

***Xylaria kaumanae* sp. nov. from the Island of Hawaii (Hawaii, USA)**

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Xylaria kaumanae is described as a new species with apparent relationships with *X. telfairii* and allied taxa. Cultural features and the anamorph from naturally-occurring stromata are described and depicted.

Keywords: *Casuarina*, *Xylaria*, Xylariaceae.

The authors are involved in a continuing investigation of the mycobiota of the Hawaiian Islands. Herein, we describe and discuss an undescribed *Xylaria* species from the Island of Hawaii.

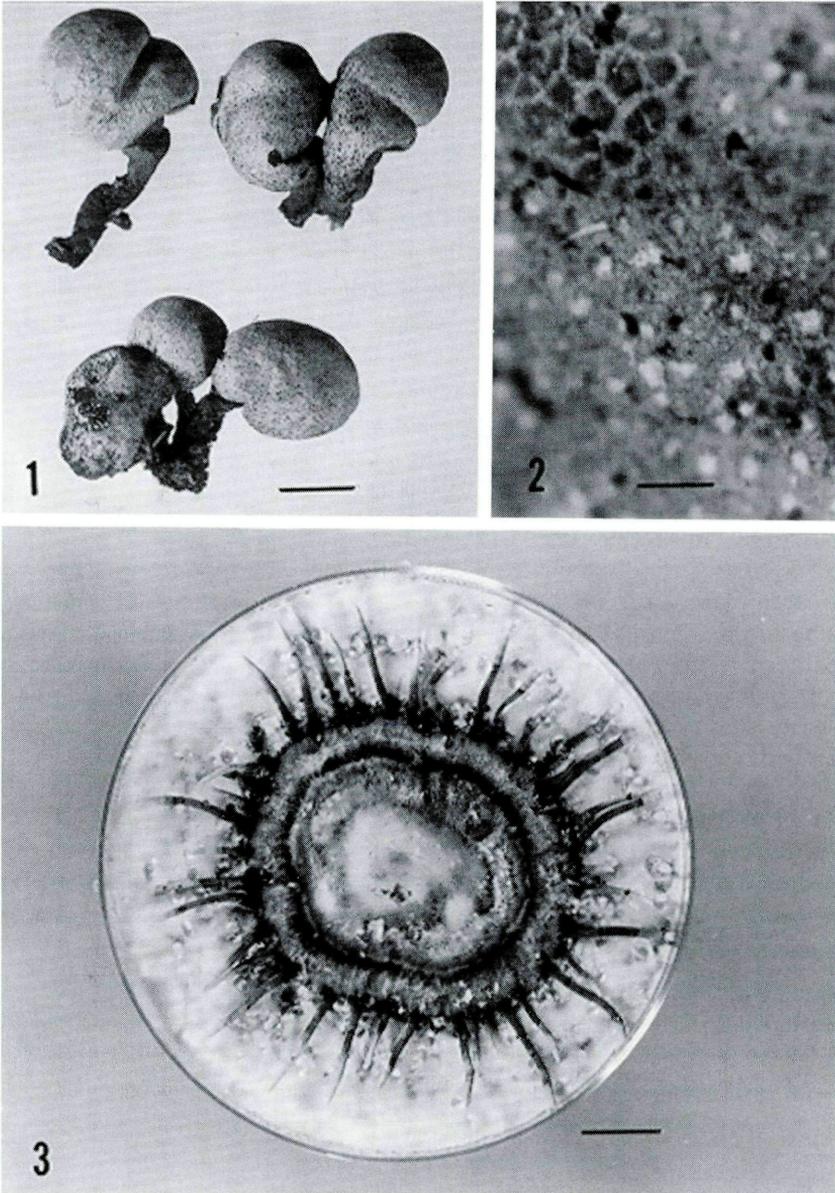
Materials and methods

Asci, ascospores, conidiogenous cells, and conidia were examined by differential interference microscopy (DIF) and bright field microscopy (BF). Material was mounted in water and Melzer's iodine reagent for examination by DIF and BF. Cultures were initiated from multiple ascospores on SME medium (Kenerley & Rogers, 1976). Resulting colonies were transferred to 2% Oatmeal agar (Difco) (OMA) and culture descriptions were made from this medium. Color terminology follows Rayner (1970).

Taxonomic part

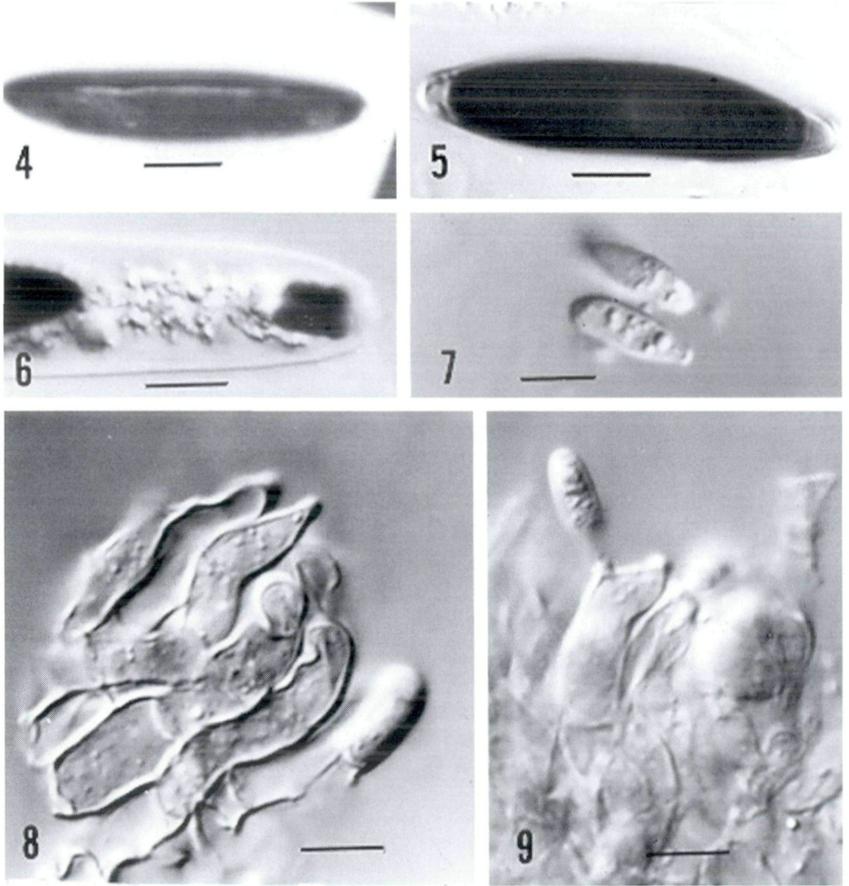
Xylaria kaumanae J. D. Rogers, Hemmes & Y.-M. Ju, **sp. nov.** – Figs. 1–9.

Stromata subglobosa vel irregularia, usque ad 3 cm diam, una vel tres ex stipite brevi non ramoso vel ramoso usque ad 4 cm longo, 0.5 cm crasso. Stromata extus murina cum squamellulis albis, intus bulbulina cum peritheciis albis circumcinctis. Stromata cava maturitate provecta. Superficies levis. Textura carbo-



Figs. 1–3. *Xylaria kaumanae*. – 1. Stromata. – 2. Stromatal surface. – 3. Culture showing numerous stromata. – Scale bars: 1 = 1.25 cm; 2 = 0.04 cm; 3 = 1.2 cm.

nacea. Perithecia globosa, usque ad 0.8 mm diam. Ostiola umbilicata. Asci octospori, stipitati, 185–220 μm longitudine tota \times 8–9 μm crassi, partibus sporiferis 105–150 μm longitudine, annulo apicali in liquore iodato Melzeri cyanescenti, urniformi, 5 μm alto, 4 μm lato. Ascospores brunneae, ellipsoideo-inequilaterales



Figs. 4–9. *Xylaria kaumanae*. – 4. Ascospore with germ slit. – 5. Ascospore showing terminal appendages. – 6. Ascus apical ring. – 7. Conidia. – 8. Conidiophores in palisade. – 9. Conidiophore bearing conidium. – Figs. 4–6 by BF. Figs. 7–9 by DIF. Fig. 6 from Melzer's reagent mount. All other figs. from water mounts. – Scale bars: 4 = 5.6 μm ; 5 = 5 μm ; 6 = 5 μm ; 7–9 = 5.8 μm .

vel fusiformes, interdum in una extremitate vel utrinque cellula minuta hyalina ornati, leves, (22–)25–27(–28) \times 6–7.5(–9) μm (mensura media 20 ascosporarum = 26 \times 6.5 μm), rima germinativa recta brevissima praeditae. Paraphyses angustae abundantes.

Stromata subglobose to irregular, up to 3 cm diam, one to three from short unbranched or branched stipe up to 4 cm long and 0.5 cm diam. – Stromata externally Dark Mouse Grey (119) with minute white squamules, internally Buff (45), white around the perithecia, becoming hollow at maturity. Surface smooth. Texture carbonaceous. – Perithecia globose, up to 0.8 mm diam. –

Ostioles umbilicate. – Asci eight-spored, stipitate, 185–220 μm total length, 8–9 μm wide, the spore-bearing part 105–150 μm long, with ascus apical ring staining blue in Melzer's iodine reagent, urn-shaped, 5 μm high, 4 μm wide. – Ascospores brown, ellipsoid-inequilateral to fusoid, some with a tiny cellular appendage on one or both ends, (22–)25–27(–28) \times 6–7.5(–9) μm (average of 20 ascospores = 26 \times 6.5 μm), with germ slit much less than length of ascospore. – Paraphyses narrow, abundant.

Anamorph produced on immature clavae, forming a white coating that eventually breaks up into scales and disappears. – Conidiophores in compact layer, sparingly branched, 25–35 \times 3–4.5 μm , producing conidia holoblastically in sympodial sequence. – Conidia hyaline, smooth, subcylindric to ellipsoid with inconspicuous flattened base indicating former point of attachment to conidiogenous cell, (7–)9–11 \times (2.5)–3(–3.5) μm .

Colony on OMA at ca. 20 °C and ca. 12 hr natural sunlight and 12 hr darkness covering 9 cm diam Petri plate in 2 wk, at first lanose, uniformly white, at length blackening from center outward, then forming stromata around the perimeter of the blackened area. Colony beyond stromata and extending to margin of plate remaining white and eventually producing stromata. – Reverse essentially uncolored. – Stromata acutely conic, up to 3 cm \times 2 mm at base, at first white, becoming black. – Conidia not observed.

Etymology. – For the location where the fungus was collected.

Specimens examined. – United States, Hawaii, Island of Hawaii, Kaunamana, Hilo, on log of *Casuarina equisetifolia* L. ex J. R. & G. Forst., R. Gerber 2 Jan 2002, D. E. Hemmes 2244, holotype BISH; isotype WSP 70312; ibidem, R. Gerber 25 Apr 2002, D. E. Hemmes 2298, immature, WSP 70313. Dried culture from holotype deposited in WSP.

Discussion

Xylaria kaumanae seems related to *X. enterogena* (Mont.) Fr. and *X. telfairii* Berk & Fr., based on the smooth stromata that become hollow prior to perithecial maturity. In spite of color differences in the stromata of the latter two species Dennis (1956) considered them conspecific as *X. telfairii*. Callan & Rogers (1990) cultured material conforming to *X. enterogena* and *X. telfairii*, respectively. The cultures were virtually identical, thus tending to support Dennis' opinion (1956) of conspecificity. Cultures of *X. kaumanae* are strikingly similar to those of *X. enterogena* and *X. telfairii* (Callan & Rogers, 1990; see especially Figs. 72 and 73). Stromata likewise resemble in gross surface morphology those of *X. cranioides* (Sacc. & Paol.) Dennis. Cultures of this species, however, produce a *Xylocor-*

emium J. D. Rogers anamorph (Ju & Rogers, 2001). There is likewise a strong resemblance of stromata of *X. kaumanae* to those of *X. dealbata* Berk. & Curt. [= *X. fockei* (Miq.) Cooke]. However, flesh of this latter species darkens. Ascospores of the latter species, moreover, have acute apices and cultures produce an anamorph on pulvinate stromata (Rogers & al., 1987); ascospores of *X. kaumanae* have a cellular appendage on one or both ends, resembling those of the *Rosellinia aquila* (Fr.) de Not. complex (Rogers & Stiers, 1974). Such ascospores have not been reported among the other *Xylaria* species discussed herein.

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