

Hebelomina neerlandica*, a new species for Ukraine and considerations about the genus *Hebelomina

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Hebelomina neerlandica Huijsman has been found near Kiev (Ukraine). It is an addition to the Ukrainian mycoflora. The specimens are described and illustrated. A synopsis of the genus *Hebelomina* is presented, with comments on the systematics and the distribution of its different species, which are all very rare.

Key words: *Hebelomina*, *Hebeloma*, *Gymnopilus*, *Rapacea*, *Cortinariaceae*, Ukraine

INTRODUCTION

During a mycological excursion in a forest near Novobilychi (Kiev, Ukraine), a whitish gilled mushroom has been observed. It was growing on a dead log of *Pinus sylvestris* lying on the ground. Several sporophores have been collected. Their characters are typical of *Hebelomina neerlandica* Huijsman, a.o. the general habit, whitish colour, ecology, size and shape of the cheilocystidia, size and shape of the spores, which are smooth, whitish and dextrinoid. This species has never been reported from Ukraine. A short description of the specimens is given below.

Up to now, six species have been described in the genus *Hebelomina*, most of them are extremely rare or even known only by the type specimens. The taxonomic position of the genus and its species is still under discussion. The nomenclature is also quite complicated. A summary of the data concerning those questions is presented here as well as a list of the descriptions and illustrations published for the different species, an overview of their worldwide distribution and an identification key.

DESCRIPTION OF THE UKRAINIAN COLLECTION

Sporophores completely whitish, drying ochraceous, sometimes with a rather dark rusty brown spot. Pileus 12-22 mm broad, convex with involute margin, smooth, moist, not viscid. Lamellae adnate. Stipe 12-25 x 2-4.5 mm, central, cylindrical, curved, without annulus, small remnants of a cortina-like velum sometimes visible on young specimens. Context whitish. No particular smell detected. Taste not tested.

Spores (Figs 1a and 2) (6.0-) 6.5-7.5 (-8.0) x (3.5-) 4.0-4.5 (-5.1) μm , generally amygdaliform, sometimes ellipsoid or ovoid, hyaline, smooth, without germ-pore, slightly thick-walled, dextrinoid (reddish-brown in Melzer reagent). Basidia (Fig. 1b) irregularly cylindrical, (2-) 4-spored, 28-30 x 5-7 μm , with sterigmata 4-6 μm long. Cheilocystidia (Fig. 1c) usually narrowly lecythiform, sometimes narrowly lageniform, narrowly conical or cylindrical, 25-35 x 5.0-6.5 μm (body), x 2.0-3.0 μm (neck) and x 2.5-4.5 μm (head). Pleurocystidia absent. Clamp-connections present.

ECOLOGY. Sporophores not caespitose, growing on a fallen dead trunk of *Pinus sylvestris*, in a forest of *Pinus sylvestris* with numerous *Quercus robur*, on podsolic sand.

SPECIMEN DESCRIBED. Ukraine, Kiev, forest near Novobilychi, 14. IX. 2004. Herbarium A. Fraiture 2927 (BR), double in herb. V. Hayova (KW 29993).

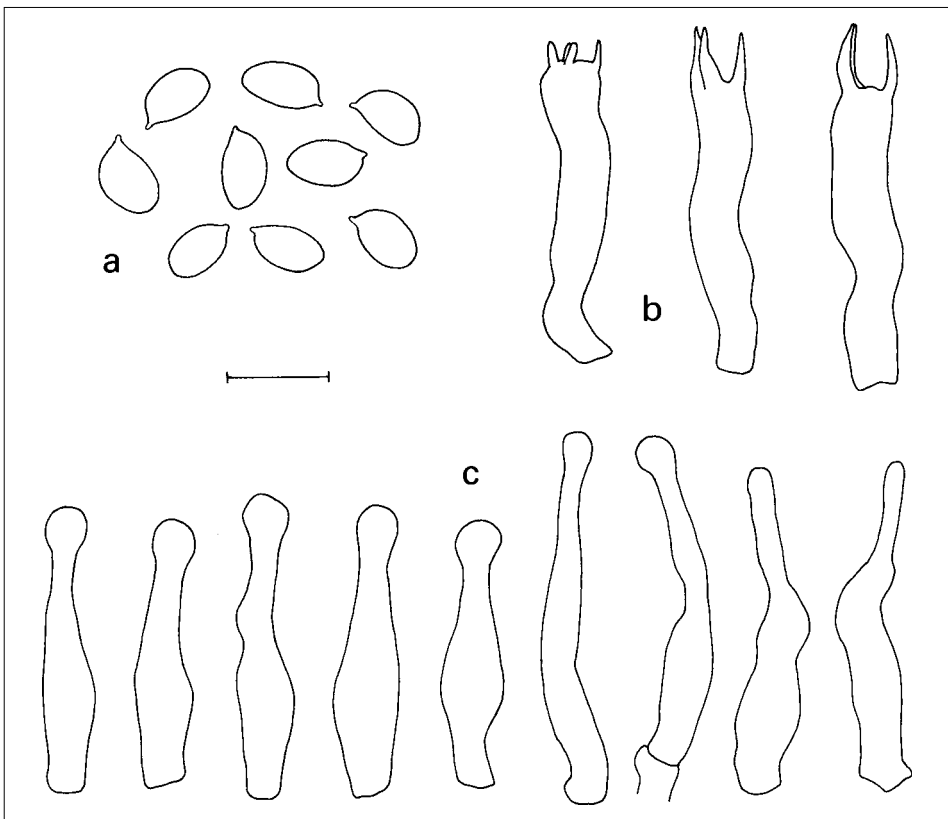


Fig. 1. *Hebelomina neerlandica*: a spores, b basidia, c cheilocystidia (specimen A. Fraiture 2927, BR); scale bar = 10 μm .

SYNOPSIS OF THE GENUS *HEBELOMINA*

Genus *Hebelomina* Maire 1935, Bull. Soc. Hist. nat. Afrique du Nord 26: 13.

≡ *Hebeloma* [sect. *Denudata*] subsect. *Hebelomina* (Maire) Beker, Eberhardt and Vesterholt 2005, in Vesterholt, The genus *Hebeloma*: 24 [note: this is probably the correct name].

Type species: *Hebelomina domardiana* Maire.

The taxonomic position of the genus *Hebelomina* is not easy to circumscribe and the question has been treated by several authors. The most argued discussion is probably the one proposed by Singer (1986: 611), who finally decides to accommodate the genus in the *Cortinariaceae*, where he assumes it is related to *Cortinarius* and *Leucocortinarius* or, more probably, to *Hebeloma*. The difficulty in positioning the genus in the systematics is partly due to its very specific characters, a.o. the spores which are whitish, smooth, thick walled, devoid of a pore and dextrinoid.

As it will be seen hereunder, the problem also lies in the fact that the genus *Hebelomina* is heterogenous. *H. domardiana*, type species of the genus *Hebelomina*, seems to be a white spored *Hebeloma*. Consequently, the genus *Hebelomina* has been recently included in *Hebeloma* (Vesterholt 2005). However, it will not be possible to transfer to *Hebeloma* all the species described in *Hebelomina*. Molecular analysis (Moncalvo et al. 2002: 367, 379) has shown that *Hebelomina neerlandica* is probably a *Gymnopilus*. Those authors extend however improperly their conclusions to the whole genus *Hebelomina*.

? *Hebelomina amazonensis* Sing. 1979, in Singer and Araujo, Acta amazonica 9 (1): 32 [invalid: nomen nudum].

This is a simple mention of the name, without any description or citation of a specimen. Singer did not cite the name in his *Agaricales in Modern Taxonomy*, ed. 4 (1986) and one may thus suppose that he did not believe anymore in the value of this taxon.

Hebelomina domardiana Maire 1935, Bull. Soc. Hist. nat. Afrique du Nord 26: 13.

≡ *Hebeloma domardianum* (Maire) Beker, Eberhardt and Vesterholt 2005, in Vesterholt,

The genus *Hebeloma*: 102 [note: this is probably the correct name of the species].

DESCRIPTIONS: Maire (1935, original description), Vesterholt (2005), Urbonas (2005: 174).

ILLUSTRATIONS: Maire (1935, line drawings of the specimens and microscopic characters), Vesterholt (2005, aquarelle of the specimen and line drawings of spores and cheilocystidia), Urbonas (2005, pl. 21,1: a f, aquarelle of the specimens and line drawings of microscopic characters).

Maire (1935), in the first lines of his paper, already says that *H. domardiana* is «un Champignon très remarquable, ayant l'aspect extérieur d'un *Tricholoma*, mais qui est, en réalité, un *Hebeloma* à spores incolores». The great mycologist also points out that the genus *Hebelomina* «est aux *Hebeloma* ce que le genre *Cortinellus* [*Leucocortinarius*] est aux *Cortinarius*». He adds in his comments that the amygdaliform spores, with an epispore rigid and thin but looking double, becoming violaceous-purple by iodine when young, the edge of the gills entirely covered with filamentous subclaviform and very dense hairs and even the faint raddish smell and the bitterness of the flesh are characters of *Hebeloma*. It is possible to add other characters corresponding with the genus *Hebeloma*: big spores (11-15 x 8 µm) with a clearly papil-

late top, white cap becoming reddish brown in the centre, white stem very pruinose under the gills (“*valde pruinosa*”, in italics in the latin diagnosis), tricholomoid habit and terricolous ecology. Gennari (2003) says “su legno di *Quercus suber*”, but the original description gives no indication concerning lignicolous ecology. Moreover, Maire compares his species with *Hebeloma* and *Tricholoma* and tells that, at first sight, he took it for *Hygrophorus eburneus* var. *pseudodiscoideus*; all of those fungi are terricolous.

Molecular analysis recently confirmed the intuition of Maire and showed that, despite its white spores, *Hebelomina domardiana* probably belongs to the genus *Hebeloma*, where it occupies however a “very isolated position” (Vesterholt 2005).

Unfortunately, it seems that the type specimen, collected by Maire, has not been preserved or is lost. Therefore, Vesterholt had to undertake molecular study of material collected in Estonia. The species has also been reported from Lithuania and Latvia (Urbonas, Kalamees, Lukin 1986). If there is no problem to admit that the different collections from the three Baltic states belong to the same taxon, it is less easy to believe that a species growing in the Baltic states can also be present in a *Quercus suber* wood in Algeria, especially for a taxon which is most probably mycorrhizal. If the type material can not be found again, it would be interesting to make a new collection of the species in its original growth place or in a *Quercus suber* wood of the Mediterranean region.

DISTRIBUTION: ALGERIA: Forêt de l’Alma, 15. XII. 1933, under *Quercus suber* (Maire 1935). Maire says “Mauritaniae” but l’Alma is situated about 40 km to the east of Alger; its name is now Boudouaou (P. Berteau and J.F. Trimbach, comm. pers.). No herbarium specimen is formally cited in the protologue. After Horak (1968: 266) and Huijsman (1978: 487), the type specimens have been lost. ESTONIA: Surju, 28. VIII. 1989, in mixed forest, specimen Vesterholt JV89 497 (Vesterholt 2005: 133). LATVIA: on humus in pine forests; no locality and no collecting date indicated (Urbonas et al. 1986: 71). Gennari (2003) mentions a personal communication from Kalamees, after which the collections have been lost. After Nezdoinogo (1996), those records are quite doubtful. LITHUANIA (Urbonas 2005: 174): Rūdininkų, Šalčininkų distr., 03.VIII.1974, in mixed forest with *Pinus*, young *Quercus* and *Betula*. Viešvilės reserve, Jurbarko distr., 19.VII.2000, young *Picea abies* forest.

Biržų forest, Biržų distr., 16.VIII.2001, in mixed forest. See also Urbonas et al. (1986: 71, cf. comments given here above for Latvia)

Hebelomina maderaspatana Natarajan and Raman 1980, Kavaka 8: 72.

DESCRIPTIONS AND ILLUSTRATIONS: Natarajan and Raman (1980, original description and line drawings of the specimens, spores and basidia). The text and the illustrations, except the latin description, are reproduced in Natarajan and Raman (1983: 137 138 et Fig. 22, e g).

The classification of this species is very unclear. The limoniform and rather big spores (7-11.2 x 5.6-8.4 µm) are quite typical of *Hebeloma* while the presence of rhizomorphs at the base of the stem indicates rather a saprotrophic species growing on litter or in connection with wood. On the other hand, the reddish-brown to orange-brown colours are rather resembling the genus *Gymnopilus*. Moreover, the lack of cheilocystidia corresponds neither with *Hebeloma* nor with *Gymnopilus* and therefore *H. maderaspatana* could belong to another genus.

DISTRIBUTION: INDIA: campus of the Indian Institute of Technology, Guindy (Madras), 23. VIII. 1978, on ground, in groups, coll. N. Raman (MUBL 2421, paratypus) Ibid., 3.XI.1978, on litter, in groups, coll. N. Raman (MUBL 2420, holotypus) (Natarajan, Raman 1980, 1983).

Hebelomina mediterranea A. Gennari “2002”, publ. 2003, Riv. Micol. 45 (4): 312.

DESCRIPTIONS AND ILLUSTRATIONS: Gennari (2003, original description and colour photograph of the specimens, spores, cheilocystidia and epicutis; line drawings of the spores, basidia, cheilocystidia and epicutis).

The big limoniform to subamygdaliform spores, measuring 9-11 (-12) x 6-8 (-8.5) μm , the subclavate to cylindrical cheilocystidia, the milky white cap, with a cream ochraceous centre, the stem pruinose on the apex, the tricholomatoid habit and the terricolous ecology are connecting the species with the genus *Hebeloma*. It is very probable that its pertaining to this genus will be demonstrated.

The species appears to be very close to *H. domardiana*. The comparison of the descriptions (Gennari 2003; Maire 1935; Urbonas 2005; Vesterholt 2005) shows only a few differences between the two species. The specimen of *H. mediterranea* is more robust than *H. domardiana* (cap diameter 5-7 cm versus 2.5-4 cm) and its spores are slightly shorter: 9-11 (-12) μm instead of 11-15 or 10.7-13.4 μm . Gennari also mentions a germ-pore (“poro germinativo evidente”) and represents it on his drawings. However, true germ-pores have not been described in *Hebeloma* and the structures seen by Gennari correspond probably with a callus rather than a pore (Singer 1986; Pegler, Young 1971; Meléndez-Howell 1967). The description of Gennari is based on a single collection and can not provide any idea of the variability of the species. In conclusion, we consider as possible that *H. mediterranea* could be conspecific with *H. domardiana*.

DISTRIBUTION: ITALY: Civitella in Val di Chiana, prov. Arezzo, 15.X.2002, terricolous, collected among a mediterranean vegetation composed of *Quercus ilex*, *Q. pubescens*, *Arbutus unedo*, *Erica scoparia*, *Cistus monspeliensis* and *C. salvifolius*, leg. Silvia Urci (MCVE 669, holotypus) (Gennari 2003).

Hebelomina microspora Alessio and Nonis 1977, Micol. Ital. 6 (3): 19; non *H. microspora* Huijsman [*H. neerlandica*].

DESCRIPTIONS AND ILLUSTRATIONS: Alessio, Nonis (1977, original description, aquarelles and photographs of the specimens). Note: Alessio (1981) mentions that the colours of the plate have not been accurately reproduced, that the aquarelles are actually of a very pale cream ivory ochre with which contrast much more coloured patches, reaching the «terra cotta» colour; he also says the red colour of the photographs is too marked and diffuse.

The affinities of this taxon are difficult to circumscribe. The fusoid to cylindrical cheilocystidia, the top of the stem slightly white pruinose and the creamy white cap, becoming pale ochre and finally slightly brownish with irregular pale clay-orange patches are characters of *Hebeloma*. But, on the other hand, the ovoid to amygdaloid spores, measuring 6-8 (-9) x 4-4.5 μm , and the lignicolous ecology are rather in favour of the genus *Gymnopilus*.

Hebelomina microspora “Huijsman ex” Alessio and Nonis 1977 is probably another species than *H. microspora* Huijsman [*H. neerlandica*, see that species].

DISTRIBUTION: ITALY: Parco della Rimembranza Augustae Taurinorum, Torino, prov. Piemonte, 5.V.1976, on slightly emergent root of *Pinus strobus*, alt. 500-600 m, leg. Bruna Nonis (herb. E. Rebaudengo, Cebae, holotypus) (Alessio, Nonis 1977). The authors indicate «vere autumnoque», what should signify that another observation was done in autumn.

Punta Manara, Sestri Levante, prov. Liguria, 27.XII.1989, at the base of a *Pinus pinaster* trunk, leg. R. M. Dameri (Orsino, Traverso 1990).

Hebelomina neerlandica Huijsman 1978, Persoonia 9 (4): 490 [nom. nov. to replace *H. microspora* Huijsman 1978, non *H. microspora* Alessio and Nonis 1977].

≡ *Hebelomina microspora* Huijsman 1946, Rev. Mycol. NS 11: 31 [invalid, Art. 36.1]; *Hebelomina microspora* Huijsman “ex Huijsman” 1978, Persoonia 9 (4): 485 [illeg., Art. 53.1] non *H. microspora* Alessio and Nonis (1977).

≡ *Hebelomina huijsmaniana* Singer 1986, Agaricales in Modern Taxonomy (ed. 4): 612 [illeg., Art. 52.1; nom. nov. to replace *H. microspora* Huijsman 1978, non *H. microspora* Alessio and Nonis 1977].

DESCRIPTIONS: Garnweidner (1996), Huijsman (1946, 1978, original description), Neville, Roux (1997), Spooner (1993), Volders (1997), Urbonas (2005).

ILLUSTRATIONS: Anonymous (2003, colour photograph of the specimens), Garnweidner (1996, colour photograph of the specimens and line drawings of spores and cheilocystidia), Huijsman (1946, line drawings of microscopic characters of the types; 1978, line drawings of the type specimens), Neville and Roux (1997, colour photograph and line drawings of microscopic characters), Spooner (1993, line drawings of spores and cheilocystidia), Volders (1997, line drawings of microscopic characters; the author also mentions a slide *JVDM 7677* and an aquarelle *O. Van De Kerckhove 295*, BR, both unpublished), Urbonas (2005, line drawings of microscopic characters).

The publication of a valid name for this taxon has not been easy. The species is first described by Huijsman (1946), under the name *Hebelomina microspora*. Unfortunately, no Latin diagnosis is provided and the name is thus invalid (Art. 36.1).

About thirty years later, Alessio and Nonis (1977) publish a latin diagnosis in order to validate the name created by Huijsman. However, they choose another type than the specimen cited by Huijsman and, consequently, at a nomenclatural point of view, they create a new taxon. On the other hand, as pointed out by different authors (a.o. Huijsman 1978; Neville, Roux 1997), there are several morphological differences between the two specimens : the Italian collection has a inocyboid habit, reddish brown colours on the pictures, amyloid spores and twice bigger cheilocystidia. Therefore, they probably belong to two different taxa at a systematic point of view as well. That hypothesis is not accepted by Alessio (1981), who believes that a single taxon is involved. We consider that conspecificity possible, while unlikely.

A few months after Alessio and Nonis (1977) and Huijsman (1978) also decides to validate his species by publishing a Latin diagnosis. His paper is at the point to be sent to the printer when he discovers the “validation” made by Alessio and Nonis. He publishes nevertheless his own “validation” (which is illegitimate: later homonym, Art. 53.1) but, thinking that his fungus is not the same that the one of the Italian authors, he adds, at the end of his text, a note in which he proposes *Hebelomina neerlandica* as a new name for his species. Would the synonymy be proven in the future, then the species should be named *H. microspora* Alessio and Nonis and *H. neerlandica* would be reduced to a superfluous synonym.

Finally, Singer (1986), reading the Huijsman (1978) paper, overlooks its final note and introduces *Hebelomina huijsmaniana* as a new name to replace *H. microspora* Huijsman. The name published by Singer is illegitimate (superfluous name, Art. 52.1).

The nomenclatural changes are not finished yet. The species will probably be transferred to the genus *Gymnopilus*, since molecular analyses have shown that the species is likely a white spored *Gymnopilus*, rather close to *G. penetrans* (Moncalvo et al. 2002: 367, 379). Regarding the macro- and microscopic characters of

the species as well as its ecology on *Pinus* wood, it seems reasonable to consider *H. microspora* as a whitish *Gymnopilus*, with white and smooth spores. Within that genus, the absence of a membranous ring, the relatively small size of the spores and the growth on coniferous wood correspond with the group of *G. stabilis*, *G. sapineus*, *G. penetrans* and *G. hybridus*. The status of the three last species is still uncertain and varies considerably in the recent literature: three (Moser 1983; Orton 1993) or two independent species (Holec 2005) or one single species (Høiland 1990).

DISTRIBUTION: BELGIUM: Bois des Manants, Tilff, prov. Liège, 6.X.1978, 31.X.1978 and 5.X.1979, on dead wood of *Pinus sylvestris* (branches of various size, stumps, cones), herb. V. Demoulin (LG). “De Kuik”, Gooreind (Wuustwezel), prov. Antwerpen, 9.XI.1996, in a pine wood on sandy soil, on fallen branches and litter of *Pinus nigra*, herb. O. Van De Kerckhove 499 (BR), J. Volders 96205 and A. de Haan 96100 (Volders 1997). The species has been found every year at the same place up to the year 2000 (de Haan 2001). FRANCE: “Croix de Novy”, Monregard, dépt. Haute Loire, 23.IX.1993, on a piece of rotten coniferous wood (*Picea abies*, *Abies alba* or *Pinus sylvestris*), leg. A. Charret (herb. P. Neville 93.09.20.25 and P. Roux 93.09.17.57) (Neville, Roux 1997). Forêt de Pont Calleck, dépt. Morbihan, X.2002, on rotten wood of *Pinus*, two collections leg. P. Hériveau and leg. R. Chalange (herb. M. Chiaffi) (Anonymous 2003 and G. Eyssartier, comm. pers.). GERMANY: Schöngesing, near Fürstenfeldbruck, distr. Oberbayern, 13.XI.1994 and 1.X.1995, on a dead *Larix decidua* trunk, herb. E. Garnweidner (Garnweidner 1996). LITHUANIA: Žagarės forest, Joniškio distr., 20.IX.1990, on fallen rotting branches Striniškų forest, Vilkaiviškio distr., 25.VII.1999, on fallen rotting branches (Urbonas 2005: 174) NETHERLANDS: Near Rijssen, prov. Overijssel, 24.X.1943, on dead twigs of *Pinus sylvestris*, coll. W.J. Reuvecamp and W.F. Smits (L, holotypus) (Huijsman 1946, 1978). The growth place has been destroyed soon after 1945, when a new quarter of Rijssel was built; moreover, the typus has been found in a very poor condition, badly moth eaten and mouldy (Huijsman 1978). «De Fonteintjes», south of Rijssen, 1988, under *Picea abies*, coll. C. Bas, and 1990, leg. W. Ligterink (L) (unpublished data, cited fide Volders 1997; Arnolds, Kuyper and Noordeloos 1995; see also the distribution map in Anonymous 2000). UKRAINE: forest near Novobilychi (Kiev), Kiev obl., 14.IX.2004, on dead log of *Pinus sylvestris* lying on the ground, herb. A. Fraiture 2927 (BR) and V. Hayova (KW 29993) (this publication). UNITED KINGDOM: Surrey, Oxshott Heath, nr bog N of Sandy Lane, 14.X.1984, under *Pinus* and *Betula* on damp sandy ground, coll. L. Spooner (K) Ibid., 13.X.1991, on dead twig in litter, herb. Kew (K) (Spooner 1993). South Hampshire, 1999, clustered on fallen branch of *Salix* (BMSFRD n°480383). North Hampshire, 1999, on mossy fallen branch of *Salix* in broadleaf semi natural woodland (BMSFRD n° 493526) (British Mycological Society Fungus Record Database).

Hebelomina pallida Dessi and Contu 1993, in Contu and Dessi, Micol. Veget. Medit. 8 (2): 104.

DESCRIPTIONS AND ILLUSTRATIONS: Contu, Dessi (1993, original description, with colour photograph [the legend of which erroneously mentions (*Hebelomina candida*) and habit sketch of the carpophores and line drawings of the spores, basidia and cheilocystidia).

The authors of the species point out that *H. pallida* is close to *H. neerlandica* and they list the following characters to separate the two species: the carpophores of *H. pallida* have a white colour remaining nearly unchanged during their whole life, they are completely devoid of a veil even in very young stage, they have bigger and non amygdaliform spores and they grow on dead wood of *Eucalyptus*. Those differences are not much significative. *H. neerlandica* is also a whitish species and the colour modifications described by Huijsman (becoming pale ochraceous-aluta-

ceous, often more or less mixed with incarnate) may considerably vary depending on ecological conditions. The veil of that species is fugacious and often difficult if not impossible to see. As for the spore size, the figures are indeed a bit bigger: 7.5-9.0 (-10.3) x 5.2-6.0 (-6.9) μm for *H. pallida* versus 6.5-7.8 x 4.2-4.6 μm for *H. neerlandica* (Huijsman 1978), but some collections of the latter species have shown bigger spores (a.o. Volders 1997). The difference between the two species is mainly significant for the spore width. Since the estimation of the spore length/width ratio (Q) for *H. pallida* is about 1.47 when calculated on the spore size reported by Contu, Dessi (1993) and about 1.77 when calculated after the drawings provided by the same authors, it seems possible that the spore size given by Dessi and Contu is not perfectly accurate. The habitat on *Eucalyptus* wood is indeed unusual but not sufficient to create a new species. In conclusion, we think that *H. pallida* is very close to *H. neerlandica* and even possibly conspecific with that species.

DISTRIBUTION: ITALY: Serramanna, prov. Cagliari, Sardinia, 05.XII.1992, on dead wood of *Eucalyptus camaldulensis*, herb. M. Contu 92/269 (CAG, holotypus) Ibid., 06.XII.1992 and 10.I.1993, leg. P. Dessi and M. Contu (CAG and pers. herb. P. Dessi, paratypus) (Contu, Dessi 1993).

IDENTIFICATION KEY TO THE SPECIES DESCRIBED IN *HEBELOMINA*

- 1) Cheilocystidia absent. Carpophores reddish brown to orange brown. India.
..... *H. maderaspatana*
- 1) Cheilocystidia abundant. Carpophores usually much paler, often whitish. Europe, Algeria 2
- 2) Terricolous species. Spores bigger than 9 x 6 μm , often more or less citriform or with a papillate top. Cheilocystidia mostly cylindrical or clavate, sometimes narrowly lageniform
..... (Hebelomoid species) 3
- 2) Lignicolous species. Spores smaller than 9 x 6 μm , usually amygdaliform or ellipsoid and not citriform. Cheilocystidia mostly narrowly lecythiform, except in *H. microspora*, where they are fusoid to cylindrical. (Gymnopiloid species) 4
- 3) Cap 5-7 cm broad. Spores 9-11 (12) μm long. Italy. *H. mediterranea*
- 3) Cap 2.5-4 cm broad. Spores 11-15 μm long. Algeria and Baltic countries.
..... *H. domardiana*
- 4) Spores amyloid. Cheilocystidia bigger than 40 x 9 μm , mostly fusoid to cylindrical. On pine wood. May and December. Italy *H. microspora*
- 4) Spores dextrinoid. Cheilocystidia smaller than 40 x 9 μm , mostly narrowly lecythiform. On coniferous wood or on *Eucalyptus*. September-January. Europe 5
- 5) Spores (3.5-4.0) 5.0 (5.2) μm wide. Carpophores whitish, becoming pale ochraceous alutaceous or incarnate. On coniferous wood, rarely on *Salix*. (September) October-November. Europe. *H. neerlandica*
- 5) Spores 5.2-6.0 (6.9) μm wide. Carpophores whitish and remaining so. On *Eucalyptus* wood. December-January. Italy *H. pallida*

SUMMARY AND CONCLUSIONS

The genus *Hebelomina* is heterogenous. It can be divided into at least two groups of species.

1) The hebelomoid species (*H. domardiana* and *H. mediterranea*). They are tercolous and probably ectomycorrhizal, with a tricholomoid or hebelomoid habit, a stem which is pruinose in its upper part, rather big spores (usually above $9 \times 6 \mu\text{m}$), more or less citriform or amygdaliform with a papillate top, cheilocystidia usually irregularly cylindrical or clavate, eventually narrowly lageniform but not lecythiform. Both species have been described from Mediterranean oak forests but, rather unexpectedly, the first one has also been reported from the three Baltic countries, in pine forests and in mixed forests. The two species are very close to the genus *Hebeloma*. This has been recently confirmed by molecular analysis for *H. domardiana* (specimen from Estonia), which has consequently been transferred to that genus (Vesterholt 2005). We suggest that the two species are close to each other and even possibly conspecific. On the other hand, the Baltic collections attributed to *H. domardiana* could belong to a separate, undescribed species of this group.

2) The gymnopiloid species (*H. neerlandica*, *H. pallida* and probably *H. microspora*). They are lignicolous and saprotrophic, with a gymnopiloid habit, a stem not or only slightly pruinose, medium sized to small spores (usually under $9 \times 6 \mu\text{m}$), which are amygdaliform, ellipsoid or ovoid and neither citriform nor papillate; the cheilocystidia are usually narrowly lecythiform. Most of the collected specimens of *H. neerlandica* were growing on coniferous wood, mainly *Pinus sylvestris*, but also *P. nigra*, *Larix decidua* and *Picea abies*; there are two reports on *Salix* in Great Britain. *H. microspora* has been observed on wood of *Pinus strobus* and *P. pinaster*. *H. pallida* is only known from the type collections, on wood of *Eucalyptus camaldulensis*. By its morphological characters, *H. neerlandica* is very close to *Gymnopilus*. This has been confirmed by molecular analysis (Moncalvo et al. 2002) and the species will probably be transferred to that genus. *H. pallida* is very close to *H. neerlandica* and could even be conspecific. We believe that *H. microspora* belongs to this same group; however, its taxonomic position is less easy to interpret.

3) Incertae sedis (*H. maderaspatana*). This species exhibits characters from the two groups cited above and, besides, the lack of cheilocystidia does not fit with the genera *Hebelomina*, *Hebeloma* and *Gymnopilus*. The taxonomic position of the species is thus still unclear.

In conclusion, it seems probable that most of the species of the genus *Hebelomina* will be transferred to either *Hebeloma* or *Gymnopilus* and that the genus *Hebelomina* will disappear. It is nevertheless noteworthy that most of the species described in *Hebelomina* share some original characteristics which separate them from those two genera. The carpophores are often whitish or very pale, at least when young. The spores are very particular, being whitish and smooth under the light microscope when the spores in *Hebeloma* and *Gymnopilus* are brown and rather coarsely ornamented. It seems that it is difficult to obtain a good spore print because the spores, while being usually produced in large amount, are remaining on the gills. When it was possible to obtain a spore deposit from a *Hebelomina* collection, it has been observed that it was not pure white but very pale brownish. The pictures of the spores of *H. neerlandica*, seen by SEM (Fig. 2) show a kind of shallow ornamentation although it could be an

artefact due to insufficient reinflation. The presence of those special features in the different *Hebelomina* species could be explained by a mutation, inducing the loss of pigmentation of the carpophores and changing the brown and ornamented spores of *Hebeloma* and *Gymnopilus* into whitish and smooth “hebelominoid” spores.

An unpublished paper by Gasparini (pers. comm.) has drawn our attention to the genus *Rapacea*, created by Horak (1999) to accommodate a single species, *Rapacea mariae* E. Horak. It is a cortinarioid species, recorded from New Zealand, Tasmania and Papua New Guinea, which seems to be another example of this “hebelominoid syndrome”, again affecting a species of the *Cortinariaceae* family. It has whitish carpophores (see colour picture in Soop 2005) and its spores are pale olivaceous-argillaceous, i.e. much paler than the normal colour of the spores in the genus *Cortinarius*. They are inamyloid, but become brown in Melzer’s reagent (dextrinoid), and appear smooth under the light microscope but minutely asperulate or with low net-like ridges under SEM. Molecular and phylogenetic analyses have shown that *Rapacea* was nested in the genus *Cortinarius* (Peintner et al. 2002a) and, consequently, the species has been transferred to that genus: *Cortinarius mariae* (E. Horak) E. Horak et al., in Peintner et al. (2002b: 449).

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Hebelomina neerlandica, gatunek nowy dla Ukrainy
i rozważania o rodzaju *Hebelomina*

Streszczenie

Owocniki *Hebelomina neerlandica* Huijsman zostały niedawno zebrane w okolicach Kijowa. Ten nowy dla Ukrainy gatunek został opisany i zilustrowany przez autorów, którzy równocześnie dyskutują pozycję taksonomiczną rodzaju, a w nim sześciu dotychczas znanych gatunków. Są to: *H. maderaspatana*, *H. mediterranea*, *H. domardiana*, *H. microspora*, *H. pallida*, *H. neerlandica*.

Praca zawiera klucz do oznaczania, analizę literatury, na podstawie której rozważana jest delimitacja taksonów, nazewnictwo, cechy taksonomiczne i rozmieszczenie. W większości są to gatunki rzadko spotykane, niektóre znane tylko z pojedynczych okazów.

Dokładne wyjaśnienie wielu kwestii poruszanych przez autorów wymaga dalszych zbiorów, do których zachętą może być niniejsza praca.