KEY

1. No blue/violaceous tones in either cap or stipe

I. Cap not or scarcely striate; stipe fibrillose, scaly etc
A. Species with clamp (otherwise recalling Ps. Poriarella)
1. Grey brown, *+* conical/papillate, isoecyloid, .......... *Hispidulum*
   (eg Dawlish Warren, seen Orton 1960 as *L. isoecyloides*) N82b
2. Olive brown, cliticooeoid, *+* large chlollowystidia .......... *Indutoideus*
   (only known from calc. grassland, Yorks.) Orton 1960; N49b
B. Species lacking clamp, caps scaly
1. Stout, cap with dark squamules on pale ground .......... *Scabrellopsis*
   (grassland in Scandinavia)
2. Smaller dark grey-brown to red-brown, gill edge sterile
   a. Spores 9-12.5x6-9; stem base bruising slowly pinkish .......... *Fuscus*
      (eg Perth on Cairnwell) Orton 1960; Bon195, C2325, C958, N70a
   b. Spores 7.5-11x6-7.5; no pinkish bruising .......... *Pseudoturci*
      (widespread but rare, esp. calc. inc. Dunes) BK57, C2727, N70b

II. Cap translucently striate when moist; stipe ± smooth, polished
A. Colours clear yellow to tawny or red-brown
1. Clamps present; small, dark yellow-brown .......... *Polistoflavipes*
   (recently desc. from calc. grassland) BK63, N50a
2. Clamps absent
   a. With green/olive tints in stipe, base often reddish
      * Gill edge sterile, .......... *Exile*
      (inc. pyrospila, see Orton 1960) BK31, C952, M24, N65
      ** Gill edge fertile (7 very var of exile) .......... *Chloropolum*
         (not in Orton list, but in Ireland fide C&D) C951, N66b
   b. Cap yellow to yellow-brown
      * Yellow (= fulva Orton 1960) .......... *Fornous*
         (fairly common in north) BK35, C1862, C954, M22, N70a
      ** Differing chiefly in brown gill-edge .......... *Rambouria*
         (similar sites to last but rarer) Orton 1964: BK36, C954
   c. Cap tawny to red-brown
      * Differing little from last except in colour .......... *Ephorners*
         (little known, eg in sphagnum bog) BK45, N67b
      ** Stronger red colours .......... *Rufocarnia*
         (Berkeley type (lost) Dorset, accepted by Moord.) N76a
B. Duller brown to grey, ± hygrophanous species
1. Clamps present; grey-brown, omphaloid (eg Omphaliopsis), *Parkesia*
   (calc. grasslands) C962
2. Clamps absent; gill edge dark brown .......... *Atromarginatum*
   (rare, eg Kimdroan, dunes at Tynælæ and Betty Hill) N60a
3. Clamps absent; gill edge concolorous
   Conspicuously translucently striate spp. (longistriatum complex)
   a. Spores only 7-9x5-7 .......... *Longistriatum micosporum*
      (widespread, ± calc. soil, often damp places)
   b. Spores larger, on average 10.5-11.5x7-8
      * Strongly hygrophanous, stipe dull brown .......... *Longistriatum*
         (L. majuscula of NCL, esp. on clay soil) N69a, N85c
      ** Strongly striate, ochre brown .......... *Longistriatum sarmatium*
         (NU, calc. or acid) BK50, Bon195 (sarmatium), C2323, C957
      *** Less striate, lighter colours .......... *Ochromicarinae*
         (recently desc., poor eg calc. grassland) BK50, N59a

WAXCAP-GRASSLAND FUNGI

1: Hygrocybe, Camarophyllopsis and
Dermoloma in Britain

2: Keys to Grassland Species of
Leptonia s.l.

Alick Henrici
July 1996
HYGROCYBE, CAMAROPHYLLOPSIS & DERMOMLA IN BRITAIN

Alick Henrici

"...these rather attractive but sometimes bewildering fungi"
Peter Orton, 1960

This is neither a key nor a check-list, though half way to both. British species, together with others that might occur here, are presented in a taxonomic arrangement following Boerntann 1995 for Hygrocybe, and Arnolds in Flora Agaricina Neerlandica (FAN) for Camarophyllopsis and Dermoloma. Subgenera, sections and subsections of Hygrocybe are here as defined by Boerntann. In a few places further informal groupings, labelled a, b, etc, have been introduced for convenience within the larger subsections.

Approach Taken

The author makes no claims to specialist knowledge in this area. No independent assessment has been attempted, and no material reexamined. This is simply a résumé of the taxa currently believed to occur in Britain, presented in the terms used by the above authors. Their nomenclature and synonymy is adopted with only a few minor exceptions (noted explicitly). Boerntann covers all the British species of Hygrocybe with the exception of H. aurantium (a probable alien, described from N.America). FAN also covers most of these species, those omitted being here marked - "FAN". Northern European species not so far known in Britain are listed in [ ].

The main British source work is Orton in Part III of NCL 1960, a major milestone in European Hygrocybe studies, and the basis of the treatment in Moser's Keys to Agarics and Boleti. Orton provided very full descriptive keys, besides describing nine new species and five others then new to Britain. References are given under the species concerned to these and all other descriptions he has published since. For a further European overview see Bon 1976, where rather more species are recognized than in the present account, as well as numerous varieties and forms.

Higher Taxonomy

The traditional concept, used in NCL, of a single large genus Hygrophorus has now been long abandoned. Orton & Watling (1969) proposed a two genus scheme of Hygrophorus and Hygrocybe, with the latter in six sections. The relations between the various approaches can be summarised as follows:

NCL 1960        Orton & Watling 1969        Present Treatment
Subgenera         Sections of Hygrocybe

Camarophyllus
Cupophyllus
Camarophyllopsis
Hygrotrama
Hygrophorus

Camarophyllopsis
Camarophyllopsis ssp. Camarophyllopsis
(only C. schulzeri in Britain)
Camarophyllopsis ssp. Bodophyllus

Hygrocybe
Hygrocybe
Neohygrocybe
Amylohygrocybe

Hygrocybe ssp. Cupophyllus
Hygrocybe ssp. Camarophyllopsis
Hygrocybe ssp. Camarophyllopsis ssp. Camarophyllopsis
Hygrocybe ssp. Bodophyllus
Hygrocybe ssp. Bodophyllus

Hygrocybe ssp. Hygrocybe

Hygrocybe ssp. Pseudohygrocybe

Hygrocybe ssp. Pseudohygrocybe ssp. Pseudohygrocybe
(p. p. (Section Neohygrocybe)

Amylohygrocybe
excluded (Porpoloma p. p.)

At a higher level FAN abandons the concept of a family Hygrophoraceae. The three genera treated here become the first tribe, Hygrocybeae, and Hygrophorus alone becomes the second tribe, Hygrophorae. Of a total of 17 tribes constituting the Tricholomataceae. The Hygrophoraceae were traditionally largely defined by their thick gills, and more recently by the long basidia which cause these thick gills (basidium-length mostly over 5 x spore-length fide Singer). But boundaries between e.g. Hygrocybe and Omphalina are considered too blurred to warrant separate families. Placement here of Dermoloma is a recent development. FAN Vol. 2 followed Kühner in considering Dermoloma to be closer to Tricholoma.

Some background

This document was first put together in draft in the autumn of 1995 in response to plans for a survey of British grassland fungi. I did not feel competent to produce a key to Hygrocybe but felt a summary of this nature might be a useful aid to identification. Three months later David Boerntann’s admirable book on Hygrocybe appeared. If it had come out earlier I would not have embarked on the exercise. As it is he has enabled me to substantially revise and sharpen up my draft. I hope it may be found a useful supplement to his work; it certainly is no substitute.

Descriptions and Illustrations

Descriptive material has been limited to the main discriminatory features of each species. It thus varies from almost none (for unmistakable species such as H. calyptriformis) to somewhat more extensive for critical species. Illustration citations take into account Boerntann’s published assessment of the main sources. But note that Cetto Vol. 6 and 7 (±c2400 upwards) evidently came out too recently to receive his comments. Nor does he discuss Bon or Courtecuisse & Duhem. So citations from these works should be treated with less confidence than the rest.

NB. A number of references are made to collections at Kew. The names recorded there and the approximate numbers of collections of each have been ascertained. But in these genera the Edinburgh holdings are likely to be equally significant, and these have not been consulted.

Conservation

The three genera treated here appear to be at least as well represented in Britain as anywhere in Europe. The great majority of European species are present. Even on the Island of St Kilda, far out on Britain’s Atlantic extremity, 33 species have been recorded (reduced to 28 spp. + 1 var. in this account where H. riginae/nivea, H. conica/sigescens, H. chlorophana/ flavescentis and H. insipida/subinutilula are all no longer distinguished). However unimproved grassland of a type capable of supporting such a rich Hygrocybe flora has already become a rarity over much of the country.

It seems likely that Britain may have several of the richest Hygrocybe sites in Europe. I share David Boerntann’s hope that making available further information about these species may lead to more accurate site evaluation, and thus to the appropriate focusing of conservation measures.

A.H.
July 1996
Hygrocybe
Sec. Cuphophyllus
Subsec. Virginei

5 | russocoriacea
   | virginea + v. ochraceopallida + v. fuscescens
eolleniana
5 | laciniae + flavipes [+ radiata]
7 | pratensis + v. pallida, canescens
8 | [cinerella], viola

Hygrocybe
Sec. Cuphophyllus
Subsec. Cuphophyllus

7 | xanthochroa, lilacinia, citrinopallida

Hygrocybe
Subsec. Sigrescentes

9 | conica + v. chloroideae + v. olivaceoingra [+ v. conicapolalutris], conicoides
10 | persistens + kouradii + f. subglobispora
11 | intermedia, spadicea [+ v. albofolla]

Hygrocybe
Sec. Chlorophanae

11 | chlorophana [+ v. aurantiaca] [+ flavescens]
12 | glutinipes [+ v. rubra], [subpapillata]

Hygrocybe
Sec. Pseudohygrocybe
Sec. Neohygrocybe
Subsec. Ornata
Subsec. Fornicatae

12 | helobia

Hygrocybe
Sec. Glutinosae
Subsec. Coccineae

14 | ugnuina (+ irrigata)
16 | psittacina + perplexa
16 | laeta + v. flava, vitellina

Hygrocybe
Subsec. Coccineae

18 | punicae, aurantioplaneae
18 | coccinea + murchii [+ zelicis-berbaeae]
18 | ceracea
18 | insipida + f. subinutula, reai (here?)

Hygrocybe
Subsec. Siccaceae

19 | splendidissima, reidi, quieta
19 | phaeococcinea, [constricticorpora]
19 | aurantia

Hygrocybe
Subsec. Squamosae

22 | subtrangulata [+ v. rhodophylla]
23 | minuta [+ v. mollia], calciphila
23 | cantharellus + turunda + coccineocrenata

Taxonomic Arrangement

Non-British in [ ]. Not recognised as distinct in [ ].

Abbreviations

B Boertmann: The genus Hygrocybe 1995
BK Breitenbach & Karlin: Fungi of Switzerland Vol. 3 1975
C Cetto: I Funghi del Veron. Vols 1-7
CD Courtecuisse & Duham: Mushrooms & Toadstools, English Edn. 1995
CKE Cooke: Illustrations of British Fungi 1880-1890
DD Dahkne & Dahkne: 700 Pilze in Farbfotos 1982
DF Dahkne: 1200 Pilze in Farbfotos 1993
FRC Fungi Rariorum Icones Colorati
KAR Kühner & Romagnesi: Flore Analytique
L Lange: Fl. Ag. Danica
LHG Lange & Hora: Collins Guide to Mushrooms & Toadstools
MA Marchand: Champignons du nord et du midi
NJ Moser & Jüllich: Farbatlas
MYC The Mycologist
NCL New Check List 1960
NM Nordic Macromycetes Vol. 2 1992
RP Roger Phillips: Mushrooms
W&D Wakefield & Dennis: Common British Fungi

Authors referred to without a date imply the following works:

Arnolds: Section on Hygrocybe in FAN Vol. 2 1990
Bourtmann: The genus Hygrocybe 1995
Bon: Mushrooms and Toadstools 1987
Bouquet: British Fungi 1910
Boutelou: Keys to Agarics & Boleti (English edition) 1983
Orton: MCL Part III 1960
Orton: British Basidiomycetes 1922
Singer: The Agaricales, 4th Edn. 1986

Further References:

Arnolds 1986a Persoonia 13:57-68 Notes on Hyphophoraceae VI
Arnolds 1986b Persoonia 14:167-160 Notes on Hyphophoraceae VII
Byer & Orton 1955 TBMS 38,400-404 Three New British Agaric Records
Orton 1953 MCL Part II, Notes on Genera & Species
Orton 1969 Notes RBG Edinb. 29:75-127 Notes on some Ags from Scotland
Orton 1980 Notes RBG Edinb. 34:315-331 Notes on Brit. Ags IX
Orton 1987 Notes RBG Edinb. 44:485-502 Notes on some Ags from Scotland
Orton & Watling 1969 Notes RBG Edinb. 29:129-138 A reconsideration of the classification of the Hyphophoraceae
Watling & Rothero 1989 Proc RBG 968:111-126 Macrofungi of sand dunes
GENUS HYGROCYBE (Fr.) Kummer 1871

Gill trama regular or interwoven; habit non-mycorrhizal. Mainly species of unploughed grassland or moorland (to be assumed below whenever no habit details are given). Hygrocybus differs in having bilateral gill trama, in often having a veil, and (fide Singer) in being always mycorrhizal, and is thus largely a woodland genus.

Subgenus Cypophyllus Donk
= Cypophyllus (Donk) M.Bon = Camarophyllus s.Singer, Moser, WM

Gill trama of narrow interwoven hyphae, 7-5(-8)μm wide. Colours dull. Gills strongly decurrent. Singer recognises sections based largely on colour. Arnoldus has no lower subdivisions.

1. Section Cypophyllus

1.1 Subsection Virginei (caps ± greasy, hygrophanous, margin striate)

a) Caps pale (white to buff, in one var. darker at disc)

Cap to 2cm, ivory to pale cream, with strong smell of Russian leather or of cedar-wood pencils, that can persist for at least 50 years in dried material. In other respects similar to next. Not uncommon

Russocoriaea (Berk. & Miller) Orton & Watling
B47, B677, CD175, DD110, L64B, RP64

Cap 1-5(-9.5)cm, ± pure white, slightly glutinous; spores 7-12.5x3.5-7.5μm.

Exceptionally variable, particularly in size of basidiocarp and spores" FAN. Common. Pink tinged, rather on the cap or gills (eg in C1100) or at the stipe base (var. roseipes Massiee = f.roseipes of Bon103), are infection by a hypomyces, Fusarium sporotrichoides Sherk.

Virginea (Fr.) Orton & Watling
B49, BK103, Bon103, CD174, DD111, L64C,F, RP64 (niveus)

Syn. nivea (distinct in NCL, E&R. Moser, spores smaller fide Orton)

Torresian Bon103 (not recorded from Britain)

NB. If gills crowded and spores much smaller, 4.5x2-3, see Clitocybe eretorum Quel., often in similar habitats. CD104, EP46

Whole cap evenly but palely coloured, striate when moist, clay-buff with age; often stouter and tougher than the type variety, but does not differ microscopically; can resemble pratensis v.pallida, but that has considerably shorter spores

Desc. from dunes and fields in Devon and Cornwall. Later British records from eg Welsh dunes, Hampshire chalk downs

Virginea v.chrocaeopallida (P.D. Orton) Boerlm. (FAN) B53, BK104?
Type desc. (as species) Orton 1980, p.329

Cap pale cream cap; smaller spores 5.5-8.5x3.5-5.5μm; very short basidia 25-35(-40)x6-8μm

As yet little known. Distinct from last? Desc. from Switzerland

Cereopallidus Clél. (FAN) C2795, CD176, D+144 (DD111 niveus)

Cap largely pale, but with small rather sharply delimited grey-brown zone at the disc

Differs only in colour from the type var. and in the Netherlands always grows with it fide Arnoldus. Common on acid heaths fide Orton 1960 (as subpratensis). But in Denmark spore Q higher and usually on calc. soils

Virginea v.fuscosecens (Bres.) Arnoldus
B51, BK104 (or = v.chrocaeopallida?), Bon103 (subpratensis, or = next?), C231, CD171, MJ7 (Camarophyllus fuscosecens)


Also recorded from Mull as niveus v.fuscosecens

Considered an independent species in E&R, NCL, NM, CD

b) Caps brown (grey-brown to red-brown)

Cap to 6.5cm, rather fleshy, pale or dark brown, gradually slightly darker to the disc, dry to greasy with thick gelatinised cutis

Pale collections easily confused with last, but spores broader (lower Q), gills typically interveined. Rare in calcareous pastures

Colemaniana (Dixon) Orton & Watling B55, BK84, Bon103, C665, CD179

Also (as subpratensis) Bon103?, C668, CD178, L615D

Syn. H.subpratensis s.E&R, Lange non NCL

c) Caps grey with violaceous tones

Cap 2-4cm, shiny ("lacm" = lacquered); stipe base white; spores 5-9x4-6μm (but larger when basidia 1- or 2-spored, eg li17 in Bon); smell often sweetish; usually on sand or peat

Reported as British in Orton 1960 from a damp field in Devon. Since then several recs at F from the west or north. Also in moss on mountain tops

Watling 1973

Jacquin (Schumack.) Orton & Watling s.Arnolds, non NCL

B57, BK88, Bon103 (subviolaceus), CD173, MJ7 (Camarophyllus subv.)


Desc. Orton 1960, p.260 (as subviolaceus)

[72yn. cinerea (Pers.) Orton & Watling (FAN) Bon103, C2794, L613B

Stout like pratensis, cap pale grey 3-6cm, stipe 5-10cm wide. All recs old, most from Scotland. Not seen by Orton. But for Rea (as pratensis v.cinerea) "heaths and downs. Not uncommon". For Boerlm's "insufficiently known", probably only lacmus with the violaceous tones faded]

Similar but stipe base yellow; spores subglobose, mainly 6-8.5x4-5μm; smell indistinct; usually on calc. soils

Not uncommon fide Orton

Flavipes (Britzelm.) Arnoldus
B59, Bon103, C1102 (lacmus), L615B (lacmus), MJ3 (Camarophyllus f.)

Syn. H.lacmus s.NCL + auct. mult., non Arnold

Similar to last, "merely a small and slender form" (Boerlmann)

Cap to 4cm, strongly striate to the sharply delimited brownish disc, dry with thin cutis. On sandy calc. soils. Described 1899 from Holland, also reported from Denmark and Sweden. Not known in Britain

[tradita Arnoldus] B61

Syn. H.subpratensis s.Konrad & Maublanc non al.
1.2 Subsection Cupophyllus (caps dry and non-hygrophanous)

Cap dull orange, 3.5–(9) cm (NW), 5–10 cm (Bon); spores 5–7×4–5.5

Common, and even in woods much commoner than its woodland look-alike
Hygrophorus nemoreus (see eg BK121)

Fratensis (Pers.-Fr.) Merrill
B41, B76, Bon103, C225, CD171, DD113, Li65F, F1, MJ2 (Can.), RP60

Cap ivory/cream throughout, otherwise as last

Not uncommon Fide Orton, but only few mainly Scottish racs at K.

Can develop pink Fusarium stains as in virgineus fide Orton

fratensis var. pallida (Cooko) Arnolds
B43, Bon103 (berkeleyi), C2443, Cke 893(932)A, CD172, MJ2 (Can. berck.)


Type desc. Orton 1960 p.259

(Orton described H.berkeleyi to raise Cooke's variety to a species. He had to give it a new name as there was already a different H.pallidus Peck. So he chose to commemorate Berkeley, who had first described this variety, though without giving it a name. But unfortunately there was also an earlier H.berkeleyi Sacc., hence the multiplicity of names for what all agree is the same taxon)

Cap grey, small (2 cm in only British collection), slightly tomentose/scaly

Spores small, 4.5–6×4–4.5. Found Argyll 1985 (G.Dickson)

First European record of a species desc. from N.America. A few collections since from Sweden

camascens (Smith & Nesler) Orton (-FAN) B45

See desc. Orton 1987, p.489

2. Section Greocybe Boertm.

Three closely related montane species with ± viscid cap and stipe, at least in young specimens

Cap 1–2.5 cm, chrome-yellow with slight violaceous tinge at centre; gills

pale lilac; spores 6–8×3.5–4.5

"A delicate and very distinct fungus, in some ways resembling H. vastus but with characteristic colours" Orton. Described from mossy Calluna heath, Rothierxivius

xanthochroa (Orton) Moser (-FAN) B67, CD180

[Exc. C673, Citocybe sp. fide Boertmann]

Type desc. Orton 1960, p.271, supplemented Orton 1964, p.53

Type is the only collection at K

Cap 1–2 cm, yellow to yellow-brown, tinged violaceous; gills pale dirty

ochraceous; spores larger, 7.5–10×5–6

Rare in peat on Scottish mountains above 2000 ft.

iliacina (P.Karst.) Moser (-FAN) B69, CD181

Material at E7 None at K

Cap 0.3–3 cm, pale lemon yellow

Easily confusable with Omphalina luteovitellina or O.hudsoniana, and in similar habitats, but non-lichenised, + clamps. British fide Boertmann

citrinopallida (Smith & Nesler) Kobayasi (-FAN) AA111, B65

Syn. vitellina f. Moller (his description wrongly cited in NCL for Orton's concept of vitellina, recognized as distinct in Orton 1964)

3. Unplaced Species (within eg. Cupophyllus)

Cap dark brown-grey when moist, 1–3 cm, omphaloid

Strictly arctic/alpine. Not known in Britain
[citrinella (Röhrer) Arnold] (-FAN) B63, MJ2 (Camarophyllus c.)

Cap deep purple at centre, paler at margin, only 4–10 mm; woodland Distinctive minute omphaloid woodland species. Gills very pale. The only British record by Courtecuisse in Ruislip Woods on soil of a ditch bank during the European Congress 1992, det. Lassez, Arnold and Kuyper. Previously known only from Belgium (first collected 1977) and the Netherlands

viola Gesiök & Bas B71

See desc. in Persoonia 13:66,1986, where it caused Arnolds to write "The differences between Hygrocybe and Omphalina are not as fundamental and easy as often thought"

NB. Omphalina discorsosae (C1479) and O.lemnisca (CD345) are both similar, but have clamps at all septa. The first is larger (1–3 cm) and the second (British but rare) has somewhat larger spores.

4. Excluded Species

The following species has been placed in many genera under several names. It was considered a Hygrophorus by Rea, and is placed in Cupophyllus by eg Bon, Courtecuisse, and in Camarophyllus in B&K. For its latest placement see Norvell, Redhead & Ammirati, Mycotaxon 50:379-407,1994.

Cap greenish, caespitose on conifer stumps, uncommon

Chromosphalina grossula (Pers.) Norvell et al.

B75, C118, CD170, DD127, L60

Syn. Camarophyllus g. in B&K = Cupophyllus g. in Bon, C&D

= Omphalina g. in FAN Vol.3 p.80 (and in Cetto, DD)

= Gerronema g. in Singer

Syn. Hygrophorus wynnei Berk. & Broome in Rea = Omphalina v. in NCL

Syn. Omphalina abingoa in B&K, Lange
Subgenus Hygrocybe
   = Conici s.ER

Gill trama very regular, of broad greatly elongated elements, tapering towards the ends, 200-1000 (1500)x20-35µm. In several species these can project from the gill margin as pseudocyttidalia. Caps usually acutely conical/campanulate, often with a somewhat up-turned margin when old, but in section Chlorophanaceae convex to broadly umbonate. Usually bright coloured, often rather fragile. Gills narrowly attached.

1. Section Hygrocybe

Cap usually ± viscid, conical. Stipe dry. Spores usually over 10µm long.

1.1 Subsection Hygrocentes (all parts blackening with age)

Many species described, but all treated by K&R and now by Boermaann as varieties or even taxonomically insignificant forms of a single variable H.conica. The range of possibilities is well shown in the array of paintings in C&D p.157. Some collections have medially swollen 2-spored basidia (so-called Godfrinia-type) once considered very significant, but the genus Godfrinia R.Maire 1902 based on this phenomenon has now been abandoned (see Singer 1986 p.117).

Spore quotients c.1.5, spores mainly 8.5-10x5-6.5, larger when 2-spored; gills ± yellow
conica (Schaaff. Fr.) K.Jum.
B159, Bon105, CD189+CD191, DB120, L167D, F1, H, M35, RP61
inc. nigrescens = conica v.pseudocoma (M35) = f.pseudocoma in FAN (NCl distinguishes:
 - conicus: slender, cap 1.6-4(-6)cm, acute, ± yellow; usually 2-spored
 - nigrescens: more robust, cap 3.5-6(-9)cm, ± obtuse, ± red; 4-spored
But the differences are not constant and these are at best forms.)

Gills grey to greenish; no red colours, at most dingy orange
Several poorly known taxa with a variety of colours are here listed together pending further clarification:
conica v.chloroides (Malercom) Bon s.l. B161, CD190
7SyN. lingii s.s. with Bon105, C1110, CD186
7SyN. olivaceonigra s.Cetto C2439
(both collection matching this perfectly from Bucks, 1994)
(Welsh dunes, Harlech and Kenfig, det. Courtecuisse)

As last but no yellow or orange colours at all; in dunes
conica v.olivaceonigra (Orton) Arnolds CD185
Desc. (as species) Orton 1960 p.263, from Norfolk (only the type + a watercolour at X)

Cap only 5-10mm, acutely papillate, deep red with yellow margin
In swamps and bogs. Keyed in Orton 1960, but as yet no British records
conica v.conicaoplasteris (Haller) ex Arnolds B161
WB R tsparia Kreisel, CD192, with Salix in dunes etc (Listed in Moser and discussed in FAN) is somewhat intermediate between this and conica v.conica fide FAN. Also unrecorded in Britain, southern in Europe.

Spore quotients c.2; gills reddish; cap typically cherry-red
Spores 10-12.5x5-6 (Boermaann), but 12.5-15x5-8 (Bon)
Always coastal and usually the commonest 'conica' in dunes
conicipila (Orton) Orton & Watling
B163, Bon105, C2440, CD188, M37, NYC. 1(3):122,1987
Desc. Orton 1960 p.262. Reduced to a var. of conica by Arnolds in 1974, but he now accepts it in FAN as a good species.

1.2 Subsection Macrospora (not blackening appreciably)

a) Caps yellow or tinted with red, fairly smooth
H.persists complex: treated here as two species distinguished on spore shape. Only varieties for Boermaann (occasional intermediates found).

Spores ellipsoid, 8-16(-19)x4.5-8.5(-9.5); gills yellow to orange
Cap sometimes partially tinted red. The conoform, wholly yellow, form is sometimes distinguished as v.langi (M35). Not uncommon fide Orton
persiscens (Britzelma) Singer
B153+155, KE37, Bon107, CD200+201, L167C (constans), RP65 (langel)
Syn. langel of MCL = croceus of K&R = acutoconica of Moser (M36)
Most often 2-spored, but largely 4-spored collections can also occur, uncorrelated with other characters of colour or habitat fide Arnolds.
Very large spores arise from the not-infrequent 1-spored basidia.

Differing only in cap scarlet or orange-red when young, gills usually more orange, stipe usually more reddish (not worth a name for Boermaann)
In dunes or dry limestone grassland
persiscens v.cupulidata (Peck) Arnolds C2796? (aurantiolutescens)
Syn. aurantiolutescens Orton 1960 p.267, desc. from dunes

Differing in subglobose spores 9.5-12x7-10.5, =12.1-1.5
Normally yellow. Only two collections at K, both det. Reid, one the material of RP64, which looks exactly like the subglobispora of RP65, though both are cited by Arnolds for their respective species
konradii R.Baller B157, Bon107,C1995, CD197, RP64
[Cap red-tinted in f.pseudopersiscens Bon107, CD198. British?]

As last but gills ± white to pale yellow
For Boermaann no other differences, and hence a form, but see below.
Cap normally yellow (red when young in f.uraniatorubra, British?)
Can look very like conica, but refuses to blacken. Uncommon fide Orton
subglobispora (P.D.Orton) Boermaann B157, C2444, M37, RP65
Desc. (as species) Orton 1960 p.267
(Fide Arnolds differs also from konradii in young cap more acutely conical, in having more primary gills (40-38) rather than 19-36) and in stipe pellis with substantial ixocutis to 100µm, rather than only 30µm

b) Cap orange flushed with red; cap and stipe strongly fibroellise

Robust species, cap 5-8cm. Smell 'of meal' (Keal, 'mushroomy' (RP)
Spores 8-12x5-8. 'Among grass on calcareous slopes with junipers' (Bon)
Widespread but uncommon except in W.Scotland
intermedia (Pass.) Fayod
B149, Bon105, C320? (cap too smooth - Boermaann), CD195, M37, RP62
[Orton 1960 describes chellocytydia, but Arnolds could find only pseudocyttidalia (projecting hyphal ends) and even these usually absent]
c) Cap dark brown (sometimes nearly black with age)

Dark brown v. viscid cap (the name means 'date-brown') contrasting with bright yellow gills and stipe

Rare in damp calcareous grassland ('limestone or basalt' Bon), never seen by Rea. Until recently only 3 collections at K (Colonsay, Cumberland, Cheshire), though presumably more at K. But several records from the S.Devon coast, 1994-95. Category A on provisional Euro. Red Data List, 'Vulnerable' on British list (spadicea) (Scop.) P.Karst. B151, Bon105, C672, CD193, M14

Differing in pure white gills and stipe

Described from America, known in Denmark and Germany

[spadicea x albifolia (Wesler & A.H.Smith) Boerst.] D4165 (spadicea)

2. Section Microsporae Boerst. Spores (from 4-spored basidia) under 9μm

approx. = Sect. Obrusaeae s.Bon)

Cap 2.5-7(-9)cm, lemon or golden yellow, sometimes with greenish tinge, slightly fibuliform when old. Often with the acute and splitting build of H.calyptroforis

Spores 7-9x5-6; with tapered pseudocystidia (hypal ends) projecting up to 65μm from gill edge. Usually stoutier and less fragile than the conspecific chlorophana, as well as less glutinous. Uncommon or overlooked citrinovirens (J.Lange) J.Schäff. (-FAN) B139, C651, L165A, M114

Syn. obrusseea s.NCL, Kühner, Moser non Arnoldis C161, CD196, M7

Syn. brevispora Moller (spores only 5-8.5x4-6 Fide Arnoldis) C117

Syn. cysidiata Arnoldis

[Gill tran section elements only 150-500μx15-30μ, very short for this subgenus]

Caps pink (unmistakeable)

Occasionally. Possibly commoner in Britain than elsewhere in Europe. A snow-white form is also known (= var.niveus Cooke) 'Vulnerable' on provisional British Red Data List calyptraformis (Berks & Broome) Fayod

B117, Bon102, C1109, CD194, DB122, M26, BP62

[Splet 'calyptraformis' in NCL, FAN]

3. Section Chlorophanae (Serink) Arnoldis

Cap viscid, stipe usually viscid. Cap obtuse unonbated rather than conical, thus resembling the next subgenus macroscopically. Colours lemon yellow to gold or orange

Cap 2-7cm, lemon yellow; cap and stipe viscid

colls consistently lemon yellow. Spores 7-9.5x4-6.5. Common chlorophana (Fr.Fr) Wünsche B141, BKX1, Bon107, C2416, CD183, L166B

[The name implies greenish tinges but these are scarcely apparent. It would better suit H.citrinovirens]

"Differ only in the orange colours of the young basidiocarp; older

specimens of the two varieties cannot be distinguished" Arnoldis in FAN

Known from France and the Netherlands

[chlorophana x aurantiaca Bon] Bon107, L166B (as forma)

Very similar to chlorophana but deeper coloured and less glutinous

"It may be better to regard this as another infra-specific taxon of H.chlorophana" Arnoldis. Distinguished (fide Orton 1960 p.255 footnote) by: stipe drier, gills chrome yellow, spores narrower. Somewhat less common? (not distinguished at all by Boerstmann)

flavescens (Kaufm.) Singer s.auct.Kaprop.

BKX6, C1961 (obrusseea), BD16 (chlorophana), L166C (obrusseea), M24 + M311, Myc.1(3):123,1987

Syn. euroflavescens Bon187, CD182, described in the belief that

Koelmans American flavescens is probably distinct

I know nothing about flavescens s.Favre (C2442), alpine.

Cap 1-3cm, lemon yellow; gills broadly attached, pale; cap and stipe both very glutinous, stipe often darker at apex

Narrower spores than chlorophana, 7.5-8.5x3.5-4.2

grlutinipes (J.Lange) Moller

B143, C1960, CD184, L167E (citrina v.grlutinipes), M3

Syn. citrina (Rea) Lange s.auct.mult. Bon109, M11

7?Syn. H.citrinus Rea s.Rea (TRMS 3:228,1910), no material at Kew, only a water-colour by Rea presumed to be of the type, so a nom. dub.

Syn. aurantiocitrinae Arnoldis s.l Boerstmann.

C1106 (citrinus) is cited by Arnoldis, but for Boerstmann this picture is ceracea NB. Taken here s.Kühner with long gill tran elements, 65-420μx8-13.

For glutinipes Arnoldis with short gill tran elements, 30-160μx23

see insedia

Differing from last only in the bright orange-red cap and stipe

Rare. Known only from Norway, Denmark, France

[grlutinipes v.rubra Bon] B145

Cap small, (0.5-1.5-3)cm, papillate; differing from glutinipes in dry stipe and broader spores 7.7-10x4.5-6.5

Aspect of a small non-blackening red-orange conica. Rare and little known. No authentic British records

[subpapillata Kühner] B147, C24417

Syn. mucronella s.Küh non al.

4. Unplaced Species (within sec. Hygrocybe)

Small fragile red species resembling H.miniata etc. with weak smell of garlic. Gill tran sections of elements 150-500μm long and persistently pale to ± white gills (all similar species have coloured gills with elements only to c.100μm).

Spores 7-11x4.5-6. Damp places on acid soils, esp. with Sphagnum or Calluna. One of the earliest species, from June (Boerstmann). Described 1974. Reported as British in Orton 1984, p.583. Before then probably usually recorded as miniata. Probably not uncommon in upland areas.

halobia (Arnoldis) Bon B135, BKX7, C1542

Syn. miniata s.auct. (? s.NCL) BK92, C6747, RP63

Syn. H.minitidalis s.Moller, see key in Orton 1960 (not then British), a name applied to forms with pure white gills
Subgenus Pseudohygrocybe Bon

Gill trama somewhat less regular than in sg. Hygrocybe and of such shorter elements, usually under 200µm long. Cap usually convex to broadly umbonate, in some species often depressed or even unumbilicate. Gills usually broadly attached (over 2/3 their width).

Acutely conical caps are common in fornicata (pale grey), and can occur in eg raei (small, red, and bitter). A few species are often broadly umbonate and have narrowly attached gills (H.pumicea, H.aurantiosplendens, H.splendissima).

1. Section Menygrocybe Murr. = Tristes of K&R, Singer, C&G

1.1 Subsection Orninae (= Section Oliidae in Bon)

Medium to large, dark grey-brown grassland species. All now rather rare in Britain, mostly in the north and west. All Category B or C on the provisional European Red Data List

a) Smell often of amonia: spores inamylloid

Brusising red then black like Russula nigricans; often with strong amonia smell; whole fr. body v. dark; gills greyish to blackish brown

Cap 2-5cm (Orton), but 8-12cm (Bon); spores broad 7-9(-10)x5-6.5(-7)

Not uncommon: Orton, but only two recs in last 30 years at K, both from Gaitburn, Lances. More at E7

ovina (Bull.-Fr.) Kühner

B79, BK96, Bon113, C1107, CD231, DD114, LI66E, MUJ, RF61

Syn. Hnitiosus s.NCL p.p., distinguished as paler, esp. in the gills, and with slightly narrower spores

Very similar but paler; gills whitish to cream; stem whitish to ochraceous

Desc. from the Faeroes. See NM for more details

ingrata Jensen &oller (-FNM) B77, Bon113, C19547, RF61 (nitrata)

Syn. Hnitiosus s.auct. and p. s.NCL p.p. 4 recs. so named at K may be either this or ovina

Broader spores than last fide Bon, but no difference for Boertmann

Again very similar, but not bruising red, at most slowly blackening

Always with strong amonia smell. Calcific. Not uncommon fide Rea

nitratæ (Pers.) Wünsche A91/11, B75, BK94 (murinaeas), C6622, LI65E

[Exc. RF61 = ingrata]

Syn. murinaeas s.Moser

b) Smell usually, usually strong: spores amyloid (I)

Very slowly bruising red as above; spores, as well as being amyloid, are smaller than in the species above, 6-8x3-4

Can grow very large, 5-15cm, but greatly resembles the Orinae

Porpoloma metadum (Fr.) Singer (-FNM) Bon163, C1103, M830, MUJ

Syn. Hygrophorus m. in NCL, Hygrocybe m. in Moser

[Placed by Orton & Watling 1969 in a section of its own, Amylohygrocybe, within Hygrocybe, but now excluded from the genus entirely. Will eventually be described in FNM in the tribe Tricholomatae] 13

1.2 Subsection Fornicatae

Not separated for Boertmann, but a section on its own for Arnold, who makes the Ovinrea a subsection of the Coccineae

Cap dry to subviscid, smooth, whitish to grey brown; stipe dry

Here treated as a single species, following both Arnold and Boertmann.

"In the present concept a rather variable taxon, especially in the colour of the pileus and the size and shape of the spores" FNM. Bon 1976 distinguishes four species: fornicata, clivalis, streptopus and distans, based on variations in cap colour and shape, said to be correlated with spore size and ecology.

Cap 2-5cm, dry, whitish except at disc in the type var., ± conical, margin often eventually revolute (whence the name 'fornicata' = arched). Spores from 5.5-6.5x4-4.5 in some collections to 7-8x5-5.5 in others.

Chiefly in Scotland (Bon), born out by the mainly old recs at K. Usually (always?) on calcareous soils

fornicata (Fr.) Singer B73, Bon113, C1104, CD230

Syn. clivalis of Rea, NCL, though 'plainly different' for Orton in his 1960 key (with yellowish tints, spores only 5-6x3-4)

?Syn. lopidopus, similar but scaly, see Excluded Species

Cap largely pale grey to pale brown ('differing mainly in darker pileus colours' FNM). Not distinguished in NCL or by Boertmann

fornicata v.streptopus (Fr.) Arnold B73, Bon113, C669, LI65C

Syn. fornicata s.RAR. A distinct species streptopus for Moser 'Seemingly the commoner form in Britain, though both occur.

Similar appearance, but smell mealy; spores strongly amyloid

In calcareous alpine pastures

[Porpoloma pas-caprae (Fr.) Singer] BK398, CI6120, CD465, MUJ

b) Smell usually, usually strong: spores amyloid (I)

Very slowly bruising red as above; spores, as well as being amyloid, are smaller than in the species above, 6-8x3-4

Can grow very large, 5-15cm, but greatly resembles the Orinae

Porpoloma metadum (Fr.) Singer (-FNM) Bon163, C1103, M830, MUJ

Syn. Hygrophorus m. in NCL, Hygrocybe m. in Moser

[Placed by Orton & Watling 1969 in a section of its own, Amylohygrocybe, within Hygrocybe, but now excluded from the genus entirely. Will eventually be described in FNM in the tribe Tricholomatae]

2. Section Glutinosae Kühner

Cap and stipe more very glutinous (exception: dry cap in irrigata) Small species with caps under 5cm (rarely larger in H.unguinosa). Clamps often lacking or confined to medallion clamps at the base of basidia (most other Hygrocybe spp. have clamps).

a) Gills without a viscid edge, usually at most broadly adnate

Cap greyish, 3-6cm, 'smearred with dense fuliginous gluten' (Rea)

The largest of the Glutinosae. The name means 'oily'. Common

unguinosa (Fr.) P.Karst.

B93, BK102, Bon113, C1033, CD229, LI681, MUJ, RF60 (dry and pale)

Syn. irrigata s.Boertmann

Strongly resembling H.unguinosa, except in the dry cap (for Boertmann not worth distinguishing, he uses this earlier name in place of unguinosa)

irrigata (Pers.-Fr.) Bon

1) Accepted by Arnold, who cites Cke 903(919). He writes: "may only be a form of unguinosa in which the pileipellis is reduced or washed away in part. However such variants have not been observed in related species such as H. laeta or H.psittacina. Apparently v.rare"

2) Included on the strength of a collection recently reported from Wales (Rotheroe, Nyc. 9:107,1995). No other convincing material at K
Cap dry to subviscid, smooth or squamulose; stipe dry and usually smooth (exception: stipe moist in H. insipida s.l., included here by Boertmann)

3.1 Subsection Coccineae (cap distinctly gelatinous or viscid)

a) usually distinctly umboate, gills only narrowly adnate

Species resembling sg. Hygrocybe, where they are keyed by both Orton and Moser, but differing in the short gill trama elements

Robust, in general the largest Hygrocybe, cap 3–10(–15) cm, deep blood-red (the meaning of ‘punicea’) or duller brownish red, paling with age; stem coarsely fibrilllose, yellow or flushed red; flesh and stem base ± white

Sporae 7–10(–15) μm. Common on slightly acid grassland and heathland

punicea (Fr.-Fr.) P. Kumm.

B129, B393, Bon107, C229, CD204, DD123, L167G, MJ38, RP61

Medium, cap 2–5 cm, orange-red when young (pure yellow in f. luteoalveolosus Bon.), soon fading patchily to chrome yellow

Sporae 7–9(–10)x4–5. Constricted in some views. In the field easily confused with the H. persistens group. Small faded punicea can also look similar, differing in the fibrilllose stipe and slightly larger less constricted spores. Compare also quiet with similar spores but a less viscid cap and an oily smell. Not well known. ‘Not uncommon and widely spread’ Orton. Widespread British race at K. Possibly confined to calcareous soils.

Red Dkta list

aurantiosplendens Haller B131, CD206

[Exc. C112, not cited by Arnold, “maybe chlorophana” Boertmann]

See desc. Orton 1960 p.261

b) red to orange species with broadly attached gills

Cap 1.5–5.5 cm. bright red to blood red, ± viscid; sporae 7–11x4–6

Differ in the field from small punicea in gills more broadly attached, cap usually flatter (though a v. umbonata Herink has been described), and in flesh orange to red.

Common
coccineae (Schaeff.-Fr.) P. Kumm.

B117, B833 (+ front cover), Bon109, C670, CD208, L168G, RP61

[+ MJ12 (insipida), but not DD124 (probably splendidissima)]

“Looks very much like a small, rather orange and discoloring H. coccineae” (Boertmann). Sporae somewhat smaller 7.5–9x4–5, in part constricted Distinguished chiefly by the spores. Ecology not yet clarified

parchii (Bres.) Singer s. Boertmann B119, Bon109?, DD209

[Exc. (fide Boertmann) BK91=?, C137=?, RP62=reedii]

non s.NCL, Reid + auct.mult. = reedii

[Recently reported by Walsing from Shetland, but almost all other British records are likely to be of reedii (cap not greasy)]

Similar but arctic/alpine. Bitter taste when well chewed

3) In Rea together with another doubtful unguinosus relative, H. clarkii, with viscid cap and scaly stipe
4) ‘excluded pending clearer definition but possibly distinct’ (NCL)

Cap 1.5–2 cm, normally with a mix of green and yellow colours when fresh, but often ageing pale brown, rarely with violaceous tinges (see B81, MJ2). Some green normally persists at stipe apex even if absent/faded elsewhere

Sporae 7–10x4–6. Common

psittacina (Schaeff.-Fr.) P. Kumm.

B81, BK36, Bon103, C228, CD228, DD115, MJ2, RP64

Cap and stipe initially rich red-brown, drying pale with olive tinges. Gills often rose pink. Differing little from psittacina except in colour, and thus reduced to a variety by Boertmann

Uncommon or overlooked. ‘Very beautiful, densely gregarious’ Masssee (Smith & Watson) Arnold.

B81, Bon113, C1354 (sciophana), CD225

Syn. sciophioides s.NCL, K&R, Moser

Syn. H. sciophioides Rea = sciophana s.Cooke (see Excluded Species)

b) Gills ± arcuate/decurrent, with a viscid edge

Both species can have a nasty smell (esp. when kept in a box)

Cap 1.5–4 cm, pale tawny to flesh coloured; smell ± of burnt parchment

Cap flesh thin, margin pallid/striate. Stipe apex often ± olive

(Distinctly green in f. pseudopsittacina Bon.) Sporae 6–9x4–5. Common

in heathland, often with bracken, also in grass and on moors

laeta (Pers.-Fr.) P. Kumm.

B85, Bon113, C1105, CD226, DD118, L168F.F1, MJ2, RP64

NB. Old psittacina can easily be confused with laeta, but usually has somewhat larger spores

As last but cap bright yellow

Mostly boreal/arctic/alpine. Distinguished from next eg by habitat, persistently yellow cap and narrower spores. Recorded from Lanarkshire, Clyde Valley, c.1992 fide Silverside (pers. comm.)

laeta var.Flava Boertmann. AA3/9, B87

Cap 0.7–2.5 cm, egg-yolk yellow (the name means this) drying whitish; gills deep yellow, arcuate/decurrent; spores broad, 6–8x5–6.5

Fr. body very fragile, usually soon umbilicate

‘In damp mossy grass. Uncommon’ (Orton), esp. with Juniper (Boertmann).

‘On sand, favours acid soils’ (Ged)

vitellina (Fr.) P. Karst. s. Boertmann B91, CD227 (luteolaetiana). RP64

[Exc. MJ12 = cercaea fide Boertmann]

Syn. luteolaetiana Arnold, a name he introduced to distinguish his concept from that of Orton 1964, which had been described with a fertile gill edge and no smell. It is not clear if these are really distinct. If they are, then both occur in Britain: a collection by Malcolm Storey from Wilts 1984 had the smell and gelatinous gill-edge of Arnold’s then unpublished species; Storey similarly regarded it as distinct and deposited it at E as H.nicrolaelaetiana nom.prov.

Note: RP, K&R and Moser all give spores under 5 μm wide for vitellina, suggesting confusion with other species. Orton (1960) p.52 clarified his concept and distinguished it from that of Holler (a boreal/alpine species now = citrinopallida). He maintained his 1960 view that Rea’s much disputed H.citrinus is a probable synonym. However the treatment in Rea 1952 suggests it is distinct (≠ H.glutinipes of this account).
c) waxy yellow species

Cap 0.5-3.5-(-5)cm; fr-body yellow throughout. Spores narrow, 6.5-8x3-4, often constricted. Common fide Rea, probably correctly, but easily confused with other species. 'Not uncommon' Orton 1960. B121, CD211, CD213 + M121 (both vitellina), RP64, W403 (cited in FAN). Syn. citrina Rea = act. BKH2, L67A-L679 (both fide Boertmann) cerea f.rubella, Bon109, is a rare orange form (not known in Britain) paraceracea Bon, CD212, more robust, moist stipe, somewhat larger spores as yet unknown to Boertmann. [If stipe at all viscid and yellow colour tends to fade see next]

d) small red (esp. when young) to yellow viscid species, stipe moist (Insidiaceae of Bon, Glutinosaceae p.p. for Arnold)

Cap 1.5-3(-4)cm, at most broadly umbonate; spores 6-7.5x3-4 when 4-spored. Originally described by Lange as a mild variety of the bitter red. Colours very variable, often yellow to reddish orange, but sometimes scarlet when young. "Red colours very fugacious" Orton. Common (Orton, 1960). Fairly common throughout Britain in pastures (Bon) insidios (J.Lange) Moser B123 + B125, Bon109, L678C [Exc. M121 - cocineae (fide Boertmann)] "Syn. ortoni (Bon) intended to = glutinipes s.Orton 1960 key" "Syn. minutula (Peck) Murrill s.Bon. 4-spored, spores larger 7-10x4-6, reported from France (may be this fide Boertmann) [Cap 'soon discoloring chrome-yellow from centre, but red sometimes persisting at margin in places' (Orton). Contradicted by 'cap typically with orange or yellow margin' (Bon), and so illustrated].

Cap smaller (0.5-2cm), when young scarlet and very viscid; gills paler, almost white; stem apex remaining bright red when old. Spores smaller for Orton, 5-7x2.5-3.5, but Boertmann finds no difference, and does not recognise a separate taxon even at form level. Not uncommon fide Orton. Also reported from France, Norway and Italy insidios f.subminutula (Murrill) = FAN Bon109 C2438, CD217, M37. See desc. (as species) Orton 1960, p.268 [It does not appear to be clearly established whether this European concept is the same as Murrill's American species].

Note: The colours of the paintings of subminutula in Bon and C&D appear exaggerated until compared with the excellent Cetto photo. The three together, supported by Orton’s description, look like a taxon worth distinguishing from Boertmann's admittedly variable H.insipida. Even if the spore differences are not born out, they seem worthy of recognition as a form, and are here listed as such.

Taste very bitter; cap 0.5-2(-3)cm, sometimes umbonate to papillate; spores ± constricted or basally swollen, 7-9.5x4.5. "In the field more similar to miniata than to other Insidioae" FAN, and not assigned to a subsection by Boertmann. Placed here for convenience. Rather uncommon (Orton). Under-recorded? real (Maire).J.Lange Bon109, CD214, DO119, L678A, M121 [Exc. BK100=7, C1108=7 fide Boertmann]

Sy. mucronella (Fr.) P.Karst. s.Lange, Moser, Boertmann, B133, CD215? B121, but non K44, non Rea (better rejected as a non disc.?) Spelling sometimes 'corrected' to reae (eg. Bon, C&D, NM)

3.2 Subsection Eicaceae

Subsection erected by Boertmann 1996 for species intermediate between the Coccineae with a smooth gelatinised pileus and the Squamulosae with a dry scurfy pileus. Cap dry or slightly greasy when young, ± smooth, i.e. with an ungelatinised cutis of repent hypheae.

a) Species with a sweet or oily smell

Like pinaces, but cap drier, characteristically crimson-red, build usually more slender, stem usually smoother, flesh and stem base more distinctively yellow (even 'bright orange' fide Bon). Honey smell when drying 'Acid pastures and heaths' Bon. 'Probably not uncommon' Orton splendidissima (Orton) Srcev (FAN) B95, Bon107, C1325, CD205, M310 (queta). Type desc. Orton 1960, p.265, [Exc. M310, too scurfy, = miniata fide Boertmann]

Syn. marchii s.Reid = act. mult. FREC18A, RP63 "Intermediates between the subsections Coccineae and Squamulosae. It is easily confused with H.marchii and with almost glabrous basidioecarps of H.miniata, but it is well characterised by the peculiar smell, the trichodermal pileipellis with narrow hypheae, and, with regard to H.miniata, by the shape of the spores (not broader in frontal view)" FAN

Cap chrome yellow to orange, ± buttery/waxy when moist. Smell oily, as of lactarius quietus, when bruised, or 'soapy or of washing' (Bon). Size variable, cap 1-8cm. Colour variable, from lemon to dull orange, sometimes developing olive/green tones with age. Gills often more orange than cap. Spores 7-10x4-5, often constricted quieta (Köhner) Singer B99, BK95 (obruseae), Bon109, CI115, CD210 [Exc. NM10 = reidi fide Boertmann]


Syn. obruseae s.Arnolds'. NB. aurantioplendens is similar with similar spores, but lacks the smell; usually more viscid and more acutely umbonate.

b) No smell

Cap 0.5-3cm, usually dark red, but a yellow form is known, ± blackish at disc, with narrow yellow margin, v.fragile. Reported in Watling & Bótheore 1989 from Quendale, Shetland. Sept. 1985. Otherwise known only in Holland and Scandinavia in unimproved grassland phaseococccae (Arnolds) Bon. B97, CD207

Cap 0.5-3.5cm, reddish, like a dry insipida, but spores more constricted Little known, but eg in Danish dunes with Salix repens, and in sandy grassland in Holland. [constrictopus Arnolds] B101. "May be confused in the field with weakly squamulose forms of H.miniata. However the shape of the spores and structure of the pileipellis are quite different" FAN.
c) Caps minute, orange, hygrophanous; spores very small

Cap 1-8mm, orange drying pale; spores 4-5x3-4
Desc. from Jamaica, but not recorded there since. Common in Japan and New Zealand. First European record Bedgebury Pinetum, Kent 1959, on a steep ditch bank among bryophytes, det. Reid. A second record Pembrey, S.Wales 1980, from a 50 year old plantation of Lawson’s Cypress, also det. Reid. Still seemingly unknown elsewhere in Europe
aurantia Murrill (=FAN) FRIC41b
See desc. by Reid in FRIC.6, 1972

3. Subsection Squamosae

Cap dry, soon disrupting finely scaly/scurfy, at least at centre, i.e. in part with trichoderm. Colours red to yellow

a) Gills adnate, at most with a decurrent tooth

Small, bright red; gills normally pale; faint scent of garlic; gill trama of elements 100-500μm long............See above 5g. Hygrocybe, H. hellobia

Spores large, 9-12x5-7, usually at least half constricted in the middle; basidia 8-10.5μm wide. Otherwise v. like miniata; and named with reference to strangulata Orton, which = miniata (see next). Apparently uncommon. In dune slacks, but also eg ditches in conifer plantations. Also arctic/alpine.
Type from Dorset
substranquiliata (Orton) Orton & Watling (=FAN) B107
[Exc. C1538=7, pilule smooth and greasy]

Type desc. Orton 1960, p.269
Syn. biminiata Kühn.
[v rhyodophylla, B109, deep red, in Greenland and the French alps]
[N.constrictispora, see previous subsection, can appear similar, but has spores only 6.5-10x3.5-5, and basidia only 6-8μm wide]

Gills red or yellow; cap bright red or orange, 1-3.5cm (but 2.5cm wide)
B0n), bleaching pale yellow in parts with age; spores 6-9(-10)x4-6.5, ellipsoid, ovoid or oblong in side view, Q = (1.4-1.5-1.75, most spores broader in face view with a swollen base (pear shaped)
Comm. esp. in somewhat acid heathland
miniatula (Fr.:Fr.) P.Kumm. B103, Bon11, C221, DD125, M79
Syn. H.strangulatus Orton Bon111, FRIC188, RP63

Desc. (type) Orton 1960 p.266; Reid in FRIC.3, 1968
Exc. miniata s.auct.mult. (??n. NCL) = hellobia: B92, C674, RP63?
A name formerly attached to any small dry reddish Hygrocybe; see further discussion in Note p.21

Differing only? in orange yellow colour of all parts, and thus for Boertmann not worth a name

miniata v.mollis (Berk. & Broome) Arnold
B103 (lower), Bon11 (moseri)
[Exc. B103 = calciphila fide Boertmann, C2797 = lepida]
Syn. H.moseri Bon
7Syn. turunda s.Arnolds in FAN and s.Moser fide Boertmann
Exc. H.mollis s.NCL (accepted here by Arnold, but spores uncontricted)

Often differing from miniata in smoother cap and light yellow gills (at least when young more orange later). Better distinguished by the spores ellipsoid to ovoid, Q = 1.25-1.45, not swollen in face view. Also differing sharply in habitat: dry calcareous grassland (esp. upland)
One rec. at K from Surrey 1992 det. Laesarro
calciphila Arnold B105, BK93? (miniata v.mollis). CD219
[Exc. BK79 = fide Boertmann]

7Syn. H.mollis s.NCL (see Orton 1960 key) Cke 910(921b)
[See miniata s. Orton is widely described as a syn. of calciphila, but this is a view not accepted here, see note p.21]

b) Gills ± strongly aruncate/decurrent

Three small species, esp. in moss on fairly acid soils, all rather similar. Spores around 9.5-11.5x5.5-7, but variable. Boertmann finds occasional intermediates

Cap 1.2-3cm. Squamules concolorus
Stipe long and slender. Named for the chanterelle gills. Not uncommon in acid mossy grass or sometimes in sphagnum

Cantharellus (Schwein.) Murrill
B111, L167B, M110, C1112, C15407 (turunda), RP63

Syn. lepida Arnold BK90, CD222

Syn. turunda v.lepida in Rea
7Syn. mucronellus s.Cooke, Rea non al. (see Excluded Species)

NBL1 lepida here means ‘charming’ fide Rea, rather than ‘scaly’
NR2 lepida s.Bon (Bon111) with cap 4-7cm and spores 11x8 must be some other species. Its spores are shown slightly warted

Cap and scales ± orange, but the scales darkening with age
Uncommon in Britain. Orton 1960 cites only collections from Scotland in damp moss or mossy soil, but not sphagnum. Since reported from eg Ilkley Moor, Warwicks, Windsor, Bedgebury (mostly det. Reid)
turunda (Fr.:Fr.) P.Karat. (=FAN) B111, Bon111?, CD223
[Exc. C1540 probably = cantharellus fide Boertmann]
Desc. Orton 1960, p.270
Exc. turunda s.Lange, KAR = coccineocrenata

Exc. turunda s.Moser, Arnoldis = miniata v.mollis

Cap ± scarlet, 1-3cm, with darker scales, margin often crenate; gills usually very strongly decurrent
In wet boggy places, esp. under Holinia or with sphagnum. Only the type and one other collection at K
coccineocrenata (Orton) Moser
B115, BK1017 (turunda v.sphagnophila), Bon11, C1541, CD224

Syn. turunda s.Lange, KAR etc (non NCL, nec Arnoldis) L168B = L6879
Type desc. Orton 1960, p.262
[Arnolds also recognizes a v.sphagnophila with paler scales, less decurrent gills and margin not crenate; this is ignored by Boertmann]
A note on *Hygrocybe miniata*

In preparing this account it was in general easy to relate the treatment by Orton in *NCL* to the later ones by Arnold and by Boertmann. They both use a broad species concept, while Orton abhors forms and varieties, so there are differences, but it is usually clear what taxa are being discussed. The major exception was the *H. miniata* complex.

In 1960 when *NCL* was published, there was no surviving type material of *H. miniata*. Orton’s *NCL* concept was of a rather uncommon species with bright red scaly caps and unconfined spores. In *NCL* he also included a newly described species, *H. strangulatus*, common in heathland, with caps at most minutely scurfy and constricted spores. In 1986 Arnold’s neotype identified *H. miniata*, using material from Fries’ type locality (Pensjö). The material he chose proved identical with an isolate of Orton’s *H. strangulata*. Now that Arnold’s concept is generally accepted, *H. strangulata* perforce becomes a synonym of *H. miniata*.

This makes sense, since a species as common as *H. strangulata* should have had a name before 1960. But it leaves some unease that the epithet ‘miniata’ which should mean ‘painted with red lead’ has been attached to a species that is more usually orange-red. It also raises the question of what to call Orton’s *H. miniata*. Arnold’s had described a rather similar uncommon species, *H. calciphila*. In correspondence with Orton he established that many of Orton’s *H. miniata* were from calcareous soil, and (Arnold 1986b) thought it likely these were identical. But in Arnold’s 1986a (written later?) he writes “Orton’s collections of *H. miniata* studied by me (preserved at K) do not contain *H. calciphila* (one probably and two certainly he found to be indeed miniata). Nevertheless for some reason in F2H he gives *Hygrocybe miniata* s. Orton as a syn. of *H. calciphila*, a view repeated in BAK, and most recently by Boertmann.

Arnold found that material of *H. strangulata* at K was heterogeneous. As well as *H. miniata* it included *H. marchii* and possibly *H. constrictospora* (not otherwise recognised in Britain). The material of *H. miniata* may well be similarly heterogeneous and contain some *H. calciphila*, but this does not seem to have been established. *H. calciphila* is included here as a British strain on the strength of a Surrey collection det. Laessoe, and not as *H. miniata* s. Orton.

My personal view is that Orton’s *H. miniata* is based on collections of *H. helobia* with coloured gills. This is a bright red scurfy upland species with unconfined spores, rather uncommon in Britain and otherwise unrepresented in Orton’s 1960 key except in its white-gilled form as *H. miniato-albus* Pat. There must also be doubt about Orton’s concept of *H. mollis*, again with unconfined spores, and thus not Arnold’s *H. miniata* v. *mollis* (which Boertmann treats as only a colour form of *H. miniata*). From Orton’s 1960 key it seems plausible that it is his *H. mollis* rather than his *H. miniata* that corresponds to the then undescribed *H. calciphila* Arnold.

**GENUS CAMAROPHYLLOPSIS** Herink 1958

- *Hygrotrama Singer* (used by Moser, published months later)
- Appendice aux Hygrophores (Espèces de position systématique discutable) of K&K

With the decurrent gills, dry caps and dull colours of *Hygrocybe* sg. *Cuphophyllus*, but cap cuticle wholly or partially hymeniform. Clamps absent in all the European species.

Small species, cap 0.5–3 cm, on scrub or sometimes more open grassland. None are common in Britain or elsewhere, but they have been noted as often occurring together. So if any species is found the area within a few metres should be carefully searched for others. See Printz & Laessoe, Svanep 14:83–92,1986 (in Danish) for good photos of all five species (which all occur together at one Danish site).

Subgenus Camarophyllopsis

  (the one British species included in *Hygrophorus* sg. *Hygrocybe* in *NCL*)

Cap cuticle mainly of erect uninflated hyphae. Some pyriform elements also present, but not abundant and lost with age.

Cap grey-brown, 1–3 cm, dry, minutely tomentose/velvety under a lens; spores subglobose 3.5–4.5 μm (too large in *Moser*).

Gills thinner and paler than in other species, first white, then light brown, broadly adnate, then decurrent. "Resembling *H. nitrous* in colour and habit... a rather tough little fungus" Orton. Usually in fairly open calcareous grassland.

**schulzeri** (Bres.) Herink FRIC49c
Desc. Orton 1960, p. 364

With *Larix fide* K&K, true of the type collection, but atypical.

Subgenus Hodophyllus (R. Hein) Arnold


Cap cuticle ± entirely hymeniform, i.e. formed of a pellissle of pyriform cells. Caps 0.5–2 (–2.5) cm. Gills strongly decurrent, eventually chocolate brown.

The species are very similar, each having only a single strong character to distinguish it from the rest. Spores small, subglobose, mostly in the range 4.5–5.5 μm, but can be larger in toetens.

Smell very strong, unpleasant, foetid (like *Tricholoma sulphureum* or *Thelephora palmaea* for *Moser*)."
"Known by its small size, umber cap and abominable smell" Hassell
*foetens* (Phillips ex Berk. & Broome) Arnold’s Bon175, L166M, K31 Syn. *Opellinia* abhorrrens Berk. & Broome
Upper part of stipe covered in small grey-brown scales
"amongst bracken in woods and on heaths" W&D
atropuncta (Pers.:Fr.) Arnolds
Bon171, C2798, CD624, FR1C664, L166A, W&D29

Stipe bright yellow to brownish yellow at least at apex, later browning
On basic clay soils roadside at Orton
micaeae (Berk. & Broome) Arnolds NJ2
Syn. phaeoxantha in Hoser
See desc. Orton 1988 p.559, where combined as Hygrocybe m

Without yellow tones, cap and stipe pale grey to brown, blackening with age
Recs at K from Waddingley Woods, Cambs 1955 and Box Hill, Surrey 1993
hymanoscypha (Smith & Nesi) Arnolds (-FAM) NJ1 (rather pale?)
See desc. Hora & Orton 1955 p.402
?Syn. phaeophylla (Romagn.) Arnolds, NJ2, colours paler, spores smaller?
(included in FAM, where the differences are discussed)
(Rather weakly separated from micaeae)

GENUS DERMOLOMA (J.Lange) Singer 1951

Species differing from Hygrocybe in having a hymeniform cap cuticle,
giving a dry, velvety cracking cap. Basidia rather short for
Hygrophoraceae, hence previously placed elsewhere (e.g. by Kühner near
Tricholoma, and by Singer near Hydrops in the Mycenaceae.

The most closely related genus appears to be Camarophylospis, with a
similar cuticle. They may be separated as follows:
-Gills broadly adnate to decurrent; clamps absent; spores inamyloid
Camarophylospis
-Gills adnected to sinuate; clamps present (except in occasional 2-spored
collections); spores amyloid or not
Dermoloma

Caps grey to brown. Smell mealy, at least when cut or bruised, in all
the British species. In unimproved grassland or wood margins, but not
known in British dunes.

Orton 1980 gives a key to 6 British species. The treatment here follows
Arnolds in FAM Vol.3, where these are treated as 3 species and a variety.

Spores inamyloid
Cap 1-6cm, light or dark grey brown, scarcely hygrophanous. Spores
4.5-7.5x3-5. Much the commonest British species
cuneiform (Fr.:Fr.) Bon BX206, CD641, L31B, MJ1, Persoonia 14:520
Syn. atrocinereum (Pers.) Orton Bon171, C1928, CD640, MJ1, RM365
This name used in K&R, NCL. A distinct species in Orton 1980, Hoser
(used for dark grey collections)
Syn. fuscobrunneum Orton (see type desc. Orton 1980 p.326)
-Defined for collections with dark brown cap and brown stipe
This is s.Orton 1980, non s.K&R, NCL = pseudocuneiform
[var.punctipes Arnolds, known from Netherlands and France differs only
in a finely punctate stipe apex]
[D.intermedium Bon (Doc.Hyc.9(35):42,1979) is larger, caps 5-8cm]

The remaining species all have amyloid spores, and are all uncommon:
Small, cap 0.7-2.5cm, usually dark brown when moist, but hygrophanous;
stipe 1-3mm wide; gills usually dark; spores 6.7.5x4-5, ellipsoid, Q = 1.5-1.7
Mostly on poor ± calc. soils (by contrast Arnolds in NM says 'rich soil
in decid. forests'). Common fide Bon, but rare for Orton, Arnolds.
Chalk downs, Surrey, Hants + limestones in Devon
Pseudocuneiform Herink ex Bon
Bon171, C1019 (Trich. cuneiform), H832, MJ2
See desc. Orton 1980 p.328
Syn. cuneiform N.KEK, NCL

Larger, paler, ivory to beige, cap 1.5-5cm, stipe 2-8mm wide; gills and
stipe whitish; spores shorter, 5-6x3.5-5, broadly ellipsoid to subglobose,
Q = 1.2-1.4
Uncommon, recs from calc. woods Somerset, Hants, Devon
josserandii Dennis & P.D.Orton C14687 (pragensis)
Type desc. in NCL Pict III, 1960, where considered = Tricholoma
hygrophorus Juss. (nom.nud.)
Syn. D. hygrophorus and D. pragensis (both distinct in Hoser)
Syn. D. glauconitens s.Bon, C&D

As last but cap dark grey-brown, gills and stipe tinged brownish
Indistinguishable from Cuneiformus in the field (also resembles
Camarophylospis schulzera). Wrongly desc. in C&D as always small.
Uncommon. Known to Orton from grassland in Devon, other recs at K from
Glouce., Hants, Kent. Also recorded from Hull
josserandii x phaeopodium (P.D. Orton) Arnolds CD642, MJ27 (pragensis)
Type desc. (as species) Orton 1980 p.327

A further non-British species mentioned in C&D is somewhat puzzling:
D.atrobrunneum (Dennis) Singer ex Bon (CD643), illustrated with ± black
caps, not mentioned in FAM etc. Desc. from Trinidad, no smell, spores
amyloid fide Singer, inamyloid fide Orton.
1. Doubtful Species with British Records

Smaller & look-alike of punicea. Cap 1.5-5.5cm, usually distinctly papillate, yellowing at margin with age. Not well understood ("insufficiently known" Boerntmann). Included in Orton 1960 key and FAN key. Believed to have been reported in Scotland acutopunicea R.Haller & F.H.Holler (FAM) BK78, C1111 (acuta), C2445. But the illustrations cited here look like three different species!

Cap pale ochraceous, 2.4cm, obtuse; cap and lower 3/4 of stipe finely scaly; spores subglobose 5-5.5x4-4.5 (type desc.), 5-7x4-5.5 (Orton) Gills minute/adsnate, distant. In grassland Lepidopus (Rea) Orton & Watling
Type desc. TBM 12:214,1927 Never retracted? Accepted in NCL The type is a single fr.bodies & a Rea watercolour probably of the type are the only material at K. The scales remain clearly visible, but in other respects the description is consistent with fiorisculus

Minute (2-8mm), scarlet to yellow becoming hoary; gills yellow, triangular. Described in Rea with implausible small globose spores 3x3-3

Mucronella (Fr.) P.Karst s.Cooke, Rea nov al. Cke 905(937)B non s.Lange, Moser (= real), nec s.K&R (= subpapillata) 'doubtful' (NCL index). No material at K, but Rea's watercolour of his collection suggests a small lepida

Medium to large, yellow to gold ochrusa (Fr.) Wünsche The same means 'pure gold' and has been widely applied: s.Lange = flavescens, s.NCL = citrinovires. s.Arnolds = quieta

With paler, pinker colours and smaller spores than sciohpamina (is perplexa)
No type material known? Painting by Rea at K (of type?) suggests a thin watery deperasped a laetia. But accepted in NCL sciohpaminoides (Rea) Orton & Watling
Intended as a nom. nov. for sciophana s.Cooke 905(937)A. "Seems to be a related taxon [to perplexa] Arnolds. Possibly represents a aberrant or dried out form of R.pissitacina" Boerntmann.
Only collection at K from the lawn of a University Hall, Bangor 1940 det. Pearson

Small, resembling insipida, not discussed in FAN or by Boerntmann subinipida Murrill Mycologia 3:198,1911
Two unpublished collections at K: a) Orton, Surrey 1951, who thought insipida or 7sp. nov., but assigned here by Pearson. b) in sphagnum, Ilkley Moor, 1959, det. Reid

2. Further very doubtful species included in Hygrocybe in Rea, though mostly unknown to Rea personally. None of these discussed by Boerntmann:

clarkii (Berk. & Broome) W.G.Smith Cke 900(934) 'doubtful' NCL Large 9-10.5 cm for Rea but only 1.5-2 inches for Hasscase. 7= unguisnosa, but spores large, 10x6, and stipe dry. Material at K

connatus F.Karst. 'doubtful' NCL, a Clitocybe? Cap 3-4cm, grey, silky; stipe grey, gills dark grey, recurved; spores 7-8x4-5 pip-shaped; caespitose in woods. A Rea painting at K but no material

distant Berk. possibly = virginesa fide NCL Gills few, very distant. In woods. The type and only record at K looks like praeatis v.pallida. For Bon 1976 near fiorisculus

nitratus v.glauciminens Fr. 'Excluded pending clearer definition' NCL Stiff woodland variety fide Rea Two Berkeley collections at K.

obscuratus P.Karst. 'doubtful' NCL Presumably a member of the Orinaca, reads like nitratus. None at K

turundus v.sphaerospora Rea 'suggests Laccaria bella' NCL Spores warty! Survives only as a Rea painting of a turundalike orange scaly Hygrocybe accompanied by a presumably extraneous Laccaria-like spore. L.bella (Pers.) Berk. & Broome is an orange yellow Laccaria described from rotten conifer wood distinguished by its foetid smell, but also with no material known to survive.

ventricosus Berk. & Broome Cke 897(901) 7= virginesa fide NCL Differs in the swollen stem. Type at K is a stout specimen suggesting praeatis v.pallida. For Parker Rhodes (unpublished list) the flesh of H.ventricosus slowly reddens in Ethyl chlorostannate (!) (said to leave H.virginicus unchanged)

3. Other non-British species

The following is the only species listed in the English edition of Moser that has not been discussed elsewhere in this paper:

parvula (Peck) Murrill (FAM) C1116 For Moser a chrome/orange species near reidii, and Bon 1976 agrees "miniature d'H.marcius". But the Cetto illustration cited by Moser looks like H.cantharellus. Described from and commonly there fide Phillips (Mushrooms of N.America 1991) who pictures an utterly different species, apparently near H.glutinipes. For Boerntmann the American species resembles a dry H.ceracea; he is unconvinced by European records.
KEYS TO GRASSLAND SPECIES OF LEPTONIA s.l.
Alick Henrici, July 1996

Covering species placed by Noordeloos in sgs. Alboleptonia, Leptonia, Omphalotrichia and Paraletotrichia. A few mainly recently described species are included in [ ], although not yet recorded in Britain.

NB. These are very minimal simplistic keys, designed merely to alert readers to the range of species to be considered, and to lead quickly to a range of illustrations and descriptions that might lead to a more secure determination.

Most species lack clamps; where they do occur they are mentioned. Best seen in the narrow hypheae of the cap or stipe cuticle.

Abbreviations


Noordeloos’ Illustrations are always cited and up to four others.

KEY A

Pale species, caps white to cream, pink, yellow or greenish

I Cap and stipe white to cream (all with clamps)
A Stipe short; smell strongly meally (sg.Paraletotrichia)
   1 Cap cream to yelowish; often 2-spored, 9-12.5x6-9..............neglectum
      (Ec.qcanceria of NCL) C2734, L79D, N171, N1c
   2 Cap pure white; 4-spored
      a Spores as last (? in sg. Claudopus)....................rugosum
         (one Brit. rec. at E, Gait Barrows, Lancs) CD967, N72d
      b Spores smaller, ± subglobose; clamps rare..............pallens
         (Don’t know why this is on British list)
   B Stipe elongated; smell none (sg.Alboleptonia)
      Widespread and common; spp. 8-11.5x6-9......................sericellum
         BK78, Bon189, CD959, N45a, RP116

II Cap pinkish
A Cap and stipe rose pink; esp. in dunes with Salix repens.............roseum
      (rare in calic. grassland) BK71, Bon195, CD948, MJ14, N58c
B Cap pink, stipe blue at least at base................................catalanicum
      (uncommon, acid boreal/upland) BK16, Bon195, C2322, N133, N58b

III Cap cream to ochre yellow
A Confusable with discoloured E.sericellum; but - clamps .........kerverni
      (collected by Noordeloos near Kindrogan) BK46, N76b
B For other yellow to yellow-brown species, with cap at least partly
      translucently striate, see Key E

IV Cap and particularly stipe green, at least in part
A Smelling of mice (inc. v.citrina Reid, ± yellow)..................incana
      (fairly common on calic. soils) BK42, Bon195, CD947, N58a, RP116
B Greenish tints can also occur in the stipe of E.exile and
   E.chloropollium, see below Key E
KEY B
Species with a blue-black or violaceous blue gill edge
These are all closely related, differing mainly in colour.

I Cap deep blue or bluish green
A Cap and stipe dark blue, young gills whitish or blue...serulatum
(commonest Leotia in Britain) BK62, Bon195, CD941, M52a, RP117
B Cap paler greenish blue to olivaceous.................quercetula
(2 or 3 British records, eg Null) Bon195, C540, CD941, M56a
II Cap yellow-brown or lilac grey
A Cap yellow- to rust-brown, translucently striate........cansicinctum
(not uncommon in Scotland) BK14, C2324, CD942, HJ25, M52c
B Cap pale yellowish lilac grey.................................carnegiei
(boreal, only Brit. rec. Bk & Br type, Aberdeen 1865) BK15, M52b

KEY C
Species with cap and stipe blue-grey to deep blue to ± black
(Browner species also included here if with violaceous tints)

I Gills also blue (at least when young)
A Stipe base with white tomentum; gill edge sterile, sometimes brown
1 Cap entirely tomentose/squamulose.....................chalybæus v.chalybæus
(uncommon, mainly northern) BK19, C7279, CD944, HJ23, M53a
2 Cap deeply translucently striate..................chalybæus v.lanzulorum
(uncommon, mainly northern) BK20, C899, M53b, RH83, RP117
B Stipe base with coloured tomentum; gill edge fertile
1 Cap deep violet grey, papillate; tomentum orange-red...cyaneatum
(acid heathland, Fort William, Blair Atholl, Moordellos 1961)
2 Cap dark blue black; tomentum sulphur-yellow........cyaneovirensdescens
(only known from Orton’s type, Glen Affric, 1958)

II Gills white when young, later ± pink, strongly contrasting with cap
A Cap deeply translucently striate
1 Minute (to 1cm), deep blue, spores large c.12-14x9-10...cyanium
(in moors, esp sphagnum, eg. Yorks = Inversness 1983) NS4b
2 Larger, violaceous brown, spores c.9x7..............pseudocheilostigma
(eg with Molinia, widespread but rare in W.Europe) BK65, M54a
B Cap not or weakly striate
1 Cap and stipe violaceous grey
a Cap/stipe often fairly pale, gill edge sterile...........mougeoti
(NU, calc. to basic soils) BK25, Bon195, C890, CD946, M56a
b Cap/stipe dark violaceous; gill edge fertile...........microviolaceum
(known only from a few Scottish recs.) Orton 1960 (type desc.)
C Cap and stipe dark blue to blue-black
a Gill edge fertile, cap blue-black..........................atrococerellum
(7 not uncommon in Scotland ride Moordellos) NS6b
b Gill edge entirely sterile
a Cap dark black-blue..........................carneusinus
(uncommon, poor grasslands) BK25, C1428, CD945, M24, M55
** Cap brighter blue, fading to brown...............faurea
d (eg dunes with Salix repens) Orton 1960 (type desc.)
C Cap and stipe purple-black
a Cap almost glabrous, spores 11-14x8-10..................aethios
(esp. on peat, rare) BK6, M56c
b Cap more squamulose, spores only 9-10x6-7.........melamphorochrom
(boreal/subalpine, rare, = aethios s.K&R)

KEY D
Stipe blue to steel-grey or violaceous, but cap brown or grey
I Stipe fibrous, floculose, scaly etc
A With clamps (at least in the hymenium)
1 Cap 1-4cm, spores 6-9 angled, + encrusting pigment......lampros
(s.K&R, Roord. non NCL, uncommon) Bon195, C18647, CD939, M20
2 Cap 0.5-1.5cm, spores 5-6 angled, - encrusting pigment
a spores elliptic.................................................insidiopedum
(paratype collection, Moordellos, Fort William)
b spores smaller, subglobose.................................juniperinum
(rich calc. soils, often among Juniper litter)
B Totally lacking clamps
1 Cap pale brown, stipe ± violaceous......................griseocupreum
(not uncommon in Scotland) BK36, C2327, M314, M36b, RH36
2 Cap dark brown to nearly black
a Relatively robust species of acid heathland........anatium
(uncommon, see desc. Orton 1960) CD951, M53a
b Small species; gill edge sterile.....................coeruleofloculose
(desc. by Moordellos from Blair Atholl, also in dunes)

II Stipe smooth and polished (at least in the mid section)
A Spores on average under 10µm long
1 Gill edge fertile
a Yellow-brown, stipe pale blue (poor soil)...............lividocyanum
(upland grassland) BK49, D2529, M60b
b Pink-brown, stipe deep blue (rich soil), habit amphialloid
(eg.Omphalopis = L.lepontinae of NCL)...incurvatofuscescens
(parks and gardens) BK43, Bon189, C1867, CD960, M85a
2 Gill edge sterile
a Gill deeply striate........................................porphyrogrisum
desc. from calc. grassland with Salix repens, Denmark
b Gill scarcely striate........................................poliosopus v.parvisspergerum
(in & calc. soil, rare but widespread) BK62
B Spores on average over 10µm long
1 Gill edge fertile
a Stipe grey-violaceous; all many basidia 2-spored........hujsemannii
(mainly on rich basic soils) BK41, M70v
b Stipe steel-blue; 4-spored..................................knightii
BK11, C2728, CD949, M60a, RH36b
2 Gill edge sterile
a Cap dark brown, scarcely striate
** Gill edge darker; stipe intensely blue..poliopus v.poliosopus
(locally not uncommon?) CD950, M62b
** Gill edge concolorous; stipe paler..poliosopus v.discolor
(widespread but rare, type from Perth, also the Burren)
b Cap paler brown, deeply striate
** Cap brown, not hygrophanous............................nodosale
(boreal/montane = lampros s.NCL) BK84, C2367, M62a
** Cap beige with pink tones, hygrophanous..............metabolites
(lowland woods or grassland) BK43, M61