

***Gymnopus obscuroides* (Agaricomycetes, *Omphalotaceae*),  
a new species of sect. *Levipedes* from England**

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A new species, *Gymnopus obscuroides* Antonín & Legon (*Agaricomycetes*, *Omphalotaceae*), is described. It is characterised by having a very long, floccose stipe, an initially dark purplish-brown then more mahogany-brown pileus, pallid pinkish-beige lamellae, rather large, subfusoid, ellipsoid-fusoid, lacrimoid to pip-shaped basidiospores, cylindrical, clavate, (sub)fusoid, subutriform, regular, irregular to subcoralloid cheilocystidia, a pileipellis consisting of radially arranged, cylindrical, scatteredly diverticulate, cylindrical, narrowly clavate or narrowly lageniform caulocystidia, and distinctly incrustated ochraceous-brown (in H<sub>2</sub>O) hyphae, these becoming brown-olivaceous in KOH. It belongs to sect. *Levipedes* (Fr.) Halling, subsect. *Alkalivirentes* Antonín & Noordel.

**Key words:** Agaricales, *Omphalotaceae*, *Alkalivirentes*, *Gymnopus obscuroides*, new species, England.

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Je popsán nový druh, *Gymnopus obscuroides* Antonín & Legon (*Agaricomycetes*, *Omphalotaceae*), vyskytující se na několika místech v jižní Anglii, ale nalezený i v dalších částech Velké Británie. Má velice dlouhý třeň, tmavě purpurově hnědý, pak mahagonově hnědý klobouk, světle růžově béžové lupeny, vločkatý třeň, dosti velké, téměř vřetenovité, elipsoidně-vřetenovité až kapkovité výtrusy, válcovité, kyjovité, téměř vřetenovité až urnovité, pravidelné, nepravidelné nebo až téměř korálovité cheilocystidy, pokožku klobouku složenou z paprscitě uspořádaných, válcovitých, výrazně inkrustovaných hyf s řídkými krátkými bočními výrůstky, úzce kyjovité nebo lahvovité kaulocystidy; inkrustace je ve vodě okrově hnědá a zbarvuje se v KOH do hnědoolivova. Patří do sekce *Levipedes* (Fr.) Halling, podsekce *Alkalivirentes* Antonín & Noordel.

#### INTRODUCTION

During field research over the past few years, the second author made several collections of an interesting gymnopoid fungus, from widespread locations in southern England, and also discovered material from elsewhere in Britain, in herb. K. Much of this was originally determined as *Collybia fuscopurpurea* (Pers.)

*P. Kumm.*, or as ‘possibly *Collybia obscura* sensu Favre’ and was included in the Checklist of the British and Irish Basidiomycota under the former name (Legon and Henrici 2005).

Whilst undertaking further studies for a new edition of the monograph of European marasmioid and collybioid fungi (Antonín and Noordeloos 2008), material was re-evaluated by the first author and, due to divergent morphological and anatomical characters, it was decided to describe this fungus as a new species belonging to the genus *Gymnopus* (Pers.) Roussel.

#### MATERIAL AND METHODS

Using an Olympus BX-50 light microscope with a magnification of  $\times 1000$ , microscopic features are described from dried material mounted in Melzer’s reagent, Congo Red, H<sub>2</sub>O and KOH. For basidiospores, the factors E (quotient of length and width in any one spore) and Q (mean of E-values) are used. Authors of fungal names are cited according to Kirk and Ansell (1992), herbarium abbreviations follow Holmgren (2003).

#### RESULTS

##### ***Gymnopus obscuroides* Antonín & Legon spec. nov.**

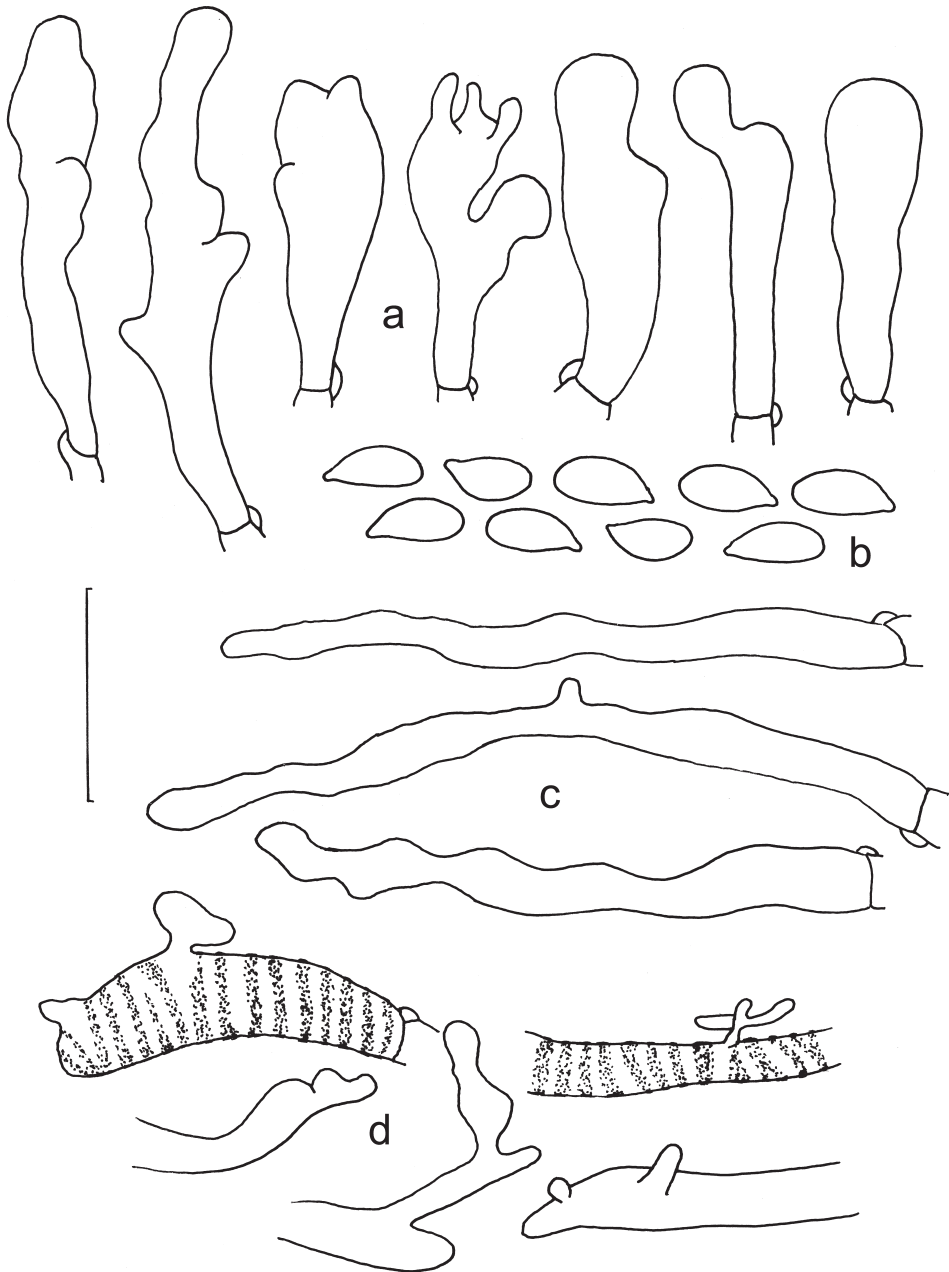
Figs. 1–3

(MycoBank: MB511474)

Pileo (5–)9–18(–25) mm lato, leniter convexo vel campanulato, postea applanato, juvenili purpureo-brunneo, mature mahagonio-brunneo. Lamellis densis, adnatis vel leniter decurrentibus, pallide roseo-griseo-albidis. Stipite usque 50–80 mm longo, cylindraceo, laterale compresso, floccoso, colore pilei simili. Basidiosporis (7,5–)8,5–11(–12)  $\times$  (3,5–)4,0–5,0  $\mu\text{m}$ , ellipsoideis-fusiformibus, subfusiformibus, lacrimoideis, hyalinis, inamyloideis. Basidiis tetrasporis. Cheilocystidiis 21–54  $\times$  5,0–12(–15)  $\mu\text{m}$ , clavatis, cylindraceis, subfusiformibus, subutriformibus, regularibus vel irregularibus. Pileipellis ex hyphis cylindraceis, usque 8,0  $\mu\text{m}$  latis, incrustatis, projectionibus cylindraceis vel anguste clavatis. Caulocystidiis 20–85  $\times$  4,0–7,0(–9,0)  $\mu\text{m}$ , cylindraceis, anguste lageniformibus vel anguste clavatis, leniter crassiparietalibus. Incrustatione hypharum in KOH viride tincta. Hyphis fibulatis.

Holotypus (hic designatus): Anglia, Surrey, Windsor Great Park, Valley Gardens, 28. IX. 1998 leg. N. W. Legon (holotypus in herbario K(M) 61849, isotypus in herbario BRNM 705363 asservantur).

Pileus (5–)9–18(–25) mm broad, initially shallowly ‘domed’ to almost campanulate, then expanded flat and often with a slightly upturned margin; smooth, dark purplish-brown when young, becoming more mahogany-brown when older, often with a paler ochraceous-brown margin in older or slightly dried out specimens; margin not striate. Lamellae closely spaced, adnate with a slight tooth or (rarely) shallowly decurrent onto the stipe, pallid pinkish-beige, with a finely white-floccose, entire edge. Stipe up to 90 mm long, often rather



**Fig. 1.** *Gymnopus obscuroides*. a – cheilocystidia, b – basidiospores, c – caulocystidia, d – pileipellis hyphae. Scale bar = 20  $\mu$ m.



**Fig. 2.** *Gymnopus obscuroides*. England, Surrey, Windsor Great Park, Virginia Water, 24 Oct. 1991. Photo: N. W. Legon.



**Fig. 3.** *Gymnopus obscuroides*. England, Surrey, Kew, Royal Botanic Gardens, 30 June 1998. Photo: N. W. Legon.

obviously 'out of proportion' (very long) when compared to the diameter of the pileus, cylindrical, often slightly flattened and sometimes with a slight central furrow, sparsely covered with fine white flocci, floccose-hairy at the base, of a similar colour to the pileus; basidiomes completely pallid pinkish-brown colour when dried. Context very thin, inodorous and with no obvious taste when fresh.

Basidiospores  $(7.5-8.5-11(-12) \times (3.5-4.0-5.0 \mu\text{m})$ ,  $E = 1.9-2.6(-3.0)$ ,  $Q = 2.0-2.3$ , subfusoid, ellipsoid-fusoid, lacrimoid to pip-shaped, thin-walled, smooth, hyaline. Basidia  $26-33 \times 7.5-9.0 \mu\text{m}$ , 4-spored, clavate, sometimes subcapitate. Basidioles  $15-35 \times 2.5-10 \mu\text{m}$ , clavate, cylindrical or fusoid, sometimes substrate. Cheilocystidia  $21-54 \times 5.0-12(-15) \mu\text{m}$ , cylindrical, clavate, (sub)fusoid, subutriform, regular, irregular to subcoralloid, sometimes lobed or with projection(s), rarely branched or rostrate, thin- to slightly thick-walled, hyaline; rather variable in each specimen – with regular cystidia dominating in some specimens, or in others, coralloid ones. Pleurocystidia absent. Tramal hyphae cylindrical to (sub)fusoid,  $\pm$  thin-walled, smooth or incrustated, up to  $12(-15) \mu\text{m}$  wide, incrustation ochraceous-brown in  $\text{H}_2\text{O}$  becoming dirty brown-olivaceous in KOH. Pileipellis a cutis consisting of radially arranged, cylindrical, scatteredly diverticulate, thin- to slightly thick-walled, distinctly incrustated (granular or zebroid), up to  $10 \mu\text{m}$  wide hyphae, incrustation ochraceous-brown in  $\text{H}_2\text{O}$  becoming (dirty) brown-olivaceous in KOH; lateral projection  $\pm$  digitate, often irregular to coralloid, thin-walled; terminal elements adpressed to erect,  $20-50 \times 4.5-6.0 \mu\text{m}$ , cylindrical, narrowly clavate to narrowly lageniform, sometimes (slightly) irregular,  $\pm$  thin-walled, smooth. Stipitipellis a cutis of cylindrical, parallel, slightly thick-walled hyphae, up to  $5.0 \mu\text{m}$  wide, with pale yellowish-ochraceous to olivaceous tinged walls in KOH. Caulocystidia  $20-85 \times 4.0-7.0(-9.0) \mu\text{m}$ , cylindrical, narrowly clavate or narrowly lageniform, rarely branched, sometimes rostrate, obtuse, slightly thick-walled, with pale ochraceous-olivaceous walls in KOH. Clamp connections present in all tissues.

Chemical reactions. Most parts of the basidiocarps are inamyloid and non-dextrinoid, with the exception of the incrustation on the hyphae of the trama and pileipellis, which are indistinctly dextrinoid.

Ecology. Saprotrophic; single or in small clumps amongst short grass on acidic soil in gardens, parkland or heathland vegetation.

Phenology. (June) September to November.

Distribution. Seemingly rather frequent in southern England, with numerous collections from Surrey and Berkshire. Further collections, in herb. K, from other areas in England [Leicestershire, Middlesex (London), North Wiltshire and South Somerset] and a single one from Wales (Denbighshire).

Collections examined. England, Surrey, Kew, Royal Botanic Gardens, 30 June 1998, N. W. Legon [K(M) 58031, BRNM 705366 and K(M) 58019, BRNM 705362]. – England, Surrey, Brookwood Cemetery (near Woking), 9 Oct. 2005, N. W. Legon [K(M) 133449 and BRNM 705365]. – England, Surrey, West End (near Bisley), Brentmoor Heath, 4 Oct. 1998, N. W. Legon [K(M) 61213 and BRNM 705360]. – England, Berkshire, Windsor Great Park, Saville Gardens, 29 Oct. 1989, N. W. Legon [K(M) 14088 and BRNM 705358]. – ditto, 8 Nov. 1989, N. W. Legon [K(M) 86881 and BRNM 705361]. – England, Surrey, Windsor Great Park, Virginia Water, 24 Oct. 1991, N. W. Legon [K(M) 18719 and BRNM 705359]. – ditto, 28 Sept. 1998, N. W. Legon [K(M) 34624 and BRNM 705364]. – England, Surrey, Windsor Great Park, Valley Gardens, 28 Sept. 1998, N. W. Legon [holotype, K(M) 61849 and BRNM 705363].

## DISCUSSION

*Gymnopus obscuroides* is characterised by a dark purplish-brown pileus, this more mahogany-brown with age, a floccose, and (in comparison with the diameter of the pileus) very long stipe, pallid pinkish-beige lamellae, basidiocarps becoming very pallid pinkish-brown when dried, rather large, subfusoid, ellipsoid-fusoid, lacrimoid or pip-shaped basidiospores, cylindrical, clavate, (sub)fusoid, subutriform, regular, irregular to subcoralloid cheilocystidia, a pileipellis consisting of radially arranged, cylindrical, scatteredly diverticulate, cylindrical to narrowly clavate or narrowly lageniform caulocystidia, and distinctly incrustated hyphae, the incrustation ochraceous-brown in H<sub>2</sub>O but becoming brown-olivaceous in KOH. These characters place it in sect. *Levipedes* (Fr.) Halling, subsect. *Alkalivirentes* Antonín & Noordel.

In other *Gymnopus* species with hyphae turning greenish in alkalis, *G. fusco-purpureus* (Pers.: Fr.) Antonín, Halling & Noordel. has darker coloured basidiocarps, smaller basidiospores, (6.0–)6.5–8.5 × (2.5–)3.0–4.0(–5.0) µm, a pileipellis with a Dryophila-structure and is usually found on litter of *Fagus*, or rarely *Pinus*. *Gymnopus loiseleurietorum* (Moser, Gerholt & Tobies) Antonín & Noordel. is smaller in stature, has a translucently striate, chocolate-brown, then pallescent pileus, a shorter (20–30 mm long) stipe, smaller basidiospores (5.5–8.3 × 3.4–5.0 µm), and lacks cheilocystidia. *Gymnopus pubipes* Antonín, A. Ortega & Esteve-Rav. has a chestnut-brown or purplish-brown then pallescent pileus (paler, brown, with pale cream, beige or whitish margin in var. *pallidopileatus*), 10–40 mm in diameter, with striate margin, smaller basidiospores, (5.0–)5.5–8.0 × 2.5–4.0 µm, smaller basidia (18–25 × 5.0–7.5 µm), and pileipellis with a typical Dryophila-structure (Antonín and Noordeloos 1997, 2008). *Gymnopus potassiovirescens* (Contu) Antonín & Noordel. has distinctly more robust basidiocarps (with the habitus of *Rhodocollybia butyracea*) and basidiospores of similar size (8.0–11 × 4.2–6.0 µm) but differing in shape (Contu 2000).

Among extra-European species with similar characters, *G. alkalivirens* (Singer) Halling has a glabrous stipe, smaller basidiospores, 5.4–6.5(–8.6) ×

2.2–3.2(–5.4)  $\mu\text{m}$ , and scattered or inconspicuous cheilocystidia (Halling 1983), *G. virescens* A. W. Wilson, Desjardin & E. Horak a similar habit but slightly different basidiospores (7.0–10  $\times$  3.0–6.0  $\mu\text{m}$ ), shorter basidia (19–24  $\times$  4.0–7.0  $\mu\text{m}$ ), pileipellis without terminal elements and lacks cheilocystidia (Wilson et al. 2004), *G. semihirtipes* (Peck) Halling possesses a glabrous or subglabrous stipe, smaller basidiospores, 7.5–8.6(–9.8)  $\times$  3.2–4.2(–5.0)  $\mu\text{m}$ , and lacks hymenial cystidia (Halling 1983), *G. spongiosus* (Berk. & M. A. Curtis) Halling a subglabrous stipe, smaller basidiospores (6.2–8.4  $\times$  3.5–4.2  $\mu\text{m}$ ), smaller basidia (17.5–24.5  $\times$  6.3–9.8  $\mu\text{m}$ ), and inconspicuous, differently shaped cheilocystidia (Halling 1983).

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#### REFERENCES

- ANTONÍN V. and NOORDELOOS M. E. (1997): A monograph of *Marasmius*, *Collybia* and related genera in Europe. Part 2: *Collybia*, *Gymnopus*, *Rhodocollybia*, *Crinipellis*, *Chaetocalathus*, and additions to *Marasmiellus*. – In: *Libri Botanici* 17: 1–256, Eching.
- ANTONÍN V. and NOORDELOOS M. E. (2008): A monograph of marasmioid and collybioid fungi in Europe. – Eching (in press).
- CONTU M. (2000): Tre notevoli species di *Collybia* dalla Sardegna. – *Boll. Gruppo Micol. Bres.* 43(1): 3–12.
- HALLING R. E. (1983): The genus *Collybia* (*Agaricales*) in the Northeastern United States and adjacent Canada. – *Mycol. Mem.* 8: 1–148.
- HOLMGREN P. K. (2003): Index herbariorum. – <http://sciweb.nybg.org/science2/IndexHerbariorum.asp>.
- KIRK P. M. and ANSELL A. E. (1992): Authors of fungal names. – 95 p. Kew.
- LEGON N. W. et al. (2005): Checklist of the British and Irish Basidiomycota. – 517 p. Kew.
- WILSON A. W., DESJARDIN D. E. and HORAK E. (2004): *Agaricales* in Indonesia. 5. The genus *Gymnopus* from Java and Bali. – *Sydowia* 56(1): 137–210.