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## *Dendrominia burdsallii* (Corticiales, Basidiomycota), a new species from Arizona

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**Abstract:** *Dendrominia burdsallii* is proposed as a new species that occurs on bark of living *Arbutus arizonica* in southern Arizona. Its most striking feature is the very large, narrowly cylindrical to allantoid basidiospores, (30–) 37–50 × 10–12 (–13.5) μm, with hyaline, thin, smooth, acyanophilous walls.

**Key words:** Arizona madrone, catahymenium, Corticiales, *Dendrominia*, *Vuilleminia*.

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**Introduction:** The wood-inhabiting, basidiomyceteous fungi from Arizona are well-documented because of the pioneering work of Robert L. Gilbertson, his students, and colleagues and are summarized in Gilbertson et al. 1974 and 1979. New species of wood-inhabiting fungi are

still being discovered in Arizona including *Theleporus ajovaliensis* Gilb. & M. Blackw. (Gilbertson and Blackwell 1982), *Crustoderma opuntiae* Nakasone & Gilb. (Nakasone and Gilbertson 1982), *Phellinus coronadensis* Rizzo, Gieser & Burds. (Rizzo et al. 2003), and

*Dendrothele gilberstoni* Nakasone (Nakasone 2009).

A striking corticioid fungus with large cylindrical basidiospores from Arizona was uncovered during a study of *Dendrothele* Höhn. & Litsch. species. Although similar to *Dendrothele* species in basidiome morphology and occurrence on bark of a living host, this taxon is quite different microscopically, producing a true catathymenium, very large, clavate basidia, and thin-walled, acyanophilous basidiospores. An appropriate genus for this taxon became available recently when Ghobad-Nejhad and Duhem (2014) described the new genus *Dendrominia* Ghobad-Nejhad & Duhem. Their phylogenetic study clearly shows that *Dendrominia* is a well-supported clade in the Corticiales K.H. Larss. and distinct from *Vuilleminia* Maire, *Punctularia* Pat. and related genera. *Dendrominia* includes three species: *D. maculata* (H.S. Jacks. & P.A. Lemke) Ghobad-Nejhad & Duhem, *D. dryina* (Pers.) Ghobad-Nejhad & Duhem, and *D. ericiae* (Duhem) Ghobad-Nejhad & Duhem. Based on morphology, the taxon from Arizona is congeneric with *Dendrominia*. It is described and illustrated below as *Dendrominia burdsallii*.

**Materials and Methods:** Thin, freehand sections from basidiomes were mounted in 2% aqueous potassium hydroxide (KOH) with 1% aqueous phloxine or Melzer's reagent (Kirk et al. 2008) and examined under an Olympus BH2 compound microscope. Drawings were made with a camera lucida attachment. Photographs of the basidiomes were taken with an Olympus DP12 camera on an Olympus SZH Stereomicroscope. Cyanophily of basidiospore and hyphal walls were observed in 0.1% cotton blue in 60% lactic acid (Kotlaba and Pouzar 1964, Singer 1986). Q values were obtained from dividing average length by average width of at least 30 basidiospores (Kirk et al. 2008). Color codes and names follow Kornerup and Wanscher



**Fig. 1.** Basidiomes of *Dendrominia burdsallii*, holotype, HHB 8549 Scale bar = 5 mm. **Fig. 2.** Close-up of basidiome of holotype, HHB 8549, on bark. Scale bar = 1 mm.

(1978) and herbarium designations follow Thiers (2014).

## Results

***Dendrominia burdsallii*** Nakasone, *sp. nov.*

MycoBank No. MB807837

Figs. 1–4

**Diagnosis.** Basidioma effused, smooth to slightly uneven, pale yellow to pale orange, subcrustaceous, densely and finely farinaceous; margin abrupt; context usually filled with hyaline crystals; hyphal system monomitic with clamped, generative hyphae; hyphidia simple or sparsely branched; cystidia clavate or tapering to apex, walls thin to thick; basidia clavate with 4, stout sterigmata; basidiospores narrowly cylindrical to allantoid, slightly curved, (30–) 37–50 × 10–12 (–13.5) μm, walls hyaline, thin, smooth, acyanophilous, not reacting in Melzer's reagent.

On bark of living *Arbutus arizonica* (A. Gray) Sarg.

Holotype. UNITED STATES. Arizona, Santa Cruz County, Coronado National Forest, Santa Rita Mountains, Gardner Canyon, on bark of living *A. arizonica*, 11 September 1975, H.H. Burdsall, Jr., HHB 8549 (BPI, isotype CFMR).

Etymology. Named in honor of Harold H. Burdsall, Jr.

Basidioma resupinate, effused, adnate, beginning as small, distinct, circular to oblong colonies, then coalescing into discrete, irregular, elongate patches, thin to moderately thick, up to 600  $\mu\text{m}$  thick, soft to firm, subcrustaceous, smooth to slightly uneven, pale yellow (4A2), yellowish white (4A3), orange white (5A2) to pale orange (5A3). Hymenial surface densely and finely farinaceous to somewhat felty; margin abrupt, distinct, adnate.

Hyphal system monomitic with clamped, generative hyphae, 2-5  $\mu\text{m}$  diam, moderately branched, walls hyaline, thin, smooth or encrusted with coarse, hyaline crystals. Context non-agglutinated, obscured by coarse, hyaline crystals. Subiculum absent. Catahymenium composed of hyphidia, cystidia, and basidia, all enclosed in a dense matrix of crystals. Hyphidia filamentous, unbranched or occasionally branched, 30-55  $\times$  2-3  $\mu\text{m}$ , clamped at base, walls hyaline, thin, smooth. Cystidia clavate or cylindrical then slightly tapered to apex, often sinuous or strangulated, irregular, rarely branched, sometimes stalked, 70-115 (-140)  $\times$  8-14  $\mu\text{m}$ , clamped at base, containing oil-like materials, walls hyaline, thin to 1  $\mu\text{m}$  thick, smooth. Basidia rare, slightly protruding, clavate with a long stalk, sometimes strangulated, rarely with an adventitious septum near apex, 80-180  $\times$  16-25  $\mu\text{m}$ , clamped at base, with 4, stout sterigmata, 15  $\times$  7  $\mu\text{m}$ , walls hyaline, thin, smooth. Basidiospores scarce, narrowly cylindrical to allantoid, slightly curved, with a

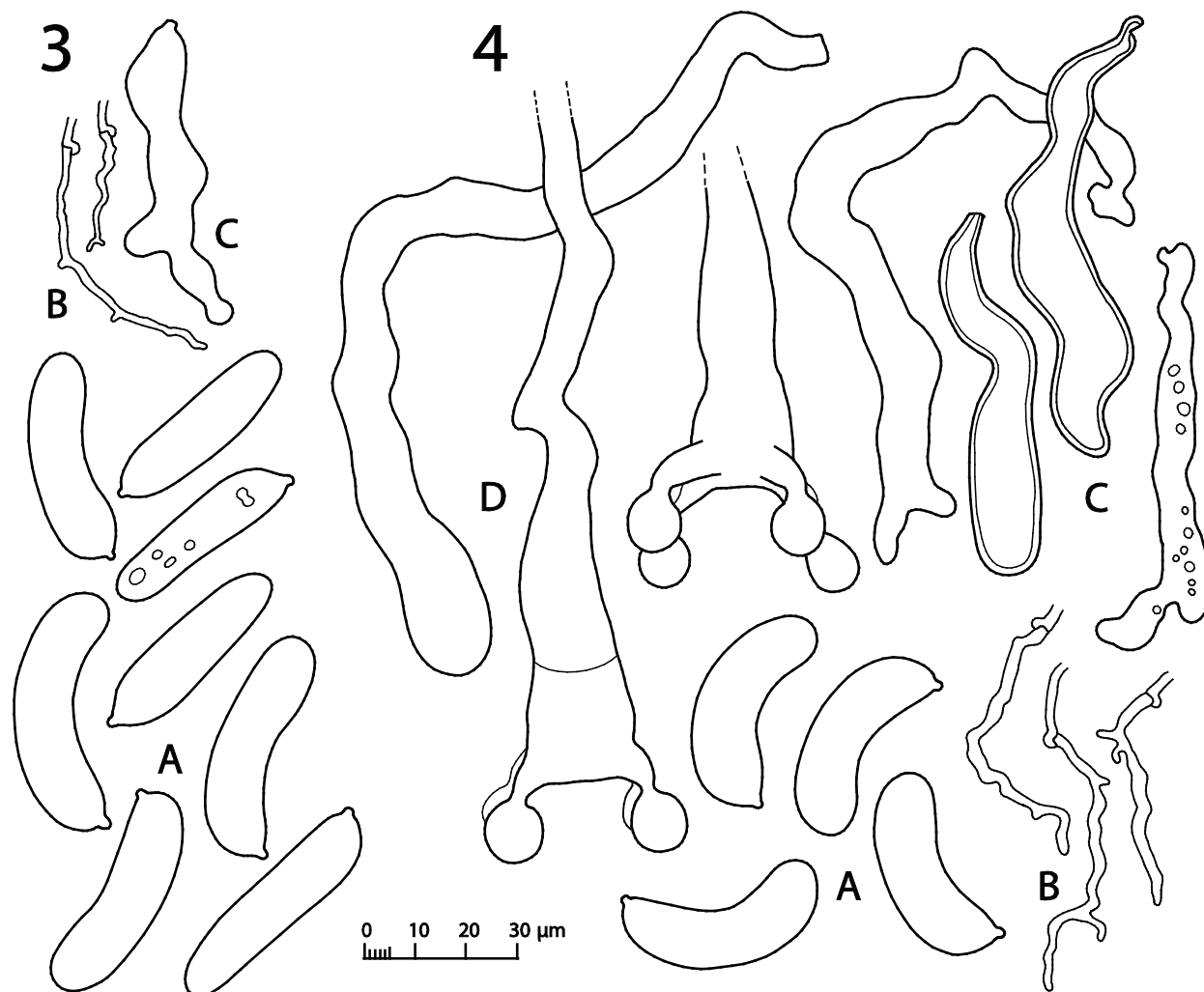
blunt apiculus, (30-) 37-50  $\times$  10-12 (-13.5)  $\mu\text{m}$ , average of holotype 45.4  $\pm$  4  $\times$  11.7  $\pm$  0.8, Q = 3.9, containing small globules of oil-like material, walls hyaline, thin, smooth, acyanophilous, not reacting in Melzer's reagent.

Habitat and distribution. On bark of living *Arbutus arizonica* (A. Gray) Sarg. in southern Arizona.

Additional specimens examined. UNITED STATES. Arizona, Santa Cruz County, Coronado National Forest, Santa Rita Mountains, Madera Canyon, on bark of *A. arizonica*, 24 July 1980, H.H. Burdsall, Jr., HHB 10924 and HHB 10925 (CFMR).

Remarks. This striking species is characterized by small, pale yellow to pale orange, circular to linear basidiomes on bark of living Arizona madrone and very large, slightly curved, narrowly cylindrical to allantoid basidiospores. The numerous crystals found throughout the context obscure the catahymenial structure and hinder the observation of the hymenial elements. Intact basidia were not observed because of their size and tendency to collapse immediately after releasing basidiospores. Basidiospores are scarce but locally numerous when present. When mounted in phloxine and KOH, the thin basidiospore walls often become distended then burst.

*Dendrominia burdsallii* generally conforms to the generic description of *Dendrominia* except that cystidia were observed. As in other species of *Dendrominia*, *D. burdsallii* has large, clavate basidia that produce large, lunate to allantoid basidiospores with hyaline, thin, smooth, acyanophilous walls that do not react to Melzer's reagent. It is most similar morphologically to *D. dryina* which has smaller basidiospores that measure 22-30  $\times$  7.5-9 (-11)  $\mu\text{m}$ . *Dendrominia ericae* occurs on bark of living *Erica* L. but with smaller and distinctly curved basidiospores, (16.5-) 18.5-23.5 (-25)  $\times$  (6-) 7-9  $\mu\text{m}$  (Duhem



**Figs. 3–4.** Line drawings of microscopic characters of *Dendrominia burdsallii*. **Fig. 3.** From holotype, HHB 8549. **Fig. 4.** From HHB 10925. A, basidiospores; B, hyphidia; C, cystidia; D, basidia.

2010). The type species of the genus, *D. maculata*, is unique in producing simple-septate hyphae.

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