

(2289) Proposal to conserve the name *Morchella semilibera* against *Phallus crassipes*, *P. gigas* and *P. undosus* (Ascomycota)

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DOI <http://dx.doi.org/10.12705/633.20>

- (2289) *Morchella semilibera* DC. in Lamarck & Candolle, Fl. Franç., ed. 3, 2: 212. 17 Sep 1805: Fr., Syst. Mycol. 2: 10. 1822, nom. cons. prop.
Neotypus (hic designatus): France. Oise, Saint-Maximin, under *Fraxinus excelsior*, 14 Apr 2011. *P. Clowez PhC99* (LIP No. 0900126; isoneotypi: S No. F254893; Fungal Herb., CEFE-CNRS, Montpellier No. PhC99) (Mycobank MBT177077).
- (=) *Phallus crassipes* Vent. in Mém. Inst. Natl. Sci., Sci. Math. 1: 509. 1799 (*Morchella crassipes* (Vent.: Fr.) Pers.: Fr.), nom. rej. prop.
Lectotypus (hic designatus): [icon in] Ventenat in Mém. Inst. Natl. Sci., Sci. Math. 1: t. VII fig. 2. 1799 (Mycobank MBT177909).
- (=) *Phallus gigas* Batsch, Elench. Fung.: 131. Jul–Nov 1783 (*Morchella gigas* (Batsch: Fr.) Pers.: Fr.), nom. rej. prop.
Lectotypus (hic designatus): [icon in] Micheli, Nov. Gen. Pl., t. 84 fig. 1. 1729 (Mycobank MBT177910).
- (=) *Phallus undosus* Batsch, Elench. Fung.: 131. Jul–Nov 1783 (*Morchella undosa* (Batsch: Fr.) Pers.: Fr.), nom. rej. prop.
Lectotypus (hic designatus): [icon in] Micheli, Nov. Gen. Pl.: t. 84 fig. 2. 1729 (Mycobank MBT177911).

Morchella semilibera is an edible morel of commercial value that is widespread and abundantly fruiting in Europe, but rare in Asia and not known to occur in North America. It is one of the few species of *Morchella* that can be easily recognized morphologically by its half-free apothecial margin (approximately one-third to one-half of the margin is free of the stipe). The stipe is typically long and slender compared to the small, campanulate apothecium. Although Lévillé (in Ann. Sci. Nat. Bot., sér 3, 5: 250. 1846) placed *M. semilibera* in a separate genus, *Mitrophora* Lév., the name *Mitrophora semilibera* has been used relatively few times over the past century. Moreover, multi-gene phylogenetic analyses have shown that *M. semilibera* is deeply nested within the Elata Clade of *Morchella* (as *Mel-3*; e.g., Taşkın & al. in Fungal Genet. Biol. 47: 672–682. 2010; O'Donnell & al. in Fungal Genet. Biol. 48: 252–265. 2011; Du & al. in Fungal Genet. Biol. 49: 455–469. 2012).

Different names, however, have been applied to this species, from Micheli (l.c.) to Boudier (in Bull. Soc. Mycol. France 13: 129–153. 1897), mostly based on early illustrations by Micheli (l.c.), Ventenat (l.c.) and Sowerby (Col. Fig. Engl. Fungi 2. 1799). The first known

synonymy is attributable to Fries (l.c. 1822: 11), who retained *M. semilibera* DC: Fr. as the accepted name, citing *Phallus rete* Batsch, *P. patulus* Gled. and *Helvella hybrida* Sowerby as synonyms. Most subsequent authors either accepted this synonymy (e.g., Lagarde, Discomyc. France 1: 24. 1923; Moser in Gams, Kleine Krypt. Fl. 2a: 86. 1963; Dissing in Hansen & Knudsen, Nordic Macromycetes 1: 82. 2000) or referred to this species as *M. hybrida* (Sowerby) Pers. (e.g., Cetto, Funghi dal Vero 2: 806. 1976; Jacquetant, Les Morilles: 32. 1984). The name *M. semilibera* has been used in the majority of recent publications on morels, e.g., in taxonomic (Kuo & al. in Mycologia 104: 1159–1177. 2012), phylogenetic (Taşkın & al., l.c.), and ecological studies (Buscot in Canad. J. Bot. 67: 589–593. 1989). Although the name *M. hybrida* has been used in biotechnological and toxicological publications (e.g., Cocchi & al. in Food Chem. 98: 277–284. 2006), it had come into disuse by the end of the 20th century in favour of *M. semilibera* since Fries's sanctioning (l.c.: 10) gives this name priority over *M. hybrida*. Nevertheless, three earlier names also sanctioned by Fries, have recently been interpreted as conspecific, i.e., *M. gigas*, *M. undosa*, and *M. crassipes* (Clowez in Bull. Soc. Mycol. France 126: 335. 2012), relegating *M. semilibera* to synonymy. It is desirable to continue the longstanding and widespread use of the name *M. semilibera* rather than reviving disused or ambiguous names (Art. 14.1 of the ICN; McNeill & al. in Regnum Veg. 154. 2012) and we therefore propose *M. semilibera* be conserved against these earlier synonyms. The competing names are briefly commented on below.

Phallus gigas, *P. undosus*, and *P. rete* (the last not sanctioned) were applied by Batsch (l.c.) to each of Micheli's polynomial taxa and figures (l.c.: 203, pl. 84, figs. 1, 2 and 3, respectively). Micheli clearly attributed them to his genus "*Phallo-boletus*" characterized by the apothecial margin being free of the stipe, as opposed to "*Boletus*" (with apothecial margin connected to the stipe). The three figures of plate 84 can be interpreted as stylized representations of phenotypic plasticity within *M. semilibera*. No reference but a single citation as "*Ptychoverpa gigas* Batsch" by Boudier (Hist. Classific. Discomyc. Europe. 1907) is known to us attributing any of them to the genus *Verpa*, although all appear to possess a free apothecial margin, which is characteristic of *Verpa*. *Morchella gigas* (Batsch: Fr.) Pers. (Syn. Meth. Fung.: 619. 1801) was revived in 1993 (Krieglsteiner, Verbreitungsatlas Grossp. Deutsch. (West). 2: Schlauchp.: 76), used in a phylogenetic paper by Kellner & al. (in Organisms Diversity Evol. 5: 102–107. 2005), and it was accepted by Clowez (l.c.). However, this

name is rarely used in mycological literature today and it is unfortunate to apply the epithet *gigas* (meaning a giant) to one of the smallest and most fragile European morels. Rejection of *Phallus undosus* (the basionym of *Morchella undosa* (Batsch: Fr.) Pers., Syn. Meth. Fung.: 620. 1801), which was published simultaneously with *P. gigas*, is also desirable because it is based on an obscure figure by Micheli and therefore it has not been cited in modern literature. Comparative use of these names in the literature since 1900 estimated on the occurrence of each name as *Morchella* or *Mitrophora* combined with the respective epithet in searches of the online international bibliographic databases Scopus (<http://www.scopus.com>), JSTOR (<http://www.jstor.org>), and Google Scholar (<http://scholar.google.fr>), respectively, revealed the following numbers: *M. gigas* (2, 62, 246), *M. hybrida* (0, 65, 708), *M. semilibera* (9, 77, 383), and *M. undosa* (0, 0, 1). Close inspection, however, revealed that nearly all references to *M. gigas* filtered by JSTOR and Google Scholar in fact were to *Discina gigas* (Krombh.) Eckblad (syn. *Gyromitra gigas* (Krombh.) Cooke), and most reports for *M. hybrida* in Google Scholar include unrelated references containing the word “hybrid”.

Morchella crassipes (Vent.: Fr.) Pers., Syn. Meth. Fung.: 621. 1801 is another possible synonym of *M. semilibera*. It is based on a figure by Ventenat (l.c.: pl. VII, fig. 2) that is a reproduction of an unpublished plate by Jussieu. Although Ventenat (l.c.: 509) described *M. crassipes* in group A “*Chapeau adhérent sur toute son étendue*” (as opposed to B, representing the current delimitation of the genus

Phallus), some authors have interpreted the illustration as *M. semilibera* (e.g., Boudier, l.c. 1897: 152; Clowez, l.c.). It can be argued that Ventenat did not see the fungus himself and Jussieu’s plate does not show whether the margin is free or attached to the stipe. However, the name *M. crassipes* was interpreted by Krombholtz (Naturgetr. Abbild. Schwämme 3: 6. 1834) as a large, fleshy morel in which the apothecial margin is attached to the stipe. This interpretation has been followed by most researchers (e.g., Boudier, l.c. 1907; Kellner & al., l.c., and in 279 citations present in Google Scholar).

Because *M. semilibera* is the name most commonly applied to this species, according to Art. 14.2 regarding nomenclatural stability and because it is a morel with some economic importance, conservation of this name is warranted. Since no original material is known to exist, we propose a neotype from the Paris area from where *M. semilibera* was originally described (“*dans les bois des environs de Paris*”; Lamarck & Candolle, l.c.). Multi-locus DNA sequences from the neotype are provided and are deposited in GenBank as accessions no. KJ174320 (ITS rDNA), KJ174321 (LSU rDNA), KJ174322 (*RPB1*), KJ174323 (*RPB2*) and an in situ photograph of the neotype is to be included in a forthcoming paper (F. Richard & al., in prep.).

Acknowledgements

We thank Mario Filippa, Guy Garcia, Christophe Lécureu and Ibai Olariaga Ibarburen, for providing helpful bibliographic references. The USDA is an equal opportunity provider and employer.