., *Variospora* s. lat., and *Seirophora* s. lat., will be especially discussed in our next paper on taxonomy and molecular phylogeny of the caloplacoid lichens.

*

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