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## ***Pyrenula relictata* sp. nov. (Pyrenulales, Ascomycotina), a new European lichen species**

### **Abstract**

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*Pyrenula relictata* Etayo & Puntillo, a lichen species new to science, is currently known from only two localities, in Southern Italy and Western France, where it grows in shaded and sheltered canyons with very interesting lichen floras.

*Key words:* Lichens, *Pyrenula*, Italy, France.

### **Introduction**

Over several years, the first author has studied the lichen and lichenicolous flora of the western Pyrenees within the “Pirineo navarro” or “Pirineos occidentales” in Spain and Pyrénées-Atlantiques in France. The Navarre section was studied for a doctoral thesis (Etayo 1989), after which some records were published, but others awaited further discoveries and more time to be dedicated them. The species treated here were studied together with E. Sérusiaux in the course of an as yet unpublished paper on the very rich *Pyrenula* flora of that part of the Pyrenees. Recently, the second author discovered the presence of the same species in Italy and we both finally decided to describe this *Pyrenula* species.

### **Material and methods**

For microscopic examination (up to 1000×), hand sections of the perythecia were prepared and mounted in water or, to increase the contrast, in lactophenol-cotton blue. All measurements were made in water. Drawings were made with a drawing tube.

*Pyrenula relictata* Etayo & Puntillo sp. nov.: *Pyrenula relictata* ab eadem quae occidentalis vocatur pro eius ascomatibus minoribus (0,3-0,45 mm), perithecia magis applanata cum involucrello, thallo sine rubra pruina, hymenio non insperso sporisque non ornamentatis vero differt.

*Typus*: Italia, Campania, Salerno, Morigerati, Gole del Bussento, on *Buxus sempervirens* twigs, 100-150 m, 28.7.1997, D. Puntillo 10451 (CLU-holotypus, hb. Etayo-isotypus).

Thallus thin, immersed, continuous, not pseudocyphellate, delimited by a black hypothallus, olive-green (in shade) to olive-orange, UV+ orange, with *Trentepohlia*. Ascomata perithecia, black, isolated to aggregate, flattened rarely subglobose (0.3-0.45 mm in diam.), with a black involucrellum spreading laterally, K-, up to 0.7 mm. Ostiole central, sometimes in a small papilla or hole. Exciple black, entire, without crystals amongst the carbonaceous hyphae, c. 30 µm thick laterally. Hymenium jelly I+ orange (dextrinoid reaction), KI+ yellow, without oil drops or crystals. Hamatecium of unbranched paraphyses, not anastomosed, thin, c. 1 µm thick, paraphyses covering the ostiolar canal. Asci subcylindrical to clavate, thickened at the apex, I-, first uniseriate, finally, when the spores grow, biseriate, 90-100 × 13-15 µm. Spores ellipsoid, the apices rounded, brownish, darker in the septa, smooth-walled, 3-septate, thick-walled, distoseptate, with angular central cells, end-cells with lumina directly against the exospore, 14-18 × 6.5-8.5 µm. Conidiomata not seen.

### Etymology

*P. relictata* is named after its location, namely in humid, shaded canyons with stable climate, where some tropical lichen species have survived so far.

### Remarks

Sérusiaux & Diederich (1992) recognized four different spore types in European *Pyrenula*. One of these is elliptical to almost cylindrical, brown, medium-size with elliptical to rhomboid lumina, the terminal cell pressed against the exospore. Spores with terminal lumina pressed directly onto the exospore is also one of the features of *P. relictata*. This character is also shown by another European species: *P. occidentalis* (R. C. Harris) R. C. Harris. However, *P. relictata* differs from that species in several characters: the ascomata are smaller, 0.3-0.45 vs. 0.4-0.6(-0.7) mm, more applanate and covered by a laterally spreading involucrellum that gives them a broader appearance (to 0.7 mm diam.); sometimes the perithecia are aggregated into small groups. *P. occidentalis* has semi-spherical perithecia, without involucrellum and dispersed on the thallus. *P. relictata* has more typically elliptical spores, with smooth wall, a non-interspersed hymenium which reacts I+ yellow-orange, KI+ yellow, while *P. occidentalis* has broader cylindrical spores with pointed ends, ornamented with small, brown, granules, the hymenium is interspersed and reacts I+, KI+ blue. Furthermore, *P. occidentalis*, at least in European samples, is usually covered by a red pruina reacting K+ purplish, not present in *P. relictata*.

### Habitat and distribution

*P. relictata* grows on thin twigs of *Buxus sempervirens* in shaded canyons in France (Kakouetta) and Italy (Gole del Bussento). It has not been found so far outside deep, nar-

row gorges, which are very important for the survival of several tropical or subtropical species. In both stations it grows on *Buxus* leaves, which often host several foliicolous species (Puntillo & al. 2000; Sérusiaux 1993, 1998, 2001): *Bacidia colchica* Vězda, *Byssoloma leucoblepharum* (Nyl.) Vainio, *Byssoloma kakouettae* (Sérus.) Lücking & Sérus., *B. subdiscordans* (Nyl.) P. James, *Fellhanera bouteillei* (Desm.) Vězda, *F. christiansenii* Sérus. & Vězda, *Fellhaneropsis myrtillicola* (Erichs.) Sérus. & Coppins, *Gyalectidium minus* Sérus., *G. puntilloi* Sérus., *Gyalidea phyllophyla* Vězda, *Porina hoehneliana* (Jaap) R. Sant., *P. oxneri* R. Sant., *Raciborskiella minor* Vězda, *Scoliciosporum curvatum* Sérus., *Strigula nitidula* Mont., *S. smaragdula* Fr. and *Woessia vasakii* (Vězda) Sérus. Accompanying species in Italy on trunks and twigs are: *Enterographa elaborata* (Lyell ex Leight.) Coppins & P. James, *Graphis scripta* (L.) Ach., *Phaeographis smithii* (Leighton) De Lesd., *Porina aenea* (Wallr.) Zahlbr. and *Thelotrema lepadinum* (Ach.) Ach. In Kakouetta, *P. relictata* also grows on twigs of *Buxus*, together with *Graphis elegans* (Borr.) Ach., *G. scripta* (L.) Ach., *Gyalidea cylindrica* Etayo & Vězda, *Porina rosei* Sérus. and *Thelotrema lepadinum* (Ach.) Ach. and especially with several species of *Pyrenula*, *Strigula* and *Graphidales*.

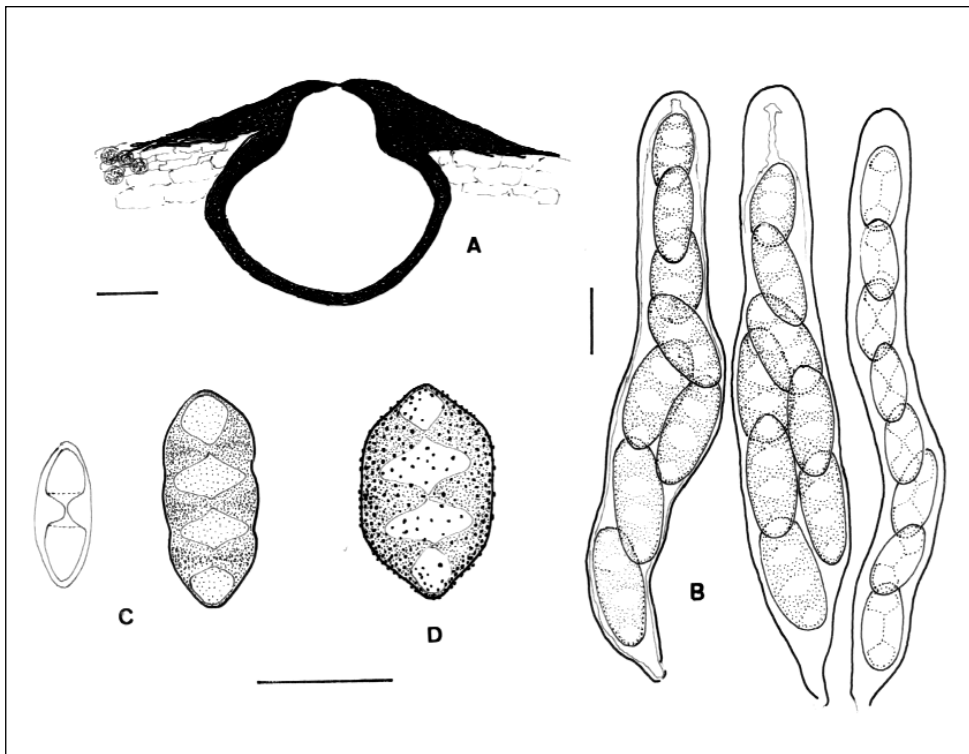


Fig. 1. *Pyrenula relictata* (holotypus). A, transverse section of the perithecia. B, young (right) to mature (left) asci. C, ascospores of *P. relictata* (young to mature). D, spore of Pyrenean *P. occidentalis*. Scales: A = 100 µm; B, C & D = 10 µm.

### Additional localities

Italy, Salerno, Morigerati, Gole del Bussento, 250 m, 21.10.1999, *D. Puntillo* 12968 (CLU); *ibidem*, grotte del Bussento, 100 m, 28.7.1997, *D. Puntillo* 10457 (CLU). France, Pyrénées-Atlantiques, Ste-Engrâce, au sud de Tardets-Sorholus, Gorgue de Kakouetta, on *Buxus sempervirens*, 500 m, 31.1.1993, *J. Etayo* 14008 (hb. Etayo).

Specimens of *P. occidentalis* studied: Canary Islands: La Gomera, La Meseta de Vallehermoso, on *Salix*, 740 m, 3.8.1994, *J. Etayo* 13284, 13295 (hb. Etayo). La Gomera, Agulo, Garajonay, on *Laurus* and *Persea*, 5.8.1994, *J. Etayo* 13413 (hb. Etayo). La Gomera, Hermigua, El Bailadero, *Myrica*, 1010 m, 4.8.1994, *J. Etayo* 13433, 13440 (hb. Etayo). La Palma, Los Tilos, Mirador de la Baranda, on *Ocotea* and *Castanea*, 460-720 m, 12.8.1995, *J. Etayo* 13541 (hb. Etayo). La Palma, Galga, Cubo de la Galga, on *Ilex*, 550-600 m, 13.8.1995, *J. Etayo* 13719 (hb. Etayo). Tenerife, amongst Pico del Inglés and Cruz del Carmen, 900 m, 7.7.1991, *J. Etayo* 1371 (hb. Etayo). Tenerife, way to Taborno, on *Laurus*, *J. Etayo* w.n. (hb. Etayo). Tenerife, Monte de la Mercedes, track to Plano del Loro, on *Laurus*, 7.1991, *J. Etayo* 3650 (hb. Etayo). France: Pyrénées-Atlantiques, Ste. Engrâce, gorges de Kakouetta, on *Sorbus*, 450 m, 28.8.1995, *J. A. Azpilicueta*, *J. Etayo* 1359, *W. Müller* & *C. Serra* (hb. Etayo). Pyrénées-Atlantiques, Ehujarre, on *Corylus*, 18.8.1991, *P. Diederich* & *J. Etayo* 1350 (hb. Etayo). Spain: Navarra, Iribas, on *Ulmus*, *J. Etayo* 4909 (hb. Etayo); *ibidem*, on *Corylus*, *J. Etayo* 4033 (hb. Etayo).

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