FRAGILE ITEMS

Key to *Sistotrema*

Monomitic corticioid fungi with urniform basidia, without dendrohyphidia and with non-amyloid, thin-walled, smooth basidiospores

19th March, 2023

aphyllo.net

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Used shortenings:

CB+/−	dextrinoidity
Distr.	distribution
IKI+/−	amyloidity
Refs.	references
smt.	sometimes
smw.	somewhat
st.	sterigmata
Substr.	substrate
SV	sulphovanilline
👁	description and images available in aphyllo.net

Key

1.1 Hyphae simple-septate. 2

1.2 Hyphae fibulate. 7

2.1 Spores lanceolate, filiform, 24–30 x 1.5–2 µm.

Effused, farinaceous, smooth, very thin, white. Hyphae simple-septate, 2–8 µm; subicular up to 8 µm with thickening wall. Cystidia tubular-clavate-irregular, up to 70 x 6 µm. Basidia suburniform to subcylindrical, 24–30 x 3–6 µm; 4 st.

Distr.: Great Britain. – Substr.: *Pteridium aquilinum*. – Refs.: [35:11]

Sistotrema aciferum P. Roberts & Henrici 2008

2.2 Spores differently shaped. 3

3.1 Cystidia (gloeocystidia) present.

Effused, membranaceous, smooth, thin, whitish, pale yellowish. Hyphae simple-septate, 1.5–2.5 µm. Gloeocystidia subcylindrical-irregular, smt. bi-rooted, smt. with apical schizopapilla, (15) 20–30 (40) x (2.5) 3.5–5 (6) µm. Basidia urniform, 14–25 x 4–6 µm; 4 st. Spores narrowly ellipsoid to cylindrical, (5) 6–8.5 x 2–2.8 µm.

Distr.: France. – Substr.: *Fraxinus excelsior*, *Rubus idaeus*. – Refs.: [3:189] 👁

Sistotrema gloeocystidiatum Boidin & Gilles 1994

3.2 Cystidia (gloeocystidia) absent. 4

4.1 Spores subfusiform, narrowly ellipsoid often tapering toward the apiculus, longer than 9 µm.

Effused, adherent, porulose, reticulate, smooth, thin, whitish-grey. Hyphae simple-septate; subhymenial 2–3 µm; subicular 4–7 µm, with thickening wall. Basidia urniform, with an elongated neck, subcylindrical, smt. peduncolate, (20) 25–35 (40) x 6–7.5 µm (base); (4) 6 st. Spores narrowly ellipsoid often tapering toward the apiculus, subfusiform, 9–11 (12) x 4–4.5 (5) µm

Distr.: Europe. – Substr.: angio, gymno, litter, needles. – Refs.: [13:1355]

Sistotrema pyrosporum Hauerslev 1974

4.2 Spores differently shaped and shorter. 5

5.1 Spores subangular, broadly ellipsoid, wider than 3.5 µm.

Effused, adherent, hypochnoid to membracaceous, smooth, whitish to yellowish. Hyphae simple-septate, 2–3.5 µm. Basidia urniform, 20–25 x 5–6 µm; 6 (8) st. Spores 5–6 x 3.5–4 µm

Distr.: Europe. – Substr.: gymno, *Pinus sp.*, bark. – Refs.: [41:479, 13:1365, ibid., 24:318, 4:249, p.p.]

Sistotrema citriforme (M.P. Christ.) K.H. Larss. & Hjortstam 1987

5.2 Spores ellipsoid to cylindrical, up to 3.5 µm in diam. 6

6.1 Hyphae 5–8 µm in diam., spores (6) 7–8 (9) x 3–3.5 (4) µm.

Effused, arachnoid-pruinose, smooth, very thin, whitish. Hyphae simple-septate, subicular with thickening wall. Basidia urniform, smt. with a long neck (tubular), 15–45 x 6–8 µm; (4) 6 (8) st. Spores narrowly ellipsoid to cylindrical.

Distr.: Argentina. – Substr.: *Nothofagus pumilio*. – Refs.: [16:1392]

Sistotrema botryobasidioides Gresl. 2001

6.2 Hyphae 2–6 µm in diam., spores (4.5) 5–6 (7.5) x 2.5–3 µm.

Effused, smooth, very thin, whitish, greyish. Hyphae simple-septate; subicular thickening wall, smt. ampullate at the septa. Basidia urniform (15) 18–22 (25) x 5–7 µm; 6 st. Spores ellipsoid, narrowly ellipsoid, cylindrical, often glued together.

Distr.: S.America, Europe. – Substr.: angio, gymno, needles, bark, wood. – Refs.: [13:1337]

Sistotrema efibulatum (J. Erikss.) Hjortstam 1984

7.1 Cystidia present. 8

7.2 Cystidia absent. 19

8.1 Cystidia (gloeocystidia) cylindrical to tubular, with or without constrictions, normally enclosed and with yellowish content. 9

8.2 Cystidia (leptocystidia) capitate, broadly clavate, ovoid, subglobose, ventricose, mostly hymenial, projecting or not. 16

9.1 Basidia with 1–4(5) sterigmata. 10

9.2 Basidia with 6–8 sterigmata. 12

10.1 Spores 5–7.5 (9) µm long

Effused, adherent, smooth, slightly tuberculate, whitish. Hyphae fibulate, 3–7 µm; subicular often ampullate at the septa. Gloeocystidia cylindrical-irregular, 50-80 x 5-8 µm. Basidia urniform with a long neck, 15–30 x 3.5–6 µm; (2) 4 st. Spores cylindrical, suballantoid. Smt. with bulbils

Distr.: Africa, N.America, S.America, Asia-Temperate, Asia-Tropical, Europe. – Substr.: angio, basidio, fungi, gymno, wood. – Refs.: [13:1361, 10:45] 👁

Sistotrema sernanderi (Litsch.) Donk 1956

10.2 Spores 7–12 (14) µm long 11

11.1 Basidia with 2 sterigmata

Effused, adherent, farinaceous or tufted-porulose to smooth, greyish to whitish. Hyphae fibulate; basal distinct 2–7 µm, sometimes ampullate, with thickening wall. Gloeocystidia cylindrical to tubular, slightly irregular, sinuous, obtuse, smt. with short outgrows toward the base, 45–80 x 3–7.5 µm. Basidia urniform to subcylindrical, (10) 15–30 x (3) 4–7 µm; 1–2 (5) st. Spores cylindrical, adaxial side flattening or slightly depressed, often with a light median compression in frontal view, 7–12 (14) x 2–3.5 µm

Distr.: Primorsk Terr.. – Substr.: *Corylus heterophylla*. – Refs.: [10:46, 33:209]

Sistotrema pereximium (Parmasto) Domanski 1992

11.2 Basidia with 4 sterigmata

Effused, loosely adherent, smooth, greyish white, brownish grey when dry. Hyphae fibulate less than 3.7 µm wide, basal with ampullate swellings. Basidia suburniform to urniform, 20–34 x 8–9 µm; 4 st. Spores narrowly ellipsoid to suballantoid, 8–11.5 x 3–3.7 µm

Distr.: West Himalaya. – Substr.: *Cedrus deodara*. – Refs.: [26:676]

Sistotrema macrosporum Man. Kaur & al. 2019

12.1 Spores subglobose to drop or pip-shaped, 2.5–4 x 2–3.5 µm.

Effused, loosely adherent, membranaceous, pellicular, smooth, very thin, whitish; with hyphal strands. Hyphae fibulate, 2.5–8 µm. Gloeocystidia poorly differentiated, cylindrical-irregular, 20–62 x 4.5–7 µm, often embedded in a hyaline to yellowish resinous matter. Basidia urniform, rarely pleural, (12) 14–25 (28) x 6–7.5 µm; (4) 6–8 st.

Distr.: Europe. – Substr.: angio, gymno. – Refs.: [12:2]

Sistotrema henri-michel Duhem & al. 2011

12.2 Spores elongated, subcylindrical to allantoid in side view. 13

13.1 Gloeocystidia toruloid to moniliform, with yellow-ochre content. 14

13.2 Gloeocystidia cylindrical to sinuous, without or with faint constrictions, with hyaline to yellowish content. 15

14.1 Spores 4–5.5 x 2–3 µm.

Effused, adherent, smooth, tuberculate, grandinioid, thin, whitish, light ochraceous. Hyphae fibulate, 2–5 µm. Gloeocystidia cylindrical-irregular to moniliform, 40–60 x 6–8 µm, yellow-brown content. Basidia urniform with a long neck, 17–30 x 5–6 µm; (4) 6 (8) st. Spores ellipsoid, subovoid.

Distr.: Africa, N.America, S.America, Asia-Temperate, Europe. – Substr.: angio, gymno, wood. – Refs.: [19:466, 13:1359, 10:32]

Sistotrema resinicystidium Hallenb. 1980

14.2 Spores (5) 5.5–7.5 (8) x 2.4–3.5 (4) µm.

Effused, membranaceous to papyraceous, loosely adherent to separable, thin, smooth to slightly tuberculated, cream to ochraceous or brownish. Hyphae fibulate; basal 4–8 µm, often ampullate. Gloeocystidia sinuous, irregularly moniliform, 50–80 (100+) x 7–13 (15) µm, yellow-amber content. Basidia urniform with a long neck, 15–30 x 5.5–6.5 µm; 5–8 st. Spores narrowly ellipsoid to subcylindrical, often slightly depressed, smt. tapering toward the apiculus.

Distr.: France. – Substr.: *Pinus sp.*, *Pinus sylvestris*. – Refs.: [10:35]

Sistotrema resinicystidioides Duhem 2013

15.1 Spores 3–5 (5.5) x (1.3) 1.5–2 (2.5) µm.

Effused, adherent, pruinose, smooth, subceraceous, very thin, greyish, whitish. Hyphae fibulate, 2–5.5 µm, hyaline, oily content; subicular with slightly thickening wall. Gloeocystidia cylindrical-irregular, 18–60 x (3.5) 5–8 (10) µm, oily content. Basidia urniform, 9–18 (22) x (3.5) 4–5.5 (6.5) µm; 6–8 st. Spores suballantoid, allantoid, subreniform.

Distr.: Europe. – Substr.: angio, fungi, gymno, bark, wood. – Refs.: [11:202] 👁

Sistotrema tholliae Duhem & Schultheis 2013

15.2 Spores 5–7 (7.5) x (1.5) 2–2.8 µm.

Effused, adherent, porulose, smooth, whitish to pale yellow. Hyphae fibulate, 2–5.5 µm, hyaline, oily content; subicular mostly thin-walled. Gloeocystidia 18–60 x (3.5) 5–8 (10) µm. Basidia urniform, 15–20 (25) x 5–8 µm; (4) 6 (8) st. Spores narrowly ellipsoid, subcylindrical, suballantoid.

Distr.: Northern hemisphere. – Substr.: angio, basidio, gymno, timber, wood. – Refs.: [13:1329, 10:19] 👁

Sistotrema coroniferum (Höhn. & Litsch.) Donk 1956

16.1 Cystidia capitate.

Effused, loosely adherent, pellicular, smooth, thin, whitish. Hyphae fibulate, 3–6 µm; subicular with thin or thickening wall, smt. ampullate at the septa. Cystidia (25) 40–70 x 6–7 (9) (base) x 2–4 (stem) x 6–8 (9) µm (top). Basidia urniform, suburniform, 20–35 x 4–6 µm; 6 (8) st. Spores subglobose, drop-shaped, subangular, 4–5 µm across or 3.5–5 x 3.2–4.5 µm.

Distr.: Africa, Europe. – Substr.: angio, gymno, mosses. – Refs.: [1:1352, 3:209]

Sistotrema pistilliferum Hauerslev 1974

16.2 Cystidia not capitate. 17

17.1 Spores often with depressed adaxial side, subreniform, up to 3.5–4.5 x 2.2–2.6 µm.

Effused, adherent, pruinose, porulose, granulose, finely grandinioid, white, greyish-white or bluish-white. Hyphae fibulate, 2.5–6 (11.5) µm. Cystidia ventricose, clavate, globulose, 10–25 x 6.5–13.5 µm, smt. shortly peduncolate. Basidia urniform, 11–22 x 3.8–6 µm; 6–8 st.

Distr.: Italy. – Substr.: *Fagus sylvatica*. – Refs.: [7:42]

Sistotrema ampullaceum Duhem 2011

17.2 Spores with flattening or only slightly depressed adaxial side, longer than 4.5 µm. 18

18.1 Basidia botryose, stout, 8–15 µm long; cystidia with small papillae.

Effused, araneose, pruinose, very thin, greyish-white. Hyphae fibulate, (2) 3–4 µm. Cystidia subglobose to broadly clavate, 12–20 x 10–13 µm. Basidia 8–15 x 5–9 µm; 4–8 st. Spores (4) 4.5–5 (6) x 2–2.5 (3) µm.

Distr.: Argentina. – Substr.: *Nothofagus pumilio*. – Refs.: [16:1393]

Sistotrema globosum Gresl. 2001

18.2 Basidia urniform to suburniform, 12–25 µm long; cystidia smooth.

Effused, smooth, porulose when dry. Hyphae fibulate, 2.5–4 µm, thin-walled. Cystidia subglobose to ovoid, 20–35 x 8–16 µm, with thin or thickening wall. Basidia 12–25 x 5.5–7 µm; 6–8 st. Spores subcilindrical, 5–7 x 2.5–3 µm.

Distr.: France. – Substr.: *Pinus pinaster*. – Refs.: [3:217]

Sistotremastrum lateclavigerum Boidin & Gilles 1994

19.1 Hymenophore odontioid, hydnoid, irpicoid, poroid. 20

19.2 Hymenophore smooth to grandinioid or slightly tuberculate. 28

20.1 Basidiome flabellate, spathulate, stipitate. 21

20.2 Basidiome effused. 22

21.1 Spores narrowly ellipsoid, subcylindrical, (4) 4.5–6 x 2–2.5 (3) µm.

Concrescent, soft whitish, parts turning ochraceous when old. Hymenophore reticulate poroid to irpicoid or hydnoid, teeth up to 2 mm long. Hyphae fibulate, 2–5 (7) µm. Basidia urniform, (12) 14–25 (45) x (3.5) 4–6 (8) µm; 6–8 st.

Distr.: Africa, N.America, Asia-Temperate, Asia-Tropical, Europe. – Substr.: angio, gymno, litter, mosses, needles, roots, timber, wood. – Refs.: [13:1325, 34, 37:612, 38:385]

Sistotrema confluens Pers. 1794

21.2 Spores ellipsoid to narrowly ellipsoid, (3.7) 3.9–4.2 (4.5) x 2–2.3 (2.4) µm.
Infundibuliform, centrally or laterally stipitate. Hymenophore poroid. Hyphae fibulate, 2–5 µm diam., thin-walled. Basidia urniform, 10–18 x 4-7 µm; 6 st.
Distr.: Manchuria. – Substr.: timber. – Refs.: [45:180]
Sistotrema subconfluens L.W. Zhou 2013

22.1 Hymenophore odontioid to hydnoid. 23

22.2 Hymenophore poroid. 25

23.1 Spores subglobose to broadly ellipsoid, 3–5 x 2.5–3.5 µm.
Effused, loosely adherent, separable, soft membranaceous, odontioid, hydnoid, irpicoid, subporoid, whitish, yellowish; teeth up to 2 mm long. Hyphae fibulate, 2–5 µm, smt. ampullate at the septa. Basidia urniform, 12–20 (25) x 5–7 µm (base); 6 st.
Distr.: Northern hemisphere. – Substr.: angio, gymno, leaves, lichens, litter, mosses, needles, ferns, stones, worked timber, wood. – Refs.: [13:1343, p.p., 36:62]
Sistotrema muscicola (Pers.) S. Lundell 1947

23.2 Spores elongated, longer than 6 µm. 24

24.1 Spores subfusiform, narrowly ellipsoid, often slightly broader toward the base, (6) 6.5–8.5 (9) x (2.2) 2.8–3.5 µm.
Effused, adherent, odontioid, hydnoid, whitish, pale buff; subiculum thin; aculei up to 4 mm long. Hyphae fibulate, 2–6 µm; subicular with slightly thickening wall. Basidia urniform, 18–20 (25) x 6.5–8 µm (base); (4) 6–8 st.
Distr.: N.America, S.America, Asia-Temperate, Europe. – Substr.: angio, gymno, wood. – Refs.: [13:1357, 3:212]
Sistotrema raduloides (P. Karst.) Donk 1956

24.2 Spores narrowly ellipsoid, 9–10.5 x 2.8–3 µm.
Effused, pruinose, membranaceous, smooth with scattered spines, odontioid, whitish, pale buff, with hyphal strands; aculei up to 1 mm long. Hyphae fibulate, 2.4–6.5 µm; subicular with rare ampullate septa. Basidia urniform, (15) 25–35 x 6 µm; 4–6 st.
Distr.: Yukon. – Substr.: *Populus tremuloides*. – Refs.: [14:67]
Sistotrema populicola Ginns 1988

25.1 Spores globose to subglobose. 26

25.2 Spores elongated. 27

26.1 Basidia with 2–4 sterigmata; spores 4.5–6 µm across.
Effused, loosely adherent, soft, brittle when dry, pores angular, 1-4/mm, 1-2 mm thick, whitish to pale yellowish. Hyphae fibulate, 2–8 µm. Basidia urniform, 20–30 (35) x (6) 7–10 (11) µm.
Distr.: Northern hemisphere. – Substr.: angio, gymno, litter, mosses, stones, timber. – Refs.: [13:1312, 15:20, 38:384]
Sistotrema alboluteum (Bourdot & Galzin) Bondartsev & Singer 1941

26.2 Basidia with 6–8 sterigmata; spores 3–4 µm across.
Effused, pores angular, 4/mm, thin, whitish. Hyphae fibulate, 2.5–4 µm. Basidia urniform, 12–18 µm. Spores subglobose, broadly ellipsoid, 3–4 x 2.5–3 µm.
Distr.: Europe. – Substr.: ferns, gymno, litter, stones. – Refs.: [36:62]
Sistotrema albopallescens (Bourdot & Galzin) Bondartsev & Singer 1941

27.1 Basidiome pale ochraceous to brownish; spores narrowly ellipsoid to cylindrical, adaxial side flattening.

Effused, soft-waxy and fragile, soft-corky when dry, pores angular, lacerate, (3) 4-6/mm, up to 5 mm thick. Hyphae fibulate, subhymenial 2.5–4 µm, subicular 3.5–7 µm, CB±. Basidia urniform, 15–22 x 4.5–6 (7) µm; 2–4 st. Spores (4.3) 4.6–6.7 (7.3) x (2.3) 2.5–2.9 (3.4) µm

Distr.: Russia Central. – Substr.: *Populus tremula*. – Refs.: [40:57]

Sistotrema brunneolum Spirin & Zmitr. 2007

27.2 Basidiome whitish; spores subcylindrical, adaxial side flattening or slightly depressed.

Effused, loosely adherent, soft, delicate, brittle when dry, pores rounded to angular. Hyphae fibulate, 2–5 µm; subicular smt. ampullate at the septa. Basidia urniform, 14–20 x 5–7 µm; 6 st. Spores 4–5.5 (6) x 2–2.5 (3) µm

Distr.: Africa, Asia-Temperate, Europe. – Substr.: angio, gymno, litter, wood. – Refs.: [28:105, 13:1331]

Sistotrema dennisii Malençon 1976

28.1 Spores isodiametric or almost so: globose, subglobose, broadly ellipsoid, ovoid, obovoid or ±angular, adaxial side convex or sometimes flattening. 29

28.2 Spores elongated 36

29.1 Spores tetrahedral, distinctly 3–4 angular.

Effused, adherent, smooth, very thin, whitish. Hyphae fibulate, 2.5–5 µm. Basidia urniform, 12–18 x 4–6 µm; 6–8 st. Spores 4.5–5 x 3–4.5 µm.

Distr.: Africa, N.America, S.America, Asia-Tropical, Europe, Pacific. – Substr.: angio, gymno, wood. – Refs.: [13:1365] 👁

Sistotrema subtrigonospermum D.P. Rogers 1935

29.2 Spores differently shaped. 30

30.1 Spores often slightly angular to somewhat biapiculate; basidiome relatively thick, yellowish to yellowish-green.

Effused, adherent, tough, smooth. Hyphae fibulate; subhymenial 2.5–4 µm; basal short-celled 3–9 µm often almost isodiametric. Basidia urniform to subcylindrical, smt. narrowed at the base, (19) 21–36 (40) x 6–8 (9) µm; 6 st. Spores (4.5) 5–6 x (3.5) 4–5 µm.

Distr.: Finland. – Substr.: *Juniperus communis*, *Populus tremula*. – Refs.: [27:220]

Sistotrema luteoviride Kotir. & K.H. Larss. 2013

30.2 Spores different; basidiome mostly whitish. 31

31.1 Basidia up to 10 µm long; spores 2.5–3.5 x 2.3–2.5 µm.

Effused, loosely adherent, farinaceous, smooth, whitish. Hyphae fibulate, 2–3.3 µm. Basidia urniform, 8–9.5 x 3–4 µm; 6–8 st. Spores subglobose.

Distr.: Alaska, British Columbia, Veracruz. – Substr.: angio, gymno. – Refs.: [20:406]

Sistotrema farinaceum Hallenb. 1984

31.2 Basidia longer; spores larger. 32

32.1 Basal hyphae short-celled, irregular, swollen, sausage-shaped, up to 16 µm in diam., thick-walled. 33

32.2 Basal hyphae almost regular or if irregular then thin-walled. 34

33.1 Basal hyphae finely and densely incrusted (at least in IKI and CB); spores 3–4 (4.5) x 2–2.6 µm.

Effused, adherent, thin, whitish. Hyphae fibulate; subhymenial 1.5–5 µm; basal up to 10 µm in diam, sausage-shaped, finely and densely incrusted in CB and IKI. Basidia urniform to subcylindrical, 9–25 (30) x 4.4–5.5 µm; 6–8 st. Spores broadly ellipsoid with a flattening adaxial side.

Distr.: France. – Substr.: angio, wood. – Refs.: [9:98]

Sistotrema gerard-trichies Duhem 2013

33.2 Basal hyphae smooth; spores (3.8) 4–5.5 (6) x 3.3-4.2 µm.

Hyphae fibulate. Basidia urniform, 13–27.5 x 5.5–7.5 µm; 5–7 st. Spores broadly ellipsoid.

Distr.: France. – Substr.: *Picea abies*. – Refs.: [8:105]

Sistotrema sommandense Duhem 2011

34.1 Spores up to 4.5 (5) µm long.

Effused, adherent to loosely adherent, farinose, porulose, pelliculose, smooth, whitish, yellowish, ochraceous. Hyphae fibulate, 3–5 µm, subicular smt. up to 10 µm, with thickening wall. Basidia urniform, smt. with a long neck, 11–30 (40) x 4.5–6.5 µm; 6–8 st. Spores broadly ellipsoid, slightly tapering toward the apiculus, drop-shaped, (2.5) 3–4.5 (5) x (2) 2.2–3 (3.3) µm.

Distr.: Africa, N.America, S.America, Asia-Temperate, Asia-Tropical, Europe. – Substr.: angio, ferns, gymno, herbs, leaves, bark, wood. – Refs.: [7:46-54, type rev.]

Sistotrema diademiferum (Bourdot & Galzin) Donk 1956

34.2 Spores 5–7 µm long. 35

35.1 Basal hyphae 6–8 (10) µm wide.

Effused, loosely adherent, smooth, whitish. Hyphae fibulate. Basidia urniform, 16–24 x 5–7 (9) µm; (4) 6 (8) st. Spores pyriform to ovoid, broadly ellipsoid, (5) 5.5–7 x (3.5) 4.5–5 µm

Distr.: New Zealand. – Substr.: wood. – Refs.: [17:67, 42:331, 5:324]

Sistotrema otagense (G. Cunn.) Stalpers & P.K. Buchanan 1991

35.2 Basal hyphae 2–3 µm wide.

Effused, adherent, smooth, subceraceous, thin, greyish when fresh, when dry yellowish and porulose. Hyphae fibulate. Basidia urniform, 17–22 (25) x 6–7 µm; 4–5 (6) st. Spores subglobose, more or less isodiametric, 5–6 (6.5) x 4–5 µm.

Distr.: Martinique. – Substr.: *Coccoloba uvifera*. – Refs.: [17:66]

Sistotrema macabouense G. Gruhn & al. 2017

36.1 Basidia with 1–4 sterigmata. 37

36.2 Basidia with 6–8 sterigmata. 42

37.1 Basidia mostly with 2 sterigmata. 38

37.2 Basidia mostly with 4 sterigmata. 39

38.1 Spores ellipsoid to subcylindrical, 8–10.5 x 5.5–6 µm.

Effused, pruinose, porulose, smooth, very thin, whitish. Hyphae fibulate, 3.5–4.5 µm. Basidia urniform, often with a long neck, 20–25 x 7–8.5 µm; 2 (4) st.

Distr.: North Caucasus, Ontario. – Substr.: *Pinus strobus*, wood. – Refs.: [25:152]

Sistotrema eximum (H.S. Jacks.) Ryvarden & Solheim 1977

38.2 Spores ellipsoid to subfusiform, (8) 10–16 (18) x (5.5) 6–8 µm.

Effused, porose-reticulate then subpellicular, subceraceous, smooth, thin, whitish. Hyphae fibulate, 3–4 (6) µm; subicular smt. ampullate at the septa. Basidia subcylindrical to narrowly urniform 25–50 x 5–7 µm; 2 st.

Distr.: Europe. – Substr.: angio. – Refs.: [39:378, 13:1317, 3:189]

Sistotrema autumnale Ryvarden & H. Solheim 1977

39.1 Spores up to 8 µm long. 40

39.2 Spores longer than 8 µm. 41

40.1 Basidiome adherent, becoming grandinioid.

Effused, adherent, porulose, grandinioid, whitish. Hyphae fibulate, 2–4 µm. Basidia urniform, 15–20 x (4) 5.5–7 µm; 4 st. Spores subcylindrical, suballantoid, 5.5–7 (8) x 3–4 µm.

Distr.: Africa, Europe. – Substr.: angio, ferns, gymno. – Refs.: [6:130, 21sub *S. quadrisporum*]

Sistotrema hispanicum M. Dueñas & al. 1988

40.2 Basidiome pellicular, smooth.

Effused, adherent, ceraceous, up to 0.3 mm thick, whitish. Hyphae fibulate, 2.5–5 (6) µm, greyish to yellow-olivaceous with SV. Basidia urniform with an elongated neck, 20–28 x 4.5–5.5 µm; 4 st. Spores (6.5) 7–8 (8.5) x 3–3.5 µm.

Distr.: Estonia. – Substr.: angio. – Refs.: [32:224]

Galzinia athelioides Parmasto 1965

41.1 Spores with convex adaxial side.

Effused, adherent, porulose, smooth, indistinctly tuberculate, cracking when dry, whitish. Hyphae fibulate, 3–5 µm, subicular straight and uniform, with thickening wall. Basidia urniform, 30–40 x 6–7 µm; (2) 4 st. Spores subamigdaliform, 8–10 (11) x 4.5–5.5 (6.5) µm.

Distr.: Europe. – Substr.: *Salix nigricans*, *Salix sp.* – Refs.: [22:578, 13:1340]

Sistotrema intermedium Hjortstam 1983

41.2 Spores with flattening to depressed adaxial side.

Effused, farinose, araneose, porulose, smooth, white. Hyphae fibulate, 3–4 µm. Basidia urniform, 19–32 x 6–7 µm (base); (2) 4 st. Spores narrowly ellipsoid, subfusiform, slightly depressed, 6.5–9 x 3–4 µm.

Distr.: Europe. – Substr.: *Alnus viridis*. – Refs.: [3:187]

Sistotrema alni Boidin & Gilles 1994

42.1 Spores with distinctly depressed adaxial side. 43

42.2 Spores with convex, flattening or only slightly depressen adaxial side. 50

43.1 Spores up to 6.5 µm long. 44

43.2 Spores longer than 6 µm. 48

44.1 Spores 3-4 x 1.5 µm; basidia up to 10 µm long.

Effused, adherent, reticulate, smooth, very thin, whitish. Hyphae fibulate, 1.5–4 µm. Basidia urniform, 6.5–9.5 x 3.5–4 µm; 6–8 st.

Distr.: Japan, Sichuan. – Substr.: angio, *Castanopsis cuspidata*. – Refs.: [30:122]

Sistotrema microsporum N. Maek. 1993

44.2 Spores and basidia larger. 45

45.1 Basidiome granulose to grandinioid

Effused, soft, whitish. Hyphae fibulate, 3–6 µm; subicular with thickening wall. Basidia urniform, 12–20 (24) x 3–6 (7) µm; 6–8 st. Spores suballantoid 4–4.5 x 2–2.5 µm.

Distr.: Africa, N.America, S.America, Antarctic, Asia-Temperate, Asia-Tropical, Europe, Pacific. – Substr.: angio, basidio, ferns, Fungi, gymno, litter, worked timber, bark, wood. – Refs.: [20:392, 13:1317]

Sistotrema brinkmannii (Bres.) J. Erikss. 1948

45.2 Basidiome pruinose, porulose, becoming smooth (never grandinioid). 46

46.1 Spores somewhat bananiform, tapering toward the apiculus.

Effused, pruinose to tufted, greyish-ochraceous. Hyphae fibulate, 1–4 µm in diam; in hymenium embedded in jellowish resinous material (CB). Basidia botryose to suburniform, 9–20 (25) x 3.5–6 µm; 6–8 st. Spores 4–6 (6.5) x 1.5–2.2 (2.5) µm.

Distr.: France. – Substr.: angio, wood. – Refs.: [9:94]

Sistotrema janus Duhem & Trichies 2013

46.2 Spores with obtuse ends. 47

47.1 On *Hevea brasiliensis* in Malaysia; with *Ingoldiella* imperfect state in culture.

Effused, pruinose, powdery or granular, thin, white. Hyphae fibulate. Basidia urniform; (4) 8 st. Spores subcylindrical, suballantoid, 5–6 x 1.5–1.8 µm Imperfect state: *Ingoldiella hamata*

Distr.: Malaysia. – Substr.: *Hevea brasiliensis*. – Refs.: [31:287]

Sistotrema hamatum Nawawi & J. Webster 1982

47.2 On other substrates, common species with worldwide distribution.

Effused, adherent, pruinose, smooth, ceraceous, very thin, whitish, light greyish. Hyphae fibulate, 2.5–3.5 µm diam.. Basidia urniform, 15–18 (22) x 4–6 µm; 6–8 st. Spores cylindrical, suballantoid (4.5) 5–6 x 1.5–2 µm.

Distr.: Worldwide. – Substr.: angio, gymno, bark, wood. – Refs.: [13:1347]

Sistotrema oblongisporum M.P. Christ. & Hauerslev 1960

48.1 Spores subnavicular, somewhat bananiform; basidia up to 20 µm long.

Effused, araneose, pruinose, subpellicular, thin, whitish. Hyphae fibulate, 3–4 µm. Cystidia absent. Basidia urniform, 15–20 x 5–7.5 µm; 6–8 st. Spores (5) 7–9 x 2–2.5 µm.

Distr.: Australia. – Substr.: timber. – Refs.: [44:510]

Sistotrema hypogaeum Warcup & P.H.B. Talbot 1962

48.2 Spores suballantoid to allantoid; basidia often longer. 49

49.1 Basidiome adherent; basal hyphae regular, thin-walled, not forming strands.

Effused, smooth, thin, whitish. Hyphae fibulate, 2.5–4.5 µm. Basidia urniform, with elongated neck, 25–32 x 5–6 µm; (6) 8 st. Spores (6.3) 7–9 (10) x 1.8–2.5 µm.

Distr.: Reunion. – Substr.: *Stellia sp.* – Refs.: [2:134]

Sistotrema cadetii Boidin & Gilles 1994

49.2 Basidiome pellicular; basal hyphae often with ampullate septa, some with thickening wall, sometimes forming strands.

Effused, smooth, thin, whitish, light ochraceous. Hyphae fibulate, 2.5–5.5 µm. Basidia urniform, 14–30 x 5.5-6.5 µm; 4–8 st. Spores cylindrical, suballantoid, 7–9 x 2–2.5 µm.

Distr.: Asia-Temperate, Europe. – Substr.: *Castanea sativa*, *Populus alba.* – Refs.: [19:468]

Sistotrema suballantosporum Hallenb. 1980

50.1 Basal hyphae 7–10 µm in diam., brownish and cyanophilous.

Effused, loosely adherent, porulose, pellicular, smooth, thin, whitish; smt. with hyphal strands. Hyphae fibulate. Basidia urniform, 18–25 (30) x 6–7 µm; 6–8 st. Spores narrowly ellipsoid, adaxial side flattening or smt. concave, subcylindrical, 4.5–5.5 (6) x 2–2.5 (3) µm, CB±

Distr.: Africa, Europe, Pacific. – Substr.: angio, cones, ferns, gymno, litter, timber, wood. – Refs.: [13:1339, 29:312]

Sistotrema heteronemum (J. Erikss.) Å. Strid 1975

50.2 Basal hyphae thinner, hyaline to yellowish, CB– 51

51.1 Spores longer than 8.5 µm.

Effused, adherent, pruinose, porulose, smooth, thin, whitish. Hyphae fibulate, 2.5–3 (3.5) µm. Basidia urniform, smt. pleural, 20–30 (40) x 6–7 (8) µm; (4) 5 st. Spores narrowly ellipsoid to cylindrical, 9–12 x 4–4.5 (5.5) µm.

Distr.: Africa, Europe. – Substr.: angio, ferns, gymno, horsetails. – Refs.: [23:56]

Sistotrema pteriphilum K.H. Larss. & Hjortstam 1985

51.2 Spores less than 8.5 µm long. 52

52.1 Spores up to 4.5 µm long. 53

52.2 Spores longer than 4.5 µm. 55

53.1 Spores obovoid to drop-shaped, tapering toward the apiculus.

Effused, pruinose, subceraceous, whitish. Hyphae fibulate, 2–5.5 µm. Basidia urniform, 12.5–17 x 5–5.5 µm (base); 8 st. Spores 3–4 x 1.7–2.2 µm.

Distr.: France. – Substr.: leaves, *Pinus pinaster.* – Refs.: [3:208]

Sistotrema pinifoliae Boidin & Gilles 1994

53.2 Spores subcylindrical, obtuse at both ends. 54

54.1 Spores binucleate, 3.3–3.8 x **1.5–1.8** µm.

Effused, adherent, porulose, smooth, very thin, greyish. Hyphae fibulate, 1.5–3 µm diam. Basidia urniform, 7–12 x 3–4 µm; 6–8 st.

Distr.: N.America, Asia-Temperate, Asia-Tropical, Europe. – Substr.: angio, gymno, wood. – Refs.: [20:409]

Sistotrema binucleosporum Hallenb. 1984

54.2 Spores uninucleate, 3.5–4.5 x (1.8) **2–2.5** µm.

Effused, adherent, porulose, smooth, thin, greyish white. Hyphae fibulate, subicular with thickening walls. Basidia urniform, 10–20 x 3.5–4.5 µm; 6–8 st.

Distr.: Africa, N.America, S.America, Asia-Temperate, Asia-Tropical, Europe. – Substr.: angio, gymno. – Refs.: [20:407, 3:209] 👁

Sistotrema porulosum Hallenb. 1984

55.1 Spores wider than 3 µm (at least in mean). 56

55.2 Spores up to 3 µm in diam. 58

56.1 Spores up to 6.5 (7) µm long; basidiome pellicular.

effused, arachnoid to pellicular and separable, smooth, white to slightly greyish. Hyphae fibulate; subhymenial 3.5–4.5 (5) µm; subicular 3.5–7 (8) µm, individual cells sometimes swollen. Basidia urniform, 18–25 x 4.5–5.5 µm, 6 st. Spores ellipsoid with flattening adaxial side, sometimes slightly pip-shaped, (5.4) 5.7–6.5 (7) x 3.3–4 (4.3) µm.

Distr.: Netherlands. – Substr.: *Fagus sylvatica*, leaves. – Refs.: [43:287]

Sistotrema epiphyllum Stalpers & al. 2014

56.2 Spores 6–8 µm long; basidiome adherent or pellicular. 57

57.1 Basidiome pellicular, separable; basal hyphae often forming strands; spores (6.2) 6.5–8.2 x (2.8) 3–4 (4.2) µm.

Effused, smooth, thin, whitish, with hyphal strands. Hyphae fibulate, 3.3–6.5 µm, in subiculum with thickening wall, smt. ampullate at the septa, content often yellowish, brownish with SV. Basidia urniform, smt. peduncolate, 16–32 x 6–8 µm; (4) 6–8 st.

Distr.: N.America, S.America, Asia-Temperate. – Substr.: angio, gymno. – Refs.: [20:400]. – 👁

Sistotrema athelioides Hallenb. 1984

57.2 Basidiome adherent; basal hyphae rarely forming strands; spores (5) 6–7 (8) x 2.7–3.3 µm.

Effused, smooth, thin, whitish. Hyphae fibulate; subhymenial 3.5–7.5 µm; subicular with thickening wall, often ampullate at the septa. Basidia urniform, 19–27 x 6–8.5 µm; 6 st.

Distr.: British Columbia. – Substr.: gymno, wood. – Refs.: [20:397]. – 👁

Sistotrema adnatum Hallenb. 1984

58.1 Basidiome very thin, mostly discontinuous and hardly visible when dry. 59

58.2 Basidiome thicker, submembranaceous to pellicular, normally well developed. . 61

59.1 Spores wider than 2.5 µm.

Effused, farinose, pruinose, smooth, very thin, whitish, light greyish. Hyphae fibulate, 3.5–6 µm, often smw. ampullate at the septa. Basidia urniform, rarely obpyriform, 6–8 µm wide; 6 st. Spores narrowly ellipsoid to subcylindrical, slightly tapering toward the apiculus, 5.5–7.5 x (2.5) 2.7–3.2 µm.

Distr.: Estonia, Sichuan. – Substr.: *Populus tremula*. – Refs.: [32:230]

Sistotrema estonicum Parmasto 1965

59.2 Spores up to 2.5 µm in diam. 60

60.1 Spores somewhat bottle-shaped in frontal view, sometimes slightly broader toward the base; apiculus distinct and relatively large.

Effused, porulose, discontinuous, very thin, whitish. Hyphae fibulate, 5–8 µm, subicular with thickening wall, smw. ampullate at the septa. Basidia urniform, 10–15 (20) x 6–7 µm (base); 6–8 st. Spores narrowly ellipsoid, cylindrical, 5.5–7.5 x 2.2–2.7 µm.

Distr.: Africa, Europe. – Substr.: *Calamus sp.*, *Juncus sp.*, *Pteridium sp.* – Refs.: [3:204]

Sistotrema lagenosporum Boidin & Gilles 1994

60.2 Spores ellipsoid in frontal view; apiculus small.

Effused, loosely adherent or separable, pulverulent, hypochnoid, reticulate, smooth, very thin, whitish, pale yellowish grey. Hyphae fibulate, 3.5–6.5 µm, smt. ampullate at the septa. Basidia urniform, 15–20 x 5.5–7 µm; (4) 6 (8) st. Spores narrowly ellipsoid to cylindrical, 5.5–7 x 1.8–2.5 µm.

Distr.: Iran, Kamchatka. – Substr.: angio, *Populus suaveolens*. – Refs.: [32:230, 18:72]

Sistotrema camshadalicum Parmasto 1965

61.1 Basidiome smooth to granulose or somewhat grandinioid; bulbils normally common toward and at the margin; hyphal strands infrequent.

Effused, pellicular to submembranaceous, loosely adherent to separable, smooth to granulose or smw. grandinioid, cream to yellowish. Rhizomorphs infrequent. Hyphae fibulate, 2.5–5 µm, sometimes with ampullate septa. Basidia urniform, 15–25 x 5–7 µm; (4) 6 sterigmata. Spores ellipsoid, narrowly ellipsoid to subcylindrical, (4) 5–6.5 (7) x (2) 2.2–3 µm. Bulbils normally present at margin.

Distr.: Northern hemisphere. – Substr.: angio, gymno, wood. – Refs.: [20:403] 👁

Sistotrema coronilla (Höhn. & Litsch.) Donk 1935

61.2 Basidiome porulose to smooth; bulbils absent (but reported for *S. biggsiae* in culture.); hyphal strands absent. 62

62.1 Spores ellipsoid to narrowly ellipsoid; adaxial side mostly convex.

Effused, smooth, soft, whitish. Hyphae fibulate, subhymenial 3–4 µm, subicular 4–7 µm. Basidia urniform, 15–20 (30) x 5–7 µm; 6 st. Spores (4) 4.5–6 (7) x (2) 2.5–3 µm.

Distr.: Africa, Asia-Temperate, Europe. – Substr.: angio, basidio, ferns, gymno, leaves, litter, mosses, timber, bark, wood. – Refs.: [13:1349]

Sistotrema octosporum (Höhn. & Litsch.) Hallenb. 1984

62.2 Spores subcylindrical; adaxial side flattening, sometimes slightly depressed.

Effused, membranaceous, smooth, whitish. Hyphae fibulate, 2.5–5.5 µm. Basidia urniform, 12–28 x 4–5.5 µm; 6–8 st. Spores subcylindrical, 5–6.5 x 2.3–3 µm.

Distr.: Africa, N.America, S.America. – Substr.: angio, fungi, gymno, wood. – Refs.: [20:401]

Sistotrema biggsiae Hallenb. 1984

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