

NOTULAE AD FLORAM AGARICINAM NEERLANDICAM – XLIII

Notes on *Agrocybe*

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Within the scope of a revision of the genus *Agrocybe* for Flora agaricina neerlandica, three new taxa of *Agrocybe* sect. *Pediadae* are described. *Agrocybe ochracea* spec. nov. is characterized by the presence of conspicuous pleurocystidia of different shape and size as the cheilocystidia. A new variety of *Agrocybe pediades* with a consistently annulate stipe is proposed as *A. pediades* var. *cinctula* nov. var. *Agrocybe fimicola* (Speg.) Singer, characterized by the presence of appendiculate veil at the margin of the cap and occurrence on dung, is reduced to the level of variety.

As part of the long-term project 'Flora agaricina neerlandica' the genus *Agrocybe* has recently been revised for the Netherlands and adjacent regions (Nauta, in press a). Many additional collections from Europe have been studied and this revealed some new species, among which *Agrocybe rivulosa* on wood-chips (Nauta, 2003), belonging to sect. *Agrocybe*. Within section *Pediadae* a new species with remarkable pleurocystidia, a new annulate variety of *A. pediades* and a variety of *A. pediades* with appendiculate veil at the cap margin occurring on dung are formally described here.

***Agrocybe pediades* var. *cinctula* Nauta, var. nov.**

A varietate typica stipitis conspicuo annulo differt.

Holotypus: The Netherlands, prov. Utrecht, Odijk, 15.VII.1984, L. Jalink & M. Nauta 1030 (L).

Differing from the typical variety in the presence of a conspicuous annulus. The microscopy and habitat are the same as for the typical variety.

This taxon was discovered among the collections studied for a previous revision of *Agrocybe* in the Netherlands (Nauta, 1987), and has since then been found more often. It may be the same taxon as Singer had in mind when he published a description of *A. pediades* var. *annulata* (1950: 457). However, this name was invalid since no Latin description was given.

***Agrocybe ochracea* Nauta, spec. nov. — Fig. 1**

Pileus 10–35 mm latus, convexus, ochraceo-luteus viscidus in centro plerumque magis brunneolior. Lamellae adnatae. Stipes 30–50 mm longus 2–5 mm latus luteolus sine annulo. Caro odore farinosa ubi secta.

Sporae ellipsoideae 11.5–15.5 longae 8.5–11.0(–12.0) latae 8.0–9.5(–10.0)  $\mu\text{m}$  crassae in medio 13.5–15.0  $\mu\text{m}$  longae, Q = (1.25–)1.40–1.55(–1.80), poro germinativo 1.5–2.0  $\mu\text{m}$  lato. Basidia 2- et 4-sporigera. Lamellae margine fere steriles. Cheilocystidia abundantia lageniformia, (15–)25–35(–40)  $\mu\text{m}$  longa 2.0–5.0(–8.0)  $\mu\text{m}$  lata plerumque (sub)capitata. Pleurocystidia aliquantum abundantia, 35–55

$\mu\text{m}$  longa 12–18  $\mu\text{m}$  vel 4.0–9.5(–12.0)  $\mu\text{m}$  crassa lageniformia vel utriformia cheilocystidiis formae vel staturae diversae apice plerumque muco tecto parietibus parum incrassatis. Pileipellis 50–100  $\mu\text{m}$  latus valde gelatinosa cellulis clavatis 10–20(–30)  $\mu\text{m}$  longis 7.0–11(–17)  $\mu\text{m}$  latis strato gelatinoso 8.0–15  $\mu\text{m}$  lato reliquiis hyphis 2.5–3.5  $\mu\text{m}$  latis tectus.

Holotypus: The Netherlands, prov. Noord-Brabant, Breda, Mastbos, 30.V.1984, *J. Gelderblom 84-13* (L 0341733).

Cap 10–35 mm, (irregular) convex, sometimes with faint umbo, ochraceous yellow to brownish yellow (Mu. 10 YR 6/8), at centre usually more brownish, at margin paler; surface smooth, rather viscid, greasy in dry weather. Lamellae 60–64, with 1–3 lamellulae per lamella, moderately crowded, adnate to narrowly adnate, ventricose, up to 5 mm broad, (yellowish) brown (10 YR 5/4), edge whitish, minutely denticulate. Stipe 30–50  $\times$  2–5 mm, without annulus, cylindrical to slightly enlarged or tapering towards base, (pale) yellow (10 YR 7/6), paler than cap, at top pale yellow (10 YR 8/4), towards base slightly brownish; fistulose, fibrillose. Context 2 mm thick in cap, whitish. Smell farinaceous when cut.

Spores 11.5–15.5  $\times$  8.5–11.0(–12.0)  $\times$  8.0–9.5(–10.0)  $\mu\text{m}$ , on average 13.5–15.0  $\times$  9.5–10.0  $\times$  8.5–9.5  $\mu\text{m}$ , ellipsoid, in frontal view  $Q = 1.25\text{--}1.55$ ,  $Q_{\text{av}} = 1.40\text{--}1.45$ , in side-view  $Q = 1.40\text{--}1.75(–1.80)$ ,  $Q_{\text{av}} = 1.50\text{--}1.55$ , thick-walled up to 1.0  $\mu\text{m}$ , with wide and sometimes slightly eccentric germ pore of 1.5–2.0  $\mu\text{m}$  wide; yellow-brown with light microscope. Basidia 20–30  $\times$  9–12  $\mu\text{m}$ , usually a mixture of 4- and 2-spored, often in the ratio of 3 : 1, sometimes with almost solely 2-spored basidia. Lamella edge almost sterile. Cheilocystidia abundant, (15–)25–35(–40)  $\times$  5.0–15(–17.5)  $\times$  2.0–5.0(–7.0)  $\times$  2.0–5.0(–8.0)  $\mu\text{m}$ , lageniform, often (sub)capitate, sometimes lecythiform, with slightly thickened walls, with colourless contents. Pleurocystidia rather abundant and often conspicuous, 35–55  $\times$  10–18  $\times$  (3.0–4.0  $\times$ ) 4.0–9.5(–12.0)  $\mu\text{m}$ , of different size or shape than cheilocystidia, lageniform to utriform or lecythiform, sometimes multi-apiculate, often with mucilaginous cap, yellowish in KOH, with slightly enlarged walls up to 2  $\mu\text{m}$ , translucent, colourless. Pileipellis 50–100  $\mu\text{m}$  thick, strongly gelatinized, composed of an irregular hymeniderm, consisting of erect, clavate elements of 10–20(–30)  $\times$  7.0–11(–17)  $\mu\text{m}$ , with pale yellowish intracellular pigment, covered with a gelatinous, 8.0–25  $\mu\text{m}$  thick layer composed of remnants of 2.5–3.5  $\mu\text{m}$  wide hyphae; subpellis gelatinized, consisting of rounded rectangular elements of 6.0–15  $\times$  2.5–4.5  $\mu\text{m}$ , gradually passing into pileitrama. Stipitipellis a slightly gelatinized cutis of unbranched, 2.0–4.5  $\mu\text{m}$  wide hyphae with cylindrical elements, with pale yellowish intracellular or parietal pigment. Clamp-connections abundant in stipitipellis, pileipellis, and at base of basidia and cheilocystidia.

Habitat & distribution — Gregarious, saprotrophic; terrestrial on soil mixed with woodchips at verge of a parking place in mixed forest, on heap of woodchips, in short grass. Very rare in the Netherlands (Breda, Mastbos; Beverweerd), but probably often confused with *A. pediades*; May, August. Also recorded from Portugal (Azores; November) and Italy, probably more widespread.

*Collections studied.* THE NETHERLANDS: Noord-Brabant, Breda, Mastbos, 30.V.1984, *J. Gelderblom 84-13* (L 0341733; holotype); Utrecht, laan van Beverweerd, 17.VIII.2004, *J. Wisman (Nauta 9001; L 0341734)*. — PORTUGAL: Azores, Sao Jorge, on airport, 3.XI.1996, *B. M. Spooner* (K (M) 57728; Az 1213).



Fig. 1. *Agrocybe ochracea*. a. Pileipellis; b. habitus; c. pleurocystidia; d. spores; e. cheilocystidia. Scale bars = 10  $\mu$ m resp. 1 cm.

Also this taxon was discovered in an earlier stage of the revision of *Agrocybe* for the Netherlands (Nauta, 1987), but unfortunately only one collection was available. Much later another collection was found among voucher specimens of *Agrocybe* collected by B. M. Spooner in 1996 on the Azores, which were sent for identification. This second collection finally enabled comparison with other taxa and formal description of this taxon. Since then, this species has been found on a few more locations in the Netherlands. It seems that the percentage of 2-spored basidia can be much higher than originally thought. Striking characters are the thick gelatinous pileipellis covering and the presence of pleurocystidia differing in shape or size from the cheilocystidia. These pleurocystidia are often quite conspicuous, due to the slightly thickened walls and the often present mucilaginous covering of the head.

This taxon may be the same as *A. temulenta* (Fr.) Singer in the sense of Watling (1982), differing from *A. semiorbicularis* according to Watling by the deeper coloured cap. It is, however, difficult to judge from the description exactly what species he had in mind. In addition the presence of veil is mentioned as a distinguishing character in the description of *A. temulenta*, in contrast to *A. semiorbicularis* which lacks all veil (Watling, 1982: 22). In the key, however, both species are set apart together with *A. subpediades* by the lack of all traces of veil (Watling, 1982: 11, step 14 ×). Although the presence of pleurocystidia with *A. temulenta* is mentioned in the description, no details are given about their size and shape, which is one of the most distinguishing characters of the above described taxon. Singer (1936: 167) had a different interpretation of this species: the characteristic cystidia with the finger-like projections and the fruit-bodies with a root connected to a sclerotium partly match with what is nowadays called *A. arvalis*.

Both interpretations are partly in contrast with the original description of Fries (1821: 268) which describes *A. temulentus* with a rusty brown substrate cap and a whitish stipe which becomes brownish. Since there is also no original material of *A. temulenta* available, this name may best be considered as ambiguous, and the above described taxon is in need of a new name.

Judging from the description and drawings of Migliozi & Coccia of *A. temulenta* sensu Watling (1993: 27–28) *A. ochracea* has also been found in Italy.

#### ***Agrocybe pediades* var. *fimicola* (Speg.) Nauta, *comb. nov.***

Basionym: *Naucoria fimicola* Speg., An. Mus. nac. Hist. nat. B. Aires 6 (1899) 133.

Synonyms: *Agrocybe fimicola* (Speg.) Singer, Lilloa 23 (1950) 209.

Characteristics — Differing from the typical variety in the presence of conspicuous appendiculate floccose veil at the margin of the cap, also when mature, and in a later stage an areolate-rimose cap.

Spores 12.0–14.5(–15.5) × 8.5–9.5 × 7.5–8.5 μm, on average 13.0 × 9.0 × 8.5 μm. Basidia usually 4-spored, some 2-spored present. Microscopically not differing from var. *pediades*.

Habitat & distribution — Gregarious or solitary, saprotrophic, on dung of cow (or horse) in grasslands in the coastal dunes. Very rare in the Netherlands (Vogelenzang, Amsterdamse Waterleidingduinen), but probably overlooked; July. Very rare in Europe (Italy), probably more widespread. Also known from the Americas.

This taxon was recently discovered during an excursion of the Netherlands' Mycological Society. An area was visited in the Amsterdamse Waterleidingduinen where grazing cows are used as a method of nature management. This management has been carried out since 1985 and many interesting species of fungi have already been found, also on dung, e.g. *Panaeolus speciosus* P.D. Orton. It was this species the participants were looking for, and the *Agrocybe* on dung looked superficially like a slightly aberrant *A. pediades*. Although *A. pediades* is a very variable species (Nauta, in press b), occurring on various substrates, this particular collection was different, and remarkable for its presence of veil at the cap margin. Careful investigation of the literature revealed the existence of *A. fimicola* (Speg.) Singer, a species originally described from dung in Argentina by Spegazzini (1899). Singer (1950) discovered the species among collections from Spegazzini and transferred it to *Agrocybe*. Because the species did not differ microscopically from *A. pediades* var. *pediades*, except for the consistently large spores, it is here considered a variety. Although it was found only on one location, the distribution is probably wider, it may easily be overlooked.

#### ACKNOWLEDGEMENTS

For sending me their collected material I wish to thank J. Gelderblom (Breda), J. Wisman (Leusden) and B. M. Spooner (Kew, UK). My colleague J. F. Veldkamp is thanked for correcting the Latin diagnosis. This study has been carried out for the project 'Flora agaricina neerlandica', with a fellowship granted by the 'Rijksherbariumfonds Dr. E. Kits van Waveren'.

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