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Lichens and lichenicolous fungi new for Tenerife (Canary Islands)

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Résumé – Une étude de lichens et de champignons lichénicoles de Ténérife, basée sur du matériel récent, est présentée. Deux espèces de lichens sont nouvelles pour l'Afrique : *Anisomeridium ranunculosporum* et *Arthothelium dictyosporum*, ce dernier ayant été considéré jusqu'à présent comme une espèce endémique d'Ecosse. Deux espèces de lichens sont nouvelles pour la Macaronésie : *Brigantiaea leucoxantha* et *B. tricolor*, tandis que la présence de *Polymeridium proponens* y est confirmée. Sept espèces de champignons lichénicoles sont nouvelles pour les îles Canaries : *Lichenosticta alcicorniaria*, *Monodictys epilepraria*, *Paranectria oropensis*, *Phacopsis fusca*, *Phaeosporobolus alpinus*, *Stigmidium neofusceliae* et *Syzygospora physciacearum*. Quinze espèces sont nouvelles pour Ténérife : *Belonia lumbrispora*, *Biatoropsis usnearum*, *Catillaria nigroclavata*, *Homostegia piggotii*, *Lichenoconium erodens*, *Phacopsis cephalodioides*, *Pronectria pertusariicola*, *Pyrenula hibernica*, *Roselliniella nephromatis*, *Sphaerophorus globosus*, *Syzygospora bachmannii*, *Tremella cetrariicola*, *T. coppinsii*, *T. hypogymniae* et *Xanthoriicola physciae*.

Biodiversité / biogéographie / hôte / lichen / Macaronésie / Espagne / taxonomie

Abstract – A study of lichens and lichenicolous fungi from Tenerife, based on recent collections, is presented. Two lichen species are new to Africa: *Anisomeridium ranunculosporum* and *Arthothelium dictyosporum*, the latter having been considered until now as an endemic species from Scotland. Two species are new for Macaronesia: *Brigantiaea leucoxantha* and *B. tricolor*, whilst the presence of *Polymeridium proponens* is confirmed. Seven species of lichenicolous fungi are new for the Canary Islands: *Lichenosticta alcicorniaria*, *Monodictys epilepraria*, *Paranectria oropensis*, *Phacopsis fusca*, *Phaeosporobolus alpinus*, *Stigmidium neofusceliae* and *Syzygospora physciacearum*. Fifteen species are new for Tenerife: *Belonia lumbrispora*, *Biatoropsis usnearum*, *Catillaria nigroclavata*, *Homostegia piggotii*, *Lichenoconium erodens*, *Phacopsis cephalodioides*, *Pronectria pertusariicola*, *Pyrenula hibernica*, *Roselliniella nephromatis*, *Sphaerophorus globosus*, *Syzygospora bachmannii*, *Tremella cetrariicola*, *T. coppinsii*, *T. hypogymniae* and *Xanthoriicola physciae*.

Biodiversity / biogeography / host / lichen / Macaronesia / Spain / taxonomy

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INTRODUCTION

Tenerife is the largest and highest island of the Canary Islands and like the rest of the archipelago, is of volcanic origin. The island lies in the mid-Atlantic, between 16.1° and 16.6° W longitudinal and between 28.0° and 28.4° N latitudinal, and has a surface area of around 2000 km^2. It can be divided in a very dry southern part and a much more humid northern part. The vegetation shows a remarkable altitudinal zonation ranging from the coastal region to the summit of the island at 3718 m (Kunkel, 1993). In the northern part, two large areas (Las Montanas de Anaga and Monte del Agua) are still covered with well preserved laurel forest, which is a subtropical forest type considered as a relic from the Tertiary period. The laurel forest hosts a very rich and original lichen flora such as Lobarion and epiphyllous communities. Many publications were devoted to the flora of lichens and lichenicolous fungi of the Canary Islands archipelago. Most of these data are included in the checklists by Hernández-Padrón (2004) and Hafellner (1995a, 1999, 2002, 2005a). Very recently, contributions to the lichen flora of the archipelago were published on the genera *Usnea* (Clerc 2006) and *Porina* (Sérusiaux *et al.* 2007) and on cyanobacterial lichens (Schultz & van den Boom 2007). New and interesting records were provided for La Palma (van den Boom, 2007). Some new species have also been described from Tenerife (Crespo *et al.*, 2006) and Fuerteventura (van den Boom & Etayo, 2006).

The aim of this paper is to publish additions to the checklist of lichens and lichenicolous fungi of Tenerife, based on the material collected during a field trip of one week made by the two authors. Specimens for this study were collected mainly in coastal areas, laurisilva forests, forests of *Pinus canariensis* and in areas dominated by volcanic rocks with sparse vegetation at different altitudes (see list of localities).

MATERIAL AND METHODS

Material of lichens and lichenicolous fungi was collected from 18 to 25 July 2007. Examination of thallus and apothecial anatomy was made using standard microscopic techniques. Microscopical examination such as ascospores measurements were made in water and in 5% KOH at magnifications of ×400 or ×1000. The specimens have been deposited in the herbaria of the National Botanical Garden of Belgium (BR) and the private herbarium of Paul Diederich (Di).

List of Localities

Loc. 1.
Tenerife, Las Montanas de Anaga, Monte de las Mercedes, Mirador de Jardina, 28°31' N, 16°17' W, 880 m, trees and rocks along road, 19 and 24 July 2007.

Loc. 2.
Tenerife, Las Montanas de Anaga, 3.5 km on road S of Chamorga, 28°33'33" N, 16°09'50" W, 700 m, laurisilva, 19 July 2007.

Loc. 3.
Tenerife, S of Puerto de la Cruz, Valle de la Orotava, along road to Teide, between Aguamansa and Bermeja, 28°21'24" N, 16°30'33" W, 1180 m, mixed forest with *Erica arborea* and *Pinus canariensis*, 20 July 2007.

Loc. 4.
Tenerife, S of Bosque de la Esperanza, along road to Güímar, barranco close to Los Loros, 28°22'18" N, 16°25'39" W, 1125 m, rocks in dry valley, 20 July 2007.
Loc. 5.
Tenerife, Bosque de la Esperanza, Las Lagunetas, Cumbres de la Victoria, 28°24'34" N, 16°25'16" W, 1675 m, forest with *Pinus canariensis*, 20 July 2007.
Loc. 6a.
Tenerife, S of Los Silos, c. 1 km W of Erjos, Monte del Agua, 28°19' N, 16°48' W, 1140 m, laurisilva, 22 July 2007.
Loc. 6b.
Id., forest remnants with *Pinus canariensis*.
Loc. 6c.
Id., Erjos, on *Casuarina* trees along road (altitude c. 1100 m).
Loc. 7.
Tenerife, Las Montanas de Anaga, Monte de las Mercedes, Mirador Pico del Inglés, laurisilva and rocks along road, 28°32'00" N, 16°15'51" W, 975 m, 24 July 2007.
Loc. 8.
Tenerife, Las Montanas de Anaga, Monte de las Mercedes, laurisilva along road and ridge W of Cruz del Carmen, 28°32' N, 16°17' W, 910 m, 24 July 2007.
Loc. 9.
Tenerife, Las Montanas de Anaga, Monte de las Mercedes, road between Las Mercedes and Mirador de Jardina, 28°31' N, 16°17 W, 860 m, *Cupressus* and other trees along road, 24 July 2007.

RESULTS

Anisomeridium ranunculosporum (Coppins & P. James) Coppins

Loc. 9, on bark of trees along road, Diederich 16642 & Ertz (Di).

This lichen was previously often misinterpreted as *Arthopyrenia cinereopruinosa* (Coppins, 1988). New for Macaronesia and for Africa.

Arthothelium dictyosporum (Coppins & P. James) Coppins

Loc. 6a, on a smooth trunk in laurisilva, Ertz 10855 (BR).

This species was considered as a possible endemic of Scotland, where it inhabits old woodlands and grows on smooth bark of *Corylus*, *Ilex* and *Sorbus*, as well as on roughish bark of *Salix* (Coppins 1992). It is an extremely rare member of the hyperoceanic *Graphidion* alliance, with previously just six localities known (http://www.ukbap.org.uk/UKPlans.aspx?ID=113). As the species is similar in appearance to *Arthonia ilicina* which grows in the same habitats, it might have been overlooked in the laurisylva of Macaronesia where *A. ilicina* is quite common. It is new for Macaronesia and for Africa.

Belonia lumbrispora **Etayo**

Loc. 8, epiphytic on an old tree in laurisilva, Diederich 16462 & Ertz 10905 (BR, Di).

B. lumbrispora is an endemic species of the Canary Islands, described only in 1996 from La Gomera and La Palma (Etayo, 1996a). It is new for Tenerife.

Biatoropsis usnearum Räsänen

Loc. 3, on *Pinus canariensis*, on *Usnea articulata*, Diederich 16700 & Ertz 10792 (BR, Di). Loc. 6a, on trees in laurisilva, on *Usnea*, Diederich 16583 & Ertz 10860, 10870 (BR, Di). Loc. 6b, on *P. canariensis*, on *U. articulata*, Diederich 16648 & Ertz (Di). Monte Aguirre, on *Usnea*, 1990, Becker (Di 9810).

This is a widespread, probably cosmopolitan lichenicolous heterobasidiomycete confined to the host genus *Usnea* s.l. In the Canary Islands, it was known from La Gomera and La Palma (Etayo, 1996b; Hernández-Padrón, 2004). It is new for Tenerife.

Brigantiaea leucoxantha (Spreng.) R. Sant. & Hafellner

Loc. 2, epiphytic on an old tree in laurisilva, Diederich 16530 & Ertz (Di).

The genus *Brigantiaea* is herewith reported for the first time from Macaronesia. Two species were collected in the same locality. Following Hafellner (1997), one specimen with apothecia reacting only K+ purplish in section belongs to *B. leucoxantha*, whilst other specimens in which the hymenium and hypothecium react K+ bluish violet in addition to the K+ purplish reaction belongs to *B. tricolor*. *B. leucoxantha* is widely distributed in tropical and subtropical regions of Africa and America, whilst the species is rare in Asia and Australia. It is new for Macaronesia. The closest known locality is in Cameroon. Our material from Tenerife has a sorediate thallus, the taxonomic value of which is little understood and regarded as of minor importance by Hafellner (1997).

Brigantiaea tricolor (Mont.) Trevis.

Loc. 2, epiphytic in laurisilva, Diederich 16531 & Ertz 10725 (BR, Di).

This species is widely distributed in the Paleotropics and is also known from Hawaii (Hafellner, 1997). It is new for Macaronesia. The closest known localities are in tropical West Africa (Ivory Coast and Togo). The thallus in our material is sorediate. Following Hafellner (1997), sorediate specimens were known only from the Hawaiian Islands. See also comments under *B. leucoxantha*.

Catillaria nigroclavata (Nyl.) Schuler

Loc. 8, laurisilva along road and ridge, on branch of *Sarothamnus*, Ertz 10911 & Diederich (BR).

In the Canary Islands, this lichen was known from Gran Canaria and La Palma (Hernández-Padrón, 2004). New for Tenerife.

Homostegia piggotii (Berk. & Broome) P. Karsten

Loc. 6a, on trees in laurisilva, on *Parmelia saxatilis*, Diederich 16596 & Ertz (Di).

In the Canary Islands, this gall-inducing lichenicolous ascomycete was known from La Gomera and La Palma (Hafellner, 1996; Hernández-Padrón, 2004). It is new for Tenerife.

Lichenoconium erodens M. S. Christ. & D. Hawksw.

Loc. 3, on *Pinus canariensis*, on *Usnea articulata*, Diederich 16701 & Ertz 10782 (BR, Di).

This common and widespread lichenicolous coelomycete was known only from La Palma in the Canary Islands (Hernández-Padrón, 2004) and is new for Tenerife.

Lichenosticta alcicorniaria (Lindsay) D. Hawksw.

Loc. 6a, on trees in laurisilva, on *Cladonia*, Diederich 16572 & Ertz (Di).

A common lichenicolous coelomycete, usually growing on the lower surface of the squamules of *Cladonia*. New for the Canary Islands.

Monodictys epilepraria Kukwa & Diederich

Loc. 1, on vertical rocks along road, on *Lepraria santosii* (type locality), Diederich 16498 & Ertz (Di). Loc. 8, in laurisilva, on corticolous *Lepraria lobificans*, Diederich 16494 & Ertz (Di).

This lichenicolous fungus has only recently been described from Europe (Kukwa & Diederich, 2005) and it is reported for the first time from the Canary Islands.

Paranectria oropensis (Ces.) D. Hawksw. & Piroz.

Loc. 7, on rocks along road, on *Lecanora*, Diederich 16631 & Ertz 10898 (BR, Di).

This widely distributed lichenicolous fungus is new for the Canary Islands.

Phacopsis cephalodioides (Nyl.) Triebel & Rambold

Loc. 5, on fallen branches on the ground, on *Hypogymnia*, Ertz 10812 & Diederich (BR). Loc. 6a, on tree in laurisilva, on *Hypogymnia*, Ertz 10845 & Diederich (BR).

This lichenicolous ascomycete has rarely been collected but is widely distributed, being known from America (Diederich, 2003), Europe (Triebel *et al.*, 1995) and Russia (Zhurbenko & Otnyukova, 2001). In the Canary Islands, it was known from La Gomera (Hafellner, 1995c) and is here reported as new for Tenerife.

Phacopsis fusca (Triebel & Rambold) Diederich

Loc. 4, on *Xanthoparmelia* with a brown thallus growing on soil over rock, Ertz 10808 p.p. & Diederich (BR, sub *Stigmidium neofusceliae*).

This widely distributed lichenicolous fungus is new for the Canary Islands.

Phaeosporobolus alpinus R. Sant., Alstrup & D. Hawksw.

Loc. 5, on branches of *Pinus canariensis* in forest, on *Ochrolechia*, Diederich 16663 & Ertz (Di).

P. alpinus is a common, probably cosmopolitan lichenicolous fungus on *Ochrolechia*, *Pertusaria* and *Varicellaria* species. It is new for the Canary Islands.

Polymeridium proponens (Nyl.) R. C. Harris

Loc. 2, epiphytic in laurisilva, Diederich 16527 & Ertz 10744 (BR, Di).

Harris (1991) studied material of this lichen species from America, South Africa and India. It has also recently been reported from Tenerife by Hernández-Padrón (2004), but without any references to published data or herbarium material. In the updates to the checklist of insular Macaronesia (Hafellner, 1999, 2002 and 2005a), the species is not reported. The occurrence of the species in Macaronesia is herewith confirmed.

Pronectria pertusariicola Lowen

NE of La Laguna, Anaga-Mountains, Cruz del Carmen, in laurisilva, on *Pertusaria*, 9 April 2003, Diederich 15587 (Di).

In the Canary Islands, this lichenicolous fungus was known from La Gomera (Etayo 1996b). It is new for Tenerife.

Pyrenula hibernica (Nyl.) Aptroot

Loc. 2, small dead standing trunk in laurisilva, Ertz 10757 & Diederich (BR). NE of La Laguna, Anaga-Mountains, Cruz del Carmen, epiphytic in laurisilva, 9 April 2003, Diederich 15586 (Di).

Hernández-Padrón (2004) reported this lichen species from La Gomera and La Palma (as "*Pyrenula chilensis*"). It is therefore new for Tenerife.

Roselliniella nephromatis (Crouan) Matzer & Hafellner

Loc. 6a, on trunk on *Nephroma laevigatum*, Ertz 10833 & Diederich (BR).

This lichenicolous fungus, confined to species of *Nephroma* and *Pseudocyphellaria*, was known so far from Western Europe (Martínez, 2002, Matzer & Hafellner, 1990), Canada (Goward *et al.,* 1996, Etayo & Breuss, 1998) and Macaronesia (Azores, Madeira, La Gomera) (Etayo, 1996b, Kalb & Hafellner, 1992, Kondratyuk & Galloway, 1995). It is new for Tenerife.

Sphaerophorus globosus (Huds.) Vain.

Loc. 6a, epiphytic on tree in laurisilva, Diederich & Ertz (field observation).

In the Canary Islands, this macrolichen was known from El Hierro, La Gomera and La Palma (Hernández-Padrón, 2004). New for Tenerife.

Stigmidium neofusceliae Calatayud & Triebel

Loc. 4, on *Xanthoparmelia* with a brown thallus growing on earth over rock, Ertz 10808 p. p. & Diederich (BR).

Calatayud & Triebel (1999) recently described this lichenicolous fungus from Spain. Subsequently it has also been reported from the Czech Republic (Kocourková, 2000). New for the Canary Islands.

Syzygospora bachmannii Diederich & M. S. Christ.

Loc. 3, in forest with *Erica arborea,* on terricolous *Cladonia rangiformis*, Diederich 16692 & Ertz (Di); ibid., on trunk of *E. arborea*, on *Cladonia*, Diederich 16685 & Ertz (Di). Loc. 6a, in laurisilva, on *C. furcata*, Diederich 16606 & Ertz (Di). Loc. 8, on terricolous *C. furcata*, Diederich 16472 & Ertz 10910 (BR, Di).

This widely distributed lichenicolous heterobasidiomycete was known from La Palma (Etayo, 2000) and is herewith newly reported from Tenerife.

Syzygospora physciacearum Diederich

Loc. 6c, on *Casuarina* trees along road, on *Physcia adscendens*, Diederich 16568 & Ertz (Di).

This widespread and probably cosmopolitan lichenicolous heterobasidiomycete is here reported as new for the Canary Islands.

Tremella cetrariicola Diederich & Coppins

Loc. 3, on branches in forest with *Erica arborea*, on *Tuckermannopsis chlorophylla*, Diederich 16688 & Ertz 10799 (BR, Di).

In the Canary Islands, this lichenicolous fungus was known from La Gomera (Diederich, 1996; Etayo, 1996b) and La Palma (Etayo, 2000). New for Tenerife.

Tremella coppinsii Diederich & Marson

Loc. 6a, on trees in laurisilva, on *Platismatia glauca*, Diederich 16576 & Ertz 10840 (BR, Di).

In the Canary Islands, this lichenicolous heterobasidiomycete was known from La Gomera (Diederich, 1996; Etayo, 1996b). It is new for Tenerife.

Tremella hypogymniae Diederich & M. S. Christ.

Loc. 6a, on trees in laurisilva, on *Hypogymnia physodes*, Diederich 16594 & Ertz 10826 (BR, Di).

This parasite of *Hypogymnia physodes* is widely distributed in Europe and North America (Diederich, 1996, 2003). In the Canary Islands, it was known from La Gomera (Diederich, 1996; Etayo, 1996b), and is here newly reported from Tenerife.

Xanthoriicola physciae (Kalchbr.) D. Hawksw.

Loc. 6c, on *Casuarina* trees along road, on *Xanthoria parietina*, Diederich 16570 & Ertz (Di).

In the Canary Islands, this lichenicolous hyphomycete confined to *Xanthoria* was known from La Gomera (Hafellner, 1995b) and Lanzarote (Hafellner, 2005b). It is new for Tenerife.

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