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MYCOTAXON

Volume LXXI, pp. 95-103

April-June 1999

TWO NEW AGARICS FOUND IN ANDALUCIA
(PENINSULAR SPAIN)

F. Esteve-Raventós* & A. Ortega**

* Departamento de Biología Vegetal (Botánica). Universidad de Alcalá. E-28871 Alcalá de Henares, Madrid (Spain). E-mail: fernando.esteve@alcala.es

** Departamento de Biología Vegetal (Botánica). Universidad de Granada. E-18071 Granada, Andalucía (Spain).

Summary. *Entoloma griseocyaneum* var. *glyciosmus* var. nov. and *Mycena gladiocystis* sp. nov. (sect. *Insignes*) are described and commented. Drawings of microcharacters are added.

Key words: *Entoloma griseocyaneum* var. *glyciosmus*, *Mycena gladiocystis*, Agaricales, taxonomy, Andalucía, Spain.

INTRODUCTION

These two new agarics are part of the research that both authors have been carrying out in the last years in two of the most interesting botanical areas of Andalucía, e.g. the *Abies pinsapo* Boiss. forests which extend in two localities of Cádiz and Málaga provinces (Grazalema and Ronda-Sierra de las Nieves), and the alpine grasslands of Sierra Nevada (Granada). Previous contributions to the mycoflora of these areas were published by ORTEGA & al. (1996, 1997).

Mycena gladiocystis was found growing on leaves of *Quercus ilex* subsp. *ballota* (Desf.) Samp. (= *Quercus rotundifolia* Lam.), in mixed areas of *A. pinsapo* with this evergreen oak. It is a new component of the very diverse foliicolous *Mycena* species that grow on *Q. ilex* leaves, e.g. *M. adscendens* (Lasch) Maas Geest., *M. mucor* (Batsch:Fr.) Gillet, *M. quercophila* Esteve-Rav. & Villarreal, *M. quercus-ilicis* Kühner or *M. smithiana* Kühner (see ESTEVE-RAVENTÓS & VILLARREAL, 1997), all of them rather frequent on this substrate when heavy and continuous rain favours their fructification.

On the other side, *Entoloma griseocyaneum* var. *glyciosmus* is a common agaric of the "borreguiles", a name which defines the alpine

grasslands of Sierra Nevada. A partial previous catalogue of the mycoflora of these areas (ORTEGA & al., 1997) did not include this taxon, which characteristic smell has been tested repeatedly in collections made in different years. A comparison with collections from (AH) of var. *griseocyaneum* (Fr. :Fr.) P. Kumm. which is commonly found in some alpine grasslands of the Spanish Pyrenees, has been made, both taxa revealing very similar macro and microcharacters.

MATERIAL AND METHODS

Both type collections have been deposited in (AH), University of Alcalá Herbarium, Spain. The microscopical study of the samples was made using NH₄OH (2 %) and Melzer's reagent. Line drawings of the figures were made with the aid of a camera lucida. Basidiospore measurements were obtained following the method proposed by HEINEMANN & RAMMELOO (1985). Authors' abbreviations follow KIRK & ANSELL (1992).

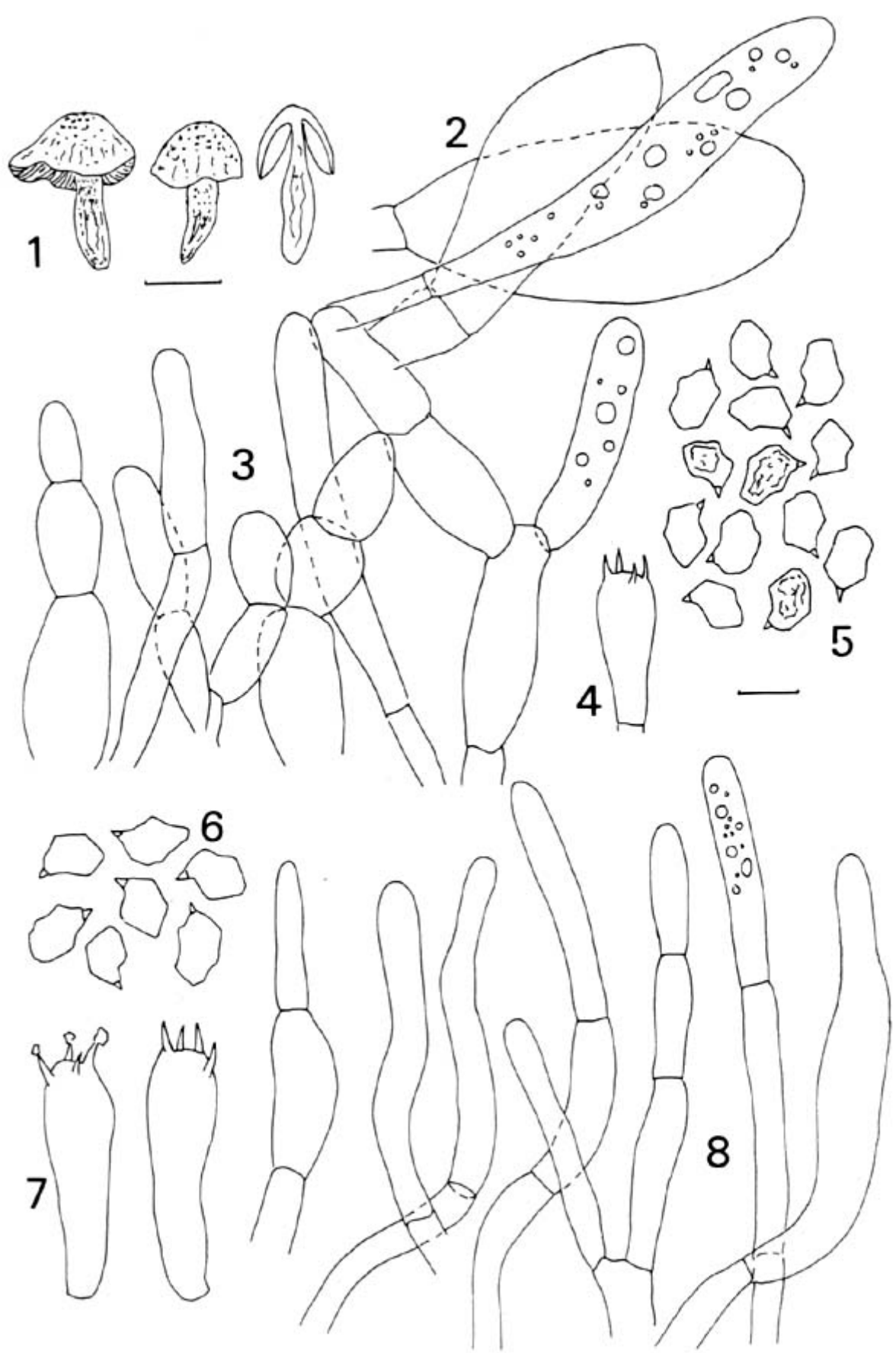
Entoloma griseocyaneum* var. *glyciosmus Esteve-Rav. & A. Ortega, *var. nov.* (Figs. 1-5)

A typo differt odore glyciosmo simulanti. Habitat: inter graminis in pratis alpinis, 2.200-2.500 m, 17-VII-1997, Sierra Nevada (Granada), Andalucia, Hispania, AH 23426 (Holotypus).

Basidiomata gregarious (Fig. 1). Pileus 18-40 mm diam., hemisphaerical, convex to plano-convex, not umbonate or subumbonate, with deflexed to straight margin, not or slightly hygrophanous, not translucently striate, grey-brown, sepia or red-brown depending on the water content, the surface entirely subtomentose to fibrillose-squamulose, in old specimens even subsquarrose at the centre. Lamellae moderately distant, almost free to adnexed, ventricose, ascendant, at first white then pink, with concolorous and even edge. Stipe 20-40 x 4-8 mm, cylindrical, frequently compressed with longitudinal groove, base attenuate to slightly broadened, grey-blue, sky-blue to violaceous-blue, white at the base, the surface distinctly silvery fibrillose-furfuraceous and striate lengthwise. Context concolorous in cortex. Smell typically reminding of coconut, especially upon drying and in dried specimens (still recognizable in exsiccata). Taste mild.

Spores L x w = 9-10.3-11.5 x 6.7-7.7-8.5 µm, Q= (1.2-)1.25-1.35-1.47(-1.53) -

Figs. 1-5. *Entoloma griseocyaneum* var. *glyciosmus* (holotypus). 1.- Basidiomata. 2.- Terminal cells of the pileipellis. 3.- Terminal cells of the stipitipellis. 4.- Basidium. 5.- Spores. **Figs. 6-8.** *Entoloma griseocyaneum* var. *griseocyaneum* (AH 19450). 6.- Spores. 7.- Basidia. 8.- Terminal cells of the stipitipellis. Bar = 10 µm except basidiomata = 12 mm.



$n=21$ -, heterodiametrical, 5-8 angled in side view (Fig. 5). Basidia 28-40 x 9.5-12 μm , broadly clavate, 4-spored (but mono- and bisporic also present in a low number), clampless, sclerobasidia sometimes observed (Fig. 4). Cheilocystidia not seen. Pileipellis a subtrichoderm to a true trichoderm in places, the terminal elements usually inflated (x 10-40 μm broad), with brown intracellular content (Fig. 2). Subpellis with branched elements, usually constricted at the septa, 5.5-10 μm broad. Hymenophoral trama regular, made up of elements 90-130 x 5-20 μm . Caulocutis a trichoderm constituted by regularly septate hairs, constricted at the septa, often branched, 10-25 μm broad, with grey-bluish intracellular content (Fig. 3). Clamp-connections absent.

Habitat: in wet acid pastures (gneiss), among mosses and grasses in *Festuca iberica* communities (*Nardo strictae-Festucetum ibericae*).

Material studied. SPAIN. ANDALUCIA, GRANADA: Sierra Nevada, Borreguiles de San Juan, alt. 2.500 m, 5-IX-1996, L. Alcoba, F. Esteve-Raventós, A. Ortega & M. Villarreal, (AH 21652). Sierra Nevada, Campos de Otero, alt. 2.200 m, 17-VII-1997, L. Alcoba & A. Ortega, (AH23426 *Holotypus*). *Idem*, (AH 23427 *Paratypus*).

Other material studied.

Entoloma griseocyaneum var. *griseocyaneum* (Fr. :Fr.) P. Kumm.
(Figs. 6-8)

SPAIN. ARAGON, HUESCA: San Nicolás de Bujaruelo, umbría del Gabieto, alt. 2.100 m, 30TYN3931, 15-VIII-1996, in calcareous alpine grasslands, F. Arenal, V. González & I. Pereira, (AH 19450). Parque Nacional de Ordesa, senda Punta Acuta-refugio de Calcilarruego, 1.950 m, 30TYN4125, 14-VIII-1997, in similar habitat, F. Arenal, F. Esteve-Raventós & V. González, (AH 23409).

The characteristic smell of coconut develops upon the drying process, but it is very distinctive, and also present in dried specimens. *E. griseocyaneum* has often been described lacking any particular smell (NOORDELOOS, 1987, 1992, 1994 -“not distinctive”-) or, if present, with a slightly farinaceous or “boletoid” smell when cut (JAMONI, 1996).

This new taxon is rather frequent in the acid wet pastures of the alpine range in Sierra Nevada, these locally called “borreguiles”. The record extends the distribution range of *E. griseocyaneum* in Europe to more meridional areas. In our continent, *E. griseocyaneum* is locally widespread in montane and boreo-alpine areas of central and western Europe. With regard to pH preferences, it seems to be edaphically indifferent to acid or basic soils (NOORDELOOS, 1987, 1992); though more frequent in fertilized pastures, it can also be encountered in humid *Alnus* or *Corylus* forests.

According to our field experience, *E. griseocyaneum* is rather common in the subalpine and alpine calcareous pastures of the Spanish Pyrenees

(BALLARÀ, 1997; ESTEVE-RAVENTÓS & al., 1996). In the numerous samples studied by us from these areas, a distinctive smell was not present. The comparative study of collections from the Pyrenees and those of Sierra Nevada, has revealed that both agarics are very similar in both macro and microcharacters. The range of variation of colours, spore and basidial size, pileipellis structure and hymenophoral trama in both taxa are very similar. It has been observed, though, that the stipe covering in the Sierra Nevada agaric is constituted by mostly branched hairs, frequently constricted at the septa, whereas these are not or seldomly branched, longer and more cylindrical in those from the Pyrenees. But also in this case, some overlapping exists; consequently, this character seems to be of little taxonomical importance, and possibly influenced by environmental factors or age of the fruitbodies.

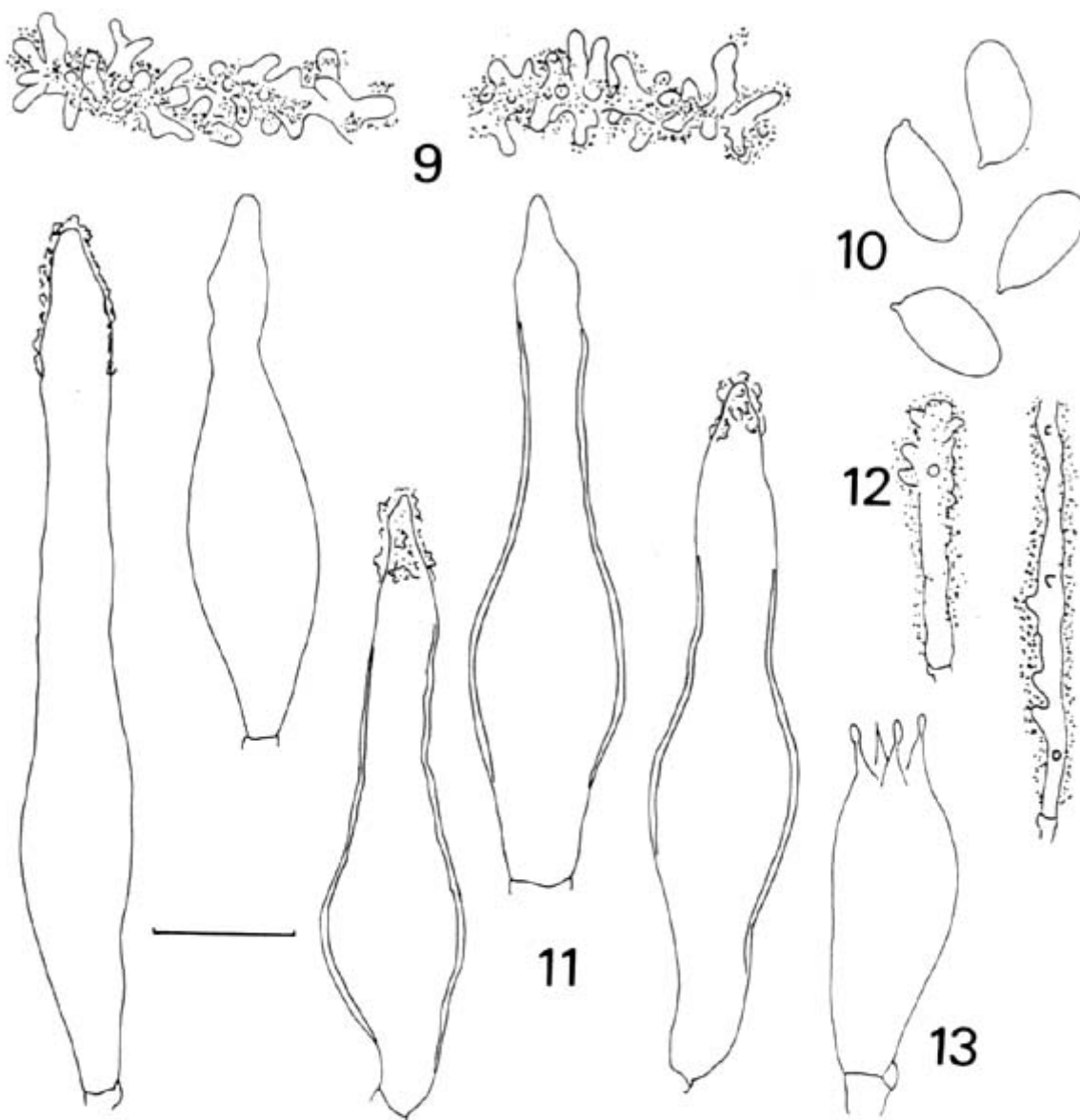
Another variety of *E. griseocyaneum* was published by FAVRE (1955) from the Swiss National Park as *Rhodophyllus griseocyaneus* var. *nudipes*. A lectotype was designed by HORAK (1993) from material collected by Favre in this National Park, the sample showing cheilocystidia and being devoid of the typical stipe covering; according to Horak, the var. *nudipes* should be considered a synonym of *E. poliopus* (Romagn.) Noordel. MAIRE (1933) described from Cataluña *E. griseocyaneum* var. *rhodocephalum*, which differs in the more red-brownish colours of the pileus; except for this character, the rest of Maire's description fits well with our concept of *E. griseocyaneum*, and this taxon is probably a color variant or form of this species.

***Mycena gladiocystis* Esteve-Rav. & A. Ortega sp. nov.** (Figs. 9-13)

Etymology: from latin "gladius" = sword, due to the shape of the cystidia

Basidiomata dispersa. Pileus usque ad 10 mm latus, convexus, haud umbonatus, leviter sulcatus et paulus translucide striatus, leviter lubricatus, luteo-olivaceus vel olivaceo-brunneus. Lamellae 15-20 stipitem attingentes, ascendentes, adnatae, dente decurrentes, usque 2 mm latae, flavido vel flavido-olivaceo tinctae, margine concolores. Stipes -50 x 1 mm, aequalis, fistulosus, pileo concolor, basi fibrillis albidis instructus. Caro tenuis, odore alcalino. Sporae 8-11 x 4-5.5 µm, laeves, amyloideae, ellipsoideae. Basidia 22-33 x 8-11 µm, clavata, 4-spora, fibulataque, sterigmatibus -5.5 µm longis praedita. Cheilocystidia 45-75 x 9-17 µ, lageniformia vel fusiformia, interdum crassotunicata (-0.5 µm), laeves. Pleurocystidia similia. Trama lamellarum dextrinoidea. Hyphae pileipellis -3 µm latae, fibulatae, surculis simplicibus vel subramosis munitae, in materiam gelatinosam immersae. Hyphae stipitis corticales fibulatae, in materiam gelatinosam immersae, laeves vel paulo diverticulatae, cellulae terminales laeves vel subramosae. Habitat: ad Quercus ilex subsp. ballota (Desf.) Samp. (= Q. rotundifolia

Lam.) folia decisa, 2-XI-1994, Nava de San Luis, Sierra de las Nieves, Ronda (Malaga), Andalucia, Hispania, AH 18819 (Holotypus).



Figs. 9-13. *Mycena gladiocystis* (holotypus). 9.- Diverticulate elements forming the suprapellis. 10.- Spores. 11.- Hymenial cystidia. 12.- Elements and terminal cell of the stipitipellis. 13.- Basidium. Bar = 12.5 μ m.

Basidiomata gregarious. Pileus 5-10 mm diam., convex to plano-convex, not umbonate, with straight margin, hygrophanous, translucent striate, yellow-olivaceous, then becoming brownish-olivaceous when drying, the surface smooth, slightly lubricous when wet but without separable gelatinous pellicle. Lamellae 15-20 reaching the stipe, ascending, not ventricose, adnate to subdecurrent by a tooth, yellowish to olivaceous, with concolorous or slightly paler edge. Stipe 20-50 x 1-1.5 mm, cylindrical, fistulose, concolorous with pileus, somewhat darker at the base, the surface smooth and lubricous, without gelatinous pellicle, the apex slightly pruinose, the

base more or less densely covered with long, rather fine to coarse whitish fibrils. Smell slightly nitrous.

Spores $L \times w = 8\text{-}9.5\text{-}11 \times (4\text{-})4.2\text{-}4.9\text{-}5.6 \mu\text{m}$, $Q = (1.6\text{-})1.65\text{-}1.95\text{-}2.2(-2.3)$ - $n=21$ -, smooth, hyaline, ellipsoid, amyloid (Fig. 10). Basidia $22\text{-}33 \times 8\text{-}11 \mu\text{m}$, clavate, 4-spored, clamped (Fig. 13). Cheilocystidia forming a sterile band, $45\text{-}75 \times 9\text{-}17 \mu\text{m}$, strongly projecting from the hymenium, narrowly fusiform to sublageniform, with long, acute, usually strangled neck, sometimes distinctly thick-walled ($\sim 0.5 \mu\text{m}$ thick), often covered by resinous yellowish material at the apex, which is also present inside the cystidia (Fig. 11). Pleurocystidia abundant, similar to cheilocystidia, strongly projecting from the hymenium (Fig. 11). Pileipellis a cutis of clamped, cylindrical hyphae, the superficial elements $\sim 3 \mu\text{m}$ broad, covered with cylindrical, simple or hardly ramified excrescences $\sim 2 \mu\text{m}$ broad, embedded in gelatinous matter. (Fig. 9). Subpellis typically pseudoparenchymatous. Pigment brownish-yellowish, extracellular, parietal. Hymenophoral trama dextrinoid. Hyphae of the stipitipellis $3\text{-}5 \mu\text{m}$ broad, with scattered, simple and short excrescences, embedded in gelatinous matter, but without separable pellicle (Fig. 12). Clamp-connections present in all tissues.

Habitat: on fallen leaves of *Quercus ilex* subsp. *ballota* (Desf.) Samp. (= *Q. rotundifolia* Lam.).

Material studied. SPAIN. ANDALUCIA, MALAGA: Ronda, Sierra de las Nieves, Nava de San Luis, 2-XI-1994, *F. Esteve-Raventós & A. Ortega*, (AH 18819 *Holotypus*).

According to MAAS GEESTERANUS (1992), *M. gladiocystis* could be either classified in sect. *Insignes* Maas Geest. or in sect. *Carolinenses* Maas Geest. Taking into important account the presence of the particular thick-walled pleurocystidia (a character which is also present in *M. carolinensis* A.H. Sm. & Hesler), the new species might seem closer to this North American taxon; however, the distribution of the fibrils at the stipe base and the gelatinous, though not separable, pellicle in the pileipellis would better suggest its placement in sect. *Insignes* (MAAS GEESTERANUS, pers. comm.).

Either considered as a member of the one or the other section, *M. gladiocystis* shows a peculiar combination of characters which make it a very distinct species: yellow-olivaceous colours and the presence of both cheilo- and pleurocystidia, which are very typical by: 1) mostly possessing slightly thickened walls, 2) being smooth, 3) showing amorphous yellowish exsudates and 4) particular morphology which reminds that of a sword or a dagger. In *M. carolinensis*, a species which grows in North America on dead twigs and stems of *Rhododendron* and *Leucothoë* respectively, the cheilocystidia are more or less diverticulate; on the other hand, *M. insignis* A.H. Sm., which is only known from Washington (USA) growing on fallen Douglas fir and hemlock needles, shows very different macro and

microscopic characters from those of *M. gladiocystis* (MAAS GEESTERANUS, *loc. cit.*: 376-377).

Among the foliicolous species that grow on the diverse sclerophyllous species of *Quercus* in the Iberian Peninsula, only *M. quercophila* could be mistaken in the field, owing to the yellowish colors which are characteristic in both species; this is a member of sect. *Polyadelphia* Singer ex Maas Geest., with very different microscopic characters (ESTEVE-RAVENTÓS & VILLARREAL, *loc. cit.*).

ACKNOWLEDGEMENTS

The authors would like to thank Dr. R.A. Maas Geesteranus (Leiden, The Netherlands) for his kind suggestions regarding *M. gladiocystis* and to Dr. R. Courtecuisse (Lille, France) for critical revision of the manuscript.

BIBLIOGRAPHY

BALLARÀ, J. (1997). Nou estudi d'espècies interessants dels estatges alpi i subalpi dels Pirineus catalans. *Rev. Catalana Micol.* 20: 1-24.

ESTEVE-RAVENTÓS, F. & VILLARREAL, M. (1997). *Mycena quercophila*, a new species of *Mycena* section *Polyadelphia* growing on *Quercus ilex* leaves. *Österr. Z. Pilzk.* 6: 67-70.

ESTEVE-RAVENTÓS, F., GONZÁLEZ GARCÍA, V. & ARENAL YAGÜE, F. (1996). El género *Entoloma* (Fr. :Fr.) P. Kumm. (Agaricales) en los pisos alpino y subalpino del Parque Nacional de Ordesa y zonas limítrofes. *Lucas Mallada* 8: 41-71.

FAVRE, J. (1955). Les champignons supérieurs de la zone alpine du Parc National Suisse. *Ergebn. Wiss. Untersuch. Schweiz. Nationalparkes* 5: 1-212.

HEINEMANN, P. & RAMMELOO, J. (1985). De la mesure des spores et de son expression. *Agarica* 6: 366-380.

HORAK, E. (1993). *Entoloma* in the alpine zone of the Alps: 1. Revision of the taxa described by J. Favre (1955). - 2. New records from the Swiss National Park and other locations in the Alps. *Biblioth. Mycol.* 150: 63-91.

JAMONI, P.G. (1996). I funghi dell'ambiente alpino - XI. Gli *Entoloma* della zona alpina del Monte Rosa Vercellese. *Funghi e Ambiente* 70-71: 23-80.

KIRK, P.M. & ANSELL, A.E. (1992). Authors of fungal names. *Index of Fungi Suppl.* C.A.B. International. 95 pp.

MAAS GEESTERANUS, R.A. (1992). *Mycenas of the Northern Hemisphere. II. Conspectus of the Mycenas of the Northern Hemisphere.* North-Holland. Amsterdam. 493 pp.

MAIRE, R. (1933). Fungi Catalaunici. Contributions à l'étude de la Flore Mycologique de la Catalogne. *Treb. Mus. Ci. Nat. Barcelona, Ser. Bot.* 15(2): 1-120.

NOORDELOOS, M.E. (1987). *Entoloma* (Agaricales) in Europe. Synopsis and keys to all species and a monograph of the subgenera *Trichopilus*, *Inocephalus*, *Alboleptonia*, *Leptonia*, *Paraleptonia*, and *Omphaliopsis*. *Nova Hedwigia Beih.* 91: 1-419.

NOORDELOOS, M.E. (1992). Fungi Europaei vol. 5. *Entoloma* s.l. Saronno. 760 pp.

NOORDELOOS, M. E. (1994). Bestimmungsschlüssel zu den Arten der Gattung *Entoloma* (Rötlinge) in Europa. IHW-Verlag, 85 pp.

ORTEGA, A., ESTEVE-RAVENTÓS, F., HORAK, E. & MORENO, G. (1996). Aportación al catálogo de los macromicetos del área potencial del *Abies pinsapo* en España. *Bol. Soc. Micol. Madrid* 21: 219-249.

ORTEGA, A., ESTEVE-RAVENTÓS, F., VILLARREAL, M. & HORAK, E. (1997). The alpine mycobiota of Sierra Nevada (Andalucía, Spain). Part I. *Boll. Gruppo Micol. G. Bresadola* 40(2-3): 367-384.