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Lichenicolous Fungi from the Western Pyrenees, France and Spain. III. Species on *Lobaria pulmonaria*

by

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Abstract: Twenty-one species of lichenicolous fungi growing on *Lobaria pulmonaria* are reported from the western parts of the French and Spanish Pyrenees. A key is given for all these taxa. Seven species are described as new: *Chalara lobariae* Etayo, *Lichenopeltella lobariae* Etayo & Diederich, *Monodictys fuliginosa* Etayo (also reported from Scotland), *Nanostictis christiansenii* Etayo, *Niesslia lobariae* Etayo & Diederich (also reported from Papua New Guinea), *Pronectria fissuriprodiens* Etayo and *Unguiculariopsis manriquei* Etayo.

Introduction

During our studies on lichenicolous fungi from the western Pyrenees (France and Spain), special attention has been paid to fungi growing on *Lobaria pulmonaria*, a member of the Lobarion, which is still well developed in this area. Some results have already been published in Diederich & Etayo (1994) and Etayo & Diederich (1995). We here publish a list of all species encountered on that lichen, with the descriptions of some new taxa, and we give a key for their identification.

So far only a few lichenicolous fungi have been collected on *Lobaria pulmonaria*: Hawksworth (1979) accepted one single species of hyphomycetes, *Endophragmiella hughesii*, growing on a decaying thallus of *L. pulmonaria*. One single species of coelomycetes, *Cornutispora lichenicola*, was accepted by Hawksworth (1981); two additional species, *Phoma lobariae* and *Pycnopsammina lobariae*, were described by Etayo & Diederich (1995); Kondratyuk & Galloway (1995b) added *Lichenoconium follmannii* Kondr. & Gallow. Diederich (1996) recognized one species of lichenicolous heterobasidiomycetes, *Tremella lobariacearum*, as growing on this lichen. Only a few ascomycetes growing on *L. pulmonaria* were known: *Dactylospora lobariella* (Hafellner 1979), *Nectria lecanodes* (Hawksworth 1978), *Plectocarpon lichenum* and *P. macaronesiae* Diederich, Etayo & Sérusiaux (Diederich & Etayo 1994).

Several additional lichenicolous fungi have been mentioned from other *Lobaria* species: *Arthonia linitae* R. Sant., *Arthonia subconveniens* Nyl., *Capronia epilobarina*

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(here also reported to grow on *L. pulmonaria*), *Karschia linitaria* Vouaux, *Pharcidia microspora* (Speg.) Vouaux, *Plectocarpon lambinonii* Diederich & Etayo, *P. scrobiculatae* Diederich & Etayo, *Scutula krempelhuberi* Körb. and *Unguiculariopsis lobariellum* Kondr. & Gallow. (Clauzade et al. 1989, Diederich & Etayo 1994, Kondratyuk & Galloway 1995a, Santesson 1988).

In the Pyrenees, *L. pulmonaria* is the host of a large number of lichenicolous fungi, whilst other *Lobaria* species (especially *L. amplissima* and *L. virens*) are almost devoid of such fungi. Most of these fungi seem to be specialized on the genus *Lobaria*, although some of the apparently saprotrophic species might be expected to occur also on other lichens. It is interesting to notice that all genera of the Peltigerales with large thalli (*Lobaria*, *Peltigera*, *Pseudocyphellaria*, *Solorina*, etc.) are very rich in lichenicolous fungi, which let Hawksworth (1982) suggest that the genus *Peltigera* must be an ancient genus of lichens. An alternative explanation may be that these lichens with very large thalli, which are often decaying in older parts and often grow in humid conditions, are an appropriate ecological niche in which many new taxa could develop.

Two species seem to be very rare in the Pyrenees and only reduced material has been collected. We therefore prefer to leave them unnamed in this paper.

Material and Methods

Most specimens studied are located in the private herbaria of the authors, type specimens in MA-Lichen. Ascomata were measured under a binocular at a magnification of x40. Microscopical examination of herbarium material has been executed at a magnification of x1000. All microscopical measurements have been done in water, and illustrations in water, or in Lugol, after a pre-treatment with KOH (KI).

Unless otherwise stated all specimens mentioned in the text have been collected on *Lobaria pulmonaria*.

Key to lichenicolous fungi occurring on *Lobaria pulmonaria* in the Pyrenees

1. Spores produced in asci 2
1. Spores produced on basidia; basidiomata inducing the formation of galls, especially on isidia or on marginal lobes ..... *Tremella lobariacearum*
1. Spores absent; conidia present 12
2. Ascomata apothecioid 3
2. Ascomata perithecioid 6
3. Apothecia pale, whitish, immersed in the thallus; ascospores hyaline, 3-7-septate, 30-44 x 2.5-3.5 µm ..... *Nanostictis christiansenii*
3. Apothecia dark coloured 4
4. Apothecial margin with hairs; ascospores hyaline, simple, 4-5.5 x 2-2.5 µm ..... *Unguiculariopsis manriquei*
4. Apothecial margin without hairs 5

5. Ascomata with a well developed raised excipulum; ascospores brown, 1-septate, 12-17 x 4-7 µm ..... *Dactylospora lobariella*
5. Ascomata convex, inducing the formation of galls; excipulum reduced; ascospores hyaline or brownish, 3-septate, 16-25 x 4-9 µm ..... *Plectocarpon lichenum*
6. Ascomata pale or light coloured; ascospores hyaline, 1-septate; paraphyses absent 7
6. Ascomata dark brown or black 8
7. Perithecia superficial; ascospores not constricted at the septum, 9-12 x 3-4 µm ..... *Nectria lecanodes*
7. Perithecia immersed, emerging from a thallus split; ascospores distinctly constricted at the septum, 6.5-10 x 3-5 µm ..... *Pronectria fissuriprodiens*
8. Ascomata catathecia, 75-110 µm in diam.; ascospores hyaline, 1-septate, 11-15 x 3-3.5 µm ..... *Lichenopeltella lobariae*
8. Ascomata perithecia 9
9. Perithecia with dark setae; ascospores hyaline 10
9. Perithecia without setae; ascospores hyaline to brown 11
10. Setae 35-50 µm long; ascospores simple to submuriform, 17-23 x 3.5-7 µm ..... *Capronia epilobarina*
10. Setae 50-85 µm long; ascospores 1-septate, 4.5-8.5 x 1.5-2.5 µm ..... *Niesslia lobariae*
11. Ascospores brown, 3-septate, 11-18 x 3-4 µm; perithecia 75-100 µm in diam. ..... *Phaeospora* cf. *peltigericola*
11. Ascospores hyaline, soon becoming brown, 1-septate, 9.5-13.5 x 3-4 µm; perithecia 40-70 µm in diam. ..... *Stigmidium* sp.
12. Conidia produced in pycnidia 13
12. Conidia produced directly from conidiogenous cells not enclosed in pycnidia 17
13. Conidia dark brown, subglobose, 3-4 µm in diam.; conidiogenous cells hyaline ..... *Lichenoconium lecanorae*
13. Conidia and conidiogenous cells hyaline 14
14. Conidia branched, simple or septate 15
14. Conidia ellipsoid, simple 16
15. Conidia non-septate, in form of an Y ..... *Cornutispora lichenicola*
15. Conidia with many septate arms ..... *Pycnopsammina lobariae*
16. Conidia catenate, conidiogenesis thallic ..... *Vouauxiella* sp.
16. Conidia single, conidiogenesis blastic ..... *Phoma lobariae*
17. Conidia multicellular, brown, 6-16 µm in diam. ..... *Monodictys fuliginosa*
17. Conidia simple or septate 18
18. Conidia endogenous, becoming extruded, hyaline, 6-10 x 2.5-3.5 µm ..... *Chalara lobariae*
18. Conidia produced in a different way, brown 19
19. Conidiogenous cells percurrently proliferating; conidia clavate, the basal cell paler, 25-30 x 11-13 µm ..... *Endophragmiella hughesii*
19. Conidiogenous cells not percurrently proliferating; conidia subcylindrical, even in colour, 9-19 x 3-4 µm ..... *Pseudocercospora lichenum*

The Species

Capronia epilobarina Kondr. & Galloway (Fig. 1)

Spain: Navarra, Monte Limitaciones de las Améscoas, *Fagus* wood, 1090 m, 1 April 1994, *J. Etayo* 12382, 12383 (herb. Diederich, herb. Etayo).

Ascomata 0.05-0.07 mm in diam., wall brown, K+ greenish-brown, of textura angularis, cells 6-12 µm in diam. Setae simple, straight, brown, thick-walled, 35-70 x 3-4 µm. Ascus thickened at the apex, 45-50 x 14-17 µm, 8-spored. Ascospores simple to submuriform, with (0-)3-5 transverse and 0-1 longitudinal septa, greyish brown, 17-23 x 3.5-7 µm.

Our collection clearly differs from the original description of *C. epilobarina* by the much smaller ascomata, and also by some minor characters, like straight, instead of curved ascomatal setae, and slightly smaller ascospores and asci.

In the original description of *C. epilobarina* (Kondratyuk & Galloway 1995a), the ascomata are said to be 200-250 µm in diam., and c. 250 µm high, and the setae up to 45-54 µm long. The SEM photograph in Fig. 1 (A) (in Kondratyuk & Galloway 1995a) shows, however, ascomatal setae which are almost as long as the diameter of the ascoma. The magnification given for Fig. 1 reveals an ascoma measuring just c. 50 µm in diam., which corresponds perfectly to our material (see our description above). The differences between the ascomatal size in the original description and our observations could therefore be based on an inaccurate original description of the species.

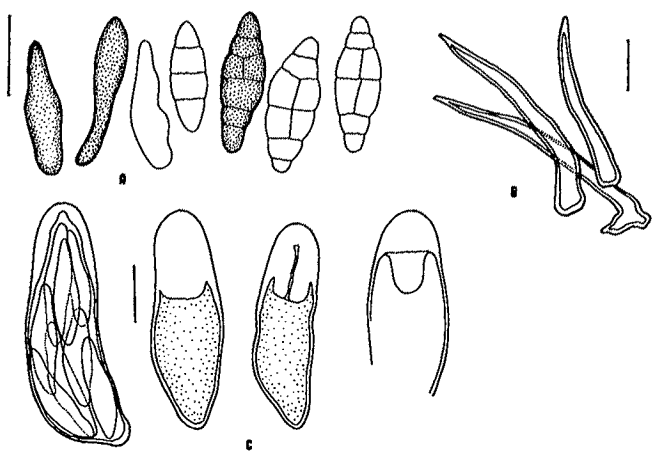


Fig. 1. *Capronia epilobarina* (*J. Etayo* 12383). A, ascospores. B, ascomatal setae. C, asci: one in water (left) and three in KI (right). Scale bars = 10 µm.

[N.B.: It should be noticed here that measurements concerning other species in the same paper are also in contradiction with the illustrations. In *Pezizella ucrainica* Kondr., the ascomata are said to be 200-270 µm in diam., and the ascospores 6-7 µm in length. Fig. 4 (A, B, D, E and G) (in Kondratyuk & Galloway 1995a) reveals an ascomatal diameter of 90-120 µm and ascospores measuring 3-5 µm in length. In Kondratyuk et al. (1994), Kondratyuk & Galloway (1995b) and Kondratyuk & Galloway (1995c), several published measurements which we checked are in a similar way in contradiction with the measurements revealed by the illustrations.]

Capronia epilobarina Kondr. & Gallow. has recently been described from one collection from Ecuador on *Lobaria* sp. (Kondratyuk & Galloway 1995a). *C. normandinae* R. Sant. & D. Hawksw. is distinguished by the larger ascomata (0.1-0.15 mm in diam.) and the broader ascospores (15-21 x 7.5-9 µm), and *C. peltigerae* (Fuckel) D. Hawksw. by the 1-3-septate hyaline ascospores (Hawksworth 1990).

Chalara lobariae Etayo sp. nov. (Fig. 2)

Colonia lichenicola, inconspicua ex conidiophoris disseminatis constans, sine mycelio externo. Cellulae conidiogenae enteroblasticae, phialidicae, lageniformes, hyalinae vel pallide brunneae, simplices, pariete laevi, 35-50 µm longae, 6-9 µm latae, apice 3.5-4 µm latae. Conidia cylindrica, non-septata, hyalina, 6-10 x 2.5-4 µm.

Type: France, Pyrénées-Atlantiques, vallée d'Aspe, near Urdos, parking near Pic d'Aspe, *Fagus-Abies* wood, on *Lobaria pulmonaria*, 1350 m, 7 Dec. 1993, *J. Etayo* 12375 (MA-Lich - holotypus; herb. Etayo - isotypus).

Conidiophores arising singly from a hyaline mycelium immersed in the lichen thallus, protruding perpendicularly to the surface of the lichen; conidiogenous cells enteroblastic, phialidic, non-septate, hyaline to brownish when mature, wall smooth and thin, except at the base where it is 1-2 µm thick, 35-50 µm long, in the lower part 6-9 µm in diam., tapering gradually to the tip which is 3.5-4 µm in diam. Conidia catenate, endogenous, smooth, hyaline, unicellular, biguttulate, cylindrical with more or less truncate ends, 6-10(-12) x 2.5-3.5(-4) µm.

Host: *C. lobariae* lives saprotrophically in old or necrosed thallus parts of *L. pulmonaria.* It is often intermixed with other lichenicolous fungi, like *Niesslia lobariae*, *Pronectria fissuriprodiens* or *Nanostictis christiansenii.*

Distribution: The species has been found in the French and Spanish Pyrenees, where it appears to be quite common.

Observations: So far only one lichenicolous species of *Chalara* was known: *C. lichenicola* M. S. Christ. (Christiansen 1993), growing on podetia of *Cladonia gracilis*, and on galls produced by an immature, unidentified heterobasidiomycete on the same host. *C. lichenicola* is easily distinguished from our new species by the much smaller conidia which measure 2.5-4 x 0.5-0.8 µm. A few other species of *Chalara* with non-septate conidia are known: *C. parvispora* Nag Raj & Hughes is distinguished by much smaller conidia, which are 4.5-5.5 x 1.5-2 µm (Nag Raj & Hughes 1974); *C. cylindrosperma* (Corda) Hughes has thinner conidia, 4-11 x 1-1.7 µm; in the *Chalara* state of *Ceratocystis fagacearum* (Bretz) Hunt, the conidiophores have stipes reaching 50 µm in length (Ellis 1971).

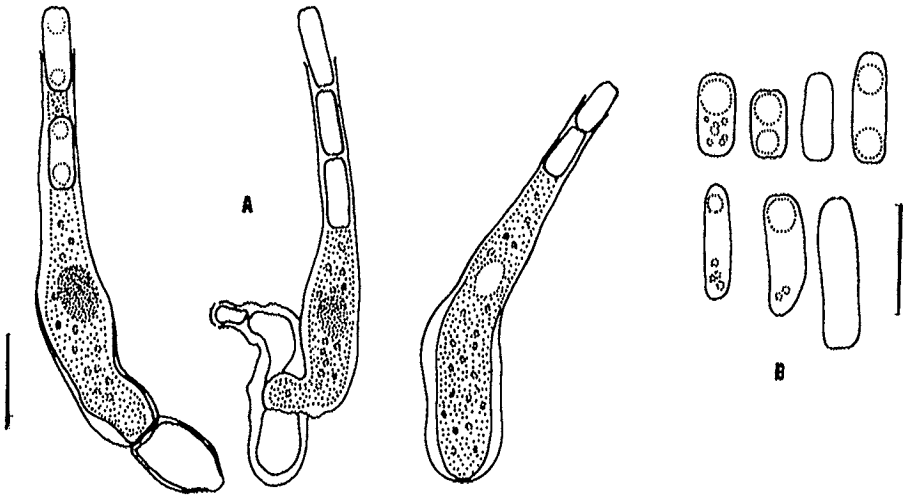


Fig. 2. *Chalara lobariae* (holotype). A. Three phialides arising from a supporting cell in the thallus of *Lobaria pulmonaria*, in the centre one branched conidiophore with a poorly developed second phialide. B, conidia. Scale bars = 10 µm.

Additional specimens: *France*: Pyrénées-Atlantiques, col de Burdincurutcheta, 800 m, 18 April 1995, *J. Etayo* 12696. - *Spain*: Alava, S of Entzía, puerto de Opácua, Zapaliturri, 940 m, 6 April 1994, *J. Etayo* 12376; Alava, Sierra de Entzía, Limitaciones de las Améscoas, 1040 m, 1 April 1994, *J. Etayo* 12379, 12380, 13004; Navarra, Monte Limitaciones de las Améscoas, 1090 m, 1 April 1994, *J. Etayo* 12359, 12381 (herb. Etayo, herb. Christiansen); Navarra, Sierra de Urbasa, P^{to} de Urbasa, 20 July 1991, *P. Diederich* 9639; Navarra, Sierra de Urbasa, after 100 m on road to Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12399; Navarra, Valle de la Ulzama, between Oroquieta and Saldías, km 7, 950 m, 13 Febr. 1994, *J. Etayo* 12389; Navarra, road from Eugui to Irurita, collado Meaka, 730 m, 22 May 1994, *J. Etayo* 12390; Navarra, Espinal-Auzperri, 940 m, 4 Dec. 1994, *J. Etayo* 12554.

Cornutispora lichenicola D. Hawksw. & B. Sutton

France: Pyrénées-Atlantiques, bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12688. - *Spain*: Navarra, NW of Isaba, near road to Uztárroz, 29 July 1990, *P. Diederich* 1982.

This fungus is known from a number of crustose and foliose lichen species (Gierl & Kalb 1993, Hawksworth 1981). In the Pyrenees, it is most frequent on species of *Pertusaria*, and is rather rare on *L. pulmonaria*.

Dactylospora lobariella (Nyl.) Hafellner

= *Abrothallus lobariellus* (Nyl.) Zopf

France: Pyrénées-Atlantiques, S^{te}-Engrâce, 6 July 1993, *J. Etayo* 12368; Pyr.-Atl., Barranco de Térmy, 6 July 1993, *J. Etayo* 2255; Pyr.-Atl., bois de S^{t}-Joseph, 6 July 1993, *J. Etayo* 2351; Pyr.-Atl., gorges de Pihot, 6 July 1993, *J. Etayo* 1468; Pyr.-Atl., bois d'Astaquieta, 3

km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12687; Pyr.-Atl., chalet Pedro, 1000 m, 18 April 1995, *J. Etayo* 12692; ibid., 19 July 1991, *P. Diederich* 9692 & *J. Etayo*; Pyr.-Atl., station d'Issarbe, 1375 m, 19 April 1995, *J. Etayo* 12684. - *Spain*: Alava, S of Entzía, puerto de Opacua, 940 m, 6 April 1994, *J. Etayo* 12052, 12069; Huesca, Valle de Ordesa, on *Lobaria amplissima*, July 1989, *J. Etayo* 5425; Navarra, Sierra de Urbasa, El cargadero, 900 m, 28 March 1991, *J. Etayo* 5690; Navarra, Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12396; Navarra, Baraibar, Sierra de Aralar, near Santuario, 1200 m, 22 July 1993, *J. Etayo* 3389.

In the western Pyrenees, this species is locally abundant on *Lobaria pulmonaria* and, rarely, on *L. amplissima*. It often occurs with *Monodictys fuliginosa*.

Endophragmiella hughesii D. Hawksw.

Spain: Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, on *L. pulmonaria* (killed by *Lichenoconium lecanorae*), 4 Jan. 1994, *J. Etayo* 12372, 12373, 12374; Alava, Sierra de Entzía, puerto de Opacua, road to the mirador, 995 m, on *Parmelia saxatilis*, 6 April 1994, *J. Etayo* 12058.

E. hughesii was only known from the type collection on dead and decaying thalli of *Lobaria pulmonaria* (Hawksworth 1979). Here we confirm its saprotrophic way of life, and we can also add a new host species, *Parmelia saxatilis*.

Lichenoconium lecanorae (Jaap) D. Hawksw.

Spain: Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, 4 Jan. 1994, *J. Etayo* 12369; Navarra, Sierra de Urbasa, road to Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12398.

Conidiomata immersed in yellowish to brown dots on *L. pulmonaria*, 50-70 µm in diam.; conidiogenous cells c. 6 x 3 µm; conidia subglobose, 3-4 µm in diam. A very common species, which seems to be rare on this host.

An other species of *Lichenoconium* growing on *L. pulmonaria* has been described recently: *L. follmannii* Kondr. & Gallow. (erroneously spelled as '*L. follmanii*' in Kondratyuk & Galloway 1995b). That species is said to have larger pycnidia (180-220 µm in diam.) and conidia (10.5-13.5 x 6.5-8 µm). If the scale indicated in Fig. 1 (in Kondratyuk & Galloway 1995b) is accurate, these measurements are, however, wrong: the pycnidia represented in Fig. 1 (A) measure 65-90 µm in diam. and the conidia 4.3-4.8 x 2.5 µm. These dimensions are very close to those found in our material from the Pyrenees. The type specimen of *L. follmannii* should be restudied to assess if it can really be distinguished from *L. lecanorae*.

Lichenopeltella lobariae Etayo & Diederich sp. nov. (Fig. 3)

Lichenopeltella lichenicola insignis catatheciis 75-110 µm diam., setis convergentibus, ascis 8-sporis, 33-43 x 9-10 µm et ascosporis 11-15 x 3-3.5 µm, cum 3 paribus setulis.

Type: France, Pyrénées-Atlantiques, vallée d'Aspe, near Urdos, parking near Pic d'Aspe, *Fagus-Abies* wood, on *Lobaria pulmonaria*, 1350 m, 7 Dec. 1993, *J. Etayo* 12352 (MA-Lich - holotypus; herb. Etayo - microscopic slide).

Ascomata catathecia, superficial, scattered, rounded to ellipsoid, 75-110 µm in diam., c. 45 µm high, margin entire; upper wall composed of dark brown, K+ grey, rectangular or quadratic cells arranged in radiating rows, cells 4-6 x 2.5-4 µm; basal layer similar but paler; 5-8 convergent setae present around ostiolar pore, 13-22 x 3-4 µm, simple, dark brown, thin and smooth-walled, swollen at the base but tapering gradually to the tip. Hamathecium not observed at maturity. Asci broadly clavate, more or less curved, 8-spored, 33-43 x 9-10 µm, broader in the central part, wall thickened apically, I-. Ascospores hyaline, 1-septate, ellipsoid, lower cell more acute, 11-15 x 3-3.5 µm, commonly with 3 pairs of setulae.

Host: *Lobaria pulmonaria* (lower surface of the thallus, in non-tomentose areas).

Distribution: The species is known from two localities in France and Spain.

Observations: The new fungus is close to *L. santessonii* (P. M. Kirk & Spooner) R. Sant. which has larger ascospores (16-20 x 2.5-3.5 µm) without setulae, and grows on different hosts (*Peltigera* spp.).

Additional specimen: *Spain*: Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, 4 Jan. 1994, *J. Etayo* 12351.

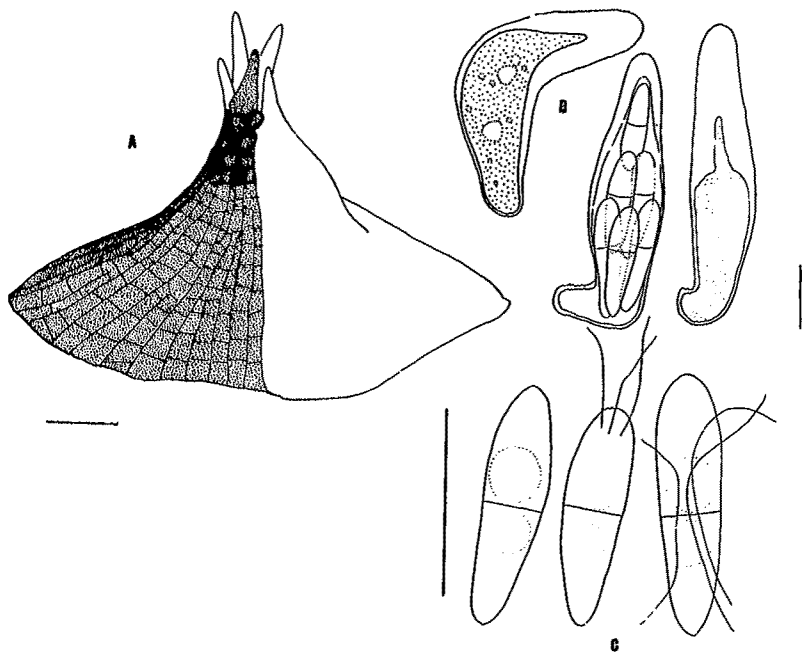


Fig. 3. *Lichenopeltella lobariae* (holotype). A, catathecium with periostiolar setae and thicker apical cells. B, asci in KI. C, ascospores with hyaline setulae (attachment point not visible). Scale bars: A = 20 µm; B, C = 10 µm.

Monodictys fuliginosa Etayo sp. nov. (Fig. 4)

Species lichenicola, similis *Monodictys leprariae*, sed conidiis 6-16 µm diam. pariete irregulariter lati differt.

Type: Spain, Navarra, road from Eugui to Irurita, collado Meaka, on *Lobaria pulmonaria*, 730 m, 22 May 1994, *J. Etayo* 12365 (MA-Lich - holotypus; herb. Etayo, herb. Christiansen - isotypi).

Colonies dispersed, superficial, black, arising on the surface of the host; mycelium immersed, composed of brownish, thin-walled hyphae. Conidiophores not branched, brown, septate. Conidiogenous cells monoblastic, integrated, terminal, determinate, subcylindrical to subglobose, grey to brown. Conidia arising singly, acrogenous, muriform, composed of numerous cells when fully developed, about 6-16 µm in diam., individual cells mainly 4-5 µm in diam., grey to brown, cell wall with irregular thickenings, smooth.

Hosts: Abundant on *L. pulmonaria* and rare on *L. scrobiculata* and *L. amplissima*.

Distribution: Frequent in the western French and Spanish Pyrenees. Also known from Scotland.

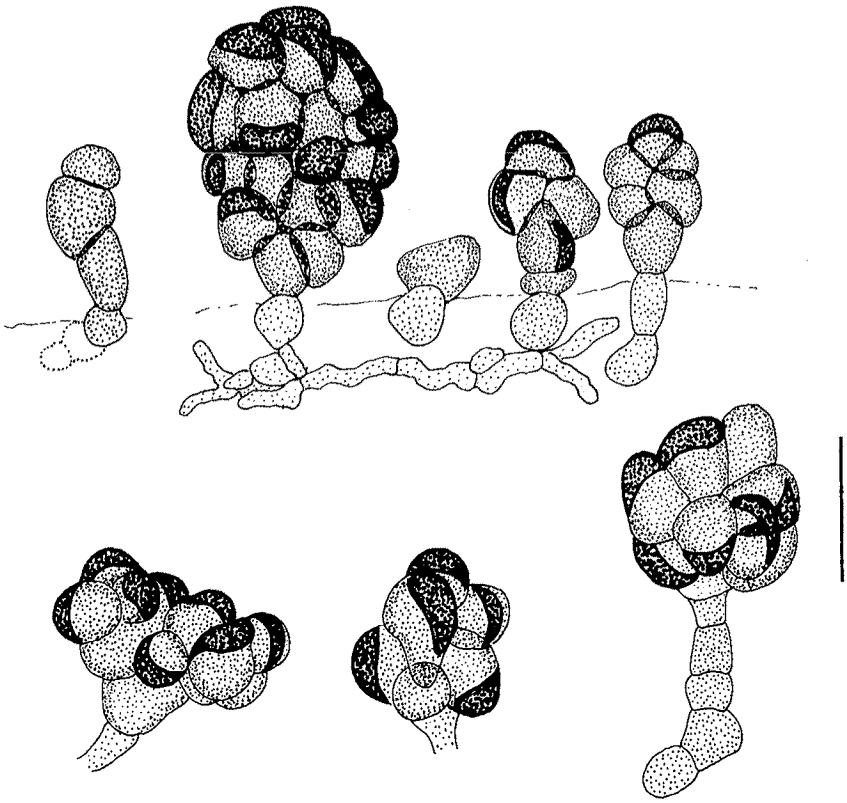


Fig. 4. *Monodictys fuliginosa* (*J. Etayo* 12371). Conidiophores and conidia in several stages of development, showing the unequal thickening of the conidial wall. Scale bar = 10 µm.

Observations: The new species differs from *M. cellulosa* S. Hughes [= *M. lepraria* (Berk.) M. B. Ellis], known on *Arthonia vinosa*, *Chrysothrix candelaris* (Santesson 1993), *Pertusaria coccodes* (Diederich 1989), *P. albescens*, *P. pertusa* and *Lepraria* sp. (Etayo ined.), by irregular thickenings of the wall and smaller conidia. These conidial thickenings are similar to those known in *Sclerococcum serusiauxii* Boqueras & Diederich and *Milospium lacoizquetae* Etayo & Diederich, two lichenicolous hyphomycetes forming sporodochia (Boqueras & Diederich 1993, Etayo & Diederich 1996).

Additional specimens: *France*: Pyrénées-Atlantiques, Barranco de Termy, 6 July 1993, *J. Etayo* 12363; Pyr.-Atl., S^{te}-Engrâce, 6 July 1993, *J. Etayo* 12368; Pyr.-Atl., vallée d'Aspe, near Urdos, Pic d'Aspe, 1350 m, 7 Dec. 1993, *J. Etayo* 12371; Pyr.-Atl., col de Suscousse, near ski station of Arette, 23 June 1992, *J. Etayo* 12378; Pyr.-Atl., gorges de Pihot, 6 July 1993, *J. Etayo* 1468; Pyr.-Atl., bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12687; Pyr.-Atl., forêt d'Iraty, chalet Pedro, 1000 m, 18 April 1995, *J. Etayo* 12690, 12692 (herb. Etayo, herb. Diederich); Pyr.-Atl., S of S^t-Jean-Pied-de-Port, forêt d'Iraty, 0.5 km S of chalet Pedro, 1000 m, 19 July 1991, *P. Diederich* 9695 & *J. Etayo*. - *Great Britain*: Scotland, Isle of Skye, S of Broadford, Kilmore, 30 May 1987, *P. Diederich* 12412. - *Spain*: Navarra, Baraibar, S Miguel de Aralar, 900 m, 29 Oct. 1991, *J. Etayo* 862 & J. I. Calvo; ibid., near Santuario, 1200 m, 22 July 1993, *J. Etayo* 3389; Navarra, Viscarret, Sorogain river, 800 m, 30 May 1993, *J. Etayo* 12367; Navarra, Valle de la Ulzama, between Oroquieta and Saldías, km 7, 13 Febr. 1994, *J. Etayo* 12154; Navarra, Sierra de Urbasa, road to Otsoportillo, 1000 m, 19 June 1994, *J. Etayo* 12396; La Rioja, camino Ermita de Lomos de Orio, *L. scrobiculata*, 1350 m, 25 July 1993, *J. Etayo* 12364 & O. Breuss.

Nanostictis christiansenii Etayo sp. nov. (Figs 5-8)

Species lichenicola, a *Nanostictis peltigerae* ascis 4-sporis, ascosporis latioribus, 30-44 x 2.5-3.5 µm et excipulo chondroideo differt.

Type: Spain, Navarra, Monte Limitaciones de las Améscoas, km 6, *Fagus* wood, on *Lobaria pulmonaria*, 1090 m, 1 April 1994, *J. Etayo* 12395 (MA-Lich - holotypus; herb. Christiansen, herb. Etayo - isotypi).

Apothecia at first immersed under the host cortex, soon erumpent and breaking through the cortex, 200-450 µm in diam., whitish, opening by a pore; margin thick and rugose; disc plane, concolorous with the margin, properly visible only in mature ascomata. Excipulum 90-110 µm thick laterally and 25-35 µm at the base, of branched and colourless hyphae 1-2 µm in diam., well separated from the hymenium, with paraphysoids (Fig. 7), without crystals; subhymenium colourless, I-, c. 10 µm thick, hyphal, with short cells; hymenium 60-70 µm, I+ red. Paraphyses numerous, filiform, simple, 0.5-1 µm thick, slightly thickened at the apex, embedded in an amorphous gel which turns KI+ blue and I+ red. Asci cylindrical, 4-spored, 54-62 x 6-8 µm, ascus wall apically thickened, KI+ blue. Ascospores cylindrical or tapering below, 3-7-septate, without a perispore, 30-44 x 2.5-3.5 µm.

Host: On brownish, decaying thalli of *Lobaria pulmonaria* (always in the oldest, central part of the thallus).

Distribution: The new species is known from several localities in Spain and one in France, always in well-preserved *Fagus* woods.

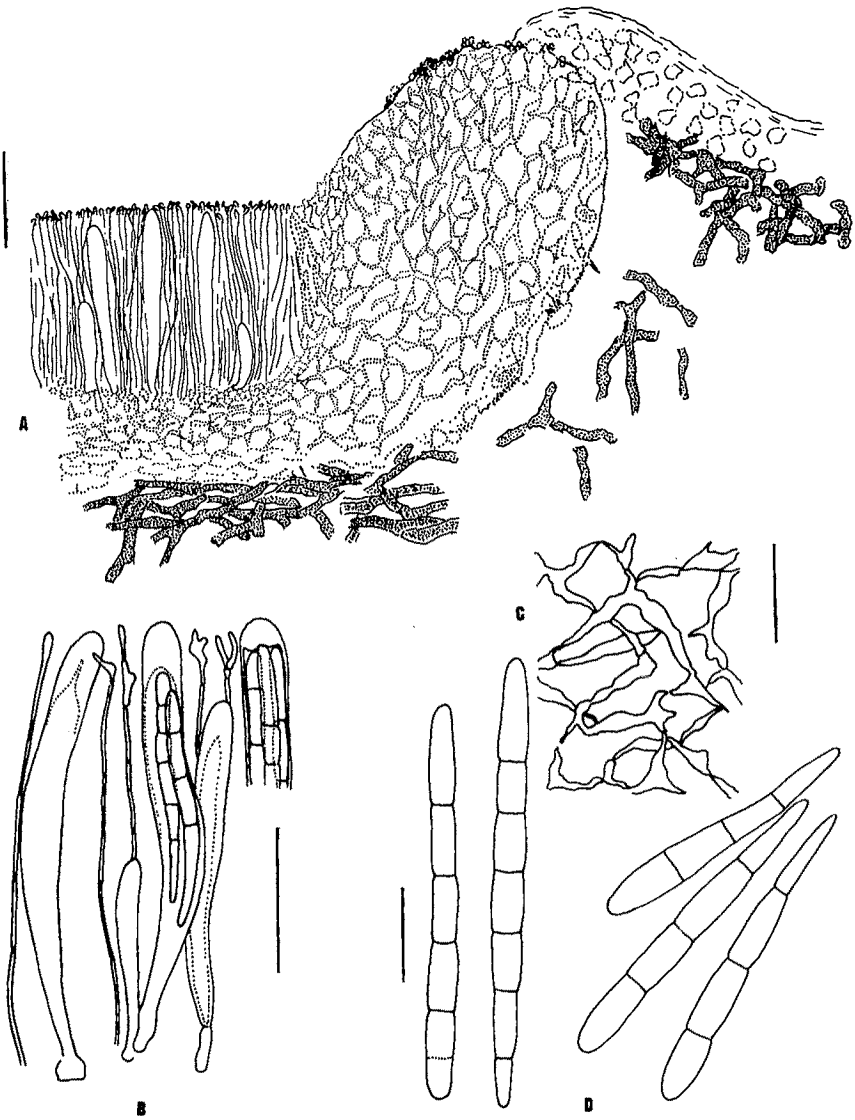


Fig. 5. *Nanostictis christiansenii* (*J. Etayo* 12395). A, cross section through a mature apothecium. B, part of the hymenium. C, excipular hyphae. D, ascospores. Scale bars: A = 30 µm; B = 20 µm; C, D = 10 µm.



Fig. 6. *Nanostictis christiansenii* (*J. Etayo* 12395). A, immature apothecium showing its hemiangiocarpic development. B, completely developed apothecium. C, D, hymenium, asci and paraphyses. Scale bars: A, B = 50 μm; C, D = 10 μm.

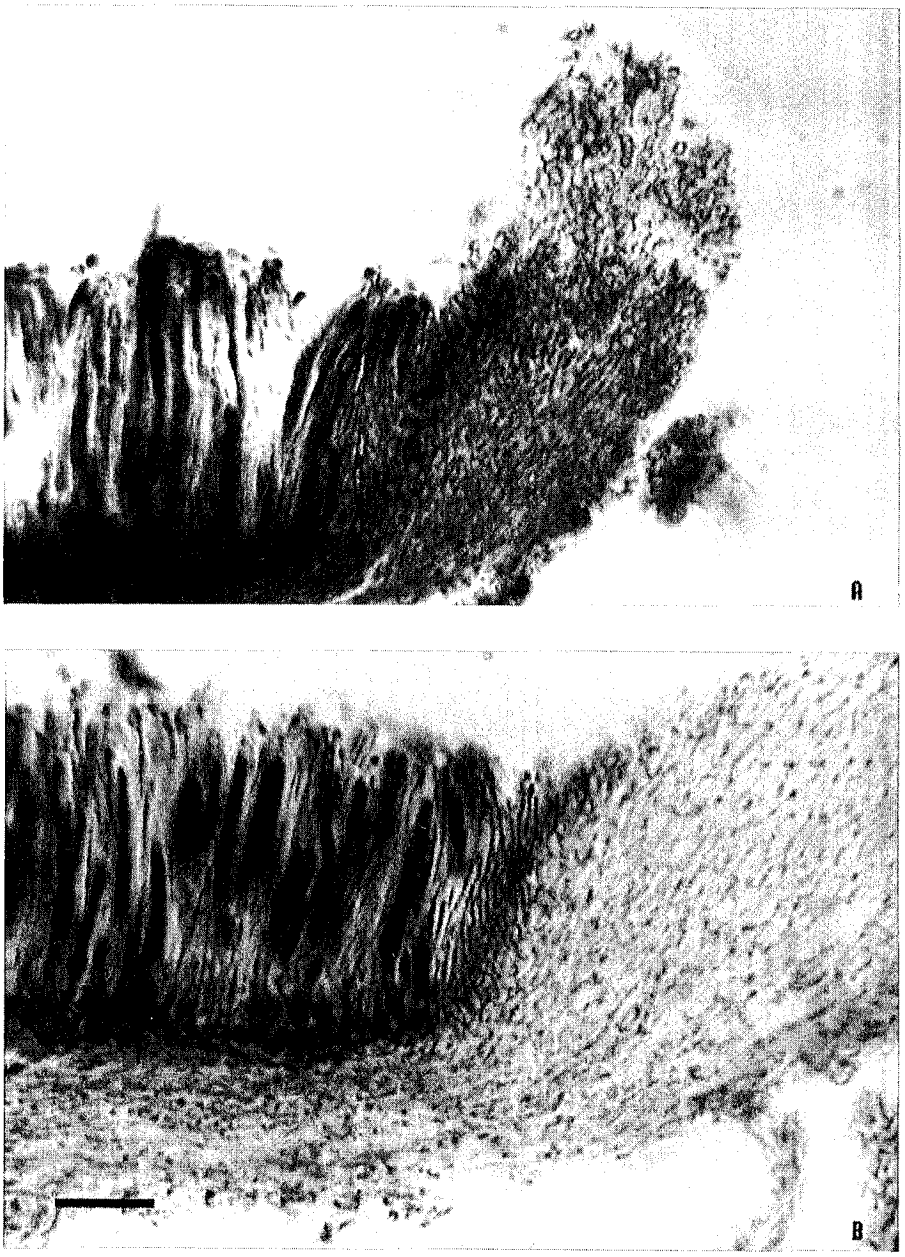


Fig. 7. A, *Nanostictis peltigerae* showing excipular textura angulosa (herb. Christiansen - isotype). B, *N. christiansenii*, showing chondroid excipular tissue formed by narrow lumina and thick cell walls (*J. Etayo* 12395). In both species, the presence of paraphysoids is visible between the excipulum and hymenium. Scale bar = 20 µm.

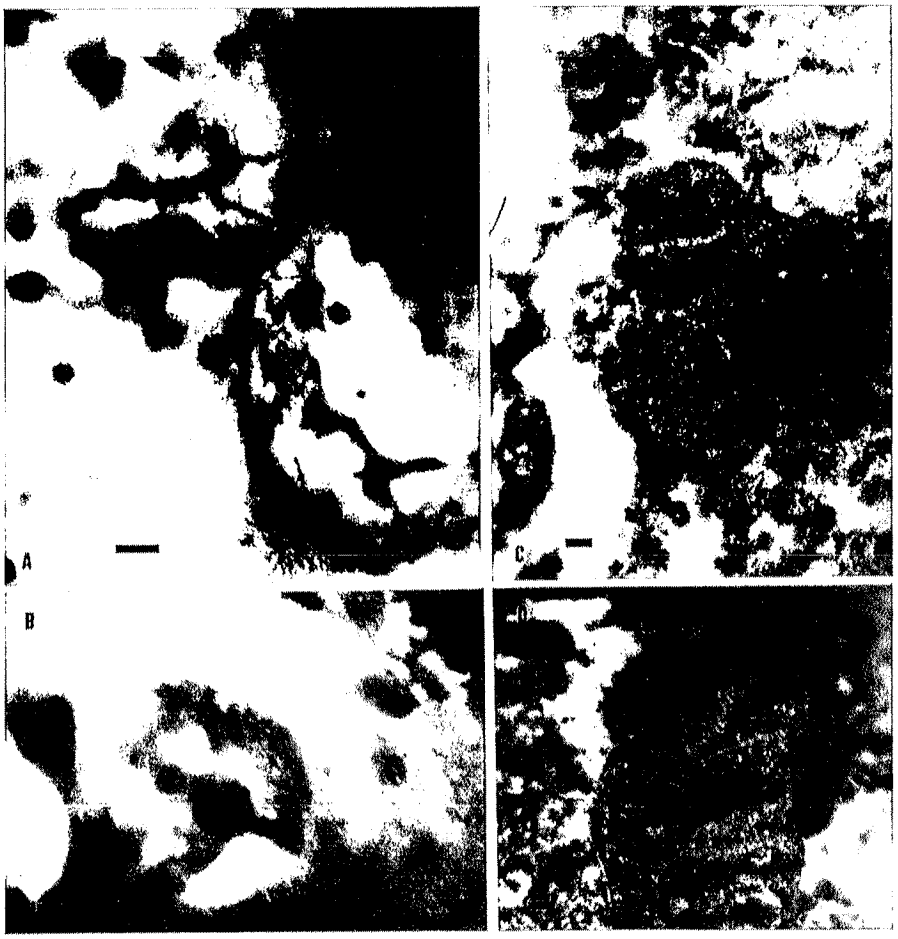


Fig. 8. A, B, *Nanostictis christiansenii*, apothecia breaking through the cortex of *Lobaria* (*J. Etayo* 12558). C, D, *Unguiculariopsis manriquei* on the lower surface of *Lobaria* (*J. Etayo* 12361). Scale bars: 100 μm.

Observations: *N. christiansenii* clearly belongs to the Ostropales. Like *N. peltigerae* M. S. Christ., our new species has the same hemiangiocarpic ascomatal development, but the excipulum has a different structure. *N. peltigerae* was described with a parietal excipulum of textura globulosa or angularis (Christiansen 1954), whilst Sherwood (1977) concluded that it was hyphal. Sherwood's conclusions are not correct: the excipulum of *N. peltigerae* is paraplectenchymatous with comparatively thin walled-cells. In *N. christiansensii* the structure of the excipulum is chondroid with thick-walled cells and very narrow lumina. As both species share other characters like simple paraphyses, non splitting ascospores and the lichenicolous habitat, we prefer to include the new species in the genus *Nanostictis*, although it may later prove to belong to a distinct genus. *N. peltigerae* differs from *N. christiansenii* in the

8-spored asci, the narrower ascospores which measure 40-60 x 0.8-1.3 µm, the different excipular structure and different hosts (*Peltigera* spp.) (Alstrup 1985, Christiansen 1954).

The species is named in honour of Dr M. Skytte Christiansen for his kind help with this and other lichenicolous fungi.

Additional specimens: *France*: Pyrénées-Atlantiques, S of St-Jean-Pied-de-Port, forêt d'Iraty, 0.5 km S of chalet Pedro, 1000 m, 19 July 1991, *P. Diederich* 12413 & *J. Etayo*. - *Spain*: Alava, Sierra de Entzía, Limitaciones de las Améscoas, 1040 m, 1 April 1994, *J. Etayo* 12356; Alava, S of Entzía, puerto de Opácua, near the road to Legaire, 940 m, 6 April 1994, *J. Etayo* 12357; Alava, S of Entzía, puerto de Opácua, Zapaliturri, 940 m, 6 April 1994, *J. Etayo* 12358; Navarra, Sierra de Urbasa, on the road to Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12354; Navarra, Espinal-Auzperri, 940 m, 4 Dec. 1994, *J. Etayo* 12558; Navarra, Burguete, road to Otsolezea, 950 m, 4 Dec. 1994, *J. Etayo* 12574.

Specimens of *Nanostictis peltigerae* examined: *Denmark*: Herb. Christiansen 3211, slide n° 94.457 (isotypus); herb. Christiansen 111, slides n° 75.336, 75.421.

Nectria lecanodes Cesati in Rabenh.

France: Pyrénées-Atlantiques, gorge d'Ehujarre, on *L. scrobiculata*, 18 July 1991, *P. Diederich* 9593 & *J. Etayo* 5917; Pyr.-Atl., gorge de Kakouetta, 550 m, 17 July 1991, *P. Diederich* & *J. Etayo* 5968; Pyr.-Atl., bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12689. - *Spain*: Navarra, road from Eugui to Irurita, collado Meaka, 730 m, 22 May 1994, *J. Etayo* 12353; Navarra, Barranca, N of Urdiain, Aitziber, 20 July 1991, *P. Diederich* 9610 & *J. Etayo*.

This species is very common on members of the Peltigerales, and rare on other lichens. In Spain we collected it also on *Degelia plumbea*, *Dendriscocaulon umhausense*, *Lobaria scrobiculata* and *Nephroma laevigatum*.

Niesslia lobariae Etayo & Diederich sp. nov. (Figs 9-10)

Species lichenicola, a *Niesslia cladoniicola* peritheciis minoribus (50-90 µm diam.) setisque longioribus (50-85 µm) differt.

Type: Spain, Navarra, valle de la Ulzama, Olcoz, on old thallus of *Lobaria pulmonaria*, 7 March 1993, *J. Etayo* 2551 (MA-Lich - holotypus; herb. Etayo, herb. Diederich - isotypi).

Ascomata perithecia, subglobose, often collapsed in herbarium specimens, dark brown, setose, ostiolate, 50-90(-150) µm in diam. Setae simple, rarely with one septum, straight, with acute ends, dark brown, 50-85 µm long, 5-7 µm in medium part, basal part bulbous, 9-16 µm in diam. Ascomatal wall brown, of textura epidermoidea, composed of several layers. Ostiole slightly erumpent, c. 20 µm in diam. Paraphyses absent at maturity. Asci clavate, unitunicate, wall very thin, apically swollen, I-, 25-40 x 3-6 µm, 8-spored, ascospores uniseriate or biseriate. Ascospores hyaline, 1-septate, not or slightly constricted at the septum, cells not separating, narrowly ellipsoid or fusiform, with two guttules in each cell, 4.5-8.5 x 1.5-2.5 µm.

Hosts: On *Lobaria pulmonaria* and *Lobaria* sp. (Papua New Guinea), perhaps saprotrophic on old dying thalli (including the lower surface).

Distribution: Known from France, Spain and Papua New Guinea.

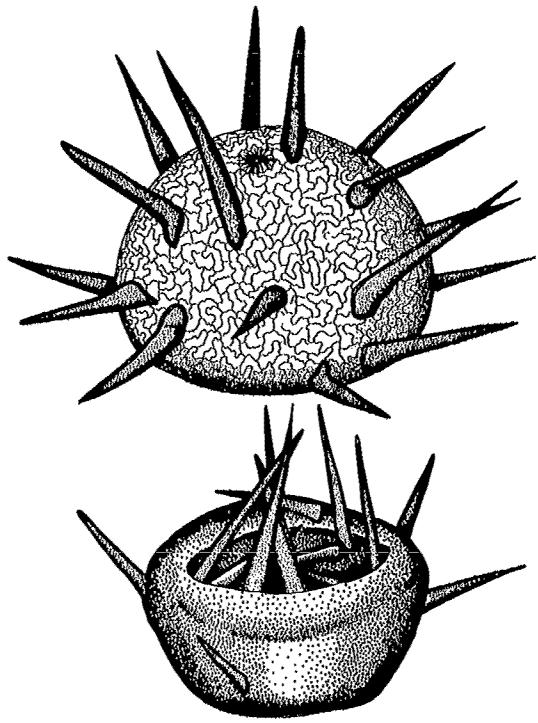


Fig. 9. *Niesslia lobariae* (holotype): humid and dry (collapsed) setose perithecium. Scale bar = 10 µm.

Observations: The new species differs from the only other lichenicolous species known in the genus, *Niesslia cladoniicola* D. Hawksw. & W. Gams, by the much longer setae and slightly smaller perithecia. In *N. cladoniicola* (IMI-holotype!) the setae measure about 20-30 µm in length and the dry perithecia have an average diameter of 90-100 µm; the setal length is thus about 20-30 % of the diameter of the perithecia. In *N. lobariae* the setae are similar in length to the perithecial diameter (80-120 %).

Nitschkiopsis stictarum Nannf. & R. Sant. is a similar fungus, abundant on apothecia of *Sticta* spp., which become black through the presence of the parasite. In this species, perithecia are 75-110 µm in diam. (UPS-holotype!), and they are covered by short (12-20 µm long) setae, as well as by longer (55-85 µm long), hyaline, subcylindrical, septate hairs (Nannfeldt 1975). Similar "hairs" are also present on the host apothecia in the absence of the parasite, and they may just represent an additional saprotrophic hyphomycete. *N. stictarum* is a distinct species, differing from our new *N. lobariae* by much shorter setae, as well as by the different habitat. It is possible that the two lichenicolous species of *Niesslia* are congeneric with *Nitschkiopsis stictarum*; cultural studies of both *N. lobariae* and *N. stictarum* would be a great help in taking such a decision.

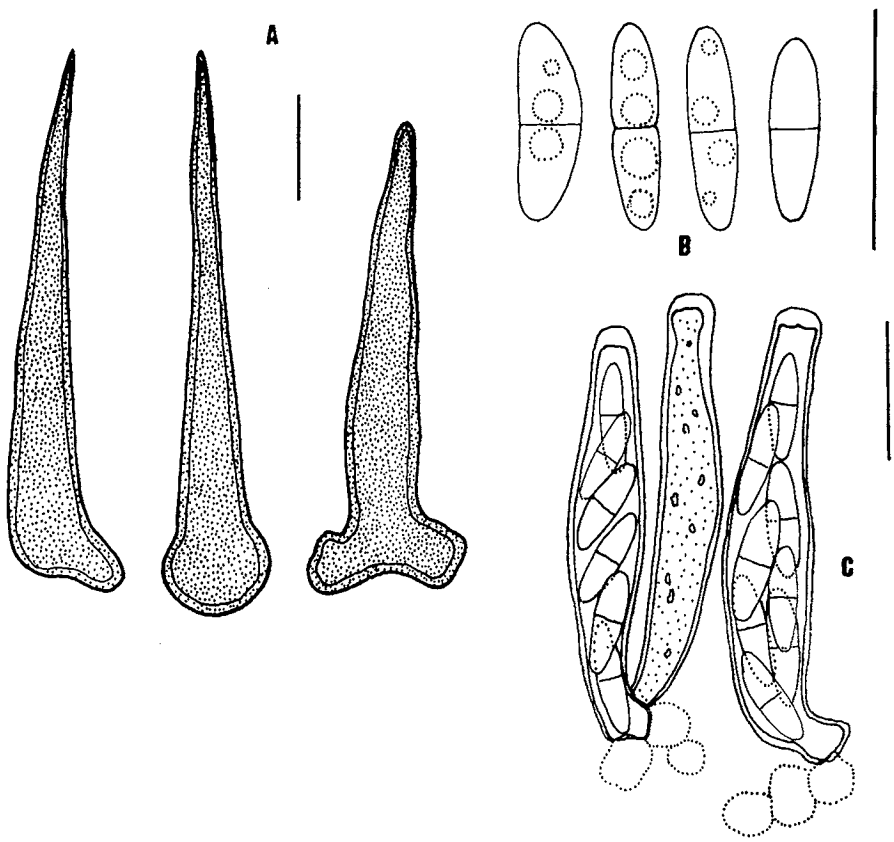


Fig. 10. *Niesslia lobariae* (holotype): A, setae. B, ascospores. C, asci. Scale bars = 10 µm.

Additional specimens: *France*: Pyrénées-Atlantiques, bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12689. - *Spain*: Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, 4 Jan. 1994, *J. Etayo* 12372; Navarra, Sierra de Urbasa, on the road to Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12397; Navarra, Espinal, Arizarte, 30 May 1993, *J. Etayo* 2552; Alava, Sierra de Entzía, Limitaciones de las Améscoas, 1040 m, 1 April 1994, *J. Etayo* 12380. - *Papua New Guinea*: Madang Province, Huon Peninsula, Finisterre range, Yupna valley, Teptep village, 2500 m, 30 July 1992, *P. Diederich* 10804.

Phaeospora cf. ***peltigericola*** D. Hawksw.

Spain: Navarra, Monte Limitaciones de las Améscoas, km 6, 1090 m, 1 April 1994, *J. Etayo* 12354, 12382.

Our material differs from typical *P. peltigericola* (Hawksworth 1980), a species restricted to *Peltigera* thalli which turn greyish, by the slightly larger ascospores which measure 11-18 x 3-4 µm (instead of 11-15 x 3.5-5 µm) and the different host (*L. pulmonaria*) which becomes dark brown. Our material is very scanty and not enough to assess if a different species is involved or not.

Phoma lobariae Diederich & Etayo

France: Pyrénées-Atlantiques, vallée d'Aspe, near Urdos, Pic d'Aspe, 1350 m, 7 Dec. 1993, *J. Etayo* 12375; Pyr.-Atl., forêt d'Hayra, near path to Urepel, 925 m, 27 Oct. 1993, *J. Etayo* 2253, 12386; Pyr.-Atl., chalet Pedro, 1000 m, 18 April 1995, *J. Etayo* 12693, 12694; Pyr.-Atl., Irati, 1240 m, 19 April 1995, *J. Etayo* 12685; Pyr.-Atl., col de Burdincurutcheta, 800 m, 18 April 1995, *J. Etayo* 12696; Pyr.-Atl., 4.2 km from station d'Issarbe, 1375 m, 19 April 1995, *J. Etayo* 12684; Pyr.-Atl., between Col de Suscousse and Arette, near the ski station, 23 June 1992, *J. Etayo* 5862, 5880 & *C. Printzen*; Pyr.-Atl., Col de Labays, alt. 1350 m, 6 July 1993, *J. Etayo* 2781, 3361; Pyr.-Atl., Bois de St-Joseph, July 1993, *J. Etayo* 1857, 2351; Pyr.-Atl., St-Engrâce, ravin de Termy, 6 July 1993, *J. Etayo* 2350; Pyr.-Atl., SE of Larrau, 29 July 1990, *P. Diederich* 9183. - *Spain*: Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, 22 July 1991, *P. Diederich* 9737 & *J. Etayo*; ibid., 4 Jan. 1994, *J. Etayo* 12370, 12369; Navarra, Burguete, road to Otsolezea, 950 m, 4 Dec. 1994, *J. Etayo*; Alava, S of Entzía, puerto de Opácua, road to Legaire, 940 m, 6 April 1994, *J. Etayo* 12050, 12387, 12391; Navarra, Valle de la Ulzama, between Oroquieta and Saldías, km 7, 950 m, 13 Febr. 1994, *J. Etayo* 12177; Navarra, Sierra de Urbasa, Otxoportillo, 1000 m, 19 June 1994, *J. Etayo* 12393, 12398; Navarra, Espinal-Auzperri, 940 m, 4 Dec. 1994, *J. Etayo* 12553; Navarra, Baraibar, S. Miguel de Aralar, 900 m, 19 July 1991, *J. Etayo* 6004 & *J. I. Calvo*; ibid., 8 Nov. 1991, *J. Etayo* 6006; Navarra, Roncesvalles, Lindux, 21 Sept. 1991, *J. Etayo* 6010; Navarra, Orbaiceta, bosque de Iraty, 24 June 1992, *J. Etayo* 5891 & *C. Printzen*; Navarra, N of Ochagavía, bosque de Iraty, Lizardoya, 19 July 1991, *P. Diederich* 9666 & *J. Etayo*; Navarra, N of Orbaiceta, N of Fabrica de Orbaiceta, 19 July 1991, *P. Diederich* 9625 & *J. Etayo*; Navarra, Viscarret, wood near of the Río Sorogain, 30 May 1993, *J. Etayo* 1658; Navarra, NE of Isaba, near the road NE of Uztárroz, 29 July 1990, *P. Diederich* 9164.

This species, which has only recently been described (Etayo & Diederich 1995), seems to be the most common parasite on *Lobaria pulmonaria* in the Pyrenees.

Plectocarpon lichenum (Sommerf.) D. Hawksw.

France: Pyrénées-Atlantiques, vallée d'Aspe, near Urdos, Pic d'Aspe, 1350 m, 7 Dec. 1993, *J. Etayo* 12375; Pyr.-Atl., bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12687. - *Spain*: Navarra, Burguete, road to Otsolezea, 950 m, 4 Dec. 1994, *J. Etayo* 12577.

Frequent in western Pyrenees on *L. pulmonaria*. Several additional collections from this region have been published by Diederich & Etayo (1994).

Pronectria fissuriprodiens Etayo sp. nov. (Figs 11-12)

Ascomata lichenicola, perithecioidea, obpyriformia vel subglobosa, 120-150 µm diam., immersa, dispersa; paries 15-30 µm crassus, e 6-9 cellularum stratis compositus. Paraphyses in maturitate nulla. Asci cylindrici, 60-82 x 5-6 µm, 8-spori, unitunicati, apice truncati. Ascosporae uniseriatae, ellipsoideae, 6.5-10 x 3-5 µm, 1-septatae, hyalinae, laeves, cellulis 1-guttulatis.

Type: Spain, Alava, S of Entzía, puerto de Opácua, near road to Legaire, *Fagus* wood, on *Lobaria pulmonaria*, 940 m, 6 April 1994, *J. Etayo* 12377 (MA-Lich - holotypus; herb. Etayo - isotypus).

Ascomata perithecioid, scattered, arising singly, obpyriform to subglobose, orange red, translucent, in vertical section 120-150 µm in diam., immersed in the thallus of the host and erumpent by a split showing only the ostiole; periphyses abundant, 10-

30 x 1-2 µm; ascomatal wall paraplectenchymatous, 15-30 µm thick, mainly composed of 6-9 layers of thin-walled, strongly compressed hyphal cells; inner part of the wall hyaline, outer part orange, K+ wine-red. Paraphyses absent. Asci arising from the base of the perithecial cavity, subcylindrical, truncate at the apex, unitunicate, without any apical thickening, 60-82 x 5-6 µm, 8-spored; ascospores uniseriate, 1-septate, distinctly constricted at the septum in mature ascospores, cells almost spherical, smooth-walled, 6.5-10 x 3-5 µm.

Host: The species prefers old parts of the thallus and is easily distinguished from other fungi on *Lobaria* due to the fissures produced on the cortex.

Distribution: Known from the French and Spanish Pyrenees, where it is not rare.

Observations: The new species is distinguished from most *Pronectria* species by the ascomatal wall becoming wine-red in KOH. A similar reaction is known in *P. ornamentata* (D. Hawksw.) Lowen, a species with much larger and tuberculate ascospores (Hawksworth 1983), and in *Pronectria subimperspicua* (Speg.) Lowen, a species with broader ascospores (6.5-8 x 5-6 µm) and shorter asci (40-50 x 6.5-7.5 µm) (Lowen, pers. comm.); the host of *P. subimperspicua* was initially given as *Ricasolia casarettiana*, but has been shown to be *Punctelia constantimontium* (Clauzade et al. 1989; Santesson., pers. comm.).

In some specimens of *P. fissuriprodiens*, a pinkish jelly containing numerous ascospores arises from the ostiole, similar to the conidia-containing droplets arising from pycnidia in species of coelomycetes.

Additional specimens: *France*: Pyrénées-Atlantiques, Barranco de Termy, 6 July 1993, *J. Etayo* 2344, 2349; Pyr.-Atl., gorges de Pihot, 6 July 1993, *J. Etayo* 3385; Pyr.-Atl., Gave de Larrau, road to Sagaspe-Borde, bois d'Etchelu, 450 m, 19 April 1995, *J. Etayo* 12695; Pyr.-Atl., Bois d'Astaquieta, road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12706. - *Spain*: Alava, Sierra de Entzía, Limitaciones de las Améscoas, 1040 m, 1 April 1994, *J. Etayo* 12380, 12384, 12683; Alava, S of Entzía, puerto de Opácua, Zapaliturri, 940 m, 6 April 1994, *J. Etayo* 12391; Navarra, Espinal, 30 May 1993, *J. Etayo* 12366; Navarra, Viscarret, Sorogain river, 800 m, 30 May 1993, *J. Etayo* 12367; Navarra, Oronoz-Mugaire, señorío de Bértiz, 400 m, 4 Jan. 1994, *J. Etayo* 12372, 12373; Navarra, Baraibar, S of Miguel de Aralar, near Santuario, 1200 m, 22 July 1993, *J. Etayo* 3390; Navarra, Espinal-Auzperri, 940 m, 4 Dec. 1994, *J. Etayo* 12548.

Pycnopsammina lobariae Diederich & Etayo

France: Pyrénées-Atlantiques, bois d'Astaquieta, 3 km on the road to Occabe and Esterençuby, 1200 m, 18 April 1995, *J. Etayo* 12686; Pyr.-Atl., chalet Pedro, 1000 m, 18 April 1995, *J. Etayo* 12691. - *Spain*: Alava, Sierra de Entzía, puerto de Opácua, Zapaliturri, 940 m, 6 April 1994, *J. Etayo* 12052; Navarra, Monte Limitaciones de las Améscoas, 1090 m, 1 April 1994, *J. Etayo* 12385.

This species was described by Etayo & Diederich (1995). Here we report some further new localities.

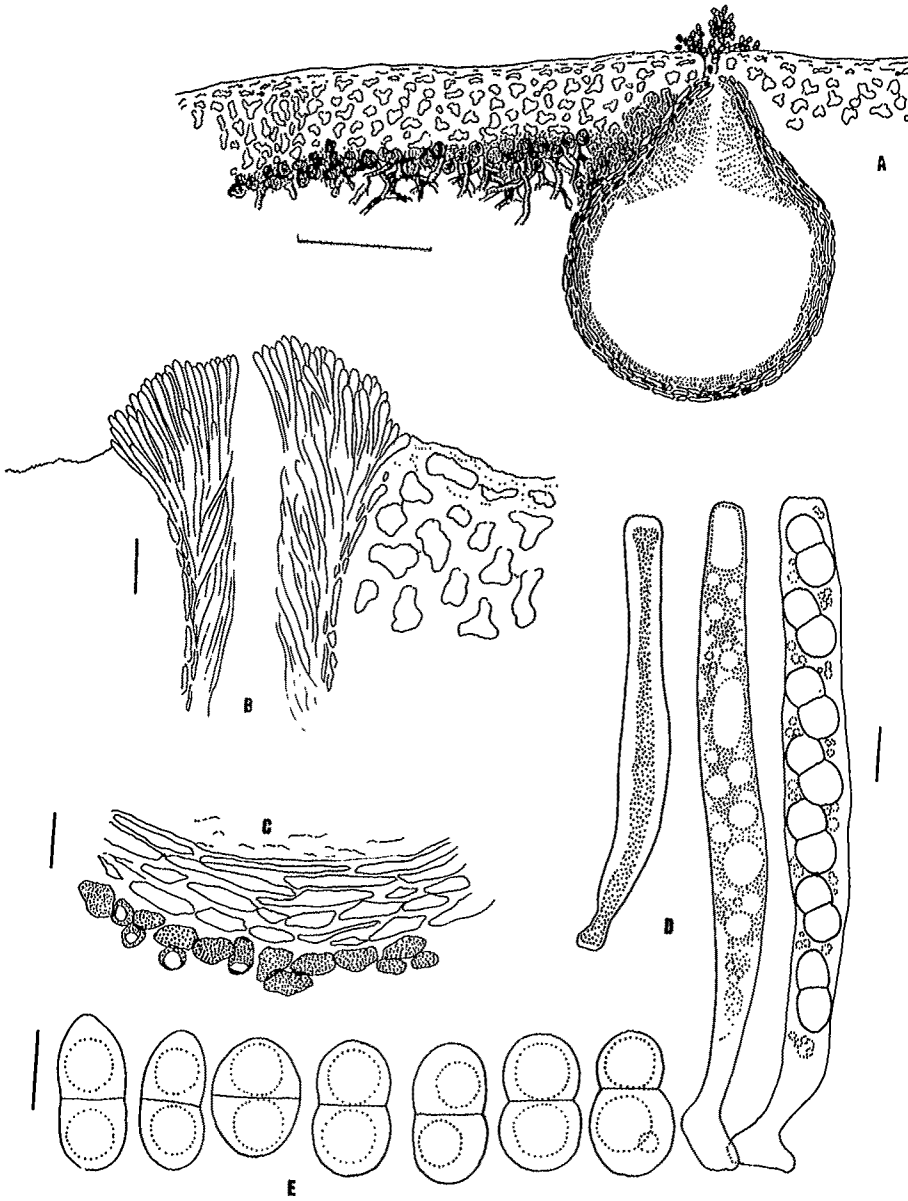


Fig. 11. *Pronectria fissuriprodiens* (holotype). A, ascoma growing in the medulla of *Lobaria*, note the periphyses and ascospores arising from the ostiole. B, ostiole with periphyses. C, ascomatal wall. D, immature (left) and mature (right) asci. E, ascospores. Scale bars: A = 100 µm; B, C = 10 µm; D, E = 5 µm.

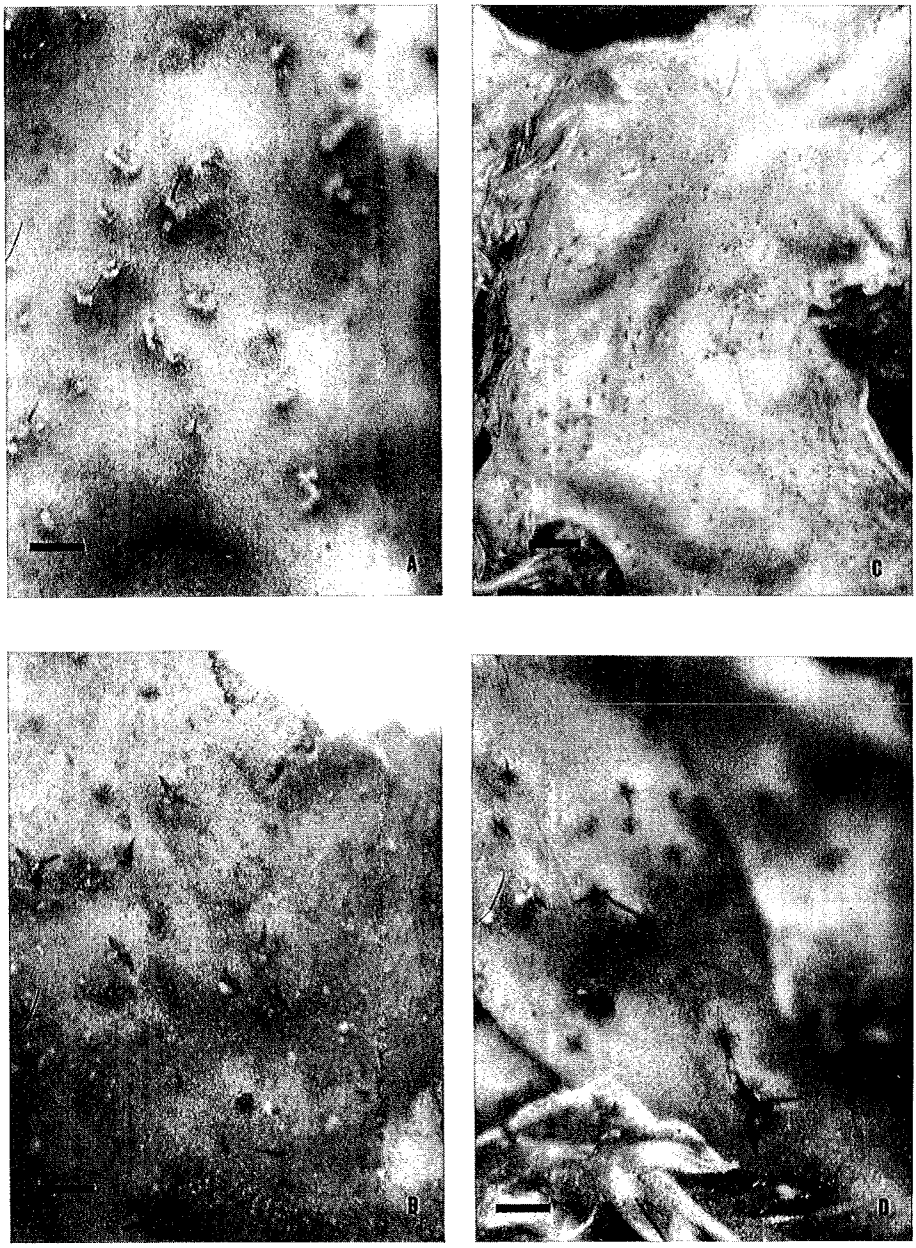


Fig. 12. *Pronectria fissuriprodiens* (holotype). A, pinkish droplets containing ascospores arising from the ostiole. B-D, ascomata immersed and erumpent by a split in the cortex of *Lobaria* (in B the conidiophores of *Chalara lobariae* can be recognized, arrow). Scale bars: A, B, D = 200 µm; C = 3 mm.

Pseudocercospora lichenum (Keissl.) D. Hawksw.

Spain: Alava, Sierra de Entzía, Limitaciones de las Améscoas, 1040 m, 1 April 1994, *J. Etayo* 12384; Navarra, Sierra de Urbasa, Otsoportillo, 1000 m, 19 June 1994, *J. Etayo* 12396.

Our specimens agree well with the description given by Hawksworth (1979), but the conidia can be larger, 10-19 x 3.5-4 µm, 0-3-septate, and the stroma is not apparent.

These are the first records of the species on *Lobaria*, on which it grows on old and decaying thalli. In the only previously known collection, the fungus grows on *Loxospora cismonica*.

Stigmidium sp.

Spain: Navarra, between Roncesvalles and Valcarlos, 650 m, 18 April 1995, *J. Etayo* s. n.

Mycelium a net of contorted, brownish hyphae (2-3 µm in diam.) in the host cortex, hardly visible at a magnification of x40. Ascomata perithecioid, 40-70 µm in diam., scattered, immersed to emergent. Wall paraplectenchymatous, brown, K-, cells 5-9 µm. Periphyses present; pseudoparaphyses of subglobose cells; centrum I- and KI-. Asci obpyriform, 8-spored, 20-43 x 8-14 µm. Ascospores clavate, 1-septate, not or slightly constricted at the septum, soon becoming brownish, 9.5-13.5 x 3-4 µm.

This species seems to be very rare. As the only specimen is reduced, we prefer to await the discovery of additional collections before describing it formally. The species is similar to *Phoma lobariae* in habitus, but perithecia are normally more dispersed than conidiomata of *Phoma*. The species is characterized by its ascospores soon becoming brownish and by the host.

Tremella lobariacearum Diederich & M. S. Christ.

Two records of this species from the Pyrénées-Atlantiques have been published by Diederich (1996).

Unguiculariopsis manriquei Etayo sp. nov. (Figs 8, 13)

Ascomata lichenicola, excipulo aurantio, pseudoparenchymatico, pilis glabris, tortuosis, aurantio-brunneis, 15-70 µm longis et 1.5-3 µm latis. Paraphyses simplices vel ramosae, cylindricae, apice non incrassatae. Asci cylindrici vel elongato-clavati, paries apice non incrassata, 25-37 x 4-5 µm, in iodo non caerulescentes, 8-spori. Ascosporae ellipsoideae, hyalinae, leves, biguttulatae, non septatae, 4-5.5 x 2-2.5 µm. Conidiomata ignota.

Type: Spain, Canary Islands, Gomera, Vallehermoso, Cañada de los Jorges, 950 m, on *Lobaria scrobiculata* growing on *Rhamnus glandulosa* and *Laurus azorica*, 6 Aug. 1994, *J. Etayo* (MA-Lich - holotypus; herb. Etayo: microscopic slide).

Ascomata apothecia, sessile, solitary or in small clusters of up to 6, dark brown with an ochre tinge (due to excipular hairs), with an incurved, persistent excipulum, 0.3-0.65 mm in diam. at maturity. Ectal excipulum c. 40-50 µm thick, prolonged below to form a short, immersed, stipe-like base, orange-brown, paraplectenchymatous in the base but prismatic in the margin; hairs numerous, covering the entire excipulum,

15-70 x 1.5-3 µm, curved or flexuose, aseptate or with 1-2 scarcely visible septa, thin-walled, orange brown (not detaching in KOH). Epithecium orange, K-. Hymenium dilute orange K-, 30-50 µm tall. Hypothecium hyaline or yellowish, prosoplectenchymatous. Paraphyses rarely branched, simple or with a single septum in the central part, 3-4 µm wide, cylindrical or rarely thinner at the apices, very similar to young asci. Asci subcylindrical, thin-walled, wall without any apical thickenings, 25-37 x 4-5 µm, 8-spored. Ascospores ellipsoid or oblong-ellipsoid, aseptate, 2-guttulate, hyaline, 4-5.5 x 2-2.5 µm. All parts non-amyloid, even after pre-treatment with KOH.

Hosts: The new fungus has been found on the lower, tomentose surface of *L. pulmonaria* and *L. scrobiculata*, in areas where the upper surface is blackish or discoloured.

Distribution: Only known from the type locality in Gomera (Canary Islands) and from the French Pyrenees.

Observations: The new species agrees well with the basic features of the genus (Zhuang 1988). It is distinguished from other species by the longer, not clearly curved hairs and the broader paraphyses. This last feature is also shared by the lichenicolous *U. cribriformis* (Norman) Alstrup & Hawksworth (Alstrup & Hawksworth 1990), a species growing on *Pertusaria* which can be distinguished by shorter hairs, globose ascospores, etc. In *U. refractiva* (Coppins) Coppins, a species growing on *Mycobilimbia sabuletorum* and *Toninia lobulata*, the hairs are strongly curved and refractive (Coppins 1988).

Three species of *Unguiculariopsis* have recently been described from members of the Peltigerales: *U. ahtii* D. Hawksw. et al. (on *Pseudocyphellaria*) (Kondratyuk et al. 1994), *U. lobariellum* Kondr. & Gallow. (on *Lobaria*) (Kondratyuk & Galloway 1995a) and *U. triregia* Kondr. & Gallow. (on *Sticta*) (Kondratyuk & Galloway 1995b). They all differ from our new species by very short excipular hairs. According to the original descriptions, these three species should also have much longer ascospores than our new species; the published measurements of the ascospores of these species are, however, in contradiction with the illustrations published together with the original descriptions: if the scale of the illustrations is correct, the ascospores of *U. ahtii* illustrated in Fig. 1 (E-F) (in Kondratyuk et al. 1994) measure c. 4-4.8 µm in length, but they are said to be 9-12.5 µm; the ascospores of *U. triregia* illustrated in Fig. 3 (D-E) (in Kondratyuk & Galloway 1995b) measure c. 3.5 µm in length, but they are said to be 8-9 µm long.

The new species is named in honour of Dr E. Manrique in recognition of his help provided to the first author during the last years.

Additional specimen: *France*: Pyrénées-Atlantiques, S^{te}-Engrâce, Barranc de Termy, 6 July 1993, *J. Etayo* 12361.

Vouauxiella sp.

Spain: Navarra, Espinal, Arizarte, 30 May 1993, *J. Etayo* 2348; Navarra, Viscarret, in Sorogain, 30 May 1993, *J. Etayo* s. n.



Fig. 13. *Unguiculariopsis manriquei* (*J. Etayo* 12361). A, ascus and paraphyses; B, ascospores; C, ectal excipulum and part of hymenium; D, excipular hairs. Scale bars: A = 10 µm; B = 5 µm; C, D = 20 µm.

Mycelium immersed. Conidiomata pycnidial, arising singly, pyriform, immersed, unilocular, 130-150 x 80-110 µm; wall thin, c. 5 µm thick, composed of thick-walled, pale brown cells (textura angularis); wall thicker (10 µm) and darker around the ostiole. Conidiogenous cells terminal, holothallic, hyaline, smooth, 8-9 x 2-2.5 µm. Conidia catenate, formed in acropetal chains, chains simple, with up to 6

adhering conidia; conidia oblong, with both ends abruptly truncate, simple, hyaline, smooth, liberated by the break-up of the chains, 2-3.5 x 1.5-2 µm.

The species is similar to *V. pithospora* (Cavalcante & Silva) Sutton, collected on an unknown foliicolous lichen in Brazil, but doubts about conidia and conidiomata size in that species are pointed out by Hawksworth (1981). As our material is reduced, we do not describe it as a new species in this paper.

Vouauxiella sp. causes a reddish coloration on the thallus of *Lobaria*. In the field the species may be distinguished from *Phoma lobariae* by that reddish colour and by the more dispersed conidiomata.

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