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Gelatinopsis roccellae (Leotiales, Ascomycota), a new lichenicolous fungus on *Roccella* from NW Spain

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Abstract: The new lichenicolous fungus *Gelatinopsis roccellae* is described from NW Spain, where it grows on *Roccella fuciformis* and *R. phycopsis*. It differs from *G. ericetorum*, which grows on *Dibaeis*, by the shorter ascospores, smaller ascomata, and the absence of an olivaceous excipular and epihymenial pigment.

Introduction

During a lichenological exploration of the Galician seaboard (NW Spain), the second author discovered a lichenicolous fungus growing on the thallus of *Roccella*. Although the ascomata looked arthonioid, a microscopical examination showed that the fungus was leotialean and belonged to the fungicolous (incl. lichenicolous) genus *Gelatinopsis* Rambold & Triebel (*Calloriopsideae* Pfister). The methods used were the same as in Diederich & Etayo (2000).

Results

Gelatinopsis roccellae Etayo, Paz-Bermúdez & Diederich sp. nov.

Fungus lichenicola in thallo *Roccellae* vigens, a speciei *Gelatinopsis ericetorum* ascosporis brevioribus, 8–10·5(–12) × 3–4(–5) µm, ascomatibus parvioribus, 70–120 µm diam. et excipulo epihymenioque non olivaceo differt.

Typus: Spain, A Coruña, Illa de Sálvora, Praia do Almacén, on granite, on *Roccella phycopsis*, June 1996, *G. Paz-Bermúdez* (SANT-Lich 9862—holotypus; herb. Diederich, herb. Etayo—isotypi).

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(Fig. 1)

Ascomata apothecioid, arising in groups, initially deeply immersed and visible through linear or irregular fissures which they form in the host cortex, later erumpent; hymenium sometimes becoming slightly raised over the host thallus, then roundish or irregular in form, often confluent; disc brown to black, light brown when wet, slightly concave to slightly convex, without any visible margin, 70–120 µm diam. (n=10). *Exciple* laterally thin, 15–20 µm thick, not raised over the hymenium, without hairs, prosenchymatous, composed of ± parallel, branched hyphae immersed in a hyaline gel, brown in the exposed parts, below paler; basally indistinctly prolonged into a brownish or hyaline stipe; pigment K−, N−. *Subhymenium* hyaline, *c.* 5 µm high. *Epihymenium* brownish, with the same pigment as the exciple, gelatinous. *Hymenium* hyaline, 50–60 µm high, I−, KI−. *Paraphyses* simple, rarely branched, septate, thickened at the apex which is covered by a gelatinous coat; individual cells 9–15 × 1·5–3 µm, apically 2–4 µm thick. *Asci* subcylindrical to clavate, unitunicate, wall apically not thickened, KI−, 8-spored, without croziers, 38–50 × 7–10 µm. *Ascospores* uni- to biseriate, simple, ellipsoid to ovoid, homopolar, with rounded apices, straight to slightly curved, hyaline, with two large guttules (examined in

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FIG. 1. *Gelatinopsis roccellae* (holotype). A, ascomata immersed in the thallus of *Roccella phycopsis*; B, ascomatal section showing the exciple (in water); C, ascospores (two biguttulate spores in K, the others in water); D, hymenium showing paraphyses and asci in several stages of development. Scales: A = 500 μm; B–D = 10 μm.

K), 8–10·5(–12) × 3–4(–5) µm (n=43). *Conidiomata* not observed.

Distribution and hosts. The new species is known from two coastal localities in NW Spain (Galicia), where it develops on the thallus of *Roccella fuciformis* and *R. phycopsis* (especially at the base of the thallus) on granitic rocks. Although the first author has carefully studied the *Roccella* populations of the coastal rocks from the Canary Islands (Tenerife, La Gomera & La Palma), the second author those of Galicia, and the third author those from Britanny (France, Côtes d'Armor), no additional population of the new fungus has been found. Furthermore, the examination of a large number of *Roccella* specimens, both in BCC and MUB and in the private herbaria of the authors, and also amongst the parasitized *Roccella* material kindly submitted to us some time ago by Prof. Follmann, did not yield any further specimens or additional hosts for the new species. *Gelatinopsis roccellae* is evidently a rare fungus.

When the host thallus is completely invaded by the fungus, it is often in a poor condition (smaller, darker, with more amorphous branches) which suggests that the *Gelatinopsis* is a weak parasite. Older apothecia are sometimes parasitized by a dematiaceous hyphomycete with ornamented, 1-septate, brown conidia, growing in the hymenium.

Discussion. The subcylindrical to clavate, non-amyloid, thin-walled asci lacking any apical structures, the linear, occasionally branched paraphyses and the non-septate, hyaline ascospores, indicate that the new fungus belongs to the Leotiales. In our opinion, it clearly falls within the current circumscription of the genus *Gelatinopsis*, which has a strongly gelatinized exciple and epihymenium, a similarly organized exciple, yellowish to brownish (in some species ochraceous to olivaceous) excipular pigments, immarginate ascomata which are often immersed in the substratum, similar paraphyses, and a non-amyloid ascus wall apically not or only exceptionally thickened (Rambold & Triebel 1990; Baral & Marson 2001).

Gelatinopsis roccellae is similar to the only hitherto recognized lichenicolous species of the genus, *G. ericetorum* (Körb.) Rambold & Triebel, which is distinguished by larger ascomata (200–500 µm in diam.), longer, cylindrical-oblong ascospores (10·5–14 × 2·9–3·4 µm), an olivaceous excipular and epihymenial pigment, and a different host, *Dibaeis baeomyces* (Baral & Marson 2001). It would have been interesting to study the variation of the ascospore size in both species statistically to find out if they are significantly different. Unfortunately, all the specimens of *Gelatinopsis ericetorum* which we examined were old, small and reduced, and it was not reasonable to cut more of the few remaining ascomata to obtain this data. Furthermore, the spore size within the two populations of the new fungus would not reflect the entire variability within the species and any conclusion based on the available information might be misleading. As there are other differences between the two species, their distinction does not depend on the ascospore dimensions.

Amongst the other species of *Gelatinopsis* recognized by Baral & Marson (2001), *G. fungicola* (Kirschst.) Baral and *G. geoglossi* (Ellis & Everh.) Rambold & Triebel both differ in having clavate-dacryoid, usually heteropolar ascospores and pale ascomata; the ascospores of *G. polyconidiata* Baral & G. Marson and *G. septata* Aptroot become 1–3-septate and bud off conidia from both ends and the middle cells; *G. tryblidariae* (A. Carter & Malloch) Hosoya & Y. Otani has narrowly cylindrical ascospores that are 1·8–2·5 µm wide, and pale reddish brown ascomata; *G. hysteropatellae* Baral & G. Marson has globose to ovoid ascospores of 4–7 × 3·6–5 µm and completely immersed, macroscopically invisible ascomata; *G. exidiophila* Baral & G. Marson has superficial, light dirty reddish brown to greyish amber ascomata and broader ascospores, 8–10 × 4·5–6·5 µm.

Gelatinopsis roccellae is also similar to some species of *Rhymbocarpus* Zopf, especially *R. boomii* Etayo & Diederich, a species found on *Dirina ceratoniae* (*Roccellaceae*) (Diederich & Etayo 2000). *Gelatinopsis*

roccellae, however, differs from all species of *Rhymbocarpus* recognized by Diederich & Etayo (2000) by the absence of the greenish excipular pigment and by the less delimited, more irregular and often confluent ascomata. The greenish pigment characteristic of these *Rhymbocarpus* species is also present in the lichenicolous *Gelatinopsis ericetorum*, but is absent in all other species of *Gelatinopsis* recognized by Barel & Marson (2001). In our opinion, the genera *Rhymbocarpus* Zopf (1896), as circumscribed by Diederich & Etayo (2000), and *Gelatinopsis* Rambold & Triebel (1990), as circumscribed by Baral & Marson (2001), are closely related, and their delimitation needs further studies.

Among the lichenicolous leotialean fungi, no other genus can be confused with *Gelatinopsis* (see generic key in Diederich & Etayo 2000). A superficial resemblance exists with the lichenicolous genus *Phacopsis* (Lecanorales), which has completely different asci, and ascomata often inducing the formation of galls on members of the *Parmeliaceae* (see Triebel *et al.* 1995). Another macroscopically similar lichenicolous fungus, *Arthophacopsis parmeliarum* Hafellner, is readily distinguished by its *Arthonia*-type asci and branched and anastomosed paraphyses (Hafellner 1998).

Although the genus *Roccella* appears to host several species of lichenicolous fungi, not one single species is mentioned from this host in Clauzade *et al.* (1989). *Arthonia follmanniana* Diederich was described from the Galápagos Islands on *Roccella galapagoensis* by Diederich (1995) and eventually proved to be not uncommon in the Canary Isles on *Roccella canariensis* and *R. fuciformis* (Hafellner 1996). *Lecanographa grumulosa* (Duf.) Egea & Torrente, often treated as a lichenized taxon (e.g. Purvis & Rose 1992, as *Lecanactis grumulosa*), is now considered to be a lichenicolous fungus inhabiting thalli of *Dirina* and *Roccella* (Egea & Torrente 1994).

Additional specimen examined. **Spain:** *Pontevedra*: Península de O Grove, S. Vicente do Mar, on granite, on *Roccella fuciformis*, iii 1996, *G. Paz-Bermúdez* (SANT-Lich 9861).

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