

## New localities of *Pilatoporus ibericus* in Europe and Asia

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The very rare polypore *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. is reported from the Czech Republic, Slovakia, Croatia and Iran for the first time. Study of the sexuality of pure cultures has shown that *P. ibericus* is heterothallic and bipolar.

The type species of the genus *Pilatoporus*, *Polyporus palustris* Berk. et Curt., was studied microscopically in detail. The presence of thick-walled and only rarely clamped sclerified generative hyphae in tissue of its basidiocarps is introduced as a new and for the genus *Pilatoporus* very important and characteristic feature. The new combination *Pilatoporus spraguei* (Berk. et Curt.) Vampola is proposed. The type specimen of the recently described polypore *Pilatoporus maroccanus* Kotl. et Pouz. was compared with the widely known species *Trametes suaveolens* Fr. Neither macroscopic nor microscopic study of its basidiocarps showed any marked distinguishing features, except for the slightly smaller spores of the former.

**Key words:** *Pilatoporus*, polypores, Aphyllophorales, sexuality, hyphal systems.

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Velmi vzácný choroš bělotroudnatec iberijský — *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. je poprvé uváděn z České republiky, Slovenska, Chorvatska a Íránu. Studium sexuality čistých kultur bylo zjištěno, že jde o druh heterothallický a bipolární.

Typový druh rodu *Pilatoporus*, a to *Polyporus palustris* Berk. et Curt., byl detailně mikroskopicky studován. Přítomnost tlustostěnných a pouze vzácně přezkatých sklerifikovaných generativních hyf v tkáni plodnic tohoto druhu je uváděna jako nový a pro rod *Pilatoporus* velmi důležitý charakteristický znak. Je navržena nová kombinace pro bělotroudnatec Spragueova — *Pilatoporus spraguei* (Berk. et Curt.) Vampola. Typová položka nedávno popsaného choroše *Pilatoporus maroccanus* Kotl. et Pouz. (Kotlaba a Pouzar 1993) byla srovnávána s všeobecně známým druhem outkovkou vonnou — *Trametes suaveolens* Fr. Jak makroskopickým, tak mikroskopickým studiem plodnic nebyly, kromě nepatrně menších výtrusů *P. maroccanus*, zjištěny žádné zjevné rozdílné znaky.

The rare polypore *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. was described as a new species only seven years ago (Melo and Ryvarden 1989) and is so far known in Europe from Portugal, France, Italy and Austria (Ryvarden and Gilbertson 1993). The new localities proved the range of this thermophilous polypore to cover not only the Mediterranean area but also Central Europe north to the Czech Republic and Slovakia, and the Middle East into Iran. With the new records the number of known hosts has increased as well. *P. ibericus* is now known

	MJ 58/95 - 1	MJ 58/95 - 2	MJ 58/95 - 3	MJ 54/95 - 2	MJ 54/95 - 12	MJ 54/95 - 13	MJ 54/95 - 14	LISU 6414 - 1	LISU 6414 - 2	LISU 6414 - 3	LISU 6414 - 4
MJ 58/95 - 1	0	-	-	+	+	+	+	+	+	+	+
MJ 58/95 - 2	-	0	-	+	+	+	+	+	+	+	+
MJ 58/95 - 3	-	-	0	+	+	+	+	+	+	+	+
MJ 54/95 - 2	+	+	+	0	-	-	+	+	+	+	+
MJ 54/95 - 12	+	+	+	-	0	-	-	+	+	+	+
MJ 54/95 - 13	+	+	+	-	-	0	-	+	+	+	+
MJ 54/95 - 14	+	+	+	+	-	-	0	+	+	+	+
LISU 6414 - 1	+	+	+	+	+	+	+	0	-	-	-
LISU 6414 - 2	+	+	+	+	+	+	+	-	0	-	-
LISU 6414 - 3	+	+	+	+	+	+	+	-	-	0	-
LISU 6414 - 4	+	+	+	+	+	+	+	-	-	-	0

Fig. 1. Results of pairings of haploid mycelia of *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. from 3 carpophores collected on 3 different hosts in 2 countries (Portugal and Czech Republic); each (+) denotes the formation of hyphae with clamp-connections at the line where monosporic mycelia meet, each (-) a failure to form such hyphae with clamp-connections.

not only from species of the genera *Quercus* and *Pinus* but also from *Carpinus* and *Fraxinus*.

#### NEW LOCALITIES OF *P. ibericus*:

##### Europe:

Czech Republic, Moravia, Břeclav distr., Lanžhot, Ranšpurk Virgin Forest, alt. c. 150 m, on fallen trunk of *Fraxinus angustifolia* subsp. *danubialis*, 7. VII. 1990, leg. A. Černý, M. Jaquenoud, J. Kuthan, A. Vágner and P. Vampola, det. P. Vampola 1995 (MJ 427/90); *ibid.* 19. VI. 1993, 19. VI. 1995, leg. et det. P. Vampola (MJ 194/93, 54/95); *ibid.* on fallen trunk of *Carpinus betulus*, 19. VI. 1993, 19. VI. 1995, leg. et det. P. Vampola (MJ 160/93, 58/95 — Fig. 5).

Slovakia, Senica distr., Lakšárska Nová Ves, military rifle-range Mikulášov, on stump of ? *Pinus sylvestris*, 18. VI. 1994, leg. T. Kukulka, det. P. Vampola (MJ 250/94).

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	MJ 54/95 - 1	MJ 54/95 - 2	MJ 54/95 - 4	MJ 54/95 - 5	MJ 54/95 - 6	MJ 54/95 - 7	MJ 54/95 - 9	MJ 54/95 - 10	MJ 54/95 - 12	MJ 54/95 - 13	MJ 54/95 - 3	MJ 54/95 - 8	MJ 54/95 - 11	MJ 54/95 - 14	MJ 54/95 - 15	MJ 54/95 - 16
MJ 54/95 - 1	0	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 2	-	0	-	-	-	-	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 4	-	-	0	-	-	-	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 5	-	-	-	0	-	-	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 6	-	-	-	-	0	-	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 7	-	-	-	-	-	0	-	-	-	-	+	+	+	+	+	+
MJ 54/95 - 9	-	-	-	-	-	-	0	-	-	-	+	+	+	+	+	+
MJ 54/95 - 10	-	-	-	-	-	-	-	0	-	-	+	+	+	+	+	+
MJ 54/95 - 12	-	-	-	-	-	-	-	-	0	-	+	+	+	+	+	+
MJ 54/95 - 13	-	-	-	-	-	-	-	-	-	0	+	+	+	+	+	+
MJ 54/95 - 3	+	+	+	+	+	+	+	+	+	+	0	-	-	-	-	-
MJ 54/95 - 8	+	+	+	+	+	+	+	+	+	+	-	0	-	-	-	-
MJ 54/95 - 11	+	+	+	+	+	+	+	+	+	+	-	-	0	-	-	-
MJ 54/95 - 14	+	+	+	+	+	+	+	+	+	+	-	-	-	0	-	-
MJ 54/95 - 15	+	+	+	+	+	+	+	+	+	+	-	-	-	-	0	-
MJ 54/95 - 16	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	0

Fig. 2. Results of pairings in 120 possible combinations of 16 monosporic mycelia of *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. (MJ 54/95); each (+) denotes the formation of hyphae with clamp-connections at septa at the line where monosporic mycelia of a given pair meet and each (-) a failure to form such hyphae.

Croatia, island Rab, on stump of *Pinus* sp., 23. IX. 1994, leg. L. Varjú, det. P. Vampola (MJ 483/94).

Asia:

Iran, Darab Kola Nagandaran, on *Carpinus betulus*, 9. V. 1971, leg. Steyaert, det. P. Vampola 1995 (IRAN 14, PRM 776860).

The identifications of *P. ibericus* were confirmed by comparing them with a specimen collected by I. Melo (author of the species) on *Pinus pinaster* in Portugal, 25. XI. 1994 (LISU 6414).

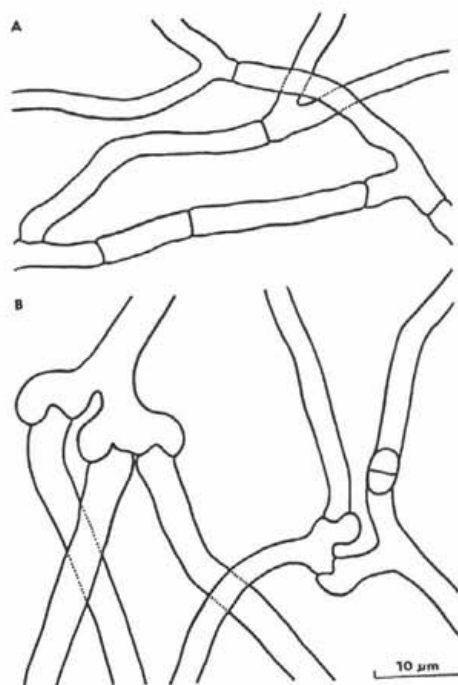


Fig. 3 *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. A) Monokaryotic mycelium (MJ 54/95 — 14), B) dikaryotic mycelium at the meeting line (MJ 54/95 — 14, LISU 6414 — 4).

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Besides macroscopic and microscopic comparative studies of the basidiocarps, the pure cultures of this species were studied as well. Interfertility tests with monosporic cultures isolated from basidiocarps from Portugal (LISU 6414) and Moravia (MJ 54/95, 58/95) were positive and pairings occurred between cultures from both countries. These mutual pairings of monosporic cultures from two localities and three different hosts performed on 40 plates were positive in all cases (Fig. 1). The interfertility tests also confirmed that populations growing on hardwoods and populations from conifers are conspecific.

*P. ibericus* is heterothallic and bipolar. This was confirmed by the results of mutual pairings of 16 monosporic cultures isolated from the specimen MJ 54/95. In 120 possible combinations compatible matings occurred in 60 cases, i. e. 50 % (Fig. 2).

*Pilatoporus ibericus* was originally described in the genus *Fomitopsis* (Melo and Ryvarden 1989). Nevertheless, its classification within the recently described genus *Pilatoporus* (Kotlaba and Pouzar 1990) seems to be an acceptable solution

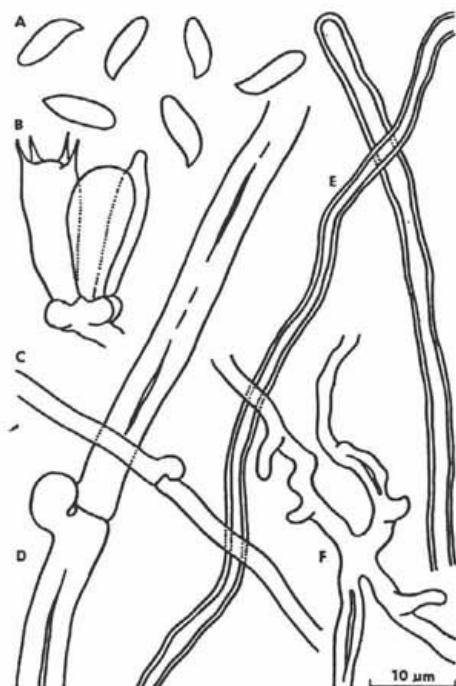


Fig. 4 *Pilatoporus ibericus* (Melo et Ryv.) Kotl. et Pouz. Microfeatures of basidiocarps (MJ 194/93). A) Spores, B) fragment of hymenium, C) thin-walled generative hypha, D) sklerified generative hypha, E) skeletal hyphae, F) binding hypha. Del. P. Vampola

(Kotlaba and Pouzar 1993). The genus *Fomitopsis* is rather heterogeneous and the exclusion of annual species with white context is certainly correct. Although the authors of the generic name *Pilatoporus* (Kotlaba and Pouzar 1990) in my opinion overestimate the slight difference in the thickness of the spore wall, this genus should be accepted. In addition to the fact that all species of *Pilatoporus* have exclusively annual basidiocarps, the whitish context and the absence of a crustaceous pileal surface are very good distinguishing features as well.

I had an opportunity to study ample herbarium material of the type species of *Pilatoporus*, *Polyporus palustris* Berk. et Curt., from different places in America. I would like to draw attention to another distinct and important feature: contrary to typical members of *Fomitopsis* s. s., special strikingly thick-walled and only rarely clamped generative hyphae can be found in the tissue of the basidiocarps of *Polyporus palustris*. These sclerified generative hyphae imitate so strongly the skeletal or binding hyphae, that their nature could easily be overlooked. The presence of rare clamps, however, reveals their identity. Besides the American *P. palustris*,

similar sclerified hyphae have been observed in all studied specimens of *Pilatoporus ibericus* (LISU 6414, HUBO 4937, PRM 776 860, MJ 427/90, 160/93, 194/93, 250/94, 483/94, 54/95, 58/95). Sclerified hyphae in the basidiocarps of *P. ibericus*, however, seem to be very rare and their observation can sometimes be rather difficult especially in badly dried specimens.

*Pilatoporus spraguei* (Berk. et Curt.) Vampola comb. nov. (basionymum *Polyporus spraguei* Berk. et Curt., *Grevillea* 1: 50, 1872) undoubtedly belongs to the same group — the sclerified generative hyphae in the tissue of its basidiocarps are well perceptible (HUBO 5047). Regarding this microscopical feature also the other species classified in *Pilatoporus* should in future be studied in detail. The presence of sclerified hyphae in the tissue of the basidiocarps also suggests that *Pilatoporus* is very closely related to *Tyromyces* s. l. and seems to pose a natural link between the genera *Fomitopsis* s. s. and *Tyromyces* s. l.

During the study of *Pilatoporus ibericus* the type specimen of the recently described *Pilatoporus maroccanus* Kotl. et Pouz. was revised as well. This species was described on the basis of only one find on a living trunk of *Cupressus sempervirens* in Morocco (Kotlaba and Pouzar 1993). The authors of the new species mentioned a brown rot of the wood in their description. However, no pieces of wood were found in the type specimen and this statement could not be confirmed. Correct identification of the type of rot can sometimes be very difficult in the field, especially when the host is furthermore attacked by another and not yet fruiting species. Unfortunately, in the case of *P. maroccanus*, no pure culture was isolated from fresh basidiocarps at the time and therefore oxidase reactions cannot be used for the determination of the type of rot. Both macroscopic and microscopic features of *P. maroccanus* seem to fit with the widely known species *Trametes suaveolens* Fr. Except the only slightly smaller spores of the former, no other significant distinguishing features were found in a comparison of both species. Although *T. suaveolens* grows almost exclusively on hardwoods, its exceptional occurrence on conifers (known from North America) could not be excluded. Further specimens from Morocco or other countries where *Cupressus sempervirens* occurs are badly needed to prove that *P. maroccanus* is really an independent species and not only a synonym of *Trametes suaveolens*.

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