

Three Resupinate Hydnaceous Basidiomycetes From Hawai'i

Karen K. Nakasone and Robert L. Gilbertson

Center for Forest Mycology Research, USDA Forest Service, Forest Products Laboratory, One Gifford Pinchot Drive, Madison, WI 53705-2398 and Department of Plant Pathology, University of Arizona, Tucson, AZ 85721

Abstract: Three resupinate basidiomycetes from Hawai'i with toothed hymenophores are described and illustrated. *Phlebia acanthocystis* is a newly described taxon that has cystidia with apical pegs or spines. The new combination *Phlebia subfascicularis* is proposed for *Acia subfascicularis*, originally described from Australia. *Mycoacia kurilensis*, described from the Kuril Islands, is reported from Hawai'i for the first time. In addition, *Mycoacia brunneofusca* from Ethiopia is compared with *P. subfascicularis*, and the new combination, *Phlebia brunneofusca* is proposed.

INTRODUCTION

The mycota of Hawai'i has been described in a number of recent papers (Gilbertson & Hemmes, 1997a, 1997b; Gilbertson & Adaskaveg, 1993; Horak et al., 1996). In this paper, we describe and illustrate three resupinate, wood-inhabiting basidiomycetes with hydnaceous hymenophores from the Hawaiian Islands.

Freehand microscopic sections were mounted in Melzer's reagent (Hawksworth et al., 1995) and 2% (w/v) aqueous KOH and 1% (w/v) aqueous phloxine. Microscopic features were drawn with a camera lucida attachment on an Olympus BH-2 microscope (Olympus Optical Co., Ltd., Tokyo, Japan). Color names are from Kornerup and Wanscher (1978), and herbarium abbreviations follow Holmgren et al. (1990). Collections by R. L. Gilbertson are abbreviated RLG. All collections from the Hawaiian Islands are at ARIZ. Occasionally, a portion of some of these collections is also kept at other herbaria and is indicated in the text.

DESCRIPTION OF TAXA

***Phlebia acanthocystis* Gilb. & Nakasone, sp. nov.** (Figs. 1, 2, 5)

Basidioma effusum, subceraceum, spiniferum; aculei teretes, usque ad 2 mm x 250 µm, singulares, 3-5 per µm, pallidi lutei vel brunnei; hyphae septatae, fibulatae; cystidia inconspicua, obclavata vel ventricosa-rostrata, 22-45 x 4-6 µm, apicibus laevibus, nodosis vel echinulatis; basidia anguste clavata, 4-sterigmatibus, basalibus fibulatis; basidiosporae ellipsoideae vel brevicylindratae, 3.0-4.5(-5)x(1.8-)2-2.5 µm, parietibus hyalinis laevibus. Holotypus: Hawai-

ian Islands, Hawai'i, Hamakua District, Kalapa State Park, ad lignam Psidium cattleianum Sabine, 22 Oct. 1991, legit Robert L. Gilbertson 18637 (BPI, isotypus ARIZ, CFMR).

From acantha (Greek, noun) = spine, + *cystis* (Greek, noun) = bladder, referring to the spiny cystidia.

Basidiomata, widely effused, up to 8 × 6 cm, thin, up to 180 µm thick, subceraceous, spinose, area between aculei smooth, sometimes cracked when dried, light-colored areas of hymenium turning brown in 2% KOH; context bilayered, composed of a thin, subceraceous upper layer concolorous with the hymenium and a slightly thicker, white, lower layer next to substrate: aculei slender, terete, occasionally compressed, acuminate, occasionally annulate from aggregations of crystals in aculeus trama or translucent with the inner core of encrusted tramal hyphae visible under a dissecting microscope, up to 2 mm long × 250 µm diam, mostly single, occasionally becoming laterally fused or clumping together, 3-5 aculei per millimeter, fragile, brittle, apices entire, smooth, acute to rounded, pale yellow (4A3), light yellow (4A4), greyish orange [5B(4-5)], brownish orange [5C(5-6)], or light brown (6D4), sometimes brownish yellow (5C7) then darkening to brown [6E6, 6F(4-5)], aculei usually evenly colored but occasionally becoming lighter toward apex, often hymenium between aculei lighter in color, sometimes with a mottled appearance resulting from the exposed, white context contrasting with the darker colored aculei; margins gradually thinning out, indistinct, indeterminate, with aculei becoming smaller, warty, and less dense, pale yellow (4A3) to greyish yellow (5B5), with edges abrupt, closely

appressed, cream-colored, porose to felty, or margins up to 2 mm wide, gradually thinning, appressed, smooth, woolly to silky, white to pale cream with bayed or even, fimbriate edges.

Hyphal system monomitic aculei composed of a core of compact, dense, parallel, rarely branched subicular hyphae, these smooth, lightly or heavily encrusted with small, crystalline material, then enclosed by thin subhymenial and hymenial layers: apices sterile, composed of slightly tapered hyphal end cells or sometimes covered by an immature hymenial layer. Subiculum thin, up to 100 μm thick, composed of two layers – a dense lower layer next to substrate 20-40 μm thick, consisting of closely agglutinated subicular hyphae arranged parallel to substrate, and an upper layer up to 60 μm thick, with an open, loose texture: subicular hyphae 2-5 μm diam, nodose septate, moderately branched, sometimes forming H-connections and branching from clamps: walls hyaline, thin to slightly thickened, smooth or occasionally encrusted with fine granular materials. Subhymenium thickening, up to 40 μm thick, a compact tissue of often indistinct subhymenial hyphae and pale yellow mucilaginous materials: subhymenial hyphae 2-3.5 μm diam, nodose septate, short-celled, frequently branched: walls hyaline, thin, smooth. Hymenium composed of a dense palisade of basidia and occasional cystidia. *Cystidia* cylindrical, obclavate to ventricose-rostrate, 22-45 \times 4-6 μm , with a short stalk tapering to 2-2.5 μm diam at base, with a basal clamp, tapering gradually toward apex, apex rounded and smooth, knobby, or with short, narrow, hyaline pegs or spines, protruding up to 25 μm beyond hymenium, arising from hymenium, occasional to rare on aculei; walls hyaline, thin, smooth. *Basidia* slender clavate, (10-) 14-26 \times 3.5-5.5 μm , tapering to 1.5-3 μm at base, with a basal clamp connection, 4-sterigmate; walls hyaline, thin, smooth. *Basidiospores* ellipsoid to short cylindrical, 3-4.5 (-5) \times (1.8-) 2-2.5 μm ; walls hyaline, thin, smooth, negative in Melzer's reagent.

Habitat. On wood and bark of angiospermous branches and slash.

Distribution. Hawaiian Islands (Hawai'i, O'ahu).

Representative Specimens Examined

United States: Hawaiian Islands, Hawai'i, Puna

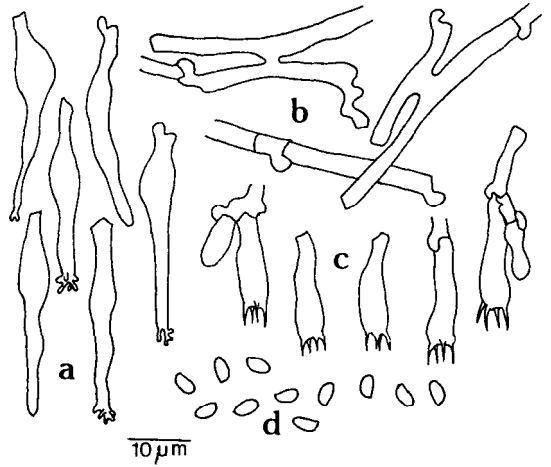


Fig. 5. Microscopic elements of *Phlebia acanthocystis* (RLG 18637, holotype): (a) cystidia, (b) subicular hyphae, (c) basidia, and (d) basidiospores.

District, Pohoiki Road, on (decorticate) *Mangifera indica* L. (mango), 15 Aug. 1991, RLG 17347 (CFMR), Cape Kumukahi, on (decorticate) mango, 26 July 1991, RLG 17088. South Hilo District, Honua Hawai'i, on (corticate) *Pandanus tectorius* Parkins (hala), 3 Sept. 1991, RLG 17658; Hilo Baptist Church, on (decorticate) *Trema orientalis* (L.) Blume (gunpowder-tree), 4 Oct. 1991, RLG 18285 (CFMR) and on (corticate) gunpowder-tree, 4 Oct. 1991, RLG 18286. Hamakua District, Honokaia Boy Scout Camp, on (corticate and decorticate) *Casuarina equisetifolia* L. ex J.R. & G. Forst. (horsetail casuarina), 5 Nov. 1991, RLG 18952 and 27 Aug. 1991, RLG 17531 (CFMR), on (decorticate) *P. cattleianum* (strawberry guava), 10 Oct. 1991, RLG 18243. Ka'u District, Kipuka Puauu, Hawai'i Volcanoes National Park (HVNP) on (corticate) *Acacia koa* A. Gray (koa), 18 July 1991, RLG 17046. O'ahu, Honolulu District, Manoa Falls, on (decorticate) mango, 7 Oct. 1991, RLG 18419. Maui, West Maui District, Maluhia, on (decorticate) strawberry guava (?), 30 Nov. 1991, RLG 19183.

Remarks. The diagnostic features of this species are the spiny, light-colored basidiomata,

the small, ellipsoid basidiospores, and the ventricose-rostrate cystidia with apical pegs or knobs. Although the occurrence of this characteristic cystidia is variable, they are easiest to observe before squashing out the mount. The development of the apical protuberances on the cystidia is variable from a few to many pegs or knobs.

We examined more than 70 collections of *I? acanthocystis* but cite only 12 specimens above. It appears to be very common in some localities on the island of Hawai'i such as Kipuka Puaulu (Bird Park) and Honokaia Boy Scout Camp.

***Phlebia subfascicularis* (Wakef.) Nakasone & Gilb., comb. nov.** (Figs. 3, 4, 6)

Acia subfascicularis Wakef., Trans. Royal Soc. South Australia 54: 155. 1930, as '*subfasculari*'.

Odontia subfascicularis (Wakef.) G. H. Cunn., Proc. Linn. Soc. New South Wales 77: 294. 1953, as '*subfascularia*'.

Columnodontia subfascicularis (Wakef.) Jülich, Persoonia 10: 327. 1979, as '*subfascularia*'.

Mycocacia subfascularia (Wakef.) Hjortstam, Mycotaxon 54: 188. 1995, as '*subfascularia*'.

Basidiomata resupinate, widely effused, up to 14 × 4 cm, 60-800 µm thick, soft ceraceous to crustaceous, densely to sparsely spinose, grandinioid or tuberculate, hymenium between aculei smooth, felty, not reacting in KOH; cracks infrequent, inconspicuous in thinner areas, but often extensively cracked in thicker areas; context brownish yellow to dark brownish black, sometimes interspersed with columns of white, crystalline materials: hymenial surface spinose or grandinioid, up to 6 aculei or sterile hyphal pegs per millimeter, subceraceous to ceraceous, aculei terete, slightly tapering toward apex, up to 1 × 0.3 mm, single or fused at base forming clumps, sometimes arranged in broad warts with one or more acute, yellow to brownish yellow apices, thinner grandinioid areas brownish orange (5C6) to light brown (5D7) and spinose and tuberculate areas light brown (6D6) to brown [6(E-F)6, 7E6], becoming white to light brownish yellow toward apices: margins typically distinct but not differentiated, closely appressed, adherent, abrupt or thinning out and blending into substrate, concolorous with

hymenium, grandinioid, edges indistinct or narrow, closely attached, white to cream-colored, granular to pulverulent.

Hyphal system monomitic aculei consisting of a core of parallel, vertically arranged thick-walled terminal end cells and large, hyaline crystals protruding through apex, up to 65 µm diam, then enclosed by subhymenial and hymenial layers, apices sterile, composed of thick-walled terminal end cells with or without a thin outer covering of subicular hyphae. Subiculum between aculei thin, up to 150 µm thick, a dense tissue of agglutinated mycelia, in some specimens with two layers, a basal layer next to substrate composed of agglutinated, brown-colored subicular hyphae 4-6 µm diam, nodose septate, with walls up to 1 µm thick, and an upper layer of hyaline subicular hyphae 2-4.5 µm diam, nodose septate, with thin, hyaline, smooth walls: sometimes with a layer of large, coarse, hyaline crystals at substrate interface, up to 60 µm thick. Subhymenium often indistinct, thickening, up to 650 µm thick, a dense layer of vertically arranged subhymenial

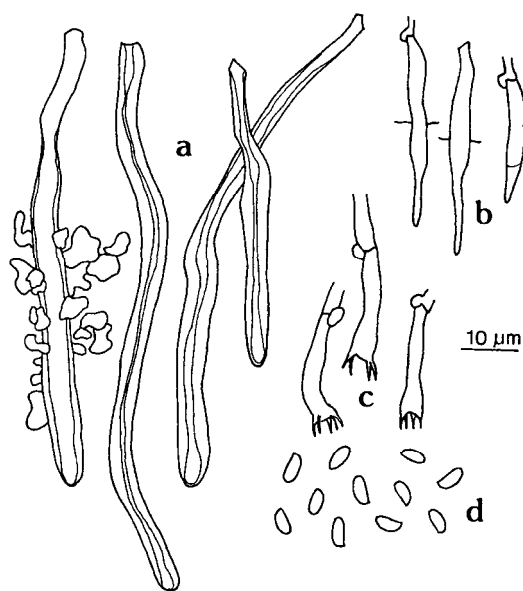


Fig. 6. Microscopic elements of *Phlebia subfascicularis* (RLG 18426): (a) thick-walled terminal end cells, (b) hymenial cystidia, (c) basidia, and (d) basidiospores.

hyphae, not agglutinated: subhymenial hyphae 1.5-4 μm diam, nodose septate, short celled and frequently branched, with thin, hyaline, smooth walls. Hymenium a dense palisade of mature and developing basidia and hymenial cystidia, elements not agglutinated but difficult to separate, embedded in a pale yellow, mucilaginous material. Pseudocystidia cylindrical, often tapering slightly toward apex and base, up to 100 \times 56 μm , clamped at base, arising from subiculum and forming a central column within aculei; walls up to 3 μm thick but thinning toward apex and base smooth or roughened, dark opaque yellow to brownish yellow, often encrusted with large, hyaline crystals. *Cystidia* rare, subulate, 20-35 \times 2.5-3 μm , tapering to 1.5-3 μm diam at base, subtended by a basal clamp connection, arising in hymenium, protruding up to 18 μm beyond hymenium; walls thin, hyaline, smooth. Basidia clavate to narrowly clavate, 16-20 \times 3-5 μm , tapering to 2-3 μm diam at base, with a basal clamp connection, 4-sterigmate: walls thin, hyaline, smooth; few mature basidia observed. Basidiospores abundant, short cylindrical to ellipsoid, adaxial side straight or slightly depressed, 4-4.5 \times 1.8-2.2 μm , walls thin, hyaline, smooth, negative in Melzer's reagent.

Habitat. On corticate and decorticate woody angiosperms.

Distribution. Australia, New Zealand, Hawaiian Islands (O'ahu).

Type Specimen Examined. Australia: South Australia, Mount Lofty, (on decorticate wood), 5 May 1928, J.B. Cleland, W, K(M):32854 (HOLOTYPE: K and ISOTYPE: BPI-US0261411 of *A. subfascicularis*).

Specimens Examined. United States: Hawaiian Islands, O'ahu, Honolulu District, Manoa Falls Trail, on *Ficus microcarpa* L. f. (Chinese banyan), 7 Oct. 1991, RLG 18424, 18426 and 18430. New Zealand: Auckland, Upper Piha Valley, on (bark and wood of) *Cordyline australis* (G. Forst.) Hook. f., Apr. 1948, J.M. Dingley, PDD 18093 (PDD). Purewa, Orakei bush, on (bark of) *Neopanax arboreus* (L.) Allan, Dec. 1948, D.W. McKenzie, PDD 18087 (PDD); Otago, Lake Wilkie, Catlins on (bark of) *Weinmannia racemosa* Linn. f., Apr. 1957, S.D. & P. J. Brook, PDD 18103 (PDD); Wellington, Waverly, 400 ft, on *Eucalyptus globulus* Labill., Dec. 1946, G.S. and E.E. Chamberlain, PDD 18086 (PDD);

Westland, Ahaura, Orwell Creek, on (bark of) *Nothofagus fusca* (Hook. f.) Oerst., Apr. 1956, J.M. Dingley, PDD 18088 (PDD).

Remarks. *Phlebia subfascicularis* is characterized by aculei and hyphal pegs composed of a core of thick-walled terminal end cells encased in large, hyaline crystals, cylindrical basidiospores with a slight depression on the adaxial side, dark purple colored basidioma, and cheesy or soft ceraceous texture. The thick-walled terminal end cells are observed only in well-squashed mounts.

Although a distinctive taxon, *P. subfascicularis* may be confused with *P. fuscoatra* (Fr.: Fr.) Nakasone and *Mycoacia brunneofusca* Hjortstam & Ryvar den. The longer basidiospores (5-6 \times 2-2.2 μm) and absence of thick-walled terminal end cells in the aculeus core of *P. fuscoatra* distinguishes it from *P. subfascicularis*. *Phlebia subfascicularis* and *M. brunneofusca* share many similarities such as thick-walled terminal end cells, subulate cystidia, and thick, dark-colored basidiomata with a soft ceraceous texture. However, *M. brunneofusca* develops paraphysoid hyphidia in the hymenium, which are lacking in *P. subfascicularis*. Furthermore, the basidiospores in *P. subfascicularis* are distinctly cylindrical, whereas in *M. brunneofusca*, the spores are ellipsoid (4-5 \times 2.5-3 μm).

Because *M. brunneofusca* is morphologically closely allied to *P. subfascicularis*, we propose the new combination, *Phlebia brunneofusca* (Hjortstam & Ryvar den) Nakasone & Gilb. (Basionym: *Mycoacia brunneofusca* Hjortstam & Ryvar den, Mycotaxon 60: 183. 1996). Examination of the holotype and paratype specimens of *M. brunneofusca* revealed distinct differences between the specimens. The holotype specimen is thick with a homogeneous context, whereas the paratype is much thinner with two distinct layers. In addition, the holotype possesses subulate hymenial cystidia and paraphysoid hyphidia; both of these structures are lacking in the paratype. The thick-walled terminal end cells are easily observed in the holotype because they are dark brown and only lightly encrusted with crystals. However, in the paratype specimen, these structures are more difficult to observe, because they are dark yellow and completely enveloped by coarse, hyaline crystals.

Mycoacia kurilensis Parmasto (Figs. 7, 8, 9)

Izv. Akad. Nauk Estonsk. S.S.R., Ser. Biol. 16: 386. 1967.

= *Phlebia heterocystidia* S.H. Wu, Acta Bot. Fenn. 142: 29. 1990.

= *Phlebia odontoidea* S.H. Wu, Acta Bot. Fenn. 142: 29. 1990.

Basidiomata annual, widely effused, up to 15 × 4 cm, thin, up to 250 μm thick, adherent, ceraceous, spiny to verruculose, hymenium between aculei porulose at first, then felty, smooth: yellow to brown but with a heterogeneous quality because of the contrasting white to light-colored areas between and at the base of the aculei and the darker colored parts of the upper aculei, cracks lacking; aculei conical to compressed, ceraceous to brittle, 3-5 per mm, up to 1 mm long × 300 μm diam, single or fused, gradually tapering to apex or blunt and obtuse, sometimes aculei with multiple tufts or penicillate apices, often with refractive, golden brown, dried-out mucilaginous materials deposited on apex that disappear in KOH, brittle, often breaking off to expose a dark golden brown central core enclosed by a lighter colored hymenial layer, pale yellow (4A3), brownish orange [5C(3-4)], light brown (5D5), yellowish brown (5D4) darkening to light brown (6D5) to brown [6D8; 6E(5-6)]; margins closely appressed, adherent, abrupt or gradually thinning out and fibrillose to woolly, aculei becoming shorter and smaller, concolorous with hymenial area between aculei. *Hyphal system* monomitic aculeus trama composed of vertical, conglutinate, parallel subicular hyphae often branching from clamp connections, with numerous H-connections, and embedded in yellowish brown resinous materials, then enclosed by subhymenial and hymenial layers: apices composed of halocystidia and capitulate to cylindrical terminal cells, rarely covered by hymenium. Subiculum up to 200 μm thick, bilayered with a thin layer, about 10 μm thick, of compact, agglutinate, thick-walled subicular hyphae arranged parallel to substrate, then forming a wider upper layer of vertical hyphae arranged in a sparse to dense layer, with abundant brownish yellow resinous materials that dissolve in KOH; subicular hyphae 2-4 μm diam, nodose septate, moderately to frequently branched, often branched from clamps, conglutinate; walls hyaline, slightly thickened to

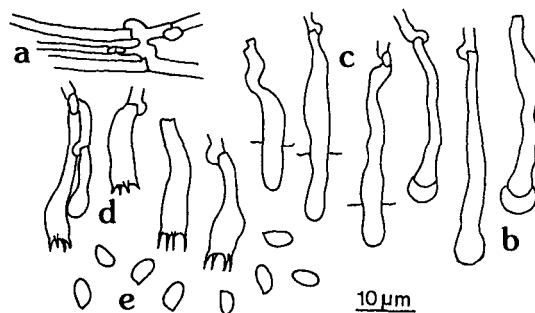


Fig. 9. Microscopic elements of *Mycoacia kurilensis* (RLG 17416): (a) subicular hyphae, (b) capitulate cystidia, (c) hymenial cystidia, (d) basidia, and (e) basidiospores.

0.7 μm thick, smooth. Subhymenium up to 25 μm thick, consisting of dense array of parallel, conglutinate and often indistinct subhymenial hyphae and brownish yellow mucilaginous materials that dissolve in KOH: subhymenial hyphae 2-3 μm diam, nodose septate; walls hyaline, slightly thickened, smooth. Hymenium a dense palisade of cystidia and basidia. *Cystidia* of two types: (a) capitulate cystidia clavate to cylindrical, 14-36 × 3.5-6 μm, with a slightly expanded apex and enclosed by a thin, hyaline, globose membrane up to 7 μm diam, tapering to 1.5-3 μm diam at base, clamped at base, abundant to rare, especially noticeable in apices of smaller aculei; walls hyaline, thin, smooth: (b) cylindrical to clavate, occasionally fusiform, 16-33 × 4-6.5 μm, rarely with filiform apical extensions, tapering at base to 2-2.5 μm diam, with a basal clamp, embedded or protruding up to 15 μm beyond hymenium, rare or absent: walls hyaline, thin, smooth. *Basidia* short clavate, 13-20 (-25) × 4-6 μm, tapering to 2-3 μm diam at base, clamped at basal septum, 4-sterigmate; walls hyaline, thin, smooth. *Basidiospores* ellipsoid with adaxial side flattened, 4-5(-5.5) × 2-2.5 μm; walls hyaline, slightly thickened, smooth, negative in Melzer's reagent. *Habitat.* On bark and wood of angiospermous branches.

Distribution. Taiwan, Japan, eastern Russia (Kuril Islands), United States (Hawai'i, Mississippi).

Type Specimens Examined. Russia: (Sachalin region), Kunašir (island), Gorjatsojė ozero, on (decorticate) *Alnus maximowiczii* Callier ex C.K. Schneid., 5 Oct. 1960, E. Parmasto (HOLOTYPE of *M. kurilensis*: TAA 13034) Taiwan: Nantou, Sun-Moon Lake, alt. 800 m, on branch of angiosperm (bark and wood), 26 Oct. 1988, S.H. Wu 881026-47 (ISOTYPE of *P. heterocystidia*: H). Hsinchu, Wufeng Hsiang, Chinchuan, alt. 500 m, on branch of angiosperm (bark and wood), 20 Aug. 1988, S.H. Wu 880820-6 (HOLOTYPE of *P. odontoidea*: H).

Specimens Examined. Japan: Kagoshima Prefecture, Oshima-gun, Uken-son, Mt. Iwandake, on decaying (corticate) branch of broad-leaved tree, 26 Nov. 1984, E. Nagasawa (TMI 14580), *ut P. heterocystidia*. Okayama Prefecture, Maniwa-gun, Kawakami-son, on (bark) of decaying branch of *Quercus* sp., 18 Sept. 1991, N. Maekawa (TMI 12777), *ut P. heterocystidia*. Taiwan: Pingtung, Taimali, alt. 850 m, on (corticate) branch of angiosperm, 19 May 1989, S.H. Wu 890519-3 (H, paratype). Taipei, beside highway between Hsintien and Piglin, alt. 200 m, on (wood and bark of) branch of *Ficus fistulosa* Reinw. ex Blume, 17 Apr. 1988, S.H. Wu 880417-11 (H, paratype), *ut P. heterocystidia*. United States: Hawaiian Islands, Hawai'i, Ka'u District, Kipuka Puauulu, HVNP, on (decorticate) *Osmanthia sandwicensis* (Gray) Knobl. (olopua), 20 Aug. 1991, RLG 17416 (ARIZ). South Hilo District, Stainback Highway, on (corticate) *Fraxinus uhdei* (Wenzig) Lingelsh. (tropical ash), 10 Oct. 1991, RLG 18511 (ARIZ). Hamakua District Kalopa State Park, on (corticate) hardwood branch, 2 Aug. 1991, RLG 17198 (ARIZ); Hilo Baptist Church, on (decorticate branches of) *Hibiscus tiliaceus* L. (hau), 6 Aug. 1991, RLG 17216 (ARIZ). Mississippi, Harrison County, Harrison Experimental Forest, on (decorticate) hardwood, 4 Dec. 1982, M. Blackwell 1167 (ARIZ, AN00405).

Remarks. *Mycoacia kurilensis* is distinguished by its spiny to verruculose hymenial surface, often with a shiny droplet of dried-out mucilagenous material capping the aculei, and the small, ellipsoid basidiospores. The hymenophore is quite variable, ranging from small, short verrucae to distinct, well-developed aculei. The capitate cystidia can usually be

found on the smaller, young aculei; however, in some specimens, they are apparently absent. *Resinicium pinicola* (J. Erikss.) J. Erikss. & Hjortstam is similar to *M. kurilensis* but has slightly narrower basidiospores [$4-5 \times 2(-2.5) \mu\text{m}$], longer aculei (1-2 mm), lacks cylindrical to clavate hymenial cystidia, and occurs wood and bark of gymnosperms.

The holotype specimen of *M. kurilensis* has well-developed aculei although the microscopic features are poorly preserved. Because *M. kurilensis*, *P. odontoidea*, and *P. heterocystidia* cannot be distinguished microscopically and have similar habitat and host preferences, they are considered conspecific. In the holotype of *P. odontoidea*, we observed capitate cystidia in the aculeate apices that were not described by Wu (1990). In addition, the basidiospores we observed were shorter than those reported in the original description and are well within the range of *M. kurilensis*. Earlier, Hjortstam and Larsson (1995, p. 48) proposed that *P. odontoidea* was a synonym of *P. heterocystidia*. We concur with their conclusion. Although the collection of *M. kurilensis* from Mississippi has smaller basidiospores ($4-4.5 \times 2-2.5 \mu\text{m}$) and more frequent clavate, hymenial cystidia than the other collections, we consider these variations to be relatively minor deviations.

The generic placement of *M. kurilensis* is not certain at this time. *Mycoacia* was recently placed in synonymy under *Phlebia* (Nakasone, 1997): however, the affinities of *M. kurilensis* lie clearly with *Resinicium sensu lato* and not with *Phlebia sensu stricto*. Until further molecular and morphological data are available, we defer proposing any taxonomic changes to *M. kurilensis*.

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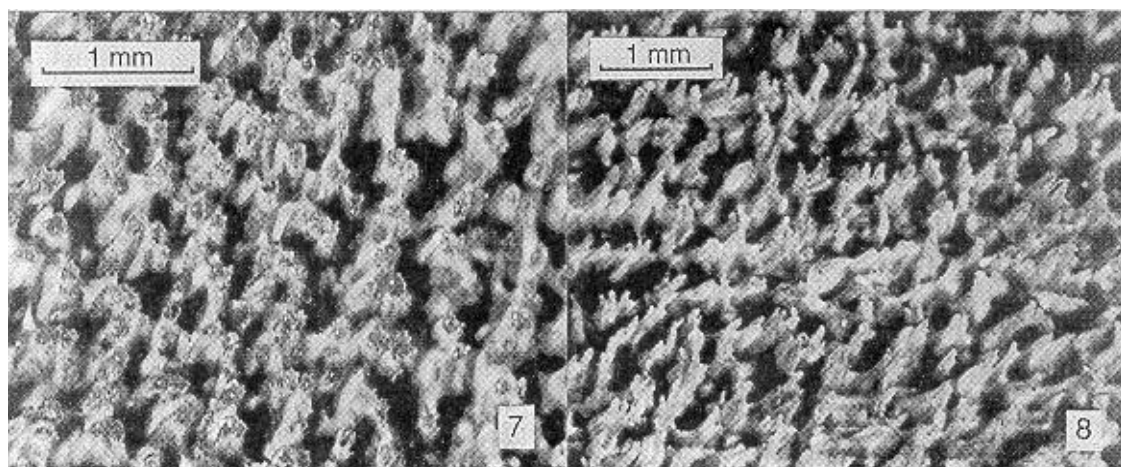


Fig. 7. Basidiomata of *Mycoacia kurilensis* (RLG 17198).

Fig. 8. Basidiomata of *Mycoacia kurilensis* (RLG 17216).

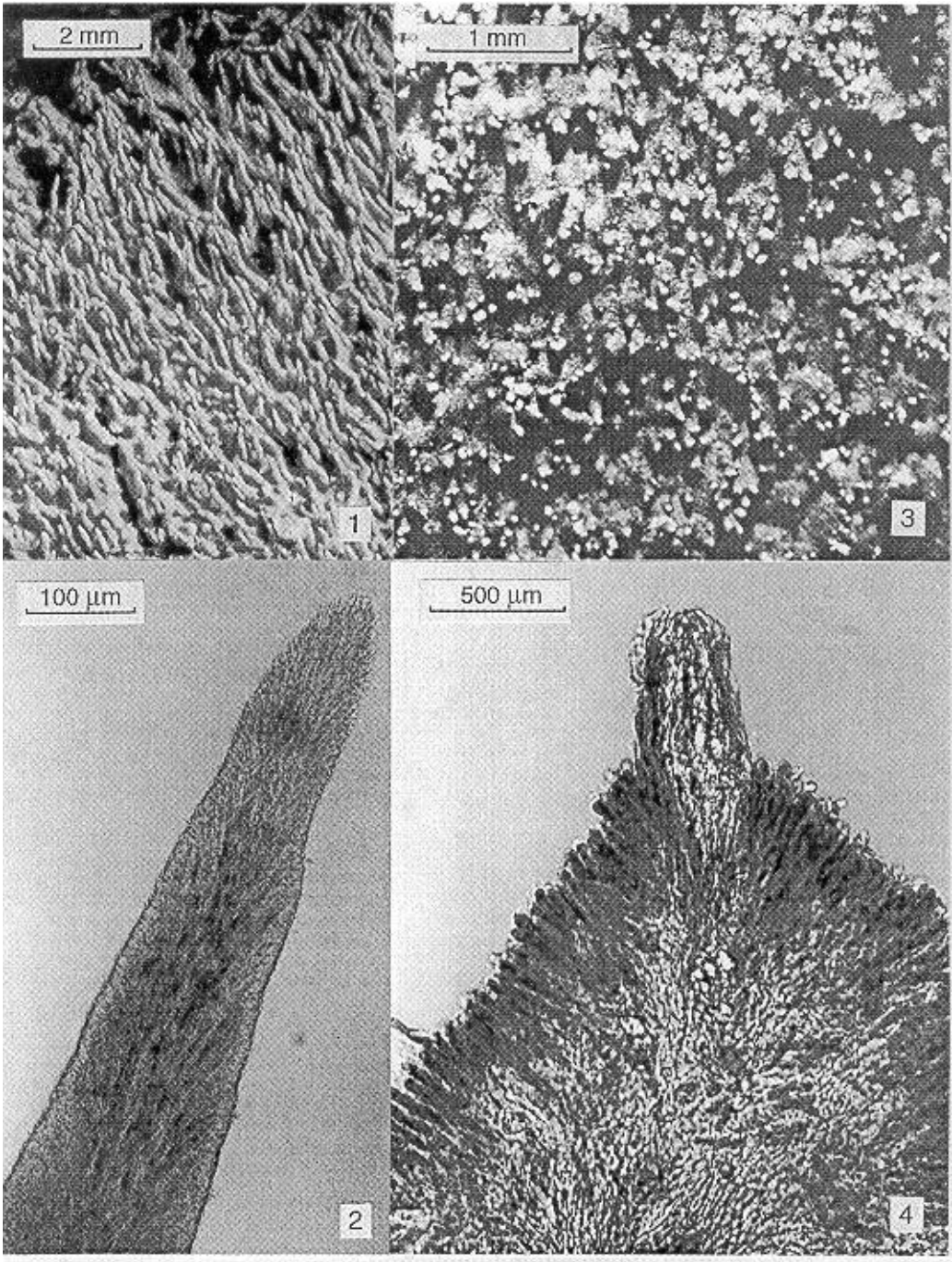


Fig. 1. Basidioma of *Phlebia acanthocystis* (RLG 18286).

Fig. 2. Photomicrograph of an aculeus of *P. acanthocystis* (RLG 17347) shows the encrusted hyphae in the trama.

Fig. 3. Basidioma of *Phlebia subfascicularis* (RLG 18424).

Fig. 4. Photomicrograph of an aculeus of *P. subfascicularis* shows the core of heavily encrusted, terminal end cells protruding through the apex (RLG 18426).