

YELLOW CLAVARIA SPECIES in the British Isles

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At the 2005 grassland fungi workshop in Wales, Debbie Evans brought along a specimen of a yellow clavarioid fungus which she had identified as *Clavaria amoenoides* Corner *et al.*, a species not previously known to be British but listed in *Nordic Macromycetes* (Hansen & Knudsen, 1997) as occurring in Scandinavia. An additional collection was made during the workshop itself and further specimens were collected at the 2006 upland foray in Wales, in a pasture next to the foray centre.

It seems we now have three yellow or yellowish *Clavaria* species in the British Isles, all of them unbranched (tubular or club-shaped) and distinctly pale or dull compared with the much commoner and brighter yellow *Clavulinopsis* species. As with the black

and brown *Clavaria* species (Roberts, 2007), the literature on these species is scattered, so a brief key and descriptions follow. ‘Q’ is spore length divided by breadth.

Clavaria amoenoides Corner, K.S. Thind & Anand, *Trans. Brit. Mycol. Soc.* 39: 483 (1956).

[Figs. 1 & 2].

Basidiomes simple, 50 – 100 x 3 – 6 mm, in dense clusters or occasionally single, mostly tubular with acute apex and an indistinct stipe, smooth or irregularly ridged, sometimes compressed, typically pale lemon- to pale straw-yellow (apices with a pinkish tint in the Carmarthenshire collection).

Hyphae hyaline, 3 – 15 µm wide, lacking clamp-connexions. **Basidia** clavate, c. 45 –

KEY

- 1) Context hyphae lacking clamp-connexions; basidiomes typically pale yellow, greyish or olivaceous yellow, pale ochre or straw2
- 1) Context hyphae with clamp-connexions; basidiomes typically bright lemon-, crocus- or orange-yellow.....*Clavulinopsis* spp (not treated here)
- 2) Most spores cylindrical (Q > 2), 9 – 12 x 4 – 5 µm; basidiomes dull greyish to olivaceous yellow, with heather (*Calluna vulgaris*) and other ericaceous plants, typically on heaths and moors***Clavaria argillacea***
- 2) Most spores globose to oblong (Q < 2); basidiomes pale yellowish to pale ochre or straw, typically in unimproved grassland3
- 3) Spores globose to subglobose, 6 – 7.5 x 6 – 7 µm; basidiomes pale ochre to straw, often more brightly coloured at the base***Clavaria straminea***
- 3) Most spores oblong.....4
- 4) Spores 6 – 9.5 x 3 – 4.5 µm; basidiomes pale yellow***Clavaria amoenoides***
- 4) Spores wider, 6.5 – 8.5 x 4.5 – 6 µm; basidiomes normally greyish white, but sometimes with a watery yellowish tint (when they can be mistaken for *C. argillacea*)
.....*Clavaria tenuipes* (not treated here)

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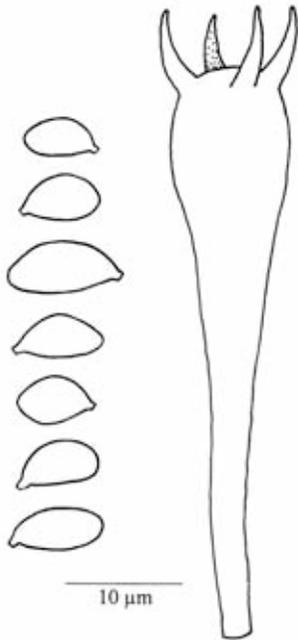


Fig. 1. *Clavaria amoenoides*: basidiospores and basidium. Caernarvonshire. K(M) 145802.



Fig. 2. *Clavaria amoenoides*: Carmarthenshire. K(M) 143730. © P.J. Roberts

60 μm long, four-spored, unclamped. **Basidiospores** mostly oblong ($Q = [1.5 -] 1.7 - 2.1$), c. 6 – 9.5 x 3 – 4.5 μm , sometimes slightly amygdaliform, thin-walled, smooth, hyaline.

Specimens examined:

SCOTLAND: Lanarkshire, Glasgow, Loch Lomond Park, 6 Oct. 1939, R.H. Johnstone, K(M) 119006.

WALES: Caernarvonshire, Rhos Isaf Cemetery, in mossy grass, 18 Oct. 2005, D.A. Evans, K(M) 145802; Carmarthenshire, Llandybie, Glynhir Estate, in pasture, 24 Oct. 2006, P.J. Roberts, K(M) 145803; Monmouthshire, Abergavenny, The Bloreng, in mossy grass (*Rhytidiadelphus squarrosus*) in upland pasture, Nov. 2005, S.E. Evans, K(M) 146677.

Clavaria amoenoides produces clusters of comparatively robust, yellow basidiomes similar to those of *Clavulinopsis fusiformis* (Sowerby) Corner, but paler. Microscopically it is immediately distinguished from *Clavulinopsis* species by its inflated, unclamped hyphae and from other yellowish *Clavaria* species by its oblong, slightly almond-shaped spores.

The species was originally described from India and has subsequently been recorded from North America, the Netherlands, Norway (Sivertsen et al., 1994), and Sweden (see photo, as *Clavulinopsis fusiformis*, in Nitare, 1988: 86). Petersen (1965) and Petersen & Olexia (1969) have suggested that *C. inaequalis* O.F. Müll. may be an earlier name, but the interpretation of this old species is disputed and it seems best to regard *C. inaequalis* as a *nomen dubium* (Corner, 1966; 1970).

The Scottish collection was found in a folder of unnamed *Clavaria* species at K and was annotated as 'lemon yellow when fresh'. It is quite possible that

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additional collections have been passed over in the field as pale or washed-out *Clavulinopsis fusiformis*, and that *Clavaria amoenoides* may be more widespread in the British Isles than these few records suggest.

Clavaria argillacea Pers., *Comment. Fungis Clavaeform.*: 74 (1797).

[Fig. 3].

Basidiomes simple, very variable in size, 5 – 150 x 2 – 12 mm, in troops or occasionally single, mostly clavate, smooth or irregularly ridged, sometimes compressed, typically dull lemon yellow, often with a greyish or olivaceous tint. **Hyphae** hyaline, 2 – 15 μm wide, lacking clamp-connexions. **Basidia** clavate, c. 45 – 50 μm long, four-spored, with open, loop-like clamp connexion at base. **Basidiospores** cylindrical (Q = [1.6 –] 2.0 – 2.6), c. (8 –) 10 – 12 x 4 – 5 μm , thin-walled, smooth, hyaline.

Typical *Clavaria argillacea* can be identified by its dull yellowish, club-shaped basidiomes, its habitat with ericaceous plants (mainly heather), and microscopically by its comparatively large, cylindrical spores.

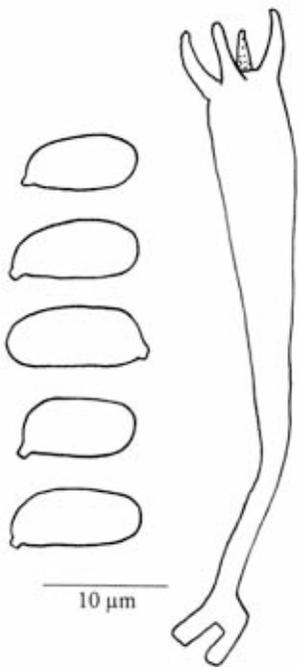


Fig. 3. *Clavaria argillacea*: basidiospores and basidium. Surrey. K(M) 146522.

It is by far the most frequently recorded yellow *Clavaria* species in the British Isles, but a random examination of recent British material at Kew shows that it is sometimes misdetermined. Several collections were found to have shorter, oblong basidiospores measuring c. 6.5 – 8.5 x 4.5 – 6 μm (Q = 1.4 – 1.7). Though a few such spores (possibly immature) may be found in some mounts of *C. argillacea*, the majority of spores should be much longer and have a higher Q value. The shorter-spored collections appear to be *Clavaria tenuipes* Berk. & Broome (*non sensu* Schild, 1981) which often has club-shaped or swollen basidiomes and is typically dull-white to hyaline grey, but sometimes has a watery yellowish tint.

The best advice is to double-check possible *C. argillacea* collections microscopically, especially if they are not growing close to heather or *Rhododendron*. Research (Englander & Hull, 1980) has shown that the fungus forms a mutual relationship, possibly mycorrhiza-like, with ericaceous plants, but whether this relationship is obligatory or opportunistic is not known.

Clavaria straminea Cotton, *Trans. Brit. Mycol. Soc.* 3: 265 (1910).

[Fig. 4].

Basidiomes simple, 30 – 100 x 2 – 4 mm, in small clusters or occasionally single, mostly tubular with acute apex, smooth or irregularly ridged, sometimes compressed, sometimes spiralled, typically pale straw or pale dull yellow to ochraceous, with a weakly defined or distinct stipe (c. 5 – 10 mm long) which is more strongly coloured yellow to orange-brown. **Hyphae** hyaline, 3 – 25 μm wide, lacking clamp-connexions. **Basidia** clavate, c. 40 – 60 μm long, four-spored, with open, loop-like clamp connexion at base. **Basidiospores** globose to subglobose (Q = 1.0 – 1.1), c. 6 – 7.5 x 6 – 7 μm , thin-walled, smooth, hyaline.

Clavaria straminea can usually be distinguished in the field by its pale, straw-coloured basidiomes which typically have a

more deeply coloured, yellow to orange-brown or copper stipe. A microscopic check should reveal the unclamped, swollen context hyphae and globose to subglobose spores. The loop-like clamp at the base of the basidia is difficult to demonstrate in old or dried fruitbodies, since the subhymenial hyphae tend to collapse and agglutinate.

In his original description, Cotton (1910) noted that *Clavaria flavipes* Pers. might be an earlier name for the species, but no type specimen existed and its identity was open to question. This still remains true, despite the revival of the name by Knudsen (1996), and it seems best to regard *C. flavipes* as a *nomen dubium*. Corner (1950), for example, considered *C. flavipes* a synonym of *C. argillacea*.

Cotton & Wakefield (1919) claimed that *Clavaria straminea* was 'rare', but recent interest in the fungi of unimproved grasslands has shown it to be widespread and not uncommon throughout Britain and Ireland (see photo from Scotland in Henrici, 2003). The species was illustrated from Switzerland by Schild (1971) and from Sweden by Nitare (1988: 86). It is also known from Denmark, Estonia, the Netherlands, and Norway.

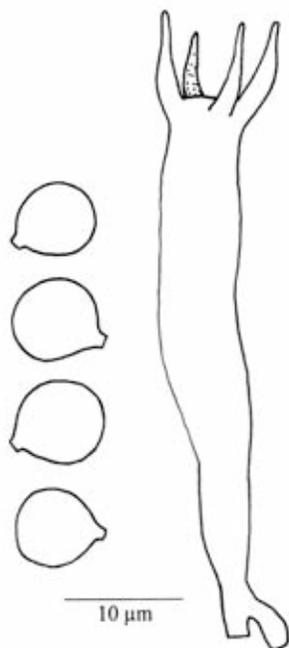


Fig. 4. *Clavaria straminea*: basidiospores and basidium. Tyrone. K(M) 127655.

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