

## VOLVARIELLA NIGROVOLVACEA KOSINA VAR. DUNENSIS VILA, ÀNGEL ET LLIMONA VAR. NOV.

J. VILA<sup>1</sup>, F. ÀNGEL<sup>2</sup> and X. LLIMONA<sup>3</sup>

1.- Rector Ubach, 53, àtic 2a. E-08021 Barcelona. 2.- Capità Arenas, 48, 2n 1a. E-08034 Barcelona.

3.- Dept. Biologia Vegetal (Botànica), Fac. Biologia, Univ. de Barcelona. Diagonal 645. E-08028 Barcelona.

**ABSTRACT.** *Volvariella nigrovolveacea* Kosina var. *dunensis* Vila, Àngel et Llimona var. nov. A new variety of *Volvariella*, collected on littoral dunes S of Barcelona (Reserva Natural del Remolar-Filipines) is described, illustrated and compared with other psammophilous taxa.

**Key words:** *Volvariella*, chorology, Catalonia, Spain.

**RESUM.** *Volvariella nigrovolveacea* Kosina var. *dunensis* Vila, Àngel et Llimona var. nov. Descripció, iconografia i comparació amb altres espècies psammòfiles, d'una nova varietat de *V. nigrovolveacea*, recol·lectada a les dunes del S de Barcelona (Reserva Natural del Remolar-Filipines).

### INTRODUCTION

This account is a part of a series of studies devoted to the fungi integrated in the plant communities of the Garraf region and neighbouring areas (see MAYORAL & ÀNGEL, 1995; VILA *et al.*, 1998). In the area prospected, located S of Barcelona, there are some coastal localities scattered along an interesting system of low dunes. In one of the many prospection visits to these localities, we had the opportunity of collecting some basidiomata, half buried in the sand, of a robust basidiomycete that intrigued us from the beginning. The collecting place is located near the beach, and shows a very poor, almost absent, vascular vegetation. The only macrofungi also recorded in the same area were *Agaricus devoniensis* P.D. Orton and *Peziza ammophila* Durieu et Mont., that were frequent.

After the consultation of some works devoted to the genus *Volvariella* (BOEKHOUT, 1990; COURTECUISSÉ, 1984; HEINEMANN, 1975; ORTON, 1986; SHAFFER, 1957 and WATLING, 1994), we have reached the conclusion that our collections, that we had formerly considered as belonging to an undescribed species, are in fact related with *V. nigrovolveacea* Kosina, a species in the close neighbourhood of *V. volvacea* (Bull.: Fr.) Singer. Its main differences with this last species is the presence of a not pubescent stipe and a non-umbonate pileus. In addition, our collections show enough distinguishing features to be considered as a different variety of the typic *V. nigrovolveacea*.

The collections studied here are preserved in the herbarium of the Societat Catalana de Micologia (BCC-SCM) and in the personal herbarium of the second author (F.A.).

*Volvariella nigrovolveacea* Kosina, *Mykol. Sborn.* 51: 129 (1974) var. *dunensis* Vila, Àngel et Llimona var. nov. (Fig. 1, A-E).

*Pileus subglobosus, demum convexus, 35-100 mm in diametro. Cuticula primo grisea aut griseo-caerulescente, deinde brunnea aut brunneo-grisea; superficies non viscida, in juvenili statu cum fibrillae subjacente strato similariter coloratae instructae. Laminae liberae, densae, primo pallide roseae, deinde roseo-brunnescentes. Stipes cylindricus, base leviter bulbosus, 25-50 × 9-14-(20 ad basem) mm, albus, glaber aut leviter pubescens. Volva albescens, fragilis, fibrilloidea, irregulariter dissociata. Caro alba, cum fungicum odorem. Sporae ellipsoidales aut ovoideae, interdum subglobosae, laeves, 7-8,5 × 4,5-6 µm, Q = 1,35-1,6. Basidia tetrasporici, 26-34 × 8-12 µm. Pleurocystidia claviformes aut fere cylindrici, 34-108 × 16-50 µm. Cheilocystidia minores. Cuticula a elementis filamentosis, moniliformibus, 50-250 × 10-50 µm, instructa. Hyphae cum intracellulare pigmento; e fibulis destitutae. Volva a hyalinis hyphis, 35-125 × 15-30 µm, multiformibus, composita.*

*Holotypus ad loco dicto "platja de l'Estany del Remolar", prope Viladecans, in Catalonia (Hispania), a J. Vila et F. Àngel lectus, 5-2-1998, prope oram maris, at 0-5 m s.m., supra thinia a vegetatione fere destituta. In herb. Societat Catalana de Micologia, SCM 3512 B, in BCC conservatus.*

Pileus subglobose to convex, without umbo, 35-100 mm in diameter. Cuticle grey to grey-bluish in young specimens, paler along the margin; getting a brownish or brownish-grey tinge when ageing. Surface dry (in young specimens, slightly viscid), provided with radial fibrils on a concolor ground, more abundant near the margin, which is hairy and not striate; as it becomes older, radial cracks appear. Gills free, closely disposed, pale pink when young, later saturate pink or sometimes slightly brown. Gill-edge pruinose, paler. Stipe cylindrical, at the base slightly bulbous, 25-50 × 9-14 mm (20 at the base), white, glabrous or slightly pubescent, especially in young specimens. Volva fragile, whitish, fibrillose-looking, irregularly dissociated, sometimes leaving on the pileus one or more remnants, usually darker, pale brownish-grey. Flesh very thin in the pileus, usually white, but in some specimens (mainly mature), with a dark grey colour under the pileipellis, and in a thin layer just on the gill bases (fig. 1e). Smell fungic.

Basidiospores ellipsoidal to ovoid, sometimes subglobose, smooth-walled, 7-8,5 × 4,5-6 µm, Q = 1,35-1,6 (fig. 1c). Basidia 4-spored, slightly claviform, 26-34 × 8-12 µm. Pleurocystidia claviform to slightly cylindrical, massive, 34-108 × 16-50 µm, with the wall thin and smooth (fig. 1a). Cheilocystidia smaller, claviform to fusiform, 30-73 × 15-37 µm (fig. 1b). Pileipellis made of filamentous, moniliform elements, 50-250 × 10-50 µm (fig. 1d). Hyphae without clamp connections, with intracellular pigment. Volva formed of hyaline hyphae, with multifiform, usually cylindrical or fusiform elements, sometimes globose or triangular, 35-125 × 15-30 µm.

COLLECTIONS STUDIED. BARCELONA: Beach adjacent to the Remolar pond, Natural Reserve of the Remolar-Filipines, Viladecans (Baix Llobregat), UTM 4224570, alt. 0-5 m, behind the first line of dunes (10 m from the sea) in the *Crucianelletum maritimae*, half or completely buried in the sand (young specimens are only detectable through bulges they form in the sand), 5-2-1998, leg. J. Vila and F. Àngel, SCM 3512 B (*Holotypus*) and FA 526 (*Isotypus*).- *Ibid.*, 23-1-1999, leg. F. Àngel and J. Vila, JVG 990123-1.- La Pineda, el Prat de Llobregat (Baix Llobregat), UTM 4244571, alt. 0-5 m, just behind the littoral dunes neighbouring the beach, in the sand, 8-2-1997, leg. F. Àngel, SCM 3513 B i FA 434.

DISCUSSION. The new variety proposed here is different from the type by the volva, that is whitish and fragile, the pleurocystidia prevalingly claviform and voluminous and the habitat, centered in coast dunes, in the close vicinity of the seashore. The var. *nigrovolveacea* has the volva dark brown grey to almost blackish, and a firm consistence, a majority of pleurocystidia fusiform, and a typical habitat in incult fields, amongst grasses. CONTU & LA ROCCA (1999) report a collection of *V. nigrovolveacea* var. *nigrovolveacea* "presso *Juniperus* sp., in terreno sabbioso di retroduna" (near *Juniperus* sp., on sandy soil of back dunes). The material described by the mentioned authors has a volva dark and "membranosa, persistente e marcatamente inguainante la base del gambo" (membranose, persistent and clearly sheathing the base of the stipe), quite as in the type, but it presents a basidioma of very small size, with a pileus reaching just 50 mm, and a stipe to 40 × 6 mm. In the original description of the type species, the pileus is said to be 100-150 mm in diameter, and the stipe is stated to attain 15 mm in diameter. PATOULLARD (1891) described *Pluteus arenarius* Pat. (*V. arenaria* (Pat.) Singer), and SINGER (1989), *V. psammophila* Singer. These are two species that, as our taxon, live in sandy soils (as indicated by their specific epithets), but they show very different characters in comparison with these of our species. *V. arenaria*, a species described from the Arabian desert, has a small pileus (maximum 30 mm in diameter), white, and spores 12-15 × 8-10 µm. *V. psammophila* has also different dimensions (pileus: 8-45 mm in diameter, stipe: 17-41 × 2-4 mm), the grey colour of the volva, the smaller spores (6,2-7,3 × 4,5-5,5 µm) and the narrow cystidia (× 16,5-17,3 µm). In the dunes of Catalonia, we have found sometimes *V. speciosa* (Fr.: Fr.) Singer, a species very different, with glutinous or viscid pileus and very big spores (12-16 × 7-9,5 µm). This taxon also occurs in the sand dunes of Northern France (COURTECUISSÉ, 1988).

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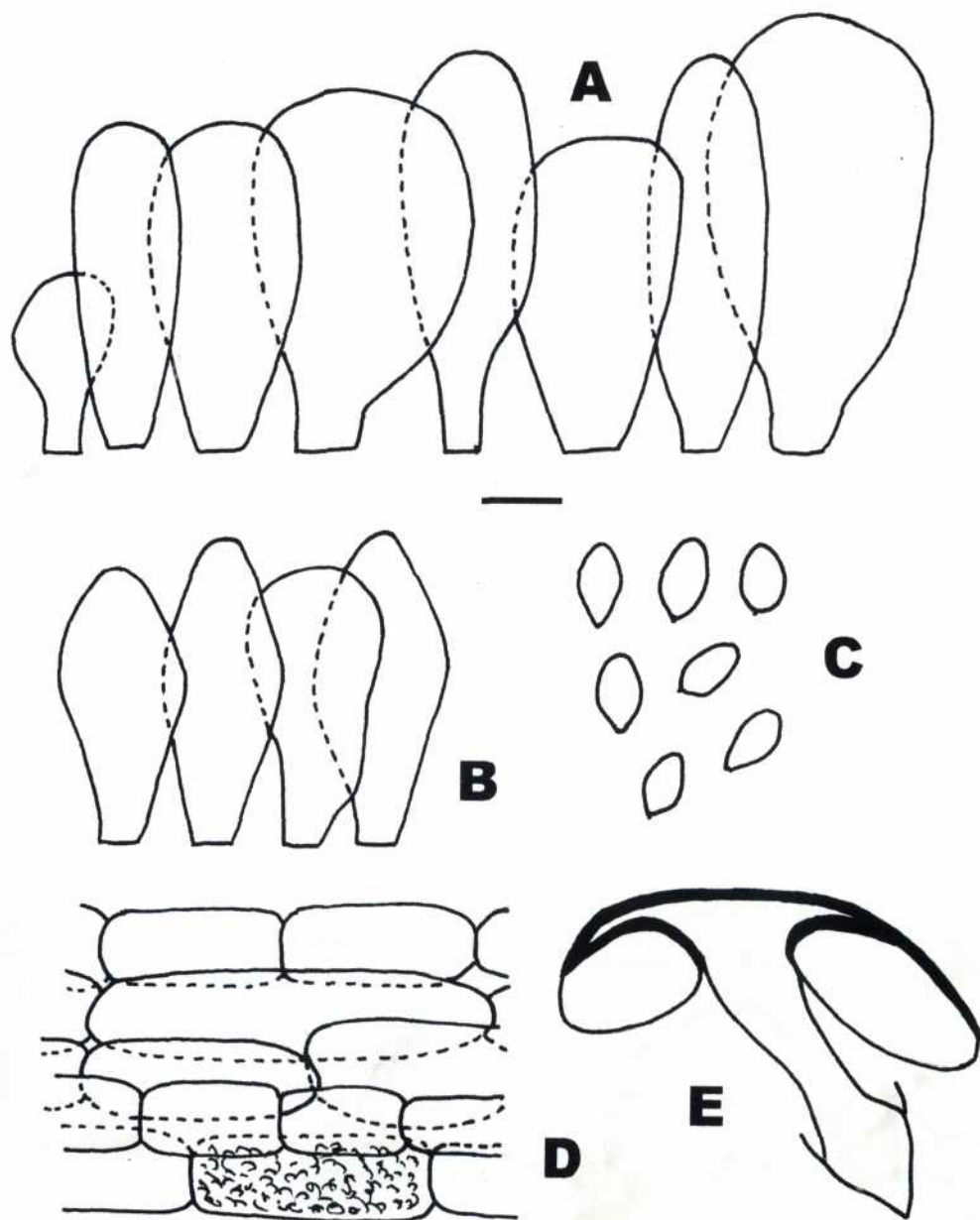


Fig. 1.- *Volvariella nigrovolvacea* Kosina var. *dunensis* Vila, Àngel et Llimona (*Holotypus*, SCM 3512 B): A) pleurocystidia; B) cheilocystidia; C) spores; D) microscopic structure of the pileipellis; E) section of a basidioma. (Strip: = 20  $\mu$ m in A, B and D; = 10  $\mu$ m in the spores).

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