

Boletus	Jahrg. 15	Heft 3	1991	Seiten 69–76
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Wood-inhabiting macromycetes characteristic in Europe for *Abies* or *Picea*, with a comparison of their hosts in North America and Far East

Zusammenfassung

Im vorliegenden Beitrag werden die Wirtsspektren von ca. 30 holzbewohnenden Großpilzen in verschiedenen Regionen gegenübergestellt. Dabei wurden Arten ausgewählt, die in Europa vorrangig auf Tanne oder Fichte vorkommen. Nur sehr wenige Arten sind ausschließlich auf Holz einer Wirtsgattung beschränkt: *Cyphella digitalis*, *Flavophlebia sulphureoisabellina*, *Peniophora piceae* und *Phellinus pouzarii* auf *Abies*, *Merulicium fuscisporum* auf *Picea*. Alle anderen diskutierten Arten bevorzugen zwar regional eine bestimmte Wirtsgattung, sind aber insgesamt nicht auf diese beschränkt. In Europa kommen manche Arten weiter nördlich fast ausschließlich auf Fichte, im Süden aber vorrangig auf Tanne vor (z. B. *Pleurocybella porrigens*). Einige Arten, die in Mitteleuropa ausschließlich auf Laubholz wachsen (z. B. *Hapalopilus rutilans*, *Inonotus dryadeus*), zeigen in balkanischen Bergwäldern eine Präferenz für Tannenholz, bei letztgenannter Art übereinstimmend mit der Wirtswahl dieses Pilzes im westlichen Nordamerika.

Betrachtet man die Wirtswahl der Arten in der gesamten nördlichen Hemisphäre, so existieren bemerkenswerte Unterschiede. In vielen Fällen stimmen die Haupt-Wirtsgattungen einer Art in Europa und Asien überein, während in Nordamerika meist weitere und vielfach andere Wirtsgattungen bevorzugt werden, darunter oftmals Laubhölzer. Letztere Erscheinung führt die Autorin auf das generell wesentlich größere Angebot der zur Verfügung stehenden Holzarten in Amerika zurück. (Red.)

Introduction

A number of lignicolous macromycetes show in Europe a preference for *Abies* or *Picea*. JAHN (1968), for example, has listed some which he considers as characteristic for either of those hosts. Here are discussed thirty such species, a few occurring only in Europe, others distributed also in some other regions of the northern temperate zone, i. e. in North America or Far East in northern Asia, or in both, and their hosts compared on the basis of the available literature. Included are several species normally growing on hardwoods, but not unusual on *Abies* in some parts of Europe. Particular attention was paid to the results of the author's investigations of those fungi in Yugoslavia.

Abies as well as *Picea* are represented in Europe for the most part by a single species, i. e. *Abies alba* and *Picea abies*, a few endemic species of fir and one of spruce occupying small areas in southern parts. *Picea abies* is distributed in North and Central Europe and partly Balkan Peninsula, whilst the main area of *Abies alba* reaches from Balkan and Apennine Peninsulas only into mountainous regions of Central Europe, with a few exclaves farther northwards.

In Yugoslavia *Abies* is widely spread in montane forests, mainly mixed with *Fagus*, and although also here, particularly in north-western part, endangered by acid rains and other pollution, it is in many places still in rather good condition and even some almost virgin forests are preserved. *Picea* occurs also in mountains (except when planted) in separate associations, but also often mixed with *Abies*. The author had the opportunity to study lignicolous fungi in such forests in several localities, including some National Parks (e.g. Triglav, Risnjak, Plitvička Jezera, Sutjeska, Durmitor, Pelister).

Species on *Abies*

On living trees *Bondarzewia mesenterica* (SCHAEFF.) KREISEL is in Europe rare and grows mainly on *Abies*, very exceptionally on some other conifers (JAHN 1963, 1968,

BONDARTSEV 1971, DOMAŃSKI & al. 1973, MARCHAND 1976, KRIEGLSTEINER 1977, KOTLABA 1984, DUNGER 1987). In Yugoslavia it was found at the base of living firs or at fir stumps in several montane localities (TORTIĆ & JELIĆ 1969, TORTIĆ 1988). It was noted on *Abies* also in Far East (LYUBARSKII & VASSILIEVA 1975). In North America it occurs on several conifers including *Abies*, but is particularly common on *Larix* (GILBERTSON & RYVARDEN 1986), and grows also on *Salix* (FARR & al. 1989).

Phellinus hartigii (ALL. & SCHN.) BOND., a characteristic parasite on fir in Europe, occurs on spruce or other conifers but rarely (BOURDOT & GALZIN 1928, JAHN 1968, BONDARTSEV 1971, DOMAŃSKI & al. 1973, MARCHAND 1976, KRIEGLSTEINER 1977, KOTLABA 1984) and is reported from Far East also on *Abies* (LYUBARSKII & VASSILIEVA 1975). However, WASSER & SOLDATOVA (1975) report it in Ukraine on *Pinus*. In Yugoslavia it was found mainly on *Abies*, a few times on *Picea*, once on *Pinus peuce*. In North America it is most frequent on *Tsuga*, also growing on *Abies* and *Pseudotsuga* (GILBERTSON & RYVARDEN 1987), and *Taxus* (FARR & al. 1989).

Several small species grow characteristically on dead branches still attached to living fir trees, some also on prostrate branches on ground. They easily escape observation when situated high in the crown of large trees.

Aleurodiscus amorphus (FR.) SCHROET. is distributed in Europe mainly on *Abies* (e.g. BOURDOT & GALZIN 1928, JAHN 1968, 1971), but in Fennoscandia, where fir is not autochthonous, on *Picea* (ERIKSSON & RYVARDEN 1973). A few finds on *Picea* were reported from Germany by KRIEGLSTEINER (1977). It is widely spread in Yugoslavia on fir and was only once collected on spruce (TORTIĆ 1982). Curiously, WASSER & SOLDATOVA (1975) noted it in Ukraine in the USSR on *Pinus sylvestris*. In Far East it occurs on *Abies*, too (LYUBARSKII & VASSILIEVA 1975), and is most often found on this host in North America, where it is however known also from a number of other conifers (FARR & al. 1989).

Tremella mycophaga MART. and *T. simplex* JACKS. & MART. are, as parasites of *A. amorphus*, distributed together with their host on *Abies* and *Picea* in Europe, Asia and North America (WOJEWODA 1981). They can be distinguished only microscopically, *T. mycophaga* having clamps on hyphae and four-spored basidia, whilst *T. simplex* is clampless with two-spored basidia. JAHN (1968) and KRIEGLSTEINER (1977) mention *T. mycophaga* in Germany and ERIKSSON & RYVARDEN (1973) *T. simplex* in Fennoscandia. BREITENBACH & KRÄNZLIN (1986) report from Switzerland only one find of *T. mycophaga*, all others being *T. simplex*. In Yugoslavia both species were found, once even both together in the same collection, but *T. simplex* is also here more frequent (TORTIĆ 1982).

Cyphella digitalis A. & S.: FR. is known only in Europe and seems to be rather rare or is perhaps overlooked. It is reported only from *Abies* (BOURDOT & GALZIN 1928, KRIEGLSTEINER 1977, BREITENBACH & KRÄNZLIN 1986), on which it was found also in the few known localities in Yugoslavia.

Hymenochaete cruenta (PERS.: FR.) DONK is distributed in Europe, northern Asia and even Australia. In Europe and Far East it was found on *Abies* (BOURDOT & GALZIN 1928, JAHN 1968, LYUBARSKII & VASSILIEVA 1975, MARCHAND 1976, KRIEGLSTEINER 1977, BREITENBACH & KRÄNZLIN 1986) and was noted on this host also in Yugoslavia in various localities, growing sometimes on standing dead trunks (TORTIĆ & JELIĆ 1970, TORTIĆ 1985). KOTLABA (1958) cites finds by some authors on *Picea*, but considers the host as doubtful. WASSER & SOLDATOVA (1975) report it on *Pinus sylvestris* in Ukraine, which is also surprising. However, it was collected in Nepal on *Rhododendron* (HJORTSTAM & RYVARDEN 1984), whilst in Australia and New Zealand it occurs on 18 woody genera, only one being a conifer (CUNNINGHAM 1963).

Panellus violaceofulvus (BATSCH: FR.) SING. is considered characteristic for dead branches of fir (JAHN 1968) but was noted rarely also on *Picea* and *Pinus* (KRIEGLSTEINER 1977). Only few localities are known in Yugoslavia; everywhere it was growing on *Abies*. In North America it is rare and occurs also on fir (FARR & al. 1989).

Peniophora piceae (PERS.) JOHN ERIKSS. is known in Europe and North America only on *Abies* (BOIDIN 1965, JAHN 1968, KRIEGLSTEINER 1977, ERIKSSON & al. 1978,

FARR & al. 1989). In Yugoslavia, it is not rare in montane forests on fir branches, as well as on those attached to the standing tree as on prostrate ones on ground (TORTIĆ 1982). Following species grow on dead prostrate trunks or stumps in various stages of decomposition.

Antrodia variiformis (PECK) DONK is for the moment known in few countries of Europe, always on prostrate logs of *Abies* (KOTLABA 1984, DAVID & TORTIĆ 1986). In North America it is widely spread on several conifers and some hardwoods (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Flavophlebia sulphureoisabellina (LITSCH.) K.-H. LARSS. & HJORTST. is according to HJORTSTAM & LARSSON (1977) bound to *Abies* and was found on rotten wood of this host in France, Poland, USSR and Canada. Recently it was reported as new from Germany (GROSSE-BRAUCKMANN 1990). FARR et al. (1989) cite it on *Abies* also in USA, as *Cerocorticium sulphureoisabellinum*. In Yugoslavia only a single locality is known at present, National Park Plitvička jezera, where it was found several times in no small quantities on prostrate fir logs (TORTIĆ, in press).

Hericium alpestre PERS. is also a rare species, found on standing or prostrate dead trunks mainly of *Abies*, only occasionally on *Picea*, even on *Fagus* (JAHN 1964, 1968, MARCHAND 1976, BREITENBACH & KRÄNZLIN 1986). In Far East LYUBARSKII & VASSILIEVA (1975) observed it on *Abies*, but also on *Larix*. In Yugoslavia it was collected on *Abies* particularly in some National parks and nature reserves (TORTIĆ 1984, 1985, TORTIĆ & JELIĆ 1977).

Hydropus marginellus (PERS.: FR.) SING. is according to JAHN (1968) characteristic for dead wood of *Abies*. In Yugoslavia it was found several times, mainly on rotten stumps of *Abies*, once also on that of *Picea*. In North America it is reported from both *Abies* and *Picea* (FARR & al. 1989).

Phellinus pouzarii KOTLABA is as yet known only from few countries in Europe, including Caucasus Mt., growing exclusively on wood of *Abies* (JAHN 1968, KOTLABA 1984). It was collected in Yugoslavia several times in a single locality, National park Plitvička jezera (TORTIĆ 1978).

Podofomes trogii (FR.) POUZ. is a rare species, in Europe characteristic for *Abies* on calcareous soil, only occasionally found also on *Picea* (BOURDOT & GALZIN 1928, JAHN 1974, KRIEGLSTEINER 1977, KOTLABA 1984, BREITENBACH & KRÄNZLIN 1986). In Yugoslavia a few localities are known in fir forests on *Abies* (JELIĆ & TORTIĆ 1968, TORTIĆ 1988). PILÁT (1936–42) cites this species from Asia Minor on *Picea* and *Abies*. NIEMELÄ & UOTILA (1977) report it from this region without host, which is sometimes difficult to estimate since the fruitbodies develop apparently on soil. It occurs also in Caucasus (BONDARTSEV 1971), as well as in Ural and Kazakhstan (KOTLABA 1984). Among species growing generally on hardwoods, following occur in some regions of Europe also more or less often on *Abies*, even on other conifers, in addition to their usual hosts.

Hapalopilus rutilans (PERS.:FR.) P. KARST. was found occasionally on *Abies* in some countries (BOURDOT & GALZIN 1928, KOTLABA 1984), but is rather frequent on this host in Germany and Switzerland (KRIEGLSTEINER 1977, BREITENBACH & KRÄNZLIN 1986). It was noted on fir in Yugoslavia in several localities and is reported from the same genus by LYUBARSKII & VASSILIEVA (1975) from Far East. It inhabits the wood of many hardwoods and some conifers in North America (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Hyphoderma radula (FR.) DONK was observed on several conifers already by BOURDOT & GALZIN (1928) and was noted as frequent on *Abies* by JAHN (1968) in some parts of Germany and by BREITENBACH & KRÄNZLIN (1986) in Switzerland. It is in Yugoslavia widely distributed and frequent on *Abies* in many fir forests (TORTIĆ 1982) and was found there, although rarely, also on *Picea*, *Larix* and *Pinus mughus*. In Spain it was reported on *Pinus radiata* (DUEÑAS & TELLERIA 1988) and *P. insignis* (TELLERIA 1980). In Far East it is known only on hardwoods (LYUBARSKII & VASSILIEVA 1975) and in North America both hardwoods and conifers (FARR & al. 1989).

Hyphodontia barba-jovis (FR.: FR.) JOHN ERIKSS, was reported from Europe on conifers

only by BOURDOT & GALZIN (1928—on *Pinus* and *Abies*) and BREITENBACH & KRÄNZLIN (1986 — one collection on *Pinus*). However, in Yugoslavia it is not rare on prostrate branches of *Abies* in several localities, and was twice collected on *Pinus sylvestris*. In North America it is cited on both hardwoods and conifers (FARR & al. 1989).

Inonotus dryadeus (PERS.: FR.) MURR, is in Europe a characteristic parasite of the genus *Quercus*, very rarely occurring on some other hardwoods (e. g. JAHN 1963, DOMAŃSKI & al. 1973, KOTLABA 1984) and a find on *Abies nordmanniana* (presumably in Causasus) was cited only by BONDARTSEV (1971). In Yugoslavia it grows also on old oaks, but was noted in several localities in montane fir forests at the base of living firs (TORTIĆ & LISIEWSKA 1972, TORTIĆ 1988), once even in lowland in a small park near Zagreb on planted *Abies pinsapo*. In North America it is distributed in east part on *Quercus* spp., and in the west on *Abies* spp., and occurs also on some other hardwoods and conifers (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Some fungi may prefer in one part of Europe *Abies*, in another *Picea*.

Pleurocybella porrigens (PERS.: FR.) SING. and *Tricholomopsis decora* (FR.: FR.) SING. are considered by JAHN (1969) as characteristic for montane spruce forests in some parts of Germany, where they grow on rotten wood of *Picea*. However, in Yugoslavia they were both observed in montane fir forests on logs of *Abies*, the second only once or twice on *Picea*. *P. porrigens* is very abundant on *Abies* in the National park Plitvička jezera. In Far East it is reported both from *Abies* and *Picea* (LYUBARSKII & VASSILIEVA 1975) and is in North America especially common on wood of *Abies* and *Pseudotsuga* (FARR & al. 1989). *T. decora* was noted in North America on several conifers (FARR & al. 1989).

Species on *Picea*

Amylocystis lapponica (ROM.) SING. Rare species in Europe, collected mainly on *Picea*, occasionally also on *Abies* and *Pinus* (RYVARDEN 1976, KOTLABA 1984), distributed also in Siberia (BONDARTSEV 1971). In two known localities in Yugoslavia, southernmost in Europe, it grew also on *Picea* (TORTIĆ 1984, 1988). LYUBARSKII & VASSILIEVA (1975) cite als host in Far East only *Picea*. In North America, although growing on several conifers, it is most common also on *Picea* (GILBERTSON & RYVARDEN 1986, FARR et al. 1989).

Antrodia serialis (FR.) DONK is according to JAHN (1969) characteristic for spruce, on which it was mainly found also by KOTLABA (1984), BREITENBACH & KRÄNZLIN (1986), DUNGER (1987). KRIEGLSTEINER (1977) states as hosts both *Picea* and *Abies*. From France it is cited by BOURDOT & GALZIN (1928) on *Picea* and *Pinus*, by MARCHAND (1974) on *Picea*, *Pinus* and *Larix*. In Spain it was noted on *Pinus insignis* (TELLERIA 1980). In Yugoslavia it was registered up to now with certainly only on *Picea* (TORTIĆ 1988). In Far East it grows on *Picea* and *Larix* (LYUBARSKII & VASSILIEVA 1975), whilst in North America it is widely spread on many conifers and some hardwoods (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Climacocystis borealis (FR.) KOTL. & POUZ. is cited by several authors as growing, predominantly on wood of *Picea* in their respective countries (JAHN 1968, 1969, DOMAŃSKI & al. 1973, KRIEGLSTEINER 1977, KOTLABA 1984, BREITENBACH & KRÄNZLIN 1986, DUNGER 1987). BONDARTSEV (1971) mentions it on this host in European part of the USSR and Siberia, However, according to BOURDOT & GALZIN (1928) it grows in France on *Abies*, and MARCHAND (1974) reports it from there on both *Picea* and *Abies*. In Yugoslavia it was noted only on wood of *Picea* (TORTIĆ 1988). In Far East it is much more frequent on *Abies* than on *Picea* (LYUBARSKII & VASSILIEVA 1975). It is in North America largely distributed on various conifers and was found, rarely, on some hardwoods (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Fomitopsis rosea (ALB. & SCHW.: FR.) P. KARST., rare species in Europe, grows there also mainly on wood of *Picea*, rarely on *Abies* or some other conifers (JAHN 1968, BONDARTSEV 1971, DOMAŃSKI & al. 1973, MARCHAND 1974, KOTLABA 1984, BREITENBACH & KRÄNZLIN 1986). Few localities are known in Yugoslavia, everywhere on wood of spruce (e. g. TORTIĆ 1988). In Far East it was noted on *Picea* and some other conifers

LYUBARSKII & VASSILIEVA 1975) and in North America it is rather common in some places, mostly on various conifers, especially *Pseudotsuga* and *Picea*, but also on hardwoods (GILBERTSON & RYVARDEN 1986, FARR & al. 1989).

Gloeophyllum odoratum (WULF.: FR.) IMAZ. is also reported for the most part on *Picea* (JAHN 1968, 1969, DOMANSKI & al. 1973, BONDARTSEV 1971, KOTLABA 1984, BREITENBACH & KRÄNZLIN 1986, DUNGER 1987), but occurs, according to JAHN (1963) in southern Germany on *Abies*. As the main host in France is stated *Abies* by BOURDOT & GALZIN (1928), but *Picea* by MARCHAND (1974). WASSER & SOLDATOVA found this species in Ukraine on *Pinus*. In Yugoslavia it is frequent on *Picea*, particularly on upper surface of old stumps (TORTIĆ 1988). The hosts in Far East are *Picea*, *Pinus* and *Larix* (LYUBARSKII & VASSILIEVA 1975). GILBERTSON & RYVARDEN (1986) are of the opinion that *G. odoratum* is rare in North America, the reports of its frequent occurrence being due to the confusion with the related *G. protractum* and cannot give an opinion about its hosts. FARR & al. (1989) cite for that species a number of conifers.

Phellinus nigrolimitatus (ROM.) BOURD. & GALZ. is another characteristic species on wood of *Picea* (JAHN 1968, KOTLABA 1984, BREITENBACH & KRÄNZLIN (1986). BOURDOT & GALZIN (1928) cite it from *Pinus* and *Abies*. BONDARTSEV (1971) gives as hosts in addition to *Picea*, *Abies* and *Pinus*. In Yugoslavia it is known up to now in few localities on *Picea* (TORTIĆ 1988), on which it grows exclusively in Far East (LYUBARSKII & VASSILIEVA 1975), and is especially common on this genus in North America, although known there from several other conifers, too (GILBERTSON & RYVARDEN 1987, FARR & al. 1989).

Columnocystis abietina (PERS.: FR.) POUZ. and very rare *C. ambigua* (PECK) POUZ. and cited mainly on *Picea* for instance by ERIKSSON & RYVARDEN (1973), JAHN (1968, 1971 – only few finds on *Abies*), KRIEGLSTEINER (1977), BREITENBACH & KRÄNZLIN (1986). BOURDOT & GALZIN (1928) mention only the first, on *Abies*. In Yugoslavia *C. abietina* was collected in several localities, and *C. ambigua* only in the National park Plitvička jezera, both always on *Picea* (TORTIĆ 1978). LYUBARSKII & VASSILIEVA (1975) report the first named in Far East only from *Larix*. In North America both species grow on wood of several conifers (FARR & al. 1989). According to HJORTSTAM & TELLERÍA (1990) *Columnocystis* is a synonym of *Veluticeps* and the correct names of the species discussed are: *Veluticeps abietina* (PERS.: FR.) HJORTST. & TELLERÍA and *Veluticeps ambigua* (PECK) HJORTST. & TELLERÍA.

Merulicium fusisporum (ROM.) ERIKSS. & RYV., restricted to Europe, is stated by ERIKSSON & RYVARDEN (1976) to occur in heaps of cut *Picea* branches. It was found in precisely the same habitat in Switzerland by BREITENBACH & KRÄNZLIN (1986) and also in the single known locality in Yugoslavia (Trebević Mt. near Sarajevo).

Exidiopsis calcea (PERS.) K. WELLS grows in Europe, Asia, Africa, North America on conifers and, more rarely, hardwoods (WOJEWODA 1981). In Yugoslavia it was observed in a few localities on hardwoods, but is in that country apparently characteristic in montane forests on wood of *Picea*, mainly dead branches attached to living trees, also on prostrate trunks, and is particularly abundant in the National park Plitvička jezera (TORTIĆ 1985). BREITENBACH & KRÄNZLIN (1986) report it from Switzerland on *Picea* and *Salix*.

Discussion

It was possible to discuss here only a selected number of fungi having a preference for *Abies* or *Picea* in Europe. Some of them do not occur in both regions compared and moreover no literature on their distribution in other parts of northern Asia was available. Still, some patterns of the relationship of those species with their hosts can be discerned.

Only few species have the same main host wherever they occur. Among those growing on *Abies* they are: 1) in all three regions *Aleurodiscus amorphus* + *Tremella mycophaga* and *T. simplex*, 2) in Europe and Far East: *Hymenochaete cruenta*, *Hericium alpestre*, 3) in Europe and North America: *Flavophlebia sulphureosabellina*, *Hydropus marginellus*,

Panellus violaceofulvus, *Peniophora piceae*, 4) only or mainly in Europe: *Cyphella digitalis*, *Phellinus pouzarii* *Podofomes trogii*. *C. digitalis*, *F. sulphureoisabellina*, *P. piceae* and *Ph. pouzarii* are stated in the literature as growing exclusively on wood of *Abies* and the author found them also solely on this host. Others mentioned may grow, although rarely, also on *Picea* or some other conifers.

Among disused species on *Picea*, *Merulicium fusisporum*, known only in Europe, and moreover requiring very precise ecological conditions, appears to be exclusively bound to this genus. Mainly on *Picea*, rarely or very rarely on other conifers are to be found in all three regions *Amylocystis lapponica* and *Phellinus nigrolimitatus*.

In some cases the principal host genus is similar in Europe and Far East, but in North America the fungus prefers a different one. In the first two regions, for instance, the most frequent host of *Bondarzewia mesenterica* and *Phellinus hartigii* is *Abies* and of *Antrodia serialis* *Picea*, but in North America *B. mesenterica* occurs mainly on *Larix*, *Ph. hartigii* on *Tsuga* and *A. serialis* is common on many conifers and some hardwoods.

Finally, a fungus may prefer in Europe one host and in both compared regions different ones., as e.g. *Climacocystis borealis*, characteristic for *Picea* in Europe, in Far East more frequent on *Abies*, and in North America growing on both conifers and hardwoods. *Antrodia variiformis*, in Europe very rare, known from few countries, always on *Abies*, is in North America rather distributed as well on conifers as on some hardwoods.

A change of hosts may be observed also in different parts of one region, in Europe e.g. from north to south. Several species growing in northern and central parts of Europe on *Picea* may go over to *Abies* in the southern part, and may be even more frequent on it there. Such is the case, for instance, of *Tricholomopsis decora* and *Pleurocybella porrigens*, considered as characteristic in some parts of Germany for montane spruce forests on rotten logs of *Picea*, but in Yugoslavia they are found, the second named particularly abundantly, in montane fir forests on rotten logs of *Abies*. It is interesting to note that some common species, growing in Europe on both *Picea* and *Abies*, show in Yugoslavia a distinct preference for fir. *Trichaptum abietinum*, e.g. is in mixed stands of fir and spruce found in masses mainly on dead wood of the former; on the latter it grows more rarely and in lesser quantities.

Other species characteristic for spruce in northern and central Europe were observed on this host regularly also in Yugoslavia and seem therefore to be really bound to it, at least in this continent, as *Antrodia serialis*, *Climacocystis borealis*, *Gloeophyllum odoratum*, *Columnocystis abietina*, as well as rare ones *Amylocystis lapponica*, *Fomitopsis rosea*, *Phellinus nigrolimitatus*, *Columnocystis ambigua*. It was possible up to now to use the appearance of the fruitbodies of those species as a sure indication that the stump or log on which they grew belonged to *Picea*. Of course, exceptions cannot be excluded.

In comparing hosts of discussed species in France, a discrepancy was noted between the statements by BOURDOT & GALZIN (1928) who give e.g. for *Climacocystis borealis* and *Gloeophyllum odoratum* as host *Abies* (sapin) and those of MARCHAND (1974) who cites *Picea*, which is in accordance with finds by other European authors.

WASSER & SOLDATOVA (1977) published from Ukraine *Aleurodiscus amorphus*, *Hymenochaete cruenta*, *Phellinus hartigii*, *Gloeophyllum odoratum*, characteristic elsewhere for *Abies* resp. *Picea*, rather surprisingly from *Pinus sylvestris*.

A few species, growing regularly on hardwoods, were noted as frequent in some parts of Europe on *Abies*. They were found often on fir also in Yugoslavia (*Hapalopilus rutilans*, *Hyphoderma radula*). However, *Hyphodontia barba-jovis* was also very frequent there on *Abies* although elsewhere in Europe found on conifers very rarely. It grows, however, on conifers in North America. Particular attention was paid to the correct identification of this species in order to avoid the confusion with the related *H. abieticola*, which was, however, found only once, on *Abies*.

Most interesting is the occurrence in Yugoslavia of *Inontus dryadeus* on *Abies*, which fungus is in Europe a characteristic parasite of oaks, and was published on fir only from Caucasus. In North America it grows in western parts on firs, in eastern on oaks.

It appears that some species of fungi may prefer a particular genus of woody plants as a

host, but usually only in a more or less restricted area, not in the whole range of their distribution. In Europe there are many species considered as characteristic for either *Abies* or *Picea* (at least in particular parts), and their hosts in Far East are often similar. However, in North America they frequently occur on several conifers, even on hardwoods. Although this may be explained partly by different climatic conditions and probably also geological history, an important reason may be a much wider choice of hosts in the last named region. In Europe and Far East there are not many autochthonous genera of conifers, only the number of species of *Picea* and *Abies* is greater in Far East. In North America genera and species of conifers are rather numerous and there are many hardwoods, some of which may also provide adequate conditions for the development of discussed fungi.

References

- BOIDIN, J., 1965: Le genre *Peniophora* sensu stricto en France. Bull. Soc. Linn. Lyon **34**: 161–219.
- BONDARTSEV, A. S., 1971: The Polyporaceae of the European USSR and Caucasia. Jerusalem.
- BOURDOT, H., A. GALZIN, 1928: Hyménomycètes de France I. Paris
- BREITENBACH, J., F. KRÄNZLIN, 1986: Pilze der Schweiz II. Nichtblätterpilze. Mykologia, Luzern.
- CUNNINGHAM, G. H., 1963: The *Thelephoraceae* of Australia and New Zealand. Bull. New Zealand Depart. Sci. Industr. Res. **15**: 1–359.
- DAVID, A., M. TORTIĆ, 1986: Contribution a l'étude de quatre polypores européens peu connus. Cryptogamie, Mycol. **7** (1): 1–13.
- DOMAŃSKI, S., H. ORŁOŚ, A. SKIRGIEŁŁO, 1973: Fungi. Polyporaceae II. Mucronopora-ceae II. Warszawa.
- DUEÑÁS, M., M. T. TELLERIA, 1988: Catálogo de los corticiáceos y polyporáceos s. l. (Aphylophorales, Basidiomycotina) de la micoflora cántabro-astur. Ruizia **5**: 1–262.
- DUNGER, I., 1987: Kartierung der Porlinge (porige Polyporales und Poriales) der Oberlausitz. I. Verbreitung und Ökologie der Arten. Abh. Ber. Naturkundemus. Görlitz **60** (11): 1–160.
- ERIKSSON, J., L. RYVARDEN, 1973, 1975, 1976: Corticiaceae of North Europe **2, 3, 4**. Fungiflora, Oslo.
- ERIKSSON, J., K. HJORTSTAM, L. RYVARDEN, 1978: Corticiaceae of North Europe **5**. Fungiflora, Oslo
- FARR, D. F., G. F. BILLS, G. P. CHAMURIS, A. Y. ROSSMAN, 1989: Fungi on plants and plant products in the United States. Aps Press. The American Phytopathological Society, St. Paul, Minnesota, USA
- GILBERTSON, R. L., L. RYVARDEN, 1986, 1987: North American Polypores **1, 2**. Fungiflora, Oslo.
- GROSSE-BRAUCKMANN, H., 1990: Corticioide Basidiomyceten in der Bundesrepublik Deutschland: Funde 1960 bis 1989. Z. Mykol. **56** (1): 95–130.
- HJORTSTAM, K., K.-H. LARSSON, 1977: Notes on Corticiaceae (Basidiomycetes). Mycotaxon **5** (2): 475–480.
- HJORTSTAM, K., L. RYVARDEN, 1984: Some new and noteworthy Basidiomycetes (Aphylophorales) from Nepal. Mycotaxon **20**, 133–151.
- HJORTSTAM, K., M. T. TELLERIA, 1990: *Columnocystis*, a synonym of *Veluticeps*. Mycotaxon **37**: 53–56.
- JAHN, H., 1963: Mitteleuropäische Porlinge (Polyporaceae s. lato) und ihr Vorkommen in Westfalen. Westf. Pilzbr. **4**: 1–143.
- JAHN, H., 1964: Die Stachelbärte (*Hericum*, *Creolophus*) und ihre Vorkommen in Westfalen. Westf. Pilzbr. **5**: 90–100.
- JAHN, H., 1968: Pilze auf Weisstanne (*Abies alba*). Westf. Pilzbr. **7**: 17–40.
- JAHN, H., 1969: Zur Pilzflora der subalpinen Fichtenwälder (Piceetum subalpinum) im Oberen Harz. Westf. Pilzbr. **7**: 93–102.
- JAHN, H., 1971: Stereoidpilze in Europa. Westf. Pilzbr. **8**: 69–176.

- JAHN, H., 1974: Einige in West-Deutschland (BRD) neue, seltene oder weniger bekannte Porlinge (Polyporaceae s. lato). Westf. Pilzbr. **9**: 81–118.
- JELIĆ, M., M. TORTIĆ, 1968: *Ischnoderma corrugis* (FR.) DOMAŃ. et ORLICZ, un nouvel élément dans la flore des macromycètes de Yougoslavie. Bull. inst. jard. bot. univ. Beograd nov. ser. **3**: 233–237.
- KOTLABA, F., 1958: Zajímavá euroasijská houba kožnatka purpurová – *Hymenochaete mougeotii* (FR.) COOKE. Čes. Mykol. **12**: 136–143.
- KOTLABA, F., 1984: Zeměpisné rozšíření a ekologie chorošu (Polyporales s. l.) v Československu. Academia, Praha.
- KRIEGLSTEINER, G. J., 1977: Die Makromyzeten der Tannen-Mischwälder des Inneren Schwäbisch-Fränkischen Waldes (Ostwürttemberg). Lempp Verlag, Schwäbisch Gmünd.
- LYUBARSKII, L. V., L. N. VASSILIEVA, 1975: Derevorazručajuščije gribi Daljnego Vostoka. Izdateljstvo „Nauka“, Novosibirsk.
- MARCHAND, A., 1974, 1976: Champignons du Nord et du Midi, **3**, **4**. Perpignan.
- NIEMELÄ, T., P. UOTILA, 1977: Lignicolous macrofungi from Turkey and Iran. Karstenia **17**: 33–39.
- PILÁT, A., 1936–42: Polyporaceae, Praha.
- RYVARDEN, L., 1976: The Polyporaceae of North Europe **1**. Fungiflora, Oslo.
- TELLERIA, M. T., 1980: Contribución al estudio de los Aphyllorphorales españoles. Bibliotheca Mycologica **74**. J. Cramer, Vaduz.
- TORTIĆ, M., 1978: Some rare and interesting higher fungi on conifers from the Plitvička jezera National park Acta Bot. Croat. **37**: 183–188.
- TORTIĆ, M., 1982: Studies in the corticia of Yugoslavia II. Some frequent and wide spread species. Acta Bot. Croat. **41**: 133–142.
- TORTIĆ, M., 1984: Distribution of polypores in Yugoslavia I. *Amylocystis*, *Anomoporia*, *Aurantioporus*, *Fibuloporia*. Acta Bot. Croat. **43**: 65–72.
- TORTIĆ, M., 1985: Non-poroid lignicolous Aphyllorphorales (Fungi, Basidiomycetes) in the Plitvička jezera National park (Yugoslavia) Biosistematika **11**: 1–15.
- TORTIĆ, M., 1988: Main characters of the polypore flora in the National park Plitvička jezera (Yugoslavia). Aphyllorphorales-Symposium 1982 in Eisenstadt, Austria. Graz.
- TORTIĆ, M. (in press): Some noteworthy fungi from the National parks Plitvička jezera and Risnjak (Yugoslavia).
- TORTIĆ, M., M. JELIĆ, 1969: Some interesting macromycetes and their distribution in Yugoslavia. Acta Bot. Croat. **28**: 369–386.
- TORTIĆ, M., M. JELIĆ, 1970: Several rare species of higher fungi and their localities in Yugoslavia. Acta Bot. Croat. **29**: 239–243.
- TORTIĆ, M., M. JELIĆ, 1977: The family Hericiaceae and the genus *Climacodon* in Yugoslavia. Acta Bot. Croat. **36**: 153–1634.
- TORTIĆ, M., M. LISIEWSKA, 1972: Mikološka istraživanja u nekim bosanskim bukovim šumama. Glasn. Zem. muz. Sarajevo N. s. **10**, Prir. nauke, 65–72.
- WASSER, S. P., I. M. SOLDATOVA, 1977: Viššije bazidiomiceti stepnoj zoni Ukrajini. Naukova Dumka, Kijev.
- WOJEVODA, W., 1981: Tremellales, Auriculariales, Septobasidiales. Mała flora grzybów **2**. Warszawa-Kraków.

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Jahr/Year: 1991

Band/Volume: [15](#)

Autor(en)/Author(s): Tortic Milica

Artikel/Article: [Wood-inhabiting macromycetes characteristic in Europe for Abies or Picea, with a comparison of their hosts in North America and Far East 69-76](#)