

REVIEW ARTICLE

Pathogenic polypores in Argentina

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Summary

We surveyed the polypore species associated with living hosts in Argentina. We reviewed the literature on polypores found in Argentina and, in addition with the study of unpublished herbarium material, present a list of 87 species decaying living trees in native forests and introduced plantations. The rot type, host(s), distribution and remarks are presented for each species. Among 87 species found, 71 produce a white rot and 16 a brown rot in wood; 61 species were exclusively found on native hosts and 7 on exotic, cultivated hosts, while 18 were found on both types of substrates; one species, *Amylosporus campbellii*, was exclusively found associated with grasses. For most cases, there are no pathological studies based on rot measurement and culture isolation to determine incidence and severity of the decay.

1 Introduction

Polypores (Basidiomycota, Agaricomycotina) are among the largest and most conspicuous fungi in all forests of the world, easily recognized in the field by their large basidiomes and poroid hymenial configuration. They are highly diverse and form a polyphyletic group of organisms that display diverse microscopy, biology and function (Ryvarden 1991; Hibbett and Thorn 2001). Their main role in nature as wood decayers of standing trees and fallen wood makes them key elements in the dynamics and health of any type of forest worldwide (Boddy and Heilmann-Clausen 2008; Lonsdale et al. 2008).

Most polypores live through the decay of wood, through the degradation of cellulose, hemicelluloses and lignin. They belong to the large group of organisms responsible for C cycling in nature. Rayner and Boddy (1988), Boddy (2001), Boddy and Heilmann-Clausen (2008), and Schwarze et al. (2000) described in detail the strategies and the ecology of wood-decaying fungi, the different methodologies for their study and the biochemistry of wood degradation. For the latter subject, see Zabel and Morrell (1992), Akhtar et al. (1997), Martínez et al. (2005), Gamauf et al. (2007), and Kersten and Cullen (2007). Wood rots produced by polypores may be classified as white or brown. White rots are generally characterized by a lighter coloration of wood (sometimes whitish or cream-coloured) than healthy wood and, biochemically, by the degradation of cellulose/hemicelluloses and lignin. It may produce a fibrous or pocket-marked or pitted macroscopic aspect. Organisms responsible for this type of decay produce, with few exceptions, a positive oxidase reaction in culture (Nobles 1965). Brown rots usually present a darker coloration than healthy wood and produce either a fibrous aspect or a cubical one (i.e. brown cubical wood rot). Biochemically, this type of rot is characterized by the degradation of cellulose/hemicelluloses, whereas lignin is very slightly altered.

Although most polypores grow as saprotrophs on dead, fallen or standing wood, others are necrotrophic parasites growing and killing living sapwood. A special case is that of the heart-rot polypores that decay the heartwood of living trees; in spite of growing on a dead tissue, they present adaptations to specifically infect a living host. They cause major volume loss in the timber industry; living trees become weakened structurally and may be easily broken and felled by wind. Heart-rot polypores are, thus, of great forest pathological importance (Sinclair et al. 1987; Shigo 1989; Manion 1991; Tainter and Baker 1996; Agrios 2005).

In Argentina, the study of polypores has a long tradition starting from the early works of Spegazzini in the last decades of 19th century (Spegazzini 1880, 1887 among others; cfr. Rajchenberg and Wright 1987 for full references), followed by those from Wright and Deschamps (1972, 1975, 1977), Rajchenberg (1984, 2006), Popoff (2000) and, more recently, Robledo (2009) and Robledo and Urcelay (2009), only to mention a brief résumé of publications. Nevertheless, most of the published work has focused on their morphology, taxonomy and biology. The pathogenic species decaying the wood of living trees have rarely been studied, the main exception being those from Patagonia (Cwielong and Rajchenberg 1995; Barroetaveña and Rajchenberg 1996; Rajchenberg 1996). General information was presented by Deschamps et al. (1997) and Deschamps and Wright (2000) but they did not discriminate between living and dead substrates. Most of the pathological information available today is hidden in the conspicuous, abundant bibliography on these organisms in mycological literature.

The aim of this work is to bring together the information regarding pathogenic polypores on native hosts belonging to the different phytogeographic areas and from exotic tree plantations of Argentina.

2 Material and methods

The checklist was prepared on the basis of available literature on polypores diversity and taxonomy and from forest pathology literature from Argentina. Otherwise, much of the information is based on data recovered personally by the authors through their numerous collecting field trips and observations in different biomes. Specimens studied are kept at BAFC, CORD, CTES, LPS and the mycological herbarium at Centro Forestal CIEFAP (Esquel, Chubut, Argentina).

Species are arranged alphabetically, with authors of scientific names following Index Fungorum website (www.indexfungorum.org/AuthorsOfFungalNames.htm). For each taxon, it is indicated as (i) the associated rot type, (ii) the host (s) (for scientific names and authorities cfr. Catálogo de las Plantas Vasculares del Conosur by Instituto de Botánica Darwinion at <http://www2.darwin.edu.ar/Proyectos/FloraArgentina/FA.asp>), and ‘The Plant List’ by Missouri Botanical Garden at <http://www.tropicos.org/>), (iii) distribution: global distribution is followed by the distributional range in

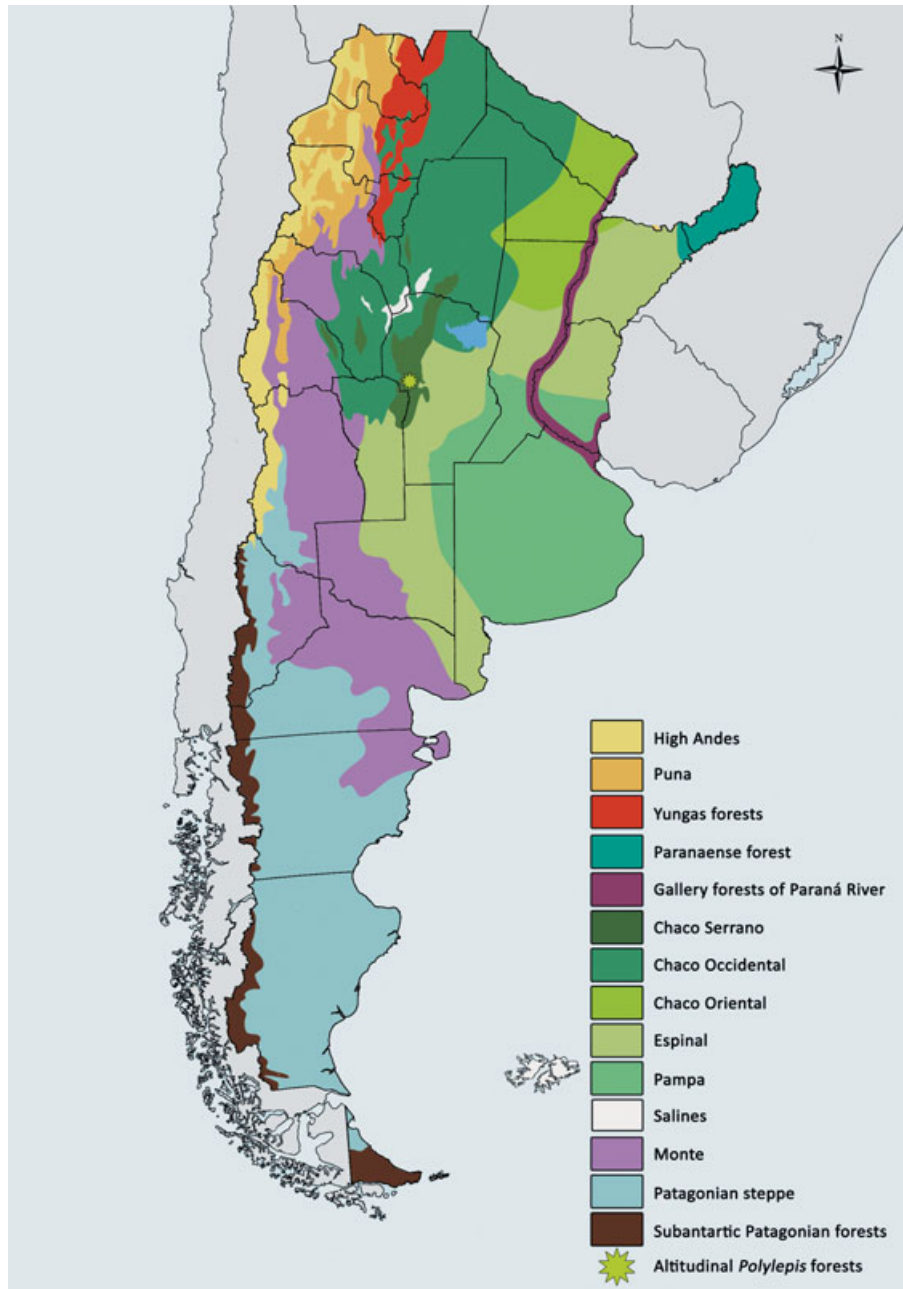


Fig. 1. Phytogeographic regions of Argentina (modified from Robledo and Urcelay 2009; based on Cabrera 1971 and Brown and Pacheco 2006).

Argentina, and the phytogeographic regions of Argentina follows Cabrera (1971) (Fig. 1) and, when relevant, d) remarks section, where relative importance of the species and personal observations by the authors are presented.

Occurrences based on personal observations are also included, as well as taxa associated with declining, standing trees. Species purportedly parasitizing non-tree plants are also incorporated.

3. Results

Abortiporus biennis (Bull.) Singer

White heart-rot of roots and lower stem (butt)

Hosts: *Prunus persica*, *Malus communis*, *Persea gratissima*, *Prunus communis*, *Prosopis* sp. (Wright and Deschamps 1975); also on stumps of *Ulmus procera*, *Ligustrum lucidum*, *Juglans* sp. and declining *Fraxinus* sp., and at the base of living *Cupressus* sp., *Acacia dealbata* and *Fraxinus excelsior* (Urcelay et al. 2012).

Distribution: a worldwide distributed species, possibly an introduced pathogen in Argentina where it is present in planted areas and urban trees; the only native host is *Prosopis* sp. from Chaco (Wright and Deschamps 1975).

Amylosporus campbellii (Berk.) Ryvarden

Brown-rot (?) [cfr. Gilbertson and Ryvarden (1986)]

Host: grasses.

Distribution: circumglobal in the tropics and subtropics, but uncommon, known from NW Argentinean Yungas forests (Robledo and Rajchenberg 2007).

Remarks: purportedly parasitizing grasses but also fruiting on several woody substrates (Ryvarden and Johansen 1980; Gilbertson and Ryvarden 1986). Molecular studies group this taxon with whitewood-rotting taxa in *Wrightoporia* Pouz. (Vlasák et al. 2011) for that reason its alleged wood rot may be different.

Antrodia serialis (Fr.) Donk

Brown cubical heart-rot

Hosts: *Ocotea acutifolia* (Wright et al. 1973) and *Fraxinus americana* in urban environments (Popoff and González 1995).

Distribution: a worldwide distributed species known from the Paranense and Yungas forests (Robledo and Rajchenberg 2007), also occurring on exotics.

Remarks: the record on *Ocotea acutifolia* needs confirmation as in the original text it is not indicated whether the host was living or standing dead. In Yungas forests, the species has been recorded on dead, fallen substrates.

Aurificaria luteoumbrina (Romell) D.A. Reid

White heart-rot and butt-rot

Hosts: *Alnus acuminata* (Robledo et al. 2003).

Distribution: Neotropical, known from Yungas forests (Robledo et al. 2003; Robledo and Rajchenberg 2007).

Remarks: it generally fruits on felled trees, but it has also been collected from standing ones.

Aurantiporus albidus Rajchenb. & Cwielong

White pocket heart-rot

Hosts: *Nothofagus antarctica* and *N. pumilio* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests.

Remarks: possibly also decaying *Nothofagus dombeyi* but yet not found on standing trees.

Bjerkandera adusta (Willd.) P. Karst.

White fibrous heart-rot

Hosts: *Polylepis australis* (Robledo et al. 2006), *Salix* sp., *Alnus acuminata* (Robledo et al. 2003; Urcelay and Robledo 2004) and *Myoporus laetum*. Also *Platanus acerifolia* in urban environments (Robles et al. 2011, 2012).

Distribution: a widely distributed species that has frequently been recorded as pathogenic on different substrates (Dai et al. 2007). In Argentina found on living trees in natural ecosystems such as the Alder forests in Yungas, altitudinal *Polylepis australis* forests in Central Argentina and subtropical gallery forest of the Paraná and Uruguay rivers, and urban environments.

Remarks: it usually fruits on fallen stems and branches, but it has also been found on living stems. Its presence in urban environments has been detected by basidiomes detection and molecular identification of cultures obtained from declining trees (Robles et al. 2011, 2012).

Bondarzewia guaitecasensis (Henn.) J.E. Wright

white butt-rot

Hosts: *Nothofagus dombeyi*, *N. nervosa* and *N. obliqua* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests in Bosque Caducifolio and Pehuén Districts, and the only representative of this genus in the southern hemisphere.

Coltricia* aff. *cinnamomea (Pers.) Murrill

White heart-rot

Hosts: *Syagrus romanzoffiana* [pindó palm] (Popoff 2000; Wright and Wright 2005).

Distribution: Paranense rainforest, possibly follows the host throughout its distributional range.

Remarks: the studied specimen grew on the exposed roots of a palm tree and might presumably be a pathogen.

Coltricia stuckertiana (Speg.) Rajchenb. & J.E. Wright

White heart-rot

Hosts: unknown.

Distribution: Neotropical, found in Yungas, Chaco Occidental and Chaco Serrano.

Remarks: although previously recorded on buried wood, it has been found attached to living roots (Robledo pers. obs.) pointing out it might be a true pathogen. Phylogenetic studies by Valenzuela et al. (2011) point towards its inclusion in *Phylloporia* Murrill, a genus characterized by parasitizing living hosts.

Diacanthodes novoguineensis (Henn.) O. Fidalgo

Presumably white rot (Gilbertson and Ryvardeen 1986)

Host: unknown.

Distribution: a Pantropical species widely registered from the Americas and recorded from Yungas and Paranense forests (Popoff 2000; Robledo and Rajchenberg 2007).

Remarks: Ryvardeen and Johansen (1980) suggest it possibly is a parasite of roots, previously infected by the imperfect stage *Bornetina corium* Magnin & Viala.

Echinoporia aculeifera (Berk. & M.A. Curtis) Ryvardeen

White heart- or sap-rot

Hosts: undetermined angiosperm (Wright 1983), also perhaps *Myriocarpum frondosus* (Wright and Wright 2005).

Distribution: Neotropical, found in Yungas and Paranense rainforest (Popoff 2000; Robledo and Rajchenberg 2007).

Remarks: a saprophyte, rarely found on living trees (Wright 1983).

Fistulina antarctica Speg.

Brown heart-rot

Hosts: *Nothofagus dombeyi*, *N. pumilio*, *N. betuloides* and *N. antarctica* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests (Bosque Caducifolio and Pehuén Districts).

Remarks: it produces a characteristic reddish, chestnut staining of the heart wood that does not produce the loss of technological properties of the wood (at the least in the preliminary moments); in fact, it was always isolated from apparently sound although 'brownish dyed' wood (Cwielong and Rajchenberg 1995).

Fistulina endoxantha Speg.

Brown heart-rot

Hosts: *Nothofagus nervosa* and *N. obliqua* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests (Pehuén District).

Fomes fasciatus (Sw.) Cooke

White heart-rot

Hosts: *Nectandra lanceolata*, *Alchornea triplinervia* (Cockle et al. 2012) and *Juglans australis*.

Distribution: Neotropical, recorded from Yungas and Paranense rainforest (Robledo and Rajchenberg 2007).

Remarks: the species generally fruits after the tree's death or on dead branches/stems of living trees.

Fomitiporia apiahyna (Speg.) Robledo, Decock & Rajchenb.

White fibrous heart-rot

Hosts: *Ocotea* sp. (Wright and Blumenfeld 1984), *Polylepis australis* and *Lepechinia* sp. (Robledo et al. 2006).

Distribution: Neotropical, known from Yungas and Paranense forests.

Fomitiporia tabaquillo (Urcelay, Robledo & Rajchenb.) Decock & Robledo

White heart-rot

Hosts: *Polylepis australis* and *P. tomentella* (Robledo et al. 2006).

Distribution: Andean mountain range on *Polylepis* spp., recorded from Yungas (Bosques Montanos district) and Chaco ecosystems of Central Argentina.

Remarks: a taxon specific to *Polylepis*.

Fomitiporia punctata (Pilát) Murrill s.l.

White heart-rot

Hosts: *Allophylus edulis*, *Bulnesia retamo*, *Pogonopus tubulosus*, *Prunus* sp., *Nectandra saligna*, *Condalia montana*, *Sebastiania commersoniana*, *Larrea* sp. *Fraxinus americana*, *Cyclolepis genistioides*, *Acacia visco*, *Geoffroea decorticans*, *Jacaranda mimosifolia*, *Ligustrum lucidum*, *Robinia pseudoacacia*, *Melia azedarach*, *Cupressus* sp., *Pyracantha* spp., *Grevillea robusta* and *Pyrostegia venusta* (Urcelay et al. 2012; Wright et al. unpublished)

Distribution: Paranense rainforest, subtropical gallery forests of Paraná and Uruguay rivers, Chaco and Yungas. Common on exotic substrates in urban trees.

Remarks: several undescribed taxa in the resupinate *Fomitiporia punctata* and pileate *F. robusta* (P. Karst.) Fiasson & Niemelä species complexes are included under this name, awaiting proper taxonomic delimitation (Decock et al. 2007; Robledo and Urcelay 2009; Amalfi et al. 2010, 2012).

Fomitopsis minutispora Rajchenb.

Brown heart-rot

Hosts: *Nothofagus nervosa* and *N. obliqua* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests (Pehuén District).

Fulvifomes fastuosus (Lév.) Bondartseva & S. Herrera

White heart-rot

Hosts: *Cedrela lilloi* (Robledo 2009), *Cedrela fissilis*, *Parapiptadenia rigida* (Cockle et al. 2012), *Peltophorum dubium*, *Aspidosperma quebracho-blanco*, *Patagonula americana* and *Prunus subcoriacea* (Wright et al. unpublished).

Distribution: widely distributed in the tropics, know from Yungas (Robledo and Rajchenberg 2007), Paranense forests (Popoff 2000) and Chaco.

Remarks: the species usually develops large basidiomes at both base and stems of living trees.

Fulvifomes merrillii (Murrill) Baltazar & Gibertoni

White heart-rot

Hosts: *Amburana cearensis*, *Xylosma venosa*, *Anadenanthera colubrina*, *Acacia aroma*, *Acacia* sp., *Apuleia leiocarpa* (Robledo 2009; Cockle et al. 2012) and *Patagonula americana* (Wright et al. unpublished).

Distribution: Pantropical, widely distributed in the Neotropics, known from Yungas (Robledo and Rajchenberg 2007) and Paranense rainforest (Popoff 2000).

Remarks: records on *Aspidosperma quebracho-blanco* and *Schinopsis lorentzii* by Guardia (1986) were not confirmed.

Fulvifomes rimosus (Berk.) Fiasson & Niemelä

White heart-rot

Hosts: on a wide range of substrates mainly Fabaceae, *Prosopis* spp., *Acacia* spp. and *Mimoziganthus carinatus* (Wright and Blumenfeld 1984; Urcelay et al. 1999; Robledo and Urcelay 2009) and on *Cedrela fissilis* (Vizcarra Sánchez 2004) also recorded on *Schinus* spp. and *Zizipus mistol*. Wright et al. (unpublished) recorded it on *Caesalpinia paraguariensis* but did not give the detail if it was found on a standing tree or not.

Distribution: Pantropical and temperate areas of the world, known practically in all areas of Central and North Argentina, Yungas, Paranense rainforest and Chaco.

Remarks: this taxon represents a complex of species, which explains the many substrates associated with the name.

Funalia gallica (Fr.) Bondartsev & Singer

White heart-rot

Hosts: *Morus* spp., *Ulmus minor*, *Ligustrum lucidum*, *Fraxinus excelsior*, *Lithraea molleoides*, *Schinus fasciculatus* and *Jacaranda mimosifolia* (Urcelay et al. 2012), also on *Myoporum laetum* and *Populus* sp. (Wright et al. 1973).

Distribution: a widely distributed species in the world, in Argentina found on native and exotic trees but restricted to urban environments (Urcelay et al. 2012).

Remarks: the species is a quite common saprobe found practically in all ecosystems of Central N, NW and NE Argentina on fallen wood of native hosts (fallen or still attached branches and stems); however, in urban environments, it has been recorded on living stems of exotic trees (particularly *Ligustrum lucidum*) and native trees.

Funalia trogii (Berk.) Bondartsev & Singer

White heart-rot

Hosts: a pathogen mostly restricted to cultivated hosts: *Salix babylonica*, *S. viminalis*, *Populus nigra* (Wright et al. 1973; Robledo and Urcelay 2009); in urban environments recorded on *Platanus acerifolia* (Robles et al. 2011) and *Cercis siliquastrum* (Urcelay et al. 2012). *Salix humboldtiana* is the only native substrate recorded for this species (Robledo and Urcelay 2009).

Distribution: a widely distributed species in the North Hemisphere, in Argentina known in urban or anthropic environments with cultivated hosts.

Remarks: Spegazzini (1925) characterized this species as a parasite of Salicaceae causing 'piptostelechia', a disease that causes curving of stems and branches.

Fuscoporia gilva (Schwein.) T. Wagner & M. Fisch.

White heart-rot

Hosts: *Platanus acerifolia*, *Eriobotrya japonica*, *Myoporum laetum*, *Acacia* sp., *Allophylus edulis*, *Prunus cerasus* (Wright et al. unpublished), *Polylepis australis*, *Ruprechtia apetala* and *Trintrinax campestris* (Robledo and Urcelay 2009); in urban environments recorded on *Pinus* sp., *Ligustrum lucidum*, *Morus* sp. and *Eucalyptus* sp. (Urcelay et al. 2012).

Distribution: a temperate to Pantropical species, known from Yungas and Paranense rainforest, also recorded in Chaco ecosystems of Central Argentina.

Remarks: a polyphagous species decaying cultivated and native species as well.

Fuscoporia senex (Nees & Mont.) Ghob.-Nehj.

White heart-rot

Hosts: *Dasyphyllum diachantoides*, *Luma apiculata*, *Myrceugenia exsucca* and *Weinmania trichosperma* (Rajchenberg 2006). Also on *Nectandra saligna* (Wright et al. unpublished) and *Prosopis* sp. (Robledo and Urcelay 2009).

Distribution: a temperate to Pantropical species, known from continental Subantarctic forests (Valdivian district), Chaco Serrano district and Paranense rainforest.

Fuscoporia wahlbergii (Fr.) T. Wagner & M. Fisch.

White heart-rot

Hosts: *Alchornea triplinervia* (Cockle et al. 2012).

Distribution: Pantropical, known from Paranense rainforest in NE Argentina.

Ganoderma australe (Fr.) Pat.

White heart-rot

Hosts: *Alnus acuminata*, *Allophylus edulis*, *Acacia* sp., *Nothofagus dombeyi*, *N. antarctica*, *N. nervosa* (Robledo et al. 2003; Rajchenberg 2006), *Ruprechtia laxiflora* and *Nectandra lanceolata* (Cockle et al. 2012), *Araucaria angustifolia* and *Parapiptadenia rigida* (Robledo pers. obs). In urban environments recorded on *Pinus* spp., *Melia azedarach*, *Gleditsia triacanthos*, *Schinus areira* and *Salix* spp. (Urcelay et al. 2012, Robledo pers. obs.).

Distribution: Yungas, Paranense rainforest, Subantarctic Patagonian forests, Chaco and Espinal (Ibañez 1998; Popoff 2000, Robledo and Urcelay 2009).

Remarks: a widespread species that needs further taxonomic elaboration (Rajchenberg 2006).

Ganoderma resinaceum Boud.

White heart-rot

Hosts: at the base of *Casuarina cunninghamiana*, *Platanus acerifolia*, *Ulmus procera*, *Acacia* sp., *Salix* sp., *Prosopis algarobilla*, *Blepharocalyx tweedii*, *Robinia pseudoacacia*, *Ziziphus mistol* and *Schinus areira* (Bazzalo and Wright 1982; Robledo and Urcelay 2009; Robles et al. 2011). In urban environments also on *Morus nigra*, *Tipuana tipu*, *Populus* sp., *Ligustrum lucidum*, *Melia azedarach*, *Morus* spp., *Fraxinus* sp., *Maclura pomifera*, *Jacaranda mimosifolia* (Urcelay et al. 2012), *Fraxinus americana* (Popoff and González 1995), *Acacia melanoxylon* and *Acer negundo* (S. Sede pers. com.).

Distribution: Pantropical to temperate species recorded from Yungas (Robledo and Rajchenberg 2007), Paranense rainforest, Chaco Serrano, Chaco Occidental and Espinal.

Remarks: it usually grows at the base of declining trees and commonly fruits the next season after the tree death.

Ganoderma subamboinense P. Henn. var. **laevisporum** Bazzalo & J.E. Wright

White heart-rot

Hosts: *Platanus* sp. (Bazzalo and Wright 1982).

Distribution: a poorly known taxon found on cultivated host in Buenos Aires city.

Ganoderma zonatum Murrill

White heart-rot

Host: *Tipuana tipu* (Bazzalo and Wright 1982).

Distribution: Neotropical, known from gallery forests of Paraná and Uruguay rivers.

Grifola gargal Singer

White heart-rot

Hosts: *Nothofagus obliqua* (Rajchenberg 2002) and cultivated *Populus nigra* (Pozzi et al. 2009).

Distribution: endemic species of the Subantarctic Patagonian forests (Pehuén District) (Rajchenberg 2006).

Remarks: it fruits on standing and fallen trees.

Grifola sordulenta (Mont.) Singer

White heart-rot

Hosts: *Nothofagus dombeyi*.

Distribution: an endemic species of the Subantarctic Patagonian forests (Bosque Caducifolio) (Rajchenberg 2006).

Remarks: the species is found on cut stumps and, more rarely, on standing trees.

Hydnopolyporus fimbriatus (Fr.) D.A. Reid

White heart-rot

Hosts: *Platanus acerifolia* and *Ligustrum lucidum* (Wright and Deschamps 1977).

Distribution: Neotropical, known from Yungas and Paranense forests.

Remarks: the species fruits on the soil, growing on semiburied roots, and has been described as saprophytic; however, Wright and Deschamps (1977) suggest that this species could be a parasite of trees' neck and roots.

Hymenochaetaceae sp.

White fibrous heart-rot

Host: *Austrocedrus chilensis* (Barroetaveña and Rajchenberg 1996).

Distribution: Subantarctic Patagonian forests (Bosque Caducifolio and Pehuén Districts).

Remarks: This is an unknown aphylloroid species responsible for the main heart-rot decay in standing *A. chilensis*. The identification to family level has been established through cultural features of the fungus (Barroetaveña and Rajchenberg 1996) and corroborated through TEM microscopy of the parentheses/dolipore apparatus (Bianchinotti & Rajchenberg unpublished) and through molecular identification (Nakasone, pers. comm.). Basidiomes of the species still wait to be found in nature.

Inocutis jamaicensis (Murrill) A.M. Gottlieb, J.E. Wright & Moncalvo

White heart-rot

Hosts: *Heterothalamus alienus*, *Eupatorium buniifolium*, *Eupatorium* sp., *Ruprechtia apetala*, *Condalia montana*, *Acacia longifolia*, *Acacia* spp., *Cedrela lilloi* and *Tecoma stans* (Robledo and Urcelay 2009; Wright et al. unpublished). Also recorded on *Vitis vinifera* plantations in Argentina and *Eucalyptus globulus* and *E. viminalis* in Uruguay (Lupo et al. 2006; Pérez et al. 2008). In urban environments on *Salix humboldtiana*, *S. babylonica* and *Prunus* sp. (Urcelay et al. 2012).

Distribution: Neotropical, known from Chaco Serrano, Chaco Occidental, Subantarctic Patagonian forests and Yungas forests.

Remarks: the species has shown to be more widespread than previously recorded (Rajchenberg and Wright 1998).

Inocutis texana (Murrill) S. Martínez

White heart-rot

Hosts: mainly *Acacia furcatispina*, but also on *Prosopis* spp., *Acacia* spp. and *Mimosa* sp. (Robledo and Urcelay 2009).

Distribution: a species with a disjunct distribution, known from SW USA, and Central Argentina in the phytogeographic regions of Chaco Occidental and Chaco Serrano (Urcelay et al. 1999).

Inonotus costaricensis Ryvarden

White heart-rot

Host: *Allophylus edulis* (Robledo 2009).

Distribution: Neotropical, known from the type locality in Costa Rica and Yungas forest in NW Argentina.

Remarks: a rare species known from few materials, only one collection has been recorded on living substrate.

Inonotus micantissimus (Rick) Rajchenb.

White heart-rot

Host: *Anadenanthera colubrina* (Robledo 2009).

Distribution: Neotropical, known from Yungas forests in NW Argentina, possibly also in the Paranense rainforest according to records from southern Brazil (Rajchenberg 1987) and, recently, it has been found in Florida (USA) and the Caribbean area (Vlasák et al. 2011), always fruiting on living trees.

Inonotus ochroporus (Van der Byl) Pegler

White heart-rot

Hosts: *Phoebe porphyria*, *Anadenanthera colubrina* (Robledo 2009) and *Diatenopteryx sorbifolia* (Cockle et al. 2012).

Distribution: Pantropical, in South America only known from Yungas and Paranense rainforest (Popoff 2000; Cockle et al. 2012). Gottlieb et al. (2002) also recorded it from Chaco, but there is no precise indication whether the recorded trees (*Casuarina cunninghamiana* and *Lithraea ternifolia*) were living or not.

Inonotus patouillardii (Rick) Imazeki

White heart- and sap-rot

Hosts: *Casuarina cunninghamiana*, *Platanus* sp. in urban environments and the native *Ocotea acutifolia*, and *Phoebe porphyra* (Gottlieb et al. 2002).

Distribution: Pantropical, known from Yungas (Robledo and Rajchenberg 2007) and Paranense rainforest (Popoff 2000). Also in urban environments.

Inonotus quercustris M. Blackw. & Gilb.

White heart-rot

Hosts: *Lithraea molleoides*, *Acacia* spp., *Celtis tala*, *Parkinsonia aculeata* and *Acacia visco* (Urcelay et al. 1999; Robledo and Urcelay 2009). In urban environments also on *Schinus areira*, *Ulmus minor*, *Robinia pseudoacacia*, *Platanus acerifolia* and *Morus* sp. (Urcelay et al. 2012).

Distribution: a species with a disjunct distribution, known from southern USA [(where it is specific on living *Quercus nigra* (Blackwell and Gilbertson 1985)], and Central Argentina in Chaco ecosystems.

Inonotus rickii (Pat.) D.A. Reid

White heart-rot

Hosts: *Acacia melanoxyton*, *Acacia visco*, *Acer negundo*, *Casuarina cunninghamiana*, *Chorisia* sp., *Delonix regia*, *Lippia citriodora*, *Morus* sp., *Platanus acerifolia*, *Schinus areira* and *Styphnolobium japonicum* in urban environments (Wright and Iaconis 1955; Gottlieb et al. 2002; Robles et al. 2011 and 2012, Urcelay et al. 2012). *Celtis tala* and *Celtis spinosa* are the only two native substrates in natural ecosystems reported for this species (Gottlieb et al. 2002; Robledo and Urcelay 2009).

Distribution: widely distributed in the neotropics and also recorded from southern Europe and Asia; known from Yungas forests (Robledo 2009), Chaco Serrano (Robledo and Urcelay 2009) and Paranense rainforest (Popoff 2000).

Remarks: the species usually fruits in its anamorphic state *Ptychogaster cubensis* Pat.

Inonotus venezuelicus Ryvarde

White heart-rot

Hosts: *Polylepis australis* (Robledo et al. 2003, 2006; Robledo and Urcelay 2009).

Distribution: Neotropical, distributed along the Andes following *Polylepis* forests, in Argentina found in altitudinal *Polylepis* forest from Yungas and altitudinal *Polylepis* forests of Central Argentina.

Remarks: the species is so far specific to *Polylepis*.

Laetiporus gilbertsonii Burds.

Brown heart-rot

Hosts: *Schinus* sp.

Distribution: a species from the Americas, reaching NW Argentinean Yungas forests in its southernmost distribution (Robledo 2009 as *Laetiporus* sp., Lindner and Banik 2008; Vasaitis et al. 2009; Banik et al. 2012).

Remarks: similar to *Laetiporus sulphureus* (Null.) Murrill, from which it differs mainly by spore size.

Laetiporus portentosus (Berk.) Rajchenb.

Brown cubical heart-rot

Hosts: *Nothofagus dombeyi* and *N. pumilio* (Rajchenberg 2006).

Distribution: an austral species, known from the Subantarctic Patagonian forests (Cwielong and Rajchenberg 1995) and Australia.

Remarks: a severe pathogen of *N. pumilio* preferably present in stands with ecologically dry environments (Cwielong and Rajchenberg 1995). Its taxonomic disposition needs further research.

Laetiporus sulphureus (Bull.) Murrill

Brown cubical heart-rot

Hosts: *Prunus* sp., *Gleditsia* sp., *Acacia* sp., *Eucalyptus* sp. (Wright and Deschamps 1975) and *Melia azedarach* (Vizcarra Sánchez 2004).

Distribution: possibly an introduced species.

Macrohyporia dictyopora (Cooke) I. Johans. & Ryvarde

Brown heart-rot

Hosts: *Nothofagus dombeyi* and *N. pumilio* (Rajchenberg 2006).

Distribution: an austral species, known from the Subantarctic Patagonian forests.

Microporellus iguazuensis Rajchenb.

Type of wood-rot unknown, presumably white.

Hosts: *Ocotea* sp. (*O. indecora* in southern Brazil, Reck et al. 2011).

Distribution: Neotropical, known from Paranense rainforest of Argentina and Brazil.

Remarks: recently, the species has been shown to be a root-rotting taxon (Reck et al. 2011).

Oxyporus obducens (Pers.) Donk

White heart-rot

Hosts: *Polylepis australis* (Robledo 2009; Robledo and Urcelay 2009).

Distribution: a widely distributed species in the North Hemisphere. In Argentina known from altitudinal *Polylepis* forests of Central and NW Argentina.

Remarks: the species is characterized by producing chlamydospores in the upper part of the basidiome.

Oxyporus populinus (Schumach.) Donk

White stem heart-rot

Hosts: *Lonchocarpus nitidus* (Wright and Deschamps 1975).

Distribution: a widely distributed species, known from subtropical gallery forest of Paraná and Uruguay rivers (Punta Lara in Buenos Aires Province).

Remarks: Rajchenberg (2006) recorded *Maytenus boaria* as a possible host of a taxon, he named *O. aff. populinus* in the Subantarctic Patagonian forests, but its taxonomic disposition needs further verification.

Perenniporia gomezii Rajchenb. & J.E. Wright

White heart-rot

Hosts: *Melia azederach* (Rajchenberg and Wright 1982).

Distribution: so far endemic to Yungas forests in NW Argentina.

Remarks: only known from the type specimen, growing on an exotic tree.

Perenniporia martia (Berk.) Ryvarden

White heart-rot

Host: *Ocotea* sp. (Wright and Deschamps 1975).

Distribution: Pantropical, known from Yungas and Paranense rainforest.

Remarks: the species fruits commonly on huge dead logs or dead standing stems, but it has also been recorded on living trees (Robledo pers. obs.).

Perenniporia medulla-panis (Jacq.) Donk s.l.

White heart-rot

Hosts: *Apuleia leiocarpa* (Cockle et al. 2012), *Polylepis australis* (Robledo and Urcelay 2009) and *Fraxinus americana* in urban environments (Popoff and González 1995).

Distribution: a cosmopolitan species in its wide sense (see Remarks), known from altitudinal *Polylepis* forests of Central and NW Argentina, Yungas forests (Robledo 2009) and Paranense rainforest. Also recorded from the Subantarctic forests in Patagonia, but not from living trees.

Remarks: the name belongs to a species complex. In its strict sense, *P. medulla-panis* is restricted to Europe (Decock and Stalpers 2006).

Phaeolus schweinitzii (Fr.) Pat.

Brown heart-rot of roots and stem

Hosts: *Pinus taeda* and *Pinus* sp.

Distribution: only recorded in *Pinus* plantations in Buenos Aires outskirts (Wright and Bolontrade 1994).

Remarks: unknown from native environments.

Phellinus andinopatagonicus (J.E. Wright & J.R. Deschamps) Ryvarden

White fibrous and pocket heart-rot of stems, main roots and branches

Hosts: *Nothofagus dombeyi*, *N. antarctica*, *N. betuloides*, *N. nervosa* and *N. pumilio* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests (Bosque Caducifolio and Pehuén Districts).

Remarks: it is the main white wood-rotting pathogen of standing *N. pumilio* (Cwielong and Rajchenberg 1995). It may develop a fibrous rot (generally along the stem) or a pocket rot (generally at the base of the tree).

Phellinus calcitratus (Berk. & M.A. Curtis) Ryvarden

White heart-rot

Hosts: *Ocotea lancifolia* (Cockle et al. 2012).

Distribution: Neotropical, known from Paranense rainforest.

Phellinus chaquensis (Iaconis & J.E. Wright) J.E. Wright & Blumenf.

White heart-rot

Hosts: *Schinopsis lorentzii*, *Schinopsis balansae*, *Schinopsis hankeana* and *Aspidosperma quebracho-blanco* (Iaconis and Wright 1953; Guardia 1986; Wright et al. unpublished), also recorded in *Caesalpinia paraguariensis*, *Acacia* spp. and *Myroxylon peruiferum* (Robledo 2009; Robledo and Urcelay 2009).

Distribution: a Neotropical species restricted to Chaco Ecosystems up to the foothills of Yungas (Selvas de Transición District).

Remarks: recent studies indicate that *P. chaquensis* causes a mottled pattern of decay (selective delignification plus simultaneous decay) in *S. haenkeana* wood (Luna et al. 2012).

Phellinus linteus (Berk. & M.A. Curtis) Teng

White heart-rot

Hosts: *Anadenanthera colubrina*, *Allophylus edulis* (Robledo 2009), *Aspidosperma quebracho-blanco*, *Patagonula americana*, *Peltophorum dubium*, *Ocotea suaveolens* and *Nectandra saligna* (Wright et al. unpublished).

Distribution: a widely distributed species in tropical and subtropical regions of America, known from Yungas, Paranense rainforest, Chaco Oriental district and Espinal.

Remarks: it also grows on other unidentified hosts (Robledo 2009). Tian et al. (2013) made the taxonomic treatment of this species complex.

Phellinus livescens (Speg.) Rajchenb.

White fibrous heart- and sap-rot

Hosts: *Nothofagus antarctica*, *N. betuloides*, *N. dombeyi* and *N. pumilio* (Rajchenberg 2006).

Distribution: an endemic species of the Subantarctic Patagonian forests (Bosque Caducifolio and Pehuén Districts).

Phellinus pomaceus (Pers.) Maire

White heart-rot

Hosts: *Prunus domestica*, *P. cerasus*, *P. persica* (Wright et al. unpublished).

Distribution: an introduced pathogen that follows its hosts where cultivated. To now registered from Buenos Aires, Entre Ríos and Córdoba Provinces where it is a common pathogen in ornamental and fruit *Prunus* species.

Phellinus shaferi (Murrill) Ryvarden

White heart-rot

Hosts: *Anadenanthera colubrina* (Robledo 2009).

Distribution: Neotropical, in Argentina recorded from NW Yungas forests.

Remarks: a quite common species that rarely fruits on standing trees.

Phellinus swieteniae (Murrill) S. Herrera & Bondartseva

White heart-rot

Hosts: *Cedrela fissilis*, perhaps also *Araucaria angustifolia* (on dead, standing tree) (Wright et al. unpublished).

Distribution: a Neotropical species found in the Paranense rainforest.

Phylloporia Murrill

The genus is characterized by species fruiting on living hosts, attacking stems, branches, roots or leaves (Ryvarden 1991; Wagner and Ryvarden 2002). In most cases, there are no detailed records of the hosts but we have preferred to include the known species to underline their presence in Argentina, with the sole exception of the type species *Phylloporia parasitica* Murrill, which fruits on fallen leaves and has been found in the Paranense rainforest (Wagner and Ryvarden 2002; Wright and Wright 2005).

Phylloporia capucina (Mont.) Ryvarden

White heart- and sap-rot

Hosts: undetermined hosts (Robledo and Rajchenberg 2007; Robledo 2009).

Distribution: a Neotropical species, found in Yungas forests.

Remarks: a rarely found species.

Phylloporia chrysites (Berk.) Ryvarden

White heart- and sap-rot

Hosts: *Forsteronia glabrescens*, *Pisonia aculeata*, *Dolichandra unguis-catis*, Apocynaceae sp. (Popoff 2000). Also on *Cissus cyssioides*, *Celtis* sp., *Chrysophyllum marginatum* and *Celtis* sp. (Wright et al. unpublished).

Distribution: Neotropical, present in Yungas and Paranense rainforest (Wright and Wright 2005).

Remarks: a morphologically variable taxon that may include a species complex.

Phylloporia fruticum (Berk. & M.A. Curtis) Ryvarden

White heart- and sap-rot

Hosts: *Allophylus edulis*.

Distribution: tropical, registered from America and Africa, present in Yungas forests (Robledo and Rajchenberg 2007).

Remarks: a morphologically variable taxon that seems to represent a species complex (Robledo 2009). In Argentina, materials restricted to *A. edulis* are morphologically homogeneous and appear to represent a distinct taxon (Robledo 2009).

Phylloporia pectinata (Klotzsch) Ryvarden

White heart- and sap-rot

Hosts: *Dolichandra unguis-catis*, *Eugenia* sp. and *Celtis spinosa* (Popoff 2000; Robledo 2009; Wright et al. unpublished).

Distribution: Pantropical and widespread, present in Yungas (Robledo and Rajchenberg 2007) and Paranense rainforest.

Phylloporia ribis (Schumach.) Ryvarden

White heart- and sap-rot

Hosts: *Ribes vulgare*.

Distribution: in cultivated areas, so far recorded in Buenos Aires Province (Wright et al. unpublished).

Remarks: certainly an introduced species.

Phylloporia spathulata (Hook.) Murrill

White heart- and sap-rot

Hosts: unknown but on living roots and rootlets of unidentified trees.

Distribution: Pantropical, present in Yungas (Robledo 2009) and Paranense rainforest (Popoff 2000).

Polyporus melanopus (Pers.) Fr.

White fibrous heart- and sap-rot

Hosts: *Austrocedrus chilensis* (Barroetaveña and Rajchenberg 1996) and *Polylepsis australis* (Robledo and Urcelay 2009).
 Distribution: circumpolar in the Northern Hemisphere, but also known in the Southern Hemisphere from Australia and New Zealand and, in Argentina, known from continental Subantarctic Patagonian forests (Rajchenberg 2006), from *Polylepsis australis* altitudinal forests of Central Argentina and Yungas forests (Robledo 2009).

Remarks: the species has been found associated with declining trees of *A. chilensis* developing 'mal del ciprés' disease (Barroetaveña and Rajchenberg 1996).

Postia balsamea (Peck) Jülich

Brown heart-rot

Hosts: *Saxegothaea conspicua* (Rajchenberg 2006).

Distribution: circumpolar in the Northern Hemisphere, in the Southern Hemisphere only recorded from continental Subantarctic Patagonian forests (Valdivian district).

Remarks: also found on fallen *Nothofagus dombeyi*.

Postia dissecta (Lév.) Rajchenb.

Brown heart- or sap-rot

Hosts: *Austrocedrus chilensis* and *Nothofagus pumilio* (Rajchenberg 2006).

Distribution: Austral, known from New Zealand, Australia and the Subantarctic Patagonian forests of Argentina and Chile.

Remarks: it causes a brown cubical sap rot in declining *A. chilensis* affected by 'mal del ciprés' disease caused by *Phytophthora austrocedrae* Gresl. & E.M. Hansen, rapidly colonizing the sapwood after the pathogen has killed/affected the tree. It is a secondary heart-rot fungus for *N. pumilio* (Cwielong and Rajchenberg 1995).

Postia pelliculosa (Berk.) Rajchenb.

Brown cubic and fibrous heart-rot

Hosts: *Nothofagus antarctica*, *N. betuloides*, *N. dombeyi*, *N. pumilio*, *N. nervosa* and *N. obliqua* (Rajchenberg 2006).

Distribution: Austral, known from E Africa, Cameroon, Australia and the Subantarctic Patagonian forests of Argentina and Chile.

Remarks: it is the main brown heart-rot fungus of *N. pumilio*, causing more than 50% of wood loss due to heart rots (Cwielong and Rajchenberg 1995); possibly also a main pathogen for other *Nothofagus* species.

Postia punctata Rajchenb. & P.K. Buchanan

Brown butt and roots heart-rot

Hosts: *Nothofagus dombeyi* (Rajchenberg and Buchanan 1996; Rajchenberg 2006).

Distribution: Austral, known from Tasmania and the Subantarctic Patagonian forests, apparently restricted to much humid areas.

Remarks: normally found on already fallen trees, fruiting exclusively on the roots.

Pycnoporus sanguineus (L.) Murrill

White heart-rot

Hosts: *Prunus persica* (Wright and Deschamps 1977) and *Prunus* sp. (V. Bianchinotti, Universidad Nacional del Sur, Bahía Blanca, pers. com.).

Distribution: Pantropical and in warm temperate areas of the world. Recorded from Adrogué and Bahía Blanca (Buenos Aires Province) on exotic cultivated hosts.

Pyrofomes lateritius (Cooke) Ryvarden

White heart-rot

Hosts: *Myrocarpus frondosus* (Wright et al. 1996).

Distribution: Neotropical, present in the Paranense rainforest.

Pyrofomes perlevis (Lloyd) Ryvarden

White heart-rot

Hosts: *Myrocarpus frondosus* (Cockle et al. 2012) and *Prosopis* sp. (Guardia 1986; Wright et al. 1996).

Distribution: tropical America and Africa, present in the Paranense rainforest and Chaco Oriental in Formosa province.

Rigidoporus lineatus (Pers.) Ryvarden

White heart-rot

Hosts: undetermined dicotyledonous tree [Wright and Deschamps 1975, as *R. zonalis* (Berk.) Imazeki].

Distribution: in tropical and warm temperate areas worldwide, found in the subtropical gallery forests of Paraná and Uruguay rivers (Corrientes Province).

Rigidoporus microporus (Sw.) Overeem

White heart-rot

Hosts: *Ocotea* sp. [Wright and Deschamps 1975, as *R. lignosus* (Klotzsch) Imazeki].

Distribution: Pantropical, recorded from the Paranense rainforest.

Rigidoporus ulmarius (Sowerby) Imazeki

White heart-rot

Hosts: *Phoebe porfiria*, *Nectandra lanceolata*, *Matayba eleagnoides* (Robledo 2009; Cockle et al. 2012; Wright and Deschamps 1975 as 'laurel vivo' (i.e. either *Nectandra* sp. or *Ocotea* sp.); in urban environments on *Populus* sp. (Urcelay et al. 2012), *Acer negundo*, *Platanus acerifolia*, *Populus* sp. and *Ulmus* sp. (S. Sede pers. obs.); the host range might be wider because there are several records on unidentified living substrates.

Distribution: a worldwide distributed species, in Argentina known from Yungas and Paranense rainforest and in urban environments.

Remarks: always growing at the base of, preferably, large trees.

Ryvardenia campyla (Berk.) Rajchenb.

Brown heart-rot of stems and branches

Hosts: *Nothofagus pumilio* and *N. nervosa* (Rajchenberg 2006).

Distribution: Austral, recorded from Australia, New Zealand and the Subantarctic Patagonian forests of Argentina and Chile.

Ryvardenia cretacea (Lloyd) Rajchenb.

Brown heart-rot of stems

Hosts: *Nothofagus dombeyi*, *N. nervosa*, *N. obliqua* and *N. pumilio* (Rajchenberg 2006).

Distribution: Austral, known from Australia and the Subantarctic Patagonian forests of Argentina and Chile; a heart-rot pathogen of minor importance of *N. pumilio* (Cwielong and Rajchenberg 1995).

Trametes cubensis (Mont.) Sacc.

White heart-rot

Hosts: *Alnus acuminata* (Robledo et al. 2003).

Distribution: Neotropical, known from Yungas and Paranense rainforest.

Remarks: the only living substrate recorded for this species is *Alnus acuminata* in NW Argentinean Yungas.

Trametes hirsuta (Wulfen) Lloyd

White heart-rot

Hosts: on living branches and stems of *Schinus fasciculatus*, *Fraxinus excelsior* and *Ligustrum lucidum* in urban environments (Urcelay et al. 2012).

Distribution: although widely distributed in temperate areas as a saprophyte, in Argentina, it behaves as pathogenic in urban environments.

Trichaptum fumoso-avellanea (Romell) Rajchenb. & Bianchin.

White heart-rot

Hosts: *Prosopis* spp. and *Tipuana tipu* (Rajchenberg and Bianchinotti 1991).

Distribution: Neotropical, present in Yungas forests and Chaco environments.

Trichaptum variabilis Ryvarden & Iturr.

White heart-rot

Hosts: *Acacia aroma* (Robledo 2009).

Distribution: a rare Neotropical species, in Argentina known from NW Yungas forests.

Remarks: this is the second record of the species after its original description from Venezuela (Ryvarden and Itrurriaga 2003).

Tyromyces atroalbus (Rick) Rajchenb.

White heart-rot

Hosts: undetermined angiosperms (Robledo 2009).

Distribution: Neotropical, in Argentina known from Yungas forests.

Tyromyces fissilis (Berk. & M.A. Curtis) Donk

White heart-rot

Hosts: *Celtis australis*, *Quercus* sp., *Salix babylonica*, *S. humboldtiana* and an undetermined angiosperm (Wright et al. 1973; Urcelay et al. 2012).

Distribution: a northern hemisphere taxon, introduced in the area and present in subtropical gallery forests of Paraná and Uruguay rivers (NE Buenos Aires and Corrientes Provinces).

Remarks: apparently restricted to cultivated trees and associated with cankers.

4 Discussion

We registered 87 pathogenic polypore taxa, of which 71 produce a white rot and 16 a brown rot (Table 1). This number appears as low when compared with what is found in other countries (Dai et al. 2007; Gilbertson and Ryvarden 1986; Gilbertson and Ryvarden 1987 among others), but it should be taken into consideration that some of the phytogeographic regions of Argentina have been poorly surveyed, such as Chaco, Monte and Paranense rainforest. The latter, for instance, has been surveyed rather thoroughly by mycologists (Wright and Deschamps 1975, 1977, Wright et al. 1973 and

Table 1. Number and percentages of pathogenic polypore species recorded according to associated wood rot and types of substrates (native vs. exotic) in Argentina.

Type of substrate	White wood-rotting species	Brown wood-rotting species	Total
Native	49 (56.3%)	12 (13.8%)	61 (70.1%)
Exotic	5 (5.7%)	2 (2.3%)	7 (8.0%)
Both	17 (19.5%)	1 (1.2%)	18 (20.7%)
Special case	0 (0%)	1 (1.2%)	1 (1.2%)
TOTAL	71 (81.6%)	16 (18.4%)	87 (100%)

unpublished, Rajchenberg 1984) but, apparently, little effort has been paid to differentiate living vs. fallen hosts because a single study, that is that of Cockle et al. (2012), revealed many new, living hosts as substrates of well-known and already recorded taxa in that area. The experience of the senior author in the Subantarctic Forests of Patagonia (Rajchenberg 2006) also showed that several taxa had not been registered as pathogenic of living trees in previous studies. Therefore, it will not be a surprise that future research will show new relationships to specific hosts, and also new taxa, in large phyto-geographic areas such as Chaco.

In spite of the polypores being a polyphyletic group of organisms that pertain to different families (Kirk et al. 2008), Hymenochaetaceae Donk can be ascertained as the main group of pathogenic polypores, with 36 taxa. This is not unexpected because numerous studies have revealed highly specific fungus–host relationships and the existence of numerous cryptic species that show active evolutionary processes within this family (Larsson et al. 2006; Robledo et al. 2006; Decock et al. 2007; Dai 2010; Amalfi et al. 2012, among others).

Substrate specificity can be observed in some austral species, known from the Subantarctic Patagonian forests and in species restricted to altitudinal *Polylepis australis* forests. *Fistulina* species, *Phellinus andinopatagonicus*, *Postia pelliculosa* and *Ryvardenia* species are specific to *Nothofagus*. *Fomitiporia tabaquilio*, *Inonotus venezuelicus* and *Phellinus uncisetus* are specific to *Polylepis*. Both ecosystems present a relatively low tree diversity but have received a higher sampling effort when compared with other phytogeographic regions. Also, the resolution of several species complexes that appear as generalist with a wide range of substrates (i.e. the *Phellinus rimosus* complex) could evidence the presence of several species with higher levels of substrate specificity.

Of the species found, seven were exclusively associated with exotic substrates, five of them produce a white rot, that is, *Ganoderma subamboinense* var. *laevisporum* on urban *Platanus*, *Perenniporia gomezii* on urban *Melia azedarach*, *Phellinus pomaceus* and *Pycnoporus sanguineus* on *Prunus* spp. and *Phylloporia ribis* on *Ribes vulgare*, whereas two produce a brown rot, that is, *Laetiporus sulphureus* on eucalypts and *Phaeolus schweinitzii* in pine plantations. Of these species, we should underline that *G. subamboinense* var. *laevisporum* and *P. gomezii* were newly described taxa that will probably be found on native species when they are more thoroughly searched and studied. David and Rajchenberg (1985) considered *P. gomezii* a synonym of *Pyrofomes fulvoumbrinus* (Bres.) David & Rajchenb., but Decock and Ryvarden (2000) maintained them as different.

Eighteen species were recorded on both native and exotics: the white wood-rotting *Abortiporus biennis*, *Bjerkandera adusta*, *Fomitiporia punctata*, *Funalia gallica*, *F. trogii*, *Fuscoporia gilva*, *Ganoderma australe*, *G. resinaceum*, *Hydnopolyporus fimbriatum*, *Inocutis jamaicensis*, *I. patouillardii*, *I. quercustris*, *I. rickii*, *Perenniporia medulla-panis* s.l., *Rigidoporus ulmarius* and *Trametes hirsuta*; and the brown wood-rotting *Antrodia serialis*. Of these, *F. punctata*, *G. resinaceum* and *P. medulla-panis* are well-known species complexes that deserve in-deep treatment. Decock et al. (2007) already showed that *F. punctata* s.s. is absent from tropical and subtropical America and the same runs for *P. medulla-panis* s.s. (Decock and Stalpers 2006). Of the remaining taxa, *H. fimbriatum*, *I. jamaicensis*, *I. quercustris* and *I. rickii* are Neotropical, while the others are widely distributed species.

Amyloporus campbellii was included in this list because it purportedly produces a brown rot on several woody substrates (Gilbertson and Ryvarden 1986), but it has only been found associated with living grasses in Argentina as is the case in other parts of the world (Dai 2007).

Evidence of pathogenicity by the listed species is based on discriminating these taxa as fruiting on living hosts. There are few published works reporting the incidence and severity of these species through rot measurements and culture isolation and identification, the exceptions being those of Cwielong and Rajchenberg (1995) and Rajchenberg (1997) for *Nothofagus pumilio*, Barroetaveña and Rajchenberg (1996) for *Austrocedrus chilensis*, and Rajchenberg (2006) who summarized personal field experience in Patagonia. We included an unidentified Hymenochaetaceae that produces a white rot in the hardwood of *Austrocedrus chilensis* to keep the interest on a taxon that is still taxonomically unknown and to show the relevance of wood decay in forest health.

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