

***PERENNIPORIA FRAXINEA* (FUNGI, POLYPORALES), A NEW SPECIES FOR POLAND**

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Abstract: *Perenniporia fraxinea* (Bull.: Fr.) Ryv., a species hitherto unknown in Poland, is reported from two localities in Warsaw. The morphology of newly collected basidiomes is described, and information on the ecology of the fungus and its world distribution are provided. Two insects inhabiting basidiomes of *Perenniporia fraxinea* are listed.

Key words: *Perenniporia fraxinea*, morphology, distribution, ecology, insects, Poland

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The genus *Perenniporia* Murrill 1942 belongs to the Basidiomycota, class Basidiomycetes, order Polyporales and family Polyporaceae (Kirk *et al.* 2001). *Perenniporia* is a large, cosmopolitan genus typified by *Polyporus medulla-panis* Jacq.: Fr. It is characterized by a dimitic (trimitic) hyphal system with clamps on the generative hyphae, thick-walled, usually obovate basidiospores, and causing a white rot. Spores and hyphae of all species in the genus are cyanophilous. The dextrinoid reaction of the basidiospores and hyphae varies within the genus, and some species such as *P. narymica* (Pilát) Pouzar even have amyloid hyphae (Ryvarden & Gilbertson 1994; Decock & Ryvarden 2003).

In recent years, many new species have been added and existing taxa have been transferred to the genus (Hattori & Lee 1999; Decock & Ryvarden 1999a, b, 2000, 2003; Decock 2001; Decock *et al.* 2001; Dai *et al.* 2002). According to Ryvarden and Gilbertson (1994), eight of them occur in Europe. Three *Perenniporia* species have been reported from Poland: *P. medulla-panis* (Jacq.: Fr.) Donk (Błoński 1896; Chełchowski 1898; Eichler 1900; Bresadola 1903; Domański 1965; Wojewoda 1974), *P. subacida* (Peck) Donk (Domański 1965), and *P. narymica* (Pilát) Pouzar (Domański 1973). Of these *P. medulla-panis* and *P. subacida* appear on the *Red List of Threatened Macrofungi in Poland*, where they have been placed in the rare (R) category (Wojewoda & Ławrynowicz 1986, 1992).

None of the relevant Polish papers confirm the possible presence of *Perenniporia fraxinea* (Bull.: Fr.) Ryv. in Poland. According to Orłóś (1951), this fungus 'is either rare or completely absent in Poland.' Although Domański provided a description of the species in classic monographs of Polish polypores (Domański *et al.* 1967, 1973; Domański 1974), he noted that the species so far had not been found in our country. Ryvarden and Gilbertson (1994) included Poland to their map of the European distribution range of *P. fraxinea* but did not give the precise locality. It is impossible nowadays to confirm and/or verify the historical sources and materials on which those scientists based their inclusion of the species within the present-day borders of Poland (Ryvarden, pers. comm.). Their report should therefore be treated with caution.

The present paper gives the first fully documented locality of *P. fraxinea* in our country. The two described sites were found in Warsaw's Saska Kępa residential district.

***Perenniporia fraxinea* (Bull.: Fr.) Ryvarden**

Polyporaceae of North Europe: 307. 1978.

Polyporus fraxineus Bull.: Fr., Syst. Mycol. 1: 374. 1821. – *Boletus fraxineus* Bull., Herb. France 2: pl. 433. 1789.

Basidiocarps perennial, large, bracketlike, broadly attached to the substrate, single or im-

bricate. Upper surface undulating-tuberculate, smooth, finely velutinous when young, cream-colored to light ochre, becoming glabrous, slightly zonate and brownish to blackish, with a very thin crust when older, often with enclosed plant remains. Margin rounded, sometimes sharp, cream-yellow or cream-orange when young, then brownish towards the pileus surface. Context corky, with age woody, cream, pale cork or pale wood-colored, weakly zoned, turning brown in Melzer's reagent. Odor and taste not distinctive. Hymenophore tubular, stratified; each tier 3–10 mm deep, the individual tube layers at times separated by a thin layer of trama. Tubes same color as trama, or in fresh basidiocarps slightly darker. Pores circular to slightly angular, 3–5 per mm. Pore surface cream-ochraceous with pink tint and after touching brown-lilac. Basidiospores subglobose to drop-shaped, thick-walled, smooth, hyaline, variably dextrinoid in Melzer's reagent, $6.0\text{--}8.5\ \mu\text{m} \times 5.0\text{--}6.5\ \mu\text{m}$.

SPECIMENS EXAMINED. POLAND. CENTRAL POLAND LOWLANDS. Warsaw Plain, Warsaw, Saska Kępa District: 1–56 Saska St. ($52^{\circ}14'01''\ \text{N}$, $21^{\circ}03'38''\ \text{E}$), a few con crescent basidiocarps on an old stump of *Fraxinus* sp. (Fig. 1), in a lane of ash trees; largest fruitbody 23 cm wide, 38 cm long, 10 cm thick, 1998–2003, *leg.* A. Szczepkowski; 2–39 Obrońców St. ($52^{\circ}14'00''\ \text{N}$, $21^{\circ}03'20''\ \text{E}$), at base of live *Fraxinus pennsylvanica* Marsch. in lane of ash trees; one fruiting body present, $21 \times 28 \times 7\ \text{cm}$, 6 Sept. 2001, *leg.* A. Szczepkowski.

Dry specimens of *Perenniporia fraxinea* are deposited in the Herbarium of the Department of Mycology and Forest Phytopathology of the Warsaw Agricultural University (WAML).

Perenniporia fraxinea occurs in Europe, North America and Asia (Marchand 1975; Kotlaba 1984; Breitenbach & Kränzlin 1986). On the European continent the fungus represents the subatlantic and submediterranean element (Kotlaba 1984). It is known from the majority of European countries. It spreads from the Atlantic Ocean on the west to the Ural Mts to the east, and from the Apennine Peninsula and the Balkans on the south to Scandinavia and the British Isles to the north (Kotlaba 1984; Ryvarden & Gilbertson 1994). Nevertheless, it is rare or very rare throughout its entire distribu-

tion range (Breitenbach & Kränzlin 1986; Gerhardt 1995). In some countries such as Denmark (Vestersholt 1998) and Sweden (Gärdenfors 2000), it has been included in 'red lists' of macrofungi.

Perenniporia fraxinea is either a parasite or a saprotroph growing on many species of broad-leaved trees. It has been collected on 19 tree genera in Europe. According to Kotlaba (1984), Ryvarden and Gilbertson (1994) and Gerhardt (1995), it is most often found on *Fraxinus* and *Robinia*; other often cited hosts to the fungus are *Aesculus*, *Acer*, *Castanea*, *Celtis*, *Eucalyptus*, *Fagus*, *Gleditsia*, *Gymnocladus*, *Juglans*, *Olea*, *Malus*, *Platanus*, *Populus*, *Prunus*, *Quercus*, *Salix* and *Ulmus* (Kotlaba 1984; Kreisel 1987; Ryvarden & Gilbertson 1994). The identification of the fungus in Poland on *Fraxinus pennsylvanica* and *Fraxinus* sp. confirms our present knowledge concerning its preferences for this host.

The fungus is reported found in hardwood forests and in gardens and parks, but also on street trees (Kotlaba 1984; Kreisel 1987). Polish habitats of *P. fraxinea* are of synanthropic character. In the past, however, the fungus might have been an element of the natural ecosystems of riparian forest and hornbeam-type forest of the area. Saska Kępa, a quiet residential district situated along the right bank of the Vistula River, became a housing quarter only in the 1920s and 1930s. The urban planning concept implemented then was to insert the buildings so as to leave untouched as many old-growth trees as possible, and the newly built streets were immediately planted with rows of trees (Faryna-Paszkiewicz 1989, 2001).

Perenniporia fraxinea usually enters the tree through wounds on roots and the base of the stem (Černý 1976). Infection probably also takes place through contact of infested roots with healthy ones. This is the conclusion from observing removed trees from the nearest vicinity of two localities in Warsaw. The fungus causes a white rot on roots and the lower parts of the stem. Basidiocarps are most often present at the base of the trunk, and only rarely are found in its upper regions. Marchand (1975) reports the occurrence of basidiocarps 1.5–2 m above the ground. After the host has died, the fungus continues its development



Fig. 1. Numerous, conrescent, old basidiocarps of *Perenniporia fraxinea* (Bull.: Fr.) Ryv. on stump of ash.

as a saprotroph. The examined stump wood of infested *Fraxinus* sp. was light brown, later becoming whitish, with soft to spongy consistency. Patchy, whitish mycelium was in cracks in the wood (Fig. 2).

In the two basidiocarps collected in spring 2003, two common insect species were found: *Morphaga choragella* (Den. et Schiffer.) and *Cis nitidus* (F.) (Borowski, pers. comm.).

Perenniporia fraxinea cannot be considered



Fig. 2. Cross section of ash stump with white rot and whitish, patchy mycelium of *Perenniporia fraxinea* (Bull.: Fr.) Ryv.

economically important because of its rarity. In Poland this species should be placed on the 'red list' as at least rare (R).

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