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NOTES ON *PHELLINUS RIMOSUS* COMPLEX *(HYMENOCHAETACEAE)*

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In the Mediterranean region an interesting polypore, belonging to the genus *Phellinus* occurs occasionally, which sometimes causes difficulties in identification — in spite of the fact that it differs dramatically from all other European and North African species of that genus. The *Phellinus* under discussion was collected several times (beginning 1966) on the coast of the Adriatic Sea in Yugoslavia during the holidays of the first author. The material collected from Yugoslavia, as well as from other warm countries, prompted the study of this species which appeared to be rather complicated.

This *Phellinus* is characterised by its predominantly parasitic occurrence chiefly on living trunks of *Robinia* and *Pistacia*, large pores, lack of setae and by large coloured spores (species of the *Phellinus ribis* group are somewhat similar but small-spored). In Europe it is mostly treated as *Phellinus rimosus* (Berk.) Pil., but some mycologists prefer to name it *Ph. robiniae* (Murrill) A. Ames or *Ph. badius* (Cooke) G. H. Cunningh. We tried to elucidate this problem by studying the liturature and the herbarium material* not only from Europe and North America, but also from Africa, Asia, Central and South America and Australia (from the last five areas only small number of specimens). We hope that we have succeeded in solving the problem of the taxonomy of the Mediterranean species as well as of the most common one in North America and of a species represented by one single collection. These three will be treated in this paper. There exist, however, several other species of the *Phellinus rimosus* group, some of which we are going to publish as new else-

* The specimens revised are preserved at the herbaria: BPI (National Fungus Collections, Betsville, Maryland), FH (Farlow Library and Herbarium of Cryptogamic Botany, Harvard University, Cambridge, Mass.), K (The Herbarium and Library, Kew), LY (Herbarium of the University Lyon; AD-collections of Dr. A. David) NY (The New York Botanical Garden, New York), PRM (Mycological Department of the National Museum-Natural History Museum, Praha) and herb. Poelt (Graz).

where later. For the others, however, we have failed to reach an acceptable conclusion and suggest them therefore as a subject of study for mycologists interested in tropical and subtropical polypores.

PHELLINUS BADIUS (Cooke) G. H. Cunningh.

Syn.: *Polyporus badius* Berkeley, Ann. Magaz. natur. Hist. 7: 453, 1841 (type seen); non *Polyporus badius* (Pers. ex S. F. Gray) Schweinitz 1832.
Fomes badius (Berk.) Cooke, Grevillea 14: 18, 1885.
Phellinus badius (Cooke) G. H. Cunningham, New Zealand Depart. sci. industr. Research Bull. No. 164: 233, 1965.

This species was described by Berkeley (1841 : 453) as *Polyporus badius* and in the original diagnosis it is described as »... badius, intus ferrugineus, pileo parce concentrice sulcato, minutissime ferrugineotomentoso demum glabrato;hymenio laevi, poris mediis angulatis, dissepimentis tenuibus« and further »... The surface of the pileus is in parts even and cracked, in parts rough, with small corrugations. The flatness of the hymenium probably arises from the specimen having been fixed by the vertex«.

A short description according to our study of the type in K, H. 1814/68 (»*Polyporus badius* n. sp. No. 6. Suberoso-lignosi. Dr. Richardson«):

A cut (2.5 × 2.3 × 0.7 cm) of a pileate carpophore: context firm, hard, lightly zoned, faintly silky lustrous, ochre brown; the surface nearly black formed by a thin crust, irregularly polygonally cracked; tubes fragile, inconspicuously stratified, maximally 1.5 cm long (in whole), cinnamon brown; pores concolorous with the tubes, angular, dentate on the edge, 4 per mm; setae absent; spores yellow to yellowish brown, very thick-walled, shortly ellipsoid to ovoid, 6.0 — 6.7 × 4.5 — 5.5 µm. Hyphal system monomitic (?); hyphae of the tubes 4.5 — 5.0 (— 5.5) µm wide.

This material does not agree with any species studied by us and we therefore propose to restrict *Phellinus badius* (Cooke) G. H. Cunningh. temporarily to the type specimen in spite of Ryvarden's (1976: 86) opinion that it represents a widespread characteristic species of *Phellinus*. The type material does not correspond to the description of Cunningham (1965: 233) nor to descriptions of other authors — see e. g. the fragility of tubes.

The hesitations about the collector as well as the region from which the type material comes is irrelevant in the case of typification of the name *Polyporus badius* Berk. This is also the opinion of Dr. D. A. Reid from Kew who has written to us on this problem (Reid in litt. e 13. I. 1976): "Assuming that there has been some confusion over the real collector and the region of the world from which it actually originated as seems evident, this does not mean that we have to reject it as being the holotype of the species. In fact Berkeley refers to the hymenium being remarkably flat which seemed to him to indicate that the sporophore had been attached by the vertex. This is precisely the feature of the specimens under consideration and there seems to me to be no obvious discrepancies between the Kew material and the original description. I think it would be preferable to regard it as holotype and so maintain the traditional interpretation of the species«.

Nomenclaturaly the problem of *Phellinus badius* was treated by Ryvarden (1976: 86) who pointed out that *Polyporus badius* Berk.

1841 was homonymous with *Polyporus badius* (Pers. ex S. F. Gray) Schw. 1832 and, hence, illegitimate. Berkeley's name can be, however, considered legitimate since the date of its first transference to other genus, i. e. *Fomes badius* (Berk.) Cooke 1885. When we accept it in the genus *Phellinus*, it should be, therefore, cited *Phellinus badius* (Cooke) H. G. Cunningh.

Phellinus (or *Fomes*) *badius* was differently interpreted by various authors. Lowe (1957) and Gilbertson, Burdsall Jr. and Canfield (1976) have under that name a polypore which we prefer to call *Phellinus rimosus* (Berk.) Pil. whereas many other authors (e. g. Bakshi 1971, Cunningham 1965, Domański 1976) describe quite different species (some of these authors even a *Phellinus* with setae!). The identity of these polypores is unclear to us.

PHELLINUS RIMOSUS (Berk.) Pil.

Syn.: *Polyporus igniarius* var. *scaber* Berkeley, Ann. Magaz. natur. Hist. Zool. Bot. Geol. 3: 324, 1839 (lectotype seen).
Polyporus rimosus Berkeley, London J. Bot. 4: 54, 1845 (lectotype seen).
Fomes rimosus (Berk.) Cooke, Grevillea 14: 18, 1885.
Xanthochrous rimosus (Berk.) Patouillard, Essai taxon. p. 101, 1900.
Phellinus rimosus (Berk.) Pilát, Ann. mycol. 38: 80, 1940.
Xanthochrous tuniseus Patouillard, Bull. Soc. mycol. France 13: 200, 1897 (type seen).
Fomes badius sensu Lowe, Techn. Publ. State Univ. Coll. Forestry Syracuse Univ. No. 80: 28, 1957.
Phellinus badius sensu Gilbertson, Burdsall Jr. and Canfield, Mycotaxon 3: 531, 1976.

This polypore was described twice by Berkeley: on the first occasion as *Polyporus igniarius* var. *scaber* (Berkeley 1839: 324) from Van Diemen's land (Tasmania) from the collections of R. W. Lawrence; he said that it occurs also on Mauritius. Berkeley characterized the new species among others: "Pileus ... ungulate ... cracking in age into coarse scalelike scabrous plates". On the second occasion this polypore was described by Berkeley (1845: 54) on the basis of the material from Swan River (Australia) collected by Mr. Drummond as *Polyporus rimosus:* "Pileus ... very hard and slow of growth, zoned, the older portions much cracked, brown and scabrous ... with the edge acute, but in old specimens occasionally very obtuse ... This I formerly considered as a variety of *Pol. igniarius* ...". Berkeley treated *Polyporus igniarius* var. *scaber* Berk. as a synonym of his *P. rimosus*.

The protologue of *Polyporus rimosus* is both the description of *Polyporus igniarius* var. *scaber* and *P. rimosus* together with the pertinent authentic specimens. The most suitable specimen which should be the best type of this name has unfortunately been lost. Nevertheless we should study the remaining part of the protologue, and here are at our disposal the two specimens cited in the description of *Polyporus igniarius* var. *scaber,* one from Van Diemen's land and the other from Mauritius. Following Lloyd's note on the herbarium label we consider Lawrence's collection from Van Diemen's land as the lectotype which agrees well with the present concept of the species of the majority of mycologists.

A short description of the material preserved in K, H. 374/62 ("V[an] D[iemen's] L[and], coll. Lawrence, herb. Berk."):

A cut (4.3 × 3.2 × 1.2 cm) of an ungulate carpophore; context firm, hard, slightly zoned, fibrillose, faintly silky lustrous, yellow brown to ochre brown; surface of the pileus is grayish black, irregularly deeply cracked (mostly radially fissured, less frequently concentrically); tubes not readily stratified, single layers 1—2 mm thick, together 1.5 cm thick, yellow brown to cinnamon; pores brown to grayish brown (a very old specimen), angular rounded, with somewhat dentate edges, 4—5 per mm; skeletal hyphae of the tube trama thick-walled, rusty brown to yellow brown, not branched, 2.8—5.0 µm wide; setae none; spores smooth, yellow brown, very thick-walled, shortly ellipsoid to ovoid, (5.6—) 5.8 — — 6.7 × 4.5 — 5.4 µm.

The second protologue specimen of *Polyporus igniarius* var. *scaber* from Mauritius (K) does not seem to be identical with *Phellinus rimosus* as spores are smaller : 4.5 — 5.5 (— 5.8) × 3.5 — 4.5 µm.

Phellinus rimosus (Berk.) Pil. is interpreted in the literature usually in such a manner that it covers one or two (sometimes even more) species, viz. *Ph. rimosus* and *Ph. robiniae*. Overholts (1953: 96) described mainly the polypore which we call *Ph. robiniae* (it has smaller spores as well as pores) and in minor part *Ph. rimosus* was probably involved, too. Pilát (1940: 80) indicated *Ph. rimosus* from China giving a very short and uncomplete description. The material has fortunately been preserved in PRM 189018 ("China, prov. Szechuan, leg. Yang, det. A. Pilát") and according to our revision it is, however, of some other species close to *Ph. robiniae* but has darker pores: it has spores 5.6 — 6.0 (— 6.6) × 4.5 — 5.1 µm and pores dark brown, 5 — 6 per mm. In his main work on polypores (Pilát 1936—42: 527) the polypore he described under the name *Ph. rimosus* is in fact *Ph. robiniae* as the spores are given 4 — 5 µm and pores 5 — 6 per mm. Donk (1974: 133) named the European population of *Ph. rimosus Phellinus robiniae* (Murrill) A. Ames giving in the synonymy *Ph. rimosus* sensu auct. He evidently merged these two species without studying the material.

Gilbertson, Burdsall Jr. and Canfield (1976: 531) correctly describe and illustrate the microstructure of *Ph. rimosus* under the name *Ph. badius*, which interpretation of this name we cannot accept. According to some authors (e. g. Domański 1976 : 219, Overholts 1953: 96, Pilát 1936—42: 526) *Phellinus rimosus* and *Ph. robiniae* are synonymus, whereas according to some others (e. g. Ryvarden 1976 : 92) this is an unsolved problem as yet. Lowe (1957 : 28) treats *Ph. rimosus* in our sense as *Fomes badius* Cooke. Only few authors (Bondarcev 1953 : 397, Malençon 1955 : 289) have the same concept of *Phellinus rimosus* as we have, but Bondarcev gave in synonymy *Ph. robiniae*, too.

We have studied the problem of *Phellinus rimosus* group in detail on the rather rich material from various countries, especially from the Northern Hemisphere, and have reached the conclusion that there really exist at least two good, independent species of *Phellinus* which can be characterized on the basic of the size of spores and pores and pore colour: *Ph. rimosus* has larger spores [(5.2—) 5.8 — 6.8 (—7.2) × (4.1—) 4.8 — 5.5 (—6.0) µm] and pores dark tobacco brown, 3—5 per mm, whereas *Ph. robiniae* has smaller spores [(4.6—) 4.8 — 6.0 (—6.3) × (3.4—) 4.0 — 5.0 (—5.2) µm] and pores light rusty to gray rusty, (4 —) 5 — 7 (— 8) per mm. There is also a partial difference in the geographical distribution of these two species: *Ph. rimosus* occurs infrequently in warm semiarid regions probably

in all continents (perhaps with the exception of South America) but *Ph. robiniae* is known to us only from more humid parts of North and Central America.

The description of *Phellinus rimosus* in our sense compiled on the basis of rich material from various regions is as follows:

Carpophores pileate, perennial, solitary; pileus ungulate, not attached to the substrate by the whole width, 3.2 — 9.0 × 4.5 — 15.0 × 2.5 — 13.0 cm, with the margin finely velvety, smooth, 0.3 — 2.0 cm wide, obtusely rounded to thickly rounded, entire or with only short deep cracks (fissures), yellow rusty to light rusty brown; surface of the pileus is sparsely to very sparsely concentrically zoned, when young less dense, when old very densely to tile-like deeply cracked, dirty black brown, sometimes gray brown; context 0.5 — 3.3 cm thick, dark rusty to tobacco brown with faintly reddish tint, fibrillose, when broken silky lustrous; tubes concolorous with the context, stratified, without a thin stratum of context between layers (continuous tubes), in layers up to 9.0 cm thick; pores are rounded to angular rounded, mostly with blunt dissepiments, rather dark tobacco brown, when in motion lightly lustrous, 3—5 per mm.

Hyphal system dimitic; generative hyphae of the trama of the tubes are thin-walled, hyaline, branched, septate, without clamps, cyanophilous, 1.5—3.5 μm wide; skeletal hyphae of the tubes are thick-walled, not branched, with secondary septa, in some places finely encrusted by fine hyaline small granules, yellow rusty, when young cyanophilous, 2.5 — 4.0 μm wide; generative hyphae of the pileus context are hyaline to yellowish, thin-walled, branched, septate, without clamps, 3.0 — 4.0 μm wide; skeletal hyphae of the pileus context are parallelly arranged, lightly undulated, in some places finely encrusted, thick- to very thick-walled, not branched, with rare secondary septa, yellow rusty, cyanophilous when young, 3.0 — 5.0 μm wide; setae none; basidia 15.0 — 17.0 × × 6.5 — 7.0 μm, shortly and widely claviform with four short, thin and slightly curved, about 3.0 μm long sterigmata; spores smooth, thick-walled, with the wall up to 0.6 μm thick, shortly ellipsoid, on the ventral side slightly flattened, indextrinoid, slightly yellow rusty, acyanophilous, (5.2 —) 5.8 — 6.8 (— 7.2) × (4.1 —) 4.8 — 5.5 (— 6.0) μm.

Material studied

Yugoslavia: Near Starigrad at Zadar (Croatia), on living trunk of *Pistacia terebinthus*, 10. 7. 1968, coll. by F. Kotlaba (PRM 796444). — Between Starigrad and Seline near Zadar (Croatia), on living trunk of *Pistacia terebinthus*, 31. 7. 1966, coll. by F. Kotlaba (PRM 796447). — Dubrovnik, between the railway station and the old town, on living trunk of *Robinia pseudacacia*, 28. 9. 1977, coll. by A. Příhoda, det. by F. Kotlaba and Z. Pouzar (PRM 807515). — In old town walls of Budva (Montenegro), on dead standing trunk of *Robinia pseudacacia*, 4. 6. 1976, coll. by F. Kotlaba (PRM 796443).

Greece: Tsavros NE of the town Kerkyra, island Kerkyra (Korfu), on trunk of *Robinia*, 24. 8. 1970, coll. by J. Poelt (herb. Poelt No. 9446).

Turkey: In railway station Toprakkale near Adana, on living trunk of *Robinia pseudacacia*, 27. 4. 1973, coll. by F. Kotlaba (PRM 776956).

U.S.S.R.: South Kirgizia, on trunk of *Juglans regia* (from collections of the Dendrological Institute of the Uzbekistan Academy of Sciences, Taškent) (PRM 518235).

India: Dehra Dun, S. C. Division Compt., Bellpur, Punjab, 16. 1. 1945, coll. by F. C. Attock, DD H 3806 (NY).

Morocco: Chaouène, *Robinia pseudacacia*, 22. 4. 1974, coll. by R. Bertault and A. David, det. by R. Bertault (LY—AD No. 3189 bis, PRM 808093).

— Fes, *Robinia pseudacacia*, 24. 4. 1974, coll. by R. Bertault and A. David, det. by R. Bertault (LY—AD No. 3189, PRM 808092)

Tunisia: Bab el Kadra, on trunks of *Robinia*, 8. 3. 1897, coll. by N. Patouillard (FH — type specimen of *Xanthochrous tuniseus* Pat.).

Southern Rhodesia: On tree trunk, 23. 6. 1934, coll. by F. Eyles (NY, ex K).

U. S. A.: NE of Nogales, Santa Cruz River Valley, Arizona, on *Prosopis julifera*, on trunk of living tree, 24. 4. 1890, coll. by G. G. Hedgcock, No. 796 (NY); ibid., 21. 4. 1907, coll. by G. G. Hedgcock, No. 825 (NY). — Oracle, Arizona, on *Acacia greggii*, 11. 9. 1917, coll. by W. H. Long (BPI). — Chiricahua Nat. Forest, Arizona, on *Robinia neomexicana*, on living tree trunks, Sept. 1903, coll. by H. D. Burrall, No. 1098 (NY). — Ellis Ranch, Manzana Nat. Forest, Sandia Mts., New Mexico, on *Robinia neomexicana*, on living tree trunks, July 1904, coll. by G. G. Hedgcock, No. 98 (NY); ibid., 1905, coll. by G. G. Hedgcock, No. 1096 (NY).

Mexico: Palo Blanco, Carmen Is., Baja Calif. Mexico, 4. 4. 1962, coll. by R. C. Banks, No. 7 (BPI).

Puerto Rico: Palo Seco, 3. 2. 1916, coll. by J. A. Stevenson (BPI).

In addition to the studied material mentioned above the collections of this species were published e. g. by Jahn (1973 : 68) from Yugoslavia (as *Phellinus robiniae*), by Bondarcev (1953: 397) and Švarcman (1964: 450—51) from the U.S.S.R. and by Malençon (1955: 289—91) from Morocco. The distribution of this species is evidently confined to warm and rather dry areas probably throughout the world but is in more detail known only in the Mediterranean Basin, Central Asia, North and Central America. It should be found in some other countries in the Mediterranean as well as in other continents, especially in Eastern and Southern Africa, in Australia and dry parts of South and East Asia. On the other hand it is improbable that it occurs in South America.

Phellinus rimosus (Berk.) Pil. is known as a parasitic polypore on some species of several genera of woody plants, mostly on *Robinia, Pistacia, Prosopis* and also on *Acacia, Chilopsis, Juglans* and *Vitex.*

PHELLINUS ROBINIAE (Murrill) A. Ames

Syn.: *Pyropolyporus robiniae* Murrill, Bull. Torrey bot. Club 30: 114, 1903 (lectotype seen).
Fomes robiniae (Murrill) Sacc. et D. Saccardo, Sylloge fung. 17: 117, 1905.
Phellinus robiniae (Murrill) A. Ames, Ann. mycol. 11: 246, 1913.
Fulvifomes robiniae (Murrill) Murrill, Northern polypores p. 49, 1914.
Pyropolyporus cedrelae Murrill, North American Flora 9 2: 105, 1908 (type seen).

This polypore was described by Murrill (1903: 114) as *Pyropolyporus robiniae* from the U.S.A. with the following main features in the original diagnosis: "... surface soon becoming very rimose and roughened ... deeply and broadly concentrically sulcate ... pores 5 to a mm ... spores ferruginous ... 4 — 5 μm, cystidia none".

Murrill (1903: 114) did not designate the type on the occasion of the description of the new species and cited several collections, all from the eastern U.S.A. (none from the dry South-West). Later (Murrill 1908: 105) he indicated indirectly a lectotype which is that from

Virginia. This lectotype, however, has evidently been lost. Lowe, therefore, selected in January 1957 another lectotype which is preserved in NY ("*Polyporus robiniae* sp. nov. Ohio, January, Lloyd, No. 223"). Short description of this lectotype:

A cut (9.8 × 5.2 × 6.2 cm) of an ungulate perennial carpophore; surface zonate, gibbose, deeply cracked, concentrically zonate and sulcate, blackish brown, with narrow, slightly velvety margin; context thin, at most 1.1 cm thick, yellowish brown, fibrous, faintly silky lustrous, with scattered irregular veins or narrow zones which are located either on the contact between the substrate and the carpophore or in the trama of tubes or in the context; tubes concolorous with the context or slightly darker, stratified, with individual layers 3 — 5 mm thick, continuous, altogether 5.5 cm thick; pores concolorous with the tubes but slightly grayish, rounded, with very thick, obtuse edges, 5 — 7 per mm; hyphal system dimitic; generative hyphae of the context and trama of the tubes are collapsed; skeletal hyphae of the context are not branched, with very rare secondary septa, thick-walled to very thick-walled, yellow brown, 2.8 — 4.0 µm wide; skeletal hyphae of the tube trama are parallelly arranged, slightly undulate, unbranched, with very rare secondary septa, thick-walled, yellow brown, 1.6 — 3.0 µm wide; setae none; spores smooth, thick-walled, shortly ellipsoid, on the dorsal side arcuate, on the ventral one slightly applanate, yellow brown to cinnamon, 5.0 — 6.0 × × 4.0 — 5.0 µm.

Phellinus robiniae (Murrill) A. Ames was correctly interpreted by some authors but it was also sometimes identified as *Ph. rimosus* (Berk.) Pil., in our opinion, however, quite incorrectly. *Phellinus robiniae* is a good, independent species well distinguished by the smaller spores as well as pores which are lighter than in *Ph. rimosus*. It does not occur — as far as we know — in Europe nor in Mediterranean Africa and Asia. Murrill (1903 : 115) indicated this species also for Europe from only one specimen collected by F. Fautrey (France, on *Robinia*, November 1891, as *Polyporus igniarius*, UPS) but, in our opinion it should be nothing else but *Phellinus rimosus* (Berk.) Pil. (we have not seen this collection) as we studied several collections from the Mediterranean and reached the conclusion that from this group of *Phellinus* only one species occurs in Europe, viz. *Ph. rimosus* (Berk.) Pil.

The following description of *Phellinus robiniae* (Murrill) A. Ames is compiled on the basis of many specimens:

Carpophores pileate, perennial, mostly solitary; pileus thick semicircular to ungulate, attached to the substrate by the whole width or by a narrowed side, 2.4 — 16.0 × 3.6 — 26.0 × 3.0 — 14.0 cm, with the margin either sharp and thin or thick and wall-like rounded, gray brown, yellow brown to deeply rusty brown, finely velvety to roughly strigose, in some carpophores sometimes to glabrous, mostly entire, not cracked; surface of the pileus mostly finely to coarsely deeply cracked, sometimes to tile-like thickly squamose or nearly obtusely echinate, only very occasionally uncracked, and then merely with scarce fissures, often coarsely and sparsely concentrically zoned, gray brown, deep brown to nearly black; context of the pileus is very thin forming only surface and marginal parts of the carpophore, 0.3 — 1.6 cm thick, light cinnamon brown to deep rusty brown, when broken fibrillose and silky lustrous; tubes concolorous with the context or a little lighter, stratified but without thin strata of context among individual layers (they are continuous), one-season's layer (the increase) 1—4 mm thick, in strata up to 12 cm

thick; pores rounded with obtuse and wide. exceptionally also narrow dissepiments, dull light rusty to gray rusty, (4—) 5—7 (—7) per mm.

Hyphal system dimitic; generative hyphae of the tube trama are hyaline, thin-walled, branched, septate, clampless, in mature specimens very sparse, 1.8 — 3.0 µm wide; skeletal hyphae of the trama of tubes parallel, slightly undulate, thick-walled to nearly solid, yellow brown, unbranched, with secondary septa, 2.5—3.4 µm wide (they are finely encrusted in the material from the Bahamas); generative hyphae of the context of pileus are hyaline to yellowish, thin-walled, branched, septate, clampless, 2.8 — 3.0 µm wide; skeletal hyphae of the context are densely parallelly arranged, thick-walled to nearly solid, with a narrow lumen only, unbranched, sometimes with secondary septa, yellow brown, 3.5 — 5.0 µm wide; setae none; basidia thin-walled, wide, shortly club-shaped, 12.0 — 14.0 × 5.5 — 6.0 µm (in the studied material mostly collapsed); spores are smooth, thick-walled, shortly ellipsoid, on the ventral side less rounded to slightly flattened, light yellow rusty to deep yellow rusty, indextrinoid, acyanophilus, (4.6—) 4.8 — 6.0 (—6.3) × (3.4—) 4.0 — 5.0 (— 5.2) µm.

As far as we know, *Phellinus robiniae* (Murrill) A. Ames occurs only in America, mostly in wet eastern parts of the U.S.A.; it is less common in the Caribean and Central America. We know only one collection from Nicaragua, which may be of relic occurrence on that locality. This species is probably not of tropical distribution as the material from true tropics seems to represent another species.

Phellinus robiniae (Murrill) A. Ames is known as a parasitic polypore growing predominantly on *Robinia* but rarely also on *Guaiacum* and *Cedrela.*

Material studied

U. S. A. : S. Lynnfield, Mass., on *Robinia pseudacacia,* 22. 9. 1932, coll. by J. R. Hanslough, No. 1379 (NY). — Portland, Conn., on *Robinia pseudacacia,* 27. 4. 1933, coll. by P. Spaulding & L. R. Hanslough, No. 1380 (NY). — Cold Spring Harbor, Long Island, N. Y., on Black locust, 2. 8. 1914 (NY); ibid., on living trunks of *Robinia,* 8. 11. 1917, H. J. Banker collection, No. 2908 (NY). — New Dorp, Staten Island, *N. Y.,* Apr. 1885, coll. by L. M. Underwood (NY). — Williamsbridge, N. Y. City, on living *Robinia pseudacacia,* 26. 11. 1914, coll. by P. Wilson (NY). — Greenville, Ridge Rd., 2 mi. W of Hartsdale, N. Y., on living trunks of *Robinia pseudacacia,* 30. 11. 1947, coll. by D. P. Rogers, No. 2061 (NY). — State College, Pa., on *Robinia pseudacacia,* 7. 1. 1916, coll by A. S. Rhoads (PRM 533905). — California, Pa., on *Robinia pseudacacia,* 27. 1. 1904, No. 908 (NY). — Ohio Pyle, Pa., along the Youghigheny river, 3—8. 7. 1905, coll. by W. A. Murrill, No. 1057 (NY). — Alta Vista, Maryland, 18. 8. 1925, coll. by F. T. Eagan, No. 60013 (NY) .— Morgantown, on *Robinia pseudacacia,* Spring 1907, coll. by C. P. Hartley, No. 38 (NY). — Sturgisson, West Virginia, on *Robinia pseudacacia,* 3. 6. 1908, coll. by J. L. Sheldon, No. 3272 (NY). — Mason County, Apple Grove, West Virginia, dead deciduous wood, 12. 1. 1935, coll. by Ch. Gould, No. 29 (NY). — In the Blue Ridge Mountains, 18 miles north of Bedford, Virginia, oak-chestnut wood, 24.—27. 10. 1916 (NY). — Bedford City, Virginia, on *Robinia pseudacacia,* 4. 9. 1914 (NY). — Crabbotom, Virginia, 17.—21. 7. 1904, coll. by W. A. Murrill, No. 195 (NY). — Mountain Lake, Virginia, moist oak-chestnut and hemlock woods, 8.—14. 7. 1909, coll. by W. A. Murrill, No. 382 (NY). — Henderson County, The Orchard, on South Carolina — North Carolina state line, SE of Tuxedo, North Carolina, on trunks of *Robinia pseudacacia,* 12. 9. 1974, coll. by C. T. Rogerson (NY). — Flat Rock, North Carolina, 1897, coll. by E. R. Memminger (NY). — Pink Bed Valley and surrounding mountains, estate of G. W. Vanderbilt, Transylvania Co., North Carolina, oak-chestnut woods, 13—24. 7. 1908, coll. by W. A. Murrill

& H. D. House, No. 539 (NY). — Ohio, January, Lloyd, No. 223 (NY). — Miami Valley, Dec. 1894, coll. by A. P. Morgan (NY). — St. Id., Ohio, on Locust trees, coll. by Morgan, No. 4 (NY). — Oxford, Ohio, living trunks of *Robinia pseudacacia*, 26. 7. 1910, coll. by L. O. Overholts, No. 7 (NY). — Brown County, Ohio, on locust, 3. 12. 1909, coll. by I. C. Tracy (NY). — Lexington, Kentucky, on *Robinia*, Nov. 1918, coll. by J. R. Weir (BPI). — Switzerland Co., Indiana, 20. 5. 1908, coll. by J. M. van Hook, No. 2532 (NY). — On north slope of Sand Mountains near mouth of Short Creek, Marshall Co., Alabama, on trunk of *Robinia pseudacacia*, 22. 3. 1906, coll. by R. M. Harper, No. 55 (NY). — De Kalb County, Ft. Payne, Alabama, on *Robinia pseudacacia*, May 1896, coll. by Underwood (NY). — Hammock, Monroe County, Key Largo, Florida, 7. 1. 1916, coll. by J. K. Small, No. 7095 (NY); ibid., 18. 1. 1916, coll. by J. K. Small, No. 7095 (NY).

Bahamas: Great Harbor Cay, Berry Is., on *Guaiacum sanctum*, 2.—3. 2. 1905, coll. by N. L. Britton & C. F. Millspaugh, No. 2352 (NY). — Caicos Islands, South Caicos, on *Guaiacum*, 14.—16. 12. 1907, coll. by P. Wilson, No. 7668 (NY). — Andros, Deep Creek, 10. 9. 1906, coll. by L. J. K. Brace, No. 5129 (NY). — Andros, road to Conch Sound, on a tree, 12. 3. 1907, coll. by L. J. K. Brace, No. 6816 (NY).

Puerto Rico: Mona Island, on dead wood, 20.—26. 2. 1914, coll. by N. L. Britton, J. F. Cowell & W. E. Hess, No. 1819 (NY).

Jamaica: Bluefields, on living trunk of *Cedrela odorata*, 11. 10. 1902, coll. by J. S. Earle, No. 450 (NY — holotype of *Pyropolyporus cedrelae*).

Nicaragua: Managua, 31. 8. 1923, coll. by D. Chaves, No. 66864 (NY).

Summary

In the course of the study of the species of *Phellinus* with large, coloured spores and complete absence of setae, from various herbaria, we reached the following conclusions:

1. *Phellinus badius* (Cooke) G. H. Cunningh. This name was based originally on the specimen from North America (Dr. Richardson, No. 6 — K). Some error, however, must have crept in as the fungus evidently came from the tropics. Nevertheless the specimen was the real basis for the original description made by Berkeley. As this type material cannot be identified with any of the *Phellinus* species known to us, we propose temporarily to restrict the name *Phellinus badius* to a species which is represented solely by the type material.

2. *Phellinus rimosus* (Berk) Pil. There is a nomenclatural as well as a taxonomic problem. Originally the name was based on three specimens of which the best one was lost and of the two remaining only one agrees with the common concept (Van Diemen's land, coll. Lawrence, herb. Berk. No. 2 — K). It is that species with larger spores and pores growing in warm dry regions on various hosts but especially on *Robinia, Pistacia* and *Prosopis.*

3. *Phellinus robiniae* (Murill) A. Ames. This is a characteristic species with smaller spores and pores, distributed in North and Central America, especially common in eastern USA on *Robinia preudacacia;* it does not occur in Europe.

4. The group of *Phellinus* with large coloured spores and without setae includes several other species which we have partly studied and reached reliable results in few cases only; we shall publish the new

species elsewhere later. There are, however, still further species and we hope that they will become the subject of study by the mycologists who study exclusively or predominantly tropical material.

*

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SADRŽAJ

BILJEŠKE O KOMPLEKSU *PHELLINUS RIMOSUS (HYMENOCHAETACEAE)*

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U području Sredozemlja raste rijetka guba iz roda *Phellinus,* srednje velikih kopitastih plodišta, mikroskopski karakterizirana obojenim sporama debelih zidova i odsutnošću seta. Različiti autori nazivaju je različito: *Phellinus rimosus, Ph. robiniae* ili *Ph. badius,* pri čemu neki smatraju da se radi samo o jednoj vrsti, a drugi o dvije ili više vrsta. Kako je sabrana nekoliko puta na jadranskoj obali u Jugoslaviji, upotrijebili smo tu priliku da je pobliže proučimo.

Ovaj taksonomski i nomenklaturni problem proučavali smo na eksikatima ne samo iz Evrope, Azije i Afrike nego i iz Sjeverne, Srednje i Južne Amerike i Australije (najviše materijala smo imali iz USA), uključivši i niz tipskih primjeraka. Na osnovi toga došli smo do uvjerenja da u tom kompleksu srodnih i sličnih vrsta postoji najmanje pet koje se mogu vrlo dobro definirati. Od njih su već ranije tri opisane:

1. *Phellinus badius* (Cooke) G. H. Cunningh. dosad je vrlo slabo poznata vrsta koju zasad moramo ograničiti na tipski materijal. Nije poznato gdje je sabran, ali je očito iz tropskih krajeva. Tipus ne odgovara nijednoj vrsti koju smo imali u rukama; cjevčice su mu krhke a građa plodišta je, čini se, monomitična.

2. *Phellinus rimosus* (Berk.) Pil. ima veće spore [(5.2 —) 5.8 — 6.8 (— 7.2) × (4.1 —) 4.8 — 5.5 (— 6.0) μm] i veće pore (3 — 5 na 1 mm) koje su prilično tamnosmeđe poput duhana. Raste kao parasit u prvom redu na *Robinia, Pistacia* i *Prosopis,* rjeđe također na *Acacia, Chilopsis, Juglans* i *Vitex.* Raširen je po mediteranskim krajevima Evrope, Azije i Afrike, zatim u srednjoj Aziji, na indijskom supkontinentu, u istočnoj i južnoj Africi, jugozapadnom dijelu USA, Meksiku i Portoriku. U Jugoslaviji ju je prvi autor sabrao dvaput kod Starigrada blizu Zadra na *Pistacia terebinthus,* jednom u Budvi na *Robinia pseudacacia,* a nađena je na *Robinia* i u Dubrovniku. Herbarski materijal nalazi se u PRM, a duplikat jednog iz Starigrada u ZA. Jahn (1973) spominje da je sabrana i u samom Zadru na *Robinia;* fragment toga se nalazi u ZA. Ovo bi dakle bili prvi objavljeni lokaliteti za Jugoslaviju.

3. *Phellinus robiniae* (Murrill) A. Ames ima manje spore [(4.6 —) 4.8 — 6.0 (— 6.3) × (3.4 —) 4.0 — 5.0 (— 5.2) μm] i manje pore [(4 —) 5 — 7 (— 8) na 1 mm], koje su svijetlorđaste do sivorđaste. Raste kao parasit prvenstveno na *Robinia,* rjeđe također na *Guaiacum* i *Cedrela.* Raširen je samo u Novom svijetu, naročito u istočnom dijelu USA, zatim na Bahamskom otočju, Jamaiki i u Nikaragui.

Osim ovih postoji u ovoj grupi roda *Phellinus* još nekoliko vrsta koje ne rastu u Starom svijetu, a neke će od njih biti opisane kao nove na drugom mjestu.

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Fig. 1. *Phellinus rimosus* (Berk.) Pil. Young carpophore with slightly cracked surface of the pileus. On living trunk of *Pistacia terebinthus* near Starigrad at Zadar (Croatia), Yugoslavia, 10 7. 1968, coll. and photographed by Dr. F. Kotlaba (PRM).

Ca 2×

Fig. 2. *Phellinus rimosus* (Berk.) Pil. Middle aged carpophore with more cracked surface of the pileus. On living trunk of *Pistacia terebinthus* near Starigrad at Zadar (Croatia), Yugoslavia, 10. 7. 1968, coll. and photographed by Dr. F. Kotlaba (PRM).

Ca 1.5×

Fig. 3., 4. *Phellinus rimosus* (Berk.) Pil. Old carpophore with very cracked to tile-like squamose surface of the pileus. Manzana Nat. Forest, Ellis Ranch, New Mexico, U.S.A., on *Robinia neomexicana*, 1905, coll. by G. G. Hedgcock (NY), photographed by Dr. F. Kotlaba.

Ca 0.6×

Fig. 5. *Phellinus robiniae* (Murrill) A. Ames. Carpophore with the upper surface of the pileus nearly smooth and only slightly cracked. New Dorp, U.S.A., on *Robinia*, Apr. 1898, coll. by L. M. Underwood (NY), photographed by Dr. F. Kotlaba.

Ca 0.8×

Fig. 6. *Phellinus robiniae* (Murrill) A. Ames. Carpophore with very deep sulcation and cracking of the pileus surface. The Orchard, SE of Tuxedo, North Carolina, U.S.A., on trunk of *Robinia pseudacacia*, 12. 9. 1974, coll by C. T. Rogerson (NY), photographed by Dr. F. Kotlaba.

Ca 0.8×

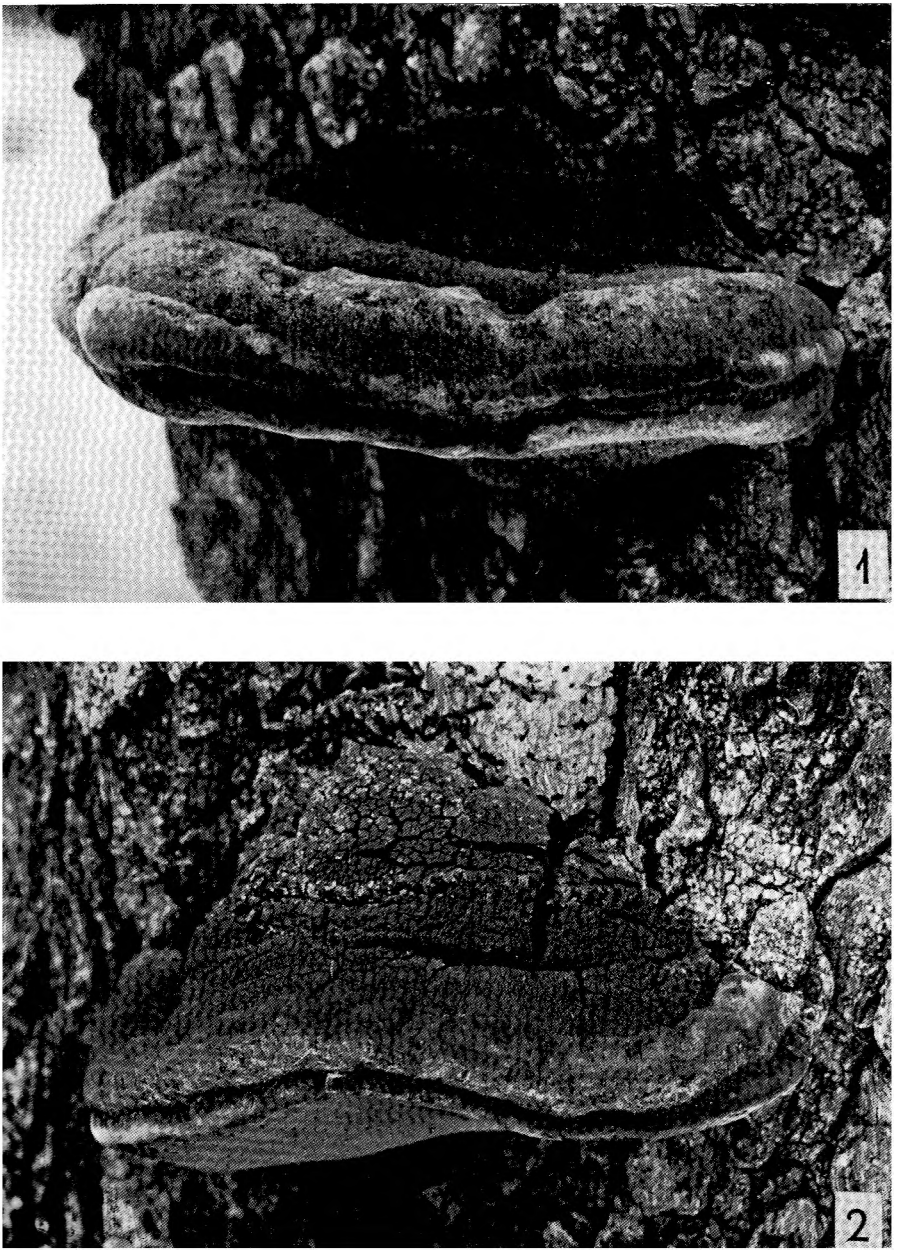
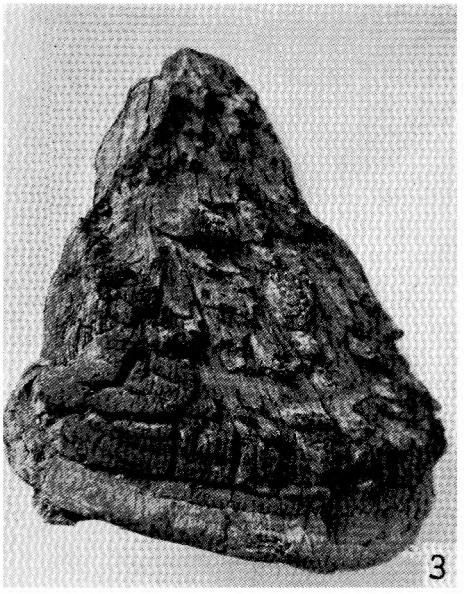


Fig. 1—2.



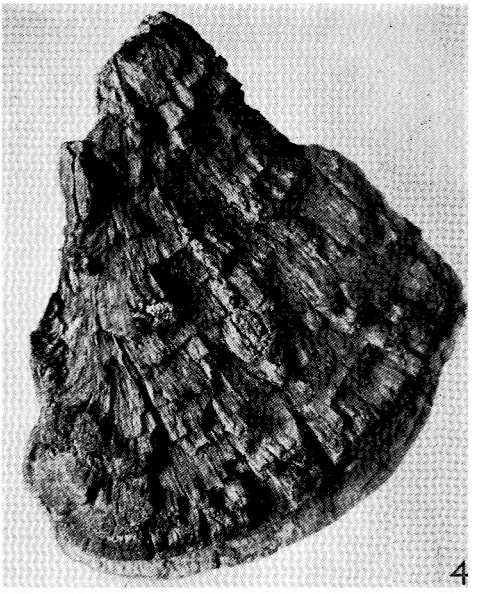


Fig. 3—6.