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## SPOROCADACEAE Corda (SORDARIOMYCETES, ASCOMYCOTA) IN WESTERN EUROPE KEY TO THE SPECIES.

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Used marks:

- = present in Belgium
- = present in Belgium and available in the herbarium of the author
- (●) = not present in Belgium, available in the herbarium of the author

Syn.: *Bartalinaceae* Wijayaw.et al., *Discosiaceae* Maharachch. & K.D. Hyde, *Pestalotiopsisaceae* Maharachch. & K.D. Hyde, *Robillardaceae* Crous

Lit.: Crous et al. 2015: 184 (sub *Robillardaeae*), Maharachchikumbura et al. 2016, Jaklitsch et al. 2016: 96, Liu et al. 2018: .287.

Saprobic or pathogenic on plants in terrestrial and aquatic habitats.

**Sexual morph:** Ascomata perithecial, immersed in bark, globose to pyriform, scattered or confluent; peridium thick, dark brown, pseudoparenchymatous. Paraphyses filiform. Asci cylindrical, containing 8 uniseriate or biseriate ascospores, thin-walled. Ascospores fusoid or ellipsoidal, septate, pale, yellow to dark brown.

**Asexual morph:** Conidiomata pycnidial, acervular or stromatic in most genera, synnematosus or sporodochial in *Synnema pestaloides*, superficial, semi-immersed or immersed, scattered, gregarious or confluent, glabrous, wall of textura angularis, textura globulosa or sometimes of textura prismatica. Conidiophores branched or reduced to conidiogenous cells, mostly hyaline, smooth. Conidiogenous cells ampulliform, lageniform, cylindrical or subcylindrical, hyaline, sometimes pale brown. Conidia septate, smooth, undulate or verruculose, fusoid, subcylindrical or cylindrical, straight or curved; end cells mostly hyaline, or sometimes pale brown; median cells pale brown to dark brown, or sometime almost colourless; appendages on the end cells present, or absent in some genera, if present, tubular, filiform, straight or flexuous, attenuated or not, branched or unbranched.

Genera belonging to this family:

1. *Allelochaeta* Petr.
2. *Bartalinia* Tassi
3. *Broomella* Sacc
4. *Ciliochorella* Syd.
5. *Diploceras* (Sacc.) Died.
6. *Disaeta* Bonar
7. *Discosia* Lib.
8. *Discostroma* Clem. = ?*Seimatosporium*
9. *Distononappendiculata* F. Liu, L. Cai & Crous 2018
10. *Diversimediispora* F. Liu, L. Cai & Crous 2018
11. *Heterotruncatella* F. Liu, L. Cai & Crous 2018
12. *Hyalotiella* Papendorf
13. *Hymenopleella* Munk
14. *Immersidiscosia* Kaz. Tanaka, Okane & Hosoya 2011
15. *Monochaetia* Allesch.
16. *Morinia* Berl. & Bres.
17. *Neopestalotiopsis* Maharachch., K.D. Hyde & Crous 2014
18. *Nonappendiculata* F. Liu, L. Cai & Crous 2018
19. *Parabartalinia* F. Liu, L. Cai & Crous 2018
20. *Pestalotiopsis* Steyaert
21. *Pseudopestalotiopsis* Maharachch., K.D. Hyde & Crous 2014
22. *Pseudosarcostroma* F. Liu, L. Cai & Crous 2018
23. *Robillardia* Sacc.
24. *Sarcostroma* Cooke
25. *Seimatosporium* Corda
26. *Seiridium* Nees
27. *Sporocadus* Corda
28. *Strickeria* Körb.
29. *Truncatella* Steyaert
30. *Xenoseimatosporium* F. Liu, L. Cai & Crous 2018
31. *Zetiasplozna* Nag Raj

### Key to the sexual genera of *Sporocadaceae*:

- 1 Ascospores hyaline ..... 2  
1' Ascospores at least partly brown ..... 3
- 2 Sexual morph: Asci with J+ apical ring. Ascospores uniseriate. Asexual morph: see *Seimatosporium*. Associated with twigs and branches ..... *Discostroma*
- 2' Sexual morph: Ascomata perithecial, immersed in host tissue, solitary or aggregated in cultures, covered by a small clypeus, obpyriform; wall composed of several layers of thin-walled, brown cells. Asci long elliptical, thickened apex and indistinct apical structures J-, with biseriate ascospores. Paraphyses degenerating at maturity. Ascospores biseriate, hyaline, 3-septate, ellipsoid, straight to inaequilateral. Asexual morph: Conidiomata stromatic and acervular, erumpent, unilocular to plurilocular, glabrous, dark brown to black; basal stroma of textura angularis; dehiscing via an irregular split in the overlying host tissue. Conidiophores reduced to conidiogenous cells or branched and septate, hyaline or pale brown at base, smooth, invested in mucus. Conidiogenous cells discrete or integrated, ampulliform, lageniform, cylindrical, subcylindrical, mostly hyaline, or pale brown below, smooth, proliferating percurrently. Conidia fusoid, naviculate, subcylindrical or acerose, straight or curved, euseptate, wall thin and with or without slight constrictions at the septa, smooth; median cells hyaline to medium brown; end cells hyaline, bearing mostly a single appendage at each end, which could be branched; appendages continuous with the conidium body or cellular, not separated from the conidium body by septa, branched or unbranched, branches filiform or attenuated and flexuous; basal appendage excentric, narrowly cuneiform to spike-like, podiform or cellular. Microconidia present in some species, acerose, unicellular, hyaline, smooth. Foliicolous. .... *Allelochaeta*
- 3 Sexual morph: Ascomata solitary or gregarious, immersed under minute clypeus, uniloculate, subglobose to globose, coriaceous, papillate or apapillate, brown. Peridium comprising light yellow or brown, thick-walled cells of textura prismatica in the upper part, and thick-walled, hyaline to pale brown cells of textura angularis in other parts. Hamathecium comprising numerous hypha-like paraphyses, slightly constricted at the septa, tapering towards the ends. Asci 8-spored, cylindrical to cylindrical-clavate, pedicellate, with J- apical ring. Ascospores biseriate or overlapping triseriate, sometimes pale greyish-brown with doliiform median cells and yellowish to pale greyish-brown end cells or brown at maturity, fusoid, glabrous, thick-walled, straight or curved, with pointed ends, 1–3-septate with constrictions at the septa and bearing unbranched, terminal appendages or ornamented wall. Asexual morph: Conidiomata stromatic, acervular to pycnidoid, immersed to semi-immersed, glabrous, brown to black. Conidiophores septate, branched, colourless, smooth, mucous. Conidiogenous cells discrete or integrated, cylindrical, ampulliform, lageniform, annellidic, colourless, smooth. Conidia fusoid, 3-euseptate, straight or curved; basal cell obconic with truncate base, thin-walled, colourless, sometimes pale brown; median cells doliiform to subcylindrical, wall thick, often verruculose, yellowish brown to brown, concolourous; apical cell conic, thin-walled, colourless; apical appendages cellular, unbranched, rarely branched, tubular, filiform, flexuous; basal appendage usually absent, when present, single, occasionally two, tubular, filiform, unbranched, centric ..... *Heterotruncatella*
- 3' Ascospores without appendages ..... 4
- 4 Ascospores with subhyaline end cells ..... 5  
4' Ascospores without subhyaline ends ..... 6
- 5 Asci cylindrical; ascospores muriform ..... *Strickeria*  
5' Asci with J-, apical ring; ascospores multiseptate ..... *Broomella*
- 6 Sexual morph: Asci cylindrical, with 8 uni- to partially biseriate ascospores, containing a flat, V-shaped to sinuous, amyloid apical ring. Ascospores oblong, ellipsoid or fusoid, symmetric, mostly muriform, light yellow- to reddish brown wall and septa more strongly pigmented than contents, smooth, partly turning dull green in Lugol, lacking a sheath. Asexual morph monochaetia-like. .... *Hymenopleella*
- 6' Sexual morph: Ascospores cylindrical-oblong, euseptate, septa often thicker than the wall, yellow- to dark brown, guttulate; asci with amyloid apical ring. Asexual morph: Conidiomata non-stromatic, acervular or pycnidial; conidia versicolorous, median cells 5-6-septate, with a single apical appendage ..... *Seiridium*

### Key to the asexual genera (= sexual morph unknown) of *Sporocadaceae*:

- 1 Conidia +/- without appendages ..... 2  
1' Conidia with one or more appendages; conidiomata coelomycetous ..... 3
- 2 Conidiomata synnematus or sporodochial, determinate, black, not changing colour in 2 % KOH or 85 % lactic acid, arising from a basal stroma composed of textura angularis; hyphae of stipe parallel or those of sporodochia loose; conidial mass black, globose to subglobose, subgelatinous. Conidiophores verticillately to sublaterally branched several times. Conidiogenous cells cylindrical to subcylindrical with annellations. Conidia fusoid with a truncate base, straight, septate, pale olivaceous to pale brown; apical appendage single or absent, when present, unbranched or dichotomously branched; basal appendage single or absent, when present, unbranched or irregularly branched, excentric ..... *Synnemapestaloides*
- 2 Conidiomata stromatic, acervular. Conidia without appendages ..... section A

- 3 Conidiomata stromatic, variable from applanate to pycnidoid, immersed to suberumpent, occasionally appearing as conical blisters, unilocular to plurilocular, glabrous, dark brown to glistening black. Conidiophores mostly reduced to conidiogenous cells, colourless, smooth, invested in mucus. Conidiogenous cells discrete, rarely integrated, clavate, ampulliform, lageniform, narrow conical, subcylindrical, or cylindrical, colourless, thin-walled, smooth. Conidia cylindrical, fusoid, naviculate or subcylindrical, straight or curved, euseptate, cells of varying lengths, colourless, pale olivaceous or brown, smooth, bearing a cellular, unbranched or branched, filiform or attenuated appendage at each end; appendages maintaining protoplasmic continuity with conidium body and characteristically inserted on the basal and apical cells on the concave side of the conidium ..... *Discosia*
- 3' Conidia with conidial appendages otherwise ..... 4
- 4 Conidial appendages, if present, single ..... 5
- 4' Conidial appendages at least several at on end, branched or unbranched ..... section D
- 5 Conidial appendages, if present, single and unbranched .....section B
- 5' Conidial appendages, if present, single and at least partly branched ..... section C

**Section A - Appendages absent**

- 1 Conidia distoseptate ..... *Distononappendiculata*
- 1' Conidia mostly 3-euseptate ..... 2
- 2 Conidia fusoid, straight or slightly curved, 3-euseptate, smooth, not constricted at the septa; basal cell obconic with a truncate or obtuse base, colourless to pale grey; median cells doliiform, pale brown, thick-walled; apical cell conical, colourless to pale grey; appendages absent..... *Nonappendiculata*
- 2' Conidia (1)3(7)-euseptate ..... see *Spororcadus*

**Section B - Appendages, if present, single and unbranched:**

- 1 Conidia with basal appendage ..... 2
- 1' Conidia mostly without basal appendage ..... 5
- 2 Conidia allantoid to subcylindrical, with apical and basal, unbranched, ragged appendage ..... *Xenoseimatosporium*
- 2' Conidia otherwise; appendages, if present, smooth walled ..... 3
- 3 Conidiomata non-stromatic, acervular, black. Conidiophores septate, branched, colourless, smooth. Conidiogenous cells discrete or integrated, cylindrical, subcylindrical, or lageniform, thin-walled. Conidia fusoid, straight or curved, 4-septate, collapsed or not collapsed at septa, smooth; basal cell obconic with a truncate base, colourless; median cells cylindrical or doliiform, thick-walled, pigmented; apical cell conical, colourless; apical appendage single, attenuated; basal appendage single, excentric ..... *Diseata*
- 3' Median cells of the conidia with undulate or verruculose wall ..... 4
- 4 Conidiomata stromatic, variable from acervular to acervuloid, pycnidoid or cupulate, innate-erumpent or erumpent, unilocular with the locule often irregularly convoluted, glabrous, dark brown to black. Conidiophores sometimes reduced to conidiogenous cells, septate, unbranched or branched, colourless, thin-walled. Conidiogenous cells discrete or integrated, ampulliform, lageniform to subcylindrical or cylindrical, colourless, thin-walled, smooth. Conidia fusoid, straight or curved, 3–5-septate, occasionally 6–7septate, basal cell obconic with a truncate base, colourless, thin-walled, smooth; median cells cylindrical or doliiform, thick-walled (including both distal septa), mid-brown to brown, wall smooth, undulate or verruculose; apical cell conical, almost colourless, smooth; appendages cellular, attenuated, unbranched, filiform, tubular or flexuous; apical appendage single; basal appendage single, excentric ... *Sarcostroma*
- 4' Conidiomata acervular, superficial or immersed, pale brown. Conidiophores sparsely septate, branched at the base, often reduced to conidiogenous cells, colourless, invested in mucus. Conidiogenous cells lageniform or ampulliform, discrete or integrated, colourless, thin-walled, smooth. Conidia fusoid with an acute apex and a truncate or obtuse base, straight or slightly curved, 4–5-septate, wall undulate or verruculose, apical and basal cell colourless, median cells pale brown, without or with slight constriction at the septa; apical appendage single, attenuated, flexuous, not branched; basal appendage single, tubular, excentric, unbranched..... *Pseudosarcostroma*
- 5 Conidiomata stromatic, acervular, erumpent, dark brown to black. Conidiophores septate, branched, sometimes reduced to conidiogenous cells, hyaline, thin-walled. Conidiogenous cells discrete or integrated, lageniform, clavate, obclavate, subcylindrical or cylindrical, colourless, thin-walled, smooth. Conidia obovoid, ellipsoid, subcylindrical, pyriform or clavate, straight or curved, smooth, (1)3(7)-septate, basal cell obconic with a truncate base, hyaline or concolourous with median cells, thin- or thick-walled; median cells cylindrical or doliiform, thick-walled, pale brown to brown; apical cell conic with round apex, concolourous with median cell(s), appendage absent in most species, when present, single, unbranched, filiform, tubular, flexuous; basal appendage excentric. .... *Sporocadus*
- 5' Conidia stromatic, acevuloid. Conidiophores septate and branched or reduced to conidiogenous cells, colourless, smooth, invested in mucus. Conidiogenous cells discrete or integrated, ampulliform, lageniform, cylindrical, subcylindrical or irregular, annellidic, colourless to pale brown, smooth. Conidia fusoid, straight or slightly curved, mostly 4-euseptate; basal cell obconic with a truncate base,hyaline to pale brown, basal appendage usually absent, when present, single, unbranched, centric; median cells with thick, smooth or ornamented walls, pigmented and

concolourous; apical cell conical, hyaline to pale brown, apical appendage single; appendages cellular, unbranched, attenuated (see *Pestalotiopsis monochaeta* too) ..... *Monochaetia*

**Section C - Appendages, if present, single and branched:**

- 1 Conidia without basal appendage ..... 2
- 1' Conidia mostly with a basal appendage ..... 3
  
- 2 Conidiomata stromatic, pycnidial or pycnidoid, erumpent, unilocular to variably loculate, often convoluted, glabrous, dehiscing by an ostiole or by an irregular split in the apical wall and overlying host tissue. Conidiophores reduced to conidiogenous cells or with 1–2 supporting cells lining the cavity of the locule, invested in mucus. Conidiogenous cells discrete, ampulliform to lageniform, hyaline, smooth; proliferating sympodially or percurrently near apex. Conidia composed of a conidium body and an apical cell modified into a branched appendage; conidium body ellipsoid, fusiform or subcylindrical, 1-septate, wall smooth, with or without constriction at the septum, hyaline to pale brown, often guttulate; apical cell short cylindrical at base, then dividing into 2–5 branches, branches thin-walled, tubular, filiform, ends pointed or swollen, flexuous, divergent, smooth, hyaline, devoid of contents ..... *Robillardia*
- 2' Conidiomata stromatic, pycnidial, immersed, vaseshaped with a well-defined venter and a long neck, venter unilocular or irregularly divided, glabrous, brown to dark brown. Conidia cylindrical, euseptate; apical cell sub-cylindrical, colourless; median cells almost colourless to pale brown, longer than end cells, smooth; appendage cellular, arising from the apical cell and maintaining protoplasmic continuity with it, branched close to the point of origin; branches 2–4, attenuated, flexuous; basal cell without appendage ..... *Hyalotiella*
  
- 3 Conidiomata stromatic, acervular, pycnidoid, semi-immersed to erumpent, glabrous, brown to black. Conidiophores septate and branched, colourless, smooth. Conidiogenous cells discrete or integrated, subcylindrical, cylindrical, ampulliform or lageniform, annellidic, colourless or almost colourless to pale brown, thin-walled, smooth. Conidia fusoid, ellipsoid, ovoid, clavate, 2-4-septate, occasionally 5-6-septate, wall smooth, sometimes constricted at the septa; basal cell obconic with a truncate base, smooth, colourless; median cells pale brown to brown, concolourous; apical cell without apical appendage, pale brown and concolourous with the median cells, but apical cell with an appendage paler or almost colourless; conidia with basal appendage only, or with no appendages, or with appendages at both ends, filiform, flexuous, attenuated; apical appendage (when present) single, unbranched; basal appendage single, branched or unbranched, excentric ..... *Seimatosporium*
- 3' Conidia with a branched apical appendage and single, unbranched basal appendage ..... 4
  
- 4 Conidiomata stromatic, pycnidoid to undeterminate. Conidia cylindrical to fusoid with an acute or blunt apex and a truncate base, straight or slightly curved, 3–4-euseptate, apical cell hyaline and devoid of contents, other cells hyaline to pale brown, wall smooth, with or without constrictions at septa, suprabasal cell longer than the rest, apical appendage single, arising as a tubular extension of the apical cell and not separated from it by a septum, invariably trifid with 2–4, narrow, attenuated, flexuous, divergent branches; basal appendage tubular, single, unbranched, exogenous, filiform, flexuous ..... *Bartalinia*
- 4' Conidiomata stromatic, acervular, erumpent. Conidiophores sparsely septate and branched at the base, often reduced to conidiogenous cells, colourless, invested in mucus. Conidiogenous cells ampulliform, cylindrical, colourless, thin-walled, smooth. Conidia cylindrical to fusoid with a rounded or obtuse apex and a truncate base, straight or slightly curved, 4-septate, smooth, apical and basal cell colourless, median cells pale brown, without or with slight constriction at the septa, suprabasal cell longer than the rest, bearing appendages; apical appendage arising laterally from the apical cell, 3–5 divergent branches, attenuated, filiform, flexuous; basal appendage single, filiform, unbranched, exogenous ..... *Parabartalinia*

**Section D - Appendages several:**

- 1 Conidia with versicoloured median cells ..... 2
- 1' Conidia with +/- concolorous median cells ..... 3
  
- 2 Conidiomata stromatic, acervular to pycnidoid, superficial to semiimmersed, black, erumpent. Conidiophores, septate, reduced to conidiogenous cells, colourless, smooth, invested in mucus. Conidiogenous cells discrete, cylindrical, lageniform, or ampulliform, colourless, smooth. Conidia fusoid, euseptate; basal cell obconic with a truncate base, thin-walled, colourless to pale brown, basal appendage single; median cells doliiform, trapezoid, thickwalled, without or with slight constriction at septa, pale brown to black, the second and third cell from apex darker than other median cells, the basal median cell verruculose; apical cell conic or semi-circle with a small protuberant apex giving rise to appendages, thin-walled, colourless to pale brown; appendages attenuated, tubular, filiform, flexuous, branched or unbranched. .... *Diversimediispora*
- 2' Conidiophores often reduced to conidiogenous cells. Conidia fusiform, ellipsoid to cylindrical, straight to curved, 4-septate; three median cells doliiform, wall rugose to verruculose, versicoloured, septa darker than the rest of the cell; apical cell hyaline, with one to many tubular apical appendages; basal cell conic to subcylindrical, hyaline or pale brown to olivaceous, rugose to smooth-walled, with single tubular appendage, unbranched, centric (but see *Pestalotiopsis* too) ..... *Neopestalotiopsis*
  
- 3 Conidiophores septate, branched, colourless, smooth, mucous. Conidiogenous cells discrete or integrated, cylindrical, ampulliform, lageniform, annellidic, colourless, smooth. Conidia fusoid, 3-euseptate, straight or curved; basal cell obconic with truncate base, thin-walled, colourless, sometimes pale brown; median cells doliiform to subcylindrical, wall

- thick, often verruculose, yellowish brown to brown, concolourous; apical cell conic, thin-walled, colourless; apical appendages cellular, unbranched, rarely branched, tubular, filiform, flexuous; basal appendage absent (see *Heterotruncatella* too)..... *Truncatella*
- 3' Basal appendage present ..... 4
- 4 Conidiomata stromatic, acervular or pycnidial, erumpent, glabrous, dark brown to black. Conidiophores reduced to conidiogenous cells or unbranched and septate, occasionally sparsely branched, colourless, smooth, invested in mucus. Conidiogenous cells discrete or integrated, ampulliform, lageniform, cylindrical, subcylindrical, conical, or obclavate, mostly colourless, or pale brown in the upper part and colourless below, smooth. Conidia fusoid or sub-cylindrical, straight or slightly curved, 3-septate, wall thin and with or without slight constrictions at the septa, smooth; median cells almost colourless to mid-brown; end cells colourless, bearing single or more appendages at each end; appendages cellular, not separated from the conidium body by septa, branched or unbranched, filiform or attenuated and flexuous; basal appendage excentric. .... *Diploceras*
- 4' Conidia appendages unbranched ..... 5
- 5 Conidiomata acervular; conidia muriformly septate, with several apical and a single (rarely two) basal, unbranched appendage (exception: *M. acacia* has multiseptate conidia) ..... *Morinia*
- 5' Conidia not muriform ..... 6
- 6 Conidiomata acervular. Conidia fusoid to oval, 4-septate, pigmented, usually 2-5 apical appendages arising as tubular extensions from the apical cell, with a centric basal appendage. Not host-specific..... *Pestalotiopsis*
- 6' Conidiomata acervular or pycnidial. Conidia 4-septate, three median cells doliform, concolourous, brown to dark brown or olivaceous, wall rugose to verruculose, septa darker than the rest of the cell; 2-4 tubular apical appendages (mostly 3), arising in an apical crest, but each inserted at a different locus, flexuous, branched or unbranched, with or without spatulate tips; basal appendage single, tubular, unbranched, centric ..... *Pseudopestalotiopsis*

#### **Allelochaeta** Petr.

Syn.: *Vermisporium*, *Discostromopsis*  
 Type species: *Allelochaeta gaubae* Petr.  
 Lit.: Crous et al. 2018: 282.

No Western European species known.

#### **Bartalinia** Tassi

Type species: *Bartalinia robillardoides* Tassi  
 Lit.: Crous et al. 2014: 145.

- 1 *Conidiomata* stromatic, pycnidoid to indeterminate or variable, amphigenous, scattered to gregarious, subepidermal, initially immersed, becoming erumpent, globose or depressed globose to angular, 180-240 µm diam., 80-200 µm high, unilocular, glabrous brown to black, lacking an ostiole; wall to 40 µm thick, of *textura angularis*, cells thick-walled and brown in the outer layers, becoming thin-walled and paler toward the conidial hymenium. *Conidiophores* arising all around the cavity of the conidioma from the innermost wall layer, reduced to conidiogenous cells, invested in mucus. *Conidiogenous cells* ampulliform, hyaline, thin-walled, smooth, 4-8x3-4.5 µm. *Conidia* subcylindrical, 4-septate, smooth, slightly constricted at the septa, (19)21-24(27)x3-4 µm, bearing appendages; basal cell obconic with a truncate base, hyaline; apical cell conical, hyaline, devoid of contents, forming a tubular, branched appendage; apical appendage branches into three unbranched, attenuated, flexuous, divergent branches, (15)16-20(22) µm long; basal appendage single, unbranched, filiform, flexuous, eccentric, 4-7 µm long; foliicolous (*Poa* sp.); phen.: I (IT,NL) ..... **Bartalinia robillardoides** Tassi (1900)  
 Ill.: Crous et al. 2014: fig. 2.

#### **Broomella** Sacc.

Type species: *Broomella umbrina* (Fr.) De Not.  
 Lit.: Ahn & Shaerer 1998: 265, Shoemaker et al. 1989: 309.

- 1 Spores 22-34x5-7 µm, 3-septate, yellow brown central cells, hyaline to slightly yellow end cells, one 6-7 µm long seta at each end; saprobic on stems of *Clematis vitalba*; phen.: IX-V (BE/F, BE/W, IT) ..... ● **Broomella vitalbae** (Berk. & Broome) Sacc. (1883)
- 1' Ascomata subepidermal, globose, (250)300-450 µm diam., papillate; asci 90-120x9-12 µm; spores 18-22(24)x5.5-7 µm, 3-septate, mid-cells red-brown, end cells yellow, verrucose, with one setose 5-8(12)x1 µm appendage at each end; *Truncatella* anamorph with conidia 20-26x6-7 µm, 3-septate, central cells greyish brown, end cells hyaline, with 2-3 apical setae 20-25x1 µm and one basal seta 5-8x1 µm; saprobic on stem of *Clematis alpina*; phen.: VII (CH) ..... **Broomella verrucosa** Shoemaker, C.E. Babc. & E. Müll. (1989)  
 Ill.: Shoemaker et al. 1989: fig. 1-8.

**Diploceras** (Sacc.) Died. 1915, emend.F. Liu, L. Cai & Crous

Type species: *Diploceras hypericinum* (Ces.) Died.

Lit.: Liu et al. 2019: 311.

- 1 Sexual morph: unknown. Asexual morph Acervuli brown, 0.2 mm diam.: Conidiophores septate, branched, colour-less, smooth, thin-walled, invested in mucus. Conidiogenous cells annellidic, discrete or integrated, mostly subcylindrical, 5-15×1-2.5 µm, colourless, smooth or verruculose. Conidia fusoid, sometimes cylindrical, curved, 15-22×2.5-4.5 µm, 3-septate, slightly constricted at septa, smooth, basal cell short cylindrical, trapezoid, thin-walled, hyaline to pale brown, 2.5-3.5 µm long; median cells cylindrical, pale brown, relatively thick-walled, second cell from the base 6-8.5 µm long, the third cell 4-6 µm long; apical cell conic with an obtuse apex, thin-walled, hyaline to pale brown, 2.5-4 µm long; appendages with independent loci of origin, flexuous, attenuated, unbranched, or dichotomously branched at one appendage; 2 apical appendages, 7.5-20.5 µm long; 1-3 basal appendages, excentric, (3.5)8.5-21.5 µm long; mean conidium length/width ratio = 4.8:1. On leaves of *Hypericum perforatum*, *H. tetrapterum*. Phen.: VIII (CH, DE, FR, IT, NL, UK) ..... **Diploceras hypericinum** (Ces.) Died. (1915)  
Ill.: Ellis & Ellis 1985: fig. 1532 (sub *Seimatosporium hypericinum*), Tui et al. 2018: fig. 11.

**Discosia** Lib.

Syn.: *Adisciso* Kaz. Tanaka

Type species: *Discosia artocreas* (Tode: Fr.) Fr.

Lit.: Vanev 1991: 387, Li et al. 2015: 37, Liu et al. 2019: 319.

- 1 Conidia 4-celled, appendages arising just next to the apex and to the base of the conidium ..... 2  
1' Conidia 4-celled, appendages arising next to the two end septa ..... 4
- 2 Two middle cells not equal in length ..... 3  
2' Two middle cells almost equal in length ..... 5
- 3 Lower middle cell longer than the upper middle cell ..... (section *Discosia*) 6  
3' Upper middle cell longer than the lower middle cell ..... (section *Clypeata*) 7
- 4 Two middle cells almost equal in length ..... (section *Libertia*) 8  
4' Lower middle cell always longer than the upper middle cell ..... (section *Strobilina*) 9
- 5 Sexual state: Unknown. Asexual state: Conidiomata 150-500 µm diam. up to 60 µm deep., pycnidial, circular, disc-shaped or plane, sometimes immersed, black, shiny, single, scattered or gregarious. Ostioles 20-45 µm diam., central or eccentric. Conidiogenous cells annellidic. Conidia 4-celled, cylindrical, with cells of equal width and colour, slightly narrowed at the ends, rounded at the apex, truncate at the base, slightly curved or straight, hyaline, 15-20×2-3.5 µm; appendages filiform, unbranched, hyaline, straight, up to 10 µm long. Saprobic on leaves of *Acer*, *Betula*, *Carpinus*, *Castanea*, *Corylus*, *Fagus*, *Juglans*, *Populus*, *Quercus*, *Salix*, *Sorbus*, *Tilia*, herbaceous (*Anemone*, *Oxalis*, *Viola*) and graminicolous. Phen.: (VI)IX-IV (BE/F, DE, FR, IT, UK).....  
..... **Discosia artocreas** (Tode: Fr.) Fr. (1849)  
Ill.: Ellis & Ellis 1985: fig. 378, Liu et al. 2018: fig. 18.
- 5' Sexual state: Unknown. Asexual state: Conidiomata 100-250 µm diam., 20-45 µm high, conspicuous, pycnidial, stromatic, amphigenous, scattered or aggregated and confluent, flattened or concave at the centre with a convex margin and a relatively thin stromatic base, rounded, black, glabrous, epidermal, unilocular or multilocular, with locules separated by cells of *textura porrecta*, ostiolate. Peridium 6-17 µm wide, composed of 3-4-layers, with outer 1-2-layers brown and inner 1-2-layers hyaline, composed of thin-walled cells of *textura angularis*. Ostiole circular, papillate. Conidiophores absent. Conidiogenous cells 2-5×1-3 µm, holoblastic to phialidic, ampulliform, integrated, hyaline, smooth-walled. Conidia cylindrical to allantoid, 10-19×1.5-4 µm, initially hyaline, becoming pigmented to pale brown at maturity, smooth-walled, guttulate, 3-euseptate, thin-walled; with basal cell obconic, slightly truncate at the base and appendaged; 2 median cells subcylindrical, with second cell from the base 4-7 µm long and third cell 2.5-4 µm long; apical cell subconical with an obtuse apex; apical and basal cells each with a single filamentous appendage at the ends, apical appendage 4-10 µm and basal appendage 6-9 µm. Saprobic on dead leaves of *Fagus sylvatica*. Phen.: IX (IT)  
..... **Discosia italica** W.J. Li, J.K Liu & K.D. Hyde (2015)
- 5'' Sexual state: Unknown. Asexual state: Conidiomata 200-500 µm diam., 30-75 µm high, pycnidial, stromatic, epiphyllous or hypophyllous, solitary, scattered to gregarious or confluent, applanate to disc-like, partly immersed or superficial, rounded to irregular in outline, glabrous, unilocular or divided into several locules by tissue cells of *textura porrecta*, ostiolate. Peridium 10-15 µm thick, composed of 5-6 layers of cells, with outer 2-3 layers dark brown, inner 1-2 layers colourless, comprising thin-walled cells of *textura angularis*. Ostiole circular, papillate. Conidiophores reduced to conidiogenous cells, arising from the upper cells of the basal stroma. Conidiogenous cells 4-8×1-3.5 µm, subcylindrical to narrowly flaskshaped, developing directly on the inner-most layer of peridium-wall, phialidic, each producing a single conidium, integrated, hyaline, smooth. Conidia cylindrical to subcylindrical, 13-20×2.5-3 µm, straight or slightly curved, 3-septate, with cells of equal width and colour (yellowish to colourless); basal cell obconic, with a

truncate base; 2 median cells subcylindrical, second cell adjacent to the base 5–9 µm long, the third cell adjacent to the apex 2–4 µm long; apical cell subconical with a rounded apex; apical and basal cells each with a subapical and suprabasal, filiform, flexuous or straight appendage; 6–10 µm long. Saprobiic on dead leaves of *Fagus sylvatica*. Phen.: ? (IT) ..... **Discosia fagi** W.J. Li, J. K. Liu & K.D. Hyde (2015)

- 6 Sexual state: Unknown. Asexual state: Conidiomata stromatic, pycnidial, erumpent to superficial, subglobose to lenticular, unilocular, dark brown, up to 150 µm diam; wall composed of polygonal brown cells. Conidiophores hyaline to pale brown, subcylindrical, 0–1-septate, branched below or not, 7-15x2–3 µm. Conidiogenous cells integrated, terminal, hyaline to pale brown, subcylindrical, 5-8x1.5-2 µm. Conidia cylindrical, 3-septate, pale brown, with an appendage at both ends, (11)14-16(17)x2.5(3) µm; basal cell 2.5–3 µm long, obconic with truncate hilum, second cell from base 5–8 µm long, third cell 3–4 µm long and apical cell 2-3 µm long with obtusely rounded apex. Appendages cellular, unbranched, filiform, eccentric; apical appendage 10-13 µm long, basal appendage 7-11 µm long. On leaves of *Tilia* sp. Phen.: VIII (AT) ..... **Discosia pseudoartocreas** Crous & Damm (2013)  
 Ill.: Crous & Damm 2013: p. 248.
- 9 On *Abies alba*, *Picea abies* ..... **Discosia strobilina** Lib. (1837)

**Diseata** Bonar emend. F. Liu, L. Cai & Crous  
 Type species: *Diseata arbuti* Bonar  
 Lit.: Liu et al. 2019: 314.

No Western European species known.

**Discostroma** Clem. -> see *Seimatosporium* too (unclear if synonyms, type material still to compare)  
 Type species: *Discostroma rehmi* (Schnabl) Clem. = *Seimatosporium ribis-alpini* (Fautrey) Shoemaker & E. Müll.  
 Lit.: Réblová et al. 2016: 132.

- 1 Mature spores pale to dark brown ..... 2  
 1' Mature spores remaining hyaline ..... 3
- 2 Asci uniseriate, IKI+; 1-septate spores 11-14x5.5-7 µm and 3-septate spores 13-16.5x6-7.5 µm present, greyish brown. Saprobiic on twigs of *Rosa* spp.; phen.: VII ..... **Discostroma polymorphum** Brockmann = **Griphosphaeria polymorpha** (Brockmann) Lar.N. Vassiljeva (1998)
- 2' Asci uniseriate, IKI+; spores elongate ellipsoid, 15-18x5.5-7.5 µm, 3-septate, seldomly with a longiseptum, pale brown. Saprobiic on twigs of *Ribes alpinum*, *Ribes petraeum*; phen.: V ..... **Discostroma saccardoanum** (Jacz.) Brockmann (1976)
- 3 Spores mainly 1-septate ..... 4  
 3' Spores with 3 or more septa ..... 10
- 4 Spores up to 4 µm wide ..... 5  
 4' Spores wider ..... 7
- 5 Ascomata immersed, up to 0.25 mm diam., mostly clypeate; spores 18-23x2.5-3.5 µm, 1-septate, hyaline, guttulate. Saprobiic on stems of *Rubus fruticosus*; phen.: X-XII ..... • **"Paradidymella" clarkii** D. Hawsw. & Sivan. (1976)  
 Ill.: Hawsw. & Sivan. 1976: fig. 2.
- 5' Spores up to 14 µm long ..... 6
- 6 Ascomata immersed, with a dark brown clypeus; spores 10-12x2.5-3.5 µm, 1-septate, smooth or slightly roughened, hyaline or subhyaline. On *Holcus lanatus*; phen.: VIII ..... **"Paradidymella" holci** D. Hawsw. & Sivan. (1976)
- 6' Ascomata immersed, up to 0.4 mm diam., clypeate; spores slightly curved, 10-14x3-4 µm, 1-septate, hyaline; saprobiic on stems of *Epilobium angustifolium*, *E. dodonaei*, *E. fleischeri*, *E. hirsutum*; phen.: (I)III-VII ..... • **Seimatosporium tostum** (Berk. & Broome) Rossman & W.C. Allen (2016)
- 7 Spores broadly fusiform, 13.5-18x5.5-7.5 µm, 1-septate, hyaline to weakly greenish. Saprobiic on *Cassiope tetragona* ..... **Discostroma hyperboreum** (P. Karst.) O.E. Erikss. (1992)
- 7' Spores 1(2.3)-septate ..... 9
- 9 Spores ellipsoid, 10-12(13)x4-5(5.5) µm, 1(2-3)-septate, not constricted at the septa, hyaline; saprobiic on bark of twig of *Rosa canina*, *Rosa pendulina*, *Rosa rubrifolia*; phen.: VII-IX ..... **Discostroma rosae** Brockmann (1976)
- 9' Spores ellipsoid, 12-15(17)x5.5-6.5 µm, 1(2-3)-septate, hyaline to pale yellowish. Saprobiic on bark of twigs of *Rosa* spp., *Cornus sanguinea*; phen.: II-X ..... **Discostroma canina** Brockmann (1976)

- 10 Ascomata globose to depressed globose, 300-530 µm high, 320-600 µm diam., single or 2-6 grouped under blackened clypeus, immersed to erumpent, ostiolate. Beak 70-160 µm high, 100-130 µm diam., short cylindrical, with hyaline periphyses. Paraphyses filiform, hyaline, 5 µm wide at the base, septate. Asci 138-193x10-13 µm, J+; spores elongate ellipsoid, 16-25x7.5-11 µm, 3-5(7) transversal septa and 1 longitudinal septum, hyaline. Saprobiic on twigs of *Ribes alpinum*, *R. petraeum*, *R. rubrum*; phen.: IV,VI-VIII ..... **Seimatosporium massarina** (Sacc.) Jaklitsch & Voglmayr (2016) Ill.: Tanaka et al. 2011: fig. 6 & 7j-k.
- 10' Spores mostly 3-septate, seldomly with longisepta ..... 11
- 11 Ascomata immersed, up to 0.4 mm diam., clypeate; spores 19-22(24)x10-13 µm, with 3 transverse septa and one longiseptum, hyaline. Saprobiic on stems of *Arctostaphylos alpina* and *A. rubra*; phen.: VI-VIII ..... **Discostroma propendulum** (P. Karst.) Brockmann (1976)
- 11' Spores elongate ellipsoid, 16.5-20(25)x7.5-9(10) µm, with 3-5 transverse septa and seldomly one longiseptum, hyaline to yellow. Saprobiic on bark of twigs of *Cornus mas*, *Cornus sanguinea*; phen.: VI ..... **Discostroma sanguineae** Brockmann (1976)

**Distononappendiculata** F. Liu, L. Cai & Crous

Type species: *Distononappendiculata banksiae* (Crous & Summerell) F. Liu, L. Cai & Crous.  
Lit.: Liu et al. 2019: 322.

No Western European species known.

**Diversimediispora** F. Liu, L. Cai & Crous

Type species: *Diversimediispora humicola* F. Liu, L. Cai & Crous  
Lit.: Liu et al. 2019: 327.

No Western European species known.

**Heterotruncatella** F. Liu, L. Cai & Crous

Type species: *Heterotruncatella lutea* (H.J. Swart & D.A. Griffiths) F. Liu, L. Cai & Crous  
Lit.: Liu et al. 2019: 327.

- 1 Sexual morph: ... Asexual morph: Conidiophores septate, branched at the base, colourless, smooth, invested in mucus. Conidiogenous cells annellidic, discrete, mostly cylindrical or lageniform, 8.5-23x1.5-4.5 µm, colourless, smooth. Conidia fusoid, straight or curved, 20.5-37x6-9µm, l:wm= 3.5:1, mostly 3-septate, smooth or verruculose; basal cell obconic with a truncate base, thin-walled, hyaline, 2.5-6.5 µm long; median cells 2, cylindrical or subcylindrical, mid-brown to brown, thick-walled, each 5-12 µm long; apical cell conic with anacute or truncate apex, thin-walled, hyaline, 4-6.5 µm long; 3-4 apical appendages, arising at different points, tubular, rough, unbranched or dichotomously branched at one appendage, variable in size, (4)11.5-52(63) µm long; single basal appendage or absent, if present, tubular, unbranched, centric, occasionally dichotomously branched, 4.5-25(44)µm long. On *Spartium junceum*. Phen.: XI (IT) ..... **Heterotruncatella spartii** (Senan.et al.) F. Liu, L. Cai & Crous (2019) Ill.: Liu et al. 2019: fig. 32.

**Hyalotiella** Papendorf

Type species: *Hyalotiella transvalensis* Papendorf  
Lit.: Liu et al. 2019: 347.

No Western European species known.

**Hymenopleella** Munk emend. F. Liu, L. Cai & Crous

Syn.: *Dyrthiopsis* L. Cai et al.

Type species: *Hymenopleella hippophaëicola* Jaklitsch & Voglmayr

Lit.: Jaklitsch et al. 2016: 96, Liu et al. 2019: 349, Samarakoon et al. 2020: 22.

- 1 Ascomata perithecial, immersed, scattered or in small groups, 0.2-0.4(0.5) mm diam., producing inconspicuous irregular bumps with small black dots, short-papillate. Asci cylindrical, (90)97-126(134)x(12)12.5-16(17) µm with 8 uniseriate, rarely more or less biseriate, ascospores, with a short stipe, with a flat, V-shaped to sinuous, amyloid apical ring (4.0)4.5-5.5x(0.7)0.8-1.2(1.5) µm. Ascospores (15.2)17.5-22.5(26.5)x(7.2)8.0-9.0(9.7) µm, Q = (1.8)2.1-2.7(-3.3) µm, oblong, ellipsoid or fusoid, symmetric, ends rounded; on twigs of *Hippophaë rhamnoides*. Phen.: VI-VIII (AT, DE) ..... **Hymenopleella hippophaëicola** Jaklitsch & Voglmayr (2016) Ill.: Jaklitsch et al. 2016:fig. 9.



**Monochaetia** (Sacc.) Allesch.

Type species: *Monochaetia monochaeta* (Desm.) Allesch.

Lit.: De Silva et al. 2017: 123, Crous et al. 2018: 190 (*M. junipericola*), Liu et al. 2019: 353.

- 1 Conidia up to 23 µm long ..... 2
- 1' Conidia longer ..... 3
  
- 2 Sexual morph: unknown. Asexual morph: Conidiomata acervuloid. Conidia fusoid, straight, 17-23x4.5-7 µm, 4(5)-septate, median cells pale to mid brown, apical appendage 7-15 µm, basal appendage centric, 1.5-7 µm long. On living leaves of *Castanea sativa* and *Quercus robur*, *Q. cerris*, *Q. ilex*. Phen.: VI-IX (FR, IT, NL, UK) ..... **Monochaetia monochaeta** (Desm.) Allesch. (1902)  
..... Ill.: Liu et al. 2019: fig. 39.
- 2' Leaf spots small to broad, irregular, pale brown to reddish brown, sometimes confluent, with stromatic and acervular conidiomata on the upper surface. Conidia fusiform to oblong-ellipsoid, 15-19(24)x(5-5)6-5-7-5 µm, 3-4-septate, pale brown but with darker central cells, and each with a colourless, cellular, curved, unbranched, apical appendage variable in length, sometimes also with a short, filiform, basal appendage 1-4(7) µm long. On living leaves of *Quercus* spp. Phen.: II, IX (IT) ..... **Monochaetia saccardoana** (Vogolino) Sacc. & Traverso (1885)  
..... Ill.: IMI n°1936.
  
- 3 Conidia straight to slightly curved, 18-26x6-8 µm, 4-septate, median cells olivaceous or umber, apical appendage 10-38 µm long, basal appendage 3-15 µm long. On decaying leaves of *Castanea* sp. and *Quercus* sp. Phen.: VI (NL) ..... (●) **Monochaetia kansensis** (Ellis & Barthol.) Sacc. & D. Sacc. (1906)
- 3' Conidia 20-26x6.5-8.5 µm, 4-septate, median cells dark or umber, apical appendage 15 µm long, basal appendage present. On decaying leaves of *Castanea* sp., *Corylus* sp. and *Quercus* sp. .... **Monochaetia concentrica** (Berk. & Broome) Sacc. & D. Sacc. (1906)
- 3" Conidiomata pycnidoid, separate to gregarious, erumpent, ovoid, 150-250 µm diam. Conidiophores arising from central stroma, hyaline, smooth, 3-6-septate, branched, subcylindrical, 40-100x3-4 µm. Conidiogenous cells terminal and intercalary, hyaline, smooth, subcylindrical, 10-30x2.5-3 µm, proliferating percurrently at apex. Conidia fusoid-ellipsoid, 4-septate, not constricted at septa, medium brown, finely verruculose, end cells hyaline, (22)25-27(28)x(5)6(7) µm, apical cell terminating in a single, unbranched, filiform, flexuous appendage, 10-20 µm long; basal cell with single, unbranched, flexuous, excentric appendage, 2-15 µm long. Conidiomata with beta conidia developing on OA, beta conidia hyaline, smooth, filiform, curved, apex obtuse, base truncate, 12-22x1.5-2 µm. On twig of *Juniperus communis*. Phen.: IV (DE) ..... **Monochaetia junipericola** Crous & R.K. Schumach. (2018)  
..... Ill.: Crous et al. 2018: fig. 22.

**Morinia** Berl. & Bres. emend. F. Liu, L. Cai & Crous.

Type species: *Morinia pestalozzioides* Berl. & Bres.

Lit.: Collado et al. 2006: 616, Liu et al. 2019: 355.

- 1 Conidiomata acervular. Conidia muriform ..... 2
- 1' Conidiomata stromatic, pycnidoid to indeterminate, amphigenous, erumpent, globose or depressed globose, up to 200 µm diam, unilocular, glabrous brown, lacking an ostiole; wall of brown textura angularis, cells thickwalled and brown in the outer layers, becoming thin-walled and paler toward the conidial hymenium. Conidiophores reduced to conidiogenous cells or with a supporting cell, invested in mucus. Conidiogenous cells ampulliform, hyaline, thin-walled, smooth, 7-12x3-5 µm; proliferating percurrently near apex. Conidia subcylindrical, widest in upper region; (31)33-37(41)x(3.5)4(4.5) µm, 4-septate, smooth (warty with age), slightly constricted septa; basal cell obconic with a truncate base, hyaline; apical cell conical, subhyaline, forming a tubular, unbranched central appendage; apical cell subhyaline, smooth with apical excentric appendage and lateral appendage in middle of apical cell; basal appendage single, centric, 12-17x1 µm; all appendages unbranched, flexuous, cellular, not separated by a septum. On leaves of *Acacia melanoxylon*. Phen.: (FR) ..... **Morinia acaciae** (Crous) F. Liu, L. Cai & Crous (2018)
  
- 2 Conidiogenous cells cylindrical, 10-19x2-3 µm, septate, hyaline. Conidia fusiform, ellipsoid, pyriform, (16)20-25x6-8 µm, with 5-7 transverse septa and 1-3(4) vertical or oblique septa, median cells brown, end cells hyaline, with 2-3 apical appendages 23 µm long and 0(1-2) basal appendages 3-5 µm long. On dead stems of *Artemisia*, *Sedum sediforme*. Phen.: IV, IX (ES, IT) ..... **Morinia pestalozzioides** Berl. & Bres. (1889)
- 2' Conidiogenous cells filiform, septate, 23-42x2-3 µm, hyaline. Conidia fusiform, ellipsoid, pyriform, 25-31(42)x8-10 µm, 5-7-septate, median cells brown, end cells hyaline, (2)3 apical appendages up to 39 µ long and one basal appendage up to 32 µm long. On living stems of *Calluna vulgaris*, *Helichrysum*, *Santolina*, *Thymus*. Phen.: I (ES) ..... **Morinia longiappendiculata** Collado & Platas (2006)

**Neopestalotiopsis** Maharachch. et al.

Type species: *Neopestalotiopsis protearum* (Crous & L. Swart) Maharachch., K.D. Hyde & Crous

Lit.: Macharachchikumbura S. et al. 2013d & 2014: 121.

- 1 Sexual state: unknown. Asexual state: conidiomata 200-400 µm diam, pycnidial, globose, brown, semi-immersed releasing black conidia in a slimy, glistening mass. Conidiophores indistinct. Conidiogenous cells discrete to lageniform, hyaline, smooth, thin-walled, 3-8x2-6 µm, proliferating 1-2 times percurrently, collarete present and not flared. Conidia (40)42-46(47)x(9)9.5-12 µm, fusiform to clavate, straight to slightly curved, 4-septate; basal cell obconic with a truncate base, hyaline or sometimes pale brown, thin- and smooth-walled, 8.5-9 µm long; three median cells (30)31-33.5(34) µm long, brown, septa and periclinal walls darker than rest of the cell, versicoloured, wall rugose; second cell from base pale brown; third and fourth cell brown; apical cell 5-8 µm long, hyaline, conic to acute; with 2-4 tubular appendages on apical cell, inserted a crest at the apex of the apical cell, unbranched, flexuous, (10)16-26(30) µm long; single basal appendage, tubular, unbranched, centric, 11-15 µm long. On decaying leaves of *Pteridium* sp. Phen.: VIII (FR) .....  
 ..... **Neopestalotiopsis magna** (Maharachch. & K.D. Hyde) Maharachch., K.D. Hyde & Crous (2013)  
 Ill.: Macharachchikumbura S. et al. 2013d: fig. 2a-j.
- 1' Asexual state: Conidiomata (on PDA) pycnidial, globose to clavate, solitary, semi-immersed, brown to black, 100-300µm diam; exuding dark brown to black conidial masses. Conidiophores reduced to conidiogenous cells. Conidiogenous cells discrete, ampulliform to lageniform, hyaline, smooth- and thin-walled, simple, apex 2-5µm diam. Conidia ellipsoid to clavate, straight to slightly curved, 4-septate, (19)19.5-25(26)x(7)7.5-9(9.5) µm, somewhat constricted at septa; basal cell obconic with truncate base, rugose and thin-walled, 3.5-5.5 µm long; three median cells (13)13.5-16(16.5) µm long, doliiform, verruculose, versicoloured, septa darker than the rest of the cell (second cell from base pale brown; third cell dark brown; fourth cell brown); apical cell obconic, hyaline, thin- and smooth-walled, 3-6µm long; with 3 tubular apical appendages, arising from the apical crest, flexuous, unbranched, (19)21-31(33) µm long; basal appendage single, tubular, unbranched, centric, 6-23µm long. On wood of *Picea* sp. Phen.: VIII (UK) .....  
**Neopestalotiopsis piceana** Maharachch., K.D. Hyde & Crous (2014)  
 Ill.: Macharachchikumbura S. et al. 2014: fig. 15.
- 1" On twig of *Camellia* sp., imported Cocos. Phen.: IV (FR, NL) ..... **Neopestalotiopsis** sp.

**Nonappendiculata** F. Liu, L. Cai & Crous

Type species: *Nonappendiculata quercina* F. Liu, L. Cai & Crous

Lit.: Liu et al. 2019: 358.

- 1 Sexual morph: unknown. Asexual morph: Conidiomata black, scattered, covered by aerial mycelia, acervular, stromatic. Conidiophores septate, unbranched or branched at the base, colourless, smooth, often reduced to conidiogenous cells. Conidiogenous cells discrete, cylindrical, subcylindrical, variable in size, 3-19x1-3 µm, colourless, smooth. Conidia fusoid, straight, 3-septate, smooth, not constricted at the septa, 13-18x5-7 µm; basal cell obconic with a truncate base, thin or fairly thick-walled, pale grey, 3-4.5 µm long; median cells 2, doliiform, pale brown, thick-walled, ± equal length, each 3-4.5 µm long; apical cell conic with an acute or rounded apex, hyaline to pale grey, 2.5-5 µm; lacking appendages; mean conidium length/width ratio = 2.5:1. On leaf of *Quercus pubescens*, *Q. suber*. Phen.: IX (IT) .....  
 ..... **Nonappendiculata quercina** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 43.

**Parabartalinia** F. Liu, L. Cai & Crous

Type species: *Parabartalinia lateralis* F. Liu, L. Cai & Crous

Lit.: Liu et al. 2018: 358.

No Western European species known.

**Pestalotiopsis** Steyaert

Syn.: teleom. *Pestalospaeria* M.E. Barr, *Pseudopestalotiopsis* Maharachch. et al.

Type species: *Pestalotiopsis guepinii* (Desm.) Steyaert

Lit.: Sutton 1980: 263, Ellis & Ellis 1985: 108 etc., Macharachchikumbura S. et al. 2012: 95, Macharachchikumbura S. et al. 2014: , Wang Z.H. et al. 2017: 1802, bladmineerders.nl, Liu et al. 2018: 361, Phukhams. et al. 2020: 173.

- 1 Conidia 4-9 µm wide ..... 2  
 1' Conidia wider ..... 14
- 2 Apical appendage(s) up to 15 µm long ..... 3  
 2' Apical appendages up to 30 µm long ..... 7  
 2" Apical appendages up to 40(50) µm long ..... 12

**Conidia 4-9 µm wide and apical appendage(s) up to 15 µm long**

- 3 Conidia up to 20 µm long ..... 4  
 3' Conidia longer ..... 5

- 4 Conidiomata 80-150 µm diam., acervular, subepidermal in origin, with basal stroma, with lateral wall 2-4 cells thick comprising hyaline to pale brown cells of textura angularis. Conidiophores indistinct. Conidiogenous cells discrete, simple, short, filiform. Conidia fusiform to ellipsoid, straight to slightly curved, 16-20x5-7 µm; with short basal cell,

obtuse, hyaline, thin-walled and verruculose, 2.7-3.8 µm long, with one filiform appendage; with three median cells, doliform to subcylindrical, concolorous, olivaceous, with septa and periclinal walls darker than the rest of the cell, together 12.4-13.8 µm long, second cell from base 4.3-5.3 µm, third cell 4-4.7 µm, fourth cell 3.8-4.4 µm; apical cell hyaline, conic, 2.4-3.4 µm long, with two to three appendages, 7-15 µm long; on leaves of *Carpinus betulus*, *Rhododendron ponticum*, etc.; phen.: VII (NL, IT) ..... **Pestalotiopsis adusta** (Ellis & Everh.) Steyaert (1953)  
 Ill.: Macharachchikumbura S. et al. 2012: fig. 5a-h.

- 4' Conidia ellipsoid-fusiform, 15-17x5-7 µm, median cells together 10-12 µm long, umber to olivaceous, guttulate; apical cell hyaline, conic, with (2)3 apical appendages 5-13 µm long; basal cell short, obtuse to rounded, hyaline, with straight 2-5 µm long appendage. On leaves of *Cryptomeria japonica*; phen.: III ..... **"Pestaliotia" cryptomeriae** Cooke (1895)
- 5 Acervuli becoming black and granular; conidia 18-25x7-8 µm, (3)4-septate, end cells hyaline, median cells brown, 1-3 apical appendages 5-12.5 µm long, 1(2) basal appendages 2-5 µm long; on *Eucalyptus botryoides*, *Pinus pinea* (PT) ..... **Pestalotiopsis disseminata** (Thüm.) Steyaert (1949)  
 Ill.: ?Ellis & Ellis 1985: fig. 2018, Liu et al. 2018: fig. 45.
- 5' Sexual morph: unknown. Asexual morph: Conidiophores hyaline, septate, branched. Conidiogenous cells discrete or integrated, cylindrical or sub-cylindrical, hyaline, smooth-walled, 3-24x1-3 µm. Conidia fusoid to oval, straight, 16.5-29x6-9.5 µm, l/wm= 2.8:1, 4-septate; basal cell cylindrical, obconic with a truncate base, hyaline, thin-walled, 3-5 µm long; three median cells doliform or trapezoid, 14-18.5 µm long, smooth-walled, concolorous or the top two median cells darker than the third cell, pale brown to brown, the two median septa usually darker than distal septa, ±equal, each 4.5-6.5 µm long; apical cell 2-4.5 µm long, hyaline, subcylindrical or conical with a truncate or acute base, thinwalled; with 2-4 tubular apical appendages, arising from apex or laterally from apical cell, unbranched, or branched at one appendage, 2-14 µm long; 0-1 basal appendages, when present, tubular, unbranched, centric, 1.5-4.5 µm long. On *Protea*. Phen.: IV (ES) ..... **Pestalotiopsis hispanica** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 46.

**Conidia 4-9 µm wide and apical appendages up to 30 µm long**

- 6 Conidia 15.5-31x4.5-6 µm, 4-septate, with 1-3 apical appendages, unbranched, 5.5-28 µm long, without basal appendage. On stem and leaves of *Camellia japonica*. • **Pestalotiopsis karstenii** (Sacc. & P. Syd.) Steyaert (1949)
- 6 Conidia with (0)1-2 basal appendages ..... 7
- 7 Conidiomata up to 0.3 mm diam. Conidia fusoid, ellipsoid, straight to slightly curved, (21)22-28.5(30)x(5.5)6-7.5(8) µm; basal cell obconic to hemispherical with a truncate base, hyaline, verruculose and thin-walled, 4-7 µm long; three median cells doliform, (13.5)14.5-17.5(-18.5) µm long, wall verruculose, concolorous, olivaceous, septa darker than the rest of the cell (second cell from the base 4-6.5 µm long; third cell 4-7 µm long; fourth cell 4-6.5 µm long); apical cell 3-4.5 µm long, hyaline, subcylindrical, rugose and thin-walled; with (2-)3 tubular apical appendages, arising from the apical crest, unbranched, filiform, (6)8-18(20) µm long; two basal appendages; centric appendage tubular, 3-8 µm long and eccentric appendage tubular, 1-3 µm long. On *Paeonia* sp., bark of *Platanus x hispanica* and *Taxus baccata* dry needles (IT, NL, SL, UK) ..... **Pestalotiopsis biciliata** Maharachch., K.D. Hyde & Crous (2014)
- 7' Conidia with one basal appendage ..... 8
- 8 Conidia up to 8 µm wide ..... 9
- 8 Conidia wider ..... 11
- 9 Acervuli about 0.1 mm diam. Conidia 22-28x6-8 µm, end cells hyaline, median cells pale brown, the upper two often slightly darker than the lower one, with 2-3 apical appendages 10-23 µm long, basal appendage 4-7 µm long. On leaves of ?*Cornus sanguinea*, *Euonymus japonicus*, *Hedera helix*, *Vaccinium*, *Zea mays*; phen.: I, VI, IX-X (BE/F, UK) .....  
 ..... • **Pestalotiopsis neglecta** (Thüm.) Steyaert (1953)  
 Ill.: Ellis & Ellis 1985: fig. 523.
- 9' Apical appendages longer ..... 10
- 10 Conidiomata acervular on PDA, globose, aggregated or scattered, semi-immersed or partly erumpent, exuding black conidial masses. Conidiophores septate near base, simple or rarely branched at base, subcylindrical with a swollen base, hyaline, up to 28 µm long. Conidiogenous cells discrete, cylindrical, hyaline, smooth, 12-25x2-4 µm. Conidia fusoid to ellipsoid, straight to slightly curved, (20)23.5-24.5(27.5)x(5)7.5-8 µm, 4-septate; basal cell obconic, hyaline, smooth and thin-walled, 3.9-7.3 µm long; three median cells doliform (12.2)14.8-15.6(17.3) µm long, smooth, thin-walled, concolorous, occasionally the two upper median cells slightly darker than the lower one, olivaceous to brown, septa darker than the rest of the cell; apical cell 2.4-4.8 µm long, hyaline, conical to subcylindrical, thin- and smooth-walled; with 3-4 tubular apical appendages (mostly 3), arising from the apical crest, unbranched, filiform, up to 20(28) µm long, basal appendage single, filiform, unbranched, centric, 1.4-7.6 µm long. On *Pinus pinea*, *P. pinaster* (PT) .....  
**Pestalotiopsis pini** A.C. Silva, E. Diogo & H. Bragança (2020)
- 10' Conidiomata acervular, punctiform, black. Conidia 24-29x6-8 µm, end cells hyaline, other cells brown, the middle one darkest, with 2-4 apical appendages mostly 20-30 µm long and a basal appendage 6-8 µm long; on dead branches of *Myrica* ..... **Pestalotiopsis oxyanthi** (Thüm.) Steyaert (1949)  
 Ill.: Maharachch., K.D. Hyde & Crous 2014: fig. 38.
- 10'' Conidia fusoid, ellipsoid to subcylindrical, straight to slightly curved, (23)24.5-29(30)x6-8 µm; basal cell obconic to conic with a truncate base, hyaline, verruculose and thin-walled, 4.5-6.5 µm long; three median cells doliform, (14) 16-

- 18.5(19)  $\mu\text{m}$  long, wall minutely verruculose, concolourous or middle median cell is much darker than other cell, olivaceous, septa darker than the rest of the cell (second cell from the base 5-7  $\mu\text{m}$ ; third cell 5.5-7  $\mu\text{m}$ ; fourth cell 5-6.5  $\mu\text{m}$ ); apical cell 3.5-5  $\mu\text{m}$  long, hyaline, cylindrical to subcylindrical, thin- and smooth-walled; with (2)3 tubular apical appendages, arising from the apical crest, unbranched, filiform, flexuous (9)18-27(17)  $\mu\text{m}$  long; basal appendage single, tubular, unbranched, centric, 3-6  $\mu\text{m}$  long. On *Telopea* sp. and seeds of *Oryza sativa*. (DK, IT) ..... **Pestalotiopsis oryzae** Maharachch., K.D. Hyde & Crous (2014)
- 11 Conidiomata acervular, punctiformis, black. Conidia 21-29x7-9.5  $\mu\text{m}$ , smooth, mid to dark brown median cells, and hyaline end cells, 3-6 apical appendages 10-27  $\mu\text{m}$  long, basal appendage 5-14  $\mu\text{m}$  long. On living and dead leaves of *Chamae-cyparis*, *Cupressus*, *Juniperus*, *Pinus*, *Sequoia*, *Thuja*. Phen.: XII-IV (BE/F) ..... **Pestalotiopsis funerea** (Desm.) Steyaert (1949)  
Ill.: Ellis & Ellis 1985: fig. 497.
- 11' Acervuli up to 0.25 mm diam. Conidia fusoid, ellipsoid, straight to slightly curved, (21)22.5-27(28)x(6)-7-9(9.5)  $\mu\text{m}$ ; basal cell obconic with a truncate base, hyaline, minutely verruculose and thin-walled, 5-6.5  $\mu\text{m}$  long; three median cells doliiform to subcylindrical, (15)16-17.5(18.5)  $\mu\text{m}$  long, wall verruculose, concolourous, but occasionally the two upper median cells are slightly darker than the lower median cell, brown, septa darker than the rest of the cell (second cell from the base 4.5-6.5  $\mu\text{m}$  long; third cell 4.5-6.5  $\mu\text{m}$  long; fourth cell 4.5-6  $\mu\text{m}$  long); apical cell 4-6  $\mu\text{m}$  long, hyaline, subcylindrical, thin- and smooth-walled; with (2)-3 tubular apical appendages, unbranched, filiform, (13) 14.5-24  $\mu\text{m}$  long; basal appendage single, tubular, unbranched, centric, 4-8.5  $\mu\text{m}$  long. On leaves of *Chamaerops humilis*. (IT) ..... **Pestalotiopsis chamaerops** Maharachch., K.D. Hyde & Crous (2014)
- Conidia 4-9  $\mu\text{m}$  wide and apical appenages up to 40(50)  $\mu\text{m}$  long**
- 12 Conidia 24-38x5-9  $\mu\text{m}$ , median cells concolourous pale brown, 2-5(6) apical setulae 14-40(45)  $\mu\text{m}$  long, without basal appendage; on leaves of *Camellia sinensis*. ..... **Pestalotiopsis camilliae** Yan M. Zhang, Maharachch. & K.D. Hyde (2012)  
Ill.: Wang Z.H. et al. 2017 : fig. 2 – group II.
- 12' Conidia with a basal appendage ..... 13
- 13 Conidia fusiform, 19-27x5-8.5  $\mu\text{m}$ , 4-septate, with two dark brown and one light brown median cell; with 2-3(4) apical setulae 14-34  $\mu\text{m}$  long and one basal appendage (2)4-9  $\mu\text{m}$  long; on leaves of *Camellia sinensis*, *Fragaria*, *Mangifera* (ES, IT). ..... **Pestalotiopsis clavispora** (G.F. Atk.) Steyaert (1949)  
Ill.: Wang Z.H. et al. 2017 : fig. 2 – group III.
- 13' Acervuli mostly hypophyllous, up to 0.2 mm diam., conidia emerge in black cirrhi; conidia 21-30x6.5-8.5  $\mu\text{m}$ , 4-septate, median cells equally olivaceous brown or with the two upper ones or middle one somewhat darker, end cells hyaline, with (2)3(5) apical appendages 8-48  $\mu\text{m}$  long and a basal appendage 4-16  $\mu\text{m}$  long; on dead leaves of *Laurus*, *Magnolia*, *Camellia japonica*, *C. sinensis*, *Erica*, *Rhododendron*, cupules of *Quercus robur*; phen.: V-VI, X-XI (BE/F, CH, DE, DK, FR, IT, NL, PT) ..... **Pestalotiopsis maculans** (Corda) Nag Raj (1993)  
Ill.: IMI Description n°320, Sutton 1980: fig. 149, Ellis & Ellis 1985: fig. 1012.
- 13'' Conidiomata pycnidial, globose, aggregated or scattered, semi-immersed on PDA, dark brown to black, 100-400  $\mu\text{m}$  diam. Conidiophores indistinct, often reduced to conidiogenous cells. Conidiogenous cells discrete, cylindrical to subcylindrical, hyaline, smooth, proliferating up to 3 times, 10-30x2-4  $\mu\text{m}$ , with visible periclinal thickening; collarete slightly flared, up to 3  $\mu\text{m}$  long when present. Conidia fusoid, ellipsoid, straight to slightly curved, 4-septate, (22)23.5-29(31)x6-8.5  $\mu\text{m}$ ; basal cell hemispherical to obconic with a truncate base, hyaline, verruculose and thin-walled, 4-6  $\mu\text{m}$  long; three median cells doliiform, 15.5-19.5  $\mu\text{m}$  long, wall verruculose, concolourous, but occasionally the two upper median cells darker than the lower median cell, brown, septa darker than the rest of the cell; apical cell 4.5-6  $\mu\text{m}$  long, hyaline, subcylindrical, rugose and thin-walled; with 3-5 tubular apical appendages, arising from the apical crest, unbranched, filiform, (20)23-35(42)  $\mu\text{m}$  long; basal appendage single, tubular, unbranched, centric, 9-25  $\mu\text{m}$  long. On *Chamaecyparis* sp. (NL) ..... **Pestalotiopsis scoparia** Maharachch., K.D. Hyde & Crous (2014)
- Conidia in average more than 8  $\mu\text{m}$  wide**
- 14 Conidia with verruculose median cells ..... 15
- 14' Conidia smooth-walled ..... 17
- 15 Conidia ellipsoid, straight to slightly curved, 4-septate, slightly constricted at septa, (25)27-40(42)x7-11(11.5)  $\mu\text{m}$ , basal cell conic to obconic with a truncate base, rugose and thin-walled, 5.5-9.5  $\mu\text{m}$  long; three median cells (17)18-25(26)  $\mu\text{m}$ , doliiform, verruculose, concolourous, but occasionally the two upper median cells slightly darker than the lower median cell; apical cell conic, hyaline, thin- and smooth-walled, 4-6.5  $\mu\text{m}$  long; with single, tubular apical appendage, unbranched, filiform, (40)43-67(75)  $\mu\text{m}$ ; basal appendage single, tubular, unbranched, centric, 6-14  $\mu\text{m}$  long. On *Taxus baccata* and endophytic in branches of *Quercus robur*. Phen.: IV, VII (NL) ..... **Pestalotiopsis monochaeta** Maharachch., K.D. Hyde & Crous (2014)  
Ill.: Maharachch., K.D. Hyde & Crous 2014: fig. 36.  
Easily misidentified as a *Monochaetia*.
- 15' Conidia shorter, with several apically appendages ..... 16
- 16 Conidiomata pycnidial in culture on PDA, globose to oval, solitary or aggregated in clusters, semi-immersed, black, 120-320  $\mu\text{m}$  diam., exuding globose, black, glistening, conidial masses. Conidia 21-33x6-15  $\mu\text{m}$ , l/w<sub>m</sub>= 3:1, fusiform

or clavate-fusiform, straight or slightly curved, 4-septate, concolorous; basal cell conical, hyaline, thin and verruculose, 2–5 µm long, three median cells doliform, olivaceous, concolorous, verruculose, 14–16 µm long, septa and periclinal walls darker than the rest of the cell (second cell from base 2–6 µm; third cell 5–9 µm; fourth cell 3.4–6.9 µm long); apical cell 1.6–5.4 µm long, hyaline, cylindrical to subcylindrical with 3–6 tubular apical appendages (mostly 3), arising from crown of the apical cell, unbranched, filiform 11–34 µm long; single, unbranched, filiform basal appendage present, 6–10 µm long. On dead stem of *Clematis vitalba*. Phen.: II (IT) .....

..... **Pestalotiopsis verruculosa** Maharachch. & K.D. Hyde (2012)  
 Ill.: Phukhams. et al. 2020: fig. 111.

16' Conidiomata pycnidial in culture on PDA, globose, scattered or gregarious and confluent, semi-immersed, dark brown, up to 200 µm diam. Conidiophores septate near the base, branched, subcylindrical. Conidiogenous cells discrete, subcylindrical or ampulliform to lageniform, smooth-walled, percurrently proliferating 1-3 times. Conidia 26-35x8-11 µm, ellipsoid, straight to slightly curved, 4-septate, basal cell conic with obtuse end, hyaline, thin-walled and verruculose, 5-7 µm long, with three median cells, doliform to cylindrical, with thick verruculose walls, constricted at the septa, olivaceous, septa darker, wall rugose, together 18-28 µm long, second cell from base 5.5-8.5 µm; third cell 6-9 µm; fourth cell 6-9 µm; apical cell hyaline, conic to subcylindrical 4-6.5 µm long; with 2-5 tubular apical appendages arising from the apex of the apical cell (rarely 1 appendage arising from just above the septum separating upper median and apical cell), 20-40 µm long: basal appendage 6-10 µm. Saprobic on *Cupressus glabra*. Phen.: XI (IT) .....

..... **Pestalotiopsis italiana** Maharachch., Camporesi & K.D. Hyde (2015)

16'' Conidia ellipsoid, straight to slightly curved, (25)25.5-33(34)x8.5-10.5 µm, l/w<sub>m</sub>= 3.1:1; basal cell conic to obconic with truncate base, thin-walled, 5–7 µm long; three median cells (16.5)17–23(24) µm long, doliform, thick-walled, verruculose, concolorous, but occasionally the two upper median cells slightly darker than the lower median cell, wall rugose (second cell from base 5–8.5 µm; third cell 6–9 µm; fourth cell 6–8 µm); apical cell conic, hyaline, thin- and smooth-walled, 3.5-5 µm long; with 1-4 tubular apical appendages, with some branched appendages, arising from the apex of the apical cell and sometimes from just above the septum separating the apical and subapical cell, 20–40 µm long; basal appendage single, tubular, unbranched, centric, 3–9 µm long. On *Sciadopitys verticillate*, *Pinus pinea* (NL, PT) .....

..... **Pestalotiopsis hollandica** Maharachch., K.D. Hyde & Crous (2014)  
 Ill.: Maharachch., K.D. Hyde & Crous 2014: fig. 30.

17 Acervuli punctiform, black; conidia 26-33x8-10 µm, with 3 median brown cells, end cells hyaline, smooth, with 1-3 subapically attached appendages up to 60 µm long and a basal appendage 2-6 µm long. On dead leaves of *Chamaecyparis lawsoniana* .....

..... **Pestalotiopsis monochaetioides** (Doyer) Steyaert (1949)  
 Ill.: Ellis & Ellis 1985: fig. 458.

17' Conidia with l/w<sub>m</sub><3, apical appendages up to 30 µm long ..... 18

18 Acervuli at first covered then opening to expose black spore mass; conidia 19-25x7-9.5 µm, upper median cells dark brown, lower one pale brown, end cells hyaline, 2-3 apical appendages, rarely 4, up to 30 µm long, basal appendage 2-5 µm long. On dead branches of *Rosa canina* .....

..... **Pestalotiopsis versicolor** (Speg.) Steyaert (1949)

18' Acervuli mostly epiphyllous, up to 0.4 mm diam., black; conidia 22-29x8-11 µm, upper median cells dark brown, lower one pale brown, end cells hyaline, 2 to 4 apical appendages up to 30 µm long, basal appendage 3-6 µm long. On dead leaves of *Calluna vulgaris*, *Erica* sp., *Rhododendron hybridum*, *R. ponticum*, *Prunus laurocerasii*; phen.: VII-IX .....

..... **Pestalotiopsis sydowiana** (Bres.) B. Sutton (1961)

Ill.: Ellis & Ellis 1985: fig. 1013.

**Pseudopestalotiopsis** Maharachch. et al. emend. F. Liu, L. Cai & Crous

Type species: *Pseudopestalotiopsis theae* (Sawada) Maharachch. et al.

Lit.: Liu et al. 2019: 373.

1 Acervuli initially subepidermal, later erumpent, finally exposed. Conidiophores simple, short, filiform, fugacious. Conidia fusiform, slightly constricted at septa, 4-septate, 20–31x(4)5–8.5 µm; basal cell obconic, hyaline, thin and smooth-walled, 4.3–5.6 µm long; 3 median cells dark brown, septa and periclinal walls darker than the rest of the cell, together 15–20 µm long; apical cell hyaline, conic to cylindrical 4.2–5.8 µm long; apical appendages tubular, 2–4, arising from the upper portion of the apical cell, 15–40(50) µm long, slightly swollen at the apex; basal appendage, filiform, 5–11 µm, apically knobbed. On living leaves of *Camellia sinensis*, *C. japonica*, *Diospyros kaki* (ES) .....

..... **Pseudopestalotiopsis theae** (Sawada) Maharachch. et al.  
 Ill.: Wang Z.H. et al. 2017 : fig. 2 – group I.

**Pseudosarcostroma** F. Liu, L. Cai & Crous

Type species: *Pseudosarcostroma osyridicola* F. Liu, L. Cai & Crous.

Lit.: Liu et al. 2019: 374.

1 Sexual morph: unknown. Asexual morph: Conidiophores septate, branched, mostly reduced to conidiogenous cells, smooth, colourless. Conidiogenous cells discrete, mostly lageniform or ampulliform, 4.5-14.5x1.5-3.5 µm, colourless, smooth. Conidia fusoid, straight or slightly curved, wall undulate, mostly 4-septate, occasionally 5-septate, distal septa thicker than the rest cell, 18.5–29.5(33)x4.5–7.5 µm, l/w<sub>m</sub>= 4.2:1, basal cell obconic with a truncate base, hyaline, thinwalled, 3-5 µm long; median cells 2, cylindrical, doliform, pale brown, thick-walled, each 3-8 µm long; apical cell

conic with acute apex, thin-walled, hyaline, 2-5.5 µm long; apical appendage, centric, 9.5–20.5 µm long; basal appendage excentric, both appendages single, attenuated, tubular, unbranched, 5.5–19.5 µm long. On twigs of *Osyris alba*. Phen.: X (FR) ..... **Pseudosarcostroma osyridicola** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2019: fig. 57.

**Robillarda** Sacc. (1880)

Type species: *Robillarda sessilis* (Sacc.) Sacc.

Lit.: Crous et al. 2015: 184, Liu et al. 2019: 376..

- 1 Conidiomata stromatic, pycnidoid, scattered to gregarious, occasionally confluent, immersed to partly erumpent, uni- to plurilocular, ovoid, globose or depressed globose, usually 110-210 µm diam. but to 500 µm diam. when plurilocular, and to 200 µm high, glabrous, dark brown to black; ostiole papillate or not, circular or oval; wall to 30 µm thick, of an thick-walled outer textura angularis, dark brown to brown in the outer layers, becoming progressively thin-walled and paler toward an inner, hyaline, textura prismatica; when present, interocular tissue hyaline, thin-walled textura prismatica. Conidiophores reduced to conidiogenous cells, invested in mucus. Conidio-genous cells ampulliform to subcylindrical, hyaline, smooth, guttulate, 5-8x2-4 µm, proliferating sympodially at apex. Conidia composed of a conidium body and a separate apical cell modified into a branched appendage; conidium body fusiform, straight or slightly curled, wall smooth, with and often slightly constricted median septum, hyaline to pale brown, (9)11-12(13)x(2.5)3(3.5) µm; apical cell cylindrical for 1-2.5 µm then dividing into 2-3 divergent branches devoid of cell contents; attenuated towards the apex, flexuous, 18-22 µm long and less than 1.5 µm wide at the broadest point; on wilted leaves of *Rubus caesius* ..... **Robillarda sessilis** (Sacc.) Sacc. (1880)  
 Ill.: Crous et al. 2015: fig. 17.

**Sarcostroma** Cooke

Type species: *Podisoma follicolum* Berk. ≡ *Sarcostroma foliicola* (Berk.) M. Morelet

Lit.: Liu et al. 2019: 378.

- 1 Acervuli epiphyllous, 0.15 mm diam., dark brown to black. Conidia 19-23x7.5-9 µm, 5-septate, median cells pale brown, end cells hyaline, apical and basal appendages up to 9 µm long. Saprobic on leaves of *Juniperus communis* (UK) .....  
**Sarcostroma foliicola** (Berk.) M. Morelet (1985)  
 Ill.: Ellis & Ellis 1985: fig. 669.
- 1' Sexual morph: unknown. Asexual morph: Conidiophores septate, branched, colourless, smooth, thin-walled, sometimes reduced to conidiogenous cells. Conidiogenous cells discrete or integrated, mostly cylindrical, subcylindrical, 7–13.5 × 1–2.5 µm, colourless, smooth. Conidia lunate or fusoid, curved or occasionally straight, 4-septate, wall smooth or undulate, not constricted at the septa, 19-23.5x3-6.5 µm, l/w<sub>m</sub>= 4.2:1; basal cell obconic with a truncate base, colourless to pale brown, 2.5-4 µm long; median cells 3, cylindrical or subcylindrical, thick-walled, mid-brown or yellowish brown, together 12.5-15.5 µm long; apical cell conical, colourless or occasionally pale brown, 3–5 µm long; apical appendage single, filiform, unbranched, attenuated, 25-35 µm long; basal appendage single, unbranched, filiform, excentric, 21-37 µm long. On *Babiana dregei*. Phen.: VII (FR) .....  
 ..... **Sarcostroma longiappendiculatum** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 64.
- On dead petiole of *Pteridium aquilum*. Phen.: ? (UK) ..... **Sarcostroma restionis** S.J. Lee & Crous

**Seimatosporium** Corda 1833 ss. str. (excluding e.g. *Diploceras*)

Type species: *Seimatosporium rosae* Corda

Syn.: *Clathridium*, *Griphosphaeria*, *Paradidymella*, ?teleom. *Discostroma*.

Lit.: Müller & Arx 1962: 670 (sub *Lejosphaerella*), Shoemaker 1963: 411, Eriksson 1974: 202 (sub *Clathridium propendula*), Brockmann 1976: 275, Dennis 1978: 326 (sub *Griphosphaeria corticola*), Ellis & Ellis 1985: 240 (sub *Paradidymella clarkii*) & 348 (sub *Paradidymella tosta*) & 464 (sub *Paradidymella holci*), Barr 1994: 200, Aptroot 1998: ... , Holm & Ryman 2003: 4, Tanaka et al. 2011: 85, Norphanphoum et al. 2015: 385, Rossman et al. 2016: 5, Perrera et al. 2016: 51, Liu et al. 2019: 387.

- 1 Conidia 3-septate ..... 2  
 1' Conidia 4-5-septate ..... 17
- 2 Apical appendage always present ..... 3  
 2' Apical appendage mostly absent ..... 4
- 3 Conidiophores branched, reduced to conidiogenous cells, colourless, smooth. Conidiogenous cells discrete, mostly cylindrical or subcylindrical, 4.5-12x1.5-2.5 µm, colourless, smooth. Conidia fusoid, curved, 3-septate, wall smooth, 13.5-18x2.5-4 µm, l/w<sub>m</sub> = 5:1; basal cell trapezoid, subcylindrical, thin-walled, hyaline to pale brown, 2-3.5 µm long; median cells 2, cylindrical, thick-walled, pale to mid-brown, each 3.5–6 µm long; apical cell conic with an acute apex, thin-walled, hyaline to pale brown, 2.5-4.5 µm long; apical appendage single, attenuated, tubular, unbranched,

- hyaline, occasionally pale brown, 2-11(15)  $\mu\text{m}$  long; basal appendage lacking or, when present, attenuated, tubular, single, unbranched, excentric, (1)3-11.5  $\mu\text{m}$  long. From forest soil under *Fagus sylvatica*. Phen.: ? (DK) .....  
**Seimatosporium soli** F. Liu, L. Cai & Crous (2018)
- 3' Conidia 15.5-18x5.5-6.5  $\mu\text{m}$ , appendages 1-3  $\mu\text{m}$  long. On leaves of *Aristotelia* (Chili) .....  
**Seimatosporium monochaetioides** (Speg.) B. Sutton (1975)  
 Ill.: Sutton 1980: fig. 162D.
- 4 Conidia less than 15  $\mu\text{m}$  long ..... 5
- 4' Conidia more than 15  $\mu\text{m}$  long ..... 7
- 5 Sexual morph: undetermined. Asexual morph: Acervuli 0.25-0.5 mm diam., brown. Conidiophores up to 10  $\mu\text{m}$  long, with fine apical annulations. Conidia fusiform, straight to slightly curved, (11)12-15x3.5-4.5(5)  $\mu\text{m}$ , 3-septate, verruculose, median cells olivaceous, end cells hyaline, apical appendage 5-10  $\mu\text{m}$  long, basal appendage 5-8  $\mu\text{m}$  long. Saprobic or weakly parasitic on branches of *Rosa canina*, *Rosa sp.*. Phen.: V, autumn (CZ, DE).....  
**Seimatosporium rosae** Corda (1833)  
 Ill.: Shoemaker 1964: fig. 1, Norphanphoum et al. 2015: fig. 4, Liu et al. 2018: fig. 68.
- 5' Appendages longer ..... 6
- 6 Appendages up to 30  $\mu\text{m}$  long ..... **Seimatosporium piceae** G.Z. Wang (1985)
- 6' Sexual morph: undetermined. Asexual morph: Acervuli circular, 0.08-0.2 mm diam. Conidia 11-15x4-6  $\mu\text{m}$ , 3-septate, median cells light brown and 6-9  $\mu\text{m}$  long, appendages up to 30-35  $\mu\text{m}$  long. On stem cankers and leaf spots of *Rosa* spp. Phen.: IV-IX (AT, CZ, CH, DE) ..... **Seimatosporium caudatum** (Preuss) Shoemaker (1964)  
 Ill.: Shoemaker 1964: fig. 3.
- 7 Conidia in average less than 4.5  $\mu\text{m}$  wide ..... 8
- 7' Conidia more than 4.5  $\mu\text{m}$  wide ..... 9
- 8 Acervuli up to 125  $\mu\text{m}$  diam. Conidiophores 5-10x1-3  $\mu\text{m}$ , with 0-1 annellations. Conidia 11-19x3-5  $\mu\text{m}$ , 3-septate, straight, median cells medium brown, end cells hyaline, each with an unbranched appendage up to 10  $\mu\text{m}$  long. On twigs of *Lonicera*, *Physocarpus*, *Syringa*. (DE, NL, SE) ..... **Seimatosporium loniceræ** (Cooke) Shoemaker (1964)  
 Ill.: Sutton 1980: fig. 161D.
- 8' Conidia falcate or straight, 3-septate, wall smooth, 15.5-21.5x3-4.5  $\mu\text{m}$ ,  $l/w_m = 5.2:1$ ; basal cell obconic with a truncate base, or subcylindrical, hyaline, 2.5-4  $\mu\text{m}$  long; median cells 2, fairly thick-walled and pale brown, cylindrical, each 4-8  $\mu\text{m}$  long; apical cell conic with an acute apex, hyaline, 1.5-5.5  $\mu\text{m}$  long; apical appendage lacking or, when present, tubular, filiform, single, unbranched, attenuated, 2-16  $\mu\text{m}$  long; basal appendage lacking or, when present, single, tubular, filiform, unbranched, attenuated, excentric, 1.5-14  $\mu\text{m}$  long; Host unknown. (DE) .....  
**Seimatosporium germanicum** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 67.
- 9 Sexual morph: undetermined. Asexual morph: Acervuli about 0.1 mm diam., black. Conidiophores up to 30x1.5-2  $\mu\text{m}$ , hyaline. Conidia fusiform, 13-18x4.5-5.5  $\mu\text{m}$ , 3-septate, mid pale brown, end cells often paler than median ones, without appendages. Saprobic on twigs of *Vaccinium myrtillus*. Phen.: IV .....  
**Seimatosporium vaccini** (Fuckel) B. Erikss. (1974)  
 Ill.: Sutton 1980: fig. 163F.
- 9' Conidia with appendages ..... 10
- 10 Appendages up to 7.5  $\mu\text{m}$  long ..... 11
- 10' Appendages longer ..... 12
- 11 Appendages 5  $\mu\text{m}$  long ..... **Seimatosporium grammitum** (Berk. & M.A. Curtis) Nag Raj (1991)
- 11' Appendages 7.4  $\mu\text{m}$  long ..... **Seimatosporium hysterioides** (Fuckel) Brockmann (1976)
- 12 Sexual morph: unknown. Asexual morph: Conidiophores irregularly branched, sometimes reduced to conidiogenous cells, colourless, smooth. Conidiogenous cells discrete or integrated, mostly cylindrical, variable in size, 4.5-25x2-3  $\mu\text{m}$ , colourless, smooth, with up to two annellations. Conidia cymbiform, fusoid, straight, 3(6)-septate, wall smooth, 13.5-26x4.5-6  $\mu\text{m}$ ,  $l/w_m = 3.2:1$ ; basal cell obconic with a truncate base, subcylindrical, colourless or similar to that of median cells, 2.5-4  $\mu\text{m}$  long; median cells 2(4), fairly thick-walled and pale brown to yellowish brown, each 3.5-5.5  $\mu\text{m}$  long; apical cell obtuse or conical, colourless, sometimes similar to that of median cells, 1.5-4.5  $\mu\text{m}$  long; apical appendage lacking or, when present, single, unbranched, attenuated, 4-11  $\mu\text{m}$  long; basal appendage single, unbranched, excentric, 4-10  $\mu\text{m}$  long. On dead stem of *Vitis vinifera*. Phen.: IV (ES) .....  
**Seimatosporium vitis-viniferae** F. Liu, L. Cai & Crous (2018)
- 12' Conidiomata acervular or pycnidia, 0.15-0.5 mm diam. Conidia fusiform, ellipsoid or clavate, (10)11-17(19)x3-6  $\mu\text{m}$ , (2)3-septate, median cells brown to pale brown; apical cell hyaline if bearing an appendage, basal cell with truncate base, hyaline to pale brown, with an appendage 14  $\mu\text{m}$  long. Caulicolous (*Ribes alpinum*, *Rosa*, *Rubus idaeus*, *R. occidentalis*, *Salix caprea*). Phen.: II-IV (AT, DE, FR)..... **Seimatosporium salicinum** (Corda) Nag Raj (1993)  
 Ill.: Nag Raj 1993: fig. 115.12.1-2.



- 17 Conidia 4-septate ..... 18  
 17' Conidia 5-septate ..... 19
- 18 Acervuli up to 0.2 mm diam. Conidia 15-21x4.5-6 µm, 4-septate, median cells brown, end cells hyaline, appendage at each end up to 12 µm long. Saprobic on leaves of *Rhododendron* (UK) ..... **Seimatosporium arbuti** (Bonar) Shoemaker (1964) Ill.: Ellis & Ellis 1985: fig. 1014.
- 18' Conidia 20-25x5-6 µm, 4-septate, median cells brown, end cells hyaline, apical appendage up to 15 µm long, basal appendage up to 30 µm long. On leaves of *Quercus robur*. Phen.: VI (NL) ..... (●) **Seimatosporium** sp.
- 19 Acervuli erumpent, pulvinate, up to 0.4 mm diam., olivaceous brown to black. Conidiophores 10-30x2-3 µm, hyaline. Conidia 27-37x9-12 µm, 5-septate, median cells brown, end cells hyaline or pale brown. Saprobic on branches of *Ulmus*, *Vitis*. Phen.: I (FR, UK) ..... **Seimatosporium macrospermum** (Berk. & Broome) B. Sutton (1975) Ill.: Sutton 1980: fig. 162B, Ellis & Ellis 1985: fig. 1217.
- 19' Acervuli up to 0.25 mm diam. Conidia 20-23x6-7 µm, 5-septate, median cells pale brown, end cells hyaline, basal appendage up to 25 µm long, apical appendage up to 30 µm long. Saprobic on leaves of *Rhododendron* (UK) ..... **Seimatosporium mariae** (Clinton) Shoemaker (1964) Ill.: Ellis & Ellis 1985: fig. 1015.

May belong here:

- 1 Sexual morph: Ascumata appearing on the bark surface as dark brown to black circular patches, 150–230 µm high, 185-350 µm diam., solitary, immersed, depressed globose, membranous, dark brown to brown, with a periphysate ostiole. Peridium 15–43 µm, multilayered, of textura angularis to textura intricata, inner layers of textura angularis. Hamathecium comprising numerous, 3–6 µm wide, hypha-like, septate, branched, apically free paraphyses. Asci 75-148x9-16 µm, 8spored, short pedicellate, with a refractive, J+ apical ring. Ascospores fusiform or ellipsoidal, 10-21x4-8.5 µm, uniseriate or overlapping uniseriate, hyaline, (1-2)3(4) transversely septate, smooth, thickwalled. Asexual morph: Conidiomata 330–400 µm diam., 220–250 µm high, acervular, superficial, solitary to gregarious, black, apapillate ostiolate. Conidiophores 25–55x2–4 µm, cylindrical, branched, hyaline. Conidiogenous cells holoblastic, simple, integrated, determinate, hyaline. Conidia fusiform or obovoid, base truncate, straight, 34-51x13-18 µm, with 3 transverse septa, dark septa brown, constricted at septa, guttulate when immature, medium brown, with hyaline to subhyaline basal cell, smooth-walled, appendage absent. Saprobic on *Cornus sanguinea*. Phen.: III(t) (IT) ..... **Seimatosporium corni** Wijayaw., Camporesi & K.D. Hyde (2015) Ill.: Wijayaw., Camporesi & K.D. Hyde 2015: fig.3.

### Seiridium Nees

Type species: *marginatum* Nees

Lit.: Jaklitsch et al. 2016: 93, Bonthond et al. 2018: 96.

- 1 Conidial appendages lacking. On *Cupressus* sp. (IT, PT) ..... **Seiridium pseudocardinale** Wijayaw. et al. (2016)
- 1' Conidia with appendages ..... 2
- 2 Sexual morph: Ascumata perithecial, immersed, depressed globose to pyriform, 0.3–0.6x0.2–0.5 mm, scattered or confluent in numbers of 2–3, visible through bark fissures as pale brownish spots with a central black papilla. Papilla periphysate. Asci cylindrical, (145)150-178(190)x(9.0)10.5-14.8(16) µm, containing 8 uniseriate ascospores, amyloid ring (3.2)3.5-4.5(4.8) µm wide, (0.6)0.9-1.6(1.8) µm high. Ascospores cylindrical-oblong, (17.5)21-25.7(32.5) x(8.0)8.5–10(11.5) µm, Q (2.1)2.3–2.8(3.7), with 3(5) thick eusepta often thicker than the wall, yellow- to dark brown, multiguttulate when fresh and often with irregularly disposed minute light dots 0.5–1 µm diam. Asexual morph: Conidiomata acervular. Conidiophores hyaline, cylindrical, more or less straight, sparsely and mostly asymmetrically branched near the base, up to 90x4 µm. Conidia formed terminally, (35.2)38-42(45)x(8.2)8.8-10.2(11) µm, Q (3.5)3.9–4.6(4.9), fusiform, straight, with 5 thick eusepta, versicolorous, of 4 brown cells with striate surface and hyaline end cells, each with a hyaline unbranched filiform appendage-up to 52 µm long. On *Rosa canina*. Phen.: IV (AT, CH, FR) . **Seiridium marginatum** Nees (1816)
- 2 Conidia up to 30 µm long ..... 3
- 3 Conidia fusiform, straight to slightly curved, 5-septate, not striate, bearing two short appendages, euseptate with pores clearly visible, (20)20.5–24(27.5)x(7.5–)8–9(–9.5) µm, mean = 22.3x8.4 µm. On *Cupressus lusitanica* (IT) ..... **Seiridium cardinale** (W.W. Wagener) B. Sutton & I.A.S. Gibson (1972) Ill.: Bonthond et al. 2018: fig. 5-6.
- 3' Conidia longer ..... 4
- 4 Conidia lunate to falcate, curved, 5-septate, not striate, bearing two appendages, euseptate without visible pores, (21) 26.5– 31(35.5)x(7)8.5–10(10.5) µm, mean = 28.7x9.2 µm; basal cell obconic with a truncate base, hyaline, 2.5–5 µm; four median cells, smooth, cylindrical to doliiform, pale to brown; apical cell conical, hyaline, 2.5–5 µm long; appendages cylindrical, attenuated; apical appendage single, centric, 6.5–12 µm long, occasionally branched near the tip; basal appendage consistently present, single, cylindrical, centric and excentric, 3.5–10.5 µm long. On *Cupressus sempervirens*. Phen.: XI (IT) ..... **Seiridium neocupressi** Bonthond, Sandoval-Denis & Crous (2018)



- 4' Conidiomata pycnidoid, stromatic. Conidia blastic-phialidic, fusiform to ellipsoid; 5-septate, 18-28x(6.5)7-8.5 µm, median cells brown, end cells hyaline; apical appendage single, simple or branched, 3-36 µm long; basal appendage single, simple or branched, 2-7 µm long, sometimes absent. On corticated twigs of *Cornus alba*, *Cornus sanguinea*, *Cornus* sp. Phen.: V-X (DE, IT) ..... **Seiridium venetum** (Sacc.) Nag Raj (1989)  
 Ill.: Nag Raj 1989: fig. 20-30.

**Sporocadus** Corda

Type species: *Sporocadus lichenicola* Corda

Lit.: Liu et al. 2019: 392.

- 1 Mean conidium length/width ratio less than 3 ..... 2  
 1' Mean conidium length/width ratio 3 and more ..... 7
- 2 Conidia up to 16 µm long ..... 3  
 2' Conidia longer ..... 5
- 3 Sexual morph: unknown. Asexual morph: Acervuli about 0.2 mm diam., black. Conidia 10-12x3-5 µm, 2(3)-septate, pale brown, basal cell palest and sometimes bearing a setulum up to 10 µm long. Saprobitic on leaves of *Rosa canina* (UK)..... *Seimatosporium rosarum* (P. Henn.) B. Sutton ≡ **Sporocadus rosarum** (Henn.) F. Liu, L. Cai & Crous (2018)  
 Ill.: Ellis & Ellis 1985: fig. 1044.
- 3' Conidia longer ..... 4
- 4 Sexual morph: unknown. Asexual morph: Conidiophores septate, branched, sometimes reduced to conidiogenous cells, colourless, smooth. Conidiogenous cells discrete or integrated, mostly lageniform, ampulliform, or obclavate, sometimes subcylindrical, variable in size, 4.5–15x1.5–3.5 µm, colourless, smooth, with up to four annellations. Conidia obovoid, ellipsoid, straight or slightly curved, 10.5–15.5x3–5.5 µm, l/w<sub>m</sub>= 2.8:1, pale brown, (2)3-septate, wall smooth, lacking appendages; basal cell obconic with blunt or sometimes round base, hyaline to pale brown, 2–3.5 µm long; median cells 2, doliiform, fairly thick-walled and pale brown, each 2.5–4.5 µm long; apical cell short-conic with a round apex, concolourous with the median cells, 2.5–3.5 µm long;. On twig of *Sorbus* and leaf spot of *Ribes*. Phen.: XII-II (DE, NL) ..... **Sporocadus microcycclus** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 77.
- 4' Conidiophores septate, branched, often reduced to conidiogenous cells, colourless, smooth, invested in mucus. Conidiogenous cells discrete or integrated, cylindrical or ampulliform, 6-16x1.5-3 µm, colourless, or pale brown, smooth, with up to four annellations. Conidia obovoid, ellipsoid, or subcylindrical, 3-septate, occasionally 2-septate, wall smooth, 10-15x3.5-6.5 µm, l/w<sub>m</sub>= 2.4:1, lacking appendages; basal cell obconic with acute or blunt base, occasionally with a narrow truncate base, hyaline to pale brown, or concolourous with median cells, thin-walled, 1-3.5 µm long; median cells 2, short-cylindrical to doliiform, hyaline or pale brown, and becoming mid-brown when mature, each 2.5-4.5 µm long; apical cell conic with round apex, concolourous with the median cells, 3.5–5 µm long. On *Rubus fruticosus* stem, *Pyrus communis*, *Rhododendron* and *Vitis*. Phen.: III (NL) ..... **Sporocadus rosigena** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 79.
- 5 Asexual morph: Acervui 1-2 mm diam. Conidia fusoid to ellipsoid, 25-32x9-11 µm, 3-septate, slightly constricted at the septa, pale yellow. On bark of *Populus nigra*, *P.tremula* (FR, IT) ..... **Sporocadus populinus** (Bres.) Orsenigo, Rodondi & B. Sutton (1998)
- 5' Conidia up to 20 µm long ..... 6
- 6 Sexual morph: unknown. Asexual morph: Conidiophores septate, reduced to very short conidiogenous cells, colourless, smooth. Conidiogenous cells usually discrete, mostly cylindrical, sub-cylindrical, sometimes lageniform, 4.5–14.5x1.5–3 µm, colourless, smooth, with up to four annellations. Conidia obovoid, or cylindrical with round apical and basal ends, straight, 11.5–20x4.5–6.5 µm, (2)3-septate, wall smooth, barely constricted at the septa, lacking appendages; basal cell obconic with a truncate base, colourless or sometimes concolourous with median cells, 2–5 µm long; median cells 2, doliiform or cylindrical, thin-walled, colourless or greyish white, ± equal, each 3–5.5 µm long; apical cell obtuse or conic with round apex, colourless or concolourous with median cells, 2.8–5 µm long; mean conidium length/width ratio = 2.6:1. On dead twigs of *Prunus dulcis*. Phen.: III (ES) ..... **Sporocadus incanus** F.Liu,L.Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 74.
- 6' Sexual morph: unknown. Asexual morph: Conidiophores septate, usually branched, colourless, smooth. Conidiogenous cells discrete or integrated, mostly subcylindrical, (6.5)10.5–24x1.5–2.5 µm, colourless, smooth, with up to five annellations. Conidia obovoid or cylindrical, straight, occasionally slightly curved, 3–4-septate, wall smooth, 15–20x4.5–8 µm, lacking appendages; basal cell obconic with a narrow truncate base, hyaline to pale brown, usually concolourous with median cells, 2.5–4.5 µm long; median cells 2–3, doliiform or short cylindrical, pale brown, ± equal, each 3.5–6 µm long; apical cell with an obtuse end, concolourous with median cells, usually becoming dark brown at the apex point, 3.5–6.5 µm long; mean conidium length/width ratio = 2.7:1. On twigs of *Malus sylvestris*. Phen.: X-II (BE/F, NL) ..... **Sporocadus mali** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 76.

- 7 Sexual morph: Ascomata immersed, up to 0.4 mm diam., clypeate; spores ellipsoid, 12-18(23)×5.5-8(9) μm, with 3(5) transverse septa and seldomly one longitudinal septum, hyaline. Asexual morph: Conidia subcylindrical to obovoid, 18-25×5.5-8 μm, 3-4(5)-septate, pale brown, end cells mostly concolourous with median ones, lacking appendages, mean conidium length/width ratio = 3:1. On bark of branches of *Prunus domestica*, *Prunus spinosa*, *Rosa canina*, *Rosa montana*, *Rosa pendulina*, *Rubus idaeus*, *Rubus fruticosus*; phen.: X-III (BE/F, DE, UK) .....  
 ..... • **Sporocadus lichenicola** Corda (1839)  
 Ill.: Shoemaker 1964: fig. 2, (non Norphanphoum et al. 2015: fig. 2), Liu et al. 2018: fig. 75.
- 7' Sexual morph: unknown. Asexual morph: Conidiophores septate, irregularly branched, colourless, smooth. Conidiogenous cells cylindrical, variable in size, 8–34×1.5–3 μm, colourless, sometimes pale brown, smooth, discrete or integrated. Conidia obovoid, clavate, straight, occasionally curved, 3(5-6)-septate, wall smooth, barely constricted at the septa, 17.5–23(32)×5.5–7.5 μm, lacking appendages; basal cell obconic with truncate base, colourless or pale brown, 3–5(9) μm long; median cells mostly 2, occasionally 4–5, fairly thick-walled, pale to mid-brown, cylindrical, ± equal, each 4–6 μm long, together 9.5–14.5 μm long; apical cell short-conic with round apex, concolourous with median cells, 3–7 μm long; mean conidium length/width ratio = 3.4:1. On *Cornus sanguinea*. Phen.: III-V (DE, IT) .....  
 ..... **Sporocadus cornicola** (Wijayaw. & Camporesi) F. Liu et al. (2018)  
 Ill.: Liu et al. 2018: fig. 72.
- 7'' Sexual morph: unknown. Asexual morph: On OA, conidiomata scattered, gregarious, dark brown or black, superficial or immersed. Conidiophores septate, irregularly branched, colourless, smooth. Conidiogenous cells integrated, mostly subcylindrical, lageniform, ampulliform, 4.5–14×1–2.5 μm, colourless, smooth, with up to three annellations. Conidia fusoid or obovoid, straight, mostly (2)3(5)-septate, wall smooth, 10-15×3-4.5 μm, bearing appendages; basal cell obconic with a narrow truncate base, hyaline to pale grey, 1.5–2.5 μm long; median cells mostly 2, cylindrical, fairly thick-walled and pale brown, ± equal, each 2–5 μm long; apical cell conic with an acute to almost acute apex when bearing an apical appendage, otherwise broadly conic with an obtuse apex, colourless or concolourous with median cells, 2–3.5 μm long; apical appendage lacking or, when present, single, unbranched, attenuated, tubular or flexuous, variable in size, 2-20 μm long; basal appendage lacking or, when present, unbranched, tubular or flexuous, excentric, 2–15.5 μm long; mean conidium length/width ratio = 3.4:1. On *Rosa canina*. Phen.: XI (SE) .....  
 ..... **Sporocadus trimorphus** F. Liu, L. Cai & Crous (2018)

#### **Strickeria** Körb.

Type species: *Strickeria kochii* Körb.

Lit.: Barr 1990: 20, Jaklitsch et al. 2016: 99.

- 1 Sexual morph: Ascomata superficial, scattered, 0.1-0.3 mm diam., first nearly globose, collapsing, discoid or cupulate, broadly attached or downward slightly attenuate, surface black, warted, peridium thick and hard, dark brown, pseudoparenchymatous, papillate ostiole periphysate. Hamathecium of simple, 1.5-4.5 μm wide, apically free paraphyses. Asci 106-132×11-13.5 μm, cylindrical, with 8 uniseriate ascospores, short stipe, thickened apex without a distinct discharge apparatus, in KOH ascus wall thicker, ocular chamber larger, sometimes branched. Ascospores ellipsoid or broadly fusiform, (12)14.8-19(24.2)×(6.0)6.5-8(8.5) μm, Q (1.7)2.1-2.7(3.3), with 3(4) transverse non-constricted septa and 1 longitudinal septum in mid cells, brown, with (sub)hyaline end cells, smooth. Asexual morph in nature: Ascomata associated with minute black pycnidia, 70–105 μm diam., globose, warted with central pore. Pycnidial wall pseudoparenchymatous, of dark brown angular to globose cells 5-13 μm diam. Conidiophores 1–3-celled, hyaline, simple, to c. 40 μm long. No phialides present. Conidia formed in fascicles, (23.5)32.5-48.3(51)×(4.7) 5-6(6.3) μm, Q (4.4)6.0-8.8(-9.6), falcate, first hyaline, 1-celled, finally brown, with 3-4 non-constricted septa, thin-walled, mid cells cylindrical, end cells lighter, acute and curved. On bark, particularly in recessed regions of thick bark, of living trunks of *Robinia pseudoacacia*; phen.: I-XII (AT, DE, IT) .....  
 ..... **Strickeria kochii** Körb. (1865)  
 Ill.: Jaklitsch et al. 2016: fig. 11.
- 1' Ascomata 0.3-0.55(-0.7) mm diam.; spores (18-)20-30×(7-)8-11.5 μm, with 5-7(-9) transverse septa, with one longitudinal septum, reddish brown; saprobic on decorticated branches of *Populus* sp.; phen.: I-XII .....  
 ..... **Strickeria pruniformis** (Nyl.) Cooke (1887)

#### **Synnemapestaloides** T. Handa & Y. Harada

Type species: *Synnemapestaloides rhododendri* T. Handa & Y. Harada.

Lit.: Liu et al. 2019: 406.

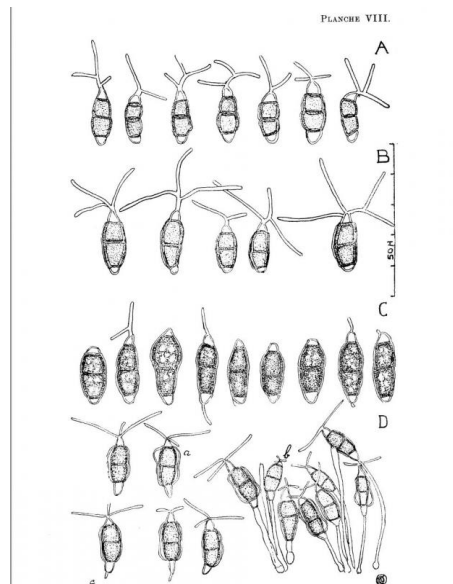
- 1 Sexual morph: unknown. Asexual morph: Conidiophores septate, branched, colourless, smooth, thin-walled, invested in mucus. Conidiogenous cells integrated, mostly subcylindrical, sometimes ampulliform or lageniform, 7–16×1.5–2.5 μm, colourless, smooth. Conidia fusoid, ellipsoidal, straight, mid-brown, 5(7)-septate, wall smooth or verruculose, without constrictions at the septa, but often collapsed between septa, 16.5–21.5×4.5–7.5 μm, lacking appendages, or with very short appendages (0.5–1 μm); basal cell obconic with a truncate base, periclinal wall thin and colourless in the lower half, becoming thick and progressively darker above, 1–3.5 μm long; median cells mostly 4, fairly thickwalled, yellowish-brown or mid-brown, doliiform, ± equal, each 2.5–4.5 μm long; apical cell short-conic with an acute apex, hyaline, 2–3.5 μm long; mean conidium length/width ratio = 2.9:1. On *Juniperus phoenicea*. (FR) .....  
 ..... **Synnemapestaloides juniperi** F. Liu, L. Cai & Crous (2018)  
 Ill.: Liu et al. 2018: fig. 83.

**Truncatella** Steyaert

Type species: *Truncatella truncata* (Lév.) Steyaert = *T. angustata* (Pers.) Hughes

Lit.: Steyaert 1949, Lee et al. 2006: 182, Liu et al. 2019: 408.

- 1 Conidia with mostly single apical appendage ..... 2
- 1' Conidia with more than one apical appendage, often irregularly or dichotomously branched ..... 3
  
- 2 Asexual morph: Conidia clavate, 15x10 µm, 3-septate (apical appendage to consider as a branched minute cell), both median cells brown, basal cell obconical and hyaline, with 1-2(3) simple or staghorn-like excentric apical appendages 5 µm long. Saprobiic on leaves of *Prunus laurocerasus*, leaves of *Lupinus*. (NL) ..... **Truncatella laurocerasi** (Westend.) Steyaert (1949) Ill.: Westendorp 1857: fig. 1.
- 2' Conidiogenous cells integrated, smooth, cylindrical, hyaline, Conidia fusiform, (19)21-25x(7)7.5-9(10) µm, l/w<sub>m</sub>= 2.8:1, 3-septate; apical cell hyaline, conical to trapezoid, smooth, thin-walled; median cells doliform, dark brown, 14-19 µm long, thick-walled; basal cell hyaline, obconical. Apical appendages rare, single, centric, unbranched to branched. Basal appendage absent. (DE) ..... **Truncatella hartigii** (Tubef) Steyaert (1949) Ill.: Steyaert 1949: pl. VIIC\*.
  
- 3 Sexual morph: unknown. Asexual morph: Conidiophores septate and branched, colourless, smooth. Conidiogenous cells discrete or integrated, cylindrical to lageniform, colourless, smooth. Conidia fusoid, straight or occasionally slightly curved, 3(4)-septate, smooth, not constricted at the septa, 15-22.5x5.5-8 µm, l/w<sub>m</sub>= 2.7:1; basal cell obconic with a truncate base, fairly thick-walled, hyaline to pale brown, 1.5-3.5 µm long; median cells 2, doliform, pale to mid-brown, thick-walled, together 11-15 µm long, each 5.5-7.5 µm long; apical cell conic, thin-walled, hyaline, 2-4.5 µm long; 2-4 apical appendages, centric, attenuated, flexuous, branched, 11-26 µm long; basal appendage absent. Parasitic/saprobiic on wood including rootstocks of *Corylus*, *Malus*, *Picea*, *Pinus*, *Prunus*, *Ribes*, *Tilia* and *Vitis*, parasitic on fruits of *Olea*, leaves of *Prunus*, *Rosa* sp., on seedlings of *Acer*, *Betula*, *Fagus*, *Picea*, *Pinus*, *Tilia*, on *Daucus*, *Lupinus*; phen.: III-VII (BE/F, CH, FR, NL, UK) ..... • **Truncatella angustata** (Pers.) Hughes (1958) Ill.: Steyaert 1949: pl. VIIIA\*, Ellis & Ellis 1985: fig. 269.
- 3' Conidiogenous cells filiform, colourless. Conidia (15)17-23(25)x6-8 µm, 3-septate, mid-cells brown, apical end with 2-3 filiform, often branched appendages up to 20 µm long, basal cell sometimes with a short pedicel; mid-cells with mucous coating. On cones of *Picea abies*; phen: I-XII (DE, IT) ..... **Truncatella conorum-piceae** (Tubef) Steyaert (1949) Ill.: Steyaert 1949: pl. VIID\*.



**Xenoseimatosporium** F. Liu, L. Cai & Crous

Type species: *Xenoseimatosporium quercinum* (Goonas. et al.) F. Liu, L. Cai & Crous

Lit.: Liu et al. 2018: 411.

- 1 Sexual morph: unknown. Asexual morph: Conidiomata acervular, black, scattered or gregarious, semi-immersed or immersed, stromatic, sometimes erumpent. Conidiophores septate, reduced to conidiogenous cells, colourless, smooth. Conidiogenous cells annellidic, discrete, cylindrical, subcylindrical, or lageniform, 3-9.5x1.5-3.5 µm, colourless, smooth. Conidia allantoid, subcylindrical, straight or curved, 2-4-septate, mostly 3-septate, smooth, sometimes slightly constricted at septa, 14.5-30x3.5-6.5µm, l/w<sub>m</sub> = 4:1.; basal cell trapezoid, sub-cylindrical, thin-walled, hyaline, 2-5.5 µm long; median cells mostly 2, cylindrical, colourless, thin-walled, each 5.5-9 µm long; apical

cell conic with an acute or rounded apex, sometimes inflated wider than other cells, hyaline, 2.5–6.5 µm; apical appendage single, not attenuated, not smooth, ragged, unbranched, 8.5–20 µm; basal appendage 0–1, when present not smooth, ragged, unbranched, 4–16.5 µm long. On wood of *Carpinus*, *Quercus*, *Rhododendron* sp. Phen.: II (DE) ..... **Xenoseimatosporium quercinum** (Goonas. et al.) F. Liu, L. Cai & Crous III.: Goonasekara et al. 2016: fig. 2 (sub *Seimatosporium quercina*).

**Zetiasplozia** Nag Raj

Type species: *Zetiasplozia unicola*

Lit.: Liu et al. 2018: 356.

Phylogenetic location still undetermined due to the lack of sequences of the generic type.