

British Dermateaceae: 2. Naevioideae

MARIJKE M. NAUTA¹ & BRIAN SPOONER²

¹*Rijksherbarium / Hortus Botanicus, P.O. Box 9514, 2300 RA Leiden, The Netherlands*

²*Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE, UK*

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This is the second part of a synopsis of the British Dermateaceae which aims to provide keys and descriptions for subfamilies and genera, and keys to species for all genera except *Mollisia* and *Pyrenopeziza*. The first part of this synopsis (Nauta & Spooner, 1998) provided an introduction to the family, with a key to subfamilies and annotated lists of included genera and synonyms and of excluded genera.

As noted in the Introduction, the subfamily Naevioideae is probably heterogeneous, including a number of genera with reduced excipular development whose true affinities are difficult to interpret. Further study is required to achieve a more precise delimitation of the subfamily. Changes to the 'traditional' classification of the following genera are proposed:

Coleosperma Ingold, *Crustomollisia* Svrček: placed here because of their pale-walled outer excipulum.

Duebenia Fr.: referred by Korf (1973) and Hein (1976) to Leotiaceae but here included in Naevioideae because the excipular structure is similar to that of other genera in this subfamily.

Pseudonaevia Dennis & Spooner: considered by Dennis & Spooner (1993) to be related to *Laetinaevia*. Not here placed in Naevioideae due to the presence of brownish basal tissue. It is apparently more closely related to *Micropeziza* and, like that genus, is referred to Dermateoideae.

Trochila Fr.: not included in Naevioideae, in contrast to Hein (1976), because of the well developed brown excipulum; regarded here as better placed in Dermateoideae

Naevioideae Nannf., Nova Acta Reg. Soc. Scient. Ups. IV(8): 186, 1932.

Apothecia developed either within or beneath the host epidermis, later often (partly) erumpent, sometimes remaining immersed, 0.1-1

mm diameter. Hymenium when fresh wax-like, light-coloured or bright-coloured, mostly translucent, yellow or orange to reddish-brown or blue-green; receptaculum varying from pale-coloured to brownish, sometimes not visible. Outer excipulum at least near base a *textura angularis* or *textura globulosa*, consisting of almost hyaline to pale yellowish-walled elements, marginal excipulum sometimes brown; hairs lacking (but marginal setae present in *Chaetonaevia*). Asci clavate, I + or I - (i.e. pore blue or not in Melzer's reagent), (2-)8-spored; spores 0-3-septate, broadly clavate or ellipsoid, hyaline, rarely becoming pale brown, [7-54 x 1.5-10 µm in British representatives]; paraphyses filiform, commonly enlarged at the apex.

Conidial state sometimes present, in form genera *Chrysosporium*, *Cylindrocolla*, *Phialophora* or *Trichosporiella*.

Saprophytic, mostly on stems and leaves of dicotyledonous herbs, rarely on woody substrata, on monocotyledonous plants, or on brown algae.

Key to genera of Naevioideae recognised in Great Britain

1. Apothecia bearing distinct marginal setae; setae hyaline, with lumen to apex, non-septate; asci 4-spored (*nannfeldtii*) or 8-spored (not recorded in Great Britain) **Chaetonaevia**
- 1'. Apothecia lacking setae; asci (2 - 4) 8-spored 2
2. Surface of lower excipulum covered with yellow-brown to red-brown amorphous crust (observed in water); apothecia on decaying leaves of broad-leaved trees **Crustomollisia**
- 2'. Surface of lower excipulum not covered with pigmented amorphous crust (sometimes excipular elements with slightly granulate walls); apothecia on various substrata 3
3. Spores packed with oil drops and with a delicate gelatinous sheath; asci I-; medullary excipulum strongly gelatinised; apothecia on submerged stems of *Schoenoplectus* **Coleosperma**

- 3'. Spores not packed with oil drops, usually without gelatinous sheath; asci I + or I-; medullary excipulum not gelatinised; apothecia not on submerged substratum.....4
4. Apothecia developed beneath a covering layer of host/fungus tissue, disc exposed by splitting of this layer as teeth or upraised epidermis, later partly erumpent.....5
- 4'. Apothecia without a covering layer, erumpent in early state.....7
5. Paraphyses apically enlarged or capitate and often with coloured contents; ascospores becoming 1 - 3-septate; anamorphs lacking.....**Ploettnera**
- 5'. Paraphyses not or slightly enlarged apically, lacking coloured contents; spores 0 (- 1)-septate; anamorphs present or lacking.....6
6. Marginal excipulum hyaline.....**Naeviopsis**
- 6'. Marginal excipulum brown.....**Naevala**
7. Asci 2 - 6-spored, spores not septate; on *Fabaceae*.....**Duebenia compta**
- 7'. Asci 8-spored, spores 0-3 septate; on other hosts.....8
8. Asci I+ or I-; anamorph *Trichosporiella* or lacking.....**Laetinaevia**
- 8'. Asci I-; anamorph *Cylindrocolla* or lacking.....**Calloria**

Generic descriptions and keys to species in Naevoideae

Calloria Fr., *Flora Scanica*: 342, 1835.

Type: *Peziza fusarioides* Berk. (= *Calloria neglecta* (Lib.) B.Hein)

= *Callorina* Korf 1971

Apothecia erumpent; hymenium orange, wax-like, translucent in wet condition; margin indistinct. Basal excipulum consisting of *textura angularis*, marginal excipulum consisting of elongated elements often bearing brown granulae. Asci I-, mostly narrowly clavate, apex not differentiated, 8-spored; spores sometimes inequilateral or slightly clavate, 0-3-septate. Paraphyses hyaline, slightly enlarged at top.

Conidial state *Cylindrocolla* (*Calloria neglecta*) or unknown (other species). Saprophytic on herbaceous substrata (British species on *Urtica* or *Galium*).

Lit.: Hein, 1976

Number of species: 2 in GB, 5 in total.

Species in Great Britain:

Calloria neglecta (Lib.) B. Hein (= *Calloria fusarioides* (Berk.) Fr.)

Calloria galiorum Dennis

Key to British species of Calloria

1. Apothecia to 1 mm diam.; asci longer than 60 µm
ascospores 10-15 x 4-5 µm. On *Urtica*.....**C. neglecta**
- 1'. Apothecia < 0.5 mm diam.; asci < 50 µm long;
ascospores 7-9 x 1.5-2.5 µm. On *Galium*
.....**C. galiorum**

Chaetonaevia von Arx, *Antonie van Leeuwenhoek* 17: 85, 1951.

Type: *C. nannfeldtii* Arx

Apothecia later partly erumpent; hymenium yellowish. Excipulum thin, a *textura angularis*, consisting of 4-5 layers of small pale yellowish elements, with thick-walled, hyaline setae at margin. Asci broadly clavate, I-, 4-spored (*C. nannfeldtii*) or 8-spored; spores slightly curved, 0-1-septate, hyaline or sometimes becoming brown. Paraphyses filiform, subclavate, hyaline, overtopping asci.

Conidial state unknown.

Saprophytic on leaves of dicotyledonous plants (British species on *Arctostaphylos*).

Lit.: von Arx, 1951; Svrček, 1976, 1982 (non GB species)

Number of species: 1 in GB, 3 in total.

Species in Great Britain:

C. nannfeldtii Arx. Asci 50-65 x 15-22 µm; spores 43-54 x 7-10 µm.

Coleosperma Ingold, *Trans. Brit. mycol. Soc.* 37: 9, 1954.

Type: *Coleosperma lacustre* Ingold.

Apothecia erumpent, hymenium white, wax-like; margin indistinct. Outer excipulum reduced, present only at base and there a *textura globulosa*, consisting of pale yellowish elements; medullary excipulum strongly gelatinised. Asci broadly clavate, with undifferentiated top structure, I -, 8-spored; spores lenticular, non-septate, hyaline, with a delicate gelatinous sheath, with numerous globules. Paraphyses

filiform, agglutinated at top and forming a pseudoeperithecium, hyaline.

Conidial state unknown.

Saprophytic on submerged stems of *Schoenoplectus*.

Lit.: Ingold, 1954

Number of species: 1 in GB, 1 in total.

Species in Great Britain:

C. lacustre Ingold. Asci c. 140 x 18 µm; spores 23-33 x 6.5-9 µm, with delicate gelatinous sheath.

Crustomollisia Svrček, *Sydowia* 39: 219, 1987

Type: *C. roburnea* (Velen.) Svrček

Apothecia erumpent; hymenium brown; receptaculum pale brownish, smooth. Outer excipulum a *textura angularis*, consisting of pale yellowish isodiametric elements, at base covered with yellow-brown to red-brown amorphous crust (in water); perihymenial excipulum consisting of yellowish thick-walled hyphae. Asci broadly clavate, I +, 8-spored; spores ellipsoid, 0 (-1) -septate, hyaline. Paraphyses subclavate, with brown contents.

Conidial state unknown.

Saprophytic on leaves of *Quercus*.

Lit.: Svrček, 1987

Number of species: 1 in GB, 1 in total.

Species in Great Britain:

C. roburnea (Velen.) Svrček (= *Pezizella roburnea* Velen.; ?= *Orbilina mollisioides* Höhn.). Asci 40-52 x 7-9 µm; spores 9-12 x 2-3 µm.

Duebenia Fr., *Summa Veg. Scand.*: 356, 1849.

Type: *D. rubra* Fr. (nom. nud.) (= *D. compta* (Sacc.) B. Hein; *D. purpurascens* (Rehm) Nannf.) = *Briardia* Sacc. 1885

Apothecia erumpent; hymenium reddish-brown, wax-like; receptaculum concolorous. Outer excipulum in lower part a *textura angularis*, consisting of pale yellowish elements, at margin a *textura prismatica*, consisting of hyphae with minutely granulate walls (*D. compta*) or smooth. Asci narrowly clavate, I+ or I-, 2-6 spored (*D. compta*) or 8-spored; spores ellipsoid,

non-septate, hyaline. Paraphyses apically subclavate, hyaline.

Conidial state unknown.

Saprophytic on Fabaceae.

Lit.: Hein, 1976

Number of species: 1 in GB, 2 in total.

Species in Great Britain:

D. compta (Sacc.) B. Hein (= *D. purpurascens* (Rehm) Nannf.). Asci 50-60 x 5-7 µm; spores 8-12 x 3-4 µm.

Laetinaevia Nannf. *Nova Acta Reg. Soc. Scient. Ups.* IV(8): 190, 1932 (nom. cons.)

Type: *Naevia lapponica* Nannf. (= *Laetinaevia adonis* (Fuckel) B. Hein) = *Myridium* Clem. 1909

Apothecia erumpent; hymenium reddish, wax-like; receptaculum brownish. Outer excipulum usually subhyaline, at base a *textura angularis*, perihymenium a *textura prismatica*, consisting of thin-walled elements. Asci usually broadly clavate, I+ or I-, apical structure not differentiated, 8-spored; spores broadly ellipsoid, 0-3-septate, with gelatinous sheath when young. Paraphyses filiform, hyaline, later often agglutinated.

Conidial state *Trichosporiella* or unknown.

Saprophytic on herbaceous substrata, on leaves of trees or on brown algae.

Lit.: Défago, 1968; Graddon, 1977; Hein, 1976; Spooner, 1981 & 1984

Number of species: 4 in GB, 13 in total

Species in Great Britain:

Laetinaevia carneoflavida (Rehm) Nannf. ex B. Hein (= *Calloria carneoflavida* Rehm; *Callorina carneoflavida* (Rehm) Dennis)

Laetinaevia luzulae Spooner

Laetinaevia marina (Boyd) Spooner (= *Orbilina marina* Boyd)

Laetinaevia pustulata Graddon

Key to British species of *Laetinaevia*

1. On marine brown algae (*Ascophyllum* & *Fucus*); spores 2.5-3.5 µm wide **L. marina**

- 1'. On stems or leaves of monocotyledonous or dicotyledonous plants; spores 3.5-5 µm wide.....2
- 2. Spores 30-33 µm long; asci up to 15 µm wide, I-; on *Luzula*.....**L. luzulae**
- 2'. Spores 9-15 µm long; asci up to 13 µm wide, I+; on other hosts.....3
- 3. Asci narrow, up to 75 x 6 µm, I+ blue; on *Quercus* leaves.....**L. pustulata**
- 3'. Asci broader, 30-60 x 10-13 µm, I+ violaceous; on *Urtica* or occasionally other herbaceous stems.....**L. carneoflava**

Naevalea B. Hein, *Willdenowia*, Beih. 9: 83, 1976
Type: *Phacidium minutissimum* Auersw. (= *N. perexigua* (Roberge ex Desm.) L. Holm & K. Holm)

Apothecia developed beneath a reddish-brown or black-brown covering layer, later partly erumpent; hymenium reddish to brownish, translucent; receptaculum brown. Outer excipulum at base a *textura angularis* consisting of thick-walled, pale elements, at margin a *textura prismatica*, consisting of brown-walled elements. Asci broadly clavate, apically undifferentiated or I+ (*N. perexigua*), (2-)8-spored (8-spored in *N. perexigua*); spores ovoid, non-septate, hyaline. Paraphyses filiform, apically slightly enlarged.
Conidial state *Phialophora* or unknown.
Saprophytic on herbaceous substrata or on leaves of dicotyledonous trees (*N. perexigua*).

Lit.: Hein, 1976; Holm & Holm, 1978

Number of species: 1 in GB, 5 in total.

Species in Great Britain:
Naevalea perexigua (Roberge ex Desm.) L. Holm & K. Holm (= *Naevalea minutissima* (Auersw.) B. Hein; *Naevia minutissima* (Auersw.) Rehm). Asci 40-5 x 8-10 µm; spores 7-10 x 3-4 µm.

Naeviopsis B. Hein, *Willdenowia*, Beih. 9: 60, 1976.
Type: *Phacidium epilobii* P. Karst. (= *Naeviopsis epilobii* (P. Karst.) B. Hein)

Apothecia developed beneath a covering layer, in wet condition later erumpent; hymenium yellow to pale brownish, translucent, wax-like; receptaculum not visible. Outer excipulum a

textura globulosa consisting of thick-walled, pale elements, towards margin elements more elongated; at base elements sometimes pale brown. Asci broadly clavate, I+ (*N. tithymalina*) or I-, 8-spored; spores broadly ellipsoid, non-septate. Paraphyses usually enlarged at top to 4 µm and embedded in hyaline gel.
Conidial state *Phialophora*, *Chrysosporium*.
Saprophytic on herbaceous substrata (British species on stems of *Euphorbia*, sometimes *Solidago*).

Lit.: Hein, 1976

Number of species: 1 in GB, 14 in total.

Species in Great Britain:
N. tithymalina (Kunze) B. Hein (= *Laetinaevia tithymalina* (Kunze) Petr.; *Calloria tithymalina* Kunze; *Pseudopeziza euphorbiae* (Berk. & Broome) Masee; *Mollisia euphorbiae* (Berk. & Broome) W. Phillips). Asci 60-80 x 11-14 µm; spores 11-13.5 x 5.5-7.5 µm.

Ploettnera Henn., *Verh. Bot. Vereins Brandenb.* 41: 94, 1899.
Type: *Ploettnera coeruleoviridis* (Rehm) Henn. (= *P. exigua* (Niessl) Höhn.)

Apothecia developed beneath a reddish-brown to blackish-brown covering layer, later erumpent; hymenium reddish-brown or blue-green; receptaculum not visible. Outer excipulum poorly developed, at base a *textura globulosa*, consisting of thick-walled, pale elements, at margin composed of brownish hyphae. Asci cylindrical, I+ or I-, 4-8-spored; spores cylindrical, sometimes curved, 1-3-septate, hyaline, later sometimes pale brown. Paraphyses usually apically enlarged to 5 µm, often with coloured contents.
Conidial state unknown.
Saprophytic on herbaceous or woody substrata.

Lit.: Hein, 1976

Number of species: 3 in GB, 4 in total.

Species in Great Britain:
Ploettnera exigua (Niessl) Höhn.
Ploettnera hyperici (Vestergr.) B. Hein

Ploettnera solidaginis (De Not.) B. Hein (= *Hyalinia ulcerata* (W. Phillips & Plowr.) Boud.; *Laetinaevia tripolii* (Berk. & Broome) Dennis)

Key to British species of *Ploettnera*

1. Substratum with blue-green stain. Asci 8-spored, apical pore I-; paraphyses tips swollen, with blue-green pigment. On *Rubus*. (spores 12-15 x 5-8 µm)...*P. exigua*
- 1'. Substratum without blue-green stain. Asci 4-8-spored, apical pore I+; paraphyses tips swollen or not, lacking blue-green pigment. On other hosts. (spores 11-17.5 x 5-9 µm).....2
2. Asci 4 (-6)-spored; paraphyses apically flexuous, not subcapitate, virtually hyaline; on Compositae).....*P. solidaginis*
- 2'. Asci 8-spored; paraphyses apically often subcapitate, with yellow-brown pigment; on *Hypericum**P. hyperici*

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Correspondence

Amanita zambiana

A note about *Amanita zambiana* in Malawi appeared on the back cover of *Mycologist* 12 (Part 3). In the accompanying photograph the specimen being held by a young boy looks much more like one of the larger species of *Termitomyces*, probably *T. letestui* or possibly a small *T. titanicus*. They have a rough and scaly cap that readily cracks at the edges, whereas *A. zambiana* has a smooth, viscid cap, with a brown centre fading to white at the striate margin. The stout proportions of the stem are also more typical of a *Termitomyces*, from which the long, underground extension, the pseudorhiza, has been broken off.

Although *A. zambiana* would similarly have lost its distinctive, ornamented volva, most usually the whole stem of this species is discarded and only the caps are sold, displayed in heaps at the roadsides and in markets. The larger *Termitomyces* mushrooms are robust enough to withstand handling by children and are typically hawked by boys offering single specimens, as in your photograph.

Their seasons overlap somewhat, but *Termitomyces* spp. are among the very first mushrooms to appear at the beginning of the rains, in November and December. *A. zambiana* mostly occurs later in December and January, and sporadically thereafter until March.

The specimen photographed is clearly over-mature for culinary purposes. At this stage a *Termitomyces* would be heavily but inconspicuously infested with insect larvae at the base of the gills. I have often wondered whether this feature of extremely rapid deterioration explains the nutty or bitter taste that has been ascribed, in the literature, to several of these termite mushrooms. It may also account for the photographer's gastric upset. Nevertheless, in prime condition these fungi are exceptionally good to eat, with a higher than average nutritional value.

G. D. Pearce
75 Wroxham Drive,
Wollaton,
Nottingham NG8 2QR