UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

INSTITUTO DE BIOCIÊNCIAS

PROGRAMA DE PÓS-GRADUAÇÃO EM BOTÂNICA

TESE DE DOUTORADO

Estudo taxonômico de homobasidiomicetos corticioides (*Agaricomycetes*, *Basidiomycota*) na Região Sul do Brasil

Juliano Marcon Baltazar

Porto Alegre, 2014

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Tese apresentada ao Programa de Pós-Graduação em Botânica, Área de Concentração em Taxonomia Vegetal (Micologia e Ficologia), da Universidade Federal do Rio Grande do Sul (UFRGS), como um dos requisitos para a obtenção do título de Doutor em Ciências (Botânica).

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Porto Alegre, 2014

"*I tell you folks*
It's harder than it looks

It's a long way to the top
If you wanna rock 'n' roll"

Angus Young, Malcolm Young e Bon Scott (AC/DC), 1975

"*Antes de resumir la solución (cuyo descubrimiento, a pesar de sus trágicas proyecciones, es quizá el hecho capital de la historia) quiero rememorar algunos axiomas.*
El primero: La Biblioteca existe ab aeterno."

Jorge Luis Borges, 1941

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RESUMO

Estudo taxonômico de homobasidiomicetos corticioides (*Agaricomycetes*, *Basidiomycota*) na Região Sul do Brasil

Os fungos corticioides são um grupo artificial caracterizado pelos basidiomas ressupinados a estipitados, com o himenóforo liso, pregueado, tuberculado, espinhoso, denteado ou raramente com poros verdadeiros. A maioria das espécies possui os basídios não septados (homobasidiomicetos), e somente essas são incluídas neste trabalho. Com o objetivo de ampliar o conhecimento sobre esses organismos na Região Sul do Brasil, um estudo taxonômico foi conduzido a partir de revisões de herbário e análises de espécimes coletados entre 2010 e 2012 no três estados da Região Sul. Dados de literatura também foram compilados com o objetivo de fornecer um quadro do atual conhecimento sobre o grupo estudado na região. São reconhecidas 226 espécies, pertencentes a 93 gêneros. Dessas espécies, 164 são conhecidas para o Rio Grande do Sul, 71 para o Paraná e 64 para Santa Catarina. *Acanthocystidium brueggemannii* é descrito como gênero e espécie novos; *Athelia fibulata* e *Steccherinum subcrinale* são citadas pela primeira vez para a América do Sul; 12 espécies são registradas pela primeira vez para o Brasil, 16 para a Região Sul, seis para o Paraná, seis para o Rio Grande do Sul e quatro para Santa Catarina. Além disso, 16 novas combinações, um nome novo, nove lectotipificações e duas epitificações são propostas, e *Epithele bambusina* é aceito como um nome correto para uma espécie válida. Análises filogenéticas dos marcadores nucleares ITS e LSU foram conduzidas para fins específicos: avaliar a posição filogenética de *A. brueggemannii*, que está relacionada com fungos cifeloides em *Agaricales*; e verificar a posição filogenética de *Hydnum peroxydatum* (espécie tipo de *Hydnochaete*), o que resultou na sinonímia de *Hydnochaete* com *Hymenochaete*. Descrições e ilustrações das estruturas microscópicas são fornecidas para espécies pouco tratadas na literatura. Além disso, são fornecidas chaves para identificação dos gêneros e espécies conhecidos para a área de estudo.

Palavras-chave: *Agaricomycotina* – *Corticiaceae* – fungos estereoides – *Hydnaceae* – *Thelephoraceae*

ABSTRACT

Taxonomic study of the corticioid homobasidiomycetes (*Agaricomycetes*, *Basidiomycota*) from the Southern Region of Brazil

The corticioid fungi form an artificial group characterized by resupinate to stipitate basidiomes, with a smooth, folded, tuberculate, with spines or teeth or rarely with true pores. Most species have non septate basidia (homobasidiomycetes), and only these are treated herein. A taxonomic study was carried out based on revisions of herbaria and study of specimens gathered from 2010 to 2012 in the three States from the Southern Region of Brazil, with the aim to increase the knowledge about these fungi in the area. Literature records were also compiled in order to get to know the current knowledge about the group. A total of 226 species belonging to 93 genera are recognized; 164 of them are known from Rio Grande do Sul, 71 for Paraná and 64 for Santa Catarina. *Acanthocystidium brueggemannii* is described as new genus and species; *Athelia fibulata* and *Steccherinum subcrinale* are new records from South America; 12 species are recorded for the first time from Brazil, 16 from the Southern Region, six from Paraná, six from Rio Grande do Sul, and four from Santa Catarina. Furthermore, 16 new combinations, a new name, nine lectotypifications and two epitypifications are proposed, and *Epithele bambusina* is accepted as a correct name for a valid species. Phylogenetic analyses of the nuclear markers ITS and LSU were conducted with specific goals: to evaluate the phylogenetic placement of *A. brueggemannii*, which is related to cyphelloid fungi within the *Agaricales*; and to verify the phylogenetic placement of *Hydnum peroxydatum* (type species of *Hydnochaete*), which leads to the synonymy of *Hydnochaete* under *Hymenochaete*. Descriptions and line drawings of microscopic structures are provided for those species poorly known from literature. In addition, keys for identification of genera and species known from the area are provided.

Key-words: *Agaricomycotina* – *Corticiaceae* – *Hydnaceae* – stereoid fungi – *Thelephoraceae*

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INTRODUÇÃO

Os fungos corticioides homobasidiomicetos são caracterizados pelos basidiomas ressupinados a estipitados, com o himenóforo liso, pregueado, tuberculado, espinhoso, denteado ou, raramente, com poros verdadeiros, porém muitas variações da circunscrição desse grupo de fungos são encontradas na literatura (Hjortstam et al. 1988; Larsson 2007; Bernicchia & Gorjón 2010). Tradicionalmente, foram classificados em *Aphyllophorales* Rea junto com fungos poroides, clavarioides e cifeloides. Alguns fungos heterobasidiomicetos também produzem basidiomas corticioides, porém esses não foram objeto de estudo do presente trabalho.

A maioria das espécies de fungos corticioides produz basidiomas ressupinados e, por esse motivo, são poucas as características macroscópicas com valor taxonômico. Entretanto, existe uma grande variedade de estruturas microscópicas, férteis e estéreis, na qual as delimitações de diversos táxons em vários níveis têm sido baseadas (Webster & Weber 2007). Além de dados morfológicos, tem-se utilizado cada vez mais marcadores moleculares para melhor circunscrever táxons desse grupo (Larsson et al. 2004; Larsson 2007).

Das ca. 100 mil espécies descritas no Reino *Fungi* R. T. Moore atualmente, mais de 1800 são fungos corticioides (Mueller et al. 2007). Entretanto, a diversidade fúngica é estimada em torno de 1,5 milhão de espécies (Hawksworth 1991), sendo essa considerada uma estimativa conservadora em trabalhos mais recentes (Hawksworth 2001; Blackwell 2011). Considerando esses dados, o conhecimento atual do reino corresponderia à cerca de 7% da real diversidade. Segundo Mueller et al. (2007), atualmente são conhecidas cerca de 600 espécies de fungos corticioides para a região neotropical e 83 para a região temperada da América do Sul; esses autores, porém, estimam que existam ainda em torno de 900 espécies não descritas no neotrópico e 420 na América do Sul temperada, o que corresponderia a 60% e 83% da real diversidade em cada área, respectivamente.

Características ecológicas e importância do grupo

Os basidiomas de homobasidiomicetos corticioides são geralmente encontrados sobre substratos vegetais, desde ramos espessos ou pequenos galhos, até sobre folhas. Porém, o substrato mais comum para encontrá-los são troncos caídos, na sua face

voltada para o solo (Hjortstam et al. 1988). A maioria das espécies desenvolve seu micélio nesse substrato atuando como decompositores. Porém, existem espécies que se desenvolvem no solo e utilizam a madeira apenas para a produção de basidiomas (Larsson 2007).

Existem ainda espécies de *Atheliaceae* Jülich e *Hydnaceae* Chevall. que formam associações ectomicorrízicas em florestas temperadas (Tedersoo et al. 2003) e tropicais (Tedersoo et al. 2007). Entretanto, pouco se conhece sobre essas relações, principalmente envolvendo as espécies corticioides (Rinaldi et al. 2008; Tedersoo et al. 2010). Poucas espécies são conhecidas parasitando plantas, como é o caso de *Stereum gausapatum* (Fr. : Fr.) Fr. (Webster & Weber 2007).

O micélio de algumas espécies captura nematoides e absorve nutrientes desses organismos, como espécies de *Hyphoderma* Wallr. e *Peniophorella* P. Karst. (Tzean & Liou 1993). Entretanto, a nutrição dessas espécies é principalmente proveniente da decomposição de madeira, e os nematoides servem como uma fonte complementar, principalmente de nitrogênio (Webster & Weber 2007).

As espécies decompositoras de madeira são as que possuem o papel ecológico mais evidente, visto que os fungos são os principais organismos que decompõem madeira em todos os ecossistemas arbóreo-arbustivos do mundo (Rossman et al. 1998). Eles degradam a matéria orgânica, permitindo que essa seja reutilizada por outros organismos, além de disponibilizar áreas do solo ocupadas por matéria orgânica morta (Hyde & Lee 1995). Os fungos corticioides, assim como outros fungos afiloforoides, estão entre os poucos organismos capazes de degradar lignina, o que os torna imprescindíveis no processo de decomposição (Carlile et al. 2001).

Os basidiomicetos xilófilos, i.e., que se desenvolvem sobre madeira, incluindo os fungos corticioides, são divididos basicamente em dois grupos segundo o modo como degradam esse substrato. Os causadores de podridão branca (*white-rot*), também chamados de lignolíticos, são hábeis em degradar todos os componentes da parede celular (celulose, hemiceluloses e lignina), enquanto os causadores de podridão castanha (*brown-rot*) removem polissacarídeos no início do processo de decomposição, mas degradam muito pouco a lignina (Blanchette 1995).

Graças a essa capacidade de degradação, algumas espécies estão sendo estudadas quanto ao seu potencial biotecnológico. Exemplos disso são a utilização desses fungos em processos de biorremediação de solos, tendo em vista a capacidade de algumas espécies em degradar organopoluentes (Chung et al. 2000), bem como em processos de

polpação e no tratamento de efluentes nas indústrias de papel e celulose (Raghukumar 2000). Outro potencial desses fungos, ainda a ser mais intensamente explorado, é a produção de antibióticos, atividade essa que já foi observada para algumas espécies de *Phlebia* Fr. (Alexopoulos et al. 1996).

Classificação dos fungos corticioides

Apesar de serem referidos muitas vezes como *Corticiaceae* Herter, os fungos corticioides constituem um grupo polifilético, o que é suportado por estudos morfológicos (Donk 1964; Jülich 1981), ultraestruturais (Hibbett & Thorn 2001; van Driel et al. 2009), de cultivos (Nakasone 1990), e moleculares (Hibbett & Thorn 2001; Larsson et al. 2004; Binder et al. 2005; Larsson 2007).

Desde os primeiros sistemas de classificação propostos, é reconhecido que os fungos corticioides não formam um grupo natural. Fries (1874) dividiu os *Hymenomycetes* Fr. em dois grupos principais e acomodou espécies corticioides em ambos: aqueles com o himenóforo liso (*hymenio laevigato*) e aqueles com outros tipos de himenóforo (*hymenio effigurato*), e.g., poroide, odontioide e hidnoide. Donk (1964) tentou propor um sistema de classificação natural para as espécies de *Aphyllophorales*, mas reconheceu que essa ordem e muitas das famílias por ele aceitas não eram naturais, incluindo *Corticiaceae*, *Hydnaceae* Chevall., *Polyporaceae* Fr. ex Corda e *Stereaceae* Pilát, essas acomodando espécies corticioides. Uma revisão completa do enquadramento taxonômico dos fungos corticioides desde os primeiros sistemas de classificação propostos foi publicada por Larsson (2007).

Nos últimos 20 anos, estudos filogenéticos baseados em dados moleculares têm confirmado que os fungos corticioides são polifiléticos. Um dos primeiros estudos a demonstrar a polifilia do grupo foi o de Hibbett & Donoghue (1995), em um estudo filogenético de *Polyporaceae*. No mesmo ano, Gargas et al. (1995) mostraram que algumas espécies de fungos corticioides estão relacionadas filogeneticamente a membros de *Agaricales* Underw.

Posteriormente, Boidin et al. (1998) publicaram um extenso estudo filogenético dos fungos *Aphyllophorales*, sendo a maioria dos táxons incluídos fungos corticioides. Entretanto, seus resultados não foram considerados por muitos estudos subsequentes por três motivos: 1) os autores utilizaram somente sequências de ITS como marcador molecular, 2) o trabalho não apresentava os valores de suporte para os clados, e 3) as

sequências utilizadas no trabalho não foram disponibilizadas para a comunidade científica. Kim & Jung (2000) também publicaram um estudo filogenético dos *Aphyllophorales*, porém utilizando a região nuc-SSU como marcador molecular. Nesse estudo, os autores reconheceram 16 clados, tratados por eles como famílias, e em 12 delas foram incluídos representantes corticioides.

Baseando-se nos dados de estudos anteriores, Hibbett & Thorn (2001) propuseram a distribuição dos homobasidiomicetos em oito clados principais, todos incluindo gêneros de fungos corticioides. A hipótese desse trabalho foi posteriormente confirmada por Binder & Hibbett (2002) e Yoon et al. (2003), o primeiro utilizando quatro marcadores moleculares e o segundo utilizando SSU.

O primeiro estudo filogenético abrangente dedicado aos fungos corticioides foi publicado por Larsson et al. (2004). Como resultado, os autores encontraram representantes desse grupo distribuídos em 12 clados de homobasidiomicetos. Posteriormente, a amostragem desse trabalho foi ampliada por Larsson (2007), em um estudo que teve como objetivo apresentar um sistema de classificação em nível de família com base em filogenias. Nesse sistema, o autor classificou os gêneros corticioides em 43 famílias, distribuídas em 12 ordens de *Agaricomycetes* Dowell *sensu* Hibbett et al. (2007), além de três famílias e 57 gêneros *incertae sedis*. Segundo Larsson (2007), o número de táxons *incertae sedis* ainda é alto porque a atual circunscrição de muitos gêneros, baseada em características morfológicas, aparentemente os torna polifiléticos. O sistema de classificação adotado pela última edição do Dicionário de Fungos (Kirk et al. 2008) é baseado nas classificações apresentadas em Hibbett et al. (2007) e Larsson (2007).

Estudos dos fungos corticioides no Brasil e na Região Sul

Os primeiros registros de fungos corticioides no Brasil foram citações esparsas em trabalhos abrangendo outros grupos de fungos (Berkeley 1843; Bresadola 1896; Hennings 1897a, b, 1902, 1904a, b; Patouillard 1907; Theissen 1911). Esses trabalhos foram publicados por micólogos europeus que, em sua maioria, nunca estiveram no Brasil. Eles recebiam os espécimes enviados por naturalistas que percorreram o Brasil e a América do Sul e aqui coletaram macrofungos de diversos grupos (Fidalgo 1968).

No início do século XX, Johannes Rick se estabeleceu no Rio Grande do Sul e iniciou o que pode ser considerado o maior inventário de fungos macroscópicos

realizado até hoje no Brasil. Rick registrou centenas de espécies de fungos corticioides, em trabalhos dedicados exclusivamente a esse grupo ou com outros grupos de fungos. Sua obra foi compilada por Balduíno Rambo e publicada em uma série de trabalhos póstumos, dos quais três tratam os fungos corticioides (Rick 1959a, b, 1960). Vários autores revisaram espécimes tipo de Rick, destacando-se em volume de materiais analisados os estudos de Hjortstam & Ryvarden (1982) e Rajchenberg (1987). Apesar desse esforço, 253 táxons em nível específico ou infraespecífico permanecem sem ser revisados até o momento.

Após Rick, poucos trabalhos foram publicados sobre os fungos corticioides no Brasil, e as primeiras publicações datam da metade do século XX. Teixeira (1945) e Viégas (1945) registraram algumas espécies para o estado de São Paulo e Rio Grande do Sul. Bononi (1979a, b, 1984) relatou a ocorrência de espécies desse grupo na Ilha do Cardoso, no estado de São Paulo. Hjortstam & Ryvarden (1993) descreveram uma espécie nova de *Aleurodiscus* Rabenh. ex J. Schröt. para São Paulo. Hjortstam & Bononi (1986a, b, 1987) relataram 51 espécies para todos os estados das Regiões Sul e Sudeste, incluindo a descrição de um gênero e duas espécies novas. Na região amazônica, Bononi (1981) registrou algumas espécies hidnoides e poucos trabalhos posteriores incluíram algum registro de fungos corticioides (Gomes-Silva & Gibertoni 2009).

Na Região Sul do Brasil, além dos trabalhos citados acima, cabe ressaltar os trabalhos de Meijer (2006) para o Paraná, Loguercio-Leite & Wright (1991), Groposo & Loguercio-Leite (2005), Drechsler-Santos et al. (2008a, b) e Trierveiler-Pereira et al. (2009) para Santa Catarina, e Azevedo & Guerrero (1993), Maluf & Guerrero (1993), Nietiedt & Guerrero (2000), Sobestiansky (2005) e Rodrigues & Guerrero (2012) para o Rio Grande do Sul. Os trabalhos de Loguercio-Leite & Wright (1991), Groposo & Loguercio-Leite (2005), Sobestiansky (2005), Meijer (2006), Drechsler-Santos et al. (2008a, b) e Trierveiler-Pereira et al. (2009), apesar de citarem espécies corticioides, não se dedicaram exclusivamente a esse grupo. Baltazar & Gibertoni (2009) compilaram os registros de fungos afiloforoides para a Mata Atlântica na literatura e incluíram os fungos corticioides da Região Sul. A última contribuição substancial para a Região Sul do Brasil foi a tese de doutorado de Rodrigues (2005), realizada com materiais coletados na região metropolitana de Porto Alegre, Rio Grande do Sul. A maior parte dos seus resultados, porém, não foi publicada.

Hjortstam & Larsson (1995) publicaram uma lista comentada de gêneros e espécies corticioides conhecidos para as áreas tropicais e subtropicais, recentemente atualizada por Hjortstam & Ryvarden (2007). Entretanto, o conhecimento desse grupo ainda é escasso nessas regiões, e estima-se que o número de espécies descritas até o momento corresponda a menos da metade da real diversidade nessas áreas (Mueller et al. 2007). Dessa maneira, o presente estudo teve como objetivo ampliar o conhecimento dos fungos corticioides, com ênfase na Região Sul do Brasil, por meio de análises morfológicas e moleculares.

MATERIAIS E MÉTODOS

Área de estudo

A Região Sul do Brasil tem uma área de 576.409,6 km^2 e inclui os estados do Paraná, Santa Catarina e Rio Grande do Sul. O clima da região, segundo a classificação de Köppen-Geiger, é subtropical úmido com verões quentes (Cfa) ou subtropical úmido com verões amenos (Cfb) em algumas áreas (Peel et al. 2007). Dois biomas brasileiros são encontrados na região, a Mata Atlântica e o Pampa, e as principais formações florestais são: Floresta Ombrófila Densa, Floresta Ombrófila Mista, Floresta Estacional Semidecidual e Floresta Estacional Decidual (Veloso et al. 1991).

As excursões a campo foram realizadas entre março de 2010 e maio de 2012. Além desse período, foram incluídos neste trabalho espécimes coletados nos manguezais de Florianópolis nos anos de 2005 e 2006. Os locais visitados estão listados na Tabela 1.

Tabela 1. Unidades de Conservação ou regiões representativas das áreas visitadas. Legenda: FOD: Floresta Ombrófila Densa; FOM: Floresta Ombrófila Mista; FES: Floresta Estacional Semidecidual; FED: Floresta Estacional Decidual; SAV: Savana (cerrado); ES: Estepe Savânica; MR: Mata de Restinga; MAN: Manguezal.

Área de coleta	**Estado**	**Formação vegetal**
Parque Nacional do Iguaçu, Céu Azul e Foz do Iguaçu	PR	FED
Região do Município de Matinhos	PR	FOD
Região do Município de Paranaguá	PR	FOD
Região do Município de Piraquara	PR	FOD
CPCN Pró-Mata – PUCRS, São Francisco de Paula	RS	FOM
FLONA de São Francisco de Paula	RS	FOM
Hotel Veraneio Hampel, São Francisco de Paula	RS	FOM
Morro Santana, Porto Alegre	RS	FES
Parque Estadual de Itapuã, Viamão	RS	FES e MR
Parque Estadual do Turvo, Derrubadas	RS	FED
Parque Nacional dos Aparados da Serra, Cambará do Sul	RS	FOD e FOM
Região do Município de Campo Bom	RS	FOD
Região do Município de Dom Pedro de Alcântara	RS	FOD
Região do Município de Morrinhos do Sul	RS	FOD
Região do Município de Santa Maria	RS	FES
Região do Município de Riozinho	RS	FOD
RPPN Mata do Professor Baptista, Dom Pedro de Alcântara	RS	FOD

Tabela 1. Continuação.

Área de coleta	Estado	Formação vegetal
Manguezal do Itacorubi, Florianópolis	SC	MAN
Manguezal do Rio Tavares (Reserva Extrativista Marinha do Pirajubaé), Florianópolis	SC	MAN
Estação Ecológica Carijós (Manguezais de Ratones e de Saco Grande), Florianópolis	SC	MAN
Morro da Lagoa, Florianópolis	SC	FOD
Parque Estadual da Serra do Tabuleiro, Santo Amaro da Imperatriz	SC	FOD
Parque Nacional da Serra Geral, Praia Grande	SC	FOD
Região do Município de Joinville	SC	FOD
Região do Município de Mondaí	SC	FED
Unidade de Conservação Ambiental Desterro, Florianópolis	SC	FOD

Coleta e preservação dos espécimes

Os substratos propícios ao desenvolvimento de basidiomas de fungos corticioides foram examinados, principalmente troncos caídos em decomposição, em sua face voltada para o solo. Os basidiomas foram retirados do substrato com auxílio de uma faca e acondicionados em sacos de papel, nos quais foram anotados os dados da coleta: data, local, substrato, presença de rizomorfos e outras características de valor taxonômico relevante.

Em laboratório, os basidiomas foram mantidos sobre a bancada por pelo menos 48 h para secagem. Os basidiomas carnosos e/ou delicados foram mantidos em estufa de lâmpada a aproximadamente 45 °C por um período de 2 a 4 dias (Fidalgo & Bononi 1989), ou em um desidratador elétrico (Fun Kitchen, Brasil), por 12 a 24 h, em temperatura inferior a 40 °C (Wu et al. 2004). Antes do tombamento dos materiais em herbário, esses foram mantidos em sacos plásticos e armazenados em congelador (aproximadamente a –6ºC) por pelo menos sete dias.

Análises morfológicas e determinação dos espécimes

A análise macroscópica dos basidiomas foi feita a olho nu e em microscópio estereoscópico, sendo que as seguintes características dos basidiomas foram observadas: modo de inserção no substrato (ressupinado, efuso, efuso-reflexo, pileado, estipitado),

tamanho (comprimento, largura, espessura), consistência, forma do píleo, cor e características da margem. As cores foram codificadas de acordo com a carta de cores de Kornerup & Wanscher (1978).

Para a análise microscópica, foram feitos cortes a mão livre de diferentes partes do basidioma sob microscópio estereoscópico utilizando uma lâmina de aço. Os cortes foram colocados em solução aquosa de hidróxido de potássio 3–5% (hidratante) e floxina a 1% (corante citoplasmático) entre lâmina e lamínula, para a observação e medição das microestruturas. Também foram montadas lâminas com o reagente de Melzer, usado para verificar se houve reações amiloides ou dextrinoides; azul de algodão, para verificar reações cianófilas; e sulfoaldeído, para observar reação sulfopositiva em gloeocistídios. As características microscópicas observadas foram: sistema hifal e características das hifas, basídios, basidiosporos e elementos estéreis (cistídios, setas, fascículos hifais, etc). As microestruturas foram medidas com auxílio de uma ocular micrometrada em aumento de 1000 ×, e as ilustrações foram feitas utilizando uma câmara clara acoplada ao microscópio de luz.

Após as análises macro e microscópicas a identidade dos espécimes foi determinada com apoio de literatura especializada e comparação com materiais de referência dos herbários BAFC, CIEFAP, CTES, FLOR, ICN, K, LY, O, PACA, S e SI (Thiers 1997). Além dos materiais coletados durante o desenvolvimento deste estudo, materiais de herbário coletados nos três estados da Região Sul também foram incluídos neste trabalho.

Os materiais coletados foram incorporados ao acervo do Herbário ICN (Departamento de Botânica, Instituto de Biociências, Universidade Federal do Rio Grande do Sul), e duplicatas de muitos materiais foram enviadas ao Herbário do Centro de Investigación y Extensión Forestal Andino Patagónico (CIEFAP, Esquel, Argentina) e ao Herbário FLOR (Departamento de Botânica, Centro de Ciências Biológicas, Universidade Federal de Santa Catarina).

Obtenção e manutenção dos cultivos

Cultivos polispóricos foram obtidos para posterior utilização no processo de extração de material genético. Para a obtenção do cultivo de um espécime, um basidioma ou parte deste foi colocado em câmara úmida sobre uma lâmina esterilizada, com o himênio voltado para baixo, de forma que os basidiosporos liberados se

depositassem sobre a lâmina. Posteriormente, em uma câmara de fluxo laminar, os basidiosporos foram retirados da lâmina com o auxílio de uma alça de platina e transferidos para uma placa de Petri contendo meio ágar extrato de malte (AEM). As placas foram mantidas em estufa a 25 ºC no escuro para que o micélio se desenvolvesse. Para a manutenção dos cultivos, esses foram repicados para tubos de ensaio com meio AEM, que também foram mantidos em estufa a 25 ºC. Após o desenvolvimento do micélio, os tubos foram transferidos para geladeira e mantidos a 4 ºC. Os cultivos de espécimes utilizados nos estudos moleculares, além de outros cultivos de interesse, foram transferidos para tubos do tipo *criovial* de 2 mL contendo água destilada estéril, seguindo a metodologia descrita por Burdsall & Dorworth (1994), e mantidos na coleção de cultivos do Laboratório de Micologia, Departamento de Botânica, Instituto de Biociências, UFRGS, e na coleção de cultivos do CIEFAP (CIEFAPcc).

Extração, amplificação e sequenciamento de material genético

Para a extração de DNA, os cultivos polispóricos foram inoculados em 2 mL de meio extrato de malte líquido em tubos de 15 mL e incubados a 25 °C por ca. 5 dias. O DNA total foi extraído dos cultivos utilizando o kit de isolamento UltraClean™ Microbial DNA Isolation Kit (Laboratórios MO BIO, Carlsbad, Estados Unidos), seguindo as instruções do fabricante. Para alguns espécimes, o DNA foi extraído de basidiomas utilizando o mesmo kit. Para isto, porções do subículo foram cortadas com uma lâmina de aço esterilizada, evitando partes expostas ou em contato com o substrato, sendo maceradas em um cadinho com o auxílio de um pistilo. Os demais procedimentos seguiram as instruções do fabricante do kit.

Os seguintes marcadores moleculares foram alvo de interesse: o espaçador transcrito interno do DNA nuclear ribossomal (ITS), incluindo ITS1 (parcial), 5.8S (completa) e ITS2 (parcial), e a região que codifica a maior subunidade do DNA nuclear ribossomal (LSU). Essas regiões foram amplificadas utilizando os pares de *primers* ITS5–LR21 e LR0R–LR5, respectivamente (R. Vilgalys lab webpage, http://www.botany.duke.edu/ fungi/mycolab).

A amplificação do DNA foi realizada por meio da reação em cadeia da polimerase (PCR) utilizando um termociclador My Cycler™ (Bio Rad, Hercules, USA). Os protocolos para PCR seguiram aqueles utilizados por Rajchenberg et al. (2011). As soluções para PCR tiveram um volume final de 50 µL e incluíram 0,25 mM de cada um

dos dNTPs, 2,5 mM de MgCl2, 10 µL de tampão para PCR fornecido pelo fabricante da enzima polimerase, 1–2 µL de albumina sérica bovina (BSA), 0,1mM de cada *primer*, 100–500 ng de DNA total e 1,25 U da polimerase GoTaq™ (Promega, Madison, Estados Unidos). As condições de PCR programadas no termociclador foram as seguintes: um ciclo de desnaturação inicial a 94 °C por 2 min., 30 ciclos com uma etapa de desnaturação a 94 °C por 1 min., uma etapa de emparelhamento dos *primers* a 56 °C por 1 min., e uma etapa de extensão a 72 °C por 1 min., além de uma etapa final de extensão a 72 °C por 10 min. Os produtos de PCR foram submetidos a eletroforese a 70 mA por 40 min. em um gel de agarose 1,5 % e corados com GelRed™ (Biotium, Hayward, Estados Unidos), sendo que em cada poço do gel foram depositados 5 µL do produto de PCR e 3 µL de corante intercalante. A presença de bandas no gel foi verificada em um transiluminador UV para a confirmação do resultado da reação de PCR. Os fragmentos amplificados foram purificados e sequenciados nos sentidos *forward* e *reverse* em um sequenciador automático ABI 3700 (Perkin-Elmer, Foster City, Estados Unidos) nas instalações de sequenciamento e síntese de DNA da Macrogen (Seul, Coréia do Sul).

Tratamento das sequências e análises filogenéticas

As sequências *forward* e *reverse* geradas para cada amostra foram checadas quanto a sua qualidade pela conferência visual de seus cromatogramas e foram combinadas (*assembly*) com o programa ATGC v6 (Genetyx, Japão), para gerar uma única sequência consenso (*contig*). Essas sequências consenso foram então submetidas a buscas na ferramenta BLAST (*Basic Local Alignment Search Tool*, http://www.ncbi.nlm.nih.gov/blast/) na página *web* do *National Center for Biotechnology Information* (NCBI), com o intuito de encontrar sequências similares. Sequências de interesse adicionais foram obtidas na base de dados de nucleotídeos GenBank (http://www.ncbi.nlm.nih.gov/genbank/), também administrada pelo NCBI.

Após a criação da biblioteca de sequências para cada análise, as sequências foram alinhadas utilizando o programa MUSCLE v3.8.31 (Edgar 2004) ou a ferramenta de alinhamento *online* MAFFT v7 (Katoh & Standley 2013) e editadas manualmente usando o programa MEGA v5.10 (Tamura et al. 2011). Os táxons utilizados como grupos externos foram escolhidos para cada análise em particular com base na literatura disponível para os respectivos grupos estudados.

As análises filogenéticas foram realizadas utilizando os critérios de máxima parsimônia, conduzidas no programa PAUP* v4.0b10 (Swofford 2002), e inferência Bayesiana, conduzidas no programa MrBayes v3.2.1 (Ronquist et al. 2012). Os modelos de evolução utilizados nas análises de inferência Bayesiana foram identificados utilizando o aplicativo jModelTest v2.1.4 (Darriba et al. 2012). Os parâmetros utilizados para configurar esses programas são fornecidos nos Manuscritos deste trabalho.

As sequências geradas durante o presente estudo serão submetidas ao GenBank, e os alinhamentos e as árvores filogenéticas obtidas estarão disponíveis no repositório de informações filogenéticas TreeBASE (http://treebase.org/treebase-web/home.html). Os números de acesso para essas informações, quando disponíveis, são fornecidos nos Manuscritos deste trabalho.

RESULTADOS E DISCUSSÃO

Para a realização deste trabalho, foram analisados 543 espécimes de fungos corticioides coletados na Região Sul do Brasil. Desses, 371 foram coletados durante as excursões a campo, sendo 355 coletados pelo próprio autor e 16 por colaboradores. Adicionalmente, 172 espécimes de herbários foram revisados, principalmente dos herbários PACA (134 espécimes) e FLOR (33).

Os espécimes estudados correspondem a 137 espécies, sendo a espécie mais representativa *Tubulicium* aff. *vermiferum* (Bourdot) Oberw. ex Jülich (21 espécimes), seguida de *Scytinostroma duriusculum* (Berk. & Broome) Donk (16) e *Hyphodermella corrugata* (Fr.) J. Erikss. & Ryvarden (10).

Combinando os resultados dos espécimes analisados com os registros de literatura, são reconhecidas 226 espécies de fungos corticioides para a Região Sul, correspondendo a 93 gêneros. Os gêneros com maior número de espécies registradas são *Hymenochaete* Lév. (24 espécies), *Phanerochaete* P. Karst. (12) e *Hyphodontia* J. Erikss. s.l. (9).

O Rio Grande do Sul é o estado com o maior número de espécies corticioides na área estudada, com 164 espécies. Para o Paraná são conhecidas 71 espécies, e para Santa Catarina 64. Apenas 22 espécies são comuns aos três estados.

Das espécies encontradas, muitas não eram conhecidas para a região ou para algum dos três estados, e tiveram sua distribuição geográfica ampliada. *Athelia fibulata* M.P. Christ. e *Steccherinum subcrinale* (Peck) Ryvarden são citadas pela primeira vez para a América do Sul, 12 espécies são registradas pela primeira vez para o Brasil, 16 para a Região Sul, seis para o Paraná, seis para o Rio Grande do Sul e quatro para Santa Catarina.

Um táxon até o momento encontrado somente no Parque Estadual da Serra do Tabuleiro (Santa Catarina), não corresponde a nenhum dos gêneros atualmente aceitos, e para acomodá-lo são propostos um gênero e uma espécie novos, i.e., *Acanthocystidium brueggemannii* Baltazar et al. (Manuscrito II). Nos manuscritos resultantes deste trabalho são propostas 16 novas combinações e um nome novo; nove lectótipos e dois epítipos são selecionados para espécies descritas por Rick; *Epithele bambusina* Rick é reintroduzido como um nome correto para uma espécie válida, e *Hydnochaete* Bres. é considerado um sinônimo de *Hymenochaete* (Manuscritos I, II e IV).

As análises filogenéticas com base em dados moleculares elucidaram o posicionamento filogenético de *Hydnum peroxydatum* Berk. ex Cooke, espécie tipo de *Hydnochaete*. Essa espécie pertence ao clado *Hymenochaete* s. str., o que levou a sinonímia de *Hydnochaete* com *Hymenochaete*. Também como resultado de análises filogenéticas, foram inferidas as relações filogenéticas de *A. brueggemannii*. Sequências de espécimes desse táxon formaram um clado irmão de um grupo de táxons cifeloides, pertencentes aos gêneros *Henningsomyces* Kuntze e *Rectipilus* Agerer. Esse grupo está ainda relacionado a outros táxons cifeloides e duas espécies de *Dendrothele* Höhn. & Litsch. em *Agaricales* (Manuscrito II).

Os manuscritos produzidos com resultados da presente tese são apresentados a seguir como itens da seção "Resultados e Discussão". Os manuscritos foram redigidos em inglês e estão formatados seguindo as normas do respectivo periódico para o qual será submetido. Um manuscrito já está publicado (Manuscrito III), e outro está aceito para publicação e disponível na versão *on-line* da revista (Manuscrito I); nesses casos, apenas a primeira página do trabalho é apresentada nesta tese porque as editoras detêm os direitos autorais dos trabalhos.

Manuscrito I

Baltazar JM, Pildain MB, Gorjón SP, Silveira RMB da, Rajchenberg M. 2014. Phylogenetic relationships of *Hydnum peroxydatum* support the synonymy of *Hydnochaete* with *Hymenochaete* (*Hymenochaetaceae*, *Agaricomycetes*). Mycologia (no prelo), 5 pp. doi: 10.3852/13-154

Trabalho aceito para publicação no volume 106, número 2, do periódico Mycologia. Apenas a primeira página é apresentada a seguir porque a editora detêm os direitos autorais da publicação do trabalho. A versão preliminar do artigo está disponível em http://www.mycologia.org/content/early/2014/01/23/13-154.abstract

Short title: Baltazar et al.: *Hydnum peroxydatum* belongs to *Hymenochaete*

Phylogenetic relationships of *Hydnum peroxydatum* support the synonymy of *Hydnochaete* with *Hymenochaete* (Hymenochaetaceae, Agaricomycetes)

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Abstract: A combined dataset of rDNA ITS and LSU sequences was used to infer the phylogenetic relationships of *Hydnochaete peroxydata* (≡ *Hydnum peroxydatum*), the type species of *Hydnochaete*. The species was retrieved nested within the *Hymenochaete* s. str. clade; therefore, *Hydnochaete* is regarded as a synonym of *Hymenochaete*, and the new combination *Hymenochaete peroxydata* is proposed.

Keywords: Basidiomycota, corticioid fungi, *Cyclomyces*, Hymenochaetales, ITS and LSU rDNA, xanthochroic fungi

INTRODUCTION

Bresadola (1896) described *Hydnochaete* Bres. with the new species *Hydnochaete*

Manuscrito II

Baltazar JM, Gorjón SP, Pildain MB, Rajchenberg M, Silveira RMB da. 2014. *Acanthocystidium brueggemannii*, a new corticioid genus and species related to cyphelloid fungi in the euagarics clade (*Agaricales*, *Basidiomycota*). Manuscrito, 22 pp.

Trabalho a ser submetido ao periódico Botany.

1 *Acanthocystidium brueggemannii*, a new corticioid genus and species related to
2 cyphelloid fungi in the euagarics clade (*Agaricales*, *Basidiomycota*)
3
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Abstract

Acanthocystidium brueggemannii gen. et sp. nov. is introduced based on specimens from Southern Brazil. This corticioid fungus is characterized by resupinate basidiomes with smooth to tuberculate hymenophore, a monomitic hyphal system with simple-septate hyphae, finely echinulate halocystidia, cylindrical to clavate, dextrinoid acanthophyses, and globose, hyaline, smooth and thin-walled, IKI– basidiospores. Phylogenetic analyses of a LSU dataset and a combined dataset of ITS and LSU were carried out and the new taxon was recovered related to cyphelloid fungi within the *Agaricales*. Descriptions of the new genus and the new species, and drawings of the microscopic features of *A. brueggemannii* are provided.

Key words: acanthophyses, *Aphyllophorales*, *Corticiaceae* s.l., *Cyphellaceae*, *Henningsomyces*, *Rectipilus*.

Introduction

Corticioid fungi, also called *Corticiaceae* Herter s.l., are defined as those non-poroid homobasidiomycetes that usually develop effused, resupinate basidiomes with smooth hymenophores on wood, but several variations of this concept are found in literature (Hjortstam et al. 1988; Larsson 2007; Bernicchia and Gorjón 2010). They form an artificial assemblage, and this was already recognized by early authors such as Fries and Patouillard (Donk 1964).

Phylogenetic studies based on molecular data in the past ca. 20 years have confirmed that corticioid fungi are polyphyletic. One of the first to show this polyphyly were Hibbett and Donoghue (1995) in a phylogenetic study of *Polyporaceae* Fr. ex Corda, although few corticioid species were included. Later, Hibbett and Thorn (2001) proposed the distribution of homobasidiomycetes in eight major clades, all of them containing corticioid genera. This hypothesis was later confirmed by Binder and Hibbett (2002) and Yoon et al. (2003).

The first comprehensive phylogenetic study devoted to corticioid fungi was presented by Larsson et al. (2004). They found that corticioid species were distributed in 12 major clades within the homobasidiomycetes. The sampling of this work was later improved by Larsson (2007), who proposed the first phylogenetic-based classification at family level for these fungi. This author classified the corticioid genera in 43 families, distributed in 12 orders of *Agaricomycetes* Dowell sensu Hibbett et al. (2007), plus three families and 57 genera that remained *incertae sedis*.

During a survey of corticioid fungi in Southern Brazil an undescribed taxon was found. Morphological studies showed that this new taxon could not be included in any of the current accepted genera following their morphological circumscription. Furthermore, nuc-LSU and ITS rDNA sequences were obtained from specimens of this

new taxon, and preliminary analyses showed that it belongs to *Agaricales* Underw. sensu Matheny et al. (2006).

Molecular evidence demonstrating that some corticioid fungi are phylogenetically related to members of *Agaricales* was first shown in the 1990's (Gargas et al. 1995; Bruns et al. 1998). Later, Bodensteiner et al. (2004) found that some corticioid species were phylogenetically related to cyphelloid and agaricoid fungi within the *Agaricales*. In an extensive phylogenetic study of the *Agaricales*, Matheny et al. (2006) confirmed the placement of some corticioid fungi within three major clades of this order. Larsson (2007) classified 26 corticioid genera in nine families of *Agaricales* based on molecular data, plus one genus that remained as *incertae sedis*.

The aims of this paper are to describe a new genus and species, and to evaluate its phylogenetic relationships by the means of analyses of single-locus and two-loci data sets containing nuc-LSU and ITS rDNA sequences.

Materials and methods

Collecting and morphological analyses

Specimens of the new taxon were gathered in Parque Estadual da Serra do Tabuleiro, state of Santa Catarina, Southern Brazil. This conservation unit has an area of ca. 85000 ha and it is inserted in the Atlantic Forest biome (Ishiy et al. 2009).

Cultures for DNA extraction were obtained from fresh spore prints and were grown in Petri dishes and later in tubes with malt extract agar (MEA) in the dark at 25 °C until DNA extractions.

For light microscopic studies, basidiomes were cut by hand and sections were mounted in 3% KOH with 1% aqueous phloxine solution, Melzer's reagent (IKI) and

0.1% cotton blue in 60% lactic acid. Line drawings were made with a camera lucida attachment. Specimens are deposited at ICN Herbarium with duplicates at the phytopatological herbarium, Centro de Investigación y Extensión Forestal Andino Patagónico (CIEFAP, Esquel, Argentina). Colors are coded following Kornerup and Wanscher (1978).

DNA extraction and PCR conditions

For DNA extractions, strains were cultured in malt peptone broth with 10% (v/v) of malt extract (Merck, Darmstadt, Germany) and 0.1 % (w/v) Bacto peptone (Difco, Detroit, USA), 2 mL medium in 15 mL tubes. The cultures were incubated at 25 °C for 5 days in darkness. Total DNA was extracted from the culture or from dried basidiomes with the UltraClean™ Microbial DNA Isolation Kit (MO BIO laboratories Inc., Carlsbad, USA), according to the manufacturer's instructions.

rDNA's ITS (including ITS1, 5.8S and ITS2) and nucLSU regions were amplified using the universal primers ITS5-LR21 and LR0R-LR5, respectively (R. Vilgalys lab webpage at http://www.botany.duke.edu/fungi/mycolab/primers.htm). PCR reaction mixtures for amplification of both regions were modified from Rajchenberg et al. (2011) in a final reaction volume of 50 μL with 100–500 ng DNA. PCR reactions were performed in a thermal cycler (My Cycler™, Bio Rad, Hercules, USA) and the thermal cycling program was the same as described in Rajchenberg et al. (2011). The amplified fragments were purified and sequenced on an ABI 3700 automated sequencer (Perkin-Elmer, Waltham, USA) at the DNA Synthesis and Sequencing Facility (Macrogen, Seoul, Korea). The same primers were used for amplification and sequencing. Sequences generated in this study were submitted to GenBank and accession numbers are given in Table 1.

Phylogenetic analyses

DNA sequences generated in this study were manually edited with BioEdit 7.1.3.0 (Hall 1999), and additional sequences for the ingroup and outgroup, based on studies of Bodensteiner et al. (2004), Matheny et al. (2006) and Larsson (2007), were retrieved from the GenBank nucleotide database. Sequence alignments were automatically performed on MUSCLE v3.8.31 (Edgar 2004) and manually checked on MEGA v5.10 (Tamura et al. 2011). Alignments are available from TreeBASE (http://purl.org/phylo/treebase/phylows/study/TB2:S15052). Two datasets were used in this study: the first one was based on phylogenies by Bodensteiner et al. (2004), Matheny et al. (2006) and Larsson (2007), and comprises LSU sequences from representatives of main clades of *Agaricales* which include corticioid genera, plus other phylogenetically closely related taxa. The second dataset is a combined matrix of ITS and LSU sequences of the *Henningsomyces-Rectipilus* clade A and the *Nia* clade sensu Bodensteiner et al. (2004), here treated as *Niaceae* Jülich. Phylogenetic analyses were conducted for both datasets under maximum parsimony (MP) and Bayesian inference (BI) criteria. The ingroup sequences are all members of *Agaricales*, whereas two members of *Boletales* E.-J. Gilbert were used as outgroup species, viz. *Calostoma lutescens* and *Strobilomyces floccopus* (Matheny et al. 2006; Larsson 2007).

MP analyses were performed in PAUP* v4.0b10 (Swofford 2002) with gaps treated as missing characters, equal weighting of characters and transformations, heuristic searches (TBR and MULTREES options on) with random addition of sequences (1000 replicates), and MaxTrees set to auto-increase. Nodal support was tested with bootstrap (BS) of 1000 replicates using the heuristic search option (TBR and MULTREES options on) and ten random addition sequences.

Bayesian analyses were conducted in MrBayes v3.2.1 (Ronquist et al. 2012). Models of evolution were identified for each dataset using jModelTest v2.1.4 (Darriba et al. 2012) under selection AIC, resulting in the model GTR+I+G for LSU in the first dataset, and the model TVM+I+G for ITS and TIM3+I+G for LSU in the combined dataset. BI posterior probabilities (PP) were estimated for 10^7 generations, by running four chains and sampling a tree each 10^5 generations, and the first 2 % trees from each run were discarded as burn in. The burn in was determined using Tracer v1.5 (http://tree.bio.ed.ac.uk/software/tracer/) to analyze MrBayes output files.

Results

Taxonomy

Acanthocystidium Baltazar, Gorjón & Rajchenb., **gen. nov.**

MycoBank: MB########

Diagnosis: *Acanthocystidium* is distinguished from other corticioid genera by the combination of dextrinoid acanthophyses, halocystidia that are finely echinulate at the apex, simple-septate generative hyphae, and globose, smooth, thin-walled and IKI– basidiospores.

Type species: *Acanthocystidium brueggemannii* Baltazar, Gorjón & Rajchenb.

Etymology: The name is a reference to the presence of abundant acanthophyses, which are very conspicuous in Melzer's reagent due to the dextrinoid reaction.

Basidiome corticioid, resupinate, adnate, cartilaginous hard when dry. Hymenophore smooth to tuberculate, even to rimose.

Hyphal system monomitc, generative hyphae simple-septate. Halocystidia abundant in the subiculum and the hymenium, hyaline, finely echinulate at the apex, IKI– to

slightly dextrinoid, with a resinous cap. Acanthophyses dominating in the hymenium, cylindrical to clavate, hyaline, with short protuberances in the apical part, dextrinoid. Basidiospores globose, hyaline, smooth and thin-walled, IKI–.

Acanthocystidium is characterized by the resupinate, cartilaginous basidiome with smooth to tuberculate hymenophore, and microscopically by the presence of abundant, dextrinoid acanthophyses, apically echinulate halocystidia with a resinous cap, and globose, hyaline, IKI– basidiospores. It differs from other corticioid genera by the combination of its microscopic features, which unknown from other corticioid fungi.

Halocystidia are somewhat common in corticioid fungi, and are known from several unrelated genera. They have been reported from members of *Dendrocorticium* M.J. Larsen & Gilb. (Baltazar et al. 2013), *Gloeodontia* Boidin (Gorjón and de Jesus 2012), *Hyphodontia* J. Erikss. s.l. (Langer 1994), and *Resinicium* Parmasto (Nakasone 2007). In all these fungi the apex of the halocystidium is smooth; we note, though, that the ornamentation is inconspicuous in the studied specimens of *Acanthocystidium* and it could have been overlooked in specimens of other taxa.

Acanthophyses of *Acanthocystidium* reminds one of several species of *Aleurodiscus* Rabenh. ex J. Schröt. s.l. (Núñez and Ryvarden 1997), and in *Aleurodiscus dextrinoideocerussatus* Manjón et al. they are also dextrinoid (Moreno et al. 1990). *Acanthocystidium* is also similar to *Aleurodiscus cerussatus* (Bres.) Höhn. & Litsch. s.l. due to gross morphology, except by the basidiome color, that is whitish to cream in the latter. Notwithstanding these similarities, basidiospores of all members of *Aleurodiscus* s.l. are distinctly amyloid, while in *Acanthocystidium* they are IKI–.

Heteroacanthella Oberw., a genus in the *Cantharellales* Gaüm., shares some micromorphological similarities with the new genus (Oberwinkler et al. 1990), but it is phylogenetically distant. *Heteroacanthella* has dominant subglobose to pyriform,

acanthoid basidia that can be confused with the acanthophyses of *Acanthocystidium*, but these structures are easily differentiated when the dextrinoid reaction is considered.

Acanthocystidium brueggemannii Baltazar, Gorjón & Rajchenb., **sp. nov.** (Fig. 1)

MycoBank: MB########

Diagnosis: *Acanthocystidium brueggemannii* differs from *Aleurodiscus dextrinoideocerussatus* Manjón et al. by wider acanthophyses with shorter apical projections, presence of halocystidia, lack of gloeocystidia, and globose, IKI– basidiospores.

Holotype: Brazil. State of Santa Catarina, Santo Amaro da Imperatriz, Hotel Caldas da Imperatriz, Trilha do Guamirim, on dead hardwood, 14 March 2012, J.M. Baltazar 2126 (ICN).

Etymology: Named in honour of Fernando M. Brüggemann (Brazilian Biologist), in recognition of his work for the research, conservation and environmental education in the Parque Estadual da Serra do Tabuleiro, type locality of *A. brueggemannii*.

Basidiome resupinate, adnate, cartilaginous hard when dry, up to 0.13 mm thick. Hymenophore smooth to tuberculate, even to rimose, pale gray (1C1, 1B1), gray (1D1) to grayish green (1D3), margin thinning out but defined, concolor with the hymenophore.

Hyphal system monomitc, generative hyphae simple-septate, pale yellowish, slightly thick-walled, 1.5–3.5 (–4) µm diam. Halocystidia abundant in the subiculum and the hymenium, rarely projecting, hyaline, finely echinulate at the capitate apex, IKI– to slightly dextrinoid, 3.4 (–4) µm diam., with a resinous cap up to 12 µm diam. Acanthophyses dominating the hymenium, cylindrical to clavate, hyaline, with short protuberances in the apical part, (3–) 4.5–10 µm diam., dextrinoid. Basidia not seen,

basidioles few, cylindrical to clavate, hyaline, thin-walled. Basidiospores globose, hyaline, smooth and thin-walled, with an inconspicuous apiculus, 5–6 µm diam., IKI–, cyanophilous.

Distribution: Known only from the type locality.

Substrate: Dead unidentified hardwood.

Additional specimen examined (paratype): Brazil. State of Santa Catarina, Santo Amaro da Imperatriz, Hotel Caldas da Imperatriz, Trilha do Guamirim, on dead hardwood, 18 September 2010, J.M. Baltazar 2122 (ICN).

Acanthocystidium brueggemannii is characterized by the resupinate, cartilaginous hard basidiome, smooth to tuberculate hymenophore with grayish tints, abundant halocystidia with echinulate apex and a resinuous cap, variably dextrinoid acanthophyses with short protuberances in the apical portion, and globose, hyaline, smooth, thin-walled, cyanophilous and IKI– basidiospores. Unfortunately, we could not find any basidium after persistent search. This is the only species of *Acanthocystidium* known at the time being.

At first glance *A. brueggemannii* could seem similar to *Aleurodiscus dextrinoideocerussatus* due to the dextrinoid acanthophyses which dominate the whole basidiome. However, acanthophyses of *A. dextrinoideocerussatus* are narrower [(4–) 5–7 µm diam.] and have longer apical projections than those of *A. brueggemannii*. It also differs by the presence of gloeocystidia and amyloid basidiospores, and by the whitish to cream colored basidiomes.

Phylogenetic analyses

Four new sequences from two specimens of *A. brueggemannii* were generated for this study, one from LSU and one from ITS for each specimen (Table 1).

The LSU dataset included 35 taxa and a total of 919 characters, of which 550 were constant, 97 were variable and parsimony uninformative, and 272 were parsimony informative. MP analysis resulted in one most parsimonious tree (Tree length = 1214; CI = 0.4415; RI = 0.6311; RC = 0.2786; Fig. 2).

The ingroup was recovered with full support (BS 100/PP 1.0) in both MP and BI analyses and no major incongruities of topology between these two analyses were observed. The two major clades recovered within the ingroup were not supported by the MP analysis, and solely the one including members of *Schizophyllaceae* Quél. and *Stephanosporaceae* Oberw. & E. Horak had high support in the BI analysis (PP 0.97). Both *Schizophyllaceae* and *Stephanosporaceae* were fully supported. The second major clade shown in Fig. 2 has no support in MP analysis and the node collapsed in BI analysis. On the other hand, more inclusive clades named *Pterulaceae* Corner, hydropoid clade, *Cyphellaceae* Lotsy, *Cystostereaceae* Jülich (excluding *Granulobasidium vellereum*), *Niaceae*, *Henningsomyces-Rectipilus* clade A and *Acanthocystidium* were recovered with high (BS > 80; PP > 0.94) to full support in both MP and BI analyses, the only exception being *Pterulaceae*, which had high and moderate support (BS 90/PP 0.90) in MP and BI analyses, respectively. *Acanthocystidium* was recovered as the sister group of *Henningsomyces-Rectipilus* clade A with high support (BS 98/PP 1.0), and also related to *Niaceae*, although this relationship was only supported by the BI analysis (BS 51/PP 0.96).

The combined dataset (ITS and LSU) included 16 taxa and a total of 1812 characters, of which 949 were constant, 295 were variable and parsimony uninformative, and 568 were parsimony informative. MP analysis resulted in one most parsimonious tree (Tree length = 2003; CI = 0.5880; RI = 0.6235; RC = 0.4143; Fig. 3).

The ingroup was recovered with full support in both MP and BI analyses, which resulted in trees with the same topology concerning major clades. Incongruities were observed in an internal node of *Niaceae*, which collapsed in the BI analysis (indicated by an asterisk in Fig. 3), and the internal nodes of *Henningsomyces-Rectipilus* clade A (see below). Two fully supported major clades were recovered within the ingroup. One of them included members of *Niaceae*, grouped in three fully or highly supported clades. The position of *Calathella mangrovei* was not resolved in this analysis. Another major clade included two fully supported clades: one of them included two specimens of *Acanthocystidium*, and the other included *Henningsomyces* spp. and *Rectipilus idahoensis*. All nodes within *Henningsomyces-Rectipilus* clade A collapsed in the consensus tree, and the topology recovered by the BI analysis was different and had no support (data not shown).

Discussion

Results of the analyses presented above are similar to those of Bodensteiner et al. (2004), Matheny et al. (2006) and Larsson (2007), especially concerning the terminal clades. These results were expected since datasets used in the present work were based on those studies. On the other hand, relationships of some major clades are different in our analyses when compared with studies cited above. For example, while *Niaceae* is closely related to *Schizophyllaceae* in Matheny et al. (2006), in Larsson (2007) it was recovered related to *Cyphellaceae* and *Cystostereaceae*, and in Bodensteiner et al. (2004) it appeared related to some marasmioid fungi, in the present study *Niaceae* was recovered close to *Acanthocystidium* and *Henningsomyces-Rectipilus* clade A. In most cases these discrepancies occurred in non supported nodes. Another reason for these discrepancies can be differences among these studies regarding sampling: Bodensteiner

et al. (2004) focused on cyphelloid taxa, Matheny et al. (2006) did not included members of *Henningsomyces-Rectipilus* clade A sensu Bodensteiner et al. (2004), and Larsson (2007) sampled mostly corticioid taxa. Finally, Matheny et al. (2006) used a five-loci dataset, while other studies used LSU and ITS.

Acanthocystidium brueggemannii specimens formed a sister group of *Henningsomyces-Rectipilus* clade A (Figs. 2, 3). All members of the latter are cyphelloid fungi, being quite different from the corticioid *A. brueggemannii*. There is no remarkable microscopic feature shared by these fungi and *Acanthocystidium*. Relationships of this group need further investigation, since previously only Bodensteiner et al. (2004) investigated that group. Additionally, these authors also recovered three specimens of *Henningsomyces* Kuntze and *Rectipilus* Agerer forming a non related clade, which they called *Henningsomyces-Rectipilus* clade B. They could not explain this separation by morphological, ecological and geographical data of the specimens. In the same way, neither a taxonomic decision was made till now in order to classify these taxa at family level, nor there were family names available for this group. Further analyses with more comprehensive sampling of specimens and/or molecular markers are needed to confirm the relationship of *Acanthocystidium vis-à-vis Henninsomyces*/*Rectipilus* p.p. Taxa from *Henningsomyces-Rectipilus* clade B were not included in our analyses since they are phylogenetically distant from *Henningsomyces-Rectipilus* clade A, and therefore from *A. brueggemannii*.

The second closest group related to *Acanthocystidium* is *Niaceae* (Figs. 2, 3). Here we accept the name *Niaceae*, and not *Lachnellaceae* as other authors, because the latter is invalid: it was originally published as ‘Lachnellacées’ by Boudier (1907) and is not valid according to Art. 32.1(b) and Art. 18.4 (McNeill et al. 2012). This family corresponds to a morphological and ecological diverse assemblage that includes *Nia*

vibrissa (a gasteroid, marine fungus), two species of *Dendrothele* Höhn. & Litsch. (corticioid fungi that grow on the bark of living trees), *Hallocyphina villosa* (a cyphelloid, marine fungus), plus other cyphelloid fungi. *Dendrothele acerina* and *D. griseocana* (generic type of *Dendrothele*) are the closest corticioid fungi related to *Acanthocystidium*. *Dendrothele* and *Acanthocystidium* are quite distinct ecologically and morphologically, except by the corticioid habit – see Nakasone (2006) and Bernicchia and Gorjón (2010) for descriptions of *D. acerina* and *D. griseocana*.

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Table 1. Specimens presented in this study with GenBank accession numbers for ITS and LSU sequences (newly sequenced vouchers/strains are preceded by *; – information not available)

Taxon	Voucher/strain	LSU	ITS
Ingroup			
* *Acanthocystidium brueggemannii*	JMB2122	GenBank #	GenBank #
* *A. brueggemannii*	JMB2621	GenBank #	GenBank #
Aphanobasidium pseudotsugae (Burt) Boidin & Gilles	–	AY586696	–
Athelidium aurantiacum (M.P. Christ.) Oberw.	KHL 11068	EU118606	–
Calathella mangrovei E.B.G. Jones & Agerer	–	AF426954	–
C. mangrovei	1-31-01Jones	–	AY571029
Chondrostereum purpureum (Pers. : Fr.) Pouzar	HHB-13334	AF518607	–
Clitocybula oculus (Peck) Singer	AFTOL-ID 1554	DQ151452	–
Coronicium alboglaucum (Bourdot & Galzin) Jülich	–	AY586650	–
Cristinia helvetica (Pers.) Parmasto	Kristiansen s.n.	EU118620	–
Cyphellopsis anomala (Pers. : Fr.) Donk	PB318	AY570998	AY571035
Cystidiodontia laminifera (Berk. & M.A. Curtis) Hjortstam	KHL 13057	EU118622	–
Cystostereum murray (Berk. & M.A. Curtis) Pouzar	KHL 12496	EU118623	–
Dendrothele acerina (Pers. : Fr.) P.A. Lemke	GEL5350	AJ406581	–
Dendrothele griseocana (Bres.) Bourdot & Galzin	–	AY293178	–
Fistulina antarctica Speg.	–	AY293181	–
Fistulina hepatica (Schaeff.) With.	–	AY293182	–
Flagelloscypha minutissima (Burt) Donk	CBS 823.88	AY571006	AY571040
Gloeostereum incarnatum S. Ito & S. Imai	strain 3332	AF141637	–

Granulobasidium vellereum (Ellis & Cragin) Jülich	AFTOL-ID 887	AY745729	–
Halocyphina villosa Kohlm. & E. Kohlm.	–	AF426957	–
H. villosa	IFO32088	–	AY571042
Henningsomyces candidus (Pers. : Fr.) Kuntze	PB338	AY571008	AY571044
H. candidus	RGT156	AF287864	AY571043
Henningsomyces puber (Romell ex W.B. Cooke) D.A. Reid	GUA-307	AY571009	AY571045
Henningsomyces sp.	C58569	AY571011	AY571046
Hydropus marginellus (Pers. : Fr.) Singer	AFTOL-ID 1720	DQ457674	–
Lachnella alboviolascens (Alb. & Schwein. : Fr.) Fr.	PB332	AY571012	AY571048
Lindtneria trachyspora (Bourdot & Galzin) Pilát	KGN 390/00	EU118646	–
Marasmius oreades (Bolton : Fr.) Fr.	AFTOL-ID 1525	DQ156126	–
Merismodes fasciculata (Schwein.) Donk	PB342	AY571016	AY571052
Merulicium fusisporum (Romell) J. Erikss. & Ryvarden	Hjm s.n.	EU118647	–
Moniliophthora perniciosa (Stahel) Aime & Phillips-Mora	DIS71	AY916738	–
Nia vibrissa R.T. Moore & Meyers	–	AF334750	–
N. vibrissa	REG M200	–	AY571053
Rectipilus idahoensis (W.B. Cooke) Agerer	PB313/RA	AY571020	AY571057
Outgroup			
Calostoma lutescens (Schwabe) Burnap	Utley 750	JX184408	–
Strobilomyces floccopus (Vahl : Fr.) P. Karst.	AFTOL-ID 716	AY684155	AY854068

1

Fig. 1. Microscopic features of *Acanthocystidium brueggemannii*, JMB 2126 (holotype): A, basidiospores; B, acanthophyses; C, generative hyphae; D, halocystidia.

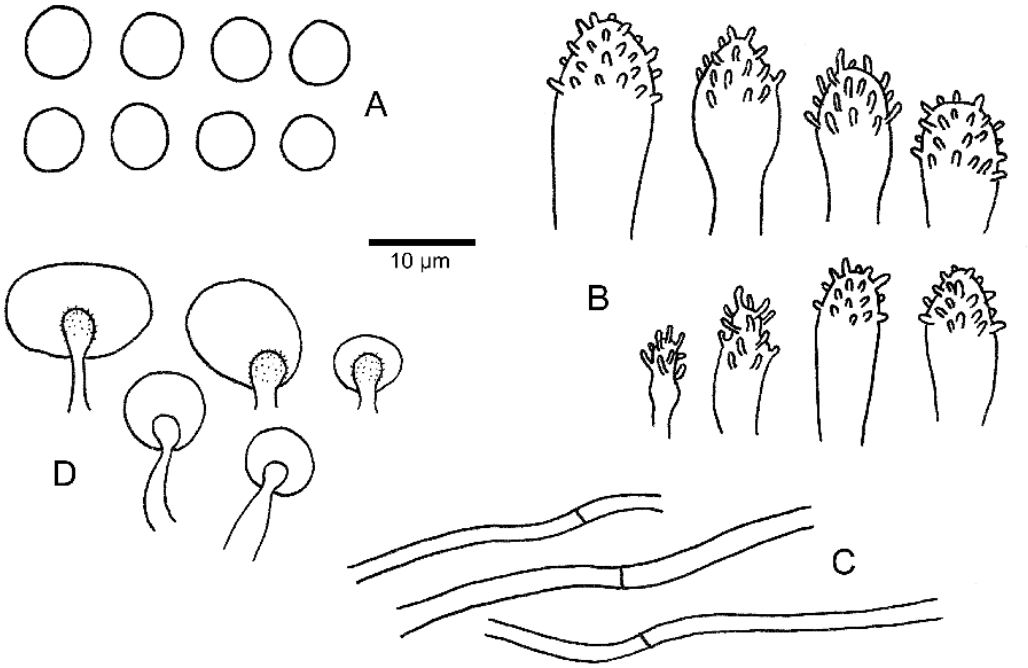


Fig. 2. Phylogenetic placement of *Acanthocystidium brueggemannii* inferred by maximum parsimony (MP) and Bayesian inference (BI) analyses of nuc-LSU rDNA sequences dataset. Tree topology is based on the most parsimonious tree. Support values for internal nodes are given on the branches as bootstrap/posterior probability (BS/PP). Fully supported nodes (BS 100/PP 1.0) are indicated by black circles. Incongruities in topologies between MP and BI analyses are indicated with an asterisk instead of the PP value. Arrows indicate branches that collapsed in the strict consensus tree.

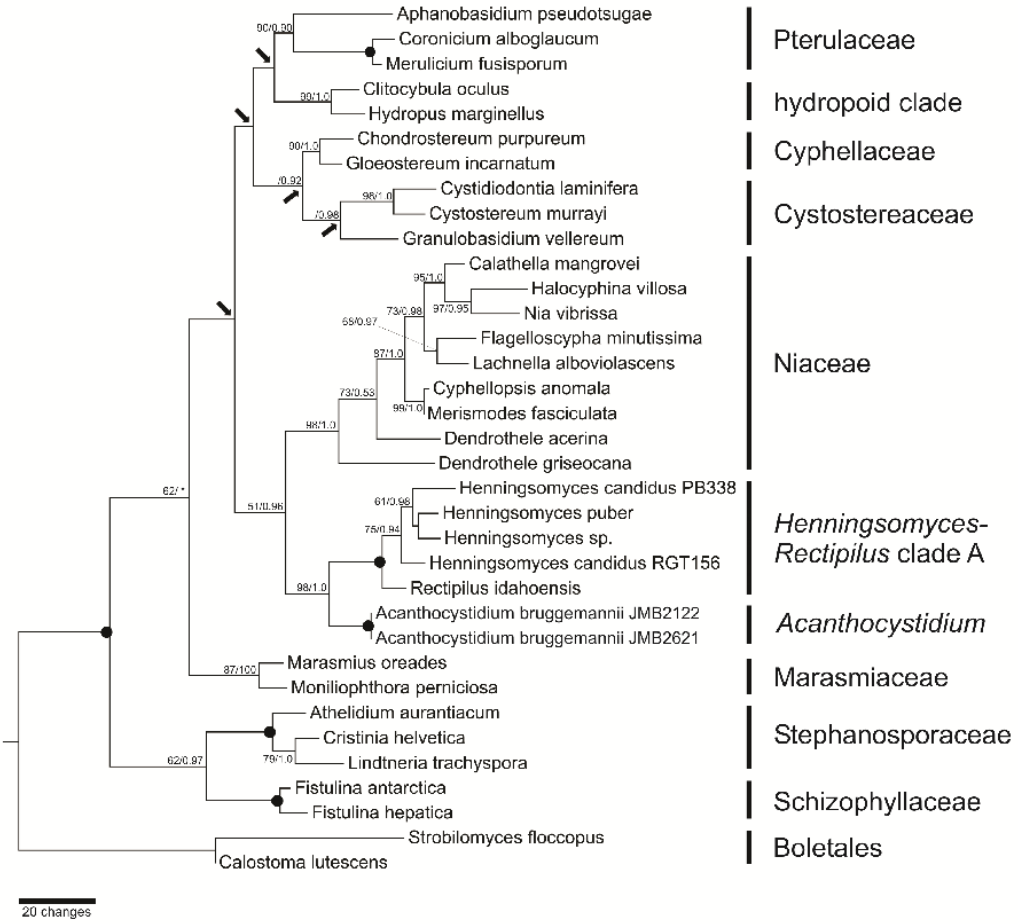
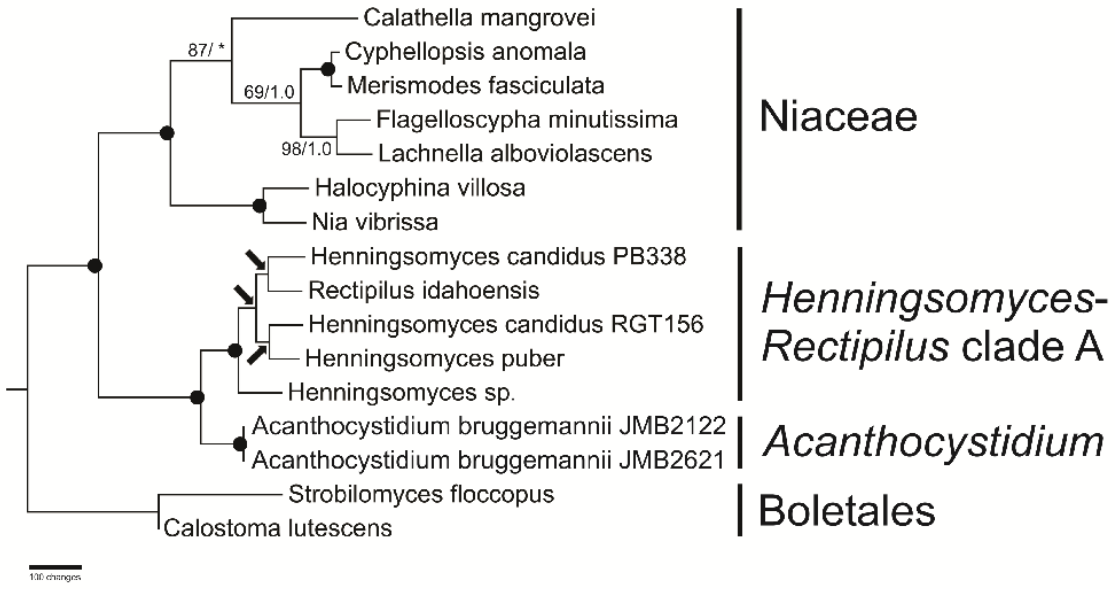


Fig. 3. Phylogenetic placement of *Acanthocystidium brueggemannii* inferred by maximum parsimony (MP) and Bayesian inference (BI) analyses of a combined dataset (nuc-LSU and ITS rDNA sequences). Tree topology is based on the most parsimonious tree. Support values for internal nodes are given on the branches as bootstrap/posterior probability (BS/PP). Fully supported nodes (BS 100/PP 1.0) are indicated by black circles. Incongruity in topologies between MP and BI analyses is indicated with an asterisk instead of the PP value. Arrows indicate branches that collapsed in the strict consensus tree.



Manuscrito III

Baltazar JM, Silveira RMB da, Rajchenberg M. 2013. *Asterostromella roseola* Bres. ex Rick is combined in *Dendrocorticium* (*Corticiaceae*, *Agaricomycetes*). Phytotaxa 104(1): 49-52. doi: 10.11646/phytotaxa.104.1.7

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Asterostromella roseola Bres. ex Rick is combined in *Dendrocorticium* (Corticiaceae, Agaricomycetes)

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Summary:—Examination of the original material of *Asterostromella roseola* Bres. ex Rick confirmed that it is a good morphological species, characterized by simple-septate generative hyphae, dendrohyphidia and halocystidia, and hyaline, smooth, IKI- basidiospores. Its morphological affinities with current accepted corticioid genera are discussed, and the new combination *Dendrocorticium roseolum* is proposed. A lectotype is selected and description and drawings are provided.

Johannes Rick (1869–1946) was the first mycologist to continuously study the fungal diversity of southern Brazil (Fildago 1962). Born in Austria, he emigrated in the early 20th century and lived until 1946 in southern Brazil, where he studied the main groups of macrofungi. He maintained an intensive correspondence and sent specimens to many important contemporary mycologists, such as G. Bresadola, C.G. Lloyd, H. Rehm and H. Sydow, who aided him to describe the Brazilian species.

During a revision of the aphyllophoroid, corticioid species described by Rick we came across with a specimen labeled as '*Asterostromella roseola* Bres.' deposited at Rick's type collection at PACA. The analysis of this specimen reveals that we were dealing with a good morphological species. The aim of this work is to discuss the nomenclature and taxonomy of *Asterostromella roseola* following current generic concepts, and to provide a description and drawings of the type specimen.

Basidiomes were cut by hand for microscopical study and sections were mounted in 3% KOH with 1% aqueous phloxine solution, Melzer's reagent and 0.1% cotton blue in 60% lactic acid. Colors are coded following Kornerup & Wanscher (1978).

Dendrocorticium roseolum (Bres. ex Rick) Baltazar & Rajchenb., *comb. nov.* (Fig. 1)
MycoBank MB 803436

≡ *Asterostromella roseola* Bres. ex Rick, Brotéria Ci. Nat. 7(34): 74, 1938.

Lectotype, designated here:—BRAZIL. Rio Grande do Sul: Santa Maria, 1935, *J. Rick*, Fungi Rickiani no. 12053 (PACA!).

Basidiome resupinate, easily detached from substrate, up to 0.5 mm thick. Hymenial surface smooth, fibrillose to cottony under the lens, orange (6B7) to brownish orange (6C8); *margin* indeterminate, fibrillose, concolorous with the hymenial surface to slightly lighter.

Hyphal system monomitic, generative hyphae simple-septated, thick-walled, 2–5 µm diam., hyphae in the subiculum hyaline, compactly arranged, in the subhymenium yellowish; *halocystidia* yellowish, thick-walled, straight to sinuous, 4.5–8 µm diam. at the apex, deeply stained in phloxine, with a resinuous, globose cap, 14.5–25.5 µm diam., not projecting above the hymenium; *dendrohyphidia* abundant, originating in the subhymenium, yellowish, slightly thick-walled, some of them arboriform, 2–5 µm diam. at the base, 0.5–3 µm

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Manuscrito IV

Baltazar JM, Rajchenberg M, Silveira RMB da. 2014. Type studies of J. Rick's corticioid homobasidiomycetes (*Basidiomycota*) housed in the Herbarium Anchieta (PACA). Manuscrito, 53 pp.

Trabalho a ser submetido ao periódico Taxon.

Running head: Corticioid fungi described by Rick

Type studies of J. Rick's corticioid homobasidiomycetes (*Basidiomycota*) housed in the Herbarium Anchieta (PACA)

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Abstract: A revision of J. Rick's type collection at Herbarium Anchieta (PACA) was carried out and 134 specimens corresponding to 115 taxa proposed by Rick were studied. Sixteen taxa are accepted: *Epithele bambusina* is accepted in this genus, and the following new combinations are proposed: *Clavulicium flavidulum*, *Dendrothele triangulispora*, *Fibrodontia fimbriata* (syn. *Fibrodontia gossypina*), *Fomitiporia bambusarum* (syn. *Phellinus bambusarum*), *Hyphoderma cinereoalbum* (syn. *Hyphoderma variolosum*), *Hyphoderma molliusculum*, *Hyphodontia corticioidea* (syn. *Hyphodontia sphaerospora*), *Hypochnicium horridulum* (syn. *Hypochnicium gomezii*), *Parvodontia albocrustacea* (syn. *Parvodontia luteocystidia*), *Peniophora carneorosea* (syn. *Peniophora laxitexta*), *Peniophora conspersa*, *Peniophora gomezii* (syn. *Peniophora confusa*), *Phlebia subconspersa* (syn. *Mycoacia subconspersa*), *Resinicium luteosulphureum* (syn. *Resinicium friabile*), and *Vararia calospora* (syn. *Vararia tropica*). Forty five taxa are considered synonyms of older names, ten names are invalid and three are illegitimate. Furthermore, eight lectotypes and two epitypes are selected. Forty two taxa remain unsolved mainly due to poor condition of Rick's specimens.

Twelve unpublished names were found among Rick's type collections, and their determination was given whenever it was possible. Descriptions and drawings are provided to taxa poorly known from literature.

Keywords: *Aphyllophorales*, Brazil, *Corticiaceae*, taxonomy, *Thelephoraceae*

INTRODUCTION

Johannes Rick (1869--1946) was a Jesuit priest born in Austria that developed a deep interest in the study of macrofungi when still living in Europe (Fidalgo, 1962). In the beginning of the 19th century he moved to the State of Rio Grande do Sul in Southern Brazil, and started what became the most important inventory of the regional mycota made until now. He was compiling his studies on *Basidiomycetes* when he passed away, but this important work was edited by Balduino Rambo and it was published in a series of posthumous papers several years later (Rick, 1958, 1959a, b, 1960, 1961a, b). Rick's biographies and important data about his contribution to mycology, such as lists of publications and herbaria holding his specimens, can be found in Torrend (1918), Rick (1958), Fidalgo (1962) and Rabuske & Rambo (2004).

Rick established a great collection of corticioid aphyllophoroid fungi (*Homobasidiomycetes*, *Basidiomycota*) which is kept at PACA, but there are also specimens in other important herbaria, such as BPI, FH, K, and S (Rick, 1928; Fidalgo, 1962). He described 376 new species and varieties in this group, i.e., taxa accepted by him in *Hydnaceae* Chevall., *Hypochnaceae* J. Schröt., *Meruliaceae* P. Karst., and *Thelephoraceae* Chevall. Seventy five names of this total are invalid, mainly because they were published after 1958 and lack citation of the type.

Rick's specimens are originated mainly from the State of Rio Grande do Sul in Southern Brazil. He gathered most of them, but he also teached local people from several localities to collect, preserve and sent specimens to him (R.A. Wasum, pers. comm.). Rick's collection also comprises a good number of specimens collected by him in the State of Santa Catarina, Southern Brazil, and from other Brazilian States sent by collaborators, such as C. Torrend. Last, Rick also collected in Tacuarembó Department, Uruguay, possibly during some visit for a cleric activity (P.I. Schmitz, pers. comm.). Unfortunately, most of the woodlands visited by Rick no longer exist, or only few small remants have been preserved, as they were suppressed by urbanization and farming. For

these reasons, Rick's collections could be considered one of the most important records of the South American corticioid mycota, and revisions of his specimens are crucial to better known the diversity of corticioids in this area.

Several authors have revised Rick's type specimens, most of them for monographic/taxonomic works on corticioid genera or morphological groups within the *Corticiaceae* s.l. This is the case of studies on *Aleurodiscus* Rabenh. ex J. Schröt. s.l. by Lemke (1964a, b) and Núñez & Ryvarden (1997), stipitate stereoid fungi by Reid (1965), *Merulius* Fr. s.l. by Ginns (1971, 1976), *Coniophora* DC. by Ginns (1973, 1982), *Irpex* Fr. and *Steccherinum* Gray by Maas Gesteranus (1974), *Gloeocystidiellum* Donk s.l. by Hjortstam & Stalpers (1982) and Boidin & al. (1997), *Hydnochaete* Bres. by Ryvarden (1982), *Hymenochaete* Lév. by Job (1985) and Léger (1998), *Phanerochaete* P. Karst. s.l. by Burdsall (1985) and Hjortstam & Ryvarden (2010), *Lopharia* Kalchbr. & MacOwan and related genera by Hjortstam & Ryvarden (1990), *Hyphodontia* J. Erikss. s.l. by Langer (1994), *Rhizoctonia*-forming fungi by Roberts (1999), and miscellaneous genera by Nakasone (2008, 2012). It is worthy to cite the revision of a Rick's type by Roberts (2001) in an inventory of heterobasidiomycetes in Cameroon, and the validation of a Bresadola's species from Southern Brazil described by Rick (Baltazar & al., 2013).

Most of the studies cited above included few Rick's specimens, usually less than three. The first extensive type revision of corticioid species described by Rick was carried out by Hjortstam & Ryvarden (1982). These authors revisited 71 taxa originally described in *Corticium* Pers., *Gloeocystidium* P. Karst., *Grandinia* Fr., *Kneiffia* Fr., *Odontia* Pers., and *Peniophora* Cooke. Later, Rajchenberg (1987b) revised the polypores described by Rick and also treated 11 species described in *Irpex* and *Grammothele* Berk. & M.A. Curtis. Despite the efforts of all previously cited authors, 253 corticioid species and varieties validly published by Rick remain unreviewed.

The aim of this work is to present a review the original material of corticioid fungi described by Rick kept in the type collection at PACA. Taxa previously revised by other mycologists were not treated here unless it was necessary. Descriptions and drawings are provided for seven species poorly known from literature.

MATERIAL AND METHODS

A total of 134 specimens corresponding to 115 names proposed by Rick revised in the present work were asked for loan from Herbário Anchieta (PACA). Specimens are included in a series named *Fungi Rickiani* (here abbreviated as *FR*) and received a five-character number. Additionally, specimens from BAFC and CIEFAP (herbarium of the Centro de Investigación y Extensión Forestal Andino Patagónico, Esquel, Argentina) were also studied as reference material.

Basidiomes were cut by hand for microscopical study and sections were mounted in 3 % KOH with 1% aqueous phloxine solution, Melzer's reagent, and 0.1% cotton blue in 60% lactic acid (Bills & Foster, 2004). Line drawings were made with the aid of a camera lucida. Scan Electron Microscopy (SEM) was conducted at 'Centro de Microscopia Eletrônica, Universidade Federal do Rio Grande do Sul' (CME/UFRGS). Basidiospores were coated with 15 nm of gold using a Bal-Tec SCD050 sputter coater and photographed with a JEOL JSM-6060 scanning electron microscope. Colors are coded following Kornerup & Wanscher (1978) and refer to dried specimens.

TAXONOMIC TREATMENT

Aldridgea ignatiana Rick in Iheringia, Bot. 4: 63. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, without date, *FR 20187* (PACA!).

Indeterminable. The type is sterile and the determination was not possible.

Aleurodiscus bicolor Rick in Iheringia, Bot. 4: 113. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20627* (PACA!).

= ***Cerocorticium molle*** (Berk. & M.A. Curtis) Jülich in Persoonia 8(2): 219. 1975.

Aleurodiscus sordidoalbus Rick in Brotéria. Ciências Nat. 3(30): 166. 1934 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, without date, *FR 12089* (PACA!).

= ***Sebacina sordidoalba*** (Rick) Rick [as '*sordide-alba*'] in Iheringia, Bot. 2: 37. 1958.

The presence of septate, cruciate basidia indicates a *Heterobasidiomycetes* but other important microscopic features were neither found nor distinguished, for which reason we leave this name as *S. sordidoalba* as proposed by Rick (1958: 37). Maybe this is a synonym of another species in *Sebacina* Tul. & C. Tul. but we were unable to confirm it due to the poor condition of the specimen.

Asterostroma chromoluteum Rick in Brotéria. Ciências Nat. 3(30): 42. 1934 – Neotype [designated by Rick (1959a: 116)]: Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 12157* (PACA!).

= ***Hyphoderma setigerum*** (Fr. : Fr.) Donk in Fungus 27: 15. 1957.

Asterostroma olivaceum Rick in Brotéria. Ciências Nat. 3(30): 41. 1934 – Lectotype [designated by Rick (1959a: 115)]: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12142* (PACA!).

= ***Dichostereum peniophoroides*** (Burt) Boidin & Lanq. in Mycotaxon 6(2): 284. 1977.

The type specimen was previously studied by G.A. Escobar (note in the exsiccatum), who also determined it as *D. peniophoroides*.

Asterostromella albocrustacea Rick in Ann. Mycol. 38(1): 59. 1940 – Type: not found at PACA.

Unknown application. Rick (1938) introduced *Asterostromella olivaceo-oxydata* with two varieties besides the autonym: *A. olivaceo-oxydata* var. *albocrustacea* and *A. olivaceo-oxydata* var. *anomala*. Neither specimens were cited nor types were selected for these three taxa. Later, Rick (1940b) proposed *A. albocrustacea* as a new species, but again did not cite any specimen. Finally, Rick (1959a) included *A. olivaceo-oxydata* var. *albocrustacea* in his compilation, but did not treat *A. albocrustacea*. It is quite possible that Rick treated a unique taxon under these two names and used the annotation 'n. sp.' instead of 'n. comb.' in Rick (1940b). Evidence supporting this hypothesis is that Rick used a specimen labelled as *A. albocrustacea* to lectotypify *A. olivaceo-oxydata* var. *albocrustacea* (see below).

Asterostromella calospora Rick in Iheringia, Bot. 4: 118. 1959 [basionym] ≡ ***Vararia calospora*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 12071* (PACA!, mistyped as *1207* in the protologue).

= *Vararia tropica* A.L. Welden in Mycologia 57(4): 516. 1965.

This species is characterized by a soft, cracked basidiome, simple-septate hyphae, and ellipsoid to subglobose, inamyloid, 9--12 × 7--9 µm basidiospores. See Welden (1965: 516) and Gilbertson & al. (1976: 534) for full descriptions and drawings.

Asterostromella deglubens Rick in Brotéria. Ciências Nat. 7(34): 1938 – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1936, FR *12063* (PACA!).

Indeterminable. The type is sterile and the determination was not possible.

Asterostromella lateritia Rick in Iheringia, Bot. 4: 118. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador (Santa Maria in the protologue), 1943, *FR 20343* (PACA!).

***Vararia*/*Dichostereum* sp.** The type is sterile, no basidiospores were found, but it is undoubtedly a species either of *Vararia* P. Karst. or *Dichostereum* Pilát due to the presence of arboriform, dextrinoid dichohyphae.

Asterostromella olivaceo-oxydata var. *albocrustacea* Rick in Brotéria. Ciências Nat. 7(34): 73. 1938 [basionym] ≡ ***Parvodontia albocrustacea*** (Rick) Baltazar & Rajchenb., **comb. & stat. nov.** [MycoBank MB######] – Lectotype [designated by Rick (1959a: 117]: Brazil, Rio Grande do Sul, Parecí, 1935, *FR 12047* (PACA!, sub '*Asterostromella albo-crustacea* Rick'). Figure 1.

= *Parvodontia luteocystidia* Hjortstam & Ryvarden in Synop. Fungorum 18: 28. 2004.

Basidiome resupinate, effused, thin, first hypochnoid, cottony, becoming pellicular, up to 230 µm thick. *Hymenophore* grandinioid, with scattered, small aculei, yellowish white (1A2) to pale yellow (1A3, 3A3); margin indeterminate.

Hyphal system monomitic, generative hyphae clamped, hyaline, with thin to thickened walls, 1.5--3 µm diam.; in the subiculum forming intercalary or terminal, swollen, broadly ellipsoid to globose vesicles, 10--15 µm diam., with yellowish contents, that usually present digitiform projections up to 4 × 3.5 µm. *Cystidia* present in the subhymenium and hymenium but rare, ventricose to subclavate, with a papillate apex, thin-walled, smooth, with yellowish contents and the same appearance of vesicles, 20--27 × 7.5--12.5 µm. *Basidioles* clavate, 10--15 × 4 µm. *Basidia* clavate to slightly suburniform, 11--12 × 4--4.5 µm, with 4 sterigmata. *Basidiospores* cylindric-ellipsoid, 4--5 × 2–2.5--3 µm, thin-walled, hyaline, sometimes glued in 3--4, IKI-.

Remarks. --- See discussion under *Asterostromella albocrustacea* Rick regarding confusion with this name and *A. olivaceo-oxydata* var. *albocrustacea*.

The type material is rather scant but it represents an outstanding species characterized by the presence of subicular vesicles with yellowish contents and digitiform projections. *Parvodontia luteocystidia* Hjortstam & Ryvarden (2004b: 28),

which was described from southern Brazil and NE Argentina is, according to its original description, the same species but differs by lacking the digitiform projections in the vesicles and a bamboo or palm leaves as substrate. In the studied specimen, we were not able to see the digitiform projections at a first glance, but they were easily seen after squeezing the preparations; this could be the reason why these structures have not been observed by Hjortstam & Ryvarden (2004b). We were not able to study specimens listed by Hjortstam & Ryvarden (2004b), but it is very likely that such similar specimens gathered in the same geographical area with similar vegetations correspond to the same species, so they are herein considered synonyms.

Asterostromella parasitica Rick in Brotéria. Ciências Nat. 7(34): 73. 1938 – Lectotype [designated by Rick (1959a: 117]: Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 12040* (PACA!).

Athelopsis* vel aff. *fusoidea (Jülich) Tellería. The lectotype slightly differs from typical specimens in forming rhizomorphs, in lacking encrustation on the subhymenial hyphae and in the basidiospores being slightly broader, 6--7 (--8) × 3--3.5 µm. Otherwise it is similar macroscopically, in basidial morphology, and in basidiospores gluing in packages of 3--4 basidiospores.

Asterostromella subalutaria Rick in Ann. Mycol. 38(1): 60. 1940 – Lectotype [designated by Rick (1959a: 118]: Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 12043* (PACA!).

***Clavulicium* sp.** The material is most probably a *Clavulicium* sp. due to its characteristic basidiospores, which are very abundant in the studied specimen [broadly ellipsoid to almost globose, hyaline, thin to slightly thick-walled and smooth, IKI-, with many guttulae, distinctly apiculated, 6--7(--7.5) × 5--6 µm]. However, the specimen is in poor condition and other microscopic features were not available in order to properly establish the specific determination.

Asterostromella taquarae Rick in Brotéria. Ciências Nat. 3(30): 43. 1934 – Lectotype [designated by Rick (1959a: 116]: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12046* (PACA!).

Indeterminable. We have studied two specimens, including the lectotype. Both were sterile and and the determination was not possible.

Additional specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12065* (PACA).

Asterostromella triangulispora Rick in Iheringia, Bot. 4: 118. 1959 [basionym] ≡ ***Dendrothele triangulispora*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20115* (PACA!). Figure 2.

Basidiome resupinate, effused, initially forming small colonies that progressively coalesce and form up to 2 × 1 cm basidiomes, ceraceous to cottony, soft to tough, easily detached from the substrate, up to 200 µm thick. *Hymenophore* smooth, felty, cracked, dull yellow (3B3, 3B4), golden yellow (5B7) to brownish yellow (5C7, 5C8) and brownish orange (6C8) in some parts. *Margin* mycelial to cottony, whitish (1A1).

Hyphal system monomitic, subiculum, subhymenium and hymenium undifferentiated and dominated by coarse hyaline crystals, generative hyphae clamped, hyaline, thin-walled, smooth, frequently branched and tortuous, usually agglutinated, 1.5--4 µm diam.. *Dendrohyphidia* hyphoid, branched and tortuous, hyaline, thin-walled, smooth, 2--3 µm diam. *Cystidia* subglobose, subclavate to ventricose, sometimes stalked, hyaline, thin-walled, smooth, 20--35 × 8.5--10 (--12) µm. *Basidia* suburniform, hyaline, thin-walled, smooth, with 4 sterigmata, 20--28 × 8.5--12 µm, sterigmata up to 2 × 2.5 µm. *Basidiospores* citriform to somewhat elongated, with prominent distal peg and apiculus, hyaline to yellowish when collapsed, thin-walled, smooth, (9.5--) 12--14 (--14.5) × 6.5--8 µm, IKI-, acyanophilous to weakly cyanophilous.

Remarks. --- *Dendrothele triangulispora* is characterized by a dense microscopic structure largely composed by crystals, where other structures are difficult to discern, and by the biapiculate basidiospores. The presence of cystidia is pointed here as doubtful. They have the same size and general appearance of basidia, but differ by their shape.

Morphologically, *Dendrothele novae-zelandiae* Nakasone & Burds. (Nakasone & Burdsall, 2011: 123) is the closest species of *D. triangulispora*. Their macroscopic appearance is similar, but *D. triangulispora* has a slightly darker hymenophore and more evident cracks. Microscopically *D. novae-zelandiae* differ by presenting encrusted dendrohyphidia and slightly shorter basidiospores, (9--) 10--11 (--12.5) × (6.5--) 7--8.5 (--10) µm, while in *D. triangulispora* dendrohyphidia are smooth and basidiospores present a more elongated shape.

Dendrothele biapiculata (G. Cunn.) P.A. Lemke and *Dendrothele citrisporella* Boidin & Duhem also have similar, citriform and biapiculate basidiospores. They differ from *D. triangulispora* by having simple-septate generative hyphae and basidia with two sterigmata (Boidin & al., 1996; Nakasone & Burdsall, 2011: 99; 116).

Botryochaete laxa Rick in Iheringia, Bot. 4: 122. 1959 – Holotype: Brazil, Rio Grande do sul, São Salvador, 1943, *FR 20404* (PACA!).

***Hyphodontia* sp.** No basidia and basidiospores were seen; in other features it seems to represent a member of *Hyphodontia* s.l. mainly due to the characteristic small, semicircular clamps.

Ceracea subsulphurea Rick in Iheringia, Bot. 2: 50. 1958 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, *FR 12019* (PACA!, sub "*Arrhytudia subsulphurea*" Rick).

= ***Phanerochaete sordida*** (P. Karst.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 5: 1023. 1978.

Ceratobasidium striisporum Rick in Lilloa 9: 219. 1943 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 12849* (PACA!).

= ***Xenasma pulverulentum*** (Litsch.) Donk in Fungus 27: 25. 1957.

The hymenium and subiculum were collapsed and microscopic structures could not be properly observed. The basidiospores were collapsed in KOH but were clearly seen in Melzer's reagent and presented typical features of the species, i.e., ellipsoid, hyaline, thick-walled and striated, with distinct apiculus, IKI-, 8--9 × 6 µm. The synonymy of *C. striisporum* under *X. pulverulentum* was first proposed by Roberts (1999: 228), who also studied the holotype at PACA.

Coniophora albo-olivacea Rick in Iheringia Bot. 4: 119. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 10 Feb 1944, *FR 21821* (PACA!).

Indeterminable. The specimen is scant and the determination was not possible. See a brief description in Ginns (1973: 249).

Corticium crystalliferum Rick in Brotéria. Ciências Nat. 7(34): 74. 1938, non Rick (1959: 91), **nom. inval.** [same holotype of *C. crystalliferum* Rick (1938)] ≡

Athelopsis crystallifera (Rick) Hjorstam in Windahlia 17: 56. 1987, non Hjortstam & Ryvarden (1982: 261), **comb. inval.** [invalid basionym] – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 15483* (PACA!).

Corticium insinuans var. *cruentata* Rick in Brotéria. Ciências Nat. 3(30): 157. 1934 ≡ *Stereofomes cruentatus* (Rick) Rick in Brotéria. Ciências Nat. 9(36): 146. 1940 – Holotype: Brazil, Rio Grande do Sul, Porto Novo, 1930, *FR 14728* (PACA!).
= ***Scytinostroma duriusculum*** (Berk. & Broome) Donk in Fungus 26: 20. 1956.

Corticium paradoxum Rick in Iheringia, Bot. 4: 94. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20127* (PACA!).
Indeterminable. The type is sterile and the determination was not possible. Also studied by Hjortstam & Ryvarden (1982: 262) who also could not solve its identity.

Crystallocystidium albescens Rick in Brotéria. Ciências Nat. 9(36): 142. 1940 ≡ *Stereum albescens* (Rick) Rick in Iheringia, Bot. 4: 68. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 12386* (PACA!).
= ***Scytinostroma duriusculum*** (Berk. & Broome) Donk in Fungus 26: 20. 1956.

Crystallocystidium albobadium Rick in Brotéria. Ciências Nat. 9(36): 142. 1940 – Lectotype [designated by Rick (1959a: 80)]: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12396* (PACA!).
Unknown application. The type is sterile and the determination was not possible. Rick wrote 'non typus' in a note in the exsiccatum, but later this specimen was indicated as typus by him (Rick, 1959a: 80). We also studied an additional specimen (*FR 12394*) but it is also sterile.
Additional specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 12394* (PACA).

Crystallocystidium albopurpurascens Rick in Brotéria. Ciências Nat. 9(36): 140. 1940 – Lectotype [designated by Rick (1959a: 80)]: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12406* (PACA!).
Indeterminable. The specimen is sterile and the determination was not possible.

Crystallocystidium enteroflavum Rick in Brotéria. Ciências Nat. 9(36): 141. 1940 – Lectotype [designated by Rick (1959a: 80)]: Brazil, Rio Grande do Sul, Cruz Alta, 1936, *FR 12388* (PACA!).

= ***Scytinostroma duriusculum*** (Berk. & Broome) Donk in Fungus 26: 20. 1956.

The studied material seems to be a young specimen given its thin basidiome. Otherwise microscopical features are typical of *S. duriusculum*.

Crystallocystidium intermedium Rick in Brotéria. Ciências Nat. 9(36): 140. 1940 – Lecotype [designated by Rick (1959a: 80)]: Brazil, Rio Grande do Sul, São Leopoldo, 1934, *FR 12387* (PACA!).

***Phlebiopsis* sp.** The type is sterile and contaminated by anamorphic fungi, but cystidia and hyphae are typical of this genus.

Crystallocystidium luteolividum Rick in Brotéria. Ciências Nat. 9(36): 141. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 12391* (PACA!).

Indeterminable. It seems to be a *Heterobasidiomycetes*, but no mature basidia and basidiospores were observed.

Crystallocystidium pauperrimum Rick in Iheringia, Bot. 4: 81. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1944, *FR 20852* (PACA!).

Indeterminable. Sterile and contaminated by anamorphic fungi.

Crystallocystidium tenue Rick in Brotéria. Ciências Nat. 9(36): 141. 1940 [basionym] ≡ ***Peniophora gomezii*** Baltazar & Rajchenb., **nom. & comb. nov.** [MycoBank MB######], non *Peniophora tenuis* (Pat.) Massee 1889 – Lectotype [designated by Rick (1959a: 80)]: Uruguay, Taquarembó, 1935, *FR 12405* (PACA!).

= *Peniophora confusa* C.E. Gómez in Gómez & Loewenbaum, Darwiniana 20(1--2): 205. 1976 – Holotype: Argentina, Buenos Aires, Punta Lara, s/ *Ocotea* sp. ad ramus in terram, Sep 1974, *C.E. Gómez 2573* (BAFC!).

Etymology. --- Named in honor of Dr. Carlos E. Gómez (Argentina), in recognition of his contributions to the taxonomy of the corticioid fungi.

Remarks. --- *Crystallocystidium tenue* is a previous name for *P. confusa*. See descriptions and drawings in Gómez & Loewenbaum (1976a: 205) and Andreasen & Hallenberg (2009: 100).

Crystallocystidium triste Rick in Brotéria. Ciências Nat. 9(36): 141. 1940 – Neotype [designated by Rick (1959a: 80)]: Brazil, Rio Grande do Sul, São Salvador, 24 Sep 1943, *FR 20020* (PACA!).

= ***Peniophora gomezii*** Baltazar & Rajchenb., cfr. above under *Crystallocystidium tenue* Rick.

Crystallocystidium variolosum Rick in Brotéria. Ciências Nat. 9(36): 143. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 12399* (PACA!).

A ***Heterobasidiomycetes***.

Cystidiodendron fimbriatum Rick in Lilloa 9: 218. 1943 [basionym] ≡ ***Fibrodontia fimbriata*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Lectotype (designated here): Brazil, Rio Grande do Sul, São Salvador, 1933, *FR 12812* (PACA!).

= *Fibrodontia gossypina* Parmasto in Conspec. System. Corticiacearum: 207. 1968.

Fibrodontia fimbriata presents the typical features of *F. gossypina*, i.e., a dimitic hyphal system with clamped generative hyphae and skeletoid hyphae in the aculei, coupled with ellipsoid, thin-walled basidiospores measuring 3.5--4.5 (--5) × 2.5--3 (--3.5) µm. Hjortstam & Ryvarden (2007: 60) stated that *F. gossypina* is easily confused with *Fibrodontia brevidens* (Pat.) Hjortstam & Ryvarden with globose to subglobose, 4--4.5 × 3.5--4.5 µm basidiospores, and asserted that they have never seen *F. gossypina* in South America. These two species are clearly separated by the basidiospore morphology, and *F. fimbriata* clearly presents the ellipsoid type. Another related species is *Fibrodontia tomentosa* (Berk. & M.A. Curtis) Hjortstam & Ryvarden, which is separated from the other two by cylindric to slightly allantoid and larger basidiospores, measuring 7--9 × 3.5--4.5 µm.

Cystidiodendron fuscum Rick in Iheringia, Bot. 5: 173. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 10 Jun 1944, *FR 22757* (PACA!).

Indeterminable. The type is sterile and the determination was not possible.

Cystidiodendron gossypinum Rick in Iheringia, Bot. 5: 172. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 21 Jul 1943, *FR 20321* (PACA!).

= ***Hypochnicium horridulum*** (Rick) Baltazar & Rajchenb., cfr. below under *Radulum horridulum* Rick.

"*Cystidiodendron laetum* Rick" in Iheringia, Bot. 5: 173. 1959, **nom. inval.** – Type: not designated.

Hyphodermella corrugata (Fr.) J. Erikss. & Ryvarden. We have studied *FR 20622* and two other specimens found at PACA not cited by Rick (1959b), and they correspond to *H. corrugata*.

Specimens studied. --- Brazil, Rio Grande do Sul, São Salvador, 17 Sep 1945, *FR 20597, 20605, 20622* (PACA).

"*Cystidiodendron papilliforme* Rick" in Iheringia, Bot. 5: 172. 1959, **nom. inval.** – Type: not designated.

Hyphodermella corrugata (Fr.) J. Erikss. & Ryvarden. This is an invalid name since Rick (1959b) did not designate any of the two cited specimens as holotype. We were only able to study one of them and it corresponds to *H. corrugata*.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 10 Jun 1944, *FR 22530* (PACA).

Cytidia conspersa Rick [as '*Cytidea*'] in Iheringia, Bot. 4: 114. 1959 [basionym] ≡ ***Peniophora conspersa*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 12823a* (PACA!). Figure 3.

Basidiome resupinate, first growing in small patches, then coalescing and becoming widely effused, adnate, ceraceous to crustaceous, cracking and exposing the substrate, up to 0.4 mm thick. *Hymenophore* smooth to slightly tuberculate, in some parts minutely farinose, purplish white (14A2), violet white (15A2), pale violet (17A3), to lilac gray (16B2). *Margin* indeterminate, fimbriate, concolor with the hymenophore, in some parts mycelial and whitish. *Subiculum* concolor with the hymenophore, translucent. *Mycelium* below the subiculum and in the substrate cottony to felty, whitish.

Hyphal system monomitc, in the subiculum with a pseudoparenchymatic appearance; generative hyphae clamped, in the mycelium found on the substrate and in the margin hyaline, thick-walled and finely encrusted with a crystalline matter, 2.5--4.5 µm diam.;

in the subiculum pale yellowish, slightly thick-walled, often collapsed, 2--3.5 (--4) µm diam.; in the subhymenium hyaline, thin to thick-walled, often tortuous and short-celled, 2--5.5 µm diam. *Dendrohyphidia* seen twice, tortuous, one simple and another with branched, dendroid apex, hyaline, thin-walled, smooth, 1.5--5 µm diam. *Cystidia* subcyllindric, suclavate to ventricose, sometimes stalked, apex obtuse to subcapitate, hyaline, thin-walled, smooth, (26--) 30--55 × (5.5--) 6.5--9 µm, lacking contents typical of gloeocystidia. *Lamprocystidia* conical, hyaline, thick-walled, strongly encrusted with hyaline crystals, 20--53 × 7--14 (--17) µm, abundant in the subiculum and suhymenium, rarely in the hymenium and never projecting above the basidia. *Basidia* subclavate to subcylindrical, usually with few to several constrictions, hyaline, smooth and thin-walled, 23.5--37 × 6--8.5 µm, with 4 sterigmata up to 6.5 × 2.5 µm. *Basidiospores* allantoid to navicular, sometimes cylindrical, hyaline, smooth and thin-walled, sometimes with small guttulae, (11.5--) 12--14.5 (--16) × 3.5--5.5 (--6) µm, IKI-, acyanophilous to slightly cyanophilous.

Remarks. --- *Peniophora conspersa* is characterized by the abundant lamprocystidia, and large, allantoid to navicular basidiospores. The presence of dendrohyphidia needs confirmation because only two were observed, contrasting with the abundant dendrohyphidia present in *Peniophora lycii* (Pers. : Fr.) Höhn. & Litsch. and its related species (Andreasen & Hallenberg, 2009). Similarly, we are neither sure about the presence of gloeocystidia nor other cystidia except lamprocystidia. Structures named cystidia in the description above and drawn in Figure 3 lack any contents typical of gloeocystidia and they are very similar in size and shape with basidia. In spite that this species really lacks those structures we are of the opinion to treat it in *Peniophora* Cooke due to the presence of lamprocystidia and basidiospores typical for the genus.

Species included in the *Peniophora cinerea* (Pers. : Fr.) Cooke group by Andreasen & Hallenberg (2009: 84) have few and indistinct gloeocystidia or even lack them. However, they have smaller basidiospores than *P. conspersa*. *Peniophora violaceolivida* (Sommerf.) Massee and related species share similar macroscopic features to *P. conspersa*, but all of them have gloeocystidia and smaller basidiospores (Andreasen & Hallenberg, 2009: 99).

Epithele bambusina Rick in Iheringia, Bot. 4: 87. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 16 Aug 1943, *FR 12936* (PACA!). Figures 4--5.

Basidiome resupinate, widely effused, at first orbicular, then confluent, felty, ceraceous to subcrustaceous, up to 0.5 mm thick. *Hymenophore* with a grandinioid to odontioid appearance due to the emergent hyphal pegs, yellowish white (1A2) to pale yellow (1A3, 2A3). *Margin* indeterminate, white (1A1) to yellowish white (1A2). *Hyphal pegs* cylindrical to conical, with an acute apex, usually penicilate, concolor with the margin, 0.5--2 (--3) per mm, 110--340 × 45--100 µm.

Hyphal system monomitic, generative hyphae clamped, hyaline, thin to slightly thick-walled, frequently branched, (2--) 2.5--5 µm diam., near to the hymenium usually short-celled. *Hyphidia* present in the hymenium and in the apex of the hyphal pegs, hyphoid to irregular, hyaline, thin-walled, usually with a dendroid apex and short knobby branches, up to 25 × 2.5 µm. *Cystidia* variously shaped, subglobose, subclavate, pyriform to ventricose, apex obtuse, thin-walled, hyaline, rarely covered by a fine crystalline matter, present in the hymenium but not projecting, 12.5--25 (--30) × (6.5--) 9--14 µm. *Basidia* clavate to subclavate, with one or two median constrictions, hyaline, thin-walled, smooth, with 4 sterigmata, 36--55 × 9.5--11.5 µm, sterigmata up to 8 × 2 µm. *Basidiospores* ellipsoid to broadly ellipsoid, usually slightly curved, with a distinct apiculus, thin to thick-walled (especially in IKI), rugulose, 12--15 × (6--) 7.5--10 µm, IKI-, acyanophilous to weakly cyanophilous.

Remarks. --- *Epithle bambusina* is characterized, above all, by the ellipsoid, slightly curved basidiospores with a distinct apiculus and rugulose walls. The rugosity of the basidiospore wall was difficult to see in some light microscope preparations, but this feature was confirmed with SEM (Figure 5).

Epithele bambusina is similar to *Epithele cylindricosterigmata* Han C. Wang & Sheng H. Wu due to the monomitic hyphal system with clamped hyphae, similar cystidia, dendrohyphidia and basidiospore shape. Wang & al. (2010: 1155) described *E. cylindricosterigmata* as lacking cystidia, but they were found in the paratype by Nakasone (2013: 73). However, *E. cylindricosterigmata* differs from *E. bambusina* by narrower cystidia (5--8 µm wide), larger hyphidia [22--50 (72) × 2.5--5 µm] and smooth, smaller basidiospores [(9.2) 10--11 (12) × (6.8) 7.2--8 (8.5) µm] (Nakasone, 2013: 73).

Epithele fasciculata (G. Cunn.) Boidin & Gilles also has ellipsoid, rugulose basidiospores and similar hyphidia as those of *E. bambusina*. The former differs by the dimitic hyphal system, lack of cystidia and slightly larger basidiospores, (13.5--) 14--16.5 × (9--) 9.5--11.5 (--12) µm (Nakasone, 2013: 76).

Epithele alba (Viégas) Boidin & al. is another species with rugulose basidiospores, but they differ from those of *E. bambusina* by being biapiculate, broadly to narrowly ellipsoid or subfusiform, and distinctly larger, (15--) 16--19 (--22) × (6.8--) 7--11 (--13) µm (Nakasone, 2013: 63).

Epithele bambusae (Burt) Nakasone is the only other species accepted in *Epithele* (Pat.) Pat. by Nakasone (2013) which also grows on bamboo. In this species, basidiospores appear rugulose when collapsed, but they differ from those of *E. bambusina* by being ellipsoid to broadly fusiform, occasionally biapiculate and remarkably longer, (14--) 16--20 (--23) × (8--) 9--10.5 µm. Furthermore, *E. bambusae* differs by lacking hyphal pegs and cystidia, and by presenting different hyphidia and larger basidia, 52--80 (--100) × 10--13 µm.

Epithele nivea Rick in Iheringia, Bot. 4: 87. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 12943* (PACA!).

= ***Fibrodontia tomentosa*** (Berk. & M.A. Curtis) Hjortstam & Ryvarden in Synop. Fungorum 20: 55. 2005.

The features of the type fit in the description of *F. tomentosa*. Basidiospores are slightly smaller in *E. nivea* when compared to those described for *F. tomentosa* [6--7(--8) × 3--4 in *E. nivea*, 7--9 × 3.5--4.5 in *F. tomentosa*] by Langer (1994: 231), but they are similar to the holotype description given by Hjortstam (1990: 416) — 6.5--7.5 (--8) × 3.8--4 µm.

Epithele straminea Rick in Iheringia, Bot. 4: 87. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20933* (PACA!).

Indeterminable. The specimen seems to correspond to a *Hyphodontia* s.l. due to its macroscopical features and the characteristic clamps. However, no hymenial elements (i.e., basidia, basidioles, cystidia or cystidioles) and basidiospores were seen.

"*Gloeocystidium cremeum* Rick" in Iheringia, Bot. 4: 90. 1959, **nom. inval.** – Type: not designated.

Scytinostromella cerina (Bres.) Hjortstam & Ryvarden. We have found no specimen under *G. cremeum* at PACA. In the type collection there is an exsiccatum labelled as "*Gloeocystidium ceraceum* Rick", a name which was never published. It is possible that '*cremeum*' was mistyped as '*ceraceum*'.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1936, *FR 13398* (PACA, sub "*Gloeocystidium ceraceum* Rick").

Gloeocystidium ferrugineum Rick in Iheringia, Bot. 4: 90. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 30 Jun 1944, *FR 20949* (PACA!).

Indeterminable. The type is sterile and the determination was not possible. Hjortstam & Ryvarden (1982: 264) studied *FR 22794* and identified it as *Sebacina* sp.

Gloeocystidium clavuligerum var. *brasiliense* Rick in Iheringia, Bot. 4: 90. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1949, *FR 13446* (PACA!, sub "*Gloeocystidium butyraceum* Rick").

= ***Scytinostromella cerina*** (Bres.) Hjortstam & Ryvarden in Mycotaxon 10(2): 287. 1980.

Gloeocystidium luteostramineum Rick in Brotéria. Ciências Nat. 3(30): 46. 1934 ≡ *Sebacina luteostraminea* (Rick) Rick in Iheringia, Bot. 2: 37. 1958 – Syntype: Brazil, Rio Grande do Sul, São Leopoldo, 1933, *FR 13439* (PACA!).

A ***Heterobasidiomycetes***.

Gloeocystidium subincarnatum Rick in Brotéria. Ciências Nat. 7(34): 76. 1938 – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1935, *FR 13383* (PACA!).

A ***Heterobasidiomycetes***.

Gloeoradulum luteosulphureum Rick in Iheringia, Bot. 5: 183. 1959 [basionym] ≡ ***Resinicium luteosulphureum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Salvador, *FR 19740* (PACA!, sub "*Radulum luteo-sulphureum*").

= *Resinicium friabile* Hjortstam & Melo in Mycotaxon 65: 324. 1997.

See Hjortstam & Melo (1997: 324) and Nakasone (2007: 426) for full descriptions and drawings of this species. Basidiospore size in the type of *G. luteosulphureum* is 5.5--7 × 3--3.5 (--4) µm, slightly different from those described for *R. friabile* by those authors, (4--) 4.5--5.5 × (2.5--) 3--3.5 µm. On the basis that all other features observed in *G. luteosulphureum* are in accordance with the concept of *R. friabile*, and that the type locality of the latter is rather close to that of *G. luteosulphureum* (Brazil, São

Paulo, Ubatuba, Ilha Anchieta), we decide to consider the differences in basidiospore size as an intraspecific variation and to place *R. friabile* under synonymy of *R. luteosulphureum*. This is the only *Resinicium* Parmasto species known from the Southern Hemisphere up to date (Nakasone, 2007: 429).

Resinicium bicolor (Alb. & Schwein. : Fr.) Parmasto is a similar species, with basidiospores presenting a size range similar to that of *R. luteosulphureum*, i.e., (4.5--) 5.5--7.2 (--8) × (2.5--) 2.9--3.5 µm. However, basidiospores are consistently cylindrical in *R. bicolor*, while in *R. luteosulphureum* they are typically ellipsoid. *Resinicium bicolor* also differs from *R. luteosulphureum* by having larger basidia and asterocystidia, and a north temperate distribution (Nakasone, 2007: 429).

"*Grandinia braunii* Rick" in Iheringia, Bot. 5: 173. 1959, **nom. inval.** – Type: not designated.

Rick (1959b: 173) cited three specimens but he did not select any of them as type. Hjortstam & Ryvarden (1982: 265) studied *FR 22711* and determined it as *H. corrugata*. We studied another specimen cited by Rick (1959b), but its determination was not possible because it lacks most of the microscopic elements.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 07 Feb 1943, *A. Braun*, *FR 16048* (PACA).

Hypochnus anceps Rick in Iheringia, Bot. 5: 129. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, *FR 13636* (PACA!).

= ***Oliveonia fibrillosa*** (Burt) Donk in Fungus 28: 20. 1958.

This species is characterized by the scarce, up to 50 µm long leptocystidia, and by the repetitive, hyaline, oblong-ellipsoid and slightly curved basidiospores measuring 8--10 × 4.5 µm.

Hypochnus aurantiacus Rick in Iheringia, Bot. 5: 129. 1959, **nom. illeg.**, non (Pat.) Burt 1916 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, *FR 13640* (PACA!, sub *Hypochnus aureus*).

***Vararia*/*Dichostereum* sp.** The type is sterile, no basidiospores were found, but it is undoubtedly a species either of *Vararia* P. Karst. or *Dichostereum* Pilát due to the presence of arboriform, dextrinoid dichohyphae.

Hypochnus carneoroseus Rick in Brotéria. Ciências Nat. 3(30): 152. 1934 [basionym] ≡ ***Peniophora carneorosea*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 13645* (PACA!).

= *Peniophora laxitexta* C.E. Gómez in Gómez & Loewenbaum, Darwiniana 20(1--2): 195. 1976 – Holotype: Argentina, Buenos Aires, Punta Lara, s/troncos de *Ocotea* sp., Jun 1975, *Galvagno & López G. 2596* (BAFC!).

Hypochnus carneoroseus is a previous name for *P. laxitexta*. For descriptions and drawings see Gómez & Loewenbaum (1976a: 195) and Andreasen & Hallenberg (2009: 76).

Additional specimen studied. --- Argentina, Buenos Aires, Tigre, Rincón de Milberg, 07 Sep 1968, *J.E. Wright G-2183* (BAFC 52167).

Hypochnus rhizomorphus Rick in Iheringia, Bot. 5: 129. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 15 Aug 1943, *FR 20330* (PACA!).

***Phanerochaete* sp.** The specimen has a pellicular, yellowish basidiome with rhizomorphic margins that reminds one of *Rhizochaete* spp. However, it has no reaction in KOH and the specimen is sterile.

Irpex arborescens Rick in Iheringia, Bot. 5: 191. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1940, *FR 16591* (PACA!).

=***Peniophorella rude*** (Bres.) K.H. Larss. in Mycol. Res. 111(2): 192. 2007.

Rajchenberg (1987b) and Nietiedt & Guerrero (1998) already studied the type of *I. arborescens* and placed it under synonymy with *Peniophorella rude* (Bres.) K.H. Larss.

The type specimen comes close to *P. odontiiformis* (Boidin & Berthier) K.H. Larss., described from Central African Republic, by its smaller basidiospores [7.5--9 × 3.5--5 µm in *P. odontiiformis*; 9--10 × 6 µm in *P. rude* following Larsson (2007: 192)]. Larsson (2007: 192) maintained *P. odontiiformis* separated, but we consider difficult to sustain this on the basis of the morphological variation displayed by *P. rude*. We point out that *I. arborescens* type and *P. rude* type ('ad ramos arbor. frond. S. Leopoldo Brasiliae, Rick no. 51') were both gathered by Rick in the same area. Therefore it is unlikely that they belong to different taxa unless this is proved experimentally.

We also note that other taxa such as *Hyphoderma crystallophorum* Gilb. & Adask. (Gilbertson & Adaskaveg (1993: 374) and *Hyphoderma mucronatum* (H. Furuk.) Sheng

H. Wu (Wu, 1990: 75) could be considered synonyms of *P. odontiiformis* due to their basidiospore size, but have been properly compared and synonymized to *P. rude* by Nietedt & Guerrero (1998). Hjortstam & Ryvarden (1980: 279) have previously suggested the synonymy of *P. odontiiformis* with *P. rude*.

Irpex corticioides Rick in Iheringia, Bot. 5: 187. 1959 [basionym] ≡ ***Hyphodontia corticioidea*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, *FR 16667* (PACA!).

= *Hyphodontia sphaerospora* (N. Maek.) Hjortstam in Hjortstam & Ryvarden, Synop. Fungorum 15: 12. 2002.

This is a previous name for *H. sphaerospora*. See Maekawa (1993) for a full description and drawings. *Odontia chroospora* Rick is also the same species (see below). It was published in the same work by Rick (1959b) in a previous page but, on the basis of Art. 11 of the International Code of Nomenclature for algae, fungi, and plants (McNeill & al., 2012) which does not give preference for species published in the same work, we have selected *I. corticioides* because its type material is in far better condition than that of *O. ochrospora*.

The holotypes of *I. corticioides* and *O. chroospora* were previously revised by Rajchenberg (1987b: 555) and Hjortstam & Ryvarden (1982: 268), respectively, and were identified as *Hyphodontia arguta* (Fr.) J. Erikss. *Hyphodontia corticioidea*, tough, is distinguished and separated by its globose basidiospores (Maekawa, 1993).

Irpex furfuraceovelutinus Rick in Iheringia, Bot. 5: 188. 1959 ≡ *Phanerochaete furfuraceovelutinus* (Rick) Rajchenb. in Nordic. J. Bot. 7 (5): 556. 1987 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 16597* (PACA!).

= ***Kneiffiella stereicola*** (Bres.) Nakasone in Cryptogam. Mycol. 29 (3): 252. 2008.

Nakasone (2012: 36) studied a probable isotype of *I. furfuraceovelutinus* and reduced it as a synonym of *K. stereicola*. The holotype of *I. furfuraceovelutinus* deposited at PACA has slightly larger basidiospores than those described by Nakasone (2012: 36), but it agrees with the basidiospores size observed in other specimens (Gilbertson & Blackwell, 1988: 383; Langer, 1994: 170; Nakasone, 2008: 252). See papers cited in this discussion for descriptions and drawings of *K. stereicola*, and Rajchenberg (1987b: 556) for a description and drawings of the holotype of *I. furfuraceovelutinus*.

Irpex microdon Rick in Iheringia, Bot. 5: 187. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 18 Mar. 1943, *FR 16619* (PACA!).

= ***Steccherinum ciliolatum*** (Berk. & M.A. Curtis) Gilb. & Budington in J. Ariz. Acad. Sci. 6(2): 97. 1970.

We have seen few basidiospores, but they are coincident with measurements presented by Rajchenberg (1987b: 557).

Irpex poria Rick in Iheringia, Bot. 5: 190. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1936, *FR 16653* (PACA!).

***Ceriporiopsis* sp.** Contrary to a previous statement by Rajchenberg (1987b) we were able to find the type specimen at PACA. It is similar to *Ceriporiopsis latemarginata* (Rick) Rajchenb. due to its macroscopic features and the thick-walled contextual hyphae – see Rajchenberg (1987b: 554) for a description and drawings of *C. latemarginata*. However, the holotype of *I. poria* is sterile and the determination was not possible.

"*Irpex regularissimus* Rick" in Iheringia, Bot. 5: 190. 1959, **nom. inval.** – Type: not designated.

Gloeodontia americana Rajchenb. in Nordic J. Bot. 7(5): 557. 1987 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 14 Aug 1943, *FR 20206* (PACA!).

Contrary to Rajchenberg (1987b: 557) description, this species does have skeletocystidia. They were found in the holotype as variably encrusted skeletal hyphal endings, which are abundant in the core of the aculei and rarely observed in the subhymenium, hymenium or projecting above the basidia. See drawings in Rajchenberg (1987b: Figs. 10--11). This is a good morphological species in *Gloeodontia* Boidin due to the combination of a dimitic hyphal system and ellipsoid basidiospores, measuring 6--7.5 × 4--4.5 µm.

Irpex subhypogaeus Rick in Egatea 17: 212. 1932 – Lectotype [designated by Rick (1959b: 189)]: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 16631* (PACA!).

***Trechispora* sp.** We have found hyaline, ellipsoid basidiospores that are slightly thick-walled and echinulate, IKI-, 4.5--6 × 3.5--4 µm. Microscopically, the specimen is close to *Trechispora verruculosa* (G. Cunn.) K.H. Larss. However, the basidiome is scant and badly broken and a study of its macroscopic features was not possible in order to properly determine it. See also comments in Rajchenberg (1987b: 558).

Kneiffia lurideolivacea Rick in Brotéria. Ciências Nat. 3(30): 74. 1934 ≡ *Peniophora lurideolivacea* (Rick) Rick in Iheringia, Bot. 4: 109. 1959 – Neotype [designated by Hjortstam & Ryvarden (1982: 267)]: Brazil, Rio Grande do Sul, Parecí, 1935, *FR 16864* (PACA!).

= ***Phlebiopsis gigantea*** (Fr.) Jülich in Persoonia 10(1): 137. 1978.

Already revised by Hjortstam & Ryvarden (1982: 267), who proposed the synonymy. We could not observe basidiospores in the neotype, but other features are according to the concept of *P. gigantea*. We have studied another original material (*FR 16836*) but it corresponds to *Phlebiopsis flavidoalba* (Cooke) Hjortstam.

Additional specimen studied. --- Brazil, Rio Grande do Sul, Parecí, 1935, *FR 16836* (PACA).

Kneiffia grisea Rick in Brotéria. Ciências Nat. 3(30): 74. 1934, **nom. illeg.** non Berk. & M.A. Curtis 1868 ≡ *Peniophora grisea* (Rick) Rick in Iheringia, Bot. 4: 110. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 16780* (PACA!) – Epitype (designated here): Brazil, Rio Grande do Sul, São Salvador, 1939, *FR 16874* (PACA!).

= ***Hypochnicium cymosum*** (D.P. Rogers & H.S. Jacks.) K.H. Larss. & Hjortstam in Mycotaxon 5(2): 477. 1977.

FR 16780 was the unique specimen kept at PACA under *K. grisea* which was gathered before 1934, and herein considered the holotype. However, it is sterile and indeterminable. *FR 16874* is here selected as epitype and *K. grisea* is placed under synonym with *H. cymosum*. Hjortstam & Ryvarden (1982: 266) also studied this specimen but have not typified the name because they considered that the specimen was not in accordance with the description in the protologue, and stated that Rick described the species as being 'granular with subangular spores'. We consider these discrepancies between the decription and the specimen unimportant, since Rick's descriptions usually show incongruencies with their respective specimens (with species names hand-noted by Rick himself). Furthermore, other features described in the protologue agree with the concept of *H. cymosum*, including the basidiospore size and the description of cystidia -- 'setulis longis, hyalinis' (Rick, 1934: 74). *FR 16847*, also determined as *K. grisea* by Rick, corresponds to *Subulicystidium perlongisporum* Boidin & Gilles.

Additional specimens studied.--- Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 16847* (PACA).

"*Kneiffia grisea* var. *hyalina* Rick" in Brotéria. Ciências Nat. 3(30): 74. 1934, **nom. inval.** ≡ *Peniophora grisea* var. *hyalina* (Rick) Rick in Iheringia, Bot. 4: 110. 1959, **nom. inval.** – Type: not designated.

We have found no specimen under this name at PACA. Two specimens labeled as "*Kneiffia hyalina* Rick", an unpublished name, could be used by Rick to describe *K. grisea* var. *hyalina*. However, both specimens are sterile and their determination was not possible.

Specimens studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 16704*, *FR16791* (PACA, both sub '*Kneiffia hyalina* Rick').

"*Kneiffiella sparsa* Rick" in Iheringia, Bot. 4: 112. 1959, **nom. inval.** – Type: not designated.

We have found the specimen *FR 17816* which was probably used by Rick to propose this species, and it corresponds to *Botryodontia cirrata* (Hjortstam & Ryvarden) Hjortstam.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 17816* (PACA, sub '*Kneiffiella grisea* Rick [OBS: *sparsa*]').

Lloydella carneo-olivacea Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 89. 1940 – Lectotype [designated by Rick (1959a: 77)]: Brazil, Rio Grande do Sul, Rio Grande, 1936, *FR 16949* (PACA!).

Indeterminable. We have studied the lectotype and one of the five additional specimens cited by Rick (1959a: 77). Both are sterile and contaminated by anamorphic fungi. Other specimens were not found at PACA.

Additional specimen studied. --- Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 16972* (PACA).

Lloydella cinereoalba Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 89. 1940 [basionym] ≡ ***Hyphoderma cinereoalbum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Lectotype [designated by Rick (1959a: 78)]: Brazil, Rio Grande do Sul, São Salvador, *FR 17006* (PACA!).

= *Hyphoderma variolosum* Boidin, Lanq. & Gilles in Bull. Trimest. Soc. Mycol. Fr. 107(3): 143. 1991.

Lloydella cinereoalba is a previous name for *H. variolosum*, a species originally described from Central African Republic and later reported from Argentina, Colombia, Venezuela, Gabon and Taiwan (Hjortstam & Ryvarden, 2007: 72). See Boidin & al. (1991: 143) for a complete description and drawings.

This species is characterized by hymenophore and subiculum of beige, pinkish gray or grayish pale brown color, with a yellowish brown zone near the substrate, presence of crystals masses which lumps on the hymenophore, and yellowish to pale brown subicular hyphae that are compactly arranged. The holotype of *L. cinereoalba* slightly differs from the original description of *H. variolosum*, which is purplish gray to pinkish gray or more grayish pale brown (in the original 'gris pourpé à gris rousâtre, ou plus bistre') (Boidin & al., 1991: 143). The basidiome of *L. cinereoalba* holotype has a beige to yellowish hymenophore, but this is here considered a variation within the species.

"*Hyphoderma romeroae* C.E. Gómez & al." nom. prov. is very similar and also presents masses of crystals; basidiospores and cystidia are also similar to those of *H. cinereoalbum*, but this species differs by a tomentose, brownish subiculum, and microscopically by the loosely interwoven, brown subicular hyphae (Gómez & Loewenbaum, 1976b: 347, under "*Mutatoderma brunneocontextum* C.E. Gómez" nom. inval.). This species is known only from the holotype (Baltazar & Rajchenberg, 2014), and specimens from Northern Argentina addressed to it where herein determined as *H. cinereoalbum* (see specimens studied below). *Hyphoderma heterocystidium* (Burt) Donk, another related species, also has loosely interwoven, brown subicular hyphae, thus differing from *H. cinereoalbum*. There is no record of masses of crystals in *H. heterocystidium*.

Hyphoderma populneum (Peck) Donk also has the striking masses of crystals in the subiculum and the hymenium, and shares with *H. cinereoalbum* the yellowish brown subicular hyphae and similar basidiospores. They differ in the size of the metuloids, which are wider in *H. cinereoalbum* (6--12 µm, up to 20 µm considering the encrustation in *H. cinereoalbum*; 5.4--7.2 µm in *H. populneum*). Moreover, *H. populneum* is mainly gathered on *Populus* spp. (McKeen, 1952: 770).

Hjortstam & Ryvarden (2005: 38) treated *Porostereum pilosiusculum* Hjortstam & Ryvarden under *Hyphoderma* Wallr. and compared it with *H. variolosum*. Nevertheless, *P. pilosiusculum* has typical features of *Porostereum* Pilát, despite its monomitic hyphal

system (Hjortstam & Ryvarden, 1990: 49). Microscopically it differs from *H. cinereoalbum* by lacking leptocystidia, by yellowish brown and larger metuloids (100--150 × 10--15 µm in *P. pilosiusculum*, 22--38 × 6--12 µm, up to 20 µm considering the encrustation in *H. cinereoalbum*), and by the slightly larger basidiospores [13--15 × 4--5µm in *P. pilosiusculum*, (9--) 11--13 (--13.5) × 3--4 µm in *H. cinereoalbum*].

Additional specimens studied.--- Argentina, Formosa, Capital, Guaycoleq, vicinity of Arroyo Pilagá, on riaparian forest, 16 Nov 1995, O. Popoff et al. 2855 (CTES). Ibid., Misiones, Guaraní, Predio Guaraní, close to the northern limit, 06 Sep 1994, O. Popoff et al. 2340 (CTES).

Lloydella cretacea Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 86. 1940 – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 16990* (PACA!).

= ***Lopharia cinerascens*** (Schwein.) G. Cunn. in Trans. Roy. Soc. New Zealand 83(4): 622. 1956.

Rick (1940a: 86) cited no specimens when he described *L. cretacea*, but later he cited 13 specimens (Rick, 1959a: 75) and did not designate any of them as type. Among these specimens, three were gathered by 1940, and we select *FR 16990* as lectotype. *FR 16983* is also *L. cinerascens*, while the exsiccatum *FR 16976* only has wood material and no basidiome.

Additional specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1935, *FR 16983* (PACA). Ibid., Parecí, 1936, *FR 16976* (PACA).

Lloydella durissima Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 88. 1940 – Lectotype (designated here): Brazil, Rio Grande do Sul, São Salvador, 1939, *FR 17047* (PACA!).

= ***Phlebiopsis galochroa*** (Bres.) Hjortstam & Ryvarden in Mycotaxon 10(2): 285. 1980.

The type specimen of *L. durissima* agrees in all features with the concept of *P. galochroa*, except by presenting slightly dextrinoid metuloids. However, the importance of dextrinoid reaction of metuloids has not been investigated in many corticioid genera.

Lloydella farinacea Rick in Iheringia, Bot. 4: 76. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 21 Jun. 1943, *FR 17030* (PACA!).

Indeterminable. The type is sterile and the determination was not possible.

Lloydella intermedia Rick in Iheringia, Bot. 4: 74. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 16998* (PACA!).

= ***Scytinostroma duriusculum*** (Berk. & Broome) Donk in Fungus 26: 20. 1956.

Lloydella ochracea Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 90. 1940 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1933, *FR 17015* (PACA!).

= ***Phlebiopsis ravenelii*** (Cooke) Hjortstam in Windahlia 17: 58. 1987.

Lloydella retiruga var. *griseorubra* Rick [as '*retirugis*'] in Iheringia, Bot. 4: 76. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 16964* (PACA!, sub '*Lloydiella grisea-cerea*' Rick).

= ***Lopharia cinerascens*** (Schwein.) G. Cunn. in Trans. Roy. Soc. New Zealand 83(4): 622. 1956.

Lloydella stramineomembranacea Rick in Brotéria. Ciências Nat. 9(36): 90. 1940 – Holotype: Brazil, Rio Grande do Sul, São Salvador, Oct. 1939, *FR 17049* (PACA!, sub '*Lloydiellochaete stramineo-membranacea*' Rick).

Vararia/Dichostereum **sp.** The specimen is sterile and indeterminable at species level but the dycohyphae are typical of those genera. Rick (1959a: 78) cited another specimen (*FR 17025*), which was not found at PACA.

Lloydella subalba Rick [as '*Lloydiella*'] in Brotéria. Ciências Nat. 9(36): 87. 1940 – Lectotype [designated by Rick (1959a: 76)]: Brazil, Santa Maria, 1935, *FR 16938* (PACA!).

Unknown application. There are two specimens in the exsiccatum that belong to different species. One is *Peniophorella* aff. *praetermissa* (P. Karst.) K.H. Larss., differing from the species concept by presenting distinct reflexed margins. Another specimen is a *Stereum* sp. D.A. Reid has annotated 'This portion is *Stereum australe* Lloyd' in the exsiccatum. We could not confirm its identity because the specimen has no hymenial elements and the basidiospores are collapsed. The original description by Rick is very brief and we are unable to assert which specimen he had in mind when he described *L. subalba*, then the status of the name remains unknown.

Lopharia albida Rick in Brotéria. Ciências Nat. 7(34): 13. 1938 – Lectotype [designated by Rick (1960: 199)]: Brazil, Rio Grande do Sul, Parecí, 1930, *FR 13935* (PACA!).

***Hyphodontia* sp.** The specimen is sterile and indeterminable at species level. Hjortstam & Ryvarden (1990: 59) also revised the type and concluded the same.

Lopharia bambusae Rick in Iheringia, Bot 7: 199. 1960 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1939, *FR 13938* (PACA!).

=***Fomitiporia bambusarum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] ≡ *Poria bambusarum* Rick in Brotéria. Ciências Nat. 6(33): 146. 1937 [basionym] ≡ *Phellinus rickianus* J.E. Wright & J.R. Deschamps in Mycotaxon 21: 414. 1984, **nom. superf.** ≡ *Phellinus bambusarum* (Rick) M.J. Larsen in Synop. Fungorum 3: 40. 1990 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 18570* (PACA!).

=*Phellinus garuhapensis* J.E. Wright & Blumenf. in Mycotaxon 21:420. 1984 – Holotype: Argentina, Misiones, Garuhapé, on bamboo, Jun 1965, *Gómez & Guerrero* (BAFC 29452!).

This species is a member of *Fomitiporia* Murrill due to its globose to subglobose, hyaline, and dextrinoid basidiospores, and the dimitic hyphal system. It belongs to the *Fomitiporia punctata* (Pilát) Murrill species complex, and a phylogenetic approach is desirable to solve the relationships within this group. For descriptions and discussion on this taxon see Rajchenberg (1987a: 114), Rajchenberg (1987b: 562), Larsen & Cobb-Poulle (1990: 40), and Coelho & al. (2009: 2).

Hjortstam & Ryvarden (1990: 59) also revised the holotype of *L. bambusae* and determined it as ‘cfr. *Phellinus punctatus* (Fr.) Pilát’.

“*Neokneiffia sulphurella* Rick” in Iheringia, Bot. 5: 178. 1959, **nom. inval.** – Type: not designated.

Rick (1959b) cited *FR 22633* in the protologue, which was not extant at PACA, and the specimen cited below. None of them was designated as ‘typus’. *FR 22626* corresponds to *H. corrugata*.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 1944, *FR 22626* (PACA).

Odontia alutacea var. *dubia* Rick in Egatea 17: 275. 1932 ≡ *Odontia dubia* (Rick) Rick in Iheringia, Bot. 5: 161. 1959 – Holotype: Brazil, Rio Grande do Sul, Jan 1922, *J. Rick 278* (BPI 265225).

Unknown application. Rick (1911: 179) treated this taxon as a variety of *Odontia alutacea* (Fr.) Quél., and later proposed it as an independent species (Rick, 1932: 275, 1959a: 161). We could not study the holotype deposited at BPI. We studied one of the specimens cited by Rick (1959b), *FR 17553*, which corresponds to a *Fibrodontia* sp. It is sterile and contaminated by anamorphic fungi; therefore it was not possible to identify it at species level.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1905, *FR 17553* (PACA).

Odontia crassa Rick in Egatea 17: 279. 1932 ≡ *Kneiffiella crassa* (Rick) Hjortstam & Ryvarden in Synop. Fungorum 15: 14. 2002 – Neotype [designated by Hjortstam & Ryvarden (1982: 268)]: Brazil, Rio Grande do Sul, São Leopoldo, 1933, *FR 19888* (PACA!).

= ***Kneiffiella stereicola*** (Bres.) Nakasone in Cryptogam. Mycol. 29 (3): 252. 2008.

Hjortstam & Ryvarden (1982: 268) revised *Odontia crassa* Rick and reduced it as a synonym of *Kneiffiella barba-jovis* (Bull.) P. Karst. Later, they considered the taxon as a different species and proposed the binomial *Kneiffiella crassa* (Rick) Hjortstam & Ryvarden (Hjortstam & Ryvarden, 2002). Nakasone (2008: 252), during a revision of Bresadola's type specimens, found an earlier name for that species and proposed the binomial *K. stereicola*, which is herein considered the correct name.

Odontia chroospora Rick in Iheringia, Bot. 5: 165. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1934, *FR 20003* (PACA!).

= ***Hyphodontia corticioidea*** (Rick) Baltazar & Rajchenb., cfr. below under *Irpex corticioides* Rick.

Odontia flava Rick in Egatea 18: 129. 1933 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 19938* (PACA!).

Unknown application. The studied specimen is sterile and its determination was not possible. Rick (1959b) did not cite *O. flava* in his treatment of *Odontia* spp.

Odontia irpicoidea Rick in Egatea 17: 278. 1932 – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 17476* (PACA!) – Epitype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 17651* (PACA!).

= ***Phaneroites subquercinus*** (Henn.) Hjortstam & Ryvarden in Synop. Fungorum 27: 31. 2010.

= *Odontia subirpicoidea* Rick in Iheringia, Bot. 5: 162. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 13 Oct 1942, *FR 17805* (PACA!).

Rick (1959b: 150) cited three specimens under *O. irpicoidea*, two of them gathered by the date of publication. Hjortstam & Ryvarden (1982: 269) studied *FR 17478*, which is collapsed and indeterminable. We studied *FR 17476* which is also indeterminable because it is sterile and contaminated by anamorphic fungi. The third specimen cited by Rick (1959b: 150), *FR 17651*, was gathered after the publication of the species. It is in good condition and agrees with the description in the protologue of *O. irpicoidea* (Rick, 1932: 278), and then is herein selected as epitype.

Odontia isabellina Rick in Iheringia, Bot. 5: 163. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1933, *FR 17843* (PACA!).

= ***Phanerochaete cana*** (Burt) Burds. in Mycol. Mem. 10: 50. 1985.

For a description cfr. Burt (1925: 227) and Burdsall (1985: 50). This species was previously known solely from Florida, USA. Rick specimen accords with *P. cana* in presenting a soft, hypochnoid/woolly and fibrous basidiome, and allantoid, narrow basidiospores 3.5--4.5 × 1.2--1.5 µm. Several metuloids are dextrinoid, as those observed in the holotype of *O. isabellina* var. *caesia* Rick (see below), but the meaning of this feature in this group of organisms is unknown, due to the fact that few observations have been made in IKI and their reaction is rarely reported by specialists.

Hjortstam & Ryvarden (1982: 269) reduced *O. isabellina* to synonymy with *Scopuloides hydnoides* (Cooke & Massee) Hjortstam & Ryvarden, but this species differs by a crustaceous, grandinoid to hydnoid hymenial surface and ellipsoid, larger basidisopores 4.5--5 × 2--2.5 µm (Hjortstam & Ryvarden, 1979: 509).

Zmitrovich & al. (2006: 15) transferred *P. cana* to *Scopuloides* (Massee) Höhn. & Litsch. but did not made any comment. This combination needs a critical revision with further evidence.

Odontia isabellina var. *caesia* Rick in Iheringia, Bot. 5: 163. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 15 Feb 1943, *FR 17827* (PACA!).

= ***Phanerochaete cana*** (Burt) Burds. in Mycol. Mem. 10: 50. 1985.

The type material is identical with *Odontia isabellina*, and also presents dextrinoid metuloids.

Odontia lividogrisea Rick in Egatea 18: 39. 1933 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 17473* (PACA!).

Indeterminable. The holotype, single specimen at PACA collected by 1933 is in poor condition and indeterminable. Hjortstam & Ryvarden (1982: 269) revised *FR 17529*, collected in 1935, and asserted that the specimen is close to *Brevicellicium olivascens* (Bres.) K.H. Larss. & Hjortstam; this specimen is also in very poor condition and indeterminable.

Specimens studied. --- Brazil, Rio Grande do Sul, Parecí, 1935, *FR 17529* (PACA).

Odontia subconspersa Rick in Iheringia, Bot. 5: 164. 1959 [basionym] ≡ ***Phlebia subconspersa*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] ≡ *Mycoacia subconspersa* (Rick) Hjortstam & Ryvarden in Mycotaxon 15: 272. 1982 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 17676* (PACA!).

We follow Nakasone (1997) who reduced *Mycoacia* Donk as a synonym of *Phlebia* Fr., then the new combination *P. subconspersa* is proposed. See Hjortstam & Ryvarden (1982: 272) for a description.

Odontia subraduloides Rick in Egatea 17: 279. 1932 – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 19996* (PACA!).

= ***Fibrodontia brevidens*** (Pat.) Hjortstam & Ryvarden in Synop. Fungorum 20: 54. 2005.

We found three specimens labeled under *O. subraduloides* in PACA's type collection. *FR 17548* is sterile and contaminated by anamorphic fungi, and it was left as *Fibrodontia* sp. *FR 17596* is in good condition but was gathered after the publication date of *O. subraduloides*. *FR 19996* has many collapsed basidiospores, but we could also observe many of them in good condition and confirm its identity; therefore this specimen was selected as lectotype. This species was not treated by Rick (1959b).

Additional specimens studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 17548* (PACA). Ibid., São Salvador, 1939, *FR 17596* (PACA).

Peniophora gelatinosula Rick in Iheringia, Bot. 4: 107. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20016* (PACA).

Unknown application. The holotype was not found at PACA. We studied two specimens labeled as '*Kneiffia gelatinosula* Rick', a genus name under which Rick (1959a) treated *Peniophora* Cooke taxa in his previous work (Rick, 1934). Both specimens were gathered previous to the publication of *P. gelatinosula* but they were not cited in the original work. Unfortunately they are sterile and it was not possible to identify them. Hjortstam & Ryvarden (1982) also studied *FR 16979* and asserted that 'the collection is completely indeterminable'.

Specimens studied. --- Brazil, Rio Grande do Sul, Parecí, 1935, *FR 16797* and *FR 16831* (PACA).

Odontia rosea Rick in Egatea 18: 43. 1933, **nom. illeg.**, non Bres. 1926. ≡ *Cystidiodendron roseum* (Rick) Rick in Iheringia, Bot. 5: 172. 1959 – Holotype: Brazil, Rio Grande do Sul, Parecí, 1931, *FR 17471* (PACA!).

= ***Steccherinum fimbriatum*** (Pers. : Fr.) J. Erikss. in Symb. Bot. Ups. 16(1): 134. 1958.

Hjortstam & Ryvarden (1982: 272) studied specimen *FR 20139*, a specimen gathered in 25 Aug 1945, and according to them also corresponds to *S. fimbriatum*.

Phlebia cinnamomea Rick in Iheringia, Bot. 7: 194. 1960 – Holotype: Brazil, Rio Grande do Sul, Santa Maria (Santa Rosa in the protologue), 1936, *FR 14566* (PACA!).

Indeterminable. The specimen has a phlebioid appearence both macro and microscopically. However, only in a small portion it was possible to observe a hymenium with basidioles. No basidia, basidiospores or cystidia were seen.

Prillieuxia flavidula Rick in Iheringia, Bot. 4: 121. 1959 [basionym] ≡ ***Clavulicium flavidulum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Holotype: Uruguay, Tacuarembó, 1936, *FR 18826* (PACA!). Figure 6.

Basidiome resupinate, effused, adnate, membranaceous, up to 0.1 mm thick. *Hymenophore* smooth to tuberculate, light yellow (4A4, 4A5), grayish yellow (4B4,

4B5) to light orange (5A4), in some parts brownish orange (7C7) with a resinous appearance under lens, cracking and exposing a white (1A1) subiculum. *Margin* fimbriate, white (1A1).

Hyphal system monomitic, all generative hyphae clamped, hyaline, thin-walled, regularly branched, 2--5 µm wide, crystals abundant in the whole basidiome and forming subglobose aggregations up to 50 µm in diam. *Cystidia* hyphoid, variable in shape, thin-walled and smooth, rarely with a dendroid apex, 23--40 × 4--5 µm. *Basidia* subclavate to cylindrical, sometimes with 1--2 constrictions, hyaline, smooth and thin-walled, with 2--4 sterigmata, clamped at the base, 55--80 × (4--) 6--8 (--10) µm, sterigmata up to 10 µm long. *Basidiospores* broadly ellipsoid to subglobose, hyliane, smooth and slightly thick-walled, with a distinct apiculum, with a granular and refractive content, 7.5--10 (--10.5) × 6.5--9 µm, IKI-, collapsed in cotton blue and variably cyanophilous.

Remarks. --- *Clavulicium flavidulum* is characterized by a membranaceous basidiome with fimbriate, whitish margin, clamped generative hyphae, hyphoid cystidia, and large basidia with four sterigmata. It deviates from other species in *Clavulicium* Boidin by lacking gloeocystidia (Bernicchia & Gorjón, 2010: 214).

Macroscopically, *Clavulicium macounii* (Burt) J. Erikss. & Boidin ex Parmasto is very similar to *C. flavidulum*, but microscopically it is quite different by having rounded, yellowish matter irregularly present in some hyphal ends, gloeocystidia, smaller basidia (35--50 × 7--8 µm), and more elongated, slightly larger basidiospores, 9--12 × 6.5--8 µm (Eriksson & Ryvarden, 1973: 249; Bernicchia & Gorjón, 2010: 215). *Clavulicium extendens* Hood from Australia has similar cystidia, but differs from *C. flavidulum* by having smaller, two sterigmated basidia (33--51 × 6--9 µm), and narrower basidiospores that measure (7--) 8--11 (--12) × 4.5--6.5 µm (Hood & Ramsden, 1999: 102).

Radulochaete flavoalutacea Rick in Iheringia, Bot. 5: 184. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1944, *FR 22969* (PACA!).

= ***Hyphodermella corrugata*** (Fr.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 4: 579. 1976.

K. Hjortstam has studied the holotype of *R. flavoalutacea* and concluded the same (note in the exsiccatum).

Radulum abortivum Rick in Ann. Mycol. 38(1): 57. 1940 – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 18926* (PACA!).

= ***Hyphodontia crustosa*** (Pers. :Fr.) J. Erikss. in Symb. Bot. Ups. 16(1): 104. 1958.

Rick (1940b) proposed *R. abortivum* but cited no specimen. Later, Rick (1959b: 183) cited two specimens but did not designate a lectotype. One of them, *FR 18926*, kept in PACA as 'typus', is here selected as lectotype.

Radulum album Rick in Iheringia, Bot. 5: 181. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1939, *FR 18961* (PACA!).

= ***Byssomerulius corium*** (Pers. : Fr.) Parmasto in Eest. NSV Tead. Akad. Toim., Biol. Seer. 16(4): 383. 1967.

Radulum brunneum Rick in Egatea 17: 104. 1932 – Neotype [designated by Rick (1959b: 180]: Brazil, Rio Grande do Sul, São Leopoldo, 1935, *FR 18929* (PACA!).

***Phlebia* sp.** The specimen is characterized by a hydnoid, reddish ochraceous basidiome, and ellipsoid, hyaline, smooth, thin-walled, IKI-, 4--5 (--5.5) × 2--3 µm basidiospores. Other microscopic elements are completely collapsed and the specimen is indeterminable at species level.

Radulum griseum Rick in Iheringia, Bot. 5: 182. 1959 – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1935, *FR 18938* (PACA!).

= ***Hyphodermella corrugata*** (Fr.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 4: 579. 1976.

Radulum horridulum Rick in Egatea 17: 102. 1932 [basionym] ≡ *Radulochaete horridula* (Rick) Rick [as '*horridulum*'] in Ann. Mycol. 38(1): 58. 1940 ≡ ***Hypochnicium horridulum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 18951* (PACA!).

= *Hypochnicium gomezii* S.E. López & J.E. Wright in Mycotaxon 23: 439. 1985 ≡ *Nodotia gomezii* (S.E. López & J.E. Wright) Hjortstam & Ryvarden in Synop. Fungorum 18: 18. 2004.

Rick did not designate any specimen when describing *R. horridulum*, but, later, he cited *FR 18951* as single specimen for the species (Rick, 1959b: 181). The specimen

agrees well with most features of *H. gomezii* studied by us (see below). Macroscopically, Rick's specimens have darker basidiomes than the Argentinian collections of *H. gomezii*, being beige to almost light cinnamon brown, while specimens of the latter are yellowish white to pale beige. However, when describing the species, Rick stated '… when fresh it is white but then yellowish red' (free translation from Portuguese by us). Basidiomes of the holotype of *Cystidiodendron gossypinum* Rick also has brownish colors, but they are considerably paler than in *R. horridulum* lectotype. The aculei of *R. horridulum* are longer than those of *H. gomezii*, but they have their same shape and the penniciliate appearence. Microscopically all the specimens are similar and no remarkable differences could be noted. There is a good description and drawings of this species in López & Wright (1985: 439). We measured the basidiospores as 7.27--9.7 × 6.3--7.27 µm, slightly larger than those described by López & Wright (1985: 439).

Hjortstam (1987) introduced *Nodotia* Hjortstam based on *Nodotia aspera* Hjortstam as separated from *Hypochnicium* J. Erikss. by the presence of skeletoid encrusted cystidia. Later, Hjortstam & Ryvarden (2004a) re-introduced the genus and transferred *H. gomezii* and *Odontia lyndoniae* D.A. Reid to *Nodotia*. However, molecular evidence has shown that the type species of these genera are phylogenetically closely related, and that *Hypochnicium* is monophyletic, including *Nodotia* (Paulus & al., 2007; Telleria & al., 2010).

Additional specimens studied. --- Argentina, Buenos Aires, Ezeiza, on a fallen branch in *Eucalyptus* woods, VI.1968, *J.E. Wright G-2148* (BAFC 30093, paratype of *H. gomezii*). Ibid., Berazategui, P. Pereyra Iraola, on a hardwood stump, VI.1969, *C.E. Gómez G-2207* (BAFC 30094, paratype of *H. gomezii*). Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 18957* (PACA).

Radulum molare var. *sulphureum* Rick [as '*sulphurea*'] in Iheringia, Bot. 5: 180. 1959 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1937, *FR 18925* (PACA!).
= ***Hyphoderma setigerum*** (Fr.) Donk in Fungus 27: 15. 1957.

Radulum molliusculum Rick in Egatea 17: 104. 1932 [basionym] ≡ ***Hyphoderma molliusculum*** (Rick) Baltazar & Rajchenb., **comb. nov.** [MycoBank MB######] – Lectotype (designated here): Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 18932* (PACA!). Figure 7.

Basidiome resupinate, effused, adnate, pellicular and cottony, less than 0.1 mm thick. *Hymenophore* smooth to grandinioid, pale yellow (1A3, 4A3), light yellow (1A4, 1A5) to orange white (5A2), aculei pale orange (5A3) to light orange (5A5), up to 0.2 mm high. *Margin* indeterminate.

Hyphal system monomitic, all generative hyphae clamped, hyaline to yellowish in the subiculum, thin to slightly thick-walled, sparsely branched, variably covered by a cristaline matter, in the subiculum hard to discern, near the hymenium richly branched and somewhat short-celled, 2.5--5.5 (--6) µm. *Cystidia* of two kinds: 1) hymenial, moniliform, with two or more constrictions, apically obtuse to subcapitate, projecting up to 10 µm or not, hyaline, thin-walled, variably covered by a crystaline matter, 14--29 (--40) × 4.5--8 µm; 2) enclosed leptocystidia rare, ventricose, apically obtuse, hyaline, thin-walled, smooth, embedded, 26--60 × 8--10.5 µm. *Basidia* clavate to suburniform, with one or two constrictions, hyaline, thin-walled, variably covered by a crystaline matter, 30.5--36 × 6--7 µm. *Basidiospores* cylindrical to slightly curved, hyaline, smooth and thin-walled, with one big oil drop or several little ones, 13--16 × 4--5 µm, IKI-, acyanophilous.

Remarks. --- Rick (1959b:180) cited three specimens but did not designate a lectotype. They correspond to a good morphological species in *Hyphoderma*, and *FR 18932* is here selected as lectotype.

This species is characterized by its small hymenial cystidia, its rare, ventricose, enclosed leptocystidia, the fine encrustation on hyphae that easily dissolves in KOH, moniliform, subcapitate cystidia, and basidia variably covered by a crystalline matter. It is morphologically related with *Hyphoderma nemorale* K.H Larss. and *Hyphoderma incrustatum* K.H. Larss., two European species, due to similar cystidia and basidiospores. They are inseparable by the basidiospores, which are very similar in shape and size. Nevertheless, *H. molliusculum* is distinguished by the encrustation on other microscopic structures (i.e., hyphae and basidia), the ventricose, enclosed leptocystidia and the hymenial, moniliform , subcapitate cystidia. On the other hand, *H. nemorale* has enclosed cystidia with several constrictions and capitate, hymenial cystidia without constrictions, while *H. incrustatum* has cylindric leptocystidia and hymenial cystidia as in *H. nemorale* (Larsson, 1998).

Additional specimens studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1931, *FR 18944* (PACA). Ibid., Santa Maria, 1930, *FR 18942* (PACA).

Radulum obtusum Rick in Egatea 17: 104. 1932 – Lectotype [designated by Rick (1959b: 180)]: Brazil, Rio Grande do Sul, São Leopoldo, 1931--1932, *FR 18965* (PACA!).

Indeterminable. The lectotype is sterile, as well as two other specimens extant at PACA (see below).

Additional specimens studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1931--1932, *FR 18939, 18952* (PACA).

Radulum subsulphureum Rick in Iheringia, Bot. 5: 182. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 1943, *FR 20413* (PACA!).

= ***Hyphodermella corrugata*** (Fr.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 4: 579. 1976.

Radulum tenue Rick in Iheringia, Bot. 5: 183. 1959 – Holotype: Brazil, Rio Grande do Sul, Parecí, 1935, *FR 18931* (PACA!).

= ***Hyphodermella corrugata*** (Fr.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 4: 579. 1976.

Stereofomes terrestris Rick in Egatea 15: 396. 1930 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1929, *FR 15242* (PACA!).

***Scytinostroma* sp**. The studied specimen is a *Scytinostroma* sp. due to its dextrinoid skeletal-binding hyphae. However, it is in poor condition and indeterminable at species level.

Stereogloeocystidium albogriseum Rick in Brotéria. Ciências Nat. 9(36): 83. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1936, *FR 19656* (PACA!).

Indeterminable. The single specimen cited by Rick (1959a: 73) of this taxon is sterile and indeterminable.

Stereogloeocystidium alboverrucosum Rick in Brotéria. Ciências Nat. 9(36): 82. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1938, *FR 14748* (PACA!).

= ***Gloeocystidiellum stereoideum*** (Rick) Ginns in Opera Bot. 61: 57. 1982 ≡ *Coniophora stereoidea* Rick in Brotéria. Ciências Nat. 3(30): 166. 1934 ≡ *Coniophorafomes stereoideus* (Rick) Rick in Brotéria. Ciências Nat. 3(30): 167.

1934 – Lectotype [designated by Ginns (1973: 256)]: Brazil, Rio Grande do Sul, São Leopoldo, Aug 1933, *FR 14219* (PACA!).

Ginns (1973: 256) described this species as 'apparentely dimitic […] the skeletal (?) hyphae yellowish, rather thin-walled, occasionally branched, aseptate, 1.6--3.2 μ in diam […]'. We found yellowish to pale rusty brown, slightly to distinctly thick-walled, clamped generative hyphae that are anastomosed in some parts, in the subiculum of the types of *C. stereoidea* and *S. alboverrucosum*. These hyphae are probably the same as those that Ginns suspected to be skeletal hyphae. Therefore, we consider this species as monomitic.

The lectotype of *C. stereoidea* was studied by Sheng-Hua Wu, Ellen Larsson and Karl-Henrik Larsson (notes on the exsiccatum), and they pointed out the similaties of this species with *Scytinostromella cerina* (Bres.) Hjortstam & Ryvarden. We agree that these species are very similar, possessing almost identical gloeocystidia and basidiospores. However, they have different hyphal structures: *S. cerina* has distinct skeletal hyphae, which is the case of the holotype of *Gloeocystidiellum clavuligerum* var. *brasiliense* Rick, while *G. stereoideum* is monomitic. At the time being, we prefer to keep these species separated.

Stereogloeocystidium avellaneum Rick in Brotéria. Ciências Nat. 9(36): 82. 1940 – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1935, *FR 15222* (PACA!).
= ***Ramaricium polyporoideum*** (Berk. & M.A. Curtis) Ginns in Bot. Not. 132(1): 98. 1979.

Stereogloeocystidium citrinum Rick in Brotéria. Ciências Nat. 9(36): 81. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1939, *FR 15223* (PACA!).
Indeterminable. The studied specimen is sterile and indeterminable.

Stereogloeocystidium gausapatum Rick in Brotéria. Ciências Nat. 9(36): 80. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 14749* (PACA!).
= ***Stereum hirsutum*** (Willd. : Fr.) Pers. in Obs. Mycol. 2: 90. 1800 ["1799"].

Although this and the holotype of *Stereogloeocystidium subsanguinolentum* were in poor condition, it was possible to observe basidiospores, skeletocystidia and acutocystidia, which helped to confirm their identity.

Stereogloeocystidium subsanguinolentum Rick in Brotéria. Ciências Nat. 9(36): 80. 1940 – Holotype: Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 14745* (PACA!).
= ***Stereum hirsutum*** (Willd. : Fr.) Pers. in Obs. Mycol. 2: 90. 1800 ["1799"].

Stereum humillimum Rick in Iheringia, Bot. 4: 68. 1959 – Holotype: Brazil, Rio Grande do Sul, São Salvador, 01 Mar. 1943, *FR 19249* (PACA!).
= ***Phanerochaete sordida*** (P. Karst.) J. Erikss. & Ryvarden in Corticiaceae N. Eur. 5: 1023. 1978.

The typus exsiccatum is a fragment of bamboo with two resupinate basidiomes that correspond to two different species. Although the original description of *S. humillinum* is brief, it points out several features that correspond to the specimen we describe: an avellanous hymenial color (cream in the other), a cracked hymenial surface (smooth in the other), the presence of cystidia and basidiospores size that correspond to *P. sordida*; these features helped us to be sure of which basidiome Rick had in mind when he described the species. The other basidiome is herein determined as *Aleurodiscus phragmitis* (Boidin & al.) Núñez & Ryvarden, easily distinguishable by the basidiospore amyloidicity and size, small gloeocystidia, achantophyses and the presence of protuberances in basidia; it has been recorded from NE Argentina by Núñez & Ryvarden (1997: 123).

Stereum metallicum Rick in Brotéria. Ciências Nat. 9(36): 45. 1940 – Holotype: Brazil, Rio Grande do Sul, São Leopoldo, 1930, *FR 19135* (PACA!).

Indeterminable. The holotype is in poor condition and the determination was not possible.

Stereum obliteratum Rick in Brotéria. Ciências Nat. 9(36):76. 1940 – Holotype: Rio Grande do Sul, São Leopoldo, 1932, *FR 19235* (PACA!).

Indeterminable. The holotype is sterile and the determination was not possible.

"*Thelephora clavarioides* Rick" [as '*lavarioides*'] in Egatea 16: 39. 1931, **nom. inval.** [same holotype of an earlier name], non Torrend 1914.

The original material of "*Thelephora clavarioides* Rick" is undoubtedly the holotype of *Thelephora clavarioides* Torrend. Notes in the exsiccatum are the same as those from the protologue and the basidiome is the same as drawn by Torrend (1914: 61). Then, *T.*

clavarioides Rick is an invalid name since it was clearly based on a specimen previously designated as type for another species, i.e., *T. clavaridoides* Torrend.

The studied specimen is a clavarioid fungus; however, it is sterile and indeterminable.

Specimen studied. --- Brazil, Bahia, 'ad terram argillaceam', *J. Tavares* (PACA!, holotype of *Thelephora clavarioides* Torrend).

Tulasnella lividogrisea Rick in Brotéria. Ciências Nat. 3(30): 169. 1934 – Neotype [designated by Rick (1959a: 99)]: Brazil, Rio Grande do Sul, Parecí, 1935, *FR 15063* (PACA!).

A ***Heterobasidiomycetes***.

"*Wiesnerina grandinioides* Rick" in Iheringia, Bot. 5: 177. 1959, **nom. inval.** – Type: not indicated.

Rick (1959b: 177) did not cite any specimen when describing this species, although he cited the substrate: 'Ad Bambusam'. We found one specimen at PACA under this name, *FR 20872*, and it corresponds to *Hypochnicium horridulum* (Rick) Baltazar & Rajchenb. (see above).

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 1944, *FR 20872* (PACA).

Unpublished names

Several specimens labeled with unpublished names and the annotation 'typus' by Rick were found at PACA. We have studied them and their determination was made whenever it was possible. These specimens are listed below.

"*Cytidea cinerea* Rick" nom. in herb.

Indeterminable. No spores and basidia were observed.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 28 Jan 1944, *FR 21015* (PACA).

"*Gloeocystidium incarnatum* Rick" nom. in herb., non (Pers.) S. Ito 1955.

Indeterminable. The specimen is sterile and the determination was not possible.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1933, *FR 13390* (PACA).

"*Hypochnus albo-fumosus* Rick" nom. in herb.

***Tomentella* sp.** The hymenium is collapsed and it was not possible to observe the basidia and the presence/absence of cystidia. Therefore it was not possible to determine it at species level.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 13654.1* (PACA).

"*Kneiffia calcea* Rick" nom. in herb.

Phanerochaete* cf. *sordida (P. Karst.) J. Erikss. & Ryvarden. The specimen is contaminated by anamorphic fungi and only one basidiospore was found.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1932, *FR 16763* (PACA).

"*Kneiffia cartilaginea* Rick" nom. in herb.

Phanerochaete sordida (P. Karst.) J. Erikss. & Ryvarden.

Specimens studied. --- Brazil, Rio Grande do Sul, Pinhal, 1936, *FR 16735, 16853, 16879* (PACA).

"*Kneiffia rudior* var. *carnea* Rick" nom. in herb.

***Phlebiopsis* sp.** The specimen is sterile and its determination at species level was not possible.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1935, *FR 16777* (PACA).

"*Kneiffia sulphureo-lutea* Rick" nom. in herb.

***Phanerochaete* sp.** The specimen is sterile and contaminated by anamorphic fungi.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1933, *FR 16726* (PACA).

"*Lloydiella nivea* Rick" nom. in herb.

Phlebiopsis flavidoalba (Cooke) Hjortstam.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 1942, FR 19659 (PACA).

"*Lopharia lanosa* Rick" nom. in herb.

Indeterminable. The specimen is sterile and contaminated by anamorphic fungi.

Specimen studied. --- Brazil, Rio Grande do Sul, Porto Novo, 1932, *FR 13936* (PACA).

"*Odontia coccinea* Rick" nom. in herb.

Phanerochaete* cf. *chrysorhiza (Torr.) Budington & Gilb. The studied specimen agrees in most features with *P. chrysorhiza*. However, the hymenium is completely collapsed and it was not possible to observe basidia and cystidia.

Specimen studied. --- Brazil, Rio Grande do Sul, São Salvador, 1939, *FR 17644* (PACA).

"*Odontia ochraceo-straminea* Rick" nom. in herb.

Hyphodontia corticioidea (Rick) Baltazar & Rajchenb. There are two specimens kept at PACA under that name. *FR 17842,1* corresponds to *H. corticioidea*, a species of *Hyphodontia* s. str. characterized by the globose basidiospores (see above). See Maekawa (1993: 120) and Hjortstam & Ryvarden (2002: 12) for descriptions and drawings (under *H. sphaerospora*). *FR 17866* is sterile and indeterminable.

Specimen studied. --- Brazil, Rio Grande do Sul, Santa Maria, 1936, *FR 17842,1* and *FR 17866* (PACA).

"*Stereum subsanguinolentum* Rick" nom. in herb.

Stereum hirsutum (Willd. : Fr.) Pers.

Specimen studied. --- Brazil, Rio Grande do Sul, São Leopoldo, 1936, *FR 19172* (PACA).

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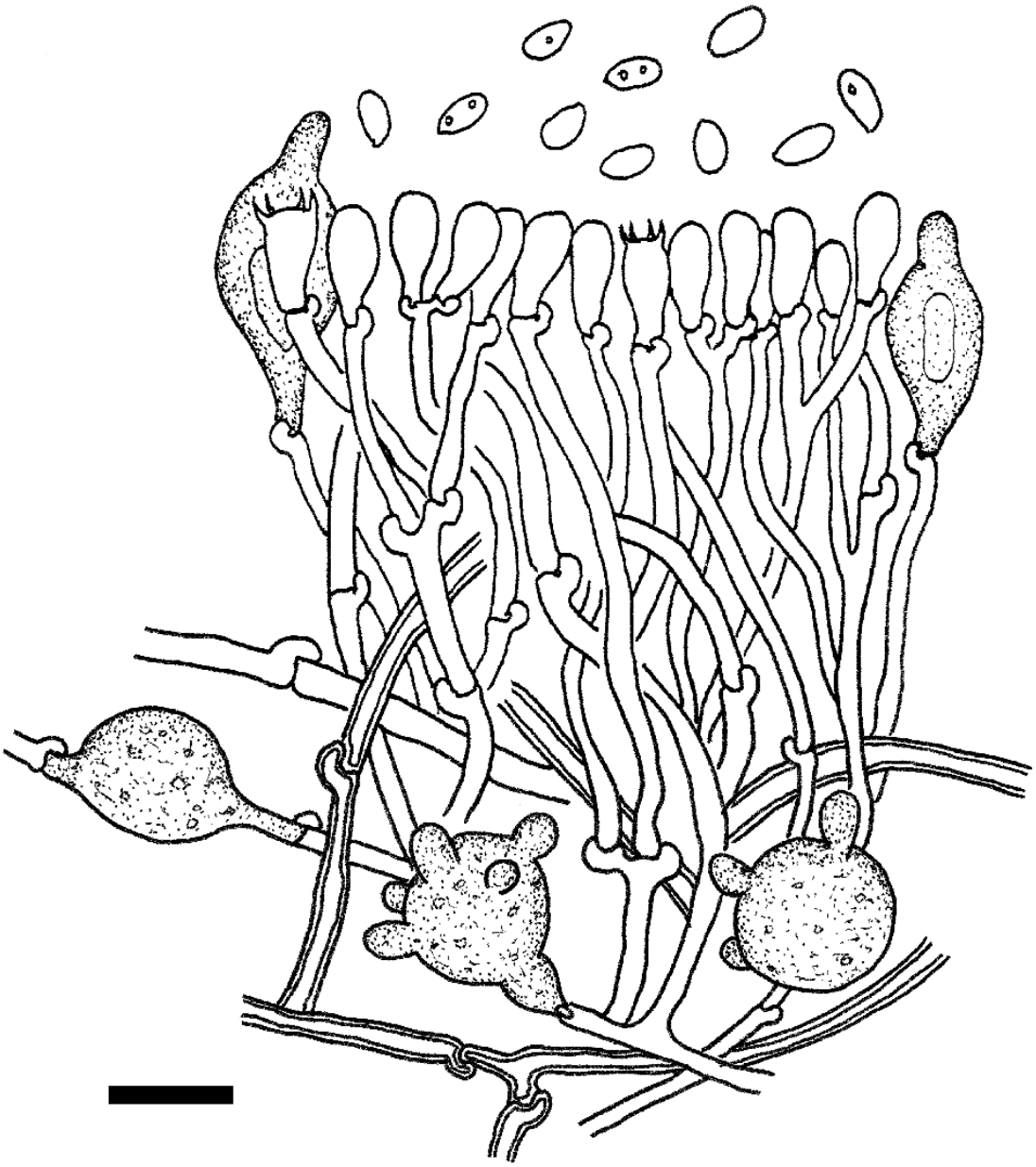

Fig. 1. Microscopic features of *Parvodontia albocrustacea*, drawn from the holotype of *Asterostromella olivaceo-oxydata* var. *albocrustacea*. Scale bar = 10 µm.

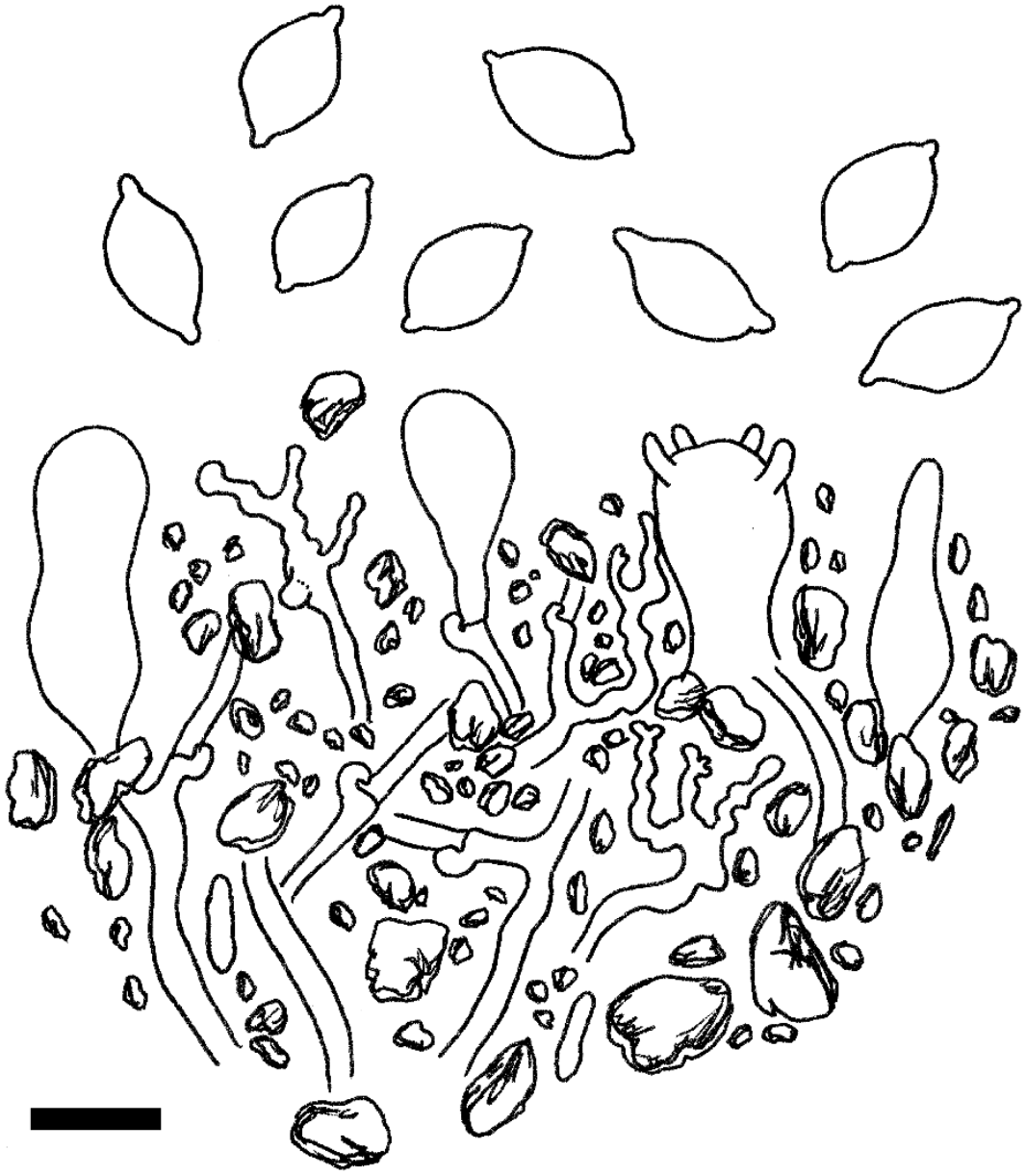

Fig. 2. Microscopic features of *Dendrothele triangulispora*, drawn from the holotype of *Asterostromella triangulispora*. Scale bar = 10 µm.

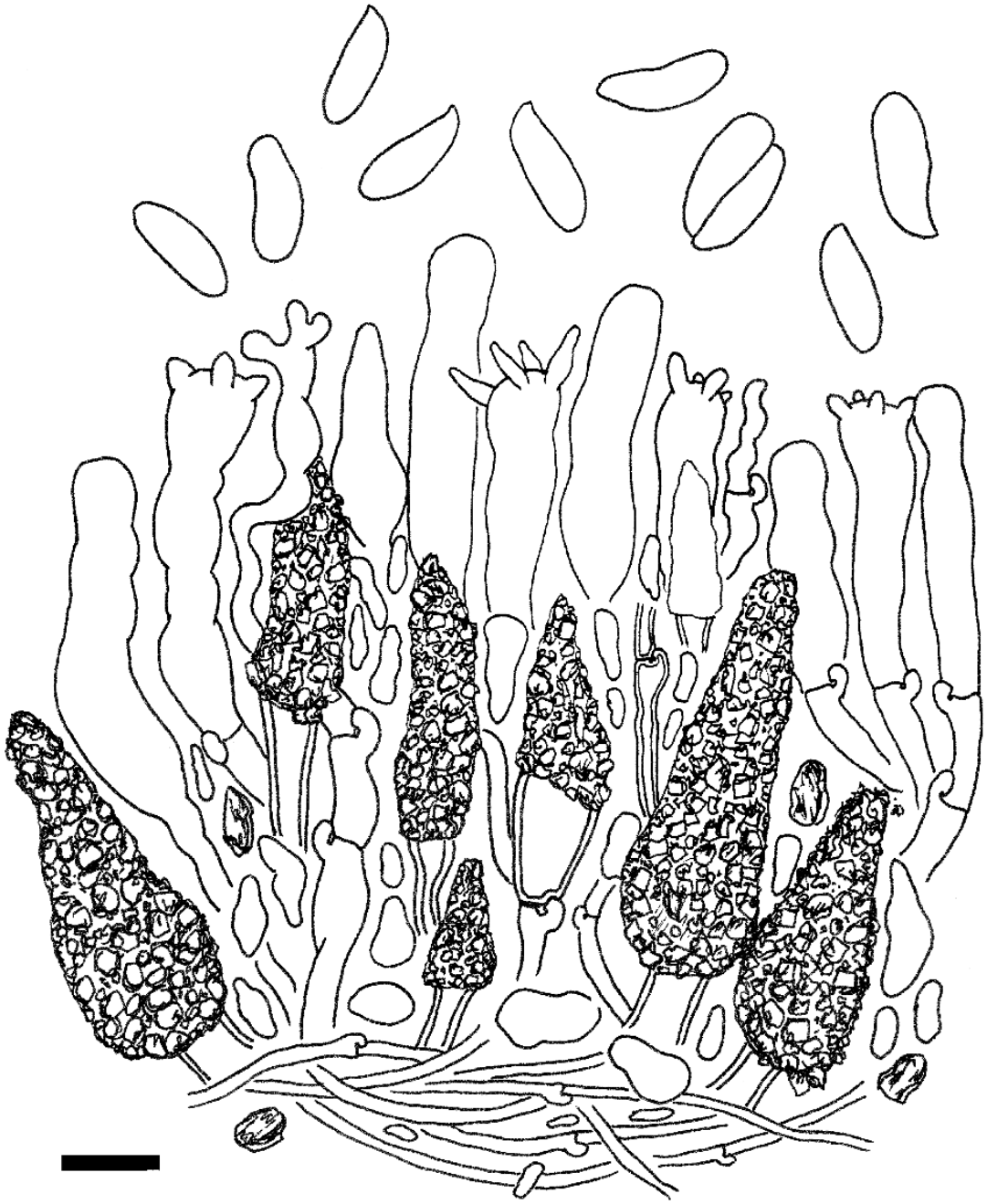

Fig. 3. Microscopic features of *Peniophora conspersa*, drawn from the holotype of *Cytidia conspersa*. Scale bar = 10 µm.

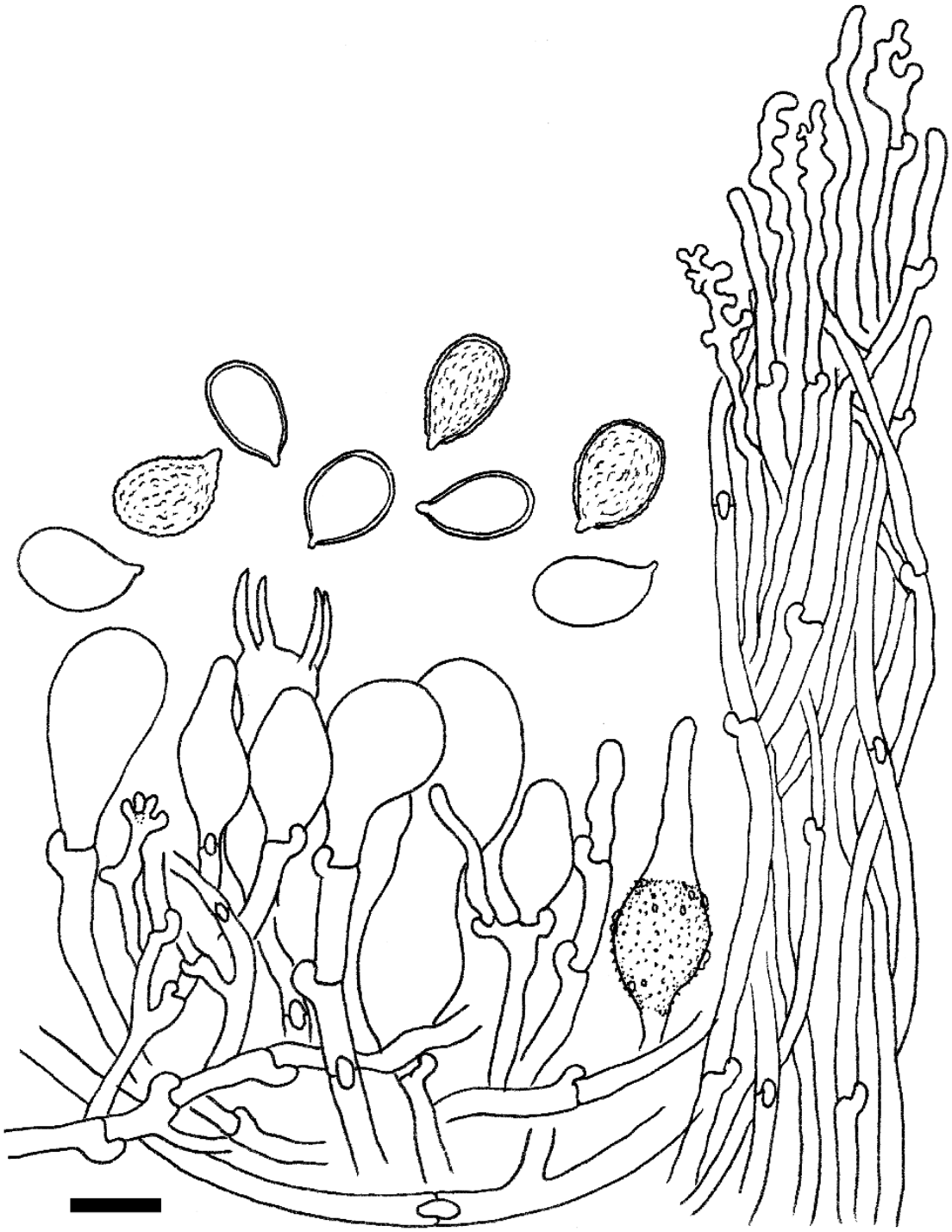

Fig. 4. Microscopic features of *Epithele bambusina*, drawn from the holotype. Scale bar = 10 μm.

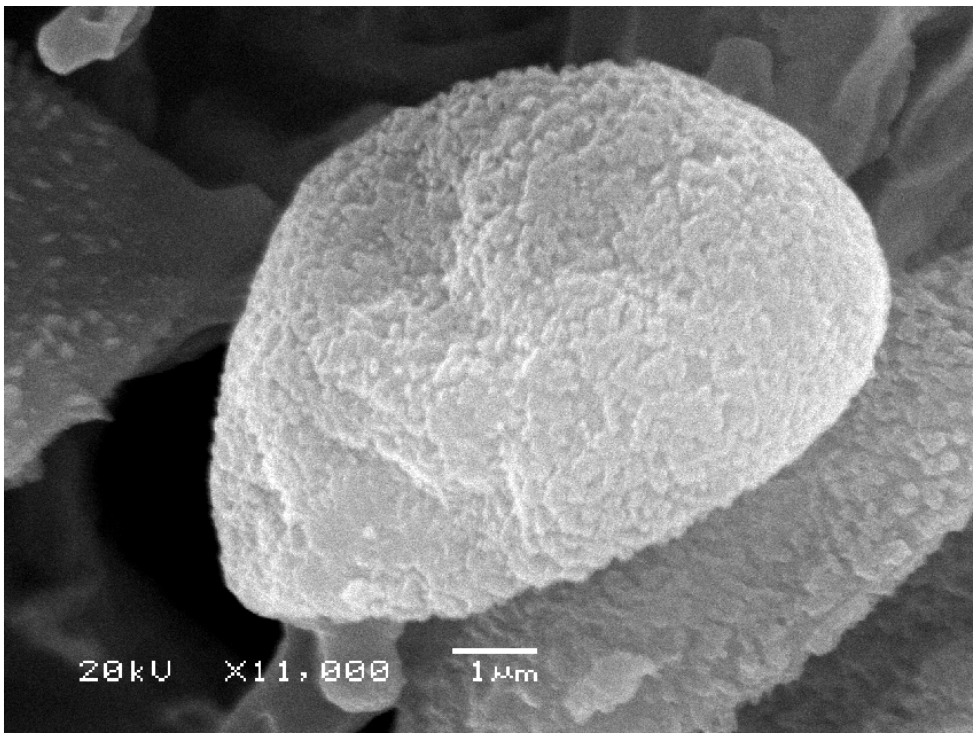

Fig. 5. SEM photograph of a basidiospore from the holotype of *Epithele bambusina*.

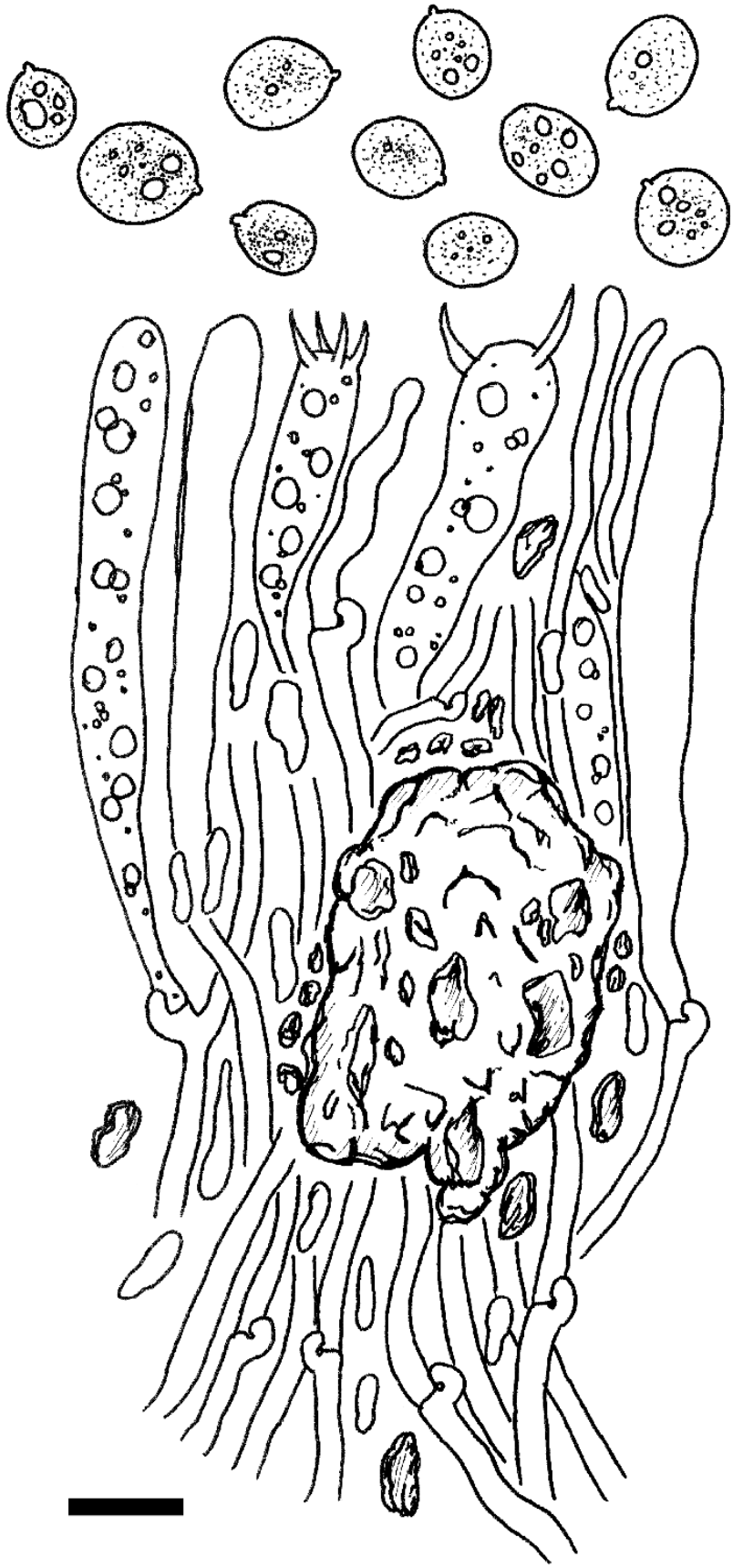

Fig. 6. Microscopic features of *Clavulicium flavidulum*, drawn from the holotype of *Prillieuxia flavidula*. Scale bar = 10 µm.

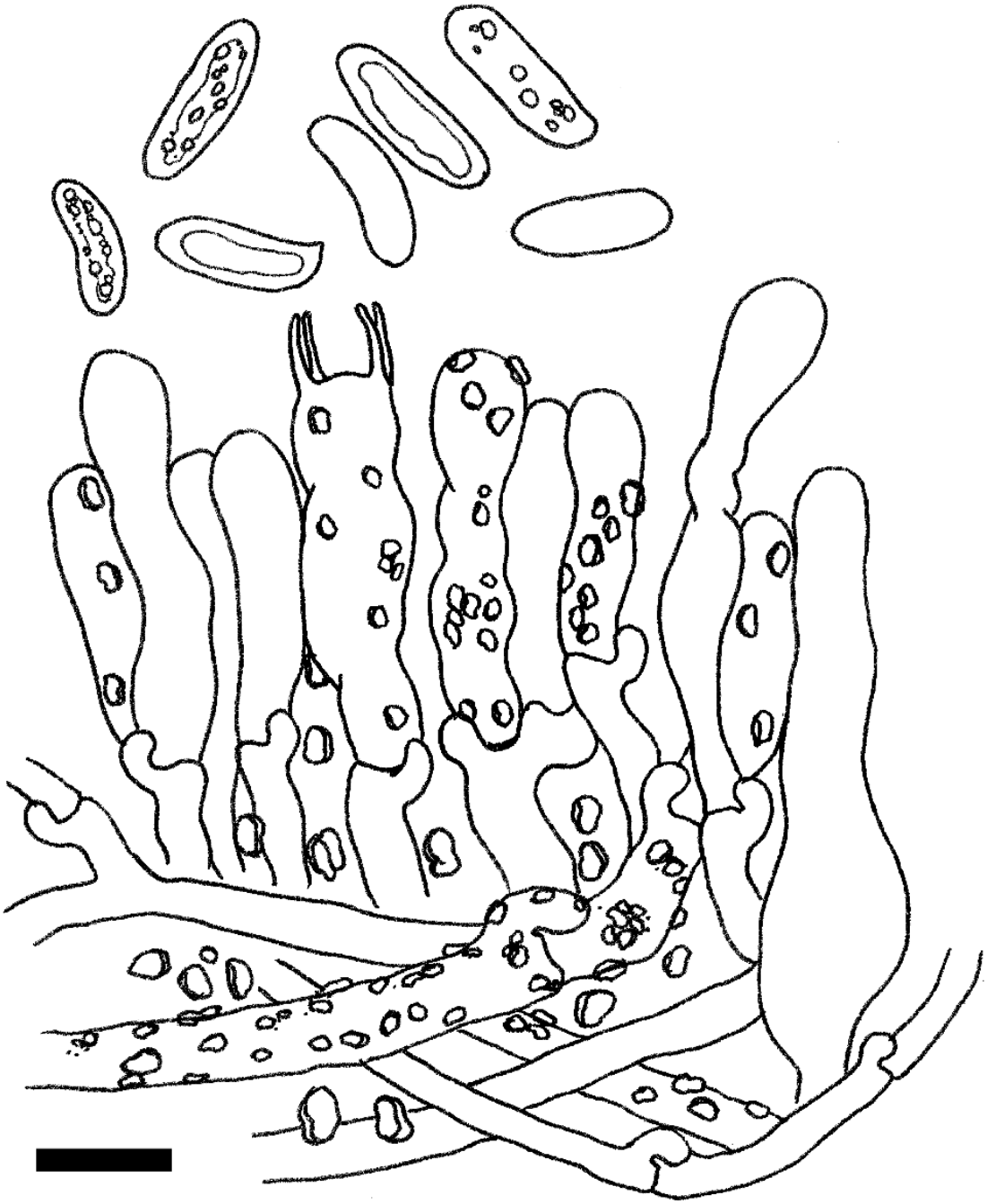

Fig. 7. Microscopic features of *Hyphoderma molliusculum*, drawn from the holotype of *Radulum molliusculum*. Scale bar = 10 μm.

Manuscrito V

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A synopsis of the corticioid homobasidiomycetes (*Agaricomycetes*, *Basidiomycota*) from Southern Brazil

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ABSTRACT

A synopsis of the current knowledge on corticioid fungi from Southern Brazil (states of Paraná, Rio Grande do Sul and Santa Catarina) is presented, including new information based on recently collected specimens and herbaria revision. A total of 226 species belonging to 93 genera were known from the area, and 47 species have their geographical distribution expanded. *Athelia fibulata* and *Steccherinum subcrinale* are new records from South America, 12 species are reported for the first time from Brazil, 16 from Southern Brazil, six species from Paraná, six species from Rio Grande do Sul, and four species from Santa Catarina. Keys for the identification of genera and species and information about literature records and distribution of the treated taxa are provided.

Keywords: *Basidiomycetes*, *Corticiaeaceae* s.l., *Hydnaceae*, hydnoid fungi, *Thelephoraceae*.

INTRODUCTION

Corticioid homobasidiomycetes are *Basidiomycetes* Dowell sensu Hibbett et al. (2007) with non septate basidia that are characterized by resupinate to stipitate basidiomes and a smooth, verrucose, merulioid, hydnoid, odontioid or rarely poroid hymenophore (Hjortstam et al. 1988; Larsson 2007). They were traditionally treated as aphyllophoroid fungi together with polypores and clavarioid fungi (Donk 1964).

Aphyllophoroid fungi have been studied continuously in Southern Brazil since early works by European mycologists (see below), and several papers have been published, mainly in the last two decades (see revisions by Baltazar and Gibertoni 2009; Baltazar et al. 2012). However, most works have focused mainly on polypores, while other

groups of aphyllophoroid fungi have received little attention recently, such as the corticioid fungi.

Earliest reports of corticioid fungi in Southern Brazil where published by European mycologists (Bresadola 1896; Hennings 1897; Theissen 1911). Giacomo Bresadola and Paul C. Hennings never worked in Brazil, but published several species based on collections sent by naturalists who visited the region, such as Ernst Ule and Alfred Möller. Later, Johannes Rick started what became the most important contribution to the knowledge of the corticoid fungi in Southern Brazil. He lived in Rio Grande do Sul from the beginning of the 19th century until 1946, and his work was compiled by Balduino Rambo and published in a series of posthumous works (Rick 1958, 1959a, b, 1960, 1961a, b). Species published by Rick were later revised by authors who studied specific genera or groups within the *Corticiaceae* s.l. The first comprehensive revision of Rick's specimens was made by Hjortstam and Ryvarden (1982). Later, Rajchenberg (1987) revised the species described in *Irpex*. Finally, Baltazar et al. (2014a) studied the remaining types of Rick's taxa housed at Herbarium Anchieta (PACA).

After Rick, few studies have made contributions to the inventory of corticioid fungi in Southern Brazil. Hjortstam and Bononi (1986a, b, 1987) reported several species from Paraná, Rio Grande do Sul and Santa Catarina. It is also worth to mention the contributions made by Meijer (2006) from Paraná, Trierveiler-Pereira et al. (2009) from Santa Catarina, Maluf and Guerrero (1993), Nietiedt and Guerrero (1998, 2000), Sobestiansky (2005) and Coelho et al. (2010) from Rio Grande do Sul. A recent contribution was made by Rodrigues and Guerrero (2012) on corticioid fungi growing on bark of living trees from Rio Grande do Sul.

On the basis of the fragmented knowledge about the corticioid fungi in Southern Brazil, the aims of the present study are: 1) to compile the literature records of corticioid

fungi found in the studied area; 2) to make additions to the species list based on recently collected specimens; 3) to provide keys for identification of the known taxa, besides a literature review, in order to help those who would like to study these fungi in Southern Brazil and adjacent areas.

METHODS

Study area

The Southern Region of Brazil comprises 576,409.6 km ^{2}, almost the same area of the Iberian Peninsula, and comprises the states of Paraná, Santa Catarina and Rio Grande do Sul. The climate is tropical to subtropical, and two Biomes are found: the Atlantic Forest and the Pampas.

Presentation of data

Each species in the list is provided with literature references for descriptions, drawings and distribution. A list of examined specimens is given for taxa which we had the opportunity to study recently, either collected by us or housed in the herbaria BAFC, CTES, FLOR, ICN, K, LY and PACA (Thiers 1997).

Additionally, we strongly recommend a visit to the MycoBank website (Crous et al. 2004; Robert et al. 2005) because descriptions for most species treated here are open accessed there. Synonyms are given only when this information is necessary to help the readers to handle literature. In the 'Distribution' heading of each species, the global distribution is given first, followed by the distribution in the studied area.

RESULTS AND DISCUSSION

Based on literature revision and study of specimens, a list of 226 species belonging to 93 genera is provided below. Of this total, 47 species have their geographical distribution expanded: *Athelia fibulata* and *Steccherinum subcrinale* were not previously known from South America, 12 species are reported for the first time from Brazil, six from Paraná, six from Rio Grande do Sul, and four from Santa Catarina.

Key to corticioid genera known from southern Brazil

For an introduction on the morphology of corticioid fungi see Hjortstam et al. (1988). Genera known from adjacent areas are included in the key, but only genera reported from Southern Brazil are boldfaced and included in the list of taxa.

Main key to groups and genera of Corticiaceae s.l., based on Gorjón (2013)

1a. Basidiome stipitate and pileate ..... **Key A**

1b. Basidiome sessile or resupinate (or with a rudimentary stipe or tapering base) 2

2a. Hymenophore poroid or with anastomosing ridges ..... **Key B**

2b. Hymenophore diverse, not typically poroid 3

3a. Basidiospores hyaline to typically brown or violet in KOH, ornamented, telephoric acid present ..... tomentelloid fungi (not treated)

3b. Not with the above combination 4

4a. Star-shaped asterohyphidia (with brown, acuminate branches) present ***Asterostroma***

4b. Star-shaped asterohyphidia absent 5

5a. Setae present ..... (includ. *Hydnochaete* and *Pseudochaete*) ***Hymenochaete***

5b. Setae absent 6

6a. Dichohyphae and/or binding-skeletal hyphae dextrinoid 7

6b. Not as above 9

7a. Dichohyphae present 8

7b. Dichohyphae absent (dendrohyphidia may be present) ..... ***Scytinostroma***

8a. Basidiospores smooth, amyloid or not ..... ***Vararia***

8b. Basidiospores verrucose, strongly amyloid ..... ***Dichostereum***

9a. Basidiospores with a reaction in Melzer's reagent (amyloid or dextrinoid) 10

9b. Basidiospores without a reaction in Melzer's reagent 11

10a. Basidiospores amyloid ..... **Key C**

10b. Basidiospores dextrinoid ..... **Key D**

11a. Basidia mostly with (1-3)4 sterigmata 12

11b. Basidia mostly with more than 4 sterigmata ..... **Key E**

12a. Basidiospores distinctly thick-walled and smooth 13

12b. Basidiospores thin-walled and/or ornamented and/or branched, lobed, triangular or tetrahedral 14

13a. Clamps either totally absent or scattered ..... **Key F**

13b. Clamps present on nearly all septa (always at the basidial base) ..... **Key G**

14a. Basidiospores ornamented and/or branched, lobed or tetrahedral (easily seen in Melzer's reagent!) ..... **Key H**

14b. Basidiospores smooth 15

15a. Lyocystidia present ..... **Key I**

15b. Lyocystidia absent 16

16a. Generative hyphae with simple septa or occasional clamps 17

16b. Generative hyphae with clamps 18

17a. Cystidial organs present (excepting hyphidia or dendrohyphidia) ..... **Key J**

17b. Cystidial organs absent ..... **Key K**

18a. Hyphal system dimitic/trimitic ..... **Key L**

18b. Hyphal system monomitic (or pseudodimitic) 19

19a. Dendrohyphidia or dendrophyses present ..... **Key M**

19b. Dendrohyphidia or dendrophyses absent (paraphysoid hyphae may be present) . 20

20a. Cystidial organs present ..... **Key N**

20b. Cystidial organs absent ..... **Key O**

Key A. Basidiome stipitate and pileate

1a. Hymenophore hydnoid 2

1b. Hymenophore smooth to rugose, merulioid or folded 6

2a. Basidiospores ornamented 3

2b. Basidiospores smooth 5

3a. Basidiospores amyloid ..... ***Auriscalpium***

3b. Basidiospores non-amyloid 4

4a. Hymenophore hydnoid, aculei longer than (1–) 3 mm, basidiospores ellipsoid to pip-shaped or almost navicular, at least slightly curved ..... ***Beenakia***

4b. Hymenophore odontioid to hydnoid, aculei up to 1 mm long, basidiospores ellipsoid to subglobose, not curved ..... ***Trechispora***

5a. Basidome fragile, basidia 6-sterigmate, hyphae with abundant oily contents ..... ***Sistotrema***

5b. Basidiome tought, basidia 4-sterigmate, hyphae not as above ..... ***Mycorrhaphium***

6a. Hyphal system monomitic (check th hyphal system in the stipe!) 7

6b. Hyphal system di-trimitic 9

7a. Cystidia present (distinctly seen and projecting above the basidial layer) ... ***Cotylidia***

7b. Cystidia absent (cystidioles or gloeocystidia may be present but they are little differentiate or embedded) 8

8a. Basidiome with a lichenized structure ..... ***Cyphellostereum***

8b. Not as above ..... ***Stereopsis***

9a. Hymenophore folded ..... ***Cymatoderma***

9b. Hymenophore smooth to rugose ..... ***Podoscypha***

Key B: Basidiome usually sessile and resupinate, hymenophore poroid

1a. Hymenium restricted to the base of the pores, tube walls sterile 2

1b. Hymenium covering the base and tube walls (may be absent in the dissepiments) . 3

2a. Basidiospores thick-walled, with dextrinoid arboriform hyphae ... ***Grammothelopsis***

2b. Basidiospores thin-walled, arboriform hyphae if present non-dextrinoid ..... ***Grammothele***

3a. Basidiospores ornamented 4

3b. Basidiospores smooth 5

4a. Hyphae usually ampullate at septa, basidia with no cyanophilous granulation ..... ***Trechispora***

4b. Hyphae not ampullate at septa, basidia with cyanophilous granulation .... *Lindtneria*

5a. Hyphae with simple-septa 6

5b. Hyphae with clamps 7

6a. Basidiospores thick-walled ..... *Byssoporia*

6b. Basidiospores thin-walled ..... ***Gloeoporus***

7a. Cystidia well diferentiated present ..... *Chaetoporellus* (= ***Kneiffiella***)

7b. Cystidia absent (cystidioles may be present) 8

8a. Hyphal system dimitic, with thick-walled skeletal hyphae ..... ***Schizopora***

8b. Hyphal system monomitic 9

9a. Basidia urniform, with 4-8 sterigmata, hyphae with oily contents, usually ampullate ..... ***Sistotrema***

9b. Basidia clavate, with 4-sterigmata, hyphae not ampullate and withouth oily contents ..... ***Gloeoporus***

Key C: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores amyloid

1a. Hymenophore clearly odontioid to hydnoid 2

1b. Hymenophore smooth to verrucose or slightly merulioid 7

2a. Basidiome stipitate ..... ***Auriscalpium***

2b. Basidiome different 3

3a. Basidiospores smooth ..... *Irpicodon*

3b. Basidiospores ornamented 4

4a. Basidome pileate or effuse-reflexed 5

4b. Basidiome resupinate (rarely pileate) 6

5a. Basidome pileate, fleshy, globose to ramified or dimidiate, white to cream *Hericium*

5b. Basidiome effuse-reflexed, not as above, brownish to grayish ..... *Gloiodon*

6a. Hyphal system dimitic or pseudodimitic, metuloids present ..... ***Gloeodontia***

6b. Hyphal system monomitic, metuloids absent ..... ***Dentipellis*** s.l.

7a. Acanthophyses, botryophyses and/or dendrophyses present 8

7b. Acanthophyses, botryophyses and/or dendrophyses absent 12

8a. Hyphal system dimitic (see also *Xylobolus*, monomitic but in some species seemingly dimitic) ..... ***Stereum***

8b. Hyphal system monomitic 9

9a. Associated to a white pocket-rot ..... ***Xylobolus***

9b. Associated to a laminar white rot 10

10a. Basidiospores smooth ..... *Acanthophysellum* (***Aleurodiscus*** s.l.)

10b. Basidiospores ornamented 11

11a. Botryophyses present ..... *Aleurobotrys* (***Aleurodiscus*** s.l.)

11b. Botryophyses absent ..... *Acanthobasidium* (***Aleurodiscus*** s.l.)

12a. Hyphal system dimitic or trimitic 13

12b. Hyphal system monomitic 16

13a. Basidiospores smooth 14

13b. Basidiospores ornamented 15

14a. With brown, encrusted (metuloid) cystidia ..... ***Amylostereum***

14b. Without brown, encrusted (metuloid) cystidia ..... ***Stereum***

15a. Basidiospores 15–20 µm long ..... *Aleurocystidiellum* (***Aleurodiscus*** s.l.)

15b. Basidiospores shorter ..... ***Scytinostromella***

16a. Basidiospores ornamented (in Melzer's reagent) 17

16b. Basidiospores smooth (in Melzer's reagent) 24

17a. Encrusted cystidia or hyphae present 18

17b. Encrusted elements absent 20

18a. Conical metuloids present, basidiospores usually up to 5 µm long ..... ***Gloeopeniophorella***

18b. Encrusted elements not as typical conical metuloids, basidiospores longer than 5 µm 19

19a. Cystidia encrusted, basidiospores ornamented with bifurcate aculei .....
..... ***Aleurodiscus*** s.l.

19b. Encrusted elements as skeletocystidia, basidiospores verrucose .....
..... *Aleurocystidiellum* (***Aleurodiscus*** s.l.)

20a. Basidiospores usually longer than 10 µm ..... ***Aleurodiscus***

20b. Basidiospores usually up to 10 µm long 21

21a. Basidiome stereoid, pileate or resupinate, context dark brown ..... ***Laxitextum***

21b. Basidiome resupinate, context white to cream 22

22a. Basidia suburniform ..... ***Boidinia***

22b. Basidia clavate 23

23a. Context pseudoparenchymatic, hyphae cyanophilous, basidia with internal repetition ..... ***Conferticium***

23b. Not as above ..... ***Gloeocystidiellum***

24a. Basidiospores thick-walled ..... ***Hypochnella***

24b. Basidiospores thin-walled 25

25a. Gloeocystidia present 26

25b. Gloeocystidia absent 27

26a. Context pseudoparenchymatic, hyphae cyanophilous, basidia with internal repetition ..... ***Conferticium***

26b. Not as above ..... ***Megalocystidium***

27a. Lamprocystidia present ..... ***Amylostereum***

27b. Lamprocystidia absent 28

28a. Skeletocystidia present, hyphae simple-septate ..... ***Aleurodiscus*** s.l.

28b. Skeletocystidia absent, hyphae clamped ..... *Melzericium*

Key D: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores dextrinoid

1a. Hymenophore smooth or tuberculate ..... ***Coniophora***

1b. Hymenophore merulioid, reticulate, folded and/or hydnoid 2

2a. Hymenophore merulioid 3

2b. Hymenophore hydnoid 4

3a. Hyphal system dimitic, with skeletoid hyphae, basidiospores longer than 8 µm ..... *Serpula*

3b. Hyphal system monomitic, basidiospores up to 8 µm long ..... *Pseudomerulius*

4a. Hyphae with simple septa ..... *Gyrodontium*

4b. Hyphae with clamps ..... ***Hydnomerulius***

Key E: Basidiome usually resupinate, hymenophore not poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 4-8 sterigmata

1a. Basidia urniform 2

1b. Basidia differently shaped but not urniform 3

2a. Basidiospores thin-walled ..... ***Sistotrema***

2b. Basidiospores thick-walled ..... *Sistotremella*

3a. Basal hyphae broad, 5–10 (–20) µm wide, and branched at right angles ..... ***Botryobasidium***

3b. Basal hyphae mostly up to 5 µm wide, branched at acute angles 4

4a. Basidiome thin and hardly visible, basidia obconical to pyriform ..... *Paullicorticium*

4b. Basidiome distinct, basidia almost cylindric to clavate ..... *Sistotremastrum*

Key F: Basidiome usually resupinate, hymenophore not poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores thick-walled and smooth, clamps absent or scattered

1a. Dendrohyphidia or paraphysoid hyphae present 2

1b. Dendrohyphidia or paraphysoid hyphae absent 3

2a. Hyphal system monomitic, on bark of living trees ..... ***Dendrothele***

2b. Hyphae system di- to trimitic, on dead wood ..... ***Licrostroma***

3a. Basidiome pinkish to red or orange, hyphae in the subiculum somewhat short-celled ..... *Erythricium*

3b. Basidiome and subicular hyphae not as above 4

4a. Basidiospores up to 6 µm long ..... *Byssoporia*

4b. Basidiospores longer than 6 µm 5

5a. Basidiospores subglobose to sphaerical ..... *Membranomyces*

5b. Basidiospores ellipsoid to fusoid or ovoid 6

6a. Basidiome dark violet, basidiospores brownish violet, slightly amyloid ..... ***Hypochnella***

6b. Basidiome different, basidiospores yellowish to brownish, non-amyloid (often dextrinoid) ..... ***Coniophora***

Key G: Basidiome usually resupinate, hymenophore not poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores thick-walled and smooth, clamps usually present (always at the basidial base)

1a. Hymenophore with hyphal pegs 2

1b. Hymenophore diverse 3

2a. On dead wood, frequently on grasses ..... ***Epithele***

2b. On bark of living trees ..... ***Dendrothele***

3a. Hyphidia or dendrohyphidia present 4

3b. Hyphidia or dendrohyphidia absent 7

4a. Skeletal hyphae more or less dextrinoid (context dextrinoid) ..... ***Cystidiodontia***

4b. Not as above 5

5a. On bark of living trees ..... ***Dendrothele***

5b. On dead wood 6

6a. Metuloids or encrusted cystidia present ..... ***Aleurocystis***

6b. Encrusted cystidial elements absent ..... ***Radulomyces***

7a. Thick-walled cystidia, skeletoid or hyphoid encrusted hyphae present 8

7b. Not as above 9

8a. Gloeocystidia present ..... ***Aleurocystis***

8b. Gloeocystidia absent ..... *Nodotia* (= ***Hypochnicium***)

9a. Hymenophore merulioid or remarkably folded, basidiospores dextrinoid 10

9b. Hymenophore different, smooth to hydnoid, basidiospores indextrinoid 11

10a. Hyphal system dimitic, basidiospores more than 8 µm long ..... *Serpula*

10b. Hyphal system monomitic, basidiospores up to 8 µm long ..... *Pseudomerulius*

11a. Basidia clearly stalked ..... ***Intextomyces***

11b. Basidia not stalked 12

12a. Gloeocystidia moniliform and amyloid ..... *Gloeocorticium*

12b. Not as above 13

13a. Some hyphae ampullate at the septa or short-celled and inflated .....
..... ***Trechispora***

13b. Hyphae not ampullate at the septa 14

14a. Basidiospores up to 4–5 µm long and 2–3 µm wide ..... *Amphinema*

14b. Basidiospores longer and/or wider 15

15a. Immature basidia with cyanophilous drops or granules ..... *Cristinia*

15b. Not as above 16

16a. Cystidia (not cystidioles!) present 17

16b. Cystidia absent 20

17a. Hymenophore clearly hydnoid ..... ***Radulodon***

17b. Hymenophore smooth to tuberculate or odontioid 18

18a. Cystidia moniliform or torulose ..... *Xylodon* (= ***Hyphodontia***)

18b. Not as above 19

19a. Cystidia with obtuse apex, basidia small, 10–20 µm long, with asterocrystals .....
..... *Lagarobasidium* (= ***Hyphodontia***)

19b. Not as above ..... ***Hypochnicium***

20a. Basidia longer than 30 µm, basidiospores on average more than 6 µm wide .....
..... ***Hypochnicium***

20b. Basidia and basidiospores wider ..... ***Coniophora***

Key H: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores ornamented and/or branched, lobed, triangular or tetrahedral

1a. Basidiospores lobed or branched ..... *Galzinia*

1b. Basidiospores variable, suballantoid, ellipsoid, fusiform, globose, navicular or with a tetrahedral outline 2

2a. Hymenophore minutely odontioid formed by sterile hyphal pegs ..... ***Epithele***

2b. Not as above 3

3a. Dendrophyses present 4

3b. Dendrophyses absent 6

4a. On bark of living trees ..... ***Dendrothele***

4b. On decayed wood 5

5a. Hyphae simple-septate, basidiospores more than 10 µm long ..... *Coniophoropsis*

5b. Hyphae with clamps, basidiospores up to 10 µm long ..... ***Ramaricium***

6a. Cystidia absent (hyphal endings, cystidioles or large subicular vesicles may be present) 7

6b. Cystidia present 21

7a. Basidia with cyanophilous granular content ..... *Lindtneria*

7b. Basidia without cyanophilous granular content 8

8a. Hymenophore poroid ..... ***Trechispora***

8b. Hymenophore smooth to hydnoid 9

9a. Hymenophore odontioid to hydnoid 10

9b. Hymenophore smooth to hypochnoid, grandinioid or tuberculate 13

10a. Basidia clearly stalked, basidiospores ellipsoid, slightly angular, thick-walled .... ***Intextomyces***

10b. Not as above 11

11a. Basidiospores subfusiform, yellowish, with strongly cyanophilous warts ... *Kavinia*

11b. Basidiospores diverse, hyaline to yellowish, weakly or not cyanophilous 12

12a. Basidiome pileate, stipitate to sessile, basidiospores ellipsoid to pip-shaped or almost navicular, at least slightly curved ..... ***Beenakia***

12b. Basidiome usually resupinate (stipitate in *T. thelephora*), basidiospores ellipsoid to subglobose, not curved ..... ***Trechispora***

13a. Clamps absent or inconstant 14

13b. Clamps present (some few basal hyphae may be simple-septate) 17

14a. Basidia pleural ..... ***Phlebiella***

14b. Basidia terminal 15

15a. Basidia clavate, hyphae narrow, up to 5 µm wide . Tomentelloid fungi (not treated)

15b. Basidia urniform to subcylindrical, hyphae broad, usually more than 5 µm wide 16

16a. Basidiospores thin-walled, not producing secondary basidiospores by germination . ..... ***Botryobasidium***

16b. Basidiospores thick-walled, often producing secondary basidiospores by germination ..... *Tofispora*

17a. Hyphae with ampullaceous swellings near the septa 18

17b. Hyphae without ampullate septa 19

18a. Hyphae with small warts, basidiospores pale yellowish ..... ***Ramaricium***

18b. Hyphae without warts, smooth to encrusted, basidiospores hyaline ..... ***Trechispora***

19a. Basidia terminal ..... ***Radulomyces***

19b. Basidia pleural 20

20a. Basidiospores angular, tetrahedral ..... ***Xenosperma***

20b. Basidiospores variably in shape, usually ellipsoid, basidia smaller, less than 20 µm long ..... ***Phlebiella***

21a. Hyphae without clamps or clamps occasional 22

21b. Hyphae with clamps 23

22a. Cystidia metuloid ..... ***Duportella***

22b. Not as above ..... ***Dendrothele***

23a. Lyocystidia present ..... *Litschauerella*

23b. Lyocystidia absent 24

24a. Basidia terminal ..... ***Hypochnicium***

24b. Basidia pleural ..... ***Xenasma***

Key I: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia present

1a. Hyphal system dimitic ..... ***Dacryobolus***

1b. Hyphal system monomitic 2

2a. Lyocystidia usually bi-rooted, smooth ..... *Tubulicrinis*

2b. Lyocystidia usually multi-rooted, covered by hyphae 3

3a. Basidiospores sigmoid to vermiform, smooth ..... ***Tubulicium***

3b. Basidiospores subglobose, finely warted (rarely smooth) ..... *Litschauerella*

Key J: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with simple septa, cystidial organs present

1a. Dextrinoid acanthophyses present ..... "***Acanthocystidium***" nom. prov.

1b. Dextrinoid acanthophyses absent 2

2a. Septocystidia present 3

2b. Distinct differentiated septocystidia absent 4

3a. Septocystidia not encrusted ..... *Candelabrochaete*

3b. Septocystidia encrusted ..... *Odonticium*

4a. Cystidia of the metuloid type (thick-walled, encrusted) or heavily encrusted, thick-walled hyphal ends/pseudocystidia present 5

4b. Cystidia not heavily encrusted (excepting encrusted hyphal ends) 11

5a. Hyphal system dimitic or pseudodimitic 6

5b. Hyphal system monomitic 8

6a. Hymenophore smooth to slightly tuberculate, cystidia yellowish brown to brown ..... ***Hjortstamia***

6b. Hymenophore odontioid to irpicoid, cystidia hyaline 7

7a. Hymenophore irregularly irpicoid to subporoid ..... ***Irpex***

7b. Hymenophore odontioid to raduloid ..... ***Steccherinum***

8a. Metuloids and gloeocystidia present ..... ***Peniophora***

8b. Only metuloids or encrusted cystidia present 9

9a. Basidiome ceraceous, subiculum poorly developed ..... *Scopuloides*

9b. Basidiome subceraceous to membranaceous, subiculum well developed 10

10a. Basidiome subceraceous, subicular hyphae agglutinate and indistinct .. ***Phlebiopsis***

10b. Basidiome membranaceous, subicular hyphae in a looser structure . ***Phanerochaete***

11a. Basidiome pileate and stipitate ..... ***Cotylidia***

11b. Basidiome resupinate or slightly reflexed 12

12a. Hymenophore merulioid or phlebioid ..... ***Byssomerulius***

12b. Hymenophore smooth to tuberculate, odontioid or raduloid 13

13a. Hymenophore odontioid, aculei with fascicles of thin-walled, usually heavily encrusted hyphae 14

13b. Not as above 15

14a. Cystidia absent, only aggregated encrusted hyphal ends present .... ***Hyphodermella***

14b. Cystidia present ..... *Botryodontia*

15a. Hymenophore odontioid to raduloid 16

15b. Hymenophore smooth to grandinioid or tuberculate 17

16a. Basidome ceraceous to subceraceous, hyphae difficult to discern ..... ***Phlebia***

16b. Basidiome membranous, hyphae distinct ..... (see also *Phanerochaete*) ***Phanerodontia***

17a. Basidiospores subglobose to globose 18

17b. Basidiospores navicular to fusiform, cylindrical, ellipsoid or filiform 19

18a. Cystidia poorly differentiated, hyphoid and with secondary septa ..... *Membranomyces*

18b. Cystidia conspicuous, non-septate ..... ***Hyphoderma***

19a. Basidiospores repetitive ..... ***Oliveonia***

19b. Basidiospores not repetitive 20

20a. Capitate cystidia present, together with strongly encrusted hyphal ends .....

..... ***Hyphoderma***

20b. Not as above 21

21a. Basidia urniform ..... ***Sistotrema***

21b. Basidia different 22

22a. Basidiome athelioid; basidia short, 13–16 µm long, in clusters ..... ***Athelia***

22b. Basidiome membranaceous, basidia longer, > 25 µm long, not in clusters 23

23a. Hymenial surface and/or rhizomorphs reddish or purple in KOH ..... *Rhizochaete*

23b. Basidiome with no colour changes in KOH 24

24a. Subiculum distinctly brown, subicular hyphae yellowish to brown .... *Australicium*

24b. Subiculum whitish, subicular hyphae hyaline ..... ***Phanerochaete***

Key K: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with simple septa, cystidial organs absent (hyphidia or dendrohyphidia may be present)

1a. Basidiome pileate and stipitate 2

1b. Basidiome resupinate 3

2a. Basidiome white, with a lichenized structure ..... ***Cyphellostereum***

2b. Not as above ..... ***Stereopsis***

3a. Basidiospores repetitive ..... ***Thanatephorus***

3b. Basidiospores not repetitive 4

4a. Subhymenial hyphae typically contorted, on soil or as plant pathogen ..... *Waitea*

4b. Not as above 5

5a. Hymenophore either merulioid, grandinoid, or odontioid to hydnoid 6

5b. Hymenophore smooth to radially rugose 11

6a. Hymenophore odontioid, composed of sterile hyphal pegs ..... ***Epithele***

6b. Not as above 7

7a. Basidiome soft, merulioid (in *Byssomerulius pirottae*, odontioid to hydnoid) .....
..... ***Byssomerulius***

7b. Basidiome tough, grandinoid, odontioid to hydnoid 8

8a. Hyphae in the apex of the aculei compacted and heavily encrusted .. ***Hyphodermella***

8b. Not as above 9

9a. Basal hyphae thin-walled, cystidia lacking ..... ***Phaneroites***

9b. Basal hyphae thick-walled, hyphoid cystidioles may be present 10

10a. Hyphal system seemingly dimitic, tramal hyphae thick-walled ..... *Odonticium*

10b. Hyphal system monomitic, tramal hyphae usually thin-walled ..... ***Phanerodontia***

11a. Basidia predominantly 2-spored ..... ***Athelia***

11b. Basidia predominantly 4-spored 12

12a. Basidiome ceraceous, hyphae gelatinized and difficult to discern ..... ***Phlebia***

12b. Not as above 13

13a. Basidiome athelioid to arachnoid, subiculum loose, basidia in candelabrum-like
clusters ..... ***Athelia***

13b. Basidiome membranaceous, subiculum denser, basidia in a dense palisade 14

14a. Subiculum distinctly brown, subicular hyphae yellowish to brown .... *Australicium*

14b. Subiculum whitish, subicular hyphae hyaline ..... ***Phanerochaete***

Key L: Basidiome usually resupinate, hymenophore non typically poroid, without
asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal

hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with clamps, hyphal system di- or trimitic

1a. Hymenophore formed by small cupuliform densely aggregated pores .. *Porotheleum*

1b. Not as above 2

2a. Basidiome stipitate with spathulate to flabelliform or infundibuliform pilei 3

2b. Basidiome sessile, resupinate to effuse-reflexed or pileate 5

3a. Hymenophore hydnoid ..... ***Mycorrhaphium***

3b. Hymenophore smooth to rought or ribbed 4

4a. Hymenial surface ribbed, abhymenial surface hirsute or tomentose ... ***Cymatoderma***

4b. Hymenial surface smooth, abhymenial surface glabrous ..... ***Podoscypha***

5a. Cystidia and dendrohyphidia absent 6

5b. Cystidia/pseudocystidia and/or dendrohyphidia present 12

6a. Basidiome pileate or cupulate 7

6b. Basidiome resupinate 8

7a. Basidiome cupulate, skeletoid hyphae close to the substrate ..... *Auriculariopsis*

7b. Basidiome pileate, dimitic hyphal system with arboriform hyphae ..... ***Mycobonia***

8a. Hyphae often ampullate at the septa, hymenophore arachnoid to granulose .... ***Trechispora***

8b. Hyphae not ampullate at the septa, hymenophore odontioid to hydnoid 9

9a. Micro-binding hyphae present ..... ***Phlebia***

9b. Only skeletal hyphae present 10

10a. Basidia more than 25 µm long ..... *Fibricium*

10b. Basidia small, up to 20 µm long 11

11a. Basidia up to 10 µm long, with smooth skeletal hyphae ..... *Ceraceohydnum*

11b. Basidia 10–20 µm long, usually with encrusted (pseudo)skeletal hyphae ..... ***Fibrodontia***

12a. Hymenophore odontioid to hydnoid 13

12b. Hymenophore smooth to tuberculate 18

13a. Encrusted skeletocystidia present ..... ***Steccherinum***

13b. Encrusted skeletocystidia absent 14

14a. Dendrohyphidia and gloeocystidia absent 15

14b. Dendrohyphidia and/or gloeocystidia present 17

15a. Tramal and/or hymenial cystidia and microbinding hyphae present ..... *Pseudolagarobasidium*

15b. Not as above 16

16a. Basidiospores more than 4.5 µm long, cystidia with an apical resinous cap ..... *Mycoaciella* (= ***Phlebia***)

16b. Basidiospores up to 3.5–4 µm long, cystidioles fusiform ..... *Ceraceohydnum*

17a. Gloeocystidia or oleiferous hyphae present ..... ***Steccherici***um

17b. Gloeocystidia or oleiferous hyphae absent ..... ***Dendrodontia***

18a. With brown skeletal hyphae, hyaline dendrohyphidia and pyriform basidiospores .. *Brunneocorticium* (= ***Dendrodontia***, see also *Neocampanella* for similar species without skeletal hyphae)

18b. Not as above 19

19a. Hyphal system pseudodimitic, brown dendrohyphydia present ..... ***Dendrophora***

19b. Not as above, brown dendrohyphidia absent 20

20a. Skeleto-binding or micro-binding hyphae present 21

20b. Only skeletal hyphae present 24

21a. Basidiome (when fresh) reddish in KOH (hyphae and crystals in KOH reddish) .....
..... ***Crustodontia***

21b. Basidiome not changing in KOH 22

22a. Basidiome bluish to violet, cystidia absent ..... *Amethicium*

22b. Not with this combination of characters 23

23a. Cystidia basally encrusted with resinous yellowish matter ..... *Cericium*

23b. Not as above ..... ***Phlebia***

24a. Dark brown pseudocystidia and/or metuloids present 25

24b. Dark brown pseudocystidia and metuloids absent (hyaline to pale yellow brown metuloids may be present) 26

25a. Gloeocystidia present ..... ***Duportella***

25b. Gloeocystidia absent ..... ***Porostereum***

26a. Skeletocystidia present, basidiospores usually more than 10 µm long ..... ***Lopharia***

26b. Not with the previous combination of characters 27

27a. Basidiome crustaceous, stratified, vesicular gloeocystidia abundant .. *Cystostereum*

27b. Basidiome membranaceous to waxy, gloeocystidia few or absent ..... *Fibricium*

Key M: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with clamps, hyphal system monomitic, dendrohyphidia present

1a. Basidiome iridiscent bluish ..... *Terana*

1b. Basidiome differently coloured .....

2a. On bark of living trees, basidiospores cyanophilous (but often difficult to verify!) .... ***Dendrothele***

2b. Not as above 3

3a. Repetobasidia present ..... *Repetobasidiellum*

3b. Repetobasidia absent or only occasional 4

4a. Cystidia present 5

4b. Cystidia absent 7

5a. Gloeocystidia absent, with leptocystidia ..... *Leptocorticium*

5b. Gloeocystidia present, leptocystidia absent 6

6a. Dendrohyphidia soon brown coloured ..... ***Dendrophora***

6b. Dendrohyphidia remaining hyaline or darkening slightly with age ..... ***Peniophora***

7a. Dendrohyphidia becoming yellowish to brown ..... *Punctularia*

7b. Dendrohyphidia remaining hyaline or subhyaline 8

8a. Hymenophore composed by sterile hyphal pegs ..... ***Epithele***

8b. Not as above 9

9a. Probasidia absent, basidiospores rarely wider than 4 µm 10

9b. Probasidia present, basidiospores usually wider than 4 µm 11

10a. Skeletal (pseudoskeletal) brown hyphae present in context ..... ***Dendrodontia***

10b. Skeletal hyphae absent, context hyaline ..... ***Dentocorticium***

11a. Probasidia distinctly thick-walled, spore print pink ..... *Corticium*

11b. Probasidia thin-walled to slightly thick-walled towards the base, spore print not pink ..... ***Dendrocorticium***

Key N: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal

hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with clamps, hyphal system monomitic, dendrohyphidia absent, cystidial organs present

1a. Cystidia strongly encrusted with crystals 2

1b. Cystidia smooth or not densely encrusted 9

2a. Basidiome red to brown, (pseudo)cystidia with a shade of brown ..... ***Duportella***

2b. Basidiome rarely brown, cystidia hyaline 3

3a. Basidiome semigelatinous, hyphae gelatinized and difficult to discern ..... ***Phlebia***

3b. With a different combination of characters 4

4a. Basidiome pink, orange, reddish, dark bluish or violaceous ..... ***Peniophora***

4b. Basidiome differently coloured 5

5a. Cystidia subulate, characteristically encrusted with rectangular crystals ..... ***Subulicystidium***

5b. Cystidia different 6

6a. Basidia small, 15–20 µm long ..... *Palifer* (***Hyphodontia*** s.l.)

6b. Basidia large, 20–40 µm long 7

7a. Basidiospores up to 6 µm long, basal hyphae 4–8 µm wide ..... ***Ceraceomyces***

7b. Basidiospores on average more than 7 µm long, basal hyphae 2–4 µm wide 8

8a. Basidia clavate to subcylindrical, echinulate cells usually present ..... ***Peniophorella***

8b. Basidia suburniform, echinulate cells absent ..... ***Hyphoderma***

9a. Septate cystidia present 10

9b. Septate cystidia lacking 13

10a. Lagenocystidia present ..... ***Hyphodontia***

10b. Lagenocystidia lacking 11

11a. Septocystidia hyphoid, very finely encrusted with thin crystals ..... *Amphinema*

11b. Septocystidia smooth or differently ornamented 12

12a. Basidiospores more than 6 µm long ..... ***Hyphoderma***

12b. Basidiospores up to 4.5 µm long ..... ***Ceraceomyces***

13a. Basidiome pileate, hymenophore hydnoid 14

13b. With a different combination of characters 15

14a. Clamps few and scattered in some hyphae but absent in the basidial base .....
..... ***Climacodon***

14b. All hyphae and basidial base with clamp-connections ..... ***Steccherícium***

15a. Basidiome resupinate to effuse-reflexed, hymenophore smooth, violaceous .....
..... *Chondrostereum*

15b. Not as above 16

16a. Cystidia tubular and thick-walled, at least towards the base 17

16b. Cystidia different 20

17a. Basidiospores on average less than 7 µm long ..... ***Kneiffiella***

17b. Basidiospores on average more than 7 µm long 18

18a. Basidiospores wider than 1.5–2 µm ..... *Crustoderma*

18b. Basidiospores up to1.5–2 µm wide 19

19a. Cystidia 8–12 µm wide, with a drop of secretion at the subcapitate apex .....
..... ***Dacryobolus***

19b. Cystidia 5–6 µm wide, without a drop of secretion at the apex ..... ***Kneiffiella***

20a. Hymenophore distinctly poroid ..... *Chaetoporellus* (= ***Kneiffiella***)

20b. Hymenophore not poroid (may be subporoid in some areas or in the margin) 21

21a. Basidiome gelatinous to ceraceous, hyphae gelatinized and difficult to discern .. 22

21b. Basidiome not ceraceous, hyphae usually distinct 23

22a. Hymenophore reddish in KOH ..... ***Crustodontia***

22b. Hymenophore with no colour changes in KOH ..... ***Phlebia***

23a. Halocystidia present (capitate cystidia with a more or less conspicuous halo) 24

23b. Halocystidia absent 25

24a. Asterocystidia present ..... ***Resinicium***

24b. Asterocystidia absent ..... (check also *Resinicium* s.l.) ***Skvortzovia***

25a. Hymenophore odontioid to raduloid or hydnoid 26

25b. Hymenophore more or less smooth or merulioid to phlebioid 33

26a. Rosette-like crystals present, cystidioles capitulate, basidiospores allantoid .....
..... ***Sidera*** (not treated)

26b. Not as above, rosette-like crystals absent 27

27a. Cystidia excreting a drop of sticky liquid, basidiospores allantoid ..... ***Dacryobolus***

27b. Cystidia not as above, basidiospores variable 28

28a. Basidiospores 8–12 µm long ..... ***Basidioradulum***

28b. Basidiospores shorter 29

29a. Gloeocystidia distinct 30

29b. Gloeocystidia absent or indistinct 31

30a. Gloeocystidia tubular, more or less sinuous ..... ***Hyphodontiastra***

30b. Gloeocystidia in the subiculum globose, vesicular, usually with digitiform
projections, rarely in the hymenium, ventricose to subulate ..... ***Parvodontia***

31a. With thin-walled tubular cystidia, basidiospores allantoids .....
..... *Alutaceodontia* (***Hyphodontia*** s.l.)

31. Basidiospores and/or cystidia different 32

32a. Basidiome yellowish to brown or orange, hyphae usually colour .....
..... *Pseudolagarobasidium*

32b. Not as above ..... *Xylodon* (= ***Hyphodontia***)

33a. Basidiospores repetitive, basidia with comparatively very long sterigmata .....

..... ***Oliveonia***

33b. Basidiospores not repetitive, basidia with shorth sterigmata 34

34a. Basidiospores on average more than 8 µm long 35

34b. Basidiospores on average less than 8 µm long 38

35a. Basidia suburniform ..... ***Hyphoderma***

35b. Basidia clavate 36

36a. Basidiospores dacryoid to obliquely ellipsoid, often in groups of 2–4 .....

..... ***Cylindrobasidium***

36b. Basidiospores not as above 37

37a. Basidiospores 6.5–8 µm wide, echinulate cells absent ..... *Clavulicium*

37b. Basidiospores up to 5 µm wide, echinulate cells usually present ..... ***Peniophorella***

38a. Basidia urniform to suburniform 39

38b. Basidia otherwise 42

39a. Basidia urniform, cystidia present as flexuose gloeocystidia ..... ***Sistotrema***

39b. Basidia suburniform, cystidia different 40

40a. Cystidia 6–13 µm wide and often longer than 100 µm ..... ***Hyphoderma***

40b. Cystidia only 3–7 µm wide and generally up to 60 µm long 41

41a. Capitate or subulate, more or less encrusted cystidia present .....

..... *Lyomyces* (= ***Hyphodontia***)

41b. Cystidia, if present, different, not distinct, as hyphoid cystidioles .....

..... *Xylodon* (= ***Hyphodontia***)

42a. Basidia 8–12 µm long, with clavate to flexuose gloeocystidia ..... *Parvobasidium*

42b. Basidia larger, gloeocystidia absent 43

43a. Hymenophore becoming violaceous in KOH ..... ***Ceraceomyces***

43b. Not as above 44

44a. Basidiospores 3–5 µm wide, often glued in groups of 2–4 ..... ***Cylindrobasidium***

44b. Basidiospores up to 3 µm wide ..... *Amphinema*

Key O: Basidiome usually resupinate, hymenophore non typically poroid, without asterohyphidia; setae absent, dichohyphae and/or dextrinoid binding-skeletal hyphae absent; basidiospores IKI-, basidia with 2-4 sterigmata, basidiospores smooth, lyocystidia absent, generative hyphae with clamps, hyphal system monomitic, dendrohyphidia absent, cystidial organs absent

1a. Basidiome cup-shaped or disciform ..... *Auriculariopsis*

1b. Basidiome not as above 2

2a. Basidiome with well developed pilei and a rudimentary to distinct stipe 3

2b. Basidiome resupinate or slightly reflexed 5

3a. Basidiome flabelliform to tubaeform, hymenophore smooth to rough ..... ***Stereopsis***

3b. Basidiome dimidiate, with a more or less developed stipe, hymenophore aculeate or meruloid 4

4a. Basidiome with well developed pilei, hymenophore merulioid ..... ***Phlebia***

4b. Basidiome stipitate-pileate, hymenophore aculeate ..... ***Mycorrhaphium***

5a. Hymenophore tuberculate, odontioid to raduloid, phlebioid, merulioid or poroid ... 6

5b. Hymenophore smooth to farinaceous 17

6a. Hymenophore poroid, basidia urniform ..... ***Sistotrema***

6b. Hymenophore and basidia different 7

7a. Hymenophore merulioid or phlebioid 8

7b. Hymenophore distinctly tuberculate to odontioid, hydnoid or raduloid 9

8a. Basidiome subgelatinous to ceraceous, hyphae embedded in a gelatinous matrix, clamps and hyphae difficult to discern ..... ***Phlebia***

8b. Basidiome not fully ceraceous, subiculum remaining membranaceous, hyphae distinct and easily to discern ..... ***Ceraceomyces***

9a. Hyphae in subiculum and cords with ampullaceous swellings near the septa ..... ***Trechispora***

9b. Hyphae with no ampullate swelling (but isodiametrical hyphae may be present) . 10

10a. Hymenophore with sterile hyphal pegs ..... ***Epithele***

10b. Not as above 11

11a. Hyphal system pseudodimitic, with skeletoid or pseudoskeletal hyphae ..... ***Fibrodontia***

11b. Hyphal system monomitic 12

12a. Basidia suburniform (cystidioles often present!) ..... *Xylodon* (= ***Hyphodontia***)

12b. Basidia different 13

13a. Subicular hyphae thick-walled, refractive or pigmented ..... *Odontiopsis*

13b. Not as above 14

14a. Subhymenial hyphae isodiametrical 15

14b. Subhymenial hyphae not isodiametrical 16

15a. Basidiospores ellipsoid to globose or more or less rhomboid ..... ***Brevicellicium***

15b. Basidiospores reniform to allantoid ..... *Brevicellopsis*

16a. Hymenophore hydnoid to raduloid ..... ***Radulomyces***

16b. Hymenophore tuberculate to odontioid ..... ***Phlebia***

17a. Basidiospores repetitive 18

17b. Basidiospores not repetitive 19

18a. Basidia clavate to ovoid, basidiospores citriform, if subglobose to ellipsoid, then 2–4 μm wide ..... ***Oliveonia***

18b. Basidia obconical, basidiospores subglobose to ovoid 3.5–6 μm wide . ***Scotomyces***

19a. Basidia urniform, hyphae characteristically with oily contents ..... ***Sistotrema***

19b. Basidia and/or hyphae different 20

20a. Hyphae in subiculum and cords often ampullate near the septa ..... ***Trechispora***

20b. Hyphae in subiculum and cords different (ampullaceous swellings may occur in more or less isodiametric hyphae in subhymenium) 21

21a. Subhymenial hyphae short-celled, more or less isodiametrical and swollen ..... ***Brevicellicium***

21b. Subhymenial hyphae long celled, not more or less isodiametrical 22

22a. Basidiome ceraceous, hyphae gelatinized and difficult to discern ..... ***Phlebia***

22b. Not as above, hyphae as a rule easily to discern 23

23a. Basidiome pellicular, basidia in candelabrum-arranged clusters ..... ***Athelia***

23b. Not as above 24

24a. Basidia as a rule urniform to suburniform 25

24b. Basidia cylindrical to clavate 27

25a. Basidia urniform to cylindrical, often with internal repetition, basidiospores allantoid ..... *Galzinia*

25b. Not as above 26

26a. Basidia on average longer than 30 μm, spore usually longer than7 μm ..... ***Hyphoderma***

26b. Basidia on average shorter than 30 μm, spore usually up to 7 μm long ..... *Xylodon* (= ***Hyphodontia***)

27a. Basidia clearly stalked ..... ***Athelopsis***

27b. Basidia not evidently stalked 28

28a. Basal hyphae encrusted, violaceous in KOH ..... ***Ceraceomyces***

28b. Basal hyphae otherwise 29

29a. Basidia small, on average <20 µm long 30

29b. Basidia on average >20 µm long 31

30a. Basidiospores on average more than 2.5 µm wide ..... ***Athelia***

30b. Basidiospores on average less than 2.5 µm wide ..... *Leptosporomyces*

31a. Basidiospores up to 4.5 µm wide, thin-walled, on bark of living trees ***Dendrothele***

31b. Basidiospores on average more than 5.5 µm wide, slightly thick-walled, on dead wood 32

32a. Basidiospores cylindrical to ellipsoid, more than 15 µm long ..... ***Cerocorticium***

32b. Basidiospores usually ellipsoid, up to 15 µm long ..... ***Radulomyces***

Genera and species known from Southern Brazil

"***Acanthocystidium*** Baltazar, Gorjón & Rajchenb.", nom. prov.

"***Acanthocystidium brueggemannii*** Baltazar, Gorjón & Rajchenb.", nom. prov.

Description. Baltazar et al. (2014b).

Distribution. Known only from the type locality in Santa Catarina.

Examined specimens. BRAZIL. Santa Catarina, Santo Amaro da Imperatriz, Hotel Caldas da Imperatriz, Trilha do Guamirim, on dead hardwood, 18 September 2010, J.M. Baltazar 2122 (ICN). Ibid., on dead hardwood, 14 March 2012, J.M. Baltazar 2621 (ICN, holotype).

Aleurocystis Lloyd ex G. Cunn., Trans. Roy. Soc. New Zealand 84(2): 234, 1956.

1a. Dendrohyphidia present, basidiospores subglobose to broadly ellipsoid, up to 22 × 17 µm ..... *A. hakgallae*

1b. Dendrohyphidia absent, basidiospores ellipsoid to oblong ellipsoid, up to 25 × 14 µm ..... *A. magnispora*

Aleurocystis hakgallae (Berk. & Broome) G. Cunn. [as '*habgallae*'], Trans. Roy. Soc. New Zealand 84(2): 235, 1956.

Descriptions. Cunningham (1956b) and Ryvarden (1998).

Distribution. A rare pantropical species (Hjortstam and Ryvarden 2007a); Paraná (Meijer 2006).

Aleurocystis magnispora (Burt) P.A. Lemke, Can. J. Bot. 42: 760, 1964.

Descriptions. Welden (1958) and Ryvarden (1998).

Distribution. Known from Colombia, Jamaica and Rio Grande do Sul, Brazil (Ryvarden 1998).

Aleurodiscus Rabenh. ex J. Schröt, in Cohn, Krypt.-Fl. Schlesien 3(1): 429, 1888.

Aleurodiscus is a large, morphologically diverse genus which has been divided into smaller genera. However, most species were not included in phylogenies up to date and their generic placements remain unsolved (Larsson 2007). Here we treat *Aleurodiscus* in a very broad sense to facilitate the use of this work as an identification tool, as done by Núñez and Ryvarden (1997) and Gorjón et al. (2013). See Larsson (2007) for a discussion on the phylogenetic status of genera within *Aleurodiscus* s.l. and Gorjón et al. (2013) for a brief discussion on the morphology of these genera. In the keys for

genera presented above the reader will find entries for both *Aleurodiscus* s.l. and to genera in a strict sense, even if they were not reported for Southern Brazil.

Key to species of *Aleurodiscus* s.l.

1a. Basidiospores smooth, up to 10 µm long ..... *A. dextrinoideocerussatus*

1b. Basidiospores ornamented at least in Melzer's reagent, > 10 µm long 2

2a. Paraphyses present, acanthophyses absent ..... *Aleurodiscus* sp. 2

2b. Paraphyses and moniliform cystidia absent, acanthophyses present 3

3a. Basidiospores 11–14 µm long, growing on bamboo (also reported from other *Poaceae* Barnhart) ..... *A. phragmitis*

3a. Basidiospores 24 µm or longer, growing on wood 4

4a. Acanthophyses amyloid, basidiospores 30–36 µm long ..... *Aleurodiscus* sp. 1

4b. Acanthophyses inamyloid, basidiospores 24–28 µm long ..... *A. mirabilis*

Aleurodiscus dextrinoideocerussatus Manjón, M.N. Blanco & G. Moreno, Mycotaxon 39: 351, 1990.

Descriptions. Moreno et al. (1990) and Núñez and Ryvarden (1997).

Distribution. Probably cosmopolitan, since there are records from Europe (Mediterranean countries), Morocco, Reunion Is. (Moreno et al. 1990; Boidin and Gilles 2001; Bernicchia and Gorjón 2010); first record from Southern Brazil, found in Rio Grande do Sul and Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 20 April 2012, J.M. Baltazar 2779 (ICN, sub *A.* cf. *dextrinoideocerussatus*). Ibid., Santa Catarina, Santo Amaro da Imperatriz, Hotel Plaza Caldas da Imperatriz, Trilha do Guamirim, 14 March 2012, J.M. Baltazar 2624 (ICN). Ibid., Trilha do Tronco, 14 March 2012, J.M. Baltazar 2629 (ICN).

Remarks. *Aleurodiscus dextrinoideocerussatus* is characterized by dextrinoid acanthophyses and smooth basidiospores. *Aleurodiscus cerussatus* (Bres.) Höhn. & Litsch. and *Acanthophysellum minor* (Pilát) Sheng H. Wu et al. are very similar and differ mainly due the IKI- acanthophyese and smaller basidiospores, though some authors have adopted other specific circumscriptions and have treated *A. minor* as a synonym of *A. cerussatus* (Núñez and Ryvarden 1997) or of *A. dextrinoideocerussatus* (Boidin and Gilles 2001). The specimen J.M. Baltazar 2779 has slightly smaller basidiospores than those of *A. dextrinoideocerussatus*, and besides, acanthophyses are weakly dextrinoid or IKI-. For this reason its determination is left as tentative.

Aleurodiscus mirabilis (Berk. & M.A. Curtis) Höhn., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1 118: 818, 1909.

Description. Núñez and Ryvarden (1997).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2747 (ICN). Ibid., Campo Bom, Mata do Lixão, 23 September 2010, J.M. Baltazar 2152 (ICN).

Remarks. This species is characterized by the stereoid, pinkish basidiomes, and the biapiculate, D-shaped, echinulated basidiospores in Melzer's reagent (Núñez and Ryvarden 1997). *Aleurodiscus* sp. 1 is a similar species found in the State of Santa Catarina (see discussion below).

Aleurodiscus phragmitis (Boidin et al.) Núñez & Ryvarden, Synop. Fungorum 12: 123, 1997.

Description. Núñez and Ryvarden (1997).

Distribution. Known from Argentina, Brazil, Europe, and Reunion Is. (Núñez and Ryvarden 1997; Baltazar et al. 2014a), but probably overlooked because it grows on species of *Poaceae* and they are not usually checked by collectors of corticioids; Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimens. BRAZIL. Rio Grande do Sul, São Salvador, 01 March 1943, J. Rick Fungi Rickiani 19249 p.p. (PACA).

Remarks. The exsiccatum cited above is the holotype of *Stereum humillimum* Rick (= *Phanerochaete sordida*) and comprises a piece of bamboo with two basidiomes, one determined as *P. sordida* and another as *A. phragmitis* (Baltazar et al. 2014a).

Aleurodiscus sp. 1

Examined specimen. BRAZIL. Santa Catarina, Santo Amaro da Imperatriz, Pousada da Mata, 10 April 2010, J.M. Baltazar 2136 (ICN).

Remarks. This species is morphological similar to *A. mirabilis* but easily separated by its amyloid acanthophyses with larger projections and by larger basidiospores (see the key above). More specimens are needed to better known the morphological variation of this undescribed taxon.

Aleurodiscus sp. 2

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2750 (ICN).

Remarks. This species is microscopically similar to *A. thujae* Ginns due to the combination of simple-septate generative hyphae, hyphidia, gloeocystidia and broadly ellipsoid to subglobose basidiospores (Ginns 1990). It differs from *A. thujae* by having a stereoid basdiome, thick-walled hyphae, more constricted gloeocystidia, and larger

basidiospores, 31–37 ×24–29 µm. More specimens are needed to better known this undescribed taxon.

Amylostereum Boidin, Rev. Mycol. 23(3): 345, 1958.

Amylostereum ferreum (Berk. & M.A. Curtis) Boidin & Lanq., Bull. Trimest. Soc. Mycol. Fr. 100(2): 217, 1984.

Descriptions. Boidin and Lanquetin (1984) and Ryvarden (2010).

Distribution. Known from Costa Rica, Cuba, Brazil, Jamaica, Guadeloupe, and Venezuela (Hjortstam and Ryvarden 2007a; Ryvarden 2010); Rio Grande do Sul (Boidin and Lanquetin 1984).

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, on dead wood of *Podocarpus lambertii* Klotzsch ex Endl., 26 March 2010, J.M. Baltazar 1741 (ICN, CIEFAP). Ibid., on dead wood of *P. lambertii*, 30 April 2012, J.M. Baltazar 2821 (ICN, CIEFAP).

Remarks. *Amylostereum ferreum* is morphologically similar to other dimitic species of *Amylostereum*, i.e., *A. chailletii* (Pers.) Boidin and *A. areolatum* (Chaillet ex Fr.) Boidin, and they show little variation in basidiospore and cystidia size. The most reliable feature to differentiate it from these two species is the substratum, since *A. ferreum* is only known growing on *Podocarpus* spp. up to date. For further discussion on *Amylostereum* spp., including cultural and biological studies, see Boidin and Lanquetin (1984).

Asterostroma Massee, J. Linn. Soc., Bot. 25(170): 154, 1889.

1a. Basidiospores smooth, inamyloid ..... *A. fulvum*

1b. Basidiospores ornamentated, amyloid 2

2a. Basidiospore ornamentations up to 1 µm long ..... *A. cervicolor*

2b. Basidiospore ornamenatations ca. 2 µm long 3

3a. Basidiospores broadly ellipsoid to subglobose, 6–8 × 5.5–7.5 µm, ornamentations conical ..... *A. muscicola*

3b. Basidiospores globose to subglobose, 5.5–6.5 × 5–6 (–6.5) µm, ornamentations blunt ..... *A. ochroleucum*

Asterostroma cervicolor (Berk. & M.A. Curtis) Massee, J. Linn. Soc., Bot. 25(170): 155, 1889.

Descriptions. Welden (1966) and Boidin et al. (1997a).

Distribution. Apparently pantropical according to Hjortstam and Ryvarden (2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Remarks. This species is morphological similar to *A. muscicola*, but differs by the subglobose, slightly small basidiospores with blunt, sparsely distribute ornamentations. *Asterostroma ochroleucum* is also similar (see discussion under this species). We have not found this species in our collections.

Asterostroma fulvum Romell, Bih. Kongliga Sven. Vetensk.- Akademiens Handlingar III 26(16): 40, 1901.

Description. Boidin et al. (1997a).

Distribution. State of Rio Grande do Sul, Brazil (Rick 1959a; Boidin et al. 1997a).

Remarks. This is the only species of *Asterostroma* with smooth, inamyloid basidiopores known from southern Brazil. Hjortstam and Bononi (1987) asserted that if

the determination of this species is correct this species should belong to *Vararia* rather than *Asterostroma*. See Boidin et al. (1997a) for further discussion.

Asterostroma muscicola (Berk. & M.A. Curtis) Massee, J. Linn. Soc., Bot. 25(170): 155, 1889.

Descriptions. Welden (1966) and Boidin et al. (1997a).

Distribution. Pantropical but also reported from Uruguay (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Paraná and Rio Grande do Sul.

Examined specimens. BRAZIL. Paraná, Matinhos, 13 November 2010, J.M. Baltazar 2337 (ICN). Ibid., Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2826 (ICN).

Remarks. *Asterostroma muscicola* differs from *A. cervicolor* and *A. ochroleucum* due to the slightly larger basidiospores with conical ornamentations.

Asterostroma ochroleucum Bres., in Torrend, Brotéria. Sér. Bot. 11(1): 82, 1913.

Description. Boidin et al. (1997a).

Distribution. Previously known from Portugal, Morocco, Siberia, and Zimbabwe (Boidin et al. 1997a; Hjortstam and Ryvarden 2007a); first record from Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2828 (ICN).

Remarks. *Asterostroma ochroleucum* was considered a synonym of *A. cervicolor* by Hallenberg (1985). Here we follow Boidin et al. (1997a) and keep them separated, as well as *A. musciola* as an independent taxon, despite their morphological similarities. Differences among these three species in culture, as shown by Nakasone (1990), also support the separation. *Asterostroma ochroleucum* differs from *A. cervicolor* by having

a more compact context, which is loose in the latter, and by almost globose basidiospores with ornamentations ca. 2 µm long, while in *A. cervicolor* they are subglose with ornamentations up to 1 µm long. *Asterostroma muscicola* differs by having broadly ellipsoid to subglobose, slightly larger basidiospores with conical ornamentations (Boidin et al. 1997a).

Athelia Pers., Mycol. Eur. 1: 83, 1822.

Athelia fibulata M.P. Christ., Dansk Bot. Ark. 19(2): 148, 1960.

Descriptions. Eriksson and Ryvarden (1973) and Bernicchia and Gorjón (2010).

Distribution. Known from Europe, North America and Japan (Jülich 1972; Maekawa 1993); first record from South America, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2788 (ICN); Ibid., 30 April 2012, J.M. Baltazar 2794 (ICN).

Athelopsis Parmasto, Conspec. System. Corticiacearum: 41, 1968.

1a. Generative hyphae simple-septate, basidia 10–15 × 5.5–6 µm, basidiospores 9–11 (–12) × (2.75–) 3–3.25 µm ..... *A. crystallifera*

1b. Generative hyphae clamped, basidia 15–18 × 4–5 µm, basidiospores 6–7.5 × 2–2.5 µm ..... *A.* vel aff. *fusoidea*

Athelopsis crystallifera (Rick) Hjorstam, Windahlia 17: 56, 1987.

≡ *Corticium crystalliferum* Rick, Brotéria. Ciências Nat. 7(34): 74, 1938.

Description. Hjortstam and Ryvarden (1982).

Distribution. Known only from the type locality in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Santa Maria, 1936, J. Rick *Fungi Rickiani* 15483 (PACA, lectotype of *C. crystalliferum*).

Remarks. This species is morphological similar to *Athelopsis glaucina* (Bourdot & Galzin) Oberw. ex Parmasto, which differs by having clamped generative hyphae and slightly narrower basidiospores (Hjortstam and Ryvarden 1982). See Baltazar et al. (2014a) for a brief discussion on its correct name.

Athelopsis* vel aff. *fusoidea (Jülich) Tellería, in Tellería & Melo, Flora Mycol. Iber. 1: 87, 1995.

≡ *Fibulomyces fusoideus* Jülich, Willdenowia, Beih. 7: 192, 1972.

Descriptions. Eriksson and Ryvarden (1975) and Bernicchia and Gorjón (2010).

Distribution. Known from Canary Islands, Europe (type locality in Russia) and Venezuela (Hjortstam and Ryvarden 2007a); if confirmed this determination it would represent the first record from Brazil.

Examined specimen. BRAZIL. Rio Grande do Sul, Santa Maria, 1936, J. Rickiani 12040 (PACA, lectotype of *Asterostromella parasitica* Rick).

Remarks. This specimen differs from typical *A. fusoidea* by presenting rhizomorphs, by lacking encrustation in the subhymenial hyphae and by the basidiospores being slightly broader, 6–7 (–8) × 3–3.5 µm. See discussion in Baltazar et al. (2014a)

Auriscalpium Gray, Nat. Arrange. Br. Plants 1: 650, 1821.

Auriscalpium villipes (Lloyd) Snell & E.A. Dick, Lloydia 21: 35, 1958.

Description. Stalpers (1996).

Distribution. Neotropical and downwards to Argentina (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Remarks. Stalpers (1996) is referred for a key and descriptions of *Auriscalpium* species.

Basidioradulum Nobles, Mycologia 59(2): 192, 1967.

Basidioradulum radula (Fr. : Fr.) Nobles, Mycologia 59(2): 192, 1967.

Descriptions. Eriksson and Ryvarden (1975), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Known from Australasia, Europe, India, Japan, Korea, and North and South America (Maekawa 1994); Paraná (Meijer 2006); first record from Santa Catarina.

Examined specimen. BRAZIL. Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead wood of *Rhizophora mangle*, 29 January 2006, L. Trierveiler-Pereira 157 & T.B. Maccarini (FLOR).

Beenakia D.A. Reid, Kew Bull. 10(4): 635, 1956 ["1955"].

Beenakia informis (Rick) Maas Geest., Persoonia 7(4): 555, 1974.

≡ *Hydnum informe* Rick, Egatea 17: 2, 1932.

Descriptions. Maas Gesteranus (1974) and Núñez and Ryvarden (1994).

Distribution. Known from Bolivia, Brazil (type locality) and Costa Rica (Núñez and Ryvarden 1994); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Leopoldo, without date, J. Rick Fungi Rickiani 16539 (PACA, holotype of *H. informe*).

Boidinia Stalpers & Hjortstam, Mycotaxon 14: 76, 1982.

1a. Generative hyphae simple-septate, basidiospores subglobose, 4–5 × 3.5–4 µm .... *B. peroxydata*

1b. Generative hyphae clamped, basidiospores broadly ellipsoid, rarely subglobose, 4–5 × 3–3.5 µm ..... *B.* cf. *luteola*

Boidinia* cf. *luteola Sheng H. Wu, Mycotaxon 58: 19. 1996.

Description. Wu (1996).

Distribution. Known from Taiwan (Wu 1996); if confirmed its identity, this would be the first record outside the type locality of this species.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Hotel Veraneio Hampel, 07 November 2010, J.M. Baltazar 2280 (ICN).

Remarks. The specimen agrees in almost all features with the original description of *B. luteola*, deviating only by the basidiospore shape: subglobose in *B. luteola* and mainly broadly-ellipsoid in JMB 2280. More specimens from Southern Brazil and a confrontation with Taiwanese specimens are desirable in order to determine the identity of this taxon appropriately.

Boidinia peroxydata (Rick) Hjortstam & Ryvarden, Acta Mycol. Sin. 7(2): 79, 1988.
≡ *Gloeocystidium peroxydatum* Rick, Brotéria. Ciências Nat. 3(30): 46, 1934.

Description. Hjortstam and Stalpers (1982) and Boidin et al. (1997b).

Distribution. Known from Brazil, Canada, Gabon, New Zealand, Spain, United Kingdom, and Venezuela (Ginns and Freeman 1994; Wu and Buchanan 1998; Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010); Rio Grande do Sul (type locality).

Examined specimen. BRAZIL. Rio Grande do Sul, São Leopoldo, 1932, J. Rick *Fungi Rickiani* 13382 (PACA, neotype of *G. peroxydatum*).

Botryobasidium Donk, Medded. Nedl. Mycol. Ver. 18-20: 116, 1931.

Botryobasidium stigmatisporum Boidin & Gilles, Bull. Soc. Mycol. Fr. 104(2): 70, 1988.

Description. Boidin and Gilles (1988a).

Distribution. Known from Argentina, France, Reunion Is., Slovenia (Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Hotel Veraneio Hampel, 07 November 2010, J.M. Baltazar 2280 (ICN).

Remarks. *Botryobasidium stigmatisporum* differs from *B. asperulum* (D.P. Rogers) Boidin by its narrower basidia and ellipsoid to ovoid, 5.2–6.7 (–7) × 3.2–4.3 µm, slightly thick-walled basidiospores, while in *B. asperulum* they are ellipsoid to subglobose, 4.5–5.5 × 3.5–4.5 µm, distinctly thick-walled (Boidin and Gilles 1988a; Langer 1994b).

Brevicellicium K.H. Larss. & Hjortstam, Mycotaxon 7: 117, 1978.

Brevicellicium mellinum (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 269, 1980.

Descriptions. Hjortstam and Ryvarden (1980, 2007c).

Distribution. Known from Brazil and Puerto Rico (Hjortstam and Ryvarden 2007a).

Remarks. Bresadola (1920) cited two specimens when describing this species, ‘Rick no.434’ and ‘Theissen no. 31’. Despite Bresadola (1920) cited the location as only

‘Brasilia’, it is very likely that both specimens were gathered in Southern Brazil since both J. Rick and F. Theissen carried most of their mycological activities in Rio Grande do Sul.

Byssomerulius Parmasto, Eesti NSV Tead. Akad. Toim., Biol. Seer 16: 383, 1967.

1a. Cystidia present, basidiospores 4–5.5 × 2–2.5 (–3) µm ..... *B. hirtellus*

1b. Cystidia absent, basidiospores 5–7 × 2.5–3.5 µm ..... *B. corium*

Byssomerulius corium (Pers. : Fr.) Parmasto, Eesti NSV Tead. Akad. Toim., Biol. Seer 16(4): 383, 1967.

= *Merulius moelleri* Bres. & Henn., Hedwigia 35(5): 285, 1896.

= *Phlebia blumenaviensis* Henn., Hedwigia 36(4): 198, 1897.

= *Radulum album* Rick, Iheringia, Bot. 5: 181, 1959.

= *Byssomerulius sordidus* (Berk. & M.A. Curtis ex Cooke) Hjortstam, Mycotaxon 54: 184, 1995.

Descriptions. Eriksson and Ryvarden (1973) and Zmitrovich et al. (2006).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Bresadola 1896; Hennings 1897; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1749 (ICN). Ibid., 24 May 2010, J.M. Baltazar 1920 (ICN). Ibid., 07 June 2010, J.M. Baltazar 1943 (ICN). Ibid., 30 April 2012, J.M. Baltazar 2791 (ICN). Ibid., Hotel Veraneio Hampel, 27 March 2010, J.M. Baltazar 1767 (ICN). Ibid., São Salvador, 1939, J. Rick Fungi Rickiani 18961 (PACA, holotype of *R. album*).

Remarks. Ginns (1971, 1976) treated *Merulius dubiosus* Bres. var. *coriacea* Rick as synonym of *B. corium*, but this name was not validly published. *Byssomerulius corium* is a morphologically variable species, and *B. sordidus* is here accepted as a synonym as stated by other authors (Ginns 1976; Zmitrovich et al. 2006).

Byssomerulius hirtellus (Burt) Parmasto, Eesti NSV Tead. Akad. Toim., Biol. Seer 16(4): 384, 1967.

Descriptions. Ginns (1976) and Bernicchia and Gorjón (2010).

Distribution. Known from several countries in Europe, Argentina, and USA (Ginns 1976; Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010); Paraná (Meijer 2006); first record from Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Hotel Veraneio Hampel, 07 November 2010, J.M. Baltazar 2276 (ICN).

Cerocorticium Henn., Monsunia 1: 138, 1900.

Cerocorticium molle (Berk. & M.A. Curtis) Jülich, Persoonia 8(2): 219, 1975.

= *Aleurodiscus bicolor* Rick, Iheringia, Bot. 4: 113, 1959.

Descriptions. Jülich (1975) and Maekawa et al. (2003).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009; Trierveiler-Pereira et al. 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, São Salvador, 1943, J. Rick Fungi Rickiani 20627 (PACA, holotype of *A. bicolor*). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead *Rhizophora mangle*, 26 October 2005, L. Trierveiler-Pereira 61 & J.M. Baltazar (FLOR). Ibid., Manguezal de Ratones, on living *Rhizophora mangle*, 29 Januray 2006, J.M. Baltazar 097 et al. (FLOR). Ibid., Manguezal do Rio Tavares, on dead *Rhizophora mangle*, 05 August 2006, L. Trierveiler-Pereira 293 et al. (FLOR). Ibid., Manguezal do Saco Grande, on unknown dead wood, 27 April 2006, J.M. Baltazar 192 & A. Regolin (FLOR).

Ceraceomyces Jülich, Willdenowia Beih. 7: 146, 1972.

Ceraceomyces serpens (Tode : Fr.) Ginns, Can. J. Bot. 54(1–2): 147, 1976.

≡ *Ceraceomerulius serpens* (Tode : Fr.) J. Erikss. & Ryvarden, Corticiaceae N. Eur. 2: 201, 1973.

"*Merulius densus*" Rick, Iheringia, Bot. 7: 197, 1960, nom. inval. (no holotype).

Descriptions. Eriksson and Ryvarden (1973) and Ginns (1976).

Distribution. Probably cosmopolitan, but with few records from the Southern Hemisphere (Ginns 1976; Maekawa 1994; Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010); Rio Grande do Sul (Ginns 1976).

Remarks. Hjortstam and Ryvarden (1980) revised the type of *Corticium subochraceum* Bres. (Blumenau, Santa Catarina) and asserted that it could belong to *Ceraceomyces*. The description given in their work agrees with small differences with the concept of *C. serpens*, but we were not able to study that specimen.

Climacodon P. Karst., Rev. Mycol. 3(9): 20, 1881.

Climacodon pulcherrimus (Berk. & M.A. Curtis) Nikol., Flora Plant. Cryptog. URSS 6, Fungi. Familia *Hydnaceae* 6(2): 194, 1961.

Description. Maas Gesteranus (1971).

Distribution. Probably cosmoplolitan (Maas Gesteranus 1971; Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010), but with few records from the Neotropics; Paraná, Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009).

Conferticium Hallenb., Mycotaxon 11: 447, 1980.

Conferticium ochraceum (Fr. : Fr.) Hallenb., Mycotaxon 11(2): 448, 1980.

Descriptions. Hallenberg (1980) and Wu (1996).

Distribution. Known from Brazil, Europe, Japan, North America, Thailand (Maekawa 1994); Paraná (Meijer 2006).

Coniophora DC., in de Candolle & Lamarck, Flore Franç. 6: 34, 1815.

Coniophora arida (Fr. : Fr.) P. Karst., Not. Sällskapets pro Fauna et Flora Fenn. Förh. 9: 370, 1868.

Descriptions. Ginns (1982) and Gilbertson and Hemmes (1997).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Hjortstam and Bononi 1986a, 1987).

Cotylidia P. Karst., Rev. Mycol. 3(9): 22, 1881.

Cotylidia aurantiaca (Pat.) A.L. Welden, Lloydia 21: 40, 1958.

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Widespread and quite common in Tropical America (Reid 1965); Paraná, Rio Grande do Sul and Santa Catarina (Reid 1965; Meijer 2006).

Examined specimens. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional da Foz do Iguaçu, Trilha do Poço Preto, 12 December 2010, J.M. Baltazar 2426 (ICN). Ibid., Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2465 (ICN).

Crustodontia Hjortstam & Ryvarden, Synop. Fungoum 20: 36, 2005.

Crustodontia chrysocreas (Berk. & M.A. Curtis) Hjortstam & Ryvarden, Synop. Fungorum 20: 36, 2005.

≡ *Phlebia chrysocreas* (Berk. & M.A. Curtis) Burds. [as '*chrysocrea*'], Mycologia 67(3): 497, 1975.

= *Odontia flavoargillacea* Bres., Hedwigia 35: 957, 1896.

Descriptions. Lombard et al. (1975) and Yurchenko and Kotiranta (2011).

Distribution. Pantropical, rarely collected in Europe (Yurchenko and Kotiranta 2011); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2318 (ICN). Ibid., Rio Grande do Sul, São Francisco de Paula, CPCN PROMATA, 26 June 2010, J.M. Baltazar 2043 (ICN). Ibid., 10 November 2010, J.M. Baltazar 2295 (ICN). Ibid., Viamão, Parque Estadual de Itapuã, Praia da Pedreira, 16 October 2010, J.M. Baltazar 2183 (ICN).

Cylindrobasidium Jülich, Persoonia 8: 72, 1974.

Cylindrobasidium* cf. *torrendii (Bres.) Hjortstam, Mycotaxon 17: 571, 1983.

Description. Wu (1990).

Distribution. Known from Burundi, Canada, Colombia, France, Portugal, Malawi, South Africa, Spain, Tanzania, Taiwan, and USA (Wu 1990; Hjortstam and Ryvarden 2007a); if its determination is confirmed, this would be the first record from Brazil.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2790 (ICN).

Cymatoderma Jungh.,Tijdschr. Natuurl. Gesch. Physiol. 7: 290, 1840.

1a. Basidiome centrally stipitate, pileus infundibiliform, basidiospore subcylindric, 7.5–12 µm long ..... *C. caperatum*

1b. Basidiome sessile to pseudostipitate, pileus dimidiate to flabellate, basidiospore broadly ellipsoid to subglobose, (2.5–) 3–4 × (2–) 2.5–3 – (3.5) µm *C. dendriticum*

Cymatoderma caperatum (Berk. & Mont.) D.A. Reid, Kew Bull. 10: 635, 1956 ["1955"].

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Tropical and subtropical America (Reid 1965; Ryvarden 2010); Rio Grande do Sul and Santa Catarina (Reid 1965).

Cymatoderma dendriticum (Pers.) D.A. Reid, Kew Bull. 13(3): 523, 1959 ["1958"].

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Pantropical (Reid 1965; Ryvarden 2010); Paraná, Rio Grande do Sul and Santa Catarina (Reid 1965); Meijer (2006).

Examined specimens. BRAZIL. Santa Catarina, Florianópolis, Manguezal de Ratones, on unidentified hardwood, 31 May 2005, J.M. Baltazar 20 & L. Trierveiler-Pereira (FLOR). Ibid., Manguezal do Itacorubi, on *Avicennia schaueriana*, 24 February 2006, L. Trierveiler-Pereira 182 & J.M. Baltazar (FLOR). Ibid, on dead trunk of *Avicennia schaueriana*, 24 February 2006, L. Trierveiler-Pereira 189 & J.M. Baltazar (FLOR). Ibid., Manguezal do Saco Grande, on unidentified hardwood, 27 April 2006, J.M. Baltazar 199 & A. Regolin (FLOR).

Cyphellostereum D.A. Reid, Beih. Nova Hedwig. 18: 336, 1965.

Cyphellostereum pusiolum (Berk. & M.A. Curtis) D.A. Reid, Beih. Nova Hedwig. 18: 342, 1965.

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Pantropical (Reid 1965; Ryvarden 2010); Paraná and Santa Catarina (Reid 1965; Meijer 2006).

Cystidiodontia Hjortstam, Mycotaxon 17: 571, 1983, emend. Hjortstam & Ryvarden, Mycotaxon 25(2): 546, 1986.

Cystidiodontia laminifera (Berk. & M.A. Curtis) Hjortstam, Mycotaxon 39: 416, 1990.

= *Cystidiodontia artocreas* (Berk. & M.A. Curtis ex Cooke) Hjortstam, Mycotaxon 17: 571, 1983.

Descriptions. Hjortstam and Ryvarden (1986).

Distribution. Neotropical, but also reported from Taiwan (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2733 (CIEFAP). Ibid., Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 11 June 2010, J.M. Baltazar 1983 (ICN). Ibid., Porto Alegre, Morro Santana, 21 June 2010, J.M. Baltazar 2012 (ICN). Ibid., São Francisco de Paula, Hotel Veraneio Hampel, 27 March 2010, J.M. Baltazar 1771 (ICN).

Dacryobolus Fr., Summa Veg. Scand. 2: 404, 1849.

Dacryobolus sudans (Alb. & Schwein. : Fr.) Fr., Summa Veg. Scand. 2: 404, 1849.

Descriptions. Lindsey and Gilbertson (1983) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1755 (ICN).

Dendrocorticium M.J. Larsen & Gilb., Nor. J. Bot. 21(3): 225, 1974.

Dendrocorticium roseolum (Bres. ex Rick) Baltazar & Rajchenb., Phytotaxa 104(1): 49, 2013.

≡ *Asterostromella roseola* Bres. ex Rick, Brotéria. Ciências Nat. 7(34): 74, 1938.

Description. Baltazar et al. (2013).

Distribution. Known only for the type locality up to date.

Examined specimen. BRAZIL. Rio Grande do Sul, Santa Maria, 1935, J. Rick Fungi Rickiani 12053 (PACA, lectotype of *A. roseola*).

Dendrodontia Hjortstam & Ryvarden, Mycotaxon 10(2): 273, 1980.

= *Brunneocorticium* Sheng H. Wu, Mycologia 99(2): 303, 2007.

Dendrodontia bispora (Burds. & Nakasone) Guerrero & C. Rodrigues, Mycotaxon 122: 8, 2012.

≡ *Dendrothele bispora* Burds. & Nakasone, Mycotaxon 17: 253, 1983 ≡ *Brunneocorticium bisporum* (Burds. & Nakasone) Nakasone, Botany 87: 879, 2009.

= *Brunneocorticium pyriforme* Sheng H. Wu, Mycologia 99(2): 306, 2007.

Descriptions. Burdsall and Nakasone (1983) and Rodrigues and Guerrero (2012).

Distribution. Known from China, Guadeloupe, Mauritius, Reunion Is., Taiwan, USA, and Brazil; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrophora (Parmasto) Chamuris, Mycotaxon 28: 543, 1987.

Dendrophora albobadia (Schwein. : Fr.) Chamuris, Mycotaxon 28(2): 544, 1987.

= *Peniophora albobadia* (Schwein. : Fr.) Boidin, Rev. Mycol. 26(3): 164, 1961.

Descriptions. Gilbertson and Blackwell (1985) and Andreasen and Hallenberg (2009).

Distribution. Known from Argentina, Bermuda, Brazil, Colombia, Hawaii, Mexico, USA, Uruguay, and West Indies (Andreasen and Hallenberg 2009); Rio Grande do Sul (Maluf and Guerrero 1993), first record from Santa Catarina.

Examined specimen. BRAZIL. Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 11 June 2010, J.M. Baltazar 1983 (ICN). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on a dead trunk of *Avicennia schaueriana* Stapf & Leechm. ex Moldenke, 23 December 2005, L. Trierveiler-Pereia 104 et al. (FLOR). Ibid., on a dead trunk of *A. schaueriana*, 23 December 2005, L. Trierveiler-Pereia 123 et al. (FLOR).

Dendrothele Höhn. & Litsch., Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1 116: 819, 1907 [“1906”].

Key to species of *Dendrothele*, updated from Rodrigues and Guerrero (2012)

1a. Cystidia present 2
1b. Cystidia absent 4
2a. Cystidia capitate ..... *D. capitulata*
2b. Cystidia fusiform, subglobose, subclavate to ventricose 3
3a. Basidiospore ellipsoid, cystidia mostly fusiform ..... *D. alliacea*
3b. Basidiospore citriform to somewhat elongated, with a prominent distal peg and apiculus, cystidia subglobose, subclavate to ventricose ..... *D. triangulispora*
4a. Basidiospore asteriform with 3 projections or more ..... *D. asterospora*
4b. Basidiospore different 5
5a. Basidiospore lageniform ..... *D. syspora*
5b. Basidiospore globose to subglobose 6
6a. Hymenophore with projections ..... *D. griseocana*
6b. Hymenophore smooth 7

7a. Basidiospore >15 µm diam. ..... *D. mangiferae*

7b. Basidiospore <15 µm diam. ..... *D. incrustans*

Dendrothele alliacea (Quél.) P.A. Lemke, Persoonia 3(3): 366, 1965.

Descriptions. Bernicchia and Gorjón (2010) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil, Canada, Europe, Russia, South Africa, Uruguay, and USA; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele asterospora Boidin & Lanq., Bull. Soc. Mycol. Fr. 112(2): 94, 1996.

Descriptions. Boidin et al. (1996) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil, Central African Republic, Réunion (sub aff.); Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele capitulata Boidin & Lanq., Bull. Soc. Mycol. Fr. 112(2): 99, 1996.

Descriptions. Boidin et al. (1996) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil and Guadeloupe; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele griseocana (Bres.) Bourdot & Galzin, Bull. Soc. Mycol. Fr. 28: 354, 1913 ["1912"].

Descriptions. Nakasone (2006) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil, Canada, Europe, Mexico, Russia, Uruguay, USA; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele incrustans (P.A. Lemke) P.A. Lemke, Persoonia 3(3): 366, 1965.

Descriptions. Greslebin and Rajchenberg (1998) and Rodrigues and Guerrero (2012).

Distribution. Known from Argentina, Brazil, Canada, Guadeloupe, Russia, USA; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele mangiferae Boidin & Duhem, Bull. Soc. Mycol. Fr. 112(2): 106, 1996.

Descriptions. Gorjón (2012a) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil, Costa Rica, Mauritius, Reunion Is.; Rio Grande do Sul (Rodrigues and Guerrero 2012).

Dendrothele syspora C. Rodrigues & Guerrero, Mycotaxon 122: 18, 2012.

Descriptions. Rodrigues and Guerrero (2012).

Distribution. Known from three localities in Rio Grande do Sul, Southern Brazil (Rodrigues and Guerrero 2012).

"***Dendrothele triangulispora*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Asterostromella triangulispora* Rick, Iheringia, Bot. 4: 118, 1959.

Description. Baltazar et al. (2014a).

Distribution. Known only from the type locality in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Salvador,1943, J. Rick Fungi Rickiani 20115 (PACA, holotype of *A. triangulispora*).

Dentipellis Donk, Persoonia 2(2): 232, 1962.

Dentipellis leptodon (Mont.) Maas Geest., Persoonia 7(4): 558, 1974.

Description. Maas Gesteranus (1974).

Distribution. Known from Australia, Brazil, Chile (type locality), India, and Sri Lanka (Hjortstam and Ryvarden 2007a); Paraná (Meijer 2006).

Dentocorticium (Parmasto) M.J. Larsen & Gilb., Nor. J Bot. 21(3): 225.

Dentocorticium brasiliense M.J. Larsen & Gilb., Nor. J. Bot. 24: 117, 1977.

Description. Larsen and Gilbertson (1977).

Distribution. Known only from Brazil; Rio Grande do Sul (Hjortstam and Ryvarden 2007a).

Dichostereum Pilát, Ann. Mycol.: 223, 1926.

1a. Gloeocystidia narrower than 10 µm, basidiospore with small warts, thin-walled .... *D. pallescens*

1b. Gloeocystidia wider than 10 µm, basidiospore strongly warted, thick-walled in KOH ..... *D. peniophoroides*

Dichostereum pallescens (Schwein.) Boidin & Lanq., Mycotaxon 6(2): 284, 1977.

≡ *Vararia pallescens* (Schwein.) D.P. Rogers & H.S. Jacks., Farlowia 1: 310, 1943.

Descriptions. Welden (1965).

Distribution. Canada, India, West Indies, and USA (type locality) (Hjortstam and Ryvarden 2007a); first record from Brazil, found in Paraná and Santa Catarina.

Examined specimens. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2450 (ICN). Ibid., Santa Catarina, Santo Amaro da Imperatriz, Hotel Plaza Caldas da Imperatriz, Pousada da Mata, 18 September 2010, J.M. Baltazar 2125 (ICN).

Dichostereum peniophoroides (Burt) Boidin & Lanq., Mycotaxon 6(2): 284, 1977.

≡ *Vararia peniophoroides* (Burt) Rogers & Jacks., Farlowia 1: 294, 1943.

= *Asterostroma olivaceum* Rick, Brotéria. Ciências Nat. 3(30): 41, 1934.

Descriptions. Welden (1965) and Boidin and Lanquetin (1977).

Distribution. Brazil, Dominican Republic, Guadeloupe, India, Jamaica (type locality), Zimbabwe (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo, 1932, J. Rick Fungi Rickiani 12142 (PACA, lectotype of *A. olivaceum*).

Duportella Pat., Philipp. J. Sci., Section C, Bot. 10: 87, 1915.

Duportella kuehneri (Boidin & Lanq.) Hjortstam, Windahlia 17: 58, 1987.

Descriptions. Boidin et al. (1991) and Andreasen and Hallenberg (2009).

Distribution. Known from Brazil, Central African Republic (type locality), Ethiopia, Madagascar and Reunion Is. (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Maluf and Guerrero 1993).

Epithele (Pat.) Pat., Essai Tax. Hyménomycètes 59. 1900.

1a. Hyphal system monomitic, basidiospore 12–15 × (6–) 7.5–10 µm ..... *E. bambusina*

1b. Hyphal system dimitic, basidiospore larger 2

2a. Microbinding hyphae present, skeletal hyphae absent, basidiospore distinct biapiculate, citriform, broadly to narrowly ellipsoid, or subfusiform, rugulose to echinulate ..... *E. alba*

2b. Microbinding hyphae absent, skeletal hyphae present, basidiospore cylindrical, pip-shaped to subfusiform, smooth ..... *E. interrupta*

Epithele alba (Viégas) Boidin, Lanq. & Duhem, Bull. Soc. Mycol. France 112: 113, 1996.

Desciptions. Hjortstam and Ryvarden (2005) and Nakasone (2013).

Distribution. Known from Brazil (type locality) and Venezuela (Nakasone 2013); first record from Southern Brazil, found in Santa Catarina.

Examined specimens. BRAZIL. Santa Catarina, Joinville, Piraí, 15 November 2010, J.M. Baltazar 2368 (ICN).

Epithele bambusina Rick, Iheringia, Bot. 4: 87, 1959.

Description. Baltazar et al. (2014a).

Distribution. Known only from the type locality.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 16 August 1943, J. Rick Fungi Rickiani 12936 (PACA, holotype).

Epithele interrupta Bres., Bull. Jard. Bot. État Brux. 4: 25, 1914 ["1913"].

= *Dendrothele subfusispora* Burds. & Nakasone, Mycotaxon 17: 255, 1983.

≡ *Epithele subfusispora* (Burds. & Nakasone) Hjortstam & Ryvarden, Synop. Fungorum 20: 29, 2005.

Description. Burdsall and Nakasone (1983), Hjortstam and Ryvarden (2005) and Nakasone (2013).

Distribution. Known from Argentina, Brazil, Burundi, Central African Republic, Congo (type locality), South Africa, Taiwan, Thailand, USA (Florida), and Venezuela; Paraná (Nakasone 2013).

Examined specimens. BRAZIL. Paraná, Foz Do Iguaçu, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2446 (CIEFAP). Ibid., J.M. Baltazar 2447 (ICN). Ibid., J.M. Baltazar 2464 (ICN).

Remarks. This is a morphologically variable species, and here it is taken in a wide sense as in Nakasone (2013). See that author for a detailed discussion.

Fibrodontia Parmasto, Conspec. System. Corticiacearum: 174, 1968.

1a. Basidiospore globose to subglobose ..... *F. brevidens*

1b. Basidiospore ellipsoid, cyllindric to allantoid 2

2a. Basidiospore ellipsoid, 3.5–4 × 2.5–3 µm ..... *F. fimbriata*

2b. Basidiospore cyllindric to allantoid, 7–9 × 3.5–4.5 µm ..... *F. tomentosa*

Fibrodontia brevidens (Pat.) Hjortstam & Ryvarden, Synop. Fungorum 20: 54, 2005.

≡ *Hyphodontia brevidens* (Pat.) Ryvarden, Occas. Pap. Farlow Herb. Cryptog. Bot. 18: 9, 1983.

= *Odontia subraduloides* Rick, Egatea 17: 279, 1932.

Descriptions. Langer (1994a), Langer et al. (1995) and Nakasone (2003); see Yurchenko and Wu (2013a) for a discussion on morphological variation.

Distribution. Known from Borneo, Brazil, Colombia, Costa Rica, Ecuador (type locality), Guadeloupe, Rwanda, Uruguay, and Venezuela (Hjortstam and Ryvarden 2007a; Yurchenko and Wu 2013a); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2707 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2825 and 2835 (ICN). Ibid., São Leopoldo, 1932, J. Rick Fungi Rickiani 19996 (PACA, lectotype of *O. subraduloides*).

"***Fibrodontia fimbriata*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Cystidiodendron fimbriatum* Rick, Lilloa 9: 218, 1943.

= *Fibrodontia gossypina* Parmasto, Conspec. System. Corticiacearum: 207, 1968 ≡ *Hyphodontia gossypina* (Parmasto) Hjortstam, Mycotaxon 39: 416, 1990.

Descriptions. Langer (1994a), Langer et al. (1995) and Bernicchia and Gorjón (2010).

Distribution. Known from Brazil, Burundi, Costa Rica, Ethiopia, India, Malawi, Russia (type locality), Taiwan, Thailand, Vanuatu, and Zimbabwe (Hjortstam and Bononi 1986a, 1987; Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Paraná and Rio Grande do Sul.

Examined specimens. BRAZIL. Paraná, Céu Azul, Parque Nacional do Iguaçu, Trilha de visita técnica, 14 December 2012, J.M. Baltazar 2475 (ICN). Ibid., Foz do Iguaçu, Parque Nacional do Iguaçu, Trilha das Bananeirras, 13 December 2012, J.M. Baltazar 2470 (ICN). Ibid., Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2304 (ICN). Ibid., Rio Grande do Sul, Campo Bom, Mata do Lixão, 23 September 2010, J.M. Baltazar 2153 (ICN). Ibid., Riozinho, 10 May 2010, J.M. Baltazar 1814 (ICN). Ibid., São Franciso de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1745 (ICN). Ibid., São Salvador, 1933, J. Rick Fungi Rickiani 12812 (PACA, lectotype of *C. fimbriatum*).

Fibrodontia tomentosa (Berk. & M.A. Curtis) Hjortstam & Ryvarden, Synop. Fungorum 20: 55, 2005.

≡ *Hyphodontia tomentosa* (Berk. & Curtis) Hjortstam, Mycotaxon 39: 416, 1990.

= *Epithele nivea* Rick, Iheringia, Bot. 4: 87, 1959.

Descriptions. Langer (1994a) and Langer et al. (1995).

Distribution. Known from Brazil, Cuba (type locality), Panama, Venezuela (Langer 1994a; Langer et al. 1995; Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Rick 1959b), but we have not revised this record.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2778 and 2813 (ICN). Ibid. São Salvador, 1943, J. Rick Fungi Rickiani 12943 (PACA, holotype of *E. nivea*).

Gloeocystidiellum Donk, Medded. Nedl. Mycol. Ver. 18-20: 156, 1931, emend. Donk, Fungus 26: 8, 1956.

1a. Gloeocystidia 30–50 µm long, basidiospores (5.6–) 6.6–8.6 (–10) × 4–5.6 (–6.6) µm ..... *G. odontoides*

1b. Gloeocystidia 100–150 (–200) µm long, basidiospores up to 6.5 × 4 µm 2

2a. Generative hyphae thin to thick-walled (sometimes interpreted as skeletals), gloeocystidia thin-walled, basidiospores 3.5–5 × 2.5–3 µm ..... *G. stereoideum*

2b. Generative hyphae thin-walled, gloeocystidia thin to thick-walled towards the base, basidiospores 5–6.5 × 3.5–4 µm ..... *G. triste*

Gloeocystidiellum odontoides Khara, Indian Phytopathol. 41(1): 35, 1988.

Description. Khara (1988).

Distribution. Known from Paraná, Brazil (Meijer 2006) and the type locality in India (Khara 1988).

Gloeocystidiellum stereoideum (Rick) Ginns, Opera Bot. 61: 57, 1982.

≡ *Coniophora stereoidea* Rick, Brotéria. Ciências Nat. 3(30): 166, 1934.

= *Stereogloeocystidium alboverrucosum* Rick, Brotéria. Ciências Nat. 9(36): 82, 1940.

Description. Ginns (1973), but see also discussion in Baltazar et al. (2014a).

Distribution. Known only from the type locality in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo, August 1933, J. Rick Fungi Rickiani 14219 (PACA, lectotype of *C. stereoidea*). Ibid., 1938, J. Rick Fungi Rickiani 14748 (PACA, lectotype of *S. alboverrucosum*).

Gloeocystidiellum triste Hjortstam & Ryvarden, Mycotaxon 25(2): 553, 1986.

Description. Hjortstam and Ryvarden (1982).

Distribution. Known from Argentina (type locality); first record from Brazil, found in Paraná.

Examined specimen. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2311 (ICN).

Gloeodontia Boidin, Cah. Maboke 4(1): 22, 1966.

Key based on Telleria et al. (2008), see this paper for a key including all species accepted in *Gloeodontia*

1a. Aculei 3–5 mm long, basidiospores subglobose ..... *G. pyramidata*

1b. Aculei up to 2.5 mm long, basidiospores ellipsoid 2

2a. Aculei up to 0.5 mm long, basidiospores 6–7.5 × 4–4.5 µm ..... *G. americana*

2b. Aculei up to 2.5 mm long, basidiospores 3.5–4.5 × 2.5– µm ..... *G. discolor*

Gloeodontia americana Rajchenb., Nordic J. Bot. 7(5): 557, 1987.

Description. Rajchenberg (1987), but see also the discussion in Baltazar et al. (2014a).

Distribution. Known only for the type locality.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 14 August 1943, J. Rick Fungi Rickiani 20206 (PACA, holotype).

Gloeodontia discolor (Berk. & M.A. Curtis) Boidin, Cah. Maboke 4(1): 22, 1966.

Discriptions. Maekawa (1999) and Hjortstam and Ryvarden (2007c).

Distribution. Tropical and subtropical areas of Africa, North and South America, and Japan, type locality USA (Maekawa 1999); Paraná (Meijer 2006).

Gloeodontia pyramidata (Berk. & M.A. Curtis) Hjortstam, Windahlia 17: 58, 1987.

Description. Hjortstam (1990).

Dsitribution. Known from Brazil, Colombia, Cuba (type locality) and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Rick 1959b) and Santa Catarina (Bresadola 1896), but we have not revised these records.

Gloeopeniophorella Rick, Brotéria. Ciências Nat. 3(30): 47, 1934.

Gloeopeniophorella rubroflava Rick, Brotéria. Ciências Nat. 3(30): 47, 1934.

Descriptions. Boidin et al. (1997b) and Hjortstam and Ryvarden (2007c).

Distribution. Known from Brazil (type locality) and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Rick 1934, 1959a).

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo, 1932, J. Rick Fungi Rickiani 13485 (PACA, holotype).

Gloeoporus Mont., Ann. Sci. Nat. Bot. Ser. 2, 17: 126, 1842.

1a. Generative hyphae simple-septate 2

1b. Generative hyphae clamped 3

2a. Basidiome pileate, hymenophore pale red, purpuraceous to vinaceous, 2–6 pores per mm, cystidia present ..... *G. guerreroanus*

2b. Basidiome resupinate, hymenophore pale pinkish to ochraceous, 5–8 pores per mm, cystidia absent ..... *G. thelephoroides*

3a. Pores large, 2–3 per mm ..... *G. subambiguus*

3b. Pores small, above 4 per mm 4

4a. Dissepiments fertile, 4–6 (–7) pores per mm ..... *G. dichrous*

4b. Dissepiments sterile, 6–8 pores per mm ..... *G. phlebophorus*

Gloeoporus dichrous (Fr. : Fr.) Bres., Hedwigia 53(1): 74, 1913.

Descriptions. Ginns (1976), Ryvarden and Johansen (1980) and Corner (1989).

Distribution. Cosmopolitan, type locality in Sweden (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

Gloeoporus guerreroanus G. Coelho, R.M. Silveira & Rajchenb., Mycologia 98(5): 821, 2007 [“2006”].

Description. Coelho et al. (2006).

Distribution. Known only from the type locality in Rio Grande do Sul, Brazil.

Gloeoporus phlebophorus (Berk.) G. Cunn., New Zealand Dep. Sci. Ind. Res. Bull. 164: 110, 1965.

Descriptions. Cunningham (1965) and Corner (1989).

Distribution. Known from Australia, Java and New Zealand (type locality) (Hjortstam and Ryvarden 2007a); also reported from Paraná (Meijer 2006).

Gloeoporus subambiguus (Henn.) Ginns, Can. J. Bot. 54(1-2): 150, 1976.

Descriptions. Ginns (1976).

Distribution. Known only from Brazil; Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009)

Examined specimen. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2207 (ICN).

Gloeoporus thelephoroides (Hook.) G. Cunn., New Zealand Dep. Sci. Ind. Res. Bull. 164: 111, 1965.

Descriptions. Ryvarden and Johansen (1980) and Corner (1989).

Distribution. Pantropical, type locality in Peru (Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Grammothele Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 327, 1869 ["1868"].

Species of *Grammothele* share several morphological features with corticioid fungi, although they have a poroid hymenophore. For this reason, the genus has been included in some studies of corticioids like the revision by Larsson (2007).

Three species of *Grammothele* are reported from Southern Brazil: *G. fuligo* (Berk. & Broome) Ryvarden, *G. lineata* Berk. & M.A. Curtis and *G. subargentea* (Speg.) Rajchenb. Reck and Silveira (2009) treated these species and their paper is referred for a key for identification, descriptions and drawings.

Grammothelopsis Jülich, Bibl. Mycol. 85: 397, 1982 ["1981"].

As the latter, *Grammothelopsis* was also included in the revision of the corticioid genera by Larsson (2007). It includes species of polypores, although the type species has irregular, shallow pores according to Robledo and Ryvarden (2007). *Grammothelopsis*

bambusicola Ryvarden & de Meijer was described from Paraná, and *G. puiggarii* (Speg.) Rajchenb. & J.E. Wright was recently found in Santa Catarina (N. Tedy, unpubl. data). See Robledo and Ryvarden (2007) for a synopsis of the genus.

Hjortstamia Boidin & Gilles, Bull. Soc. Mycol. Fr. 118(2): 99, 2003 ["2002"].

1a. Cystidia hyaline to pale brown, 50–120 × 8–20 µm, basidiospores 5.5–7.5 µm long . ..... *H. crassa*

1b. Cystidia pale to dark brown, up to 70 × 15 µm, basidiospores up to 6 µm long 2

2a. Basidiome resupinate to rarely effuse-reflexed, hymenophore lilaceous, basidiospores oblong-ellipsoid to short-cyllindrical, rarely ellipsoid . *H. amethystea*

2b. Basidiome effuse-reflexed to pileate sessile, hymenophore pale to dark brown, basidiospores ellipsoid to rarely oblong-ellipsoid ..... *H. papyrina*

Hjortstamia amethystea (Hjortstam & Ryvarden) Boidin & Gilles, Bull. Soc. Mycol. Fr. 118(2): 99, 2003 ["2002"].

= *Porostereum amethysteum* Hjortstam & Ryvarden, Synop. Fungorum 4: 27, 1990.

Description. Hjortstam and Ryvarden (1990).

Distribution. Known only from Brazil (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Rio Grande do Sul and Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2725 (ICN). Ibid., Santa Catarina, Florianópolis, Manguezal do Saco Grande, on dead wood of *Avicennia schaueriana*, 22 December 2005, J.M. Baltazar 82 & L. Trierveiler-Pereira (FLOR).

Hjortstamia crassa (Lév.) Boidin & Gilles, Bull. Soc. Mycol. Fr. 118(2): 99, 2003 ["2002"].

= *Porostereum crassum* Hjortstam & Ryvarden, Synop. Fungorum 4: 29, 1990.

Descriptions. Hjortstam and Ryvarden (1990) and Boidin and Gilles (2002).

Distribution. Pantropical, type locality in Vietnam (Hjortstam and Ryvarden 2007a); first record from Brazil, found in Santa Catarina.

Examined specimens. BRAZIL. Santa Catarina, Florianópolis, Manguezal de Ratones, on dead wood of *Laguncularia racemosa*, 29 November 2005, J.M. Baltazar 43 & L. Trierveiler-Pereira (FLOR). Ibid., on dead wood of *Avicennia schaueriana*, 29 November 2005, J.M. Baltazar 48 & L. Trierveiler-Pereira (FLOR).

Hjortstamia papyrina (Mont.) Boidin & Gilles, Bull. Soc. Mycol. Fr. 118(2): 99, 2003 ["2002"].

= *Porostereum papyrinum* (Mont.) Hjortstam & Ryvarden, Synop. Fungorum 4: 45, 1990.

Descriptions. Hjortstam and Ryvarden (1990) and Boidin and Gilles (2002).

Distribution. Neotropical, type locality in Cuba (Hjortstam and Ryvarden 2007a); Santa Catarina (Bresadola 1896).

Hydnomerulius Jarosch & Besl, Plant Biol. 3(3): 447, 2001.

Hydnomerulius pinastri (Fr. : Fr.) Jarosch & Besl, Pl. Biol. 3(3): 448, 2001.

Descriptions. Cooke (1957) and Bernicchia and Gorjón (2010).

Distribution. Possibly cosmopolitan, type locality in Sweden (Hjortstam and Ryvarden 2007a); first record from Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2703 (CIEFAP). Ibid., J.M. Baltazar 2720 (CIEFAP).

Hymenochaete Lév., Ann. Sci. Nat., Bot. Ser. III 5: 150, 1846, nom. cons., non *Hymenochaeta* P. Beauv. ex T. Lestib. 1819 (*Cyperaceae*).

= *Cyclomyces* Kunze ex Fr., Linnaea 5:512, 1830, nom. rej.

= *Hydnochaete* Bres., Hedwigia 35(5):287, 1896.

Here we follow a modern circumscription of *Hymenochaete* based on phylogenetic studies (Wagner and Fischer 2002; He and Dai 2012; He and Li 2013; Baltazar et al. 2014c; Parmasto et al. 2014), which include species with poroid and hydnoid hymenophore, traditionally placed in *Cyclomyces* and *Hydnochaete*, additionally to species with smooth hymenophore.

Key to *Hymenochaete* s.l. species updated from Gomes-Silva et al. (2012)

The genera and sections given between brackets follow their traditional sense and do not reflect the phylogenetic relationships for the treated species.

1a. Hymenophore hydnoid or poroid 2

1b. Hymenophore smooth 4

2b. Hymenophore hydnoid (*Hydnochaete*) ..... *H. peroxydata*

2a. Hymenophore poroid (*Cyclomyces*) 3

3a. Pores 3–6 per mm, basidiospores 3.5–4 × 2–2.5 µm .....

..... *H. iodina* (Mont.) Baltazar & Gibertoni (not treated)

3b. Pores 7–9 per mm, basidiospores 2.5–3.5 × 1.5–2 µm .....

..... *H. porioides* T. Wagner & M. Fischer (not treated)

4a. Basidiomes stipitate (*Stipitochaete*) 5

4b. Basidiomes resupinate to pileate sessile (*Hymenochaete*) 6

5a. Hymenial setae 40–70 × 10–15 µm ..... *H. reniforme*

5b. Hymenial setae (75–) 100–175 (–200) × (7–) 8–15 (–20) µm ..... *H. damicornis*

6a. Context present 7

6b. Context absent 17

7a. Cortex present (sect. *Hymenochaete*) 8

7b. Cortex absent (sect. *Fultochaete* G.A. Escobar ex J.C. Léger) 13

8a. Hymenial dendrophyses present ..... *H. pinnatifida*

8b. Hymenial dendrophyses absent 9

9a. Cortex placed in the middle of the context ..... *H. leonina*

9b. Cortex basal 10

10a. Paraphysoid hyphae present in the hymenium ..... *H. luteobadia*

10b. Paraphysoid hyphae absent 11

11a. Setae without encrustations ..... *H. rubiginosa*

11b. Setae apically encrusted 12

12a. With two kinds of setae: 35–45 × 5–7 µm, projecting up to 25 µm above the hymenium; 50–75 × 9–15 µm, not projecting ..... *H. rigidula*

12b. With one kind of setae, 50–110 (–130) × 6–16 (–18) µm ... *Pseudochaete tabacina*

13a. Basidiomes pileate, effuse-reflexed to sessile ..... *H. rheicolor*

13b. Basidiomes resupinate 14

14a. Encrusted cystidia present in the hymenium ..... *H. anomala*

14b. Encrusted cystidia absent 15

15a. Reddish brown granules present among hyphae ..... *H. rhabarbarina*

15b. Reddish brown granules absent 16

16a. Paraphysoid hyphae present ..... *H. unicolor*

16b. Paraphysoid hyphae absent ..... *H. epichlora*

17a. Cortex present (sect. *Paragymnochaete* J.C. Léger) ..... *H. ustulata*

17b. Cortex absent (sect. *Gymnochaete* G.A. Escobar ex J.C. Léger) 18

18a. Dichophyses present, projecting up to 20 µm above the hymenium .....
..... *H. ceratophora*

18b. Dichophyses absent 19

19a. Setae encrusted 20

19b. Setae without encrustations 22

20a. Setae 70–85 µm long, projecting up to 65 µm above the hymenium ..... *H. cervina*

20b. Setae up to 75 µm long, projecting up to 45 µm above the hymenium 21

21a. Basidiomes 100–400 µm thick, hymenophore cracking ..... *H. corrugata*

21b. Basidiomes 25–70 µm thick, hymenophore even ..... *H. proxima*

22a. Basidiospores 6.5–7 µm long ..... *H. pratensis*

22b. Basidiospores up to 5 µm long 23

23a. Setae few, regularly spaced, basidiospores ellipsoid to oblong ellipsoid, 3–4 × 1.5–
2 µm ..... *H.* cf. *coffeana*

23b. Setae numerous, crowded, basidiospores suballantoid, 4–5.5 × 2–2.5 µm 24

24a. Setal layer formed by two or three rows of setae, setae conical to subulate .....
..... *H. minuscula*

24b. Setal layer formed by one row of setae arranged in various levels, setae lanceolate
with the apex slightly curved ..... *H. tenuis*

Hymenochaete anomala Burt, Ann. Missouri Bot. Gard. 5(4): 358, 1918.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Probably Neotropical, type locality in Cuba (Léger 1998; Parmasto 2001); Paraná (sub aff.), Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

Hymenochaete ceratophora D.J. Job, Rev. Investig. Agropecu. 20(1): 146, 1985.

≡ *Dichochaete ceratophora* (D.J. Job) Parmasto, Folia Cryptogam. Estonica 37: 56, 2001 ["2000"].

= *Hymenochaete alabastrina* G.A. Escobar ex J.C. Léger, Cryptogam. Mycol. 11(4): 294, 1990.

Descriptions. Léger (1998) and Parmasto (2000).

Distribution. Probably Neotropical, type locality in Argentina (Léger 1998; Parmasto 2000); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Hymenochaete cervina Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 334, 1869 ["1868"].

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Neotropical, but also known from New Zealand and Uruguay, type locality in Cuba (Léger 1998); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, Riozinho, 10 April 2010, on dead hardwood, J.M. Baltazar 1817 (ICN, CIEFAP).

Hymenochaete* cf. *coffeana J.C. Léger & Lanq., Cryptogam. Mycol. 15(1): 21, 1994.

Descriptions. Léger (1998).

Distribution. Known only from the type locality in Central African Republic (Léger 1998); it was found in Rio Grande do Sul and, if its identity is confirmed, it would be the first record of the species after its description.

Examined specimen. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2205 (ICN).

Remarks. Confrontation with African specimens is desirable to confirm the determination of the specimen gathered in Rio Grande do Sul.

Hymenochaete corrugata (Fr. : Fr.) Lév., Ann. Sci. Nat., Bot. Ser. III 5: 150, 1846.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Cosmopolitan (Léger 1998); Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado da estrada para o Salto Yucumã, 29 October 2010, J.M. Baltazar 2251 (ICN).

Hymenochaete damicornis (Link : Fr.) Lév., Ann. Sci. Nat., Bot. Ser. III 5: 151, 1846. ≡ *Stipitochaete damicornis* (Link : Fr.) Ryvarden, Trans. Brit. Mycol. Soc. 85(3): 537, 1985.

Descriptions. Ryvarden (1985), Léger (1998) and Parmasto (2001).

Distribution. Neotropical, type locality (neotype) in Brazil (Ryvarden 1985; Léger 1998); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Hennings 1897; Baltazar and Gibertoni 2009).

Hymenochaete epichlora (Berk. & M.A. Curtis) Cooke, Grevillea 8(48): 147, 1880.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Known from Argentina, Brazil, Java, Mexico, and USA (type locality) (Léger 1998); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Hymenochaete leonina Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 334, 1869 ["1868"].

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Neotropical, but also reported from India and the Himalayas, type locality in Cuba (Léger 1998); Rio Grande do Sul (Job 1985).

Examined specimens. BRAZIL. Santa Catarina, Florianópolis, Morro da Lagoa, 16 September 2010, on dead hardwood, J.M. Baltazar 2098 (ICN).

Hymenochaete luteobadia (Fr. : Fr.) Höhn. & Litsch., Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1 116: 750, 1907 ["1906"].

= *Hymenochaete kunzei* (Hook.) Massee, J. Linn. Soc., Bot. 27(181): 100, 1890.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Pantropical, but also reported from Australia, type locality in Suriname (Léger 1998); Rio Grande do Sul and Santa Catarina (Bresadola 1896; Job 1985).

Hymenochaete minuscula G. Cunn., Trans. Roy. Soc. New Zealand 85(1): 48, 1957.

Descriptions. Cunningham (1957) and Léger (1998).

Distribution. Known from Argentina, Brazil, Colombia, Jamaica, Reunion Is., and New Zealand (type locality) (Léger 1998); Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

"***Hymenochaete peroxydata*** (Berk. ex Cooke) Baltazar, Gorjón & Rajchenb.", nom prov.

≡ *Hydnum peroxydatum* Berk. ex Cooke, Grevillea 20(93): 1, 1891≡ *Hydnochaete peroxydata* (Berk. ex Cooke) Dennis, Kew Bull. Addit. Ser. 3: 105, 1970.

= *Hydnochaete badia* Bres., Hedwigia 35(5): 287, 1896.

Description. Ryvarden (1982).

Distribution. Known from Brazil (type locality) and Venezuela (Ryvarden 1982); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, Riozinho, 10 April 2010, on dead hardwood, J.M. Baltazar 1819 (ICN, CIEFAP). Ibid., São Francisco de Paula, CPCN PROMATA, 26 June 2010, on dead hardwood, J.M. Baltazar 2056 (ICN, CIEFAP). Ibid., Floresta Nacional de São Francisco de Paula, 07 November 2010, J.M. Baltazar 2286 (ICN). Ibid., Santa Catarina, Blumenau, 1894, A. Möller 211 (S, lectotype of *Hydnochaete badia*). Ibid., without date, A. Möller 268 (S, paratype of *Hydnochaete badia*). Ibid., without date, A. Möller (S). Without date and data of locality, A. Möller 801 (S, paratype of *Hydnochaete badia*). Ibid., Florianópolis, Unidade de Conservação Ambiental Desterro (UCAD), 17 September 2010, on dead hardwood, J.M. Baltazar 2102 (ICN, CIEFAP).

Hymenochaete pinnatifida Burt, Ann. Missouri Bot. Gard. 5(4): 355, 1918.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Pantropical and some subtropical areas, type locality in USA (Léger 1998); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Hymenochaete pratensis Viégas, Bragantia 5(4): 261, 1945.

Descriptions. Viégas (1945), Job (1990) and Léger (1998).

Distribution. Known only from Brazil (Léger 1998); Rio Grande do Sul (Job 1985).

Hymenochaete proxima Rick, Brotéria. Ciências Nat. 3 (30): 37, 1934.

Descriptions. Job (1990) and Léger (1998).

Distribution. Known only from Brazil (Léger 1998); Rio Grande do Sul (Job 1985).

Hymenochaete reniformis (Fr.) Lév, Ann. Sci. Nat., Bot. Ser. III 5: 151, 1846.

≡ *Stipitochaete reniformis* (Fr.) Ryvarden, Trans. Brit. Mycol. Soc. 85(3): 538, 1985.

Descriptions. Ryvarden (1985) and Léger (1998).

Distribution. Neotropical, neotype from Brazil (Léger 1998); Paraná and Rio Grande do Sul (Ryvarden 1985; Meijer 2006).

Hymenochaete rhabarbarina (Berk.) Cooke, Grevillea 8(48): 148, 1880.

Descriptions. Cunningham (1957) and Léger (1998).

Distribution. Tropical and subtropical areas, type locality in New Zealand (Léger 1998); Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

Hymenochaete rheicolor (Mont.) Lév, Ann. Sci. Nat., Bot. Ser. III 5: 151, 1846.

= *Hymenochaete sallei* Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 333 1869 ["1868"].

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Widespread in Asia, Central and South America and Oceania, type locality in India (Léger 1998); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Hennings 1897; Baltazar and Gibertoni 2009).

Hymenochaete rigidula Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 334, 1869 ["1868"].

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Neotropical, type locality in Cuba (Léger 1998); Rio Grande do Sul (Job 1985).

Hymenochaete rubiginosa (Dicks. : Fr.) Lév, Ann. Sci. Nat., Bot. Ser. III 5: 150, 1846.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Cosmopolitan, neotype from USA (Léger 1998); Rio Grande do Sul (Job 1985); first record from Paraná.

Examined specimens. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional do Iguaçu, Trilha do Poço Preto, 12 December 2010, J.M. Baltazar 2421 (ICN, CIEFAP).

Hymenochaete tenuis Peck, Annual Rep. N. Y. State Mus. Nat. Hist. 40: 57, 1887.

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. An American species, known from USA (lectotype locality) to Brazil (Léger 1998); Rio Grande do Sul (Job 1985).

Hymenochaete* aff. *unicolor Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10(46): 335, 1869 ["1868"].

Descriptions. Léger (1998) and Parmasto (2001).

Distribution. Known from the Neotropics, Japan and New Zealand, type locality in Cuba (Léger 1998); Rio Grande do Sul (Job 1985).

Hymenochaete ustulata G.A. Escobar ex J.C. Léger, Cryptogam. Mycol. 11(4): 309, 1990.

"*Hymenochaete ustulata*" G.A. Escobar, Contributions Towards Monogr. Neotrop. Species of *Hymenochaete*:206, 1978, nom. inval. (published in a thesis after January 1st, 1953).

Descriptions. Job (1990) and Léger (1998).

Distribution. Known only from Brazil (Léger 1998); Rio Grande do Sul (Job 1985).

Hyphoderma Wallr., Flora Cryptogamica Germaniae 2: 576, 1833.

See also the key for *Peniophorella*.

1a. Septate cystidia with clamped septa present ..... *H. setigerum*

1b. Septate cystidia absent 2

2a. Large masses of crystals formed in between the hymenophore, leptocystidia and lamprocystidia often present ..... *H. cinereoalbum*

2b. Masses of crystals absent, typical lamprocystidia absent, leptocystidia to subulate thick-walled cystidia present 3

3a. Cystidia subulate, thick-walled, smooth to slightly encrusted, basidiospores 7–8 (–9) × 4–4.5 µm ..... *H. acutatum*

3b. Cystidia as thin-walled leptocystidia, basidiospores above 8 µm in the largest dimension 4

4a. Basidiospores ellipsoid, 8–12 × 6–7 µm ..... *H.* cf. *lapponicum*

4b. Basidiospores subcylindrical to slightly curved, 4–7 µm wide 5

5a. Cystidia cylindrical to moniliform, 60–100 × 6–8 µm, basidiospores 9–12 × 3–4 µm ..... *H. litschaueri*

5b. Cystidia moniliform, 14–29 × 4.5–8 µm, basidiospores 13–16 × 4–5 µm ..... *H. molliusculum*

Hyphoderma acutatum Hjortstam & Ryvarden, Synop. Fungorum 23: 74, 2007.

Description. Hjortstam and Ryvarden (2007c).

Distribution. Known from Venezuela (type locality); first report from Brazil, being found in Paraná.

Examined specimen. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2315 (ICN).

"***Hyphoderma cinereoalbum*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Lloydella cinereoalba* Rick [as '*Lloydiella*'], Brotéria. Ciências Nat. 9(36): 89. 1940.

= *Hyphoderma variolosum* Boidin, Lanq. & Gilles in Bull. Trimest. Soc. Mycol. Fr. 107(3): 143. 1991.

Description. Boidin et al. (1991).

Distribution. Probably Pantropical (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimens. BRAZIL. Rio Grande do Sul, Rio Grande, 1936, J. Rick Fungi Rickiani 16949 (PACA, lectotype of *L. cinereoalba*).

Hyphoderma* cf. *lapponicum (Litsch.) Ryvarden, Rep. Kevo Subarc. Res. Stat. 8: 149, 1971.

Descriptions. Eriksson and Ryvarden (1975) and Galán et al. (1993).

Distribution. Argentina, Belgium, France, Norway, Spain, Sweden (type locality) (Galán et al. 1993; Bernicchia and Gorjón 2010); if confirmed its determination, it will be its first record from Brazil, found in Santa Catarina.

Examined specimen. BRAZIL. Santa Catarina, Florianópolis, Manguezal do Rio Tavares, on unidentified hardwood, 29 June 2006, L. Trierveiler-Pereira 262 & J.M. Baltazar (FLOR).

Remarks. *Hyphoderma lapponicum* is a rare species mainly known from Europe and reported once from Argentina by Galán et al. (1993). Morphological features of the studied specimen agree with the descriptions cited above, but confrontation with reference specimens is desirable to confirm its determination since this is a poorly known species.

Hyphoderma litschaueri (Burt) J. Erikss. & Å. Strid, in Eriksson & Ryvarden, Corticiaceae N. Eur. 3: 481, 1975.

Descriptions. Eriksson and Ryvarden (1975), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Probably cosmopolitan, type locality in USA (Maekawa 1994; Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009); first record from Paraná.

Examined specimens. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2317 (ICN, CIEFAP). Ibid., Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2715 (ICN, CIEFAP).

"***Hyphoderma molliusculum*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Radulum molliusculum* Rick, Egatea 17: 104, 1932.

Description. Baltazar et al. (2014a).

Distribution. Known only from Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo,1930, J. Rick Fungi Rickiani 18932 (PACA, lectotype of *R. molliusculum*). Ibid., 1931, J. Rick Fungi Rickiani 18944 (PACA). Ibid., Santa Maria, 1930, J. Rick Fungi Rickiani 18942 (PACA).

Hyphoderma setigerum (Fr. : Fr.) Donk, Fungus 27: 15, 1957.

= *Asterostroma chromoluteum* Rick, Brotéria. Ciências Nat. 3(30): 42, 1934.

= *Radulum molare* var. *sulphureum* Rick [as '*sulphurea'*], Iheringia, Bot. 5: 180, 1959.

Descriptions. Eriksson and Ryvarden (1975), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan, type locality in Sweden (Maekawa 1994; Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009); first record from Paraná.

Examined specimens. BRAZIL. Paraná, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2454 (ICN). Ibid., Rio Grande do Sul, Campo Bom, Mata do Lixão, 23 September 2010, J.M. Baltazar 2147 (ICN). Ibid., Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2214 (ICN). Ibid., Santa Maria, 1936, J. Rick Fungi Rickiani 12157 (PACA, neotype of *A. chromoluteum*). Ibid., São Leopoldo, 1937, J. Rick Fungi Rickiani 18925 (PACA, holotype of *R. molare* var. *sulphureum*).

Hyphodermella J. Erikss. & Ryvarden, Corticiaceae N. Eur. 4: 579, 1976.

Hyphodermella corrugata (Fr.) J. Erikss. & Ryvarden, Corticiaceae N. Eur. 4: 579, 1976.

= *Radulochaete flavoalutacea* Rick, Iheringia, Bot. 5: 184, 1959.

= *Radulum griseum* Rick, Iheringia, Bot. 5: 182, 1959.

= *Radulum subsulphureum* Rick in Iheringia, Bot. 5: 182, 1959.

= *Radulum tenue* Rick in Iheringia, Bot. 5: 183, 1959.

Descriptions. Eriksson and Ryvarden (1976), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Known from Africa, Asia, Europe (type locality in Norway), North and South America (Maekawa 1994; Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado da estrada para o Salto Yucumã, 29 October 2010, J.M. Baltazar 2240 (ICN). Ibid., Parecí, 1935, J. Rick Fungi Rickiani 18931 (PACA, holotype of *R. tenue*). Ibid., Santa Maria, 1935, J. Rick Fungi Rickiani 18938 (PACA, holotype of *R. griseum*). Ibid., São Salvador, 1943, . Rick Fungi Rickiani 20413 (PACA, holotype of *R. subsulphureum*). Ibid., 10 Jun 1944, J. Rick Fungi Rickiani 22530 (PACA, sub "*Cystidiodendron papilliforme*"). Ibid., 1944, J. Rick Fungi Rickiani 22626 (PACA, sub "*Neokneiffia sulphurella*"). Ibid., 1944, J. Rick Fungi Rickiani 22969 (PACA, holotype of *R. flavoalutacea*). Ibid., 17 Sep 1945, J. Rick Fungi Rickiani 20597, 20605, 20622 (PACA, all sub "*Cystidiodendron laetum*").

Hyphodontia J. Erikss., Symb. Bot. Ups. 16(1): 101, 1958.

= *Xylodon* (Pers.) Gray, Nat. Arrange. Br. Plants 1: 649, 1821.

= *Lyomyces* P. Karst., Bidr. Kännedom Finl. Nat. Folk 37: 153, 1882.

= *Lagarobasidium* Jülich, Persoonia 8(1): 84, 1974.

In its traditional sense, *Hyphodontia* groups species with usually grandinioid, odontioid to hydnoid hymenophore, hyphae with distintic to slightly thick walls and small,

semicircular clamps, and cylindrical to suburniform basidia (Gorjón 2012b). *Schizopora* Velen. is separated mainly due to its poroid hymenophore. On the other hand, great variability of cystidia and other sterile elements is found within *Hyphodontia* s.l. and, besides, some species show variation in basidiospore features such as shape, thickened walls and cyanophily (Gorjón 2013). Phylogenetic studies based on molecular data have shown that *Hyphodontia* is polyphyletic (Binder and Hibbett 2002; Larsson et al. 2006), and its division into smaller and tentatively more natural genera has been adopted (Hjortstam and Ryvarden 2002, 2009; Bernicchia and Gorjón 2010). *Hyphodontia* s. str. is characterized by the presence of both septo and lagenocystidia, and includes five species (Gorjón 2012b). Other genera are separated from *Hyphodontia* s. str. mainly on the basis of cystidial features. However, several species remain to be included in phylogenetic studies and because morphological features are not enough to properly place them in some of these genera, several authors have preferred to maintain *Hyphodontia* in its traditional sense (Xiong et al. 2009, 2010; Gorjón 2012b; Gorjón and Greslebin 2012; Yurchenko and Wu 2013b; Yurchenko et al. 2013).

In this work we adopt a conservative point o view and we treat most species of *Hyphodontia* s.l. as such in order to facilitate the use of this work as a tool for the study of corticoid fungi. In the same way, genus names proposed to split *Hyphodontia* were kept in the general key (see above). Exceptions were made for species of *Fibrodontia* and *Kneiffiella* because these genera are phylogenetically supported and somewhat well characterized morphologically.

Key to species of *Hyphodontia* s.l.

1a. Lagenocystidia present 2

1b. Lagenocystida absent, other kinds of cystidia present 3

2a. Basidiospores ellipsoid to ovoid, thin-walled, 4.5–6 ×3.5–4 µm ..... *H. arguta*

2b. Basidiospores globose to subglobose, thin to thick-walled, 3.5–4 (–4.5) ×3.5–4 µm . ..... *H. corticioidea*

3a. Two kinds of cystidia present: 1) numerous, thick-walled and encrusted cystidia; 2) rare, thin-walled and distinct capitate, basidiospores thick-walled ..... *H. rickii*

3b. Only one kind of cystidia present, if covered with crystals never heavily encrusted, basidiospores thin-walled 4

4a. Hymenophore smooth ..... *H. sambuci*

4b. Hymenophore with aculei 5

5a. Hymenophore irpicoid ..... *H. spathulata*

5b. Hymenophore grandinioid to odontioid 6

6a. Basidiome cream-colored to beige and with orange tints, cystidia (capitate) arising from subhymenium and hymenium, absent in the aculei, basidiospores subcylindrical to cylindrical ..... *H. rimosissima*

6b. Basidiome white to pale yellow, without orange tints, cystidia arising from subhymenium, hymenium and aculei, basidiospores ellipsoid to ovoid 7

7a. Basidiome white, capitate cystidia encrusted, 4–6 µm diam., basidiospores ellipsoid to ovoid ..... *H. fimbriata*

7b. Basidiome cream to pale yellow, cystidia hyphoid, less differentiated, with acute to obtuse apex, smooth, 3–4 µm diam., basidiospores ellipsoid ..... *H.* aff. *lutescens*

Hyphodontia arguta (Fr. : Fr.) J. Erikss., Symb. Bot. Ups. 16(1): 104, 1958.

Descriptions. Hjortstam (1983a), Langer (1994a) and Langer et al. (1995) and Maekawa (1994).

Distribution. Cosmopolitan, type locality (neotype) in Sweden (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Santa Maria, 14 May 2010, J.M. Baltazar 1891 (ICN).

Remarks. Previous records from Rio Grande do Sul by Hjortstam and Ryvarden (1982) and Rajchenberg (1987) correspond to *H. corticioidea*. This species belongs to *Hyphodontia* s. str.

"***Hyphodontia corticioidea*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Irpex corticioides* Rick, Iheringia, Bot. 5: 187. 1959.

= *Odontia chroospora* Rick, Iheringia, Bot. 5: 165. 1959.

= *Hyphodontia sphaerospora* (N. Maek.) Hjortstam, in Hjortstam & Ryvarden, Synop. Fungorum 15: 12. 2002.

Descriptions. Maekawa (1994) and Hjortstam and Ryvarden (2002).

Distribution. Known from Brazil (type locality), Ecuador, Japan and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2764 (ICN). Ibid. São Leopoldo, without date, J. Rick Fungi Rickiani 16667 (PACA, holotype of *I. corticioides*). Ibid., 1934, J. Rick Fungi Rickiani 20003 (PACA, holotype of *O. chroospora*).

Remarks. This species belongs to *Hyphodontia* s. str.

Hyphodontia crustosa (Pers. : Fr.) J. Erikss., Symb. Bot. Ups. 16(1): 104, 1958.

≡ *Xylodon crustosus* (Pers. : Fr.) Chevall. [as '*crustosum*'], Flore Générale des Env. Paris 1: 272, 1826.

= *Radulum abortivum* Rick, Ann. Mycol. 38(1): 57. 1940.

Descriptions. Langer (1994a) and Langer et al. (1995), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Known from Brazil, Cameroon, Colombia, Hawaii, India, Morocco, New Zealand, Sweden (type locality), Taiwan and USA (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Leopoldo, 1932, J. Rick *Fungi Rickiani* 18926 (PACA, lectotype of *R. abortivum*).

Hyphodontia fimbriata Sheng H. Wu, Acta Bot. Fenn. 142: 90, 1990.

≡ *Xylodon fimbriatus* (Sheng H. Wu) Hjortstam & Ryvarden, Synop. Fungorum 26: 43, 2009.

Descriptions. Wu (1990), Langer (1994a) and Langer et al. (1995).

Distribution. Known from Taiwan (type locality) and Venezuela (Hjortstam and Ryvarden 2007a); first record from Brazil, found in Paraná.

Examined specimens. BRAZIL. Paraná, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2467 (ICN).

Hyphodontia* aff. *lutescens Hjortstam & Ryvarden, Mycotaxon 25(2): 558, 1986.

≡ *Xylodon lutescens* (Hjortstam & Ryvarden) Hjortstam & Ryvarden, Synop. Fungorum 26: 38, 2009.

Description. Hjortstam and Ryvarden (1986).

Distribution. Known from Argentina (type locality) and Brazil (Hjortstam and Ryvarden 2007a); Paraná (Meijer 2006).

Remarks. Langer (1994a) did not accept this species in *Hyphodontia*, asserting that it should belong in *Hyphoderma*. Nonetheless, Hjortstam and Ryvarden (2009) transferred this species to *Xylodon* due to similarities with species of this genus.

Hyphodontia rickii (Hjortstam & Ryvarden) Gresl. & Rajchenb., Mycologia 92(6): 1161, 2000.

≡ *Hypochnicium rickii* Hjortstam & Ryvarden, Mycotaxon 15: 271, 1982 ≡ *Lagarobasidium rickii* (Hjortstam & Ryvarden) Hjortstam & Ryvarden, Synop. Fungorum 26: 46, 2009.

Description. Hjortstam and Ryvarden (1982), but see drawings and discussion on Gorjón (2012b).

Distribution. Known from Argentina, Brazil (type locality) and Tanzania (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL Rio Grande do Sul, São Salvador, 05 April 1944, J. Rick 208 47 (O, isotype of *Hypochnicium rickii*).

Hyphodontia rimosissima (Peck) Gilb., Evol. High. Basidiomycetes: 300, 1971.

≡ *Xylodon rimosissimus* (Peck) Hjortstam & Ryvarden, Syn. Fung. (Oslo) 26: 39, 2009.

Descriptions. Langer (1994a), Langer et al. (1995) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan, type locality in USA; Rio Grande do Sul (Rick 1959b), but we have not revised this record; first record from Paraná.

Examined specimen. BRAZIL. Paraná, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2461 (ICN).

Hyphodontia sambuci (Pers. : Fr.) J. Erikss., Symb. Bot. Ups. 16(1): 104, 1958.

≡ *Lyomyces sambuci* (Pers. : Fr.) P. Karst., Bidr. Kännedom Finl. Nat. Folk 37: 153, 1882 ≡ *Hyphoderma sambuci* (Pers. : Fr.) Jülich, Persoonia 8(1): 80, 1974.

Descriptions. Langer (1994a), Langer et al. (1995), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan, type locality in France (Hjortstam and Ryvarden 2007a); Santa Catarina (Trierveiler-Pereira et al. 2009).

Examined specimen. BRAZIL. Santa Catarina, Florianópolis, Manguezal do Rio Tavares, on dead *A. schauerianna*, 05 August 2006, L. Trierveiler-Pereira 301 et al (FLOR).

Hyphodontia spathulata (Schrad. : Fr.) Parmasto, Conspec. System. Corticiacearum: 123, 1968.

≡ *Xylodon spathulatus* (Schrad. : Fr.) Kuntze, Rev. Generum Plant. 3: 541, 1898.

Descriptions. Langer (1994a), Langer et al. (1995) and Maekawa (1994).

Distribution. Argentina, Brazil, Canary Islands, Ethiopia, Europe (neotype from Sweden) India, USA, Taiwan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Paraná, Matinhos, 13 November 2010, J.M. Baltazar 2303 (ICN). Ibid., Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 11 June 2010, J.M. Baltazar 1977 (ICN). Ibid., Riozinho, 10 May 2010, J.M. Baltazar 1803 (ICN).

Hyphodontiastra Hjortstam, Kew Bull. 54(3): 755, 1999.

Hyphodontiastra virgicola Hjortstam & Melo [as '*virgaecola*'], Kew Bull. 54(3): 756, 1999.

Description. Hjortstam (1999).

Distribution. Previously known only from Brazil (Hjortstam 1999); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2752 (ICN).

Hypochnella J. Schröt., in Cohn, Kryptogamen-Flora von Schles. 3(1): 420, 1888.

Hypochnella verrucispora G. Coelho, Douanla-Meli, G. Langer & E. Langer [as '*verrucospora*'], Mycologia 102(5): 1159, 2010.

Description. Coelho et al. (2010).

Distribution. Known from Argentina and Brazil (type locality); Rio Grande do Sul (Coelho et al. 2010).

Hypochnicium J. Erikss., Symb. Bot. Ups. 16(1): 100, 1958.

= *Nodotia* Hjortstam, Mycotaxon 28: 33, 1987.

1a. Cystidia subulate, smooth to slightly encrusted, basidiospores 5 × 4 µm .... *H. cymosum*

1b. Cystidia skeletoid, usually heavily encrusted, basidiospores 7.27–9.7 × 6.3–7.27 µm ..... *H. horridulum*

Hypochnicium cymosum (D.P. Rogers & H.S. Jacks.) K.H. Larss. & Hjortstam, Mycotaxon 5(2): 477, 1977.

= *Kneiffia grisea* Rick, Brotéria. Ciências Nat. 3(30): 74. 1934, nom. illeg. (non Berk. & M.A. Curtis 1868) ≡ *Peniophora grisea* (Rick) Rick, Iheringia, Bot. 4: 110. 1959.

Descriptions. Jackson (1948) and Hjortstam and Larsson (1977).

Distribution. Known from Brazil, Canada (type locality) and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimen. BRAZIL Rio Grande do Sul, São Salvador, 1939, J. Rick Fungi Rickiani 16874 (PACA, neotype of *K. grisea* Rick).

"***Hypochnicium horridulum*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Radulum horridulum* Rick, Egatea 17: 102, 1932.

= *Hypochnicium gomezii* S.E. López & J.E. Wright, Mycotaxon 23: 439, 1985 ≡ *Nodotia gomezii* (S.E. López & J.E. Wright) Hjortstam & Ryvarden, Synop. Fungorum 18: 18, 2004.

Description. López and Wright (1985).

Distribution. Known from Argentina, Brazil and Venezuela (Hjortstam and Ryvarden 2004a; Baltazar et al. 2014a); Paraná and Rio Grande do Sul.

Examined specimens. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2309 (ICN, CIEFAP). Ibid., Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2746, 2754 (ICN, CIEFAP). Ibid., Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2711 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 29 April 2012, J.M. Baltazar 2796 (ICN, CIEFAP). Ibid., São Leopoldo, 1931, J. Rick Fungi Rickiani 18957 (PACA, lectotype of *R. horridulum*).

Intextomyces J. Erikss. & Ryvarden, Corticiaceae N. Eur. 4: 735, 1976.

Intextomyces umbrinus (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 279, 1980.

Description. Hjortstam and Ryvarden (1980).

Distribution. Known only from the type locality in Santa Catarina, Brazil (Hjortstam and Ryvarden 2007a). Rick (1959b) reported the species from Rio Grande do Sul, but this record was not revised up to date.

Irpex Fr. : Fr., Syst. Orb. Veg. 1: 81, 1825.

Irpex lacteus (Fr. : Fr.) Fr., Elenchus Fungorum 145, 1828.

Descriptions. Maas Gesteranus (1974) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan, type locality in Sweden (Ryvarden and Gilbertson 1993); Paraná, Santa Catarina and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Kneiffiella Underw., Bull. Torrey Bot. Club 24: 205, 1897.

= *Chaetoporellus* Bondartsev & Singer, in Singer, Mycologia 36(1): 66, 1944.

1a. Tramacystidia thin-walled, basidiospores narrowly allantoid ..... *K. curvispora*

1b. Tramacystidia thick-walled towards the base, basidiospores subglobose, ellipsoid to cylindrical 2

2a. Subicular hyphae simple-septate with scattered clamps, subhymenial hyphae regularly clamped, basidiospores ellipsoid to subglobose, 3.7–5 × 2.5–3.5 µm .... *K. stereicola*

2b. All hyphae clamped, basidiospores ellipsoid to cylindrical 3

3a. Tramacystidia 5–8 µm diam. at the apex and 3–4 µm diam., projecting up to 60 µm above the hymenium, basidiospores 2.5–4.5 × 1.5–2.5 µm ..... *K. microspora*

3b. Tramacystidia up to 14 µm diam., not projecting, basidiospores 4–5.5 × 2.5–3 µm ... . "*K. palmae*"

Kneiffiella curvispora (J. Erikss. & Hjortstam) Jülich & Stalpers, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Reeks 74: 134, 1980.

≡ *Hyphodontia curvispora* J. Erikss. & Hjortstam, Sven. Bot. Tidskr. 63(2): 224, 1969 ≡ *Chaetoporellus curvisporus* (J. Erikss. & Hjortstam) J. Erikss. & Hjortstam, Corticiaceae N. Eur. 4: 561, 1976.

Descriptions. Eriksson and Ryvarden (1976), Langer (1994a) and Langer et al. (1995).

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Hotel Veraneio Hampel, 07 November 2010, J.M. Baltazar 2283 (ICN).

Kneiffiella microspora (J. Erikss. & Hjortstam) Jülich & Stalpers, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Reeks 74: 130, 1980.

≡ *Hyphodontia microspora* J. Erikss. & Hjortstam, Corticiaceae N. Eur. 4: 651, 1976.

Descriptions. Langer (1994a), Langer et al. (1995), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Probably cosmopolitan, type locality in USA (Maekawa 1994; Hjortstam and Ryvarden 2007a); Paraná (Langer 1994a).

Examined specimen. BRAZIL. Paraná, Paranaguá, Morro Inglês, 13 November 2010, J.M. Baltazar 2352 (ICN).

Remarks. See discussion under "*K. palmae*".

"*Kneiffiella palmae*" (Rick ex E. Langer) Hjortstam & Ryvarden, Synop. Fungorum 26: 45, 2009, nom. inval. (basionym invalid).

"*Odontia palmae*" Rick, Iheringia, Bot. 5: 163, 1959, nom. inval. (no holotype).

"*Hyphodontia palmae*" Rick ex E. Langer, Bibl. Mycol. 154: 177, 1994, nom. inval. (basionym invalid).

Descriptions. Langer (1994a) and Langer et al. (1995).

Distribution. Known only from Rio Grande do Sul, Brazil (Hjortstam and Ryvarden 2007a).

Remarks. Rick (1959b) proposed "*O. palmae*" but cited no specimens, thus the name was not validly published. Later, Langer (1994a) proposed a new name (i.e., "*H. palmae*"), which is also invalid because he cited "*O. palmae*" as basionym. He also selected a lectotype, but this did not help to validate neither "*O. palmae*" nor "*H. palmae*". In the same way, the new combination "*K. palmae*" proposed by Hjortstam and Ryvarden (2009) is also invalid.

Kneiffiella stereicola (Bres.) Nakasone, Cryptogam. Mycol. 29(3): 252, 2008.

= *Irpex furfuraceovelutinus* Rick, Iheringia, Bot. 5: 188, 1959 ≡ *Phanerochaete furfuraceovelutinus* (Rick) Rajchenb., Nordic. J. Bot. 7(5): 556, 1987.

= *Odontia crassa* Rick, Egatea 17: 279, 1932 ≡ *Kneiffiella crassa* (Rick) Hjortstam & Ryvarden, Synop. Fungorum 15: 14, 2002.

= *Hyphodontia orasinusensis* Gilb. & M. Blackw., Mycotaxon 33: 382, 1988.

Descriptions. Langer (1994a), Langer et al. (1995) and Nakasone (2008, 2012).

Distribution. Known from Brazil (type locality), Colombia, French Guiana, United States, Venezuela; Rio Grande do Sul (Nakasone 2008).

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo, 1933, J. Rick Fungi Rickiani 19888 (PACA, neotype of *O. crassa*). Ibid., 1939, J. Rick Fungi Rickiani 16597 (PACA, holotype of *I. furfuraceovelutinus*).

Laxitextum Lentz, U. S. Dep. Agric. Monogr. 24: 18, 1956 [“1955”].

Laxitextum bicolor (Pers. : Fr.) Lentz, U. S. Dep. Agric. Monogr. 24: 19, 1956 [“1955”].

≡ *Thelephora bicolor* Pers. : Fr., Syst. Mycol. 1: 438, 1821.

Descriptions. Lentz (1956), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, CPCN PROMATA, 08 November 2010, J.M. Baltazar 2297 (ICN). Ibid., Santa Catarina, Alfredo Vagner, 19 April 2008, A. Gerlach 82 (FLOR).

Leptosporomyces Jülich, Willdenowia, Beih. 7: 192, 1972.

Leptosporomyces galzinii (Bourdot) Jülich, Willdenowia, Beih. 7: 192, 1972.

Descriptions. Eriksson and Ryvarden (1976) and Bernicchia and Gorjón (2010).

Distribution. Known from Argentina, Canada, Europe (type locality in France), Morocco, and USA (Jülich 1972; Hjortstam and Ryvarden 2007a); first record from Brazil, found in Paraná.

Examined specimen. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2322 (ICN).

Licrostroma P.A. Lemke, Can. J. Bot. 42: 762, 1964.

Licrostroma subgiganteum (Berk.) P.A. Lemke, Can. J. Bot. 42: 762, 1964.

Descriptions. Lemke (1964) and Ryvarden (2010).

Distribution. Known from Cuba, Japan and USA (type locality) (Hjortstam and Ryvarden 2007a; Ryvarden 2010); first record from Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1737 (ICN, CIEFAP).

Additional examined specimen. USA. Tennessee, Blount Co., Great Smoky Mountains National Park, Cades Cove, 15 August 1988, M. Rajchenberg et al. 4630 (CIEFAP).

Remarks. The examined specimen has dextrinoid skeleto-binding hyphae, a feature which was neither described for the species nor was observed in the reference specimen. At the time being, it is not possible to be sure whether this is a variable feature in the species.

Lopharia Kalchbr. & MacOwan, Grevillea 10(54): 58, 1881.

Lopharia cinerascens (Schwein.) G. Cunn., Trans. Roy. Soc. New Zealand 83(4): 622, 1956.

= *Lloydella cretacea* Rick [as '*Lloydiella*'], Brotéria. Ciências Nat. 9(36): 86. 1940.

= *Lloydella retiruga* var. *griseorubra* Rick [as '*retirugis*'], Iheringia, Bot. 4: 76. 1959.

Descriptions. Hjortstam and Ryvarden (1990) and Boidin and Gilles (2002).

Distribution. Known from North and South America, Portugal and tropical Africa (Hjortstam and Ryvarden 2007a; Ryvarden 2010); Paraná, Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009; Trierveiler-Pereira et al. 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Riozinho, 10 May 2010, J.M. Baltazar 1801 (ICN). Ibid., São Franciso de Paula, Floresta Nacional de São Francisco de Paula, 24 Mary 2010, J.M. Baltazar 1926 (ICN). Ibid., São Leopoldo, 1932, J. Rick Fungi Rickiani 16990 (PACA, lectotype of *L. cretacea*). Ibid., 1939, J. Rick Fungi Rickiani 16964 (PACA, holotype of *L. retiruga* var. *griseorubra*, sub '*Lloydiella grisea-cerea*' Rick). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on an unidentified dead wood, 07 July 2005, L. Trierveiler-Pereira 43A et al. (FLOR). Ibid., on dead *A. schauerianna*, L. Trierveiler-Pereira 57 & J.M. Baltazar. 26 October 2005 (FLOR). Ibid., on dead trunk of *A. schauerianna*, 26 October 2005, L. Trierveiler-Pereira 60 & J.M. Baltazar (FLOR). Ibid., Manguezal do Rio Tavares, on dead trunk of *A. schauerianna*, 22 July 2006, L. Trierveiler-Pereira 279 & J.M. Baltazar (FLOR). Ibid., Manguezal do Saco Grande, on dead trunk of *L. racemosa*, 22 December 2005, J.M. Baltazar 87 & L. Trierveiler-Pereira (FLOR).

Megalocystidium Jülich, Persoonia 10(1): 139, 1978.

Megalocystidium chelidonium (Pat.) Boidin, Lanq. & Gilles, Bull. Soc. Mycol. Fr. 113: 62, 1997.

Descriptions. Boidin et al. (1997b) and Hjortstam and Ryvarden (2007b, c).

Distribution. Known from Costa Rica, Guadeloupe (type locality), Venezuela, and the Virgin Islands (Hjortstam and Ryvarden 2007a); first record from Rio Grande do Sul, but see discussion below.

Examined specimen. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado da Estrada do Porto Garcia, 30 October 2010, J.M. Baltazar 2266 (ICN).

Remarks. This species is morphologically very similar to *M. luteocystidiatum* (P.H.B. Talbot) Sheng H. Wu which, according to Boidin et al. (1997b), occurs in Africa and differs from *M. chelidonium* by being homothallic (heterothallic bipolar in

M. chelidonium). Reports of *M. luteocystidiatum* from Paraná (Meijer 2006) and São Paulo (Hjortstam and Bononi 1986a) could be *M. chelidonium*.

Mycobonia Pat. 1894, Bull. Soc. Mycol. Fr. 10(2): 76, 1894.

Key from Gerlach and Loguercio-Leite (2011).

1a. Basidiospores ovoid-ellipsoid, (6–) 7–10 µm wide ..... *M. brunneoleuca*

1b. Basidiospores fusoid-ellipsoid, 5–7 µm wide ..... *M. flava*

Mycobonia brunneoleuca (Berk. & M.A. Curtis) Pat., Essai Tax. Hyménomycètes: 75, 1900.

Descriptions. Reid (1976).

Distribution. Central and South America (Reid 1976); Santa Catarina (Gerlach and Loguercio-Leite 2011).

Mycobonia flava (Sw. : Fr.) Pat., Bull. Soc. mycol. Fr. 10(2): 77, 1894.

Descriptions. Jülich (1976), Corner (1984) and Ryvarden (2010).

Distribution. Neotropical (type locality in Jamaica), but also reported from Borneo (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2793 and 2799 (ICN).

Remarks. The studied specimens show a variable dextrinoid reaction in the hyphal pegs. Jülich (1976) and Reid (1976) cited that none of their specimens presented a reaction in Melzer's reagent. At the time being we prefer to regard this feature as an intraspecific variation.

Mycorrhaphium Maas Geest., Persoonia 2(3): 394, 1962.

Mycorrhaphium adustulum (Banker) Ryvarden, Mem. N. Y. Bot. Gard. 49: 346, 1989.

≡ *Steccherinum adustulum* Banker, Mem. Torrey Bot. Club 12: 133, 1906.

Descriptions. Banker (1906), but see key in Ryvarden (1989).

Distribution. Previously known only from USA; first record from Brazil, found in Paraná.

Examined specimen. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional do Iguaçu, Trilha do Poço Preto, 12 December 2010, J.M. Baltazar 2416 (ICN).

Oliveonia Donk, Fungus, 28: 20, 1958.

Oliveonia fibrillosa (Burt) Donk, Fungus 28: 20. 1958.

= *Hypochnus anceps* Rick, Iheringia, Bot. 5: 129. 1959.

= *Oliveonia subfibrillosa* Hallenb., Mycotaxon 11(2): 456, 1980.

Descriptions. Hallenberg (1980) and Roberts (1999).

Distribution. Cosmopolitan (Roberts 1999); first record from Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, without date, J. Rick Fungi Rickiani 13636 (PACA, holotype of *H. anceps*).

Parvodontia Hjortstam & Ryvarden, Synop. Fungorum 18: 28, 2004.

"***Parvodontia albocrustacea*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Asterostromella olivaceo-oxydata* var. *albocrustacea* Rick, Brotéria. Ciências Nat. 7(34): 73. 1938.

= *Parvodontia luteocystidia* Hjortstam & Ryvarden, Synop. Fungorum 18: 28. 2004.

Descriptions. Hjortstam and Ryvarden (2004b) and Baltazar et al. (2014a).

Distribution. Known only from Brazil; Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Parecí, 1935, J. Rick Fungi Rickiani 12047 (PACA, holotype of *A. olivaceo-oxydata* var. *albocrustacea*, sub '*Asterostromella albo-crustacea* Rick').

Peniophora Cooke, Grevillea 8(45): 20, 1879.

1a. Hyphae simple-septate ..... *P. gomezii*

1b. Hyphae clamped 2

2a. Gloeocystidia few or inconspicuous 3

2b. Gloeocystidia present and usually distinct 4

3a. Lamprocystidia 15–25 × 5–10 µm, basidiospores 7–9 (–10) × 2–3 µm .... *P. cinerea*

3b. Lamprocystidia 20–53 × 7–14 (–17) µm, basidiospores (11.5–) 12–14.5 (–16) × 3.5–5.5 (–6) µm ..... *P. conspersa*

4a. Hyphae and cystidia always hyaline, basidiospores 8–12 × 3.5–5 µm ... *P. incarnata*

4b. Hyphae and cystidia hyaline to brownish, basidiospores up to 8 (–9) × 3 µm 5

5a. Basidiome at first whitish to cream, then pale orange, becoming brownish to ochraceous with age, subiculum loosely arranged, hyphae easily distinguish, gloeocystidia 45–65 µm long ..... *P. carneorosea*

5b. Basidiome pinkish grey to violaceous grey, becoming bluish violaceous, subicular hyphae compactly arranged, usually difficult to discern, gloeocystidia 50–100 µm long ..... *P.* cf. *pithya*

"***Peniophora carneorosea*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Hypochnus carneoroseus* Rick, Brotéria. Ciências Nat. 3(30): 152. 1934.

= *Peniophora laxitexta* C.E. Gómez, in Gómez & Loewenbaum, Darwiniana 20(1–2): 195, 1976.

Descriptions. Gómez and Loewenbaum (1976) and Andreasen and Hallenberg (2009).

Distribution. Known from Argentina and Brazil; Paraná and Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2756 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1758 (ICN). Ibid., 30 April 2012, J.M. Baltazar 2774 and 2810 (ICN). Ibid., CPCN PROMATA, 26 June 2010, J.M. Baltazar 2051 (ICN). Ibid., São Leopoldo, 1931, J. Rick Fungi Rickiani 13645 (PACA, holotype of *H. carneoroseus*). Ibid., Santa Catarina, Santo Amaro da Imperatriz, Hotel Plaza Caldas da Imperatriz, Pousada da Mata, 18 September 2010, J.M. Baltazar 2135 (ICN).

Peniophora cinerea (Pers. : Fr.) Cooke, Grevillea 8(45): 20, 1879.

Descriptions. Maekawa (1994), Bernicchia and Gorjón (2010) and Andreasen and Hallenberg (2009).

Distribution. Cosmopolitan, type locality in Norway (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009), but we could not check these records.

"***Peniophora conspersa*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Cytidia conspersa* Rick [as '*Cytidea*'], Iheringia, Bot. 4: 114, 1959.

Descriptions. Baltazar et al. (2014a).

Distribution. Known only from the type locality in Rio Grande do Sul, Brazil.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 1943, J. Rick Fungi Rickiani 12823a (PACA, holotype of *C. conspersa*).

"***Peniophora gomezii*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Crystallocystidium tenue* Rick, Brotéria. Ciências Nat. 9(36): 141, 1940.

= *Peniophora confusa* C.E. Gómez in Gómez & Loewenbaum, Darwiniana 20(1–2): 205, 1976.

Descriptions. Gómez and Loewenbaum (1976) and Andreasen and Hallenberg (2009).

Distribution. Known from Argentina, Brazil, Colombia and Uruguay (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Hotel Veraneio Hampel, 27 March 2010, J.M. Baltazar 1774 (ICN).

Peniophora incarnata (Pers. : Fr.) P. Karst., Hedwigia 28(1): 27, 1889.

Descriptions. Maekawa (1994), Bernicchia and Gorjón (2010) and Andreasen and Hallenberg (2009).

Distribution. Cosmopolitan, type locality in Sweden (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009), but we could not check this records.

Peniophora* cf. *pithya (Pers.) J. Erikss., Symb. Bot. Ups. 10(5): 45, 1950.

Descriptions. Maekawa (1994), Bernicchia and Gorjón (2010) and Andreasen and Hallenberg (2009).

Distribution. Cosmopolitan, type locality in Switzerland (Hjortstam and Ryvarden 2007a); if confirmed, this determination would be the first record from South America, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2196 (ICN). Ibid., Lajeado da estrada para o Salto Yucumã, 29 October 2010, J.M. Baltazar 2234 (ICN).

Peniophorella P. Karst., Bidr. Kännedom Finl. Nat. Folk 48: 427, 1889.

1a. Hymenophore odontioid, cystidia smooth ..... *P. rude*

1b. Hymenophore smooth, cystidia encrusted 2

2a. Lamprocystidia cylindrical, apex obtuse, only slightly thick-walled, up to 80 µm long ..... *P.* cf. *guttulifera*

2b. Lamprocystidia conical, distinct thick-walled, up to 150 µm long ..... *P. pubera*

Peniophorella* cf. *guttulifera (P. Karst.) K.H. Larss., Mycol. Res. 111(2): 192, 2007.

≡ *Hyphoderma guttuliferum* (P. Karst.) Donk, Persoonia 2(2): 223, 1962.

Descriptions. Eriksson and Ryvarden (1975) and Bernicchia and Gorjón (2010).

Distribution. Previously known only from the Northern Hemisphere, type locality in Sweden (Nakasone 1990); if confirmed, this determination would be the first record from South America, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Viamão, Parque Estadual de Itapuã, Praia da Pedreira, Trilha da Fortaleza, 16 October 2010, J.M. Baltazar 2181 (ICN).

Peniophorella pubera (Fr. : Fr.) P. Karst., Bidr. Kännedom Finl. Nat. Folk 48: 427, 1889.

≡ *Hyphoderma puberum* (Fr. : Fr.) Wallr., Flora Cryptogamica Germaniae 2: 576, 1833.

Descriptions. Eriksson and Ryvarden (1975), Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Probably cosmopolitan, type locality in Sweden (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009), first record from Paraná.

Examined specimens. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional da Foz do Iguaçu, Trilha do Poço Preto, 12 December 2010, J.M. Baltazar 2436 (ICN). Ibid., Matinhos, 13 November 2010, J.M.

Baltazar 2333 (ICN). Ibid., Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2812 (CIEFAP). Ibid., ipse, J.M. Baltazar 2814 (ICN).

Peniophorella rude (Bres.) K.H. Larss., Mycol. Res. 111(2): 192. 2007.

≡ *Hyphoderma rude* (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 275, 1980.

= *Irpex arborescens* Rick, Iheringia, Bot. 5: 191, 1959.

= *Hyphoderma odontiiforme* Boidin & Berthier [as '*odontiaeforme*'], Cah. de La Maboké 4(1): 43, 1966

≡ *Peniophorella odontiiformis* (Boidin & Berthier) K.H. Larss. [as '*odontiaeformis*'], Mycol. Res. 111(2): 192, 2007.

= *Hyphoderma crystallophorum* Gilb. & Adask., Mycotaxon 49: 374, 1993.

Descriptions. Hjortstam and Ryvarden (1980), Maekawa (1994) and Nietiedt and Guerrero (1998).

Distribution. Pantropical, type locality in Brazil (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Bresadola 1920), first record from Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2198 (ICN). Ibid., São Leopoldo, 1940, J. Rick Fungi Rickiani 16591 (PACA, holotype of *I. arborescens*). Ibid., Santa Catarina, Florianópolis, Manguezal do Saco Grande, on dead trunk of *L. racemosa*, 27 April 2006, J.M. Baltazar 172 & A. Regolin (FLOR). Ibid., on dead trunk of *L. racemosa*, 28 May 2006, J.M. Baltazar 201 & L. Trierveiler-Pereira (FLOR).

Remarks. See Nietiedt and Guerrero (1998) and Baltazar et al. (2014a) for discussions on the synonymy of *P. rude*.

Phanerochaete P. Karst., Bidr. Kännedom Finl. Nat. Folk 48: 426, 1889.

1a. Subicular hyphae brownish, at least near the substratum 2

1b. Subicular hyphae hyaline 3

2a. Subicular hyphae brownish only near the substratum, other parts of the basidiome hyaline, leptocystidia few, hyaline, basidiospores 6.5–8.5 µm long .....

1 .....*P. fuscomarginata*

2 2b. Subicular hyphae brownish, subhymenium and hymenium hyaline, pale brown

3 hyphal endings projecting into the hymenium [skeletocystidia according Hjortstam

4 and Ryvarden (1990)], basidiospores 6–7 µm long ..... *P. monomitica*

5 3a. Cystidia absent 4

6 3b. Cystidia present 5

7 4a. Hymenophore cracking, subicular hyphae up to 7 µm diam., hyphidia present in the

8 hymenium, up to 50 µm long basidiospores broadly ellipsoid ..... *P.*cf. *xerophila*

9 4b. Hymenophore not cracking, subicular hyphae up to 5.5 µm diam., hyphidia absent,

10 basidiospores narrowly ellipsoid ..... *P. corymbata*

11 5a. Subicular hyphae thin-walled or with distintictly so, up to 0.7 µm thick 6

12 5b. Subicular hyphae thick-walled, above 1 µm thick 7

13 6a. Cystidia heavily encrusted, basidiospores allantoid, up to 1.5 µm wide ..... *P. cana*

14 6b. Cystidia finely encrusted, crystals gradually dissolving in KOH, basidiospores

15 subglobose to broadly ellipsoid ..... *P.* cf. *subglobosa*

16 7a. Hymenophore odontioid to hydnoid, aculei up to 1.5 mm long, pale orange, margin

17 orange to reddish ..... *P. chrysorhiza*

18 7b. Hymenophore smooth, whitish to cream or pale yellowish 8

19 8a. Subiculum usually poorly developed, subicular hyphae 3–4.5 µm diam. .....

20 ..... *P. hiulca*

21 8b. Subiculum usually well developed, subicular hyphae on average 3–6 µm diam. or

22 wider 9

23 9a. Cystidia 8 µm diam. or wider 10

24 9b. Cystidia up to 8 µm diam. 11

10a. Cystidia almost subulate with an obtuse apex, smooth to slightly encrusted at the apex, 25–50 × (7.5–) 8–12 µm ..... *P. australis*

10b. Cystidia cylindrical, apex obtuse to tapering, heavily encrusted, 90–150 × 10–16 (–20) µm ..... *P. velutina*

11a. Subicular hyphae with flexuous appearance, contorted and with irregular swellings, rather short-celled, cystidia 45–80 µm long ..... *P. sacchari*

11b. Subicular hyphae with rigid appearance, regular, long-celled, cystidia 60–120 µm long ..... *P. sordida*

Phanerochaete australis Jülich, Bot. J. Linn. Soc. 81(1): 43, 1980.

Descriptions. Burdsall (1985) and Gilbertson and Adaskaveg (1993).

Distribution. Known from Borneo (type locality), Brazil, Colombia, Costa Rica, Hawaii and Venezuela (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Paraná and Rio Grande do Sul.

Examined specimen. BRAZIL. Paraná, Paranaguá, Morro Inglês, 13 November 2010, J.M. Baltazar 2354 (ICN). Ibid., Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2303 (ICN). Ibid., Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 12 June 2010, J.M. Baltazar 2001 and 2003 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 1755 (ICN).

Phanerochaete cana (Burt) Burds., Mycol. Mem. 10: 50, 1985.

≡ *Peniophora cana* Burt, Ann. Missouri Bot. Gard. 12(3): 227, 1926 [“1925”].

= *Odontia isabellina* Rick, Iheringia, Bot. 5: 163, 1959.

= *Odontia isabellina* var. *caesia* Rick in Iheringia, Bot. 5: 163, 1959.

Descriptions. Burt (1925) and Burdsall (1985).

Distribution. Known from USA (type locality) and Brazil (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL Rio Grande do Sul, São Salvador, 15 February 1943, J. Rick Fungi Rickiani 17827 (PACA, holotype of *O. isabellina* var. *caesia*). Ibid., 05 April 1944, J. Rick Fungi Rickiani 17843 (PACA, holotype of *O. isabellina*).

Phanerochaete chrysorhiza (Torr.) Budington & Gilb., Southwest Nat. 17(4): 417, 1973.

= *Odontia fragilissima* (Berk. & M.A. Curtis) C.A. Br., Bot. Gaz. Crawfordsville 96: 659, 1935.

Descriptions. Burdsall (1985) and Maekawa (1993).

Distribution. Known from Brazil, Japan and USA (type locality) (Bresadola 1896; Burdsall 1985); Santa Catarina and Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2818 (CIEFAP). Ibid., São Salvador, 1939, J. Rick Fungi Rickiani 17644 (PACA, sub "*Odontia coccinea*" Rick).

Remarks. The specimen J. Rick Fungi Rickiani 17644 is tentatively determined with this name, see Baltazar et al. (2014a).

Phanerochaete corymbata (G. Cunn.) Burds., Mycol. Mem. 10: 65, 1985.

Description. Burdsall (1985).

Distribution. Known from Australia, Brazil, New Zealand (type locality) and USA (Burdsall 1985); Paraná (Meijer 2006).

Phanerochaete fuscomarginata (Burt) Gilb., J. Ariz. Acad. Sci. 7(3): 135, 1972.

≡ *Peniophora fuscomarginata* Burt, Ann. Missouri Bot. Gard. 12(3): 335, 1926 ["1925"] ≡ *Porostereum fuscomarginatum* (Burt) Hjortstam, Mycotaxon 54: 190, 1995 ≡ *Hjortstamia fuscomarginata* (Burt) Hjortstam & Ryvarden, Synop. Fungorum 25: 19, 2008.

Descriptions. Gilbertson et al. (1972) and Wu (1995).

Distribution. Known from Brazil, Uruguay, and USA (type locality) (Meijer 2006; Hjortstam and Ryvarden 2008); Paraná (Meijer 2006).

Remarks. See Wu (1995) for a discussion on the generic placement of this species.

Phanerochaete hiulca (Burt) A.L. Welden, in Punugu, Dunn & Welden, Mycotaxon 10(2): 441, 1980.

Descriptions. Burdsall (1985).

Distribution. Previously known from Bermuda, Jamaica (type locality) and USA (Hjortstam and Ryvarden 2007a); first record from Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 14 May 2012, M. Rajchenberg et al. JMB2862 (ICN). Ibid., Morrinhos do Sul, 14 May 2012, M. Rajchenberg et al. JMB2879 (ICN).

Phanerochaete monomitica (G. Cunn.) Sheng H. Wu & Popoff, Mycotaxon 54: 167, 1995.

Description. Wu (1995).

Distribution. Argentina, Brazil, Paraguay and New Zealand (type locality) (Hjortstam and Ryvarden 2007a); Paraná and Santa Catarina.

Examined specimens. BRAZIL. Paraná, Foz do Iguaçu, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2473 (ICN). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead trunk of *A. schauerianna*, 23 December 2005, L. Trierveiler-Pereira 118 et al. (FLOR). Ibid., Mondaí, Linha Uruguai, 10 December 2010, J.M. Baltazar 2407 (ICN).

Phanerochaete sacchari (Burt) Burds., Mycol. Mem. 10: 113, 1985.

≡ *Peniophora sacchari* Burt, Ann. Missouri Bot. Gard. 12(3): 328, 1926 ["1925"].

Descriptions. Burt (1925) and Burdsall (1985).

Distribution. Known from Brazil, Puerto Rico (type locality) and Taiwan (Hjortstam and Ryvarden 2007a); Paraná (Meijer 2006).

Phanerochaete sordida (P. Karst.) J. Erikss. & Ryvarden, Corticiaceae N. Eur. 5: 1023, 1978.

= *Ceracea subsulphurea* Rick, Iheringia, Bot. 2: 50, 1958.

= *Stereum humillimum* Rick, Iheringia, Bot. 4: 68, 1959.

Descriptions. Burdsall (1985), Maekawa (1993) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan, type locality in Finland (Burdsall 1985); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 14 May 2012, M. Rajchenberg et al. JMB2868 (ICN). Ibid., Morrinhos do Sul, 14 May 2012, M. Rajchenberg et al. JMB2878 (ICN). Ibid., Pinhal, 1936, J. Ricki Fungi Rickiani 16735, 16853 and 16879 (PACA, sub "*Kneiffia cartilaginea*" Rick). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 26 March 2010, J.M. Baltazar 1736 (ICN). Ibid., São Leopoldo, 1932, J. Ricki Fungi Rickiani 16763 (PACA, sub "*Kneiffia calcea*" Rick). Ibid., without date, J. Ricki Fungi Rickiani 12019 (PACA, holotype of *C. subsulphurea* p.p.). Ibid., São Salvador, 01 March 1943, J. Ricki Fungi Rickiani 19249 (PACA, holotype of *S. humillimum*).

Phanerochaete* cf. *subglobosa Sheng H. Wu, Acta Bot. Fenn. 142: 49, 1990.

Descriptions. Wu (1990) and Maekawa (1993).

Distribution. Previously known from Japan and Taiwan (type locality) (Maekawa 1993); if confirmed, this determination would be the first record outside Asia, being found in Santa Catarina.

Examined specimen. BRAZIL. Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead trunk of *A. schauerianna*, 23 December 2005, L. Trierveiler-Pereira 101 et al. (FLOR).

Phanerochaete velutina (DC.) Parmasto, Conspec. System. Corticiacearum: 82, 1968.

Descriptions. Burdsall (1985), Maekawa (1993) and Bernicchia and Gorjón (2010).

Distribution. Known from Asia, Europe, North and South America, type locality in Finland (Maekawa 1993); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Riozinho, 10 May 2010, J.M. Baltazar 1818 (ICN).

Phanerochaete* cf. *xerophila Burds., Mycol. Mem. 10: 141, 1985.

Descriptions. Burdsall (1985).

Distribution. Known from Argentina, Brazil (sub aff.), Costa Rica and USA (type locality) (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 24 April 2012, J.M. Baltazar 2709 (ICN).

Remarks. Confrontation of the above specimen and reference material is needed to confirm the determination. Hjortstam and Bononi (1987) reported this species from Rio Grande do Sul sub 'aff.'.

Phanerodontia Hjortstam & Ryvarden, Synop. Fungorum 27: 26, 2010.

Phanerodontia magnoliae (Berk. & M.A. Curtis) Hjortstam & Ryvarden, Synop. Fungorum 27: 28, 2010.

≡ *Phanerochaete magnoliae* (Berk. M.A. Curtis) Burdsall, Mycol. Mem. 10: 95, 1985.

= *Phanerochaete raduloides* J. Erikss. & Ryvarden, Corticiaceae N. Eur. 5: 1015, 1978.

Description. Bernicchia and Gorjón (2010) and Hjortstam and Ryvarden (1980).

Distribution. Known from Brazil, Europe, Iran and USA (type locality) (Hjortstam and Ryvarden 2007; Bernicchia and Gorjón 2010); Rio Grande do Sul (Nietiedt and Guerrero 2000).

Phaneroites Hjortstam & Ryvarden, Synop. Fungorum 27: 30, 2010.

Phaneroites subquercinus (Henn.) Hjortstam & Ryvarden, Synop. Fungorum 27: 31, 2010.

≡ *Radulodon subquercinus* (Henn.) Hjortstam & Ryvarden, Mycotaxon 10(2): 285, 1980 ≡ *Phanerochaete subquercina* (Henn.) Hjortstam, Windahlia 17: 58, 1987.

= *Odontia subirpicoidea* Rick, Iheringia, Bot. 5: 162, 1959.

Description. Hjortstam and Ryvarden (1980) and Bernicchia and Gorjón (2010).

Distribution. Known from Brazil, Colombia, Ecuador, Ethiopia, India, Iran Java (type locality) and Zimbabwe (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 13 October 1942, J. Rick Fungi Rickiani 17805 (PACA, holotype of *O. subirpicoidea*).

Phlebia Fr., Syst. Mycol. 1: 426, 1821.

= *Merulius* Fr., Syst. Mycol. 1: 326, 1821.

= *Mycoacia* Donk, Medded. Nedl. Mycol. Ver. 18-20: 150, 1931.

= *Mycoaciella* J. Erikss & Ryvarden, Corticiaceae N. Eur. 5: 901, 1978.

= *Cabalodontia* Piątek, Pol. Bot. J. 49(1): 2, 2004.

1a. Basidiome pileate 2

1b. Basidiome resupinate 3

2a. Basidiome reddish, cystidia absent, basidiospores cylindrical to slightly curved, 4–6 × 2–2.5 µm ..... *P. incarnata*

2b. Basidiome whitish to pale yellowish, cystidia absent but smooth to encrusted hyphal endings projecting up to 30 µm in the hymenium, basidiospores allantoid, 4–4.5 × 1–1.5 µm ..... *P. tremellosa*

3a. Basidiome loosely attached, hymenophore hydnoid, hyphal system trimitic .... *P.hinnulea*

3b. Basidiome adnate, hymenophore smooth, tuberculate, odontioid to hydnoid, hyphal system monomitic 4

4a. Conical, heavily encrusted cystidia present ..... *P. queletii*

4b. Cystidia absent or finely encrusted, but encrusted hyphal endings could be present in the core of the aculei 5

5a. Hymenophore smooth to slightly tuberculate, basidiospores subcylindric, 6–8 × 2.5–3.5 µm ..... *P.* cf. *nitidula*

5b. Hymenophore odontioid to hydnoid, basidiospores suballantoid to allantoid, up to 5.5 × 2.5 µm 6

6a. Hyphal endings heavily encrusted in the core of aculei ..... *P. fuscoatra*

6b. Hyphal endings heavily encrusted absent 7

7a. Aculei 2 (–6) mm long, fusoid to cylindrical cystidia present ..... *P. aurea*

7b. Aculei 0.24–0.4 mm long, cystidia absent ..... *P. subconspersa*

Phlebia aurea (Fr. : Fr.) Nakasone, Sydowia 49(1): 55, 1997.

= *Mycoacia aurea* (Fr. : Fr.) J. Erikss. & Ryvarden, Corticiaceae N. Eur. 4: 877, 1976.

Description. Nakasone (1997).

Distribution. Known from Africa, Americas and Europe (Nakasone 1997); Santa Catarina (Gerlach and Loguercio-Leite 2011).

Phlebia fuscoatra (Fr. : Fr.) Nakasone, Sydowia 49(1): 59, 1997.

≡ *Mycoacia fuscoatra* (Fr.: Fr.) Donk, Medded. Nedl. Mycol. Ver. 18-20: 152. 1931.

Descriptions. Nakasone (1997) and Bernicchia and Gorjón (2010).

Distribution. Known from Brazil, Europe (type locality in Sweden), India, Japan, Korea, North America, Dominican Republic, Ecuador and Venezuela (Nakasone 1997; Nietiedt and Guerrero 2000); Rio Grande do Sul (Nietiedt and Guerrero 2000).

Phlebia hinnulea (Bres.) Nakasone, Mycotaxon 81: 484, 2002.

≡ *Odontia hinnulea* Bres., Ann. Mycol. 18 (1–3): 42, 1920 ≡ *Mycoaciella hinnulea* (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 281, 1980.

Descriptions. Hjortstam and Ryvarden (1980) and Nakasone (2002).

Distribution. Known Brazil (type locality), Dominican Republic, Ecuador and Venezuela (Hjortstam and Ryvarden 2007a); Santa Catarina.

Phlebia incarnata (Schwein.) Nakasone & Burds., Mycotaxon 21: 245, 1984.

≡ *Merulius incarnatus* Schwein., Schr. Berl. Ges. Naturforschender Freunde 1: 92, 1822.

Descriptions. Ginns (1976) and Westphalen et al. (2010).

Distribution. Known from Brazil, Costa Rica, Mexico and USA (type locality) (Westphalen et al. 2010); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 23 May 2011, L. Trierveiler-Pereira (ICN).

Phlebia* cf. *nitidula (P. Karst.) Ryvarden, Rep. Kevo Subarc. Res. Stat. 8: 151, 1971.

Description. Bernicchia and Gorjón (2010).

Distribution. Known only from Europe (Bernicchia and Gorjón 2010); if confirmed, this determination will be the the first record from South America, found in Santa Catarina.

Examined specimen. BRAZIL. Santa Catarina, Florianópolis, Manguezal do Itacorubi, on an unidentified dead wood, 07 July 2005, L. Trierveiler-Pereira 30 et al. (FLOR).

Remarks. The studied specimen is morphologically close to *P. nitidula*, but additional specimens are desirable to confirm its identity.

Phlebia queletii (Bourdot & Galzin) M.P. Christ., Dan. Bot. Ark. 19(2): 176, 1960.

≡ *Cabalodontia queletii* (Bourdot & Galzin) M. Piatek, Pol. Bot. J. 49 (1): 3, 2004.

Descriptions. Bernicchia and Gorjón (2010).

Distribution. Known from Brazil, Burundi. Ethiopia, Europe (type locality in France), India and USA (Hjortstam and Ryvarden 2007a); Paraná (Meijer 2006).

"***Phlebia subconspersa*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Odontia subconspersa* Rick, Iheringia, Bot. 5: 164, 1959 ≡ *Mycoacia subconspersa* (Rick) Hjortstam & Ryvarden, Mycotaxon 15: 272, 1982.

Description. Hjortstam and Ryvarden (1982).

Distribution. Known only from Brazil; Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Leopoldo, 1939, J. Rick Fungi Rickiani 17676 (PACA, holotype of *O. subconspersa*).

Phlebia tremellosa (Schrad. : Fr.) Nakasone & Burds. [as '*tremellosus*'], Mycotaxon 21: 245, 1984.

≡ *Merulius tremellosus* Schrad. : Fr., Spicilegium Florae Germanicae 1: 139, 1794.

Descriptions. Ginns (1976) and Bernicchia and Gorjón (2010).

Distribution. Probably cosmopolitan (Ginns 1976; Maekawa 1993); Paraná, Rio Grande do Sul and Santa Catarina (Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2761 (ICN).

Phlebiella P. Karst., Hedwigia 29(5): 271, 1890.

Phlebiella vaga (Fr.) P. Karst., Hedwigia 29(5): 271, 1890.

Descriptions. Hjortstam et al. (1988) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Nietiedt and Guerrero 2000).

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2757 (ICN, sub 'aff.').

Remarks. The examined specimen has a pruinose, soft basidiome, while *P. vaga* usually has gelatinous basidiomes when fresh that turn corneous when dried. Otherwise, the examined specimen agrees in all features.

Phlebiopsis Jülich, Persoonia 10(1): 137, 1978.

1a. Basidiospores broadly ellipsoid, 3.5–4.5 µm wide 2

1b. Basidiospores ellipsoid to narrowly ellipsoid, up to 3.5 µm wide 3

2a. Cystidia (50–) 75–100 (–125) × (9–) 11–18 (–20) µm, basidiospores 5.5–7.5 µm in the longest dimension ..... *P. flavidoalba*

2b. Cystidia 50–60 × 7–10 µm, basidiospores 5–6 µm in the longest dimension ..... *P.galochroa*

3a. Basidiome phlebioid, ceraceous and subhyaline when fresh, subcorneous when dry, basidiospores narrowly ellipsoid (5–) 6.5–8 × 3–3.5 µm ..... *P. gigantea*

3b. Basidiome membranous to crustaceous, basidiospores ellipsoid, curved, 4–6 × 2.5–3 µm ..... *P. ravenelii*

Phlebiopsis flavidoalba (Cooke) Hjortstam, Windahlia 17: 58, 1987.

≡ *Phanerochaete flavidoalba* (Cooke) S.S. Rattan, Bibl. Mycol. 60: 262, 1977.

Descriptions. Gilbertson and Blackwell (1985), Burdsall (1985) and Maekawa (1993).

Distribution. Tropical and subtropical America, but also reported from India and Japan (Burdsall 1985; Maekawa 1993); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Parecí, 1935, J. Rick Fungi Rickiani 16836 (PACA, sub *Kneiffia lurideolivacea* Rick). Ibid. São Salvador, 1942, J. Rick Fungi Rickiani 19659 (PACA, sub "*Lloydiella nivea*" Rick). Ibid., Viamão, Parque Estadual de Itapuã, Estrada da Praia de Fora, 16 October 2010, J.M. Baltazar 2193 (ICN).

Phlebiopsis galochroa (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 285, 1980.

= *Lloydella durissima* Rick [as '*Lloydiella*'], Brotéria. Ciências Nat. 9(36): 88, 1940.

Description. Hjortstam and Ryvarden (1980).

Distribution. Known from Brazil (type locality) and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Hjortstam and Ryvarden 1980; Baltazar et al. 2014a).

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 1939, J. Rick Fungi Rickiani 17047 (PACA, lectotype of *L. durissima*).

Remarks. The studied specimen differs from the typical *P. galochroa* by presenting dextrinoid metuloids. However, the importance of dextrinoid reaction of metuloids has not been investigated in many corticioid genera.

Phlebiopsis gigantea (Fr.) Jülich in Persoonia 10(1): 137, 1978.

≡ *Phanerochaete gigantea* (Fr. : Fr.) S.S. Rattan, Bibl. Mycol. 60: 260, 1977.

= *Kneiffia lurideolivacea* Rick in Brotéria. Ciências Nat. 3(30): 74, 1934.

Descriptions. Burdsall (1985), Maekawa (1993) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Maekawa 1993; Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Parecí, 1935, J. Rick Fungi Rickiani 16864 (PACA, neotype of *K. lurideolivacea*).

Phlebiopsis ravenelii (Cooke) Hjortstam, Windahlia 17: 58, 1987.

≡ *Phanerochaete ravenelii* (Cooke) Burds., Mycol. Mem. 10: 104, 1985.

= *Lloydella ochracea* Rick [as '*Lloydiella*'], Brotéria. Ciências Nat. 9(36): 90, 1940.

Descriptions. Burdsall (1985), Maekawa (1993) and Bernicchia and Gorjón (2010).

Distribution. Known from Asia, Europe, North and South America, type locality in USA (Maekawa 1993; Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Riozinho, 10 April 2010, J.M. Baltazar 1806 (ICN, CIEFAP). Ibid. São Salvador, 1933, J. Rick Fungi Rickiani 17015 (PACA, lectotype of *L. ochracea*).

Pseudochaete T. Wagner & M. Fisch., Mycol. Progr. 1(1): 100, 2002.

Pseudochaete is inseparable from *Hymenochaete* based solely in morphology. However, it is well known that they are not phylogenetically related. It is possible that they differ in the nuclear behavior but, to date, this feature is known for few species. For further discussion see Wagner and Fischer (2002) and Parmasto et al. (2014).

Pseudochaete tabacina (Sowerby : Fr.) T. Wagner & M. Fisch., Mycol. Progr. 1(1): 100, 2002.

≡ *Hymenochaete tabacina* (Sow.: Fr.) Lév., Ann. Sci. Nat., Bot. Ser. III 5: 152, 1846.

Descriptions. Léger (1998) and Parmasto (2001) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Léger 1998); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Podoscypha Pat., Essai Tax. Hyménomycètes: 70, 1900.

Podoscypha is a large genus with several species occurring in the Neotropics and subtropical aereas of South America. We have studied no specimens of *Podoscypha* up to date. Nonetheless, several species were reported from Southern Brazil. Meijer (2006) reported from Paraná: *P. brasiliensis* D.A. Reid, *P. moelleri* (Bres. & Henn.) D.A. Reid [or *P. fulvonitens* (Berk.) D.A. Reid, as cited by Meijer (2006)], *P. multizonata* (Berk. & Broome) Pat., *P. nitidula* var. *nitidula* (Berk.) Pat., *P. petalodes* subsp. *petalodes* (Berk.) Boidin, *P.* cf. *ravenelii* (Berk. & M.A.Curtis) Pat., *P. venustula* (Speg.) D.A. Reid, and *P. viridans* (Lloyd) D.A. Reid.

From Rio Grande do Sul there are records of *P. corbiformis* (Fr.) D.A. Reid, *P. nitidula* var. *nitidula*, *P. ravenelii*, *P. replicata* (Lloyd) D.A. Reid, *P. venustula* and *P. viridians* (Teixeira 1945, Reid 1965).

Podoscypha moelleri was originally described from Santa Catarina by Bresadola (1896), while *P. ravenelii* was reported by Burt (1920).

Reid (1965) made a good treatment of *Podoscypha*, with a comprehensive key, descriptions and discussions, and included all species cited above. Additionally, Drechsler-Santos et al. (2007) presented a key for the species known in Brazil, and Ryvarden (2010) included a synopsis of the genus from America.

Porostereum Pilát, Bull. Soc. Mycol. Fr. 52(3): 330, 1936.

Porostereum pilosiusculum Hjortstam & Ryvarden, Synop. Fungorum 4: 49, 1990.

≡ *Hyphoderma pilosiusculum* (Hjortstam & Ryvarden) Hjortstam & Ryvarden, Synop. Fungorum 20: 38, 2005.

Description. Hjortstam and Ryvarden (1990).

Distribution. Known only from Brazil (Hjortstam and Ryvarden 2007a); first record from Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 11 June 2010, J.M. Baltazar 1972 (ICN).

Radulodon Ryvarden, Can. J. Bot. 50(10): 2073, 1972.

Radulodon* aff. *americanus Ryvarden, Can. J. Bot. 50(10): 2074, 1972.

Descriptions. Ryvarden (1972) and Nakasone (2001).

Distribution. Widespread in North America, also known from Brazil and India (Ryvarden 1972; Nakasone 2001; Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2836 (ICN).

Remarks. The studied specimen differs from the typical *R. americanus* by smaller cystidia. However, it seems to be a variable species, since Hjortstam and Ryvarden (2007a) asserted that Brazilian specimens studied by them lack cystidia.

Radulomyces M.P. Christ., Dan. Bot. Ark. 19(2): 230, 1960.

Radulomyces confluens (Fr. : Fr.) M.P. Christ., Dan. Bot. Ark. 19(2): 230, 1960.

Description. Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Paraná (sub 'cf.') and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2809 (ICN).

Ramaricium J. Erikss., Sven. Bot. Tidskr. 48(1): 189, 1954.

Ramaricium polyporoideum (Berk. & M.A. Curtis) Ginns, Bot. Not. 132(1): 98, 1979.

≡ *Phlyctibasidium polyporoideum* (Berk. & M.A. Curt.) Jülich, Proc. K. Ned. Akad. Wet., Sect. C. 77: 154, 1974 ≡ *Trechispora polyporoidea* (Berk. & M.A. Curt.) Liberta, Taxon 15(8): 319, 1966.

= *Stereogloeocystidium avellaneum* Rick, Brotéria. Ciências Nat. 9(36): 82, 1940.

Descriptions. Hjortstam and Ryvarden (2007c).

Distribution. Pantropical according Hjortstam and Ryvarden (2007a), but also widespread in North America and reported from New Zealand (Jülich 1974); Paraná and Rio Grande do Sul (Meijer 2006; Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Rio Grande do Sul, Santa Maria, 1935, FR 15222 (PACA, holotype of *S. avellaneum*).

Resinicium Parmasto, Conspec. System. Corticiacearum: 97, 1968.

"***Resinicium luteosulphureum*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Gloeoradulum luteosulphureum* Rick, Iheringia, Bot. 5: 183, 1959.

= *Resinicium friabile* Hjortstam & Melo, Mycotaxon 65: 324, 1997.

Descriptions. Hjortstam and Melo (1997) and Nakasone (2007).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul.

Examined specimen. BRAZIL. Paraná, Matinhos, 13 November 2010, J.M. Baltazar 2341 (ICN). Ibid., Rio Grande do Sul, São Salvador, 1939, J. Rick Fungi Rickiani 19740 (PACA, holotype of *G. luteosulphureum*, sub '*Radulum luteo-sulphureum*').

Scotomyces Jülich, Persoonia 10(1): 139, 1978.

Scotomyces subviolaceus (Peck) Jülich, Persoonia 10(3): 334, 1979.

≡ *Hydrabasidium subviolaceum* (Peck) J. Erikss. & Ryvarden, Corticiaceae N. Eur. 5: 897, 1978.

Descriptions. Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Bresadola 1896; Roberts 1999).

Scytinostroma Donk, Fungus 26: 19, 1956.

1a. Basidiospores negative in Melzer's reagent ..... *S. phaeosarcum*

1b. Basidiospores amyloid 2

2a. Dichohyphae dichotomously branched, gloeocystidia 25–40 µm long .... *S. albocinctum*

2b. Dichohyphae scarcely branched, gloeocystidia 50–80 (–135) µm long .... *S. duriusculum*

Scytinostroma albocinctum (Berk. & Broome) Boidin & Lanq., Kew Bull. 31(3): 621, 1976.

Descriptions. Boidin and Lanquetin (1987).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Santa Catarina (Boidin and Lanquetin 1987), first record from Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2706 (ICN). Ibid., Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2760 (ICN).

Scytinostroma duriusculum (Berk. & Broome) Donk, Fungus 26: 20, 1956.

= *Corticium insinuans* var. *cruentata* Rick, Brotéria. Ciências Nat. 3(30): 157, 1934 ≡ *Stereofomes cruentatus* (Rick) Rick, Brotéria. Ciências Nat. 9(36): 146, 1940.

= *Crystallocystidium albescens* Rick, Brotéria. Ciências Nat. 9(36): 142, 1940 ≡ *Stereum albescens* (Rick) Rick, Iheringia, Bot. 4: 68. 1959.

= *Crystallocystidium enteroflavum* Rick, Brotéria. Ciências Nat. 9(36): 141. 1940.

= *Lloydella intermedia* Rick, Iheringia, Bot. 4: 74. 1959.

Descriptions. Boidin and Lanquetin (1987).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009), first record from Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 24 April 2012, J.M. Baltazar 2710 (ICN). Ibid., Cruz Alta, 1936, J. Rick Rungi Rickiani 12388 (PACA, lectotype of *C. enteroflavum*). Ibid., Derrubadas, Parque Estadual do Turvo, Lajeado do Fábio, 26 October 2010, J.M. Baltazar 2215 (ICN). Ibid., Porto Alegre, Morro Santana, 21 June 2010, J.M. Baltazar 2020 (ICN). Ibid., Porto Novo, 1930, J. Rick Rungi Rickiani 14728 (PACA, holotype of *C. insinuans* var. *cruentata*). Ibid., Riozinho, 10 April 2010, J.M. Baltazar 1812 (ICN, CIEFAP). Ibid., Santa Maria, 14 May 2010, J.M. Baltazar 1885 (ICN). Ibid. São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 24 May 2010, J.M. Baltazar 1932 (ICN). Ibid., São Leopoldo, 1939, J. Rick Rungi Rickiani 16998 (PACA, holotype of *L. intermedia*). Ibid., 1939, J. Rick Rungi Rickiani 12386 (PACA, holotype of *C. albescens*). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead trunk of *Avicennia schaueriana*, 27 November 2005, L. Trierveiler-Pereira 72 and 85 & J.M. Baltazar (FLOR). Ibid., on dead trunk of *Avicennia schaueriana*, 23 December 2005, L. Trierveiler-Pereira 103 et al. (FLOR). Ibid, Manguezal do Rio Tavares, 05 August 2006, on dead trunk of *A. schauerianna*, L. Trierveiler-Pereira 294 et al. (FLOR). on dead trunk of *Avicennia schaueriana*, 29 January 2005, L. Trierveiler-Pereira 135 & T.B. Maccarini (FLOR). Ibid., Manguezal de Ratones, on *A.*

schauerianna, 29 January 2006, J.M. Baltazar 115 et al. (FLOR). Ibid., Manguezal do Saco Grande, 22 December 2006, on dead trunk of *A. schauerianna*, J.M. Baltazar 94 & L. Trierveiler-Pereira (FLOR).

Remarks. Hjortstam and Ryvarden (1986) considered *S. duriusculum* a synonym of *S. portentosum* (Berk. & M.A. Curtis) Donk. However, we follow Hallenberg (1985) who accepted these species separated, being *S. duriusculum* the one with a tropical to subtropical distribution. See further discussion in Hallenberg (1985), Boidin and Lanquetin (1987) and Hjortstam and Ryvarden (1986). Specimens from Southern Brazil addressed to *S. portentosum* are here included in *S. duriusculum*.

Scytinostroma phaeosarcum Boidin & Lanq., Kew Bull. 31(3): 623, 1976.

Description. Boidin and Lanquetin (1987).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Santa Catarina (Boidin and Lanquetin 1987).

Examined specimens. BRAZIL. Santa Catarina, Florianópolis, Ilha do Campeche, without date, N. Tedy 111 (ICN). Ibid., Santo Amaro da Imperatriz, Hotel Plaza Caldas da Imperatriz, Trilha da Cascata, 13 March 2012, J.M. Baltazar 2604 and 2605 (ICN).

Scytinostromella Parmasto, Conspec. System. Corticiacearum: 171, 1968.

Scytinostromella cerina (Bres.) Hjortstam & Ryvarden, Mycotaxon 10(2): 287, 1980.

= *Gloeocystidium clavuligerum* var. *brasiliense* Rick in Iheringia, Bot. 4: 90. 1959.

Descriptions. Hjortstam and Ryvarden (1980).

Distribution. Known from Argentina and Brazil (type locality) (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Leopoldo, 1936, J. Rick Fungi Rickiani 13398 (PACA, sub "*Gloeocystidium ceraceum*" Rick). Ibid., São Salvador, 1949, J. Rick Fungi Rickiani 13446 (PACA, holotype of *G. clavuligerum* var. *brasiliense*, sub "*Gloeocystidium butyraceum*" Rick).

Sistotrema Fr., Syst. Mycol. 1: 426, 1821.

Sistotrema porulosum Hallenb., Mycotaxon 21: 407, 1984.

Description. Bernicchia and Gorjón (2010).

Distribution. Known from Argentina, Canada (type locality), and Europe (Hjortstam and Ryvarden 2007a; Bernicchia and Gorjón 2010); first record from Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Derrubadas, Parque Estadual do Turvo, Lajeado da estrada para o Salto Yucumã, 29 October 2010, J.M. Baltazar 2242 (ICN).

Remarks. This species probably has a temperate to subtropical distribution.

Skvortzovia Bononi & Hjortstam, Mycotaxon 28: 12, 1987.

Skvortzovia furfurella (Bres.) Bononi & Hjortstam, in Hjortstam & Bononi, Mycotaxon 28(1): 12, 1987.

Description. Hjortstam and Bononi (1987).

Distribution. Known from Brazil, Taiwan, Tanzania and USA (type locality) (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Rio Grande do Sul and Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2718 and 2724 (ICN). Ibid., Dom Pedro de Alcântara, RPPN Mata do Professor Baptista, 11 June 2010, J.M. Baltazar 1995 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2770 (ICN). Ibid., Santa Catarina, Santo Amaro da Imperatriz, Hotel Caldas da Imperatriz, Trilha do Guamirim, on dead hardwood, 14 March 2012, J.M. Baltazar 2625 (ICN).

***Steccherici**um* D.A. Reid, Kew Bull. 17(2): 270, 1963.

***Steccherici**um seriatum* (Lloyd) Maas Geest., Proc. K. Ned. Akad. Wet., Sect. C. 69: 325, 1966.

Descriptions. Maas Gesteranus (1971).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Santa Catarina (Drechsler-Santos et al. 2008).

Steccherinum Gray, Nat. Arrange. Br. Plants 1: 651, 1821.

1a. Generative hyphae simple-septate ..... *S. subcrinale*

1b. Generative hyphae with clamps 2

2a. Basidiome pileate, solitary to several pilei imbricate and/or laterally fused 3

2b. Basidiome resupinate, effused, sometimes with a small reflexed margin 4

3a. Pileus surface glabrous, skeletal hyphae usually almost solid, cystidia not numerous, with obtuse apex ..... *S. rawakense*

3b. Pileus surface with tomentose concentric zones, skeletal hyphae rarely solid, cystidia numerous, with acute apex ..... *S. reniforme*

4a. Basidiome effused and usually with a reflexed margin, basidiospores 3.5–4 µm wide ..... *S. subochraceum*

4b. Basidiome usually completely effused, basidiospores up 2.5 µm wide 5

5a. Margin not rizomorphic ..... *S. ochraceum*

5b. Margin rizomorphic 6

6a. Hymenophore whitish to pale cream, rhizomorphs whitish ..... *S. ciliolatum*

6b. Hymenophore and rhizomorphs violaceous ..... *S. fimbriatum*

Steccherinum ciliolatum (Berk. & M.A. Curtis) Gilb. & Budington, J. Ariz. Acad. Sci. 6(2): 97, 1970.

= *Irpex microdon* Rick, Iheringia, Bot. 5: 187, 1959.

Description. Hjortstam and Ryvarden (2007c).

Distribution. Known from Canada, Colombia, Europe, India, Thailand and USA (type locality) (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimens. BRAZIL. Rio Grande do Sul, Riozinho, 10 May 2010, J.M. Baltazar 1808 (ICN). Ibid., São Salvador, 18 March 1943, J. Rick Fungi Rickiani 16619 (PACA, holotype of *I. microdon*).

Steccherinum fimbriatum (Pers. : Fr.) J. Erikss., Symb. Bot. Ups. 16(1): 134, 1958.

= *Odontia rosea* Rick, Egatea 18: 43, 1933, nom. illeg. (non Bres. 1926) ≡ *Cystidiodendron roseum* (Rick) Rick, Iheringia, Bot. 5: 172, 1959.

Description. Bernicchia and Gorjón (2010)

Distribution. Argentina, Brazil, Europe (type locality in France), India, New Zealand, Thailand and Venezuela (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2702 (ICN). Ibid., Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2755 (ICN). Ibid. Parecí, 1931, J. Rick Fungi Rickiani 17471 (PACA, holotype of *O. rosea* Rick).

Steccherinum ochraceum (Pers. : Fr.) Gray, Nat. Arrange. Br. Plants 1: 651, 1821.

Descriptions. Bernicchia and Gorjón (2010).

Distribution. Probably cosmopolitan (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2716 and 2726 (ICN). Ibid., Santa Maria, 14 May 2010, J.M. Baltazar 1881 (ICN). Ibid., Santa Catarina, Florianópolis, Morro da Lagoa, 16 September 2010, on dead hardwood, J.M. Baltazar 2097 (ICN).

Steccherinum rawakense (Pers.) Banker, Mycologia 4(6): 312, 1912.

Description. Maas Gesteranus (1971).

Distribution. Previously reported from the Paleotropics and Brazil (Bresadola 1896; Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Bresadola 1896).

Examined specimen. BRAZIL. Rio Grande do Sul, Porto Alegre, Morro Santana, 2012, M.C. Westphalen 349/12 (ICN)

Steccherinum reniforme (Berk. & M.A. Curtis) Banker, Mem. Torrey Bot. Club 12: 127, 1906.

Description. Maas Gesteranus (1974).

Distribution. Neotropical, but also known from Uruguay (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009).

Examined specimen. BRAZIL. Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2783 (ICN). Ibid., Santa Catarina, Florianópolis, Manguezal do Itacorubi, on dead *A. schaerianna*, 26 October 2005, L. Trierveiler-Pereira 066 & J.M. Baltazar (FLOR)

Steccherinum subochraceum Bononi & Hjortstam, in Hjortstam & Bononi, Mycotaxon 26: 467, 1986.

Missaplied names:

"*Irpex hydneus*" Rick, Iheringia, Bot. 5: 190, 1959, nom. inval. (no holotype).

"*Steccherinum hydneum*" (Rick) Maas Geest., Persoonia 7(4): 506, 1974, nom. inval. (invalid basionym).

Descriptions. Maas Gesteranus (1974) and Hjortstam and Bononi (1987).

Distribution. Known from Brazil (type locality), Colombia and Ecuador (Hjortstam and Ryvarden 2007a); Paraná and Rio Grande do Sul (Hjortstam and Bononi 1987; Meijer 2006).

Steccherinum subcrinale (Peck) Ryvarden, Nor. J. Bot. 25: 294 (1978)

Descriptions. Eriksson et al. (1984) and Bernicchia and Gorjón (2010).

Distribution. Previously known from Europe, Northe America (type locality in USA) and Kenia (Hjortstam and Ryvarden 2007a); fisrt record from South America, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Morrinhos do Sul, 14 May 2012, M. Rajchenberg et al. JMB2882 (ICN).

Stereopsis D.A. Reid, Beih. Nova Hedwig., 18: 290, 1965.

1a. Gloeocystidia present ..... *S. radicans*

1b. Gleocystidia absent ..... *S. hiscens*

Stereopsis hiscens (Berk. & Ravenel) D.A. Reid, Beih. Nova Hedwig., 18: 298, 1965.

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Tropical to subtropical areas (Reid 1965; Ryvarden 2010); Paraná (Meijer 2006).

Stereopsis radicans (Berk. & Ravenel) D.A. Reid, Beih. Nova Hedwig., 18: 314, 1965.

Descriptions. Reid (1965) and Ryvarden (2010).

Distribution. Tropical to subtropical areas (Ryvarden 2010); Paraná (Meijer 2006).

Stereum Pers. ex Gray, Nat. Arrange. Br. Plants 1: 652, 1821.

Several authors have used the name *Stereum* Hill. ex Pers. (1794). This name, however, was published before the start point for nomenclature for this group, i.e., Fries (1821), and adopted by Fries after the publication of Gray (1821). We follow Donk (1957) adopting *Stereum* Pers. ex Gray, see this work for a detailed discussion.

Key to species of *Stereum*

1a. Hymenophore exhuding a liquid when cut in fresh condition 2

1b. Hymenophore not exhuding a liquid when cut 3

2a. Hymenophore exhuding a reddish liquid, acutocystidia present, acanthocystidia absent ..... *S. gausapatum*

2b. Hymenophore exhuding a yellowish liquid, acutocystidia absent, acanthocystidia present ..... *S. ostrea*

3a. Acutocystidia absent ..... *S. ochraceoflavum*

3b. Acutocystidia present 4

4a. With a thin dark layer separating the context from the tomentum ..... *S. hirsutum*

4b. Without a dark layer between the context and the tomentum ..... *S. striatum*

Stereum gausapatum (Fr. : Fr.) Fr., Hymenomycetes Eur.: 638, 1874.

Descriptions. Ţura et al. (2008), Bernicchia and Gorjón (2010) and Ryvarden (2010).

Distribution. Follows the distribution of oaks (*Carpinus* spp., *Castanea* spp. and *Quercus* spp.), in America usually following *Quercus* spp. from North America southward to Colombia (Ţura et al. 2008; Bernicchia and Gorjón 2010; Ryvarden 2010); found once in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, on dead unidentified wood, 30 April 2012, J.M. Baltazar 2771 (ICN, CIEFAP).

Remarks. *Stereum gausapatum* could be considered as an exotic species in Southern Brazil (see distribution above). The studied specimen was gathered in an area with many exotic conifers and hardwoods, including *Castanea sativa* Mill. Unfortunately, it was found on a fallen log, and it was not possible to assert the species of its host.

Stereum hirsutum (Willd. : Fr.) Pers., Obs. Mycologicae 2: 90, 1800 ["1799"].

= *Stereogloeocystidium gausapatum* Rick, Brotéria. Ciências Nat. 9(36): 80, 1940.

= *Stereogloeocystidium subsanguinolentum* Rick, Brotéria. Ciências Nat. 9(36): 80, 1940.

Descriptions. Ţura et al. (2008), Bernicchia and Gorjón (2010) and Ryvarden (2010).

Distribution. Cosmopolitan (Ryvarden 2010); Paraná, Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2320 (ICN). Ibid., Rio Grande do Sul, Cambará do Sul, Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, 29 April 2012, J.M. Baltazar 2768 (CIEFAP). Ibid., Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2717 (ICN). Ibid., Santa Maria, 1936, J. Rick Fungi Rickiani 14745 (PACA, holotype of *S. subsanguinolentum*). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 24 May 2010, J.M. Baltazar 1927 (ICN, CIEFAP). Ibid., Hotel Veraneio Hampel, 27 March 2010, J.M. Baltazar 1773 (ICN). Ibid., São Leopoldo, 1930, J. Rick Fungi Rickiani 14749 (PACA, holotype of *Stereogloeocystidium gausapatum*). Ibid., 1936, J. Rick Fungi Rickiani 19172 (PACA, sub "*Stereum subsanguinolentum*" Rick).

Stereum ochraceoflavum (Schwein.) Sacc., Sylloge Fungorum 6: 576, 1888.

Descriptions. Bernicchia and Gorjón (2010) and Ryvarden (2010).

Distribution. Widespread in warm temperate zones, but also found in tropical areas (Ryvarden 2010); Santa Catarina (Groposo and Loguercio-Leite 2005), first record from Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 24 May 2010, J.M. Baltazar 1931 (ICN, CIEFAP). Ibid., Viamão, Parque Estadual de Itapuã, Praia da Pedreira, 18 June 2011, J.M. Baltazar 2493 (ICN).

Stereum ostrea (Blume & T. Nees : Fr.) Fr., Epicrisis Syst. Mycol.: 547, 1838 ["1836–1838"].

= *Stereum versicolor* (Sw. : Fr.) Fr., Epicrisis Syst. Mycol.: 547, 1838 ["1836–1838"].

= *Stereum lobatum* (Kunze : Fr.) Fr., Epicrisis Syst. Mycol.: 547. 1838 ["1836–1838"].

Description. Chamuris (1988).

Distribution. Pantropical (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Hennings 1897; Baltazar and Gibertoni 2009).

Stereum striatum (Fr. : Fr.) Fr., Epicrisis Syst. Mycol.: 548, 1838 ["1836–1838"].

Description. Chamuris (1988) and Ryvarden (2010).

Distribution. Known from USA southward to Argentina (Ryvarden 2010); first record from Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2772 (ICN).

Subulicystidium Parmasto, Conspec. System. Corticiacearum: 120, 1968.

1a. Basidiospores cylindrical, up to 9 µm long ..... *S.* cf. *meridense*

1b. Basidiospores sigmoid, above (9.5–) 11 µm long 2

2a. Basidiospores 11–15 (–17) × 2–2.5 µm, Q = 5–7 ..... *S. longisporum*

2b. Basidiospores (15.5–) 17.5–20 × 1.5–2.5 µm, Q = 7.4–12 ..... *S. perlongisporum*

Subulicystidium longisporum (Pat.) Parmasto, Conspec. System. Corticiacearum: 121, 1968.

Description Maekawa (1994) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul and Santa Catarina (Baltazar et al. 2014a).

Examined specimens. BRAZIL. Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2781 and 2824 (ICN).

Subulicystidium* cf. *meridense Oberw., Bibl. Mycol. 61: 343, 1977.

Description. Boidin and Gilles (1988b).

Distribution. Known from tropical and subtropical areas, type locality in Venezuela (Maekawa 2002; Hjortstam and Ryvarden 2007a); if confirmed, this determination would be the first record from Brazil, found in Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, 28 April 2012, J.M. Baltazar 2713 (ICN).

Remarks. This specimen is left as tentatively identified because we did not find cystidia and the basidiospores are slightly larger than described for the species.

Subulicystidium perlongisporum Boidin & Gilles, Bull. Soc. Mycol. Fr. 104(3): 197, 1988.

Description. Boidin and Gilles (1988b) and Maekawa (1994).

Distribution. Known from Costa Rica, Japan, Reunion Is. (type locality) and Vanuatu (Hjortstam and Ryvarden 2007a); Rio Grande do Sul.

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 1939, J. Rick Fungi Rickiani 16847 (PACA, sub *Kneiffia grisea* Rick).

Thanatephorus Donk, Reinwardtia 3: 376, 1956.

Thanatephorus biapiculatus (D.P. Rogers) P. Roberts, Mycotaxon 69: 38, 1998.

≡ *Tofispora biapiculata* (D.P. Rogers) G. Langer, Bibl. Mycol. 158: 328, 1994.

Descriptions. Hjortstam (1983b) and Roberts (1998).

Distribution. Pantropical, type locality in Brazil (Roberts 1999); Rio Grande do Sul and Santa Catarina (Baltazar et al. 2014a).

Trechispora P. Karst., Hedwigia 29(3): 147, 1890.

= *Hydnodon* Banker, Mycologia 5(6): 297, 1913.

1a. Hyphae simple-septate, basidia with two sterigmata ..... *Trechispora* sp.

1b. Hyphae clamped, basidia with four sterigmata 2

2a. Hymenophore poroid 3

2b. Hymenophore otherwise 4

3a. With cystidia-like, encrusted hyphal endings ..... *T. regularis*

3b. Without cystidia-like hyphal endings ..... *T. mollusca*

4a. Basidiome pileate ..... *T. thelephora*

4b. Basidiome resupinate 5

5a. Hyphae in the core of the aculei short-celled ..... *T. farinacea*

5b. Hyphae in the core of the aculei long-celled ..... *T. nivea*

Trechispora farinacea (Pers. : Fr.) Liberta, Taxon 15(8): 318, 1966.

Descriptions. Maekawa (1993), Larsson (1995) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Paraná, Rio Grande do Sul and Santa Catarina (Bresadola 1896; Baltazar and Gibertoni 2009).

Examined specimens. BRAZIL. Paraná, Parque Nacional do Iguaçu, Trilha das Bananeiras, 13 December 2010, J.M. Baltazar 2449 (ICN). Ibid., Rio Grande do Sul, São Francisco de Paula, Floresta Nacional de São Francisco de Paula, 30 April 2012, J.M. Baltazar 2797 (CIEFAP). Ibid., Hotel Veraneio Hampel, 27 March 2010, J.M. Baltazar 1770 (ICN).

Trechispora mollusca (Pers. : Fr.) Liberta, Can. J. Bot. 51(10): 1878, 1974 ["1973"].

Descriptions. Maekawa (1993), Larsson (1994) and Bernicchia and Gorjón (2010)..

Distribution. Probably cosmopolitan (Ryvarden and Johansen 1980; Hjortstam and Ryvarden 2007a); Santa Catarina (Drechsler-Santos et al. 2008).

Trechispora nivea (Pers. : Fr.) K.H. Larss., Symb. Bot. Ups. 30(3): 110, 1995.

Descriptions. Larsson (1995), Maekawa (1999) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009).

Trechispora regularis (Murrill) Liberta, Can. J. Bot. 51(10): 1878, 1974 ["1973"].

Descriptions. Ryvarden and Johansen (1980) and Larsson (1994).

Distribution. Tropical and subtropical America and Africa (Ryvarden and Johansen 1980; Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar and Gibertoni 2009), first record from Paraná.

Examined specimens. BRAZIL. Paraná, Piraquara, Morro do Canal, 12 November 2010, J.M. Baltazar 2306 and 2321 (ICN, CIEFAP).

***Trechispora* sp.**

Examined specimen. BRAZIL. Rio Grande do Sul, Riozinho, 10 April 2010, on dead hardwood, J.M. Baltazar 1798 (ICN, CIEFAP).

Remarks. The examined specimen differs from all known species in *Trechispora* by having simple-septate hyphae and basidia with two sterigmata. Otherwise, the specimen is similar to *T. farinacea* and *T. nivea*. Additional specimens and molecular and/or biological studies are needed to confirme whether this is a independent species or just an haploid specimen of one of the other species in *Trechispora*. Haploidity was also suspected in *Luellia furcata* K.H. Larss. & Hjortstam (Eriksson and Ryvarden 1976), and prelimilary molecular analyses seems to support this hypothesis (K.-H. Larsson, pers. comm.).

Trechispora thelephora (Lév.) Ryvarden, Synop. Fungorum 15: 32, 2002.

Descriptions. Ryvarden (2002).

Distribution. Neotropical (Ryvarden 2002); Paraná and Rio Grande do Sul (Baltazar and Gibertoni 2009).

Tubulicium Oberw., Sydowia 19(1–6): 53, 1966 [“1965”].

Tubulicium* aff. *vermiferum (Bourdot) Oberw. ex Jülich, Persoonia 10(3): 335, 1979.

Descriptions. Boidin and Gilles (1986), Maekawa (1994), Hjortstam and Ryvarden (2007c), and Bernicchia and Grojón (2010).

Distribution. Cosmopolitan (Maekawa 1994); Rio Grande do Sul.

Examined specimens. BRAZIL. Rio Grande do Sul, Cambará do Sul, Parque Nacional dos Aparados da Serra, Estrada para o Cânion Itaimbezinho, on bark of living *Podocarpus lambertii*, 28 April 2012, J.M. Baltazar 2701 (ICN). Ibid., on bark of living unidenfied hardwood, J.M. Baltazar 2705 (ICN). Ibid., Parque Nacional da Serra Geral, Estrada para o Cânion Fortaleza, on bark of living unidenfied hardwoods, 29 April 2012, J.M. Baltazar 2759 and 2762 (ICN). Ibid., on bark of living unidenfied liana, J.M. Baltazar 2766 (ICN). Ibid., São Francisco de Paula, Floresta Nacional de São Francisco de Paula, on bark of living unidenfied hardwoods, 26 March 2010, J.M. Baltazar 1739, 1753, 1754 and 1761 (ICN). Ibid., on bark of living unidenfied hardwoods, 29 April 2012, J.M. Baltazar 2777, 2787, 2789, 2800, 2802, 2804, 2808, 2815, 2816 and 2817 (ICN). Ibid., on bark of living *Ocotea puberula* (Rich.) Nees, 29 April 2012, J.M. Baltazar 2811 (ICN).

Remarks. The specimens listed above differ from typical *T. vermiferum* by having capitate hyphal endings with a resinuous cap. These hyphal endings are found in the hymenium and in the hypha forming the hyphal sheat of lyocystidia. The presence of such feature, however, is variable even in a same specimen. Further evidence such as molecular data is desirable to confirm whether this is the same of *T. vermiferum* or not.

Vararia P. Karst., Krit. Öfvers. Finl. Basidsvampar, Tillägg 3: 32, 1898.

1a. Basidiospores ellipsoid to oblong-ellipsoid ..... *V. calospora*

1b. Basidiospores globose ..... *V. sphaericospora*

"***Vararia calospora*** (Rick) Baltazar & Rajchenb.", nom. prov.

≡ *Asterostromella calospora* Rick, Iheringia, Bot. 4: 118, 1959.

= *Vararia tropica* A.L. Welden, Mycologia 57(4): 516, 1965.

Description. Welden (1965) and Boidin and Lanquetin (1977).

Distribution. Known from Argentina, Brazil, Guadeloupe, Puerto Rico (type locality), Guadeloupe and Reunion Is. (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Baltazar et al. 2014a).

Examined specimen. BRAZIL. Rio Grande do Sul, São Salvador, 1943, J. Rick Fungi Rickiani 12071 (PACA, holotype of *A. calospora*).

Vararia sphaericospora Gilb., Pap. Mich. Acad. Sci. 50(1): 176, 1965.

Descriptions. Gilbertson and Blackwell (1988) and Boidin et al. (1980).

Distribution. Tropical and subtropical areas (Hjortstam and Ryvarden 2007a); first record from Southern Brazil, found in Santa Catarina.

Examined specimen. BRAZIL. Santa Catarina, Joinville, Piraí, 15 November 2010, J.M. Baltazar 2363 (ICN).

Xenasma Donk, Fungus 27: 25, 1957.

Xenasma pulverulentum (Litsch.) Donk, Fungus 27: 25, 1957.

= *Ceratobasidium striisporum* Rick, Lilloa 9: 219, 1943.

Descriptions. Liberta (1960), Maekawa (1993) and Bernicchia and Gorjón (2010).

Distribution. Cosmopolitan (Maekawa 1993); Rio Grande do Sul (Roberts 1999).

Examined specimen. Brazil, Rio Grande do Sul, São Salvador, 1943, J. Rick Fungi Rickiani 12849 (PACA, holotype of *C. striisporum*).

Xenosperma Oberw., Sydowia 19(1–6): 45, 1966 ["1965"].

Xenosperma murrillii Gilb. & M. Blackw., Mycotaxon 28(2): 400, 1987.

Descriptions. Gilbertson and Blackwell (1987) and Rodrigues and Guerrero (2012).

Distribution. Known from Brazil and USA (type locality); Rio Grande do Sul (Rodrigues and Guerrero 2012).

Xylobolus P. Karst., Medd. Soc. Fauna et Flora Fenn. 6: 11, 1881.

Xylobolus illudens (Berk.) Boidin, Rev. Mycol. 23(3): 341, 1958.

≡ *Stereum illudens* Berk., Lond. J. Bot. 4: 59, 1845.

= *Lloydella rickii* Bres. ex A.L. Welden, Mycotaxon 48: 75, 1993.

= ?*Stereum beigehymenium* Teixeira, Bragantia 5(7): 403, 1945.

Description. Cunningham (1956a), but see drawings in Jülich (1978).

Distribution. Australia (type locality), Brazil, Colombia, Mexico, New Zealand, Venezuela, and Zimbabwe (Hjortstam and Ryvarden 2007a); Rio Grande do Sul (Welden 1993).

Remarks. The synonymy of *S. beigehymenium* under *X. illudens* appears in the MycoBank website, but we could not find the work where the synonymy was proposed. Teixeira (1945) proposed *S. beigehymenium* based on specimens from Rio Grande do Sul, and revision of the original material is needed to confirm its identity.

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CONSIDERAÇÕES FINAIS

Os estudos dos fungos corticioides na Região Sul do Brasil começaram há mais de 100 anos e um número considerável de espécies era conhecido para essa área até o presente. Entretanto, esse conhecimento encontrava-se fragmentado. Uma das principais contribuições do presente trabalho é a compilação dos registros das espécies conhecidas, o que permite uma apreciação razoavelmente segura do estado da arte desse tema. Essa apreciação é dita razoável porque certamente algumas omissões ocorreram, além de variações no número de espécies devido às circunscrições de táxons adotadas, principalmente relativas a sinonímias.

Antes do presente trabalho, 181 espécies eram conhecidas para a Região Sul do Brasil. Com este estudo são acrescentadas 31 espécies, e outras 14 ainda necessitam confirmação de sua identidade, totalizando 226 espécies conhecidas para a área estudada.

Esse número ainda é baixo se comparado com outras áreas supostamente menos diversas, e.g., a Itália, que possui praticamente a metade da área da Região Sul do Brasil e conta com cerca de 450 espécies de fungos corticioides conhecidas atualmente (Bernicchia & Gorjón 2010). Das espécies tratadas neste trabalho, apenas 22 são conhecidas para os três estados da região, número considerado muito baixo e que reflete a falta de estudos nessa área. Esse quadro também é reflexo do número de pesquisadores que dedicam-se ou dedicaram-se ao estudo desses organismos. Tradicionalmente, um grande número de micólogos profissionais e amadores têm estudado fungos corticioides na Europa e América do Norte, e inclusive micotas completas foram publicadas para essas regiões. Por outro lado, no hemisfério sul um número muito menor de micólogos têm se dedicado ao grupo. Considerando a estimativa de que apenas 40% das espécies corticioides são conhecidas para regiões tropicais e subtropicais da América até o momento (Mueller et al. 2007), espera-se que as 226 espécies conhecidas para os três estados do sul do Brasil sejam uma pequena amostra da real diversidade.

Essa falta de tradição em pesquisas sobre o grupo pode ser considerada o principal obstáculo para o estudo dos fungos corticioides no Brasil. Atualmente, é conhecido pelo autor apenas o trabalho da Dra. Tatiana B. Gibertoni e seus alunos (Recife, Pernambuco) que têm estudado fungos corticioides em colaboração com micólogos

europeus, porém os dados desses estudos ainda não estão disponíveis. Além dessas pessoas, apenas iniciativas bastante isoladas são conhecidas.

A escassez de estudos sobre esses organismos (ver Introdução) acarreta na carência de literatura especializada (chaves, descrições e ilustrações) e de espécimes de referência depositados em herbários locais, o que dificulta o estudo dos fungos corticioides no Brasil, principalmente para micólogos sem experiência nesse grupo taxonômico.

A falta de especialistas também é importante. Durante a execução deste estudo, um avanço considerável quanto aos resultados foi possível apenas após o autor ter tido a possibilidade de trabalhar pessoalmente com o Dr. Mario Rajchenberg e o Dr. Sergio P. Gorjón, especialistas em fungos corticioides. Acredita-se também que a demanda de tempo para análises microscópicas contribui para o baixo número de pessoas interessadas em estudar esses organismos.

Apesar de não ter sido possível a produção de um catálogo completo incluindo descrições e ilustrações, devido ao grande volume de trabalho, espera-se que a sinopse apresentada no Manuscrito V seja de grande auxílio aos que se interessem em coletar e estudar fungos corticioides.

Uma etapa deste trabalho que foi muito desafiadora, porém resultou em uma importante contribuição, foi a revisão dos espécimes tipo da coleção de J. Rick. Muitos pesquisadores já haviam revisado tipos de Rick (ver Manuscrito IV), e esperava-se encontrar poucos tipos ainda não revisados no Herbário Anchieta (PACA). A primeira visita a esse herbário, no início deste estudo, provou o contrário. Foram encontrados 134 espécimes na coleção de tipos do herbário, e a sua revisão pode ser considerada a mais importante contribuição desta tese à taxonomia dos fungos corticioides. O tempo demandado para esta revisão impossibilitou a análise dos demais espécimes de fungos corticioides depositados naquele herbário.

A revisão dos espécimes de Rick foi uma experiência ímpar, e deixou como ensinamento que os registros antigos devem ser considerados apenas quando houver uma revisão moderna dos espécimes. Um exemplo é o caso de *Hyphodermella corrugata* (Fr.) J. Erikss. & Ryvarden, um táxon para o qual Rick propôs oito nomes novos, alguns dos quais invalidamente. Os equívocos nas identificações de Rick e outros micólogos contemporâneos não devem ser explicados pela falta de seriedade ou de experiência deles, mas sim pelos diferentes conceitos vigentes, como circunscrições de táxons, e prováveis condições de microscopia da época. As descrições feitas por

esses micólogos, quando publicadas, eram breves e raramente ajudam a ter uma ideia do táxon em questão.

Considera-se que o presente estudo tenha contribuído de forma significativa para o conhecimento dos fungos corticioides na Região Sul do Brasil. Apesar disso, esse ainda é um pequeno passo quando se tem em mente todo o trabalho que ainda há por fazer em relação ao tema. Ainda, espera-se que esta tese e seus manuscritos sejam de grande utilidade para aqueles que se interessem pelo estudo desses organismos, e que outros especialistas possam ser formados no futuro, pois a colaboração entre especialistas mostrou ser fundamental no aprendizado sobre os fungos corticioides.

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