

SOME RARE AND INTERESTING HIGHER  
FUNGI ON CONIFERS FROM THE PLITVIČKA  
JEZERA NATIONAL PARK

MILICA TORTIĆ

(Institute of Botany, Faculty of Science, Zagreb)

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During recent intensive investigations of the mycoflora of the Plitvička jezera National Park (further in text Plitvice), in addition to many common and widely spread species of higher fungi, several rare ones, some even new for Yugoslavia, have been established, particularly among those growing on wood. Some have already been published, together with other collections from Yugoslavia (e. g. Tortić and Kotlaba 1976).

Seven species on coniferous wood, four of them not yet recorded for Yugoslavia and others from only one or two localities, have been selected for this paper. Three are known so far only from Plitvice. Each of these species appears to be bound more or less to the wood of a particular tree genus and they are here grouped accordingly.

Species on *Pinus*

Four species on pine, presented here, had a very interesting habitat: they grew as aeromycophytes on dead branches still attached to the living tree, 1.5 m or more above ground. All were found on the same locality (not on the same branches): a young stand of *Pinus nigra* on the slopes of Mihaljevac mountain near Titova Korenica, at an altitude of about 800 m. This locality is not exactly within the boundary of the National Park, but will be included in it in the near future. The first species belongs to the *Polyporaceae* and the other three to the *Corticaceae*.

*Coriolellus ramentaceus* (Berk. et Br.) Domañ. (*Cartilosoma sub-sinuosum* (Bres.) Kotl. et Pouz) is known from Europe and North America. Pilát (1936—42) cites it as rare, but Domañski (1972) states that it is rather frequent in Poland on dead branches attached to the living trees of *Pinus*, rarely on *Picea* and *Abies*; sometimes it is found on

fallen branches. As it sometimes grows high in the crown, its resupinate, whitish fruitbodies with rather large, irregular pores may be easily missed.

Localities in Yugoslavia: 1. Meja near Kranj, alt 365 m, on a fallen branch (probably *Pinus*), 9. 11. 1972, I. V. Hudoklin, d. F. Kotlaba and Z. Pouzar. PRM 771773. — 2. Near Ljubljana, on the bank of the river Sava, alt. about 300 m, on a fallen branch of *Pinus*, 15. 4. 1973, I. V. Hudoklin, d. M. Tortić. ZA. — 3. Mihaljevac, on the dead attached branch of *Pinus nigra*, 1. 5. and 7. 10. 1976, I. M. and S. Tortić, d. M. Tortić. ZA. A fruitbody grew in October at exactly the same place from which a specimen was taken in May. — 4. Avala mountain near Beograd, alt. between 300 and 500 m, on *Pinus nigra*, Oct. 1934, I. V. Lindtner, d. V. Litschauer as *Trametes subsinuosa*. BEO herb. Lindtner 2097.

*Aleurocystidiellum subcruentatum* (Berk. et Curt.) Lemke (*Aleurodiscus subcruentatus* (Berk. et Curt.) Burt., *Aleurodiscus scutellatus* Litschauer). In Europe this species was described by Litschauer from the Alps, where it grew on living, more rarely dead trunks or dead branches of *Pinus montana*. It is very frequent on the same host in the High Tatras and widely spread in subalpine and sometimes alpine zones in the Carpathian mountains (Pilát 1926). Lemke (1964) placed Litschauer's species in synonymy with *A. subcruentatum*, for which he erected a particular genus. Although this species was collected in Europe only on *Pinus*, it is widely distributed in North America in the first place on the bark of *Picea*, but has been collected in China on *Abies* and is frequent in Japan on *Tsuga*, *Thuja* and *Cryptomeria*.

This fungus looks rather like a very small, thin, *Aleurodiscus disciformis*. It is characterized by the dimittic hyphal system, incrustated paraphysoids and large, broadly ellipsoid, amyloid spores. The author observed that in cresyl blue all structures were metachromatic, the ones with thicker walls reacting more strongly.

In Yugoslavia only the locality at Mihaljevac is known for the moment, where it was collected on 1. 5. and 7. 10. 1976, each time on different dead branches of a single living tree, by M. and S. Tortić, determined by M. Tortić and revised by L. Ryvardeen. ZA.

*Meruliopsis taxicola* (Pers.) Bond. was earlier placed in *Polyporaceae* as *Poria taxicola* (Pers.) Bres. It is widely distributed but rather rare on trunks, stumps and dead branches of living trees, rarely on fallen branches, in Europe mainly on *Pinus*, sometimes also on *Taxus*; in North America on *Picea*, *Abies* and *Pinus*; in Siberia on *Picea*, whilst it grows also on conifers in New Zealand and Australia (Pilát 1936—42, Lowe 1966). It is easily recognised by its effused poroid fruitbody of a vivid brick-red or brown-red colour, which darkens later on.

Localities in Yugoslavia: 1. Ljubljana, on posts (probably conifer), alt. about 300 m, 24. 9. 1882, I. W. Voss as *Merulius serpens*, rev. M. Tortić, F. Kotlaba and Z. Pouzar. LJUM (Voss 1889—92, Tortić et al. 1975). — 2. Kokoš, between Lokev and Bazovica, (at the Italian border), on a stump of *Pinus nigra*, alt. 590 m, 2. 7. 1968, I. S. Hočevar, d. M. Tortić (specimen kept by the collector). — 3. Lokev, between Divača and Lipica, on a dead branch attached to a living *Pinus nigra*, alt. 460 m, 27. 8. 1968, I. S. Hočevar, d. M. Tortić, rev. F. Kotlaba and Z. Pouzar, ZA. — 4. Plitvice, Babin Potok, alt. 800—900 m, on several dead branches attached to a living *Pinus silvestris*, 3. 5. 1975, I. M. and S. Tortić, d. M. Tortić. ZA. — 5. Plitvice, Mihaljevac, alt. about 800 m, on dead branches of several living *Pinus nigra*, 1. 5. 1976, I. M. and S. Tortić, d. M. Tortić. ZA. — 6. Avala mountain near Beograd, several collections by

V. Lindtner on *Pinus nigra*, on one stated expressly "ad corticem ramulosque"; the first was identified by V. Litschauer, the rest by the author: 25. 10. 1936, BEO herb. Lindtner 3159; 28. 11. 1939, BEO herb. Lindtner 5030 (two envelopes) and BEO 2026; 8. 6. 1948, BEO herb. Lindtner 6757 (poor material) and 16. 9. 1949, BEO 3370. — 7. Korab, Strežimirska šuma supra Ničpur, (alt. about 1400 m), in Fagetis, ad corticem, 23. 7. 1937, I. V. Lindtner, d. M. Tortić. BEO herb. Lindtner 4159. The substrate in this case was coniferous, probably *Pinus*.

*Peniophora pini* (Schleich. ex Fr.) Boid. [*Stereum pini* (Scheich. ex Fr.)] has small and inconspicuous fruitbodies, growing in the form of reddish brown patches on the lower side of recently dead pine branches attached to the tree. As it is therefore easily overlooked, it was considered as rare. However, according to Jahn (1971) it is widely spread and probably present whenever pine trees are to be found.

For Yugoslavia it was published only by Voss (1889—92) from dead branches of *Pinus silvestris* near Ljubljana, but there exists no exsiccate to be revised. The localities with voucher specimens are: 1. Mihaljevac, on several living *Pinus nigra*, on dead branches, 1. 5. and 7 10. 1976, I. M. and S. Tortić, d. M. Tortić, ZA. — 2. Medvednica mountain near Zagreb, on the ridge at about 900 m alt., in a tree nursery, on dead branches of a living *Pinus nigra*, 28. 2. 1976, I. M. and S. Tortić, d. M. Tortić, ZA. — 3. Trebević mountain near Sarajevo, Brus, alt. about 1000 m, on dead branches attached to the living *Pinus nigra*, 28. 6. 1974, I. et d. M. Tortić, ZA.

Although all the four species grew on dead pine branches attached to the tree, *M. taxicola* was not restricted to this habitat, even if apparently preferring it, and *A. subcruentatum*, according to the literature, occurs also on trunks. Their mode of life and the small size of most of them makes them very inconspicuous. However, it is to be expected that all of them will be refound in appropriate localities, but have to be sought. It is difficult to decide which may turn out to be rare and which frequent, although they may be widely spread. Curiously, *Peniophora pini* on Medvednica was found on only one tree, although many young pine trees with a lot of easily accessible dead branches were examined.

### Species on *Picea*

The genus *Columnocystis*, to which the two species occurring on *Picea* discussed here belong, is placed by some authors in *Stereaceae* (e. g. Jahn 1971), and by others in *Corticiaceae* (Eriksson and Ryvarden 1973). Both species are resupinate, the first sometimes with the margin bent into small caps, and with a smooth hymenial surface of different shades of brown (colours noted in dried specimens): in *C. abietina* it is, according to Methuen, nearly 5B2 (orange grey) or in older specimens 5D3 (nougat), whilst in *C. ambigua* it is 5E7 (linoleum brown) or 5D5 (clay), often with a somewhat greenish shade, towards the plate 4, and in places it is even 3A5 (light yellow). Microscopically they are characterized by long, hyaline, later brown, narrow, incrusted cystidia, but differ in the size of the spores as well as by the presence of clamps in *C. abietina* and their absence in *C. ambigua*.

*Columnocystis abietina* (Pers. ex Fr.) Pouz. (*Stereum abietinum* Pers. ex Fr.) Fr. is a boreal-subalpine species, growing in North America and Europe, where it is particularly common in Scandinavia and the

mountains of Central Europe, mainly on dead wood of *Picea*, sometimes also on *Abies*; in the lowlands it occurs only in the colder parts and is rare (Pilát 1930, Jahn 1971).

For Yugoslavia it was published by Voss (1889—92) as *Stereum abietinum* on old planks near Ljubljana. A specimen in LJUM, collected by him in February 1879, proved on revision to be *Hymenochaete* cf. *subfuliginosa* on *Quercus* wood. Škorić (1928) cites it as *Stereum striatum* from near Gospić, on *Pinus*. No specimen exists and the substrate seems unlikely.

For the moment, there exist voucher specimens only from the following localities: 1. Večna pot in Ljubljana, alt. 300 m, substrate unknown, I. V. Lindtner 1928, d. A. Pilát. PRM 23389, BEO herb. Lindtner 2044. — 2. Pokljuka near Bled, alt. 1200—1300 m, spruce forest, on *Picea* wood, 25. 5. 1974, I. S. Hočevar, d. M. Tortić. ZA. — 3. Plitvice, virgin forest at Čorkova uvala (*Abieti-Fagetum dinaricum*), alt. 900 m, on prostrate trunks of *Picea*, 8. 7. 1976 and 10. 10. 1977, I. M. and S. Tortić, d. M. Tortić. ZA. — Plitvice, Babin Potok, alt. 800—900 m, *Helleboro-Pinetum*, on logs and fallen trunks of *Picea*, 14. 7. 1976, 26. 3. and 9. 10. 1977, I. M. and S. Tortić, d. M. Tortić. ZA. — 5. Kopaonik (mountain) sub Babin Grob (Lisina) (alt. at least 1300 m), ad truncos putridos *Piceae*, 22. 10. 1953, I. V. Lindtner, d. M. Tortić. BEO 5229.

*Columnocystis ambigua* (Peck) Pouz. (*Stereum carpaticum* Pil.) is known from eastern North America (Burdall 1971) and Europe. In Europe it is very rare and has been found in Austria (Alps), USSR (Estonia, Carpathian mountains) (Pilát 1930, Jahn 1971) and Poland (unpublished), everywhere on *Picea* wood.

In Yugoslavia it is now known only from Plitvice, where it was collected in two localities nearly 10 km apart in a straight line: 1. Babin Potok, *Helleboro-Pinetum*, alt. 800—900 m, on a cut surface of a *Picea* log (together with *Amylostereum areolatum*) 14. 7. 1976, I. M. and S. Tortić, d. M. Tortić, rev. F. Kotlaba and Z. Pouzar. ZA, a fragment in PRM. On 9. 10. 1977 it grew there on three *Picea* logs, rather abundantly on cut surfaces, on one together with *C. abietina*, and was again collected. — 2. Virgin forest at Čorkova uvala (*Abieti-Fagetum dinaricum*), alt. 900 m, on a cut surface of a prostrate *Picea* trunk, young layers developing on old fruitbodies, 19. 7. 1977, I. M. and S. Tortić, d. M. Tortić. ZA.

Although *C. ambigua* was found only at Plitvice, it is there apparently at least as frequent as *C. abietina*. It is probable therefore that the distribution of both species in Yugoslavia is more or less similar and they may be expected to occur in further localities, particularly in the mountains, on dead wood of *Picea* which is here, and, according to the literature also elsewhere, their main substrate.

### Species on *Abies*

*Phellinus pouzarii* Kotl. has been described only recently (Kotlaba 1968) and published from three localities in Czechoslovakia and one in the USSR. Now, as I was informed by Dr. Kotlaba (letter), there are several new localities in Czechoslovakia and one in West Germany known, all unpublished. Yugoslavia is, therefore, the fourth country where this species has been found to date.

The resupinate fruitbodies of *Ph. pouzarii* are easily recognized in the field by their characteristic smell, not known in other *Phellinus* spe-

cies, which persists in the herbarium for years. The most outstanding microscopical characters are setoid skeletal hyphae.

The single locality in Yugoslavia is at Plitvice, in Čorkova uvala, alt. about 850 m, *Abieti-Fagetum*. On a cut surface of a log of *Abies* two specimens were found and collected 12. 7. 1976 by M. and S. Tortić. On the side of the same log several old specimens of *Ph. hartigii* were noted. In October of the same year the place was revisited and it was found that new fruitbodies had grown on the remnants of those previously collected, and further material was taken. In October 1977 both fruitbodies were again well developed. In addition to those, several large specimens were found on 22. 6. 1978 on both cut surfaces of another trunk nearby and one was collected. The species was determined by M. Tortić and revised by F. Kotlaba. All collections are deposited at ZA and part of the first at PRM 802576.

Although it seems to be rare, further finds of this species in Yugoslavia are very probable, owing to large areas covered with fir forests.

### S u m m a r y

Seven species of higher fungi from the Plitvička Jezera National Park, growing on wood of conifers, are presented. Other localities, if known, are also enumerated. *Coriolellus ramentaceus* (Berk. et Bond.) Domaň., *Aleurocystidiellum subcruentatum* (Berk. et Curt.) Lemke, *Columnocystis ambigua* (Peck) Pouz. and *Phellinus pouzarii* Kotl. are here recorded for the first time for Yugoslavia, with all, except the first mentioned, being found only in this National Park. *Meruliopsis taxicola* (Pers.) Bond., *Peniophora pini* (Schleich. ex Fr.) Boid. and *Columnocystis abietina* (Pers. ex Fr.) Pouz. were previously published from one or two other localities, but, except for the first, they were not supported by voucher specimens. Although few localities are now known for each species, it is probable that some of them at least are not rare.

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## S A D R Ź A J

### NEKE RIJETKE I INTERESANTNE VIŠE GLJIVE NA ČETINJACAMA U NACIONALNOM PARKU PLITVIČKA JEZERA

Milica Tortić

(Botanički zavod Prirodoslovno-matematičkog fakulteta, Zagreb)

U posljednje vrijeme intenzivnije se istražuje mikoflora na području nacionalnog parka Plitvička jezera, naročito vrste viših gljiva koje se razvijaju na živom ili mrtvom drvetu, pa je ustanovljeno, uz mnoge česte i obične, i mnoštvo rijetkih, od kojih dio nije dosad bio poznat u Jugoslaviji. Neke su od njih objavljene (npr. Tortić i Kotlaba 1976). Ovdje je prikazano sedam vrsta, svaka vezana manje ili više na određeni rod četinjača.

*Coriolellus ramentaceus* (Berk. et Br.) Domaň, *Aleurocystidiellum subcruentatum* (Berk. et Curt.) Lemke, *Meruliopsis taxicola* (Pers.) Bond. i *Peniophora pini* (Schleich. ex Fr.) Boid. rasle su na odumrlim granama živih stabala bora, na visini od 1,5 m i više (aeromikofiti). Prve dvije nisu još bile zabilježene u našoj zemlji, a *A. subcruentatum* zasad je poznat samo s jednog nalazišta na području Plitvica. *Columnocystis abietina* (Pers. ex Fr.) Pouz. i *C. ambigua* (Peck) Pouz. razvijale su se na panjevima i ležećim deblima smreke. Od prve je u nas poznato dosad malo nalazišta, a druga je ustanovljena samo na dva mjesta u ovom nacionalnom parku. *Phellinus pouzarii* Kotl., koji redovito raste na drvu jele, opisan je tek pred desetak godina u Čehoslovačkoj i do danas je nađen jedino još u SSSR-u i Zapadnoj Njemačkoj. U Jugoslaviji je ustanovljen samo na dva trupca jele na Plitvicama.

Većina tih gljiva vjerojatno je češća nego bi se moglo zaključiti prema broju poznatih lokaliteta. Uglavnom su prilično neugledne pa ih treba posebno tražiti na staništima povoljnim za njihov razvitak.

Dr. Milica Tortić  
Botanički zavod PMF  
Rooseveltov trg 6  
Yu-41000 Zagreb  
(Jugoslavija)