

FIRST REPORT OF *COPRINUS SPADICEISPORUS* IN EUROPEC. B. ULJÉ¹, A. GENNARI², F. DOVERI³, G. CACIALLI⁴ & V. CAROTI⁵

The first record of *Coprinus spadiceisporus* Van De Bogart in Europe is described. A study of the type and that of *Coprinus roseistipitatus* Van De Bogart revealed that both are conspecific, and accordingly the latter name is considered synonymous.

Some of us have spent many years studying the taxonomy and distribution of coprophilous fungi in Italy. So far 108 species, 19 belonging to the genus *Coprinus*, have been collected and described. Many of these species are quite common and widespread, others are typical of temperate climates, and some are undoubtedly rare. Among the rare ones is *C. spadiceisporus* Van De Bogart, an American species, which is here reported for the first time from Europe. The morphological characteristics of *Coprinus spadiceisporus* are described and compared with some related taxa, including *C. roseistipitatus*, another American species described by Van De Bogart (1976), but which we consider synonymous with *Coprinus spadiceisporus*.

In the following description the notation [100, 4, 2] stands for '100 spores from 4 basidiocarps in 2 collections'. L × B × W means: length × breadth in frontal view × width in side view. Q stands for 'length of the spores divided by breadth in frontal view'.

***Coprinus spadiceisporus* Van De Bogart — Fig. 1**

Coprinus spadiceisporus Van De Bogart, Mycotaxon 4 (1976) 245.

Coprinus roseistipitatus Van De Bogart, Mycotaxon 4 (1976) 262.

Pileus up to 20 × 14 mm when still closed, 20–50 mm when expanded, ellipsoid-ovoid at first, later campanulate, finally applanate or even revolute at deliquescence. Cap cuticle whitish at first, soon with a brown or dark grey-brown disc, then cream-hazelnut coloured, progressively greying, pronouncedly grooved up to the centre, covered with a fibrous-woolly, whitish veil, which appears more crowded at the centre, split up toward the periphery in small upturned browning scales. Lamellae fully deliquescent, ascending, free, narrow, very crowded, 2–5 mm high, white at first, then grey and finally blackish, with a lighter, whitish but turning to pink, scurfy edge. Stipe 20–80 × 3–5 mm, up to 8 mm at the base, cylindrical or slightly tapering towards the apex, at first bulbous-clavate, later slightly bulbous, solid, becoming hollow, fully white, thinly striate and vaguely flocculose, provided with a thoroughly differentiated median annulus, white above, cream

1) Van Dijkstraat 21, 2405 XE Alphen aan den Rijn, The Netherlands.

2) Via Anconetana 35/A, 52100 Arezzo, Italy.

3) Via Baciocchi 9, 57126 Livorno, Italy.

4) Via Aloisi 3, 57128 Livorno, Italy.

5) Via Zola 51, 57122 Livorno, Italy.

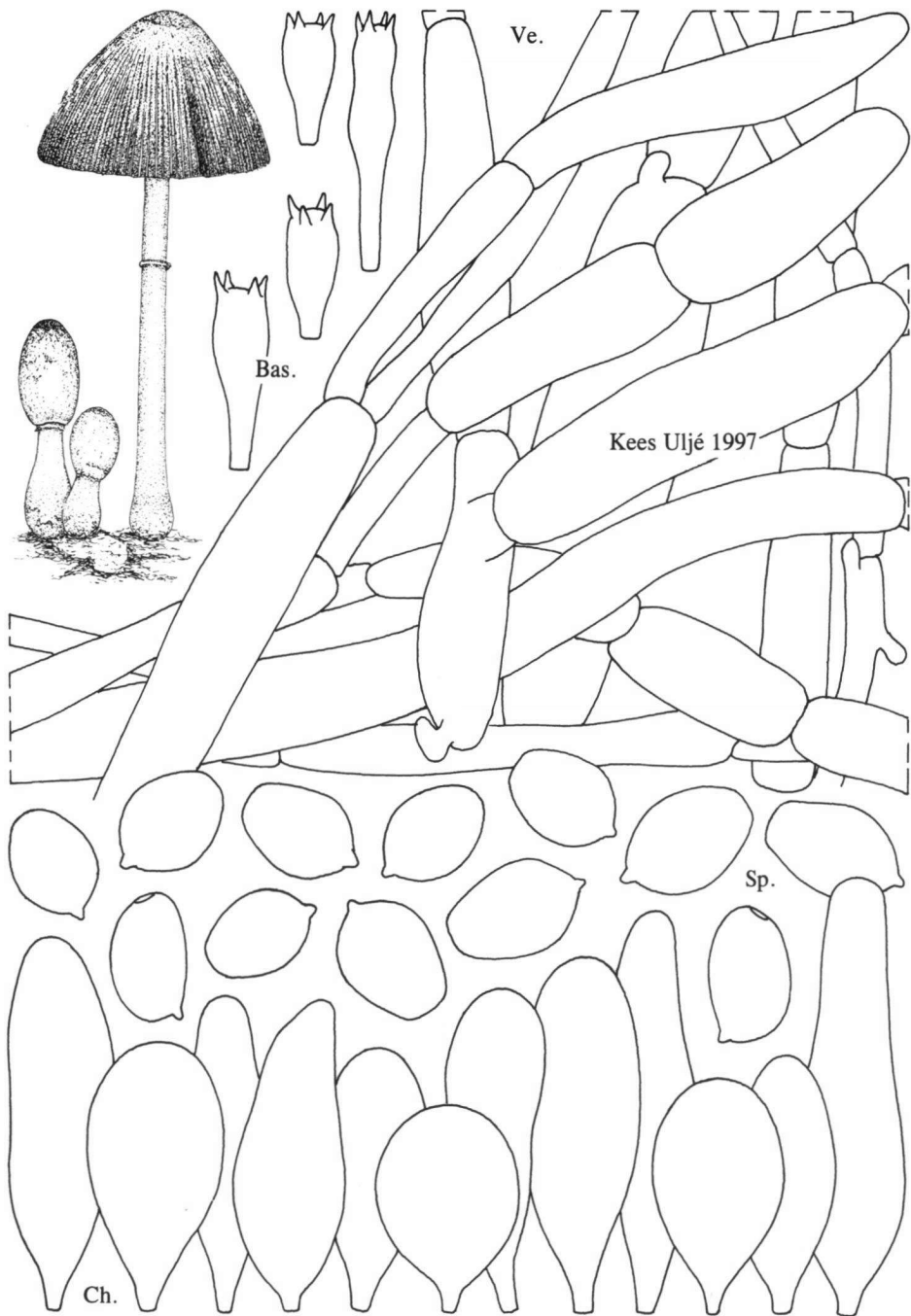


Fig. 1. *Coprinus spadiceisporus*. Sp. = spores, $\times 2000$; Bas. = basidia; Ch. = cheilocystidia; Ve. = veil (Bas., Ch. & Ve. $\times 800$).

ochraceous on the lower surface. Context white, quite firm, fibrous, devoid of particular smell and taste.

Spores [100, 5, 2] $6.7\text{--}9.3 \times 5.3\text{--}6.8 \times 4.7\text{--}5.4 \mu\text{m}$ (L \times B \times W); Q = 1.20–1.45; av. Q = 1.35; av. L = 8.0–8.4, av. B = 6.0–6.3 μm , submitriform, rhomboid or ovoid and somewhat truncate in frontal view, ellipsoid in side view, dark red-brown, with conspicuous hilar appendage and a distinct, central or slightly eccentric, 1.5–1.8 μm wide germ pore. Basidia 24–43 \times 8–10 μm , 4-spored, present in three forms: claviform and short-stalked, cylindrical-clavate or elongated cylindrical with a distinct median narrowing. Each basidium is surrounded by (3–)4–6(–8) pseudoparaphyses. Pleurocystidia and caulocystidia absent. Cheilocystidia 30–65 \times 15–23 μm , abundant (edge sterile), polymorphous: (sub)globose, ovoid, ellipsoid, oblong, utriform, subcylindrical. Veil made up of elongate elements in chains, cylindrical or somewhat inflated, often constricted at septum, 30–125 \times 6–25 μm , with fusiform, ovoid or cylindrical terminal cells. Pileipellis a cutis, made up of cylindrical, more or less parallel, repent hyphae. Clamp-connections absent. Pseudo-clamps present, difficult to observe because of the very thin walls.

Habitat & distribution — Several solitary or fasciculate specimens on dung of fallow deer. Only known from the type locality (State of Washington, USA) and from the finds described in this paper (Italy).

Collections examined. USA: State of Washington, no other annotations, *F. Van De Bogart 217* (holotype, WTU); Lewis, Cispus Centre, 25 Oct. 1975, *F. Van De Bogart 3369* (holotype of *C. roseistipitatus*, WTU). — ITALY: Grosseto, Ansedonia-Orbetello (Tombolo di Feniglia), 26 Dec. 1995, *A. Gennari, MCVE 571* (private herb.); 27 Nov. 1996, *A. Fani, L. Casetti, A. Gennari, MCVE 572* (private herb.).

The macroscopic and microscopic features of our collections were independently described by each of us before they were compared. It was immediately apparent that this taxon fitted none of the recognised European species.

To place what was a new European taxon or, possibly, a species known elsewhere, we searched the literature and found a fairly good structural likeness and similarity of habitat between our Italian specimens and the taxon described by Van De Bogart (1976).

To confirm the identification, the type material was studied by one of us (C.B. Uljé). The microscopic and macroscopic characters were indeed similar to those in our collections. The spores were slightly larger in the type material ($8.2\text{--}10.3 \times 5.8\text{--}7.3 \mu\text{m}$; Q = 1.25–1.45; av. Q = 1.35; av. L = 9.1, av. B = 6.7 μm), but the quotient and shape were in good agreement. The study dispelled any doubt and confirmed that our species deserves the name *C. spadiceisporus*.

Coprinus spadiceisporus was described as a new species by Van De Bogart (l.c.) in the first part of a study devoted to the genus *Coprinus* in western North America. He placed the new taxon in section *Coprinus*, after acknowledging that he based his systematics on Kühner & Romagnesi (1953).

Uljé & Noordeloos (1997) divided section *Coprinus* in four subsections (based on Singer, 1986), mainly on the basis of characters in the veil: subsect. *Coprinus* (= *Annulati* J. Lange), subsect. *Atramentarii* (Fr.) Konr. & Maubl., subsect. *Alachuani* Sing., and subsect. *Lanatuli* Sing.

In this scheme, *Coprinus spadiceisporus* has to be placed in the subsection *Coprinus*, on account of the presence of a ring together with the adpressed, hyphoid veil.

The other species belonging to subsection *Coprinus* are *C. comatus* and *C. sterquilinus*. *Coprinus comatus* differs from *C. spadiceisporus* in having much larger basidiocarps, larger spores and a habitat on soil, while *C. sterquilinus*, though growing on dung, has larger basidiocarps and spores twice as large.

A second taxon, that was also first described and placed in sect. *Coprinus* by Van De Bogart (l.c.), is *C. roseistipitatus*. Its distinguishing characteristics were given as pink-coloured cystidia and stipe apex, basidia with a median grey pigment band and spores that are slightly larger than *C. spadiceisporus*. In the type collection of this species the spores were indeed found to be slightly larger (less than Van De Bogart found) than in *C. spadiceisporus* ($8.7\text{--}10.7 \times 6.3\text{--}7.9 \mu\text{m}$), but of similar shape and quotient. The slight difference in spore size is not unusual in species of *Coprinus* and not sufficient in itself to maintain two species.

The pink colour of the cheilocystidia could not be found in the dried material of the type collection, nor could the median grey band on the basidia. The pink-coloured apex of the stipe does not seem to us to be a usable macroscopic feature because of the fact that white colours often become pinkish in mushrooms, especially under wet conditions.

For these reasons we consider *C. roseistipitatus* synonymous with *C. spadiceisporus*.

Although *C. spadiceisporus* and *C. roseistipitatus* are each based upon only one collection, Van De Bogart described both species as occurring on rabbit and deer dung (no annotations were added to the type collections). For *C. spadiceisporus* he described clamp-connections as being present, for *C. roseistipitatus* as being absent. We found only pseudoclamps in both species.

ACKNOWLEDGEMENTS

The authors are indebted to Else C. Vellinga for critical reading and for correcting the manuscript and to John Lennie for correcting the English text. The director of the herbarium of WTU is thanked for the loan of type material.

REFERENCES

- Kühner, R. & H. Romagnesi. 1953. Flore analytique des champignons supérieurs. Paris.
Singer, R. 1986. The Agaricales in modern taxonomy, Ed. 4. Koenigstein.
Uljé, C. B. & M. E. Noordeloos. 1997. Studies in *Coprinus* IV. *Persoonia* 16: 265–333.
Van De Bogart, F. 1976. The genus *Coprinus* in Western North America, Part I: section *Coprinus*. *Mycotaxon* 4: 233–275.