



Fundación
Miguel Lillo
Tucumán
Argentina

doi

A synopsis of the species of *Hymenochaete* (Hymenochaetaceae, Basidiomycota) with smooth hymenophore in South America

Sinopsis de las especies de *Hymenochaete* (Hymenochaetaceae, Basidiomycota) con himenóforo liso en Sudamérica

Ryvarden, Leif^{1*} ; Juliano M. Baltazar² 

¹ Institute of Biological Sciences, University of Oslo, P.O. box 1066, Blindern, N-03125 Oslo, Norway.

² Laboratório de Estudos Micológicos (LEMic), Centro de Ciências da Natureza, Universidade Federal de São Carlos, Rod. Lauri Simões de Barros, Km 12, Aracaçu, 18290-000 Buri, SP, Brazil.

* Correspondence author: leif.ryvarden@ibv.uio.no

ABSTRACT

A synopsis of the known species of *Hymenochaete* with smooth hymenophore from South America is presented. Forty-six species are described and a key for their identification is provided.

Keywords — Hymenial setae; Neotropical funga; taxonomy; wood-decay fungi.

RESUMEN

Se presenta una sinopsis de las especies de *Hymenochaete* con himenóforo liso conocidas de Sudamérica. Se describen 46 especies y se provee una clave para su identificación.

Keywords — Funga neotropical; hongos degradadores de la madera; taxonomía; setas himeniales.

► Ref. bibliográfica: Ryvarden, L.; Baltazar, J. M. 2022. A synopsis of the species of *Hymenochaete* (Hymenochaetaceae, Basidiomycota) with smooth hymenophore in South America. *Lilloa* 59 (Suplemento): 7-29. doi: <https://doi.org/10.30550/j.lil/2022.59.S/2022.07.15>

► Recibido: 31 de mayo 2022 – Aceptado: 15 de julio 2022 – Publicado en línea: 18 de octubre 2022.

► URL de la revista: <http://lilloa.lillo.org.ar>



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INTRODUCTION

Hymenochaete Lév. is a widespread genus, usually easy to recognize in the field by their brown thin basidiomes and usually with a smooth hymenophore. Microscopically they are equally easy to recognize as they all have hymenial setae and simple septate hyphae. The genus is seemingly well adapted to invade exposed environments, and their basidiomes are frequently found on dead, still attached branches and standing dead trunks. Such exposed environments have favored an adaptation to withstand dry periods and very rapidly produces basidiospores when the conditions are favorable, such as in rainy periods. The consequence is that specimens collected in dry weather are far too often sterile and difficult, with a few exceptions, to determine their identity properly. Thus, it is important when collecting *Hymenochaete* specimens under dry conditions, as far as possible, to take a spore print (placing the basidiomes over a black paper and cover them with wet paper and let them rest over a night). Remarkably often this procedure will result in a beautiful white spore print, easily seen on the black paper.

Numerous species have been described in the genus since Lévillé proposed it in 1846. Léger (1998) has written a well-documented and illustrated monograph of the genus where the species are placed in alphabetical order according to specific epithet. Thus, it is difficult to use the keys for restricted areas. The text is also in French, a language not as widely used as English. For these reasons, it was felt it would be necessary to provide a synopsis of the genus for South America to stimulate local taxonomic studies.

MATERIALS AND METHODS

The synopsis is based mainly on the works of Baltazar *et al.* (2014), Escobar (1978), Job (1987, 1990), Léger (1998), Lévillé (1846), Parmasto (1985), Parmasto *et al.* (2014), Ryvardeen (1982, 1985) and Talbot (1951, 1958). Species with 1-2 records in neighboring Central America areas (*e.g.*, Panama, Costa Rica, Jamaica) are included as they are likely to occur in South America. Terms and concepts of morphological characters, chemical reactions, decay characteristics and practical advice for the collection and determination of specimens have been previously described by Ryvardeen (2004). As basidiospores are hyaline, thin-walled and negative in Melzer's reagent, and the genus produces a white-rot, these characters are omitted in the descriptions. A broad delimitation of the genus is adopted here and does not reflect the phylogenetic relationships of the included taxa, as the aim of this work is to provide a tool for identification. Only basionyms that refer to genera considered synonyms of *Hymenochaete* are included, and only heterotypic synonyms that help in the identification process are cited.

TAXONOMY

Hymenochaete Lév.

Ann. Sci. Nat. Bot. Ser. 3, 5: 150, 1846, nom. cons.

Basidiomes resupinate to pileate, annual to perennial, pale cinnamon to deep umber brown, rarely deep reddish, hymenial surface smooth, tuberculate, irpicoid, odontoid, hydroid, poroid or concentrically lamellate, often cracked in dry condition, subiculum concolorous with a paler hymenial surface; hyphal system mono- or dimitic, generative hyphae with simple septa, skeletal hyphae present in some perennial species; dark brown, acute, unbranched setae present in all species, basidia small with 4 sterigmata, basidiospores hyaline, thin-walled, globose to allantoid and negative in Melzer's reagent. Cosmopolitan genus causing white rot in all types of wood.

Type species: *Hymenochaete rubiginosa* (Dicks) Lév.

Taxonomic synonyms:

Hydnochaete Bres., Hedwig. 35: 287, 1896 (hydroid species, not included here).

Hymenochaetella P. Karst., Bidr. Kann. Finl. Nat. Folk. 48: 428, 1889.

Cyclomyces Kunze ex Fr., Linnaea 5: 512, 1830, nom. rej. (poroid to cyclolamellate species, not included here).

Leptochoete Lév., Consid. Mycol.: 108, 1846.

Cerrenella Murrill, Bull. Torrey Bot. Club 32 (7): 361, 1905.

Cycloporellus Murrill, Bull. Torrey Bot. Club 34: 468, 1907.

Stiptochaete Ryvardeen, Trans. Br. Mycol. Soc. 85 (3): 536, 1985.

Dichochoete Parmasto, Folia Cryptogam. Estonica 37: 56, 2001.

Remarks. *Hymenochaete* species are usually easy to recognize in the field due to the brown basidiomes with a smooth to rarely tuberculate hymenial surface on which projecting dark brown setae usually can be observed with a hand lens. Currently the genus also includes species with other hymenophore configurations such as hydroid and poroid; however, these species are not included in this work.

KEY TO SPECIES

- | | | |
|----|--|-----------------------|
| 1 | Basidiomes stipitate | 2 |
| 1' | Basidiomes pileate to resupinate | 3 |
| 2 | Hymenial setae 60-75 μm long, basidiospores more or less subglobose | |
| | | <i>H. damaecornis</i> |
| 2' | Hymenial setae 40-70 μm long, basidiospores ellipsoid | <i>H. reniformis</i> |
| 3 | Hymenophore distinctly red | <i>H. cruenta</i> |
| 3' | Hymenophore brown, grayish to black, sometimes with orange or reddish tints but not distinctly red | 4 |
| 4 | Basidiomes effused-reflexed to pileate | KEY A |
| 4' | Basidiomes resupinate | KEY B |

KEY A

- 1 Hymenophore granular to hydroid *H. resupinata*
 1' Hymenophore smooth 2
 2 Cuticle present 3
 2' Cuticle absent 9
 3 Pileus smooth and glabrous 4
 3' Pileus villose, velutinate to strigose, sometimes glabrous with age but then zonate 5
 4 Basidiomes paper thin, setae septate, basidiospores allantoid *H. papyracea*
 4' Basidiomes massive, up to 1 cm thick, hard, setae without septa, basidiospores ellipsoid *H. unguolata*
 5 Encrusted hyphae present in the hymenium *H. luteobadia*
 5' Encrusted hyphae absent in the hymenium 6
 6 Dendrohyphidia present in hymenium *H. escobarii*
 6' Dendrohyphidia absent from the hymenium 7
 7 Basidiospores ellipsoid *H. villosa*
 7' Basidiospores allantoid 8
 8 Basidiospores $4-5 \times 1-1.5 \mu\text{m}$, setae apically finely encrusted *H. lenta*
 8' Basidiospores $6-7.5 \times 1.5-2.5$, setae smooth *H. curtisii*
 9 Setae up to $35 \mu\text{m}$ long, embedded in the hymenium, basidiospores $3-4 \mu\text{m}$ long *H. cacao*
 9' Setae longer than $35 \mu\text{m}$ and projecting, basidiospores longer than $4 \mu\text{m}$... 10
 10 Margin distinctly reflexed and rigid *H. rubiginosa*
 10' Margin without this combination of features 11
 11 Pileus strigose to hirsute, setae $45-75 \mu\text{m}$, smooth *H. attentuata*
 11' Pileus silky to finely tomentose, setae longer than $65 \mu\text{m}$, naked, encrusted or sheated 12
 12 Basidiomes distinctly pileate, basidiospores $3.5-5 \times 1.5-2.5 \mu\text{m}$... *H. rheicolor*
 12' Basidiomes semi-resupinate to effused, basidiospores $5-6.5 \times 2-2.5 \mu\text{m}$ *H. cervina*

KEY B

- 1 Dendrohyphidia present in hymenium 2
 1' Dendrohyphidia absent from hymenium 3
 2 Setae $20-40 \mu\text{m}$ long *H. pinnatifida*
 2' Setae $50-70 \mu\text{m}$ long *H. digitata*
 3 Cuticle or black zone present next to the substrate 4
 3' No black zone next to the substrate 12
 4 Cystidia present *H. fulva*
 4' Cystidia absent 5
 5 Basidiospores allantoid or globose 6
 5' Basidiospores ellipsoid 7
 6 Basidiospores allantoid *H. rigidula*

6'	Basidiospores globose	<i>H. globispora</i>
7	Basidiospores 5-7 × 2.3-3 μm, setae slightly encrusted	<i>H. inexa</i>
7'	Basidiospores smaller, setae naked	8
8	Basidiospores narrowly ellipsoid, 1.3-2 μm wide	<i>H. opaca</i>
8'	Basidiospores broadly ellipsoid 2-3 μm wide	9
9	Cuticle dividing context	<i>H. leonina</i>
9'	Cuticle present next to substrate	10
10	Setae 30-50 μm long	<i>H. dura</i>
10'	Setae longer than 50 μm	11
11	Large lumps of crystalline matter present in context; setae scattered in the basidiomes, known only from Brazil	<i>H. ustulata</i>
11'	Crystals present as small grains, setae only present among the basidia, known only from Argentina	<i>H. sordida</i>
12	Basidiospores longer than 5 μm	13
12'	Basidiospores shorter than 5 μm	20
13	Basidiospores cylindrical to allantoid, 4.5-7 μm long	14
13'	Basidiospores ellipsoid	16
14	Basidiomes up to 1000 μm thick, setae up to 130 μm long	<i>H. cinnamomea</i>
14'	Basidiomes up to 500 μm thick, setae up to 80 μm long	15
15	Setae fusiform to aculeate, sheathed at the apex, basidiospores 1.5-2 μm wide	<i>H. corrugata</i>
15'	Setae lanceolate to subulate, naked, basidiospores 2-3 μm wide	<i>H. proxima</i>
16	Paraphysate hyphae up to 2.5 μm in diam.	<i>H. innexa</i>
16'	Paraphysate hyphae absent	17
17	Basidiospores 5-6.5 × 3-3.5 μm, basidiomes up to 0.2 mm thick ...	<i>H. aberrans</i>
17'	Basidiospores larger, basidiomes thicker than 0.2 mm	18
18	Setae 75-185 μm projecting up to 120 μm, basidiospores subcylindrical	<i>H. contiformis</i>
18'	Setae up to 85 μm long, projecting up to 60 μm, basidiospores ellipsoid	19
19	Margin yellowish brown, setae in a single layer, basidiomes up to 100 μm thick	<i>H. flavomarginata</i>
19'	Margin absent or dark brown, setae evenly distributed, basidiomes up to 0.5 mm thick	<i>H. cervina</i>
20	Basidiospores 1-2 μm wide	21
20'	Basidiospores 2.5-4 μm wide	25
21	Encrusted cystidia present in the hymenium	<i>H. anomala</i>
21'	Encrusted cystidia absent	22
22	Basidiospores 2.5-3 μm long	<i>H. microspora</i>
22'	Basidiospores longer	23
23	Setae apically encrusted	<i>H. tuberculosa</i>
23'	Setae naked	24
24	Basidiospores 3-4 × 2 μm, ellipsoid, few setae, restricted to the hymenium, brown granular excretions present in the context	<i>H. raunkiaeri</i>
24'	Basidiospores 3-5 × 1.5-2.5 μm, ellipsoid to suballantoid, setae common throughout basidiomes	<i>H. tenuis</i>

25	Setae 50-150 μm long	26
25'	Setae 30-60 μm long	28
26	Two kinds of setae present, hyphae irregularly thick-walled, basidioles encrusted with granules	<i>H. berteroi</i>
26'	Only one kind of setae present, hyphae not irregularly thick-walled, basidioles smooth	27
27	Context with scattered dark thick-walled branched hyphae, setae almost smooth	<i>H. ceratophora</i>
27'	Context with encrusted hyphal ends, setae encrusted, often with climbing hyphae	<i>H. rhabarbarina</i>
28	Context duplex	<i>H. unicolor</i>
28'	Context homogenous	29
29	Setae few and restricted to the hymenium	<i>H. epichlora</i>
29'	Setae numerous throughout the basidiome	30
30	Basidiospores suballantoid, $3.5-4 \times 1.5-2 \mu\text{m}$, setae apically minutely verrucose	<i>H. vallata</i>
30'	Basidiospores subglobose, $3.5 \times 3-3.5 \mu\text{m}$., setae smooth	<i>H. crustacea</i>

Hymenochaete aberrans G.A. Escobar ex J.C. Léger.
Cryptogam. Mycol. 11: 292, 1990.

Basidiomes resupinate, velvety to waxy, when dry brownish orange, trama 40-90 μm thick; hyphae 3-4 μm in diameter. **Cuticle** absent. **Setigerous layer** on the substratum, 75-180 μm thick. **Setae** 75-130 \times 7.5-11 μm , uniformly distributed; lanceolate, naked to partially sheathed, projecting up to 90 μm beyond the hymenium. **Basidiospores** 5-6.5 \times 3-3.5 μm , short-ellipsoid.

Distribution. El Salvador, Brazil.

Remarks. The characteristic feature of this species is the aberrant or unusual combination of the very long and slender setae with a very thin basidiomes. *Hymenochaete innexa* and *H. fusca* seem to be closer to *H. aberrans* than to all of the other resupinate species that have the setigerous layer seated on the substrate.

Hymenochaete anomala Burt.
Ann. Missouri Bot. Gard. 5: 358. 1918.

Basidiomes resupinate, thin, brownish grey when dry, hymenophore velvety to granular, cracked; margin usually ending abruptly, trama 75-300 μm thick, hyphae 2-3 in diameter and trama with irregular masses of crystalline matter. **Cuticle** absent. **Setigerous layer** seated on the substratum at first but later on the context, 75-120 μm thick, composed of numerous setae uniformly distributed. **Setae** 20-50 \times 4.5-6 μm , lanceolate to aculeate, naked, projecting up to 25 μm beyond the hymenium.

Cystidia 16-19 \times 6-9 μm , thick-walled and encrusted. **Basidiospores** 3-3.5 \times 1.3-2 μm , short ellipsoid to suballantoid.

Distribution Trinidad y Tobago, Argentina, Brazil, Venezuela.

Remarks. *Hymenochaete anomala* is easily separated from other species by its encrusted cystidia and small setae that barely project beyond the hymenium.

Hymenochaete attenuata (Lév.) Lév.
Ann. Sci. Nat. Bot. Ser. 3, 5: 152, 1846.

Basidiomes effused reflexed with a narrow pileus, 2 × 2 10 mm, fragile, single or imbricate, papery to coriaceous, thin, pliant to brittle when dry, upper surface strigose to hirsute, finely concentrically zonate, pale to deep dark brown, hymenophore smooth, when dry deep brownish trama 70-200 μm thick, hyphae 2-4 μm in diameter but more loosely arranged towards the upper surface. **Cuticle** absent. **Setigerous layer** seated on the context, usually composed of a single layer of regularly spaced setae, sometimes 40 100 μm thick and composed of a single layer. **Setae** 45-75 × 6-9 (-11) μm , lanceolate, naked often slightly sinuous projecting, up to 40 μm beyond the hymenium. **Basidiospores** ellipsoid, 4-4.5 × 1.5-2 μm .

Distribution. Argentina.

Remarks. This species is recognized because of small the strigose pileus.

Hymenochaete berteroi Pat.
Bull. Soc. Mycol. Fr. 10 (2): 78, 1894.

Basidiomes resupinate, adnate but sometimes with loosing margins, umber brown to brown, hymenophore smooth, eventually with some deep cracks, trama up to 500 μm thick; hyphae 3-5 μm in diam., with irregularly thickened walls, setal hyphae slightly curved, 100-150 × 6-8 μm , embedded. **Cuticle** absent. **Setigerous layer** up to 400 μm thick. **Setae** 45-80 × 7-10 μm , subulate, sheathed, projecting up to 50 μm beyond the hymenium. **Basidiospores** 3.5-5 × 2-3 μm , ellipsoid and sometimes with one side slightly flattened.

Distribution. Chile, Venezuela.

Remarks. This species is characterized by the presence of two kinds of setae and basidioles encrusted with granules.

Hymenochaete cacao (Berk.) Berk. & M.A. Curtis.
J. Linn. Soc., Bot. 10: 333, 1868.

Basidiomes pileate sessile, flabelliform to dimidiate, conchate, sometimes imbricate, margin lobed and plicate, firmly coriaceous, brittle when dry, pileus up to 3.5 cm. in diameter; adaxial surface velvety, concentrically zonate and sulcate, when dry orange grey to hazel or dark brown hymenophore smooth, when dry greyish brown, trama 300-700 μm thick, composed of compact parallel hyphae 3-5.5 μm in diameter. **Cuticle** absent although some darker hyphae agglutinated to form a darker band in some areas. **Setigerous layer** seated on the context, 50-130 μm thick, composed of 3-6 overlapping layers of densely crowded setae. **Setae** 20-35 × 4-7 μm , ventricose

to lanceolate, naked, projecting up to 20 μm beyond the hymenium. **Basidiospores** $3.3\text{-}4 \times 2\text{-}3 \mu\text{m}$, ellipsoid.

Distribution. Argentina, Brazil, Colombia, Venezuela.

Remarks. This species can be easily separated from all of the other, pileate species lacking a cuticle, by having small setae that barely project beyond hymenium.

Hymenochaete ceratophora D.J. Job.

Rev. Invest. Agrop. INTA 20(1): 146, 1985.

= *Hymenochaete alabastrina* G.A. Escobar ex J.C. Léger,
Crypt. Mycol. 11: 294, 1990.

Basidiomes resupinate, waxy, when dry orange grey, hymenophore smooth to tuberculate; trama 25-75 μm thick; hyphae 1-2.5 μm in diameter. **Cuticle** absent. **Setigerous layer** usually seated on the substratum, 55-140 μm thick, composed of a single layer of regularly spaced setae. **Setae** 50-90 \times 5.5-9 μm , lanceolate, naked or sheathed, projecting up to 60 μm beyond the hymenium. **Basidiospores** 4-5.5 \times 2-2.5 μm , short subballantoid.

Distribution. Argentina, Brazil.

Remarks. This species is easily identified macroscopically by the «alabaster» colour of the resupinate basidiomes. Microscopically it resembles *H. innexa* from which it differs in having smaller basidiospores. *Hymenochaete minuscula* could also be confused with *H. ceratophora* but the former has shorter setae that project almost half as much beyond the hymenium as do those of *H. ceratophora*.

Hymenochaete cervina Berk. & M.A. Curtis.

J. Linn. Soc., Bot. 10: 334, 1868.

Basidiomes resupinate, thin and brittle, when dry brownish orange, hymenophore smooth; margin thinning out, slightly tomentose, trama 75-700 μm thick, composed of narrow hyphae 2-3 μm in diameter and irregular masses of crystalline matter. **Cuticle** proper absent but a zone of darker hyphae next to the substratum. **Setigerous layer** seated on the substratum, single or stratified, 100-750 μm thick, composed of one or several overlapping layers of regularly spaced setae. **Setae** 11-90 \times 6-11.5 μm , lanceolate, naked or apically encrusted, projecting up to 50 μm beyond the hymenium. **Basidiospores** 6-8.5 \times 3.5-5 μm , ovoid to oblong ellipsoid.

Distribution. Argentina, Brazil, Ecuador, Uruguay.

Remarks. *Hymenochaete cervina* is recognized by being resupinate and having a setigerous layer seated on the substrate, medium sized setae, crystals in the trama, and large ovoid to oblong-ellipsoid basidiospores.

Hymenochaete cinnamomea (Pers.) Bres.
Atti Acad. Agiato Rovereto 3(1): 110, 1897.

Basidiomes resupinate and adnate, thin, velvety to waxy, cinnamon to ochre, hymenophore smooth to slightly tuberculate, usually cracked, up to 1000 μm thick, trama absent. **Cuticle** absent. **Setigerous layer** single layered to stratified, up to 250 μm thick with 1 to 4 (rarely more) rows of setae. **Setae** 60-130 \times 5-7 μm , lanceolate to aculeate, naked or sheathed, projecting up to 60 μm beyond the hymenium. **Basidiospores** 4.5-6.5 \times 2.5-3.5 μm , cylindrical to suballantoid.

Distribution. Argentina, Brazil, Ecuador.

Remarks. South American specimens of *H. cinnamomea* has few or even lacks filiform paraphyses in the hymenial surface.

Hymenochaete contiformis G. Cunn.
Trans. Roy. Soc. N. Z. 85: 41, 1957.

Basidiomes resupinate, velvety to waxy, brownish grey, hymenophore smooth, trama 40-150 μm thick, hyphae 2.5-3 μm in diam, often mixed with irregular masses of crystals. **Cuticle** absent. **Setigerous layer** on the substratum, at first as a single layer, later up to 250 μm thick with numerous uniformly distributed setae. **Setae** 75-185 \times 7.5-13 μm , lanceolate, naked or sheathed, projecting up to 120 μm beyond the hymenium. **Basidiospores** 6-10 \times 3-5 μm , oblong ellipsoid to allantoid.

Distribution. Brazil, Venezuela.

Remarks. The species is easy to recognize because of the setae arising on the substratum and long setae projecting up to 120 μm and the large basidiospores.

Hymenochaete corrugata (Fr.) Lév.
Ann. Sci. Nat. Bot. 5: 152, 1846.

Basidiomes resupinate and broadly adnate, cinnamon, reddish brown to dark brown, hymenophore smooth to slightly granulose, usually cracked, trama and tomentum absent. **Cuticle** absent. **Setigerous layer** up to 400 μm thick, composed by setae and thin to thick-walled, 2-3 μm in diam. hyphae. **Setae** 40-80 \times 7-15 μm , fusiform to aculeate, sheathed at the apex, projecting up to 50 μm beyond the hymenium. **Basidiospores** 4.5-6 \times 1.5-2 μm , cylindrical to suballantoid.

Distribution. Argentina, Brazil, Colombia.

Remarks. This species is usually confused with *H. cinnamomea* or *H. pinnatifida*. The former differs from *H. corrugata* due its larger basidiospores, while *H. pinnatifida* has smaller setae than *H. corrugata*.

Hymenochaete corticolor Berk. & Ravenel.

Grevillea 1: 165, 1873.

Basidiomes resupinate, effuse reflexed or umbonate to sessile, granular to waxy, brownish orange cocoa brown, hymenophore smooth or cracked in older portions; margin ending abruptly, trama 200-1500 μm thick, composed of perpendicular partly cemented hyphae 2.5-3.5 μm in diameter and scattered masses of crystalline matter. **Cuticle** proper absent but a zone of darker hyphae next to the substratum.

Setigerous layer seated on the substratum, 250-1550 μm thick, composed of numerous overlapping layers of densely crowded setae. **Setae** 60-100 \times 10-15 μm , lanceolate, naked, sheathed, or encrusted at the tip, projecting up to 70 μm beyond the hymenium. **Basidiospores** 5-6.5 \times 2-2.5 μm , ellipsoid to suballantoid.

Distribution. Brazil, Ecuador, Uruguay.

Remarks. This is one of those «problem» species in the genus because the basidiomes can vary from being truly resupinate to having its edges reflexed and even to appearing umbonate or sessile. The common resupinate form could be confused with *H. dissimilis* but the latter is very dark brown and its basidiomes is never more than 750 μm thick and its setae are smaller.

Hymenochaete cruenta (Pers.) Donk.

Persoonia 1 (1): 51, 1959.

Basidiomes effused-reflexed to resupinate, adnate, up to 400 μm thick, upper surface brown to dark brown, hymenophore smooth to slightly tuberculate, reddish, trama up to 300 μm thick, hyphae hyaline to yellowish, thin to thick-walled, 3-4 μm in diam., tomentum up to 100 μm thick. **Cuticle** absent. **Setigerous layer** up to 50 μm thick, composed by two or three rows of setae. **Setae** 45-80 \times 6-10 μm , fusiform, obtuse to aculeate, smooth, projecting up to 50 μm beyond the hymenium. **Basidiospores** 6-8 \times 2-3 μm , cylindrical to suballantoid.

Distribution. Argentina.

Remarks. This species is easily recognized in the field due to its reddish hymenophore.

Hymenochaete crustacea G.A. Escobar ex J.C. Léger

Cryptogam. Mycol. 11: 296, 1990.

Basidiomes resupinate, crustose, waxy to woody, brownish grey, paler at the margin, hymenophore smooth, radially cracked, margin ending abruptly, trama 350-1600 μm thick, hyphae 2.5-5 μm in diam. **Setigerous layer** on the substratum, 370-1630 μm thick, composed of numerous overlapping layers of densely crowded setae. **Setae** 30-75 \times 5-8 μm , lanceolate, naked, projecting up to 35 μm beyond the hymenium. **Basidiospores** 4-5 \times 2.5-3.5 μm , ellipsoid.

Distribution. Costa Rica and Venezuela.

Remarks. The species is recognized by its thick basidiomes with setae on the substrate.

Hymenochaete curtisii (Berk.) Morgan.
J. Cincinnati Soc. Nat. Hist. 10: 197, 1888.

Basidiomes resupinate to effused reflexed, coriaceous to brittle, reflexed portion up to 5 mm wide, smooth, concentrically zonate brownish grey, hymenophore smooth and hazel brown, trama 100-250 μm thick, hyphae 2-3 μm in diam, **Cuticle** present. **Setigerous layer** on the context, single, 60-80 μm thick with few and widely spaced setae. **Setae** 60-80 \times 7-10 μm , lanceolate, naked, projecting up to 55 μm beyond the hymenium. **Basidiospores** 6-7.5 \times 1.5-2.5 μm , allantoid.

Distribution. Panama.

Remarks. The species is easy to recognize because of the cuticle and the few and widely spaced setae.

Hymenochaete damicornis (Link) Lév.
Ann. Sci. Nat., Bot. sér.3 5: 151, 1846.

Basidiomes stipitate pileate, with a lateral stipe bearing a single to several spatulate to flabelliform pileus, often split, coriaceous, when dry; pileus even or ruffled up to 6 cm wide and long upper surface smooth concentrically zonate, when dry rusty brown at the centre and paler at the margin; hymenophore dry deep brown, stipe up to 4 cm. long, velutinate to powdery, when dry deep brownish grey, trama 250-600 μm thick, often duplex; upper surface with a palisade of setae seated on a layer of partially agglutinated hyphae. **Cuticle** absent. **Setigerous layer** seated on the context, 50-300 μm thick, composed of numerous setae uniformly distributed, upper surface with widely spaced aborted setae. **Setae** 60-150 (175) μm , ventricose to lanceolate, covered to naked, projecting up to 130 μm beyond the hymenium. **Basidiospores** 4-7 \times 3.5-5 μm , oval to reniform.

Distribution. Very common throughout the Neotropical zone, and seemingly a parasitic from roots in the ground. Known from Brazil, Colombia, French Guyana, Guyana, Paraguay, Peru, Trinidad y Tobago, Venezuela.

Remarks. *Hymenochaete reniformis* and *H. damaecornis* are the only truly stipitate species of the genus and are both restricted to the Neotropics.

Hymenochaete digitata Burt.
Ann. Missouri Bot. Gard. 5: 347, 1918.

Basidiomes resupinate, somewhat granular, when dry pale brown, hymenophore smooth; margin ending abruptly, trama stratose, 650-850 μm thick, composed of 10-15 layers of densely interwoven hyphae 2.5-4 in diameter. **Cuticle** present. **Setigerous layer** seated on the context, stratose, 600-800 μm thick, composed of 10-15 discrete layers each about 50 μm thick. **Setae** 50-70 \times 5-8.5 μm , lanceolate, naked, projecting up to 50 μm beyond the hymenium. **Dendrohyphidia** present up to 30 μm long. **Basidia** and basidiospores not known.

Distribution. Panama.

Remarks. The species is distinct by its cuticle and dendrohyphidia.

Hymenochaete dura Berk. & M.A. Curtis.

J. Linn. Soc. Lond. Bot. 10: 334, 1868.

Basidiomes resupinate, velvety, when dry light brown to cocoa brown, hymenophore smooth; margin lifted or ending abruptly, trama 400-700 μm thick with tightly interwoven hyphae, 2-2.5 μm in diameter. **Cuticle** present. **Setigerous layer** seated on the context, 40-80 μm thick, composed of 1-2 overlapping layers of crowded setae. **Setae** 30-50 \times 5-7.5 μm , lanceolate, naked, projecting up to 30 μm beyond the hymenium. **Paraphysate** hyphae present in the hymenium, up to 1.5 μm in diameter. **Basidiospores** 3.5-4.5 \times 2-2.5 μm , oval to short-ellipsoid.

Distribution. Brazil, Colombia, Venezuela.

Remarks. The species is recognized by short-ellipsoid basidiospores with a thin setigerous layer composed of small setae that barely project above the hymenium.

Hymenochaete epichlora (Berk. & M. A. Curtis) Cooke.

Grevillea 8: 147, 1880.

Basidiomes resupinate, thin, velvety to waxy, when dry pale yellow or brownish orange, hymenophore smooth or somewhat granular; margin thinning out, trama 70-150 μm , thick, composed of densely interwoven hyphae 2-3.5 μm in diameter. **Cuticle** absent although some darker hyphae next to the substratum are tightly interwoven and form a thin darker band in some areas. **Setigerous layer** seated on the context, 30-60 μm thick, composed of a single layer of regularly spaced setae. **Setae** 30-50 \times 4.5-7 μm , lanceolate, naked, projecting up to 35 μm beyond the hymenium. **Basidiospores** 4.5-5.5 \times 2-2.5 μm , oblong-ellipsoid.

Distribution Argentina, Brazil.

Remarks. The short setae and the ellipsoid basidiospores characterize this species.

Hymenochaete escobarii J.C. Léger. Cryptogam.

Mycol. 11: 297, 1990.

Basidiomes pileate-sessile, circular, pendulous and confluent, coriaceous, brittle when dry, pileus up to 2.5 μm in diameter; pileus silky, concentrically zonate, pale brown, hymenophore smooth to wrinkled, deep brown to grey or caramel brown trama 300-500 μm thick; composed of rather tightly interwoven hyphae 2-2.5 μm wide. **Cuticle** present. **Setigerous layer** seated on the context, 100-350 μm thick, composed of irregular masses of crystalline matter and 2-5 discrete layers of regularly spaced setae. **Setae** (30-)50-80 \times (4-)6-8 μm , lanceolate, naked or sheathed, projecting up to 40 μm beyond the hymenium. **Dendrohyphidia** present in the hymenium. **Basidiospores** not known.

Distribution. Known only from Venezuela.

Remarks. The combination of truly pileate basidiomes with dendrohyphidia in the hymenium makes it unique.

Hymenochaete flavomarginata Pat.

Bull. Soc. Mycol. Fr. 8: 118, 1892.

= *Hymenochaete pratense* Viegas, Bragantia 5: 261, 1945.

Basidiomes resupinate, waxy to velvety adnate, pale brown to cocoa brown, hymenophore smooth to tuberculate, margin yellowish brown, trama 30-50 μm thick, hyphae 2-3 μm in diameter. **Cuticle** absent. **Setigerous layer** makes up the total thickness of the basidiomes. **Setae** 60-85 \times 6-8 μm , numerous, uniformly distributed, lanceolate, naked, projecting up to 65 μm beyond the hymenium. **Basidiospores** 6-7 \times 3-4 μm , ellipsoid.

Distribution. Ecuador and Brazil.

Remarks. *Hymenochaete flavomarginata* is recognized by its wide yellow margin and large basidiospores.

Hymenochaete fulva Burt.

Ann. Missouri Bot. Gard. 5: 354, 1918.

Basidiomes resupinate, adnate, waxy to velvety, pale brown to cocoa brown, hymenophore smooth to tuberculate, trama 100-130 μm thick, hyphae 2.5-3 μm in diameter. **Cuticle** present at the substratum, 15-35 μm thick. **Setigerous layer** seated on the context, 130-180 μm thick. **Setae** numerous uniformly distributed, lanceolate, naked, 60-90 \times 6-10 μm , projecting up to 90 μm beyond the hymenium. **Cystidia** present, clavate to club like apically encrusted, 10 \times 30 μm . **Basidiospores** 4-5.5 \times 3-4 μm , ellipsoid to subglobose.

Distribution. With certainty known only from the type locality in Jamaica.

Remarks. The species is easily distinguished by the encrusted cystidia and the cuticle.

Hymenochaete globispora G.A. Escobar ex J.C. Léger

Cryptogam. Mycol. 11: 300, 1990.

Basidiomes resupinate, waxy to velvety easily separable from the substratum, pale brown to cocoa brown, hymenophore smooth to tuberculate, trama 180-350 μm thick, hyphae 2.5-3 μm in diameter. **Cuticle** present. **Setigerous layer** seated on the context, 130-180 μm thick. **Setae** 50-125 \times 6.5-10 μm , numerous uniformly distributed, lanceolate, naked or sheathed, usually with scattered crystals, projecting up to 95 μm beyond the hymenium. **Basidiospores** globose, 4-5.5 μm in diameter.

Distribution. Brazil, Colombia, Peru.

Remarks. The species is easily distinguished by having very long setae and globose basidiospores.

Hymenochaete innexa G. Cunn.

Trans. Roy. Soc. N. Z. 85: 47, 1957.

Basidiomes resupinate, velvety, when dry orange grey to brownish grey or cocoa brown to dark brown, hymenophore smooth; trama 100-200 μm thick, hyphae 1.3-2.5 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the substratum, 130-250 μm thick, composed of numerous setae uniformly distributed. **Setae** 45-80 \times 7-10 μm , lanceolate, usually slightly encrusted with apical crystals, projecting up to 50 μm beyond the hymenium. **Paraphysate hyphae** up to 2.5 μm in diameter. **Basidiospores** 5-7 \times 2.3-3 μm , ellipsoid.

Distribution. Jamaica.

Remarks. The species is similar to *H. opaca*, but this species has a zone of darker hyphae next to the substratum and smaller basidiospores.

Hymenochaete lenta G.A. Escobar ex J.C. Léger.

Cryptog. Mycol. 11: 302, 1990.

Basidiomes sessile pileate, coriaceous, pliant but brittle when dry, pileus up to 5.5 cm. in diameter; pileus silky-tomentose, shiny, with radial hairs in concentric zones, cocoa brown hymenophore smooth to wrinkled, when dry orange grey to brownish orange, trama 200-500 μm thick, composed, of rather loosely hyphae 3-6 μm in diameter. **Cuticle** present. **Setigerous layer** on the context, 50-110 μm thick with numerous setae uniformly distributed. **Setae** 45-65 \times (7.5-)8.5-16(-20) μm , lanceolate, sometimes ventricose-cylindrical, usually finely encrusted apically, projecting up to 30 μm beyond the hymenium. **Basidiospores** 4-5 \times 1-1.5 μm , allantoid.

Distribution Costa Rica.

Remarks. Externally this species resembles *H. luteobadia* but lacks the encrusted paraphysate hyphae so peculiar to this latter species.

Hymenochaete leonina Berk. & M. A. Curtis.

J. Linn. Soc., Bot. 10: 334, 1868.

Basidiomes resupinate, at the center to powdery or fibrillose at the margin, dry brownish grey or rarely greyish orange at the center and concolorous or greyish orange to light orange at the margin; hymenophore smooth; margin thinning out, up to 2 mm wide, sometimes becoming detached, trama 150-800 μm thick, hyphae loosely interwoven 1.5-3 μm in diameter. **Cuticle** present dividing the context is almost two equal layers. **Setigerous layer** seated on the context, and with a single layer of regularly spaced setae, or up to 250 μm thick and made up of 3-4 distinct layers. **Setae** 40-90 \times 6-12 μm , lanceolate, naked or sheathed, projecting up to 60 μm beyond the hymenium. **Basidiospores** 4-5.5 \times 2-3 μm , oblong ellipsoid.

Distribution. Widespread in the Neotropical zone from Louisiana to Brazil. Reported from Argentina, Bolivia, Brazil, Ecuador, Guyana, Uruguay, Venezuela.

Remarks. The internal cuticle makes this a distinct species.

Hymenochaete luteobadia (Fr.) Höhn. & Litsch.

Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1 116: 750.

= *Hymenochaete reflexum* Burt, Ann. Missouri Bot. Gard. 5: 336, 1918.

= *Hymenochaete cubensis* Burt, Ann. Missouri Bot. Gard. 5: 337, 1918.

Basidiomes dimidiate or effuse reflexed, frequently imbricate, ruffled or straight at the margin, coriaceous, usually thin, somewhat pliant when dry, pileus up to 5 cm. in diameter; glabrous to tomentose, concentrically zonate and sulcate, when older becoming radially sulcate, when dry cinnamon brown, hymenophore smooth greyish orange to brownish orange, trama 200-600 μm thick, hyphae 2-3.5 μm in diameter with a parallel orientation. **Cuticle** present. **Setigerous layer** seated on the context, usually composed of a single layer of widely spaced setae, rarely 60-200 thick and composed of 2-5 overlapping layers. **Setae** 30-50 \times 5-7 μm , lanceolate, sheathed, projecting up to 35 μm beyond the hymenium. **Paraphysate hyphae** 2-3 μm in diameter, tapering with an apical brown encrustation. **Basidiospores** 4-5 \times 2-2.5 μm , oblong ellipsoid to subballantoid.

Distribution. Pantropical and one of the most common *Hymenochaete* species in the Neotropical area. Known from Argentina, Brazil, Colombia, Guyana, Venezuela, Galapagos (Ecuador), Trinidad y Tobago

Remarks. Microscopically easy to recognize because of the encrusted hyphal ends in the hymenium.

Hymenochaete microspora A.L. Welden ex J.C. Léger

Cryptogam. Mycol. 11: 305, 1990.

Basidiomes resupinate, waxy to velvety, when dry greyish orange at the center and paler at the margin; hymenophore smooth to tuberculate; margin thinning out, trama 70-170 μm thick, composed of loosely woven hyphae 2-2.5 μm in diameter and irregular masses crystalline matter. **Cuticle** absent. **Setigerous layer** on the context, 35-100 μm thick, composed of 1-2 layers of numerous uniformly distributed setae. **Setae** 35-70 \times 5-7.5 μm , lanceolate, naked or sheathed, projecting up to 35 μm beyond the hymenium.

Basidiospores 2.5-3 \times 1.5-2 μm , ovate to short ellipsoid.

Distribution. Argentina, Colombia, Ecuador, Venezuela.

Remarks. The species is recognized by the rather small basidiospores and a lack of the encrusted setae seen in *H. anomala* which has similar basidiospores.

Hymenochaete opaca Burt.

Ann. Missouri Bot. Gard. 5: 364, 1918.

Basidiomes resupinate, thin, velvety, when dry greyish brown to deep brown, hymenophore smooth, cracked; margin thinning out, trama 100-300 μm thick, composed of partly cemented hyphae 1.5-2.5 μm in diameter. **Cuticle** proper absent, but a zone of darker hyphae present next to the substratum. **Setigerous layer** seated on the substratum, 130-350 μm thick, composed of numerous setae uniformly distrib-

uted. **Setae** $50-80 \times 7-12 \mu\text{m}$, lanceolate, naked, projecting up to $50 \mu\text{m}$ beyond the hymenium. **Basidiospores** $3.3-5 \times 1.3-2 \mu\text{m}$.

Distribution. Jamaica, Puerto Rico.

Remarks. This species is commonly confused with *H. tenuis* but it is easily separated from it by the size of the setae. *H. tenuis* has setae $30-50 \times 5-8 \mu\text{m}$, while those of *H. opaca* are larger ($50-80 \times 7-12 \mu\text{m}$).

Hymenochaete papyracea G.A. Escobar ex J.C. Léger
Cryptogam. Mycol. 11: 307, 1990.

Basidiomes effused to pileate sessile, irregularly flabelliform, sometimes imbricate, thin, when dry papery, pileus up to 1.2 cm. in diameter; upper surface smooth, concentrically zonate, when dry greyish brown to chocolate brown, hymenophore strongly cracked, when dry orange grey to brownish grey, trama $150-450 \mu\text{m}$ thick, hyphae $2.5-3 \mu\text{m}$ in diameter. **Cuticle** present with setae. **Setigerous layer** on the substrata, $170-480 \mu\text{m}$ thick, setae uniformly distributed, but more numerous towards the hymenium. **Setae** $25-90 \times 6-12 \mu\text{m}$, lanceolate to subcylindrical, commonly with a septate lumen, usually apically encrusted with fine crystals, projecting up to $35 \mu\text{m}$ beyond the hymenium. **Basidiospores** $4-5 \times 1-1.5 \mu\text{m}$, allantoid.

Distribution. Colombia.

Remarks. This thin, and papery species is unique in being pileate with a cuticle composed of setae in addition to the darkened hyphae. *Hymenochaete corticolor* may in some cases have a pileate basidiomes, but it lacks a cuticle and its setae are thicker and without septa.

Hymenochaete pinnatifida Burt.
Ann. Missouri Bot. Gard. 5: 355, 1918.

Basidiomes resupinate, waxy to velvety, when dry brownish grey to hazel brown, rarely brownish orange or orange grey, margin concolorous or with a conspicuous greyish orange band; hymenophore smooth; margin thinning out, hyphae $2.5-3 \mu\text{m}$ in diameter with a more or less parallel orientation. **Cuticle** present. **Setigerous layer** seated on the context, $30-200 \mu\text{m}$ thick, setae numerous uniformly distributed, rarely up to $450 \mu\text{m}$ thick and composed of up to 7 overlapping layers. **Setae** $20-40(-70) \times 5-9 \mu\text{m}$, lanceolate, naked, projecting up to $40 \mu\text{m}$ beyond the hymenium. **Dendrohyphidia** present, yellow to pale brown, $12-15 \times 2-6 \mu\text{m}$. **Basidiospores** $4-5.5 \times 1.5-2.5 \mu\text{m}$, cylindrical.

Distribution. Argentina, Brazil, Peru, Venezuela, Ecuador.

Remarks. *Hymenochaete pinnatifida* is characterized by the yellowish to pale brown dendrohyphidia.

Hymenochaete proxima Rick.

Brotéria N.S. 3: 37, 1934.

Basidiomes resupinate, adnate, velvety, reddish to greyish brown, hymenophore smooth; margin thinning out, trama 70 μm thick, hyphae 2-3 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the substratum, 30-50 μm thick, composed of numerous setae. **Setae** 40-50 \times 7-10 μm , lanceolate to subulate, naked, projecting up to 25 μm . **Basidiospores** cylindrical to allantoid, 5-7 \times 2-3 μm .

Distribution. Known only from the type locality at São Leopoldo in Brazil.

Remarks. The fairly large basidiospores characterize this species.

Hymenochaete raunkiaeri Bres.

Ann. Mycol. 18: 45, 1920.

Basidiomes resupinate, adnate, hard, deep brown, hymenophore smooth; margin thinning out, trama up to 100 μm thick with scattered crystals, hyphae 2-3 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the substratum, 40-50 μm thick, composed of scattered setae. **Setae** lanceolate to subulate, naked, 40-55 \times 5-8 μm , projecting up to 25 μm beyond the hymenium. **Basidiospores** ellipsoid, 3-4 \times 2 μm .

Distribution. Brazil.

Remarks. The adnate basidiomes without a cuticle, scattered small setae and ellipsoid basidiospores characterize this species.

Hymenochaete reniformis (Fr.) Lév.

Ann. Sci. Nat., Bot. sér.3 5: 151, 1846.

\equiv *Stereum reniforme* Fr., Epicr. p. 546, 1838.

Basidiomes stipitate-pileate, with a lateral stipe bearing a single reniform to flabelliform pileus, rarely with several pilei at the apex of the stipe, coriaceous, when dry; pileus even or ruffled at the 2.5 cm. in diameter, upper surface smooth concentrically zonate, when dry cocoa brown at the center and paler at the margin; hymenophore dry deep brown, stipe up to 4 cm. long, velutinous to powdery, when dry deep brownish grey, trama 250-500 μm thick, hyphae 3-5.5 μm in diameter; upper surface with a palisade of setae seated on a layer of partially agglutinated hyphae. **Cuticle** absent. **Setigerous layer** seated on the context, 60-140 μm thick, composed of numerous setae uniformly distributed, upper surface with a palisade of small setae. **Setae** 40-75 \times 7-17 μm , ventricose to lanceolate, naked, projecting up to 50 μm beyond the hymenium. **Basidiospores** 5.5-7.5 \times 4-5 μm ellipsoid to ovoid.

Distribution. Bolivia, Brazil, Colombia, Trinidad y Tobago, much rarer than *H. damicornis*.

Remarks. *Hymenochaete reniformis* and *H. damicornis* are the only truly stipitate species of the genus and both are restricted to the Neotropics.

Hymenochaete resupinata (Sw.) Parmasto.

Mycol. Prog. 13: 62, 2014.

Basidiomes pileate, broadly reflexed with a narrow effused base, flabelliform to dimidiate, imbricate, ruffled to eroded at the margin, papery to coriaceous, thin, pliant to brittle when dry, pileus up to 2 cm. in diameter; pileus conspicuously strigose, concentrically zonate and sulcate, pale to deep dark brown, hymenophore granular to tuberculate, when dry deep brownish, trama 100-500 μm thick, in some areas unevenly stratose, mostly composed of tightly interwoven hyphae 2-4 μm in diameter but more loosely arranged towards the pileus. **Cuticle** absent. **Setigerous layer** seated on the context, usually composed of a single layer of regularly spaced setae, sometimes 40-100 μm thick and composed of 2-4 uneven layers. **Setae** 40-80 \times 5-8 μm , lanceolate, naked or sheathed, projecting, up to 40 μm beyond the hymenium. **Basidiospores** 3-4 \times 2 μm , ellipsoid.

Distribution. Widespread in the Neotropical zone. Known from Brazil, Chile, Colombia, Ecuador, Trinidad y Tobago, Venezuela.

Remarks. This species is easily recognized macroscopically because of the strigose pileus and the tuberculate hymenophore.

Hymenochaete rhabarbarina (Berk.) Cooke.

Grevillea 8: 148, 1880.

Basidiomes resupinate, velvety, when dry brownish orange to cocoa brown, hymenophore smooth, sometimes tuberculate and cracked; margin thinning out, trama (60-)120-220(-300) μm thick, hyphae 2.5-4 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the context, 60-150 μm thick, 1-2 overlapping layer of regularly spaced setae. **Setae** 60-120 \times 6-9.5 μm , lanceolate to subulate, sometimes with a median swelling, naked, projecting up to 80 μm beyond the hymenium. **Basidiospores** 4-6 \times 2.5-4 μm , obovate to oblong.

Distribution. Argentina, Brazil, Colombia, Venezuela.

Remarks. It is easily distinguished by medium sized obovate to oblong basidiospores with long and slender setae that project substantially above the hymenium. *Hymenochaete epichlora* has similar basidiospores, but its setae are half as long and only project 35 μm beyond the hymenium.

Hymenochaete rheicolor (Mont.) Lév.

Ann. Sci. Nat. Bot. sér. 3 5: 151, 1846.

Basidiomes pileate-sessile, rarely effuse-reflexed, flabelliform to umbonate-sessile, attenuated towards the base, frequently imbricate, sometimes ruffled at the margin, coriaceous to papery, thin, pliant to brittle when dry, pileus up to 6.5 cm in diam., upper surface silky-tomentose, dull or shiny, with radially arranged hairs, concentrically zonate, when dry brownish grey to hazel at the center and concolorous or greyish orange at the margin; hymenophore smooth, when dry brownish grey to hazel brown at the center and concolorous or greyish orange at the margin, trama 230-800

μm thick, hyphae 2-4 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the context, with a single layer of regularly spaced setae, rarely up to 150 μm thick and with two overlapping layers. **Setae** 70-135 \times 7.5-13 μm , lanceolate, naked or sheathed, projecting up to 90 μm beyond the hymenium. **Basidiospores** 3.5-5.5 \times 1.5-2.5 μm , allantoid to suballantoid.

Distribution. From Southern United States to Argentina and Chile. Also known from Asia. In South America known from Argentina, Brazil, Chile, Colombia, Ecuador, French Guiana, Paraguay, Trinidad y Tobago.

Remarks. This species is the most common species of the genus in the American tropics. It is easily recognized macroscopically by the radially tomentose and flabelliform pilei. Microscopically it is unmistakable by its lack of a cuticle, the suballantoid basidiospores, and by the long setae that project up to 90 μm beyond the hymenium.

Hymenochaete rigidula Berk. & M.A. Curtis.

J. Linn. Soc., Bot. 10: 334, 1869.

Basidiomes resupinate with slightly elevated margins or effuse-reflexed, waxy to coriaceous at the center and velvety at the margin, pileus up to 1 cm. in diameter; upper surface strigose, shiny, with radially arranged hairs, concentrically zonate, when dry hazel brown with greyish orange bands; hymenophore smooth to tuberculate, sometimes cracked, when dry deep brownish grey and greyish orange to caramel brown at the margin, trama 150-500 μm thick, hyphae 2.5-4 μm wide. **Cuticle** present. **Setigerous layer** seated on the context, 100-250 μm thick, composed of numerous setae uniformly distributed. **Setae** 30-80 \times 6-13 μm , ellipsoidal to lanceolate, naked or apically encrusted, projecting up to 25 μm beyond the hymenium. **Basidiospores** 4-5.5 \times 1.5-2 μm , allantoid to suballantoid.

Distribution. Brazil, Colombia, Venezuela.

Remarks. The species is often confused *H. opaca*, but *H. rigidula* does not have setae between the setigerous layer and the substratum.

Hymenochaete rubiginosa (Dicks.) Lév.

Ann. Sci. Nat. Bot. 5: 151, 1846.

Basidiomes effused-reflexed to sessile, rarely completely resupinate, up to 2000 μm thick, upper surface tomentose, zonate and sulcate, brown to gray or almost black, sometimes reddish, margin distinctly reflexed and rigid, lighter than upper surface, hymenophore smooth to tuberculate, sometimes cracked, brown, trama up to 500 μm thick, hyphae hyaline to yellowish, thin to thick-walled, 3-4 μm in diam., tomentum up to 100 μm thick. **Cuticle** absent. **Setigerous layer** up to 500 μm thick, composed by mixed rows of setae. **Setae** 40-100 \times 8-10 μm , projecting up to 60 μm , conical to fusiform, usually naked. **Basidiospores** 4-7 \times 2-3.5 μm , ellipsoid, sometimes with one side flattened.

Distribution. Argentina, Brazil, Chile, Colombia, Ecuador.

Remarks. This species is easily recognized in the field due to its rigid, reflexed margins.

Hymenochaete sordida Speg.

Bol. Acad. Nac. Cienc. Cordoba 29: 139, 1926.

Basidiomes resupinate adnate, brown, hymenophore smooth; margin thinning out, trama 100-150 μm thick, hyphae 2-3 μm in diameter. **Cuticle** present in a few places, otherwise absent. **Setigerous layer** seated on the substratum, 60 μm thick. **Setae** 40-60 \times 5-8 μm , lanceolate to subulate, naked, projecting up to 25 μm beyond the hymenium. **Basidiospores** 4-5 \times 2-3 μm , ellipsoid.

Distribution. Argentina.

Remarks. The combination of relatively thin basidiomes without crystals, small setae, and ellipsoid basidiospores makes this species unique in this section.

Hymenochaete tenuis Peck.

Rep. (Annual) Trustees State Mus. Nat. Hist., New York 40: 57, 1887.

= *Hymenochaete minuscula* G. Cunn., Trans. Proc. R. Soc. N. Z. 85: 48, 1957.

= *Hymenochaete multisetae* Burt, Ann. Missouri Bot. Gard. 5: 357, 1918.

Basidiomes resupinate, very thin, powdery to velvety, when dry caramel brown to deep brown, hymenophore smooth; margin thinning out, trama 50-150 μm thick, hyphae 1.5-3 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the substratum, 60-150 μm thick. **Setae** 30-50 \times 5-8 μm , lanceolate to subulate, naked, projecting up to 30 μm beyond the hymenium. **Basidiospores** 3.5- 5 \times 1.5-2 μm , subballantoid.

Distribution. Brazil, Colombia, Trinidad y Tobago, Venezuela.

Remarks. This species is close to *Hymenochaete pertenuis* S. Ito & S. Imai and *H. minuscula*, but these have slightly larger setae. The distinguishing characters of *H. tenuis* are the thin basidiomes, absence of a cuticle, the position of the setigerous layer and the small setae.

Hymenochaete tuberculosa Cooke.

Grevillea 9 (51): 101, 1881.

Basidiomes resupinate, up to 3 mm thick, hymenophore smooth to roughly tuberculate, cracked, brownish, trama up to 1500 μm thick, hyphae thin to thick-walled, 3-4 μm in diam. **Cuticle** absent. **Setigerous layer** up to 1500 μm thick, with abundant setae. **Setae** 30-80 \times 6-12 μm , projecting up to 25 μm , subulate, apically covered by crystals. **Basidiospores** 3.5-4 \times 1.5 μm , allantoid.

Distribution. Brazil.

Remarks. This species is rare species known only from Brazil.

Hymenochaete ungulata Burt.

Ann. Missouri Bot. Gard. 5: 338, 1918.

Basidiomes perennial, effused reflexed to unguulate, usually triquetrous in section with a sloping pileus, up to 1 cm wide, several cm long in fused specimens. Pileus black, glabrous and strongly sulcate with sharp margin. Hymenial surface smooth, dark umber brown. Subiculum up to 5 mm thick, umber brown, dense and distinctly stratified reflecting many years or seasons of growth. Hyphae hyaline to brown, simple septate, 2-3 μm wide. **Setae** 35-45 \times 6-7 μm , dark brown, acute, thick-walled. **Basidiospores** 2-2.5 \times 3-3.5 μm , subglobose to broadly ellipsoid.

Distribution. Mexico and Costa Rica.

Remarks. In the field this species is easy to recognize because of the small unguulate basidiomes with a glabrous, sulcate and black pileus.

Hymenochaete unicolor Berk. & M. A. Curtis.

J. Linn. Soc., Bot. 10: 335, 1869.

Basidiomes resupinate, thick, brittle, when dry deep brownish orange, deep greyish brown or deep dark brown hymenophore smooth, cracked; margin indeterminate, usually lifting at the edges, trama 400-700 μm thick; context duplex, a layer next to the substratum made up of densely interwoven hyphae 2.5-3 μm in diameter and a stratose layer made up of parallel hyphae perpendicular to the substratum. **Cuticle** absent. **Setigerous layer** seated on the context, 100-450 μm thick with 3-7 overlapping layers of numerous setae uniformly distributed. **Setae** lanceolate, naked, 25-60 \times 5-7.5 μm , projecting up to 30 μm beyond the hymenium. **Basidiospores** 4.5-5.5 \times 3-3.5 μm , ellipsoid.

Distribution. Brazil, Colombia, Ecuador, Venezuela.

Remarks. This species is easily recognized by its dark resupinate basidiomes with a thick and brittle context. Macroscopically it is distinguished by lacking a cuticle and by having a duplex context.

Hymenochaete ustulata G.A. Escobar ex J.C. Léger

Cryptogam. Mycol. 11: 309, 1990.

Basidiomes resupinate, waxy when dry, brownish grey to orange brown; hymenophore smooth to tuberculate; trama 35-100 μm thick of densely interwoven hyphae 1.5-2.5 μm in diameter and irregular masses of crystalline matter. **Cuticle** present. **Setigerous layer** seated on the substratum, 60-140 μm thick, composed of numerous setae uniformly distributed. **Setae** 55-85 \times 6.5-9 μm , lanceolate to subulate, naked, projecting up to 45 μm beyond the hymenium. **Basidiospores** 4-5 \times 2-3 μm short ellipsoid.

Distribution. Brazil.

Remarks. This species is characterized by its resupinate basidiomes, with crystals in the thin trama, short-ellipsoidal basidiospores and setae that do not project more than 45 μm beyond the hymenium.

Hymenochaete vallata G. Cunn.
Trans. Roy. Soc. N. Z. 85: 46, 1957.

Basidiomes resupinate, velvety to waxy, when dry caramel brown to cocoa brown, hymenophore smooth; margin thinning out, trama 100-350 μm thick, hyphae 2-3 μm in diameter. **Cuticle** absent. **Setigerous layer** seated on the substratum, 110-375 μm thick, composed of numerous setae usually arranged in 2 to 6 distinct or overlapping layers. **Setae** 35-70 \times 5-8 μm , lanceolate to subulate, naked, projecting up to 25 μm . **Basidiospores** 3-4 \times 1.5-2.5 μm , subballantoid.

Distribution. Brazil, Chile, Venezuela.

Remarks. The combination of relatively thick basidiomes without crystals, small setae, and small subballantoid basidiospores makes this species unique.

Hymenochaete villosa (Lév.) Bres.
Ann. Mycol. 8 (6): 588, 1910.

Basidiomes pileate, dimidiate to flabelliform, solitaire to imbricate, up to 500 μm thick, upper surface zonate and villose, becoming glabrous with age, brownish, hymenophore smooth to irregular, slightly cracked, grayish brown, trama up to 350 μm thick, hyphae hyaline to brownish, thin to thick-walled, 2-4 μm in diam. **Cuticle** absent. **Setigerous layer** up to 80 μm thick, with vertical hyphae and sparsely distributed setae. **Setae** 30-50 \times 5-8 μm , projecting up to 30 μm , lanceolate to subulate or conical, naked. **Basidiospores** 3.5-4 \times 2-3 μm , ellipsoid.

Distribution. Brazil.

Remarks. This species is recognized easily in the field due to its villose and zonated upper surface.

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