

MYCENA DUNICOLA, A STRIKING NEW SPECIES FROM THE IBERIAN PENINSULA

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Summary: *Mycena dunicola* is described as a new species belonging to the new section *Dunicolae*. As a whole, this section shows characters such as the arcuate-decurrent lamellae, negative reaction of the lamellar trama in Melzer's reagent, strongly amyloid spores and presence of pileocystidia. The new species has been found growing on acid, sandy soils in coastal and continental dunes.

Key words: Tricholomatales, *Mycena*, *Mycena* sect. *Dunicolae*, Portugal, Spain.

INTRODUCTION

Mycena dunicola was collected from two different localities of the Iberian Peninsula, firstly in Estremadura, central Portugal, and ulteriorly in Andalucía, southern Spain; in both occasions, the new species was found growing in dunes, either coastal or continental, in *Pinus pinaster* Aiton forests. The sample from Andalucía was found on consolidated continental dunes, in which some degraded plant formations of psammophilous *Quercus suber* forest also developed (*Oleo-Quercetum suberis*).

Strictly sabulicolous representatives of this genus are known to be few; COURTECUISSÉ (1984) has acknowledged the presence of some species in the atlantic coastal dunes of Northern France, though most of them are considered as ubiquitous praticolous species, e.g. *M. roseofusca* (Kühner) Bon, *M. pseudopicta* (J. E. Lange) Kühner, etc. According to our data from the European Continent, only *M. chlorantha* (Fr.:Fr.) P. Kumm. and *M. erianthi-ravennae* Robich could be considered as strictly sabulicolous, as they have always been recorded from dunes, associated to different species of *Poaceae*. The samples of *Mycena dunicola* were not growing on or among debris of sabulicolous herbs, but directly on sand among bryophytes.

In order to propose the new section and species, an extensive bibliographic search on this genus and close allies, e.g. *Hydropus* (Kühner) Singer, has been made (KÜHNER, 1938; SMITH, 1947; MÉTROD, 1949; PEGLER, 1977, 1983, 1986; MAAS GEESTERANUS & HORAK, 1995; GRGURINOVIC, 1997; HAUSKNECHT *et al.*, 1997; MAAS GEESTERANUS & DE MEIJER, 1997; BAS, 1999), but the particular combination of characters of the new taxa do not seem to match any described species.

MATERIAL AND METHODS

The description of *M. dunicola* has been based on the examination of collections containing six fresh specimens from Portugal and one dry specimen from Spain. The material has been deposited in AH and GDA.

The photograph of the basidiomata was taken in the field and light microscopy photographs were made in an Olympus BX50 using bright field and phase contrast. All drawings were made using a camera lucida device. Colours of the basidiomata are referred to MUNSELL (1994) and spore measurements follow the method proposed by HEINEMANN & RAMMELOO (1985). Authors abbreviations are according KIRK & ANSELL (1992).

Mycena sect. *Dunicolae* M. Villarreal, Esteve-Rav., Barrasa & A. Ortega, *sect. nov.*

Basidiomata statura parva vel media. Pileus udus lubricus, flavus, aurantiacus vel olivaceus. Lamellae paucae, molles, arcuatae vel decurrentibus, flavo-olivacea, margine concolores. Stipes fragilis, udus lubricus, pileo pallidior, puberulus, fibrillis substrato affixus.

Basidia clavata, 4-sporigera, fibulata. Spores subglobose, leves, amyloideae. Cheilocystidia et pleurocystidia fibulata, leves, ampullacea. Trama lamellarum iodi ope haud vivescens. Hyphae pileipellis fibulatae, leves vel leviter diverticulatae. Pileocystidia ampullacea. Hyphae stipis corticales fibulatae, leves vel leviter diverticulatae. Caulocystidia cheilocystidia similia, descendencia ad basim.

Terricola

Species typica: Mycena dunicola.

Basidiomata small to medium-size. Pileus lubricous, yellowish, orange to olivaceous. Lamellae distant, arcuate to decurrent, olivaceous-yellow, with concolorous edge. Stipe fragile, lubricous, paler than the pileus, finely pruinose, fibrillose at the base.

Basidia clavate, 4-spored, clamped. Spores subglobose, smooth, amyloid. Cheilocystidia and pleurocystidia clamped, non diverticulate, ampullaceous. Hymenophoral trama non dextrinoid. Hyphae of the pileipellis clamped, smooth or with isolated diverticules. Pileocystidia ampullaceous. Hyphae of the stipeipellis clamped, smooth or with lateral isolated projections. Caulocystidia similar to cheilocystidia, descending to base.

Terricolous

Type species: *Mycena dunicola*

Mycena dunicola Esteve-Rav., M. Villarreal, Barrasa & A. Ortega, *spec. nov.* (Figs 1-10).

Basidiomata gregaria vel dispersa. Pileus 7-15 mm latus, convexus vel plano-convexus, centro depressus, leviter striatus, lubricus, flavus, aurantiacus vel olivaceus. Caro tenuis, odore indistincto, sapore ignoto. Lamellae 13-19 stipitem attingentes, usque ad 2 mm latae, paucae, molles, arcuatae vel decurrentibus,

flavo-olivacea, margine concavae, concolores. Stipes 8-43 x -0.8-1.5 mm, cavus, fragilis, cylindraceus, udus lubricus, flavo-olivaceus, pileo pallidior, minute puberulus, basi fibrillis albis substrato affixus. Basidia clavata, 4-sporigera, fibulata. Sporae 7.5-9 x 5.5-7.5 µm, subgloboasae, leves, amyloideae. Cheilocystidia 35-65 x 5-12 x 1.5-3 µm, fusiformia vel ampullacea, interdum furcata, levia, fibulata. Pleurocystidia sparsa, similia. Trama lamellarum iodi ope haud vivescens. Hyphae pileipellis 3-6 µm latae, fibulatae, leves, parum gelatinosae. Pileocystidia 30-45 x 7-10 µm, fibulatae, leves, ampullacea. Hyphae stipsis corticales 1.5-3.5 µm latae, fibulatae, leves, caulocystidia diversiformia, descendencia ad basim.

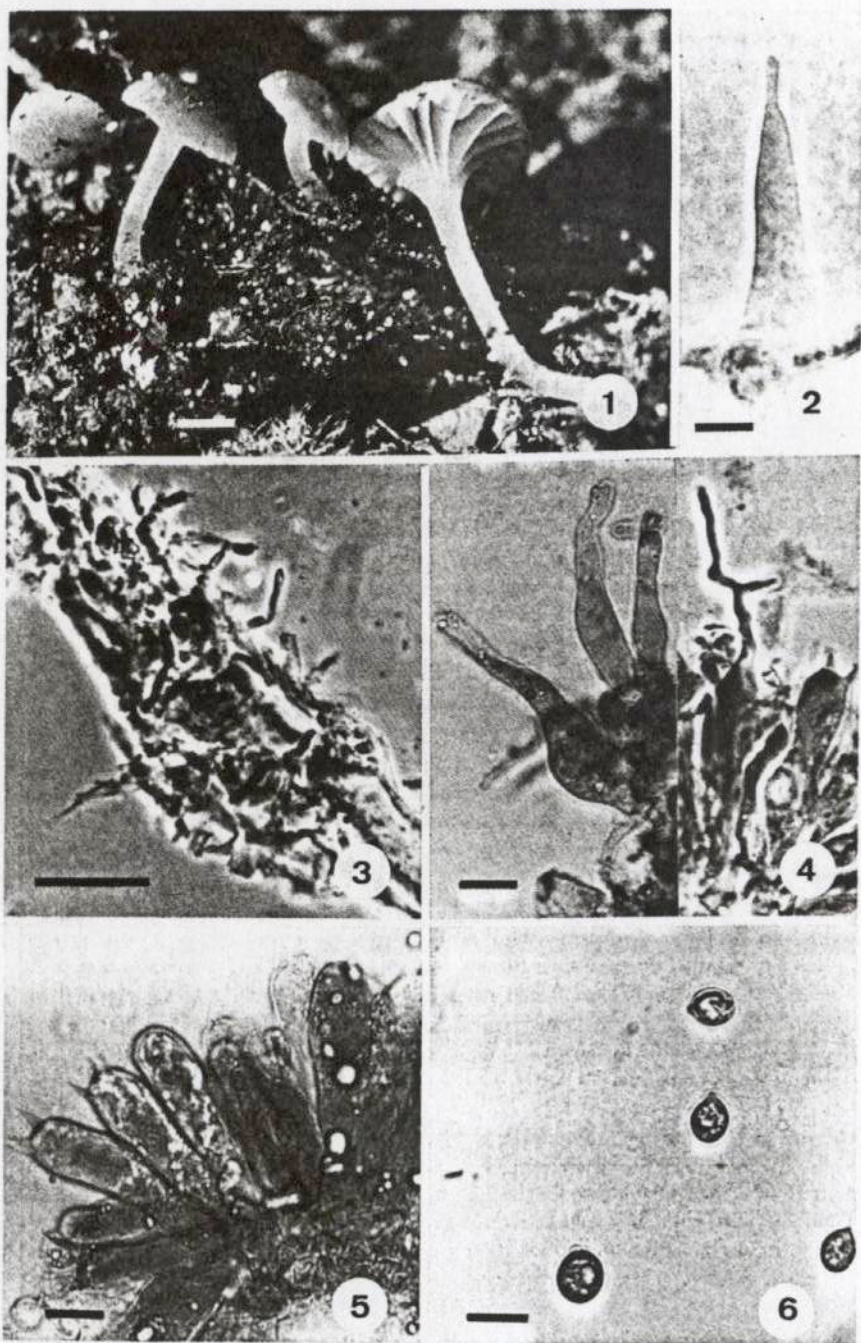
In terram sabulosam

Holotypus: AH 26939; Paratypus: GDA 43817.

Basidiomata gregarious. Pileus 7-15 mm in diam., hemispherical to convex, not umbonate, slightly depressed with age, hygrophanous, not sulcate, slightly translucent-triurate at the margin, pruinose glabrescent, lubricous when wet, uniformly yellow (Mu 5Y 7/8) to olive yellow (5Y 6/6-8), sometimes paler at the margin, drying to dark olive gray (5Y 3/2-3). Lamellae 13-19, lamellulae 1-3, -2 mm wide, pale yellow (5Y 8/4), showing an olivaceous tinge, drying olive gray to olive (5Y 4/2-3), arched to deeply decurrent, with concave and concolorous edge. Context thin, whitish yellow. Smell banal and taste unknown. Stipe 8-45 x 0.8-1.5 mm, hollow, cylindrical or slightly broadened towards the base (-1.7 mm), pale yellow to lemon yellow (5Y 8/8) sometimes with olivaceous tinges, paler than the pileus, pruinose under the lens, slightly lubricous when wet, with the base covered by long interwoven whitish to pale yellow fibrils including grains of sand.

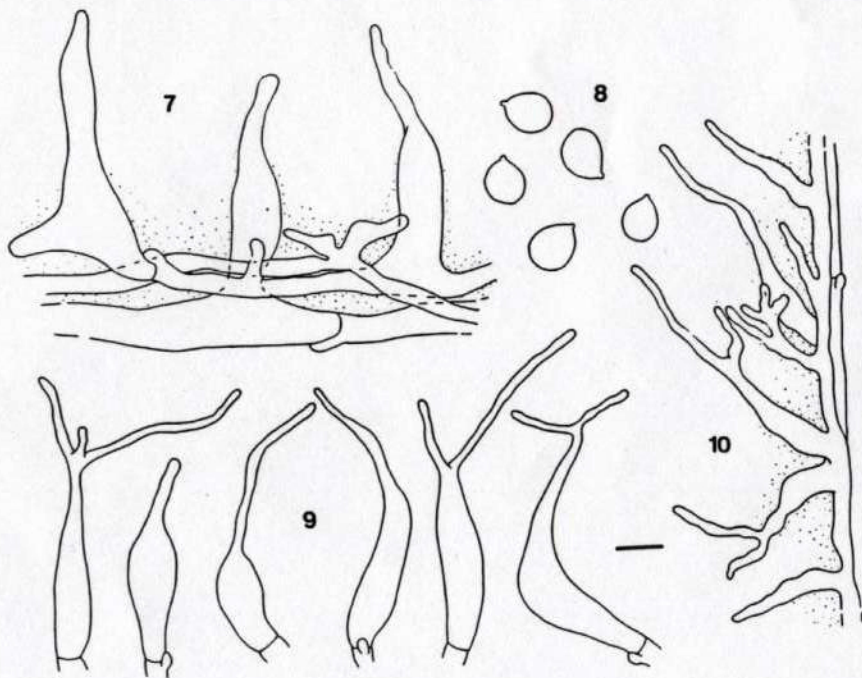
Basidia 32-36 x 7-9 µm, clavate, 4-spored, clamped at the base. Spores 7.5-8.31-9 x 5.5-6.57-7.5 µm; $Q = 1.06-1.27-1.55(-1.63)$; (n=21), subglobose to broadly ellipsoid, smooth, amyloid. Cheilocystidia 35-65 x 5-12 x 1.5-3 µm, hyaline, clamped, fusiform, lageniform, short stalked, frequently with a single or ramified long and acute neck, smooth, forming a nearly sterile band (lamella-edge heterogeneous). Pleurocystidia sparse, similar to cheilocystidia in shape and size. Hymenophoral trama not dextrinoid, made up of hyphae 10-25 µm wide. Subhymenium made up of hyphae 4-7 µm wide. Hyphae of the pileipellis smooth, 3-6 µm wide, clamped, occasionally with some sparse, simple to furcate diverticules (-15 x 1.5-4 µm), slightly gelified. Pileocystidia 30-45 x 7-10 µm, sparse, protruding among the cutis. Hypoderm made up of parallel, more or less inflated hyphae up to 35 µm wide. Stipitipellis constituted by hyphae of 1.5-3.5 µm, smooth or showing some sparse simple or forked lateral projections, clamped, slightly gelified, with fairly numerous lateral and terminal caulocystidia 30-75 x 5-8 µm. Hyphae of the cortical layer of the stipe up to 8.5 µm wide, not showing sarcodimitic structure. Oleiferous hyphae absent.

*Material studied: Portugal: Estremadura, Marinha Grande, San Pedro de Moel, Pedras Negras, 29SME9803, 20 m. alt., Leg. F. Esteve-Raventós, J.C. Salom & L.A. Parra, 7-XI-2000, in coastal dunes, on bare sand among mosses under *Pinus pinaster* Aiton., AH 26939 (Holotype). Spain: Sevilla, Aznalcázar, road from Aznalcázar to Isla menor, 30SQB2545, Leg. L. Alcoba & A. Ortega, 2-XII-2000, on sandy acid soils, among plant debris and mosses, under *Pinus pinaster* forest, GDA 43817 (Paratype).*



DISCUSSION

Macroscopically, *M. dunicola* shows a typical "hygrocyboid" to "omphalinoid" habit on the basis of its colours and distant, deeply arcuate-decurrent lamellae; the amyloid character of the spores, however, is a feature not present in either *Hygrocybe* (Fr.) P. Kumm. or *Omphalina* Quél., but in many *Mycena* (Pers.) Roussel species. Apparently, this new species might be classified as a member of sect. *Hiemales* Konrad & Maubl., and more particularly of subsect. *Omphaliariae* Kühner ex Maas Geest. on account of the non dextrinoid reaction of the hymenophoral trama, as well as the lamellar insertion; however, the amyloid spores exclude this possibility, as well as the presence of protruding dermatocystidia.



Figs. 7-10. *Mycena dunicola* (AH 26939, holotype). Fig. 7. Pileipellis. Fig. 8. Spores. Fig. 9. Hymenial cystidia. Fig. 10. Stipitipellis. Bar = 10 μ m.

Figs 1-6. *Mycena dunicola* (AH 26939, holotype). Fig. 1. Fruitbodies. Fig. 2. Pileocystidium. Fig. 3. Caulocystidia. Fig. 4. Cheilocystidia. Fig. 5. Basidia. Fig. 6. Spores. Bars: Fig. 1 = 5 mm; Fig. 3 = 75 μ m; Figs. 2, 4, 5 and 6 = 9 μ m.

Section *Dunicolae*, together with sections *Radiatae* Singer *emend* Maas Geest. (MAAS GEESTERANUS, 1985), *Diversae* Maas Geest. & de Meijer and *Nodosae* Maas Geest. & de Meijer (MAAS GEESTERANUS & DE MEIJER, 1997) shows a particular position within the genus. These four sections are characterized by the amyloid spores and non dextrinoid hymenophoral trama. In the key to the Northern Hemisphere *Mycena* sections (MAAS GEESTERANUS, 1992), *Mycena dunicola* would key out near sect. *Radiatae*, but cheilocystidia, pleurocystidia and pileocystidia are absent in *M. radiata* (Dennis) Singer *ex* Maas Geest. and macroscopically shows a very different appearance. On the other side, the South American section *Nodosae* differs by having a stipe arising from a basal disc, lamellae adnate, and diverticulate cheilocystidia and hyphae of the pileipellis. Section *Diversae* (also South American) seems to be the closest, but shows a different pileipellis structure and absence of pleurocystidia. In our opinion, the combination of characters of *M. dunicola* justify the recognition of a new section. A comparative table between the most related sections is presented below (Table I).

Table I. A comparison between sections *Diversae*, *Nodosae*, *Radiatae* and *Dunicolae*.

section	lamellar insertion	spores	pileocystidia	cheilo-pleurocystidia
<i>Diversae</i>	decurrent	subcylindrical	absent	non diverticulate
<i>Nodosae</i>	adnate	ellipsoid	absent	diverticulate
<i>Radiatae</i>	free	ellipsoid	absent	absent
<i>Dunicolae</i>	decurrent	subglobose	present	non diverticulate

The absence of dextrinoid reaction in any part of the fruitbodies and the presence of pileocystidia, also made us to consider a possible taxonomic relationship with the genus *Hydropus*; however, the following combination of characters: 1) absence of a sarcodimitic tissue in the stipititrama, 2) absence of broadly rounded dermatocystidia with vacuolar pigment, 3) presence of slightly gelified layer in the epicutis and 4) absence of oleiferous hyphae, are overall features more easily accommodated within the genus *Mycena*.

ACKNOWLEDGEMENTS

One of us (F. Esteve-Raventós) would like to thank the Dirección General de Investigación Científica y Técnica (DGICYT) for the grant of the research project "Flora Micológica Ibérica IV", PB98-0538-C04-02, in which these results are included. Dr. A. Ortega acknowledges the Programa de Investigación del Corredor Verde (PICOVER) del Guadimar, of the Junta de Andalucía, for the support given through agreement no. 12. Also to Dr. A. Hausknecht (Maissau, Austria) for revision and expert criticism on the manuscript.

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