

SHORT COMMUNICATION

# Neotropical *Perenniporia*: a new species, *Perenniporia subovoidea*, from Costa Rica, new records of little known species, and a key to the species with a resupinate basidiome

Cony Decock<sup>1,\*</sup> & Leif Ryvarden<sup>2</sup>

<sup>1</sup>Mycothèque de l'Université catholique de Louvain (MUCL, BCCM<sup>TM</sup>), Earth and Life Institute – Microbiology (ELIM), Université catholique de Louvain, Croix du Sud 2 bte L7.05.06, B-1348, Louvain-la-Neuve, Belgium

<sup>2</sup>University of Oslo, Department of Botany, P.O. Box 1045 Blindern, N-0316 Oslo, Norway

\*Author for correspondence: cony.decock@uclouvain.be

**Background and aims** – This study is a part of an ongoing survey of *Perenniporia* (Basidiomycota, Polyporales) in the Neotropics.

Methods - Material is examined and described using morphology-based methods.

**Key results** – *Perenniporia subovoidea* is proposed as new. New records of little known species are presented. A key to the *Perenniporia* species with resupinate basidiome is also presented.

**Conclusion** – *Perenniporia subovoidea* is reported from Costa Rica. New records of *P. aurantiaca*, *P. chromatica*, *P. parvispora*, *P. roseo-isabellina*, and *P. xantha* are presented. All these species are endemic to the Neotropical areas.

Key words - Basidiomycota, Costa Rica, Neotropics, Perenniporia, Polypores, taxonomy.

#### INTRODUCTION

The Neotropical species of *Perenniporia* with resupinate basidiomes have been dealt with in various publications (e.g. De Jesus & Ryvarden 2010, Decock & Ryvarden 1999b, 2000, 2011, Rajchenberg & Wright 1982, Ryvarden 1983, 1984, 1987). Sixteen species are currently reported from the area. With the exception of *P. tephropora*, that is widespread in the Neotropics and sub-Saharan Africa, all the other species are known so far only from the Neotropics, where they seem to be endemic.

As a result of the continuation of the revision of the genus *Perenniporia* in the Neotropical areas (Decock & Ryvarden 1998, 1999a, 1999b, 2000, 2003, 2011, Decock et al. 2001, 2010), two collections originating from Costa Rica were found to represent an undescribed species. This species is described and illustrated below as *Perenniporia subovoidea*.

New records of little known species are reported. A key to the species with resupinate basidiome present in the Neotropics is also presented.

#### MATERIAL AND METHODS

Colours are described according to Kornerup & Wanscher (1981). Sections were carefully dissected under a stereomicroscope in hot (40°C) NaOH 3% solution, and later exam-

ined in NaOH 3% solution at room temperature (Decock et al. 2010). Sections were also examined in Melzer's reagent, and lactic acid cotton blue. All the microscopic measurements were done in Melzer's reagent. In presenting the size range of several microscopic elements, 5% of the measurements at each end of the range are given in parentheses when relevant. In the text, the following abbreviations are used: ave = arithmetic mean, R = the ratio of length/width of basidiospores, and ave<sub>R</sub> = arithmetic mean of the ratio R.

The type and original specimens are preserved at MUCL, NY, O, and INB (herbarium acronyms are from Thiers B. [continuously updated]).

#### **RESULTS AND DISCUSSION**

#### A new species from Costa Rica

#### Perenniporia subovoidea Decock & Ryvarden, sp. nov.

Basidiomata resupinata; pororum facies alba vel aurantiogrisea; pori rotundati 6–7 / mm, 100–130  $\mu$ m latis; systema hypharum dimiticum; hyphae generatoriae hyalinae, fibulatae; contextus hyphis arboriformibus, pauciramosis, crassitunicatis, hyalinis, adextrinoideis; trama hyphis dense arboriformibus, hyalinis, crassitunicatis, adextrinoideis, stipite (100–)120–300(–300)  $\mu$ m longo, ramulis 2–4(–5), crassitunicatis, dense ramosis, usque 120 µm longis; basidia clavata vel pedunculata, tetrasterigmatica; basidiosporae ovoidae, cum apice truncatae, crassitunicatae, dextrinoideae, (7–)7.5–10(–11) × (4–)4.5–6(–6.5) µm, R = (1.4–)1.45–1.9(–2). – Type: Costa Rica, Prov. Punta arenas, La Amistad Pacifico, Coto Brus, Sabalito, on dead hardwood, 20 Jun. 2000, *E. Navarro* 2149 (holo-: O; iso-: MUCL 54487, INB). MycoBank number: MB801555.

Basidiomata seasonal, resupinate, effused, adnate, individual pieces to  $40 \times 30$  mm but the full basidiome, more likely, more extended, up to 4(–5) mm thick; <u>margin</u> absent in the fragments examined; <u>pores surface</u> mostly white, whitish, but greyish orange, cork-coloured (5B[4–5]) on external surfaces of elongated tubes; <u>pores</u> mostly round, regular, (6–)7 / mm, 100–130 µm diam., ave = 121 µm; <u>dissepiments</u> entire, 45–110 µm thick, ave = 78 µm; <u>tubes layer</u> single, 1–4 mm deep, whitish to greyish orange, cork-coloured (5B[3–4], greyish orange), with a hard, horny consistency when dry; <u>context</u> reduced, < 0.5 mm thick, mostly whitish faintly to yellowish white (4A2), contrasting with tube layer.

Hyphal system dimitic in the subiculum and the hymenophoral trama; generative hyphae hyaline, clamped, sparingly branched, 1.5–2.5 µm wide; vegetative hyphae mostly of the skeleto-binding type, hyaline, non-dextrinoid, cyanophilous; in the subiculum, skeleto-binding hyphae with a poorly developed arboriform branching pattern, occasionally unbranched, 3.5-4.5 µm diam., mostly parallel; in the hymenophoral trama skeleto-binding typically arboriform, the basal stalk arising from a generative hyphae, clamped at the basal septa,  $(100-)120-300 \ \mu m \log (ave = 186 \ \mu m)$ , thick-walled, non-branched, straight (to slightly geniculated, then often with small aborted processes), non-septate, progressively widening from 1.8-2.5 µm diam. at the basal septum (ave = 2.2  $\mu$ m) to (3–)3.5–4(–4.2)  $\mu$ m diam. at the apex (ave =  $3.6 \mu m$ ); the apical branched part tightly intermingled and difficult to tease apart, with 2-4(-5) lateral (subapical) or apical processes, short, the complete branching extending up to 125 µm, moderately branched, straight to geniculated, thick-walled, gradually tapering from  $(1.8-)2-2.5 \mu m$  at the branching point to 1–1.3 µm wide at the thin-walled end, occasionally dendrohyphidia-like (dendritic), measured up to 120 µm long.

<u>Hymenium</u>: <u>basidia</u> and <u>basidioles</u> clamped at the basal septum; mature <u>basidia</u> mostly collapsed, hyaline, with 4 sterigmata; <u>basidiospores</u> (ellipsoid), ovoid-elongated to sub-oblong, the apex truncate and occasionally slightly laterally shrunk (bottleneck-like), with a small basal apiculus, thick-walled but with an apical germ pore, hyaline, strongly dextrinoid, cyanophilous, 0–1 guttule, (7–)7.5–10(–11) × (4–)4.5–6(–6.5) µm, R = (1.4–)1.45–1.9(–2), (ave = 8.9 × 5.3 µm, ave<sub>R</sub> = 1.69); <u>chlamydospore</u> absent. <u>Type of rot</u>: white rot. <u>Substrate</u>: on dead wood of an unidentified angiosperm. Figs 1 & 2.

#### **Distribution** – so far known from Costa Rica only.

Other collections examined – Costa Rica: Prov. Punta arenas, La Amistad Pacifico, Coto Brus, Sabalito, on dead hardwood, 6 Nov. 2000, *E. Navarro* 4745.1 (O, MUCL 54488, INB).

**Discussion** – *Perenniporia subovoidea* is characterized by the combination of a resupinate, effused basidiomata, a mostly white pore surface, 6–7 pores / mm, remarkably ar-

boriform, non-dextrinoid skeleto-binding hyphae in the hymenophoral trama, and ovoid-elongated, strongly dextrinoid basidiospores, averaging  $8.9 \times 5.3 \ \mu m$  (range:  $7.5-10 \times 4.5-6 \ \mu m$ ). The apical, branched parts of the skeleto-binding hyphae are tightly intermingled, and difficult to tease apart. In the dissepiment edges, the skeleto-binding hyphae may be extremely reduced, then dendrohyphidia-like.

*Perenniporia subovoidea* can be compared to *P. isabellina* (Pat.) Ryvarden and *P. chromatica* (Berk.) Decock & Ryvarden; both have a similar hyphal system with distinctly arboriform skeleto-binding hyphae (Decock & Ryvarden 1999b). *Perenniporia isabellina* differs in having larger pores  $(3-4 \ / \ mm)$  and larger basidiospores  $[11-13(-13.5) \times (6-)6.5-7.5 \ \mum$ , averaging  $11.9 \times 6.6 \ \mum]$ . *Perenniporia chromatica* differs in having a yellow pore surface when fresh, larger pores  $(4-5 \ / \ mm)$ , and smaller, more globose basidiospores  $[(5-)5.5-7 \times 4-6 \ \mum$ , averaging  $6.2 \times 5.1 \ \mum]$ . These two species are known only from the Amazonian forest.

*Perenniporia cremeopora* Decock & Ryvarden, *P. minutopora* Ryvarden & Decock, and *P. parvispora* Decock & Ryvarden have also skeleto-binding hyphae with a well-marked arboriform pattern. These hyphae are shorter, however. Their basidiospores are also smaller, not exceeding 5 µm long (Decock & Ryvarden 2000).

*Perenniporia sprucei* Decock & Ryvarden has similar skeleto-binding hyphae and basidiospores. It differs in having pileate basidiomata (Decock & Ryvarden 1999a).

#### New records of poorly known species

*Perenniporia aurantiaca* (David & Rajchenb.) Decock & Ryvarden, (Decock & Ryvarden 1999b: 1140, with description).

The species was originally described in *Pyrofomes* Kotl. & Pouzar because of the orange to brick red pore surface when fresh (David & Rajchenberg 1985). Decock & Ryvarden (1999b) transferred it to *Perenniporia* owing to its hyphal system and basidiospores morphology. In addition to the pore surface colour, small pores, and the presence of marginal mycelial cords extending into the substrate and neighboring litter characterized this species (Decock & Ryvarden 1999b).

*Perenniporia aurantiaca* was known from several collections originating from French Guiana (type locality), Brazil, and Venezuela (David & Rajchenberg 1985, Decock & Ryvarden 1999b).

It was recollected in French Guiana and, northerly, in Belize (Vlasák J., continuously updated, <u>http://mykoweb.prf.</u> jcu.cz/polypores/list\_p.html) and western Cuba. Cuba might constitute its northern limit of distribution.

**Specimens examined** – **Brazil. Pará**: Belem-do-Pará, on dead wood and bark of an unidentified angiosperm, tropical forest, Sep. 1948, *E.J.H. Corner* (E 00005228).

**Cuba**. **Pinar del Río**: Reserva de la Biosfera "Sierra del Rosario", camino del Taburete, on small, dead twigs, *Syzygium jambos* (Myrtaceae), 18 Sep. 2001, *C. Decock & S. Herrera Figueroa* CU-154, CU-265 & CU-278 (respectively MUCL 43530, MUCL 43529, MUCL 43541, HAC) (cultures ex.- MUCL 43530 = CRGF 303, MUCL 43529 = CRGF 311; MUCL 43541 = CRGF 304).



Figure 1 – *Perenniporia subovoidea*. Vegetative hyphae from the hymenophoral trama, from the type specimen, MUCL54487. Scale bar =  $20 \mu m$ .



**Figure 2** – *Perenniporia subovoidea*, Basidiospores: A, from the type specimen, MUCL54487; B, from specimen MUCL 54488. Scale bar =  $10 \mu m$ .

## Annotated key to the species of *Perenniporia* with resupinate basidiomata from the Neotropics – incl. the Caribbean area

1	Tube layer greyish brown, (cocoa) brown on drying; vegetative hyphae yellowish, yellowish brown in KOH
1'	Tube layer differently coloured, white, cream, yellowish, yellow, orange, to reddish; vegetative hyphae mostly hyaline to pale yellowish (pinkish) in KOH
2	Basidiospores > 7 um long, ellipsoid to oblong; tube laver chocolate brown
2'	Basidiospores $< 7 \text{ µm}$ long broadly ellipsoid to subglobose: tubes (grevish) brown 4
3	Hymenonhoral trama with unbranched (skeletal) vegetative hynhae. Pore surface dark grevish brown but
5	resolution and a consistence of the second s
	probably pater (grey)sin grey)sin brown) when mesh, <u>pores</u> 0–87 mm, vegetative nymae (pate) brown, unbranched,
	destinoid, basiciospores 7.5–8.5 $\times$ 2.8–5.5 $\mu$ m, known only from the type locality, Amazonas, Brazil (De Jesus
2,2	& Kyvarden 2010)
3	Hymenophoral trama with apically branched, arboriform vegetative hyphae. Pore surface (greyish)
	brown, probably paler (dark corky, golden brown) when fresh; pores 4–8 / mm; vegetative hyphae with an
	arboriform branching pattern but the branching little developed; basidiospores $7.5-9.5 \times 3-4.2 \ \mu m$ (Rajchenberg
	& Wright 1982)P. gomezii*
4	Hymenophoral trama with unbranched (skeletal), brown vegetative hyphae; basidiospores ellipsoid to
	ovoid. The species may develop marginal, dark, up to black pseudopilei; pore surface grayish when fresh, drying
	identical or darker; pores 5–6 / mm; vegetative hyphae unbranched, brown; basidiospores $4.5-6 \times 3.5-4.5 \mu m$ ; a
	common, species, especially in open, human-made habitat (Ryvarden & Johansen 1980)P. tephropora
4'	Hymenophoral trama with branched (skeleto-binding), yellowish vegetative hyphae; basidiospores
	subglobose. Marginal, brown pseudopilei often present; pore surface grayish when fresh or dry; pores 6-10
	/ mm; <u>vegetative hyphae</u> branched, yellowish; basidiospores $4-6 \times 3.5-5.5 \mu$ m; locally very common in the
	rainforest (Ryvarden & Johansen 1980)P. inflexibilis
5	Pore surface pale to bright yellow, yellow orange, orange to brick red (sometimes fading on drying);
	hymenophoral trama with distinctly arboriform vegetative hyphae
5'	Pore surface differently coloured; hymenophoral trama with vegetative hyphae branched, distinctly
	arboriform or not
6	Basidiospores on average > 5.5 $\mu$ m long; pores 4–5 / mm. Pore surface bright yellow when fresh, fading to
	greyish cream, cork-coloured on drying; vegetative hyphae distinctly arboriform; basidiospores $5.5-7 \times 4-6 \mu m$
	(Decock & Ryvarden 1999b)P. chromatica
6'	Basidiospores on average $\leq 5 \ \mu m \log (range 4-5.5 \times 3-4 \ \mu m); \text{ pores } 6-8 \ / \ mm$
7	Pore surface orange to brick red; concolorous mycelial strands present, and extending into the substrate
	and surrounding litter. Basidiomata usually small, on small twigs amongst leaf litter, with mycelial strands;
	vegetative hyphae typically arboriform, turning pinkish in KOH (Decock & Ryvarden 1999b)P. aurantiaca
7'	Pore surface yellow to bright yellow when fresh; mycelial strands absent. Basidiomata usually small;
	vegetative hyphae typically arboriform, turning pinkish in KOH (Decock & Ryvarden 1999b)P. xantha
8	Basidiospores on average $\geq$ 7.5 µm long, dextrinoid
8'	Basidiospores on average $< 7 \mu m$ , dextrinoid or not
9	Pores $2-4$ / mm; vegetative variably branched. Basidiospores 7–9(–9.5) × 5.5–6.5(–7) µm, averaging 8 × 6 µm
	(Ryvarden 1983)P. roseoisabellina
9'	Pores 3–7 / mm: vegetative hyphae typically arboriform
10	Pores 3–4 / mm; pore surface cork to milk-coffee; basidiospores $11-13 \times 6.5-7.5$ µm. Vegetative
	hyphae robust, large, non dextrinoid (Decock & Ryvarden 1999b)
10'	Pores $(6-)7$ / mm; pore surface white; basidiospores 7.5-10.5 × 4.5-6.5 µmP. subovoidea
11	Basidiospores on average $> 5 \mu m \log$
11'	Basidiospores on average < 5 µm long
12	Pore surface whitish, faintly pinkish when fresh: pores $(5-)6-8$ / mm; vegetative hyphae non to weakly
	dextrinoid. Margin usually well-developed: basidiospores $5.5-7(-7.5) \times 4.5-6(-6.3)$ µm, averaging $6.2 \times 5.4$ µm
	(Decock & Ryvarden 2011)
12'	Pore surface cork to milk coffee: pores $(7-)8-9$ / mm: vegetative hyphae dextrinoid. Basidiospores
	$5-5.5 \times (3.5-)4-4.5$ µm, averaging $5.2 \times 4.1$ µm; sterile mycelial sheet sometimes present at the margin, in the
	pore field, or at the abhymenial surface (Decock & Ryvarden 2011).
13	Pores 2–3 / mm; hymenophoral trama with unbranched (skeletal), dextrinoid vegetative hyphae:
-	basidiospores $4-5 \times 3-4$ µm. Vegetative hyphae are unbranched and strongly dextrinoid basidiospores
	without germ pore. This species might be related to the <i>P. subacida</i> complex and therefore should be <i>in fine</i>
	excluded from <i>Perenniporia sensu stricto</i> (Ryvarden 1987)
13'	Pores 5–8 / mm; hymenophoral trama with arboriform vegetative hyphae; basidiospores
	dextrinoid

14	Pore surface cork-coloured, light brown; vegetative hyphae not dextrinoid. Pores (5–)6–7 / mm; basidiospores dextrinoid, $4-5 \times 3-3.7(-4)$ µm, averaging $4.6 \times 3.3$ µm (Decock & Ryvarden 2000)
14'	Pore surface whitish to cream; vegetative hyphae dextrinoid
15	Basidiospores on average > 4 $\mu$ m. Pore surface whitish to cream; pores 6–7 / mm; basidiospores 3.7–4.8
	$(-5.3) \times 3.2 - 3.8 \mu\text{m}$ , averaging $4.3 \times 3.4 \mu\text{m}$ (Decock & Ryvarden 2000)P. cremeopora
15'	Basidiospores on average $< 4 \mu m$ . Pore surface whitish; pores 7–8 /mm; basidiospores 3.5–4.5 × 3–3.5 $\mu m$ ,
	averaging $3.9 \times 3.4 \mu m$ (Decock & Ryvarden 2000) <i>P. parvispora</i>

\**Pyrofomes fulvo-umbrinus* (Bres.) A. David & Rajchenb. is morphologically very similar, differing in having a reddish tint in the subiculum, hence its original placement in *Pyrofomes* Kotl. & Pouzar (David & Rajchenberg 1985). It is of uncertain taxonomic status

French Guiana. Municipality of Matoury: Sentier d'Interprétation de la Nature Lamirande, on bark and wood of dead twigs on the ground and surrounding litter, 14 Jan. 1997, C. Decock FG-2103 (MUCL 40425, O, PC). Municipality of Cacao: Comte River, on the hill above "Crique Sainte-Anne", on dead twigs on the ground, Jan. 2000, C. Decock (MUCL 42938). Municipality of Regina: Nouragues Nature Reserve, CNRS "Inselberg" research plots, track (layon) C.I., from the camp to the inselberg, approx. 4°05'N 52°41'W, at the base of a dead standing trunk, 2-3 cm diam., 5 Jul. 2012, C. Decock FG-12-585 (MUCL 54400) (culture ex.- MUCL 54400); inside a dead, fallen hollowed trunk (perhaps Cecropia sp., Cecropiaceae), 10 cm diam., covering the inner side of the trunk, 7 Jul. 2012, C. Decock FG-12-612 (MUCL 54409) (culture ex.- MUCL 54409). Mana: Sentier Botanique de Mana, white sand forest, on dead fallen twigs of unidentified angiosperm, 1-2 cm diam., on the ground and surrounding leaf litter, 29 Jun. 2012, C. Decock FG-12-529 & FG-12-530 (respectively MUCL 54387, MUCL 54388) (culture ex.- MUCL 54387 & MUCL 54388).

**Venezuela**. **Estado Bolivar**: Las Nieves, on dead hardwood, rainforest, 12 Jun. 1995, *L. Ryvarden* LR 37703 (O, MUCL 41558); on dead hardwood, rainforest, 12 Jun. 1995, *L. Ryvarden* LR 37770 (O); Chimantá Massif, second growth clearing, at base camp, along the Río Tirica, elev. 500–550 m a.s.l., on a dead log, 22 Jan. 1955, *J.A. Steyermark & J.J. Wurdack* 198 (NY).

*Perenniporia chromatica* (Berk. & Cooke) Decock & Ryvarden (Decock & Ryvarden 1999b: 1142, with description).

*Perenniporia chromatica* is characterized by a yellow pore surface when fresh, 4–5 pores / mm, typically arboriform skeleto-binding hyphae, and basidiospores  $(5-)5.5-7 \times 4-6 \mu m$ , averaging  $6.2 \times 5.1 \mu m$ .

Decock & Ryvarden (1999b) re-described the species on the basis of two collections originating from Brazil and Venezuela, and dating from 1873 (Berkeley & Cooke 1876) and 1887 (Patouillard & Gaillard 1888). Since then, the species was apparently not collected again. Rick (1960) reported the species but none of its voucher specimens appeared to be correctly identified (Decock & Ryvarden 1997, 1999b). The species was not reported by Sanjuan Medeiros et al. (2012) from the Brazilian Amazonia.

An additional specimen originating from Amazonas, Brazil, was found within the unidentified *Perenniporia* collections from NY; it constitutes the third record of this species. Interestingly, all these records come from the Rio Negro area, in Brazil and Venezuela.

**Specimens examined** – **Brazil**: Prainha, on dead wood, J.W.H. Trail n° 13, 12 Dec. 1873 (K, holotype). **Rio Negro**: near Camuru,

Capoeira (very recently cut, mostly saplings), 14 Jan. 1978, *M.L. Farr, I. Araujo & J.F. Ramos* Farr-AM 104 (NY). Venezuela: Caïcara, May 1887, *A. Gaillard* s.n. (FH).

### *Perenniporia parvispora* Decock & Ryvarden (Decock & Ryvarden 2000: 357, with description).

*Perenniporia parvispora* is characterized by resupinate basidiomes, a whitish pore surface, small pores [(6-)7-8 / mm] and small basidiospores,  $3.5-4.5 \times 3-3.5 \mu m$ , averaging  $3.9 \times 3.4 \mu m$ . It was known from a single collection originating from Estado Bolivar, Gran Sabana, Venezuela. It has been found again in the same region. Sanjuan Medeiros et al. (2012) reported also the species for the Brazilian Amazonia.

**Specimens examined – Venezuela. Estado Bolivar**: Gran Sabana, Carretera km. 88-Sty., Helenea, alt. 1200 m, on dead, unknown hardwood, 21 Nov. 1994, *L. Ryvarden* 35380 (O, holotype; MUCL 41560, isotype); Gran Sabana, 1 km east of Estacion Aponguao, elev. 1200 m a.s.l., 24 Feb. 2000, *T. Iturriaga* (7228) & *L. Ryvarden* 42332 (O, MUCL 54088).

## *Perenniporia roseoisabellina* (Pat. & Gaillard) Ryvarden (Ryvarden 1983: 32, with description).

*Perenniporia roseoisabellina* is well characterized by resupinate basidiomes, large (2-4 / mm), often elongated or sinuous pores, narrow vegetative hyphae, and basidiospores averaging  $8 \times 6 \ \mu\text{m} [7-9(9.5) \times 5.5-6.5(-7) \ \mu\text{m}]$ . The species is reported also from the Brazilian Amazonia (Sanjuan Medeiros et al. 2012).

**Specimens examined** – **Colombia**: Magdalena, Parque Nacional Tayrona, Estacion de Gairaca, 0–30 m. alt., 12 Jun. 1978, *L. Ry-varden* 15775A (O).

Costa Rica: Santa Rosa, 40 years old forest succession, on hardwood, 12 Jun. 1995, *M. Núñez* MN-976 (O, INBio).

Venezuela: "Haut Orenoque", Puerto Zamuro, on a big tree, "Legumineuse arborescente parmi les Jungermannes" [arborescent Fabaceae, among Jungermanniales], 25 Nov. 1987, Gaillard # 33 (FH, holotype; NY, isotype). Estado Bolivar: La Urbana, Rio Orinoco, on a living tree, 19 Oct. 1950, B. Maguire, R.S. Cowan & J.J. Wurdack # 29227 (NY).

*Perenniporia xantha* Decock & Ryvarden (Decock & Ryvarden 1999b: 1139, with description).

The species is characterized by resupinate basidiomes with a bright yellow pore surface, small pores (6-8 / mm), arboriform vegetative hyphae, and small basidiospores,

 $4-6(-6.5) \times 3-4(-4.5) \mu m$  (averaging  $4.9 \times 3.7 \mu m$ ). This species is morphologically very similar to *Perenniporia aurantiaca* and might represent an immature form of *P. aurantiaca*; *in fine*, both names might represent the same species.

It was known so far from the type locality only, in French Guiana (Decock & Ryvarden 1999b). A second collection has been found in French Guiana, at the Nouragues Nature Reserve.

**Specimens examined – French Guiana. Municipality of Saül:** Mont la Fumée, approx. 3°37'N 53°12'W, elev. 200–400 m, on bark of decaying twig on ground, partly growing on an old basidiomata of an *Hymenochaete* sp., in tropical moist forest, 7 Aug. 1982, *B. Boom* & *S. Mori* (O, holotype; NY 1522, isotype). **Municipality of Regina**: Nouragues Natural Reserve, CNRS Inselberg research station, track (*layon*) C.I., from the camp to the inselberg, approx. 4°05'N 52°41'W, on a dead branch, 10 cm diam., hanging about 1 m above the soil, unidentified angiosperm, 2 Jul. 2011, *C. Decock* FG-11-479 (MUCL 54087).

#### ACKNOWLEDGMENTS

Cony Decock gratefully acknowledges the financial support received from the Belgian State - Belgian Federal Science Policy (contract BCCM C3/10/003) and the FNRS / FRFC (convention FRFC 2.4544.10). Cony Decock also thanks Dr. Anne Corval, Director of the CNRS Guyane, for granting authorization and facilities for field research at the Inselberg CNRS field Station, and the CNRS staff members for their invaluable help in Cayenne and during field work (namely, Mrs Dorothée Deslignes, and Mr. Philippe Gaucher, Patrick Châtelet, Gilles Peroz, and Wemo Betian). Specimens of P. aurantiaca from Cuba were collected within the frame of CUD/PIC project "Centro de Recursos Geneticos Fungicos en Cuba", and we are thankful to our Cuban colleagues of which, particularly, Dr. Sara Herrera Figueroa, for their help during fieldworks. Cony Decock is also very thankful to Ellen Bloch, New York Botanical Garden, for her constant help in sending materials from NY.

#### REFERENCES

- Berkeley M.J., Cooke M.C. (1876) The fungi of Brazil, including those collected by J.W.H. Trail, esq., M.A., in 1874. Journal of the Linnean Society of London, Botany 15: 363–398. <u>http://</u> dx.doi.org/10.1111/j.1095-8339.1876.tb00248.x
- David A., Rajchenberg M. (1985) Pore fungi from French Antilles and Guiana. Mycotaxon 22: 285–325.
- Decock C., Ryvarden L. (1997) Phellinus anchietanus (Basidiomycetes, Aphyllophorales) sp. nov. from Brazil. Cryptogamie Mycologie 18: 221–225.
- Decock C., Ryvarden L. (1998) Microporellus straminellus comb. nov. and a note on Perenniporia stipitata. Cryptogamie Mycologie 19: 171–179.
- Decock C., Ryvarden L. (1999a) Studies in Perenniporia. Perenniporia detrita and its taxonomic synonyms. Mycologia 91: 386–395. http://dx.doi.org/10.2307/3761384

- Decock C., Ryvarden L. (1999b) Studies in Neotropical polypores 1. Some coloured resupinate Perenniporia species. Mycological Research 103: 1138–1144.
- Decock C., Ryvarden L. (2000) Studies in Neotropical polypores. 6. New resupinate Perenniporia species with small pores and small basidiospores. Mycologia 92: 354–360. <u>http://dx.doi.</u> org/10.2307/3761572
- Decock C., Ryvarden L. (2003) Perenniporiella gen. nov. segregated from Perenniporia, including a key to neotropical Perenniporia species with pileate basidiomes. Mycological Research 107: 93–103. http://dx.doi.org/10.1017/S0953756202006986
- Decock C., Ryvarden L. (2011) Additions to the Neotropical Perenniporia: Perenniporia albo-incarnata comb. nov. and Perenniporia guyanensis sp. nov. Cryptogamie Mycologie 32: 13–23.
- Decock C., Valenzuela R., Castillo G. (2010) Studies in Perenniporia s.l.: Perenniporiella tepeitensis comb. nov., an addition to Perenniporiella. Cryptogamie Mycologie 31: 419–429.
- Decock C., Herrera Figueroa S., Ryvarden L. (2001) Studies in Perenniporia. Perenniporia contraria and its presumed taxonomic synonym, Fomes subannosus. Mycologia 93: 195–203. <u>http://</u> dx.doi.org/10.2307/3761616
- De Jesus M.A., Ryvarden L. (2010) Studies in Neotropical polypores 28: Two new species from Amazonas. Synopsis Fungorum 27: 73–77.
- Kornerup A., Wanscher J.H. (1981) Methuen handbook of colour. 3<sup>rd</sup> Ed. London, Methuen.
- Patouillard N.T., Gaillard A. (1888) Champignons du Venezuela et principalement de la région du Haut-Orénoque, récoltés en 1887 par M.A. Gaillard. Bulletin de la Société Mycologique de France 4: 7–46, pl. 6–13.
- Rajchenberg M., Wright J.E (1982) Two new South American species of Perenniporia (Polyporaceae). Mycotaxon 15: 306–310.
- Rick J. (1960) Basidiomycetes Eubasidii in Rio Grande do Sul, Brasilia, 4. Meruliaceae, Polyporaceae, Boletaceae. Iheringia botânica 7: 193–295.
- Ryvarden L. (1983) Type studies in the Polyporaceae. 14. Species described by N. Patouillard, either alone or with other mycologists. Occasional Papers of the Farlow Herbarium 18: 1–39.
- Ryvarden L. (1984) Type studies in the Polyporaceae. 16. Species described by J.M. Berkeley, either alone or with other mycologists from 1856 to 1886. Mycotaxon 20: 329–363.
- Ryvarden L. (1987) New and noteworthy polypores from tropical America. Mycotaxon 28: 525–541.
- Ryvarden L., Johansen I. (1980) Preliminary polypore flora of East Africa. Oslo, Fungiflora.
- Sanjuan Medeiros P., Gomes-Silva A.C., Pontes Sotato M.P., Ryvarden L., Baptista Gibertoni T. (2012) Notes on Perenniporia Murrill (Basidiomycota) from the Brazilian Amazonia. Nova Hedwigia 94: 507–519. http://dx.doi.org/10.1127/0029-5035/2012/0013
- Thiers B. [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available from <a href="http://www.http://wwwww.http://www.http://www.http://www.http://www.http://www.http://www.http://www.http://www.http://www.http://www.http://www.http://wwww.http://wwwww.http://www.http://www.http://www.http://ww

Manuscript received 15 Oct. 2012; accepted in revised version 6 Feb. 2013.

Communicating Editor: Jérôme Degreef.