



New Localities for Hawaiian Mosses

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rows, about 1 mm long; stomata superficial, at extreme base of the urn; peristome teeth rusty or red-brown, split to a low basal membrane into 32 long, filiform, densely spiculate, anastomosed divisions spirally wound together, about 1-1.3 mm long. Spores spherical, 11-15 $\mu$ , smooth or nearly so. Calyptrae cucullate, smooth, naked.

PERU. PROV. LIMA: Depto. Lima, Cascadas de Barranco, terreno húmedo, afloramiento de agua dulce, ambiente calcáreo, alt. 5 m, A. Malaga, 4 Oct. 1964 (MICH—holotype).

## New Localities for Hawaiian Mosses

DOUGLAS R. SMITH<sup>1</sup>

*Abstract. One hundred twelve mosses are reported from Hawaii with 78 as new additions to the individual floras of the six larger islands. Eighteen species previously known from a single island have been found on other islands. Glossadelphus, previously known only from Maui, is reported from Kauai, Oahu, and Molokai.*

Recent contributions to the Hawaiian moss flora (Crosby, 1965; Hörmann, 1964; Schultze-Motel, 1962) have supplemented known distributions within the islands since Bartram's publications (1933, 1939, 1942, 1952). The few new additions to the individual island floras indicate that mosses from easily accessible localities are now fairly well known. This report is based primarily upon collections made by Dr. Otto Degener in somewhat isolated parts of the islands of Kauai, Oahu, Molokai, Lanai, Maui, and Hawaii during 1950-1955. Degener was assisted in much of this work by Miss Amy B. H. Greenwell and others. Because of the abundance of duplicate gatherings in Degener's material, only a few representative collections are cited from each station. These and portions of all other collections cited have been deposited in the Miami University Herbarium, with a representative series in the New York Botanical Garden, the University of Massachusetts, and the Bernice P. Bishop Museum, as requested by the collector. Some private collections were made available to supplement this report and permission to cite these is acknowledged, for they fill distributional gaps.

A careful search for small species in *Fissidens* resulted in seven new island records for this genus. Degener's collections of *Glossadelphus*, ". . . confined to the island of Maui" (Bartram, 1933), extend the range of this genus to three other islands — Kauai, Oahu, and Molokai. The number of additions to individual island bryofloras is: Kauai (20), Oahu (16), Molokai (13), Lanai (2), Maui (2), and Hawaii (25). A summary of the apparent total number of species reported for each island to date is: Kauai (100), Oahu (118), Molokai (67), Lanai (31), Maui (176), and Hawaii (138). It is clear that additional collections from more remote areas will expose new interisland range extensions as well as an occasional addition to the bryoflora of the state.

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In general, the sequence and nomenclature follow Bartram (1933) as has been customary in recent treatments of the Hawaiian moss flora. The "manual name" is given in parentheses where another name is now used as a result of recent taxonomic work, new interpretations of the Code, or where I have returned to the original spelling.

- Fissidens hawaïicus* Bartr. KAUAI: Alakai Swamp, *Degener 22301E*. OAHU: Sacred Falls, *Miller 3331*. MOLOKAI: Waikolu Valley, 4,000 ft., *Miller 3825*. MAUI: Haleakala, Koolau Gap, 7,500 ft., *Miller 4263*. HAWAII: 12 mi. below Kulani Prison, *Miller 5222*. New to Molokai and Hawaii.
- Fissidens oahuensis* Bartr. KAUAI: Halemanu Cliff lookout, 3,000 ft., *Miller 3019*. OAHU: Poamoho Gulch, 500 ft., *Degener 21199*. MAUI: Hanakalau Trail, 1,500 ft., *Miller & Lamberton 3919*. New to Kauai. Additionally reported from Hawaii.
- Fissidens baldwinii* Broth. KAUAI: Waioli Stream, *Degener 22304H*. OAHU: Kawaiiki Ditch Trail 1,000 ft., *Miller 2313*. MOLOKAI: Pipe-line Trail, upper Waikolu Valley, 4,000 ft., *Miller 3824*. New to Molokai. Additionally reported from Maui.
- Fissidens delicatulus* Angst. KAUAI: Moloaa Forest Reserve, *Degener 22309D*; Alakai Swamp, *Degener 22301E*. OAHU: E spur of E ridge, W branch of East Makaleha Valley, 1,800 ft., *Degener 20877B*. Additionally reported from Lanai, Maui, and Hawaii.
- Fissidens pacificus* Angst. KAUAI: Wainiha Valley, 750 ft., *Miller 3247*. OAHU: Kaipapau Valley, 1,100 ft., *c. fr.*, *Miller 2386*. HAWAII: Honokanenui Valley, Kohala, *Degener 22356F*. New to Kauai and Hawaii. Additionally reported from Maui. This is the first reported discovery of a sporophyte.
- Fissidens mauïensis* C. Müll. KAUAI: S of Nawiliwili Bay, *Degener 22291B*. OAHU: E spur of E ridge, W branch of East Makaleha Valley, 1,800 ft., *Degener 20876C*. New to Kauai and Oahu. Previously known only from Maui.
- Fissidens lancifolius* Bartar. OAHU: Makaleha Valley, 1,600 ft., *Miller 2674*. MOLOKAI: W rim of Waikolu Canyon, 4,000 ft., *Miller 3759*. MAUI: Haleakala, 9 mi. W of Hana, 1,500 ft., *Miller 4528*. New to Molokai.
- Ceratodon purpureus* (Hedw.) Brid. KAUAI: Moloaa Forest Reserve, *Degener & Greenwell 22309F*. New to Kauai. Additionally reported from Maui and Hawaii.
- Trematodon latineris* C. Müll. HAWAII: Near Kulani Prison, 4,000 ft., *Degener 22281B*. Additionally reported from Kauai, Oahu, Molokai, and Maui.
- Dicranella hochreutineri* Card. KAUAI: Mohihi Road, *Degener & Greenwell 22287C*. HAWAII: Kohala, W of Halona cone, 3,750 ft., *Lohman H521*. Additionally reported from Oahu and Maui.
- Dicranella hillebrandii* (C. Müll.) Broth. MOLOKAI: Cliffs overlooking Kalaupapa, *Degener 24384*.
- Dicranella integrifolia* (Broth.) Bartr. HAWAII: Kulani Prison Road, 4,000 ft., *Degener 21755B*. Additionally reported from Oahu, Molokai and Maui.
- Campylopodium euphorocladum* (C. Müll.) Besch. KAUAI: Alakai Swamp, *Degener & Greenwell 22301G*. HAWAII: Kohala, Pololu-Honokanenui region, *Degener 22341G*. New to Kauai. Additionally reported from Oahu, Molokai, and Maui.
- Campylopus skottsbergii* Broth. HAWAII: Pololu Valley, Kohala, *Degener & Greenwell 22354C*; Waipio Valley, *Degener 22278*. New to Hawaii. Additionally reported from Kauai, Oahu and Maui.
- Campylopus introflexus* (Hedw.) Brid. KAUAI: S of Nawiliwili Bay, *Degener 22288B*, *22289*. HAWAII: Above Kulani Prison, *Degener 21933D*, *22335D*, *22338A*. Additionally reported from Oahu.
- Campylopus densifolius* Angst. KAUAI: Kōpiwai Trail, Kōkee region, *Degener & Greenwell 21621AA*; along Mohihi Road, *Degener & Greenwell 22285A*; Alakai Swamp, *Degener & Greenwell 22302*, *22307B*, *22346B*. MOLOKAI: Cliffs above Kalaupapa, *Degener 24382*; head of Waikolu Valley, rainy region, *Degener & Tousley 24403*. HAWAII: Above Kulani Prison, *Degener & Greenwell 21933E*; Pololu-Honokanenui region, Kohala, *Degener & Greenwell 22343C*, *22348A*; Pololu Valley, Kohala, *Degener & Greenwell 22354D*. Additionally reported from Oahu and Maui.

The following two species are mostly separable on the basis of Bartram's key, but further studies are needed to show whether they are variants of the same species. For now it seems reasonable to retain both species.

- Campylopus hawaiiico-flexuosus* (C. Müll.) Par. KAUAI: E of Kalalau Lookout, *Degener & Greenwell* 21620. S of Nawiliwili Bay, *Degener* 22291; Kalalau rim near lookout, *O. & I. Degener* 23887; Alakai Swamp, *Degener & Greenwell* 22295E, 22296. MOLOKAI: Head of Waikolu Valley, *Degener & Tousley*, 24402, 24452. MAUI: Above McGregor, W Maui, 2,500-4,000 ft., *Degener* 24531. HAWAII: In *kipuka* on S side of Saddle Road near milepost 16, *Degener* 22277D; above Kulani Prison, *Degener & Greenwell* 22358. Additionally reported from Oahu.
- Campylopus purpureo-flavescens* (C. Müll.) Par. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22343C; above Kulani Prison, *Degener* 22363B. Additionally reported from Kauai, Oahu, Molokai and Maui.
- Campylopus wheeleri* (C. Müll.) Hampe ex Par. KAUAI: S of Nawiliwili Bay, *Degener* 22288A; Alakai Swamp, *Degener & Greenwell* 22346A. HAWAII: Makaha Falls, Akaka, *Kikudome* 36B. New to Hawaii. Additionally reported from Maui.
- Campylopus boswellii* (C. Müll.) Par. KAUAI: Alakai Swamp, *Degener & Greenwell* 22297. New to Kauai. Additionally reported from Molokai and Maui.
- Campylopus richardii* Brid. [= *C. umbellatus* (Arnott) Par.] OAHU: SW side of Poamoho Gulch, SW of Brodie Camp, 500 ft., *Degener* 21197, 21204. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22355B, 22356F; above Kulani Prison, *Degener & Greenwell* 22359. Additionally reported from Kauai, Lanai and Maui.
- Campylopus exasperatus* (Nees & Blum.) Brid. KAUAI: NE of Kapalikea, Hanalei, *Degener* 20448. HAWAII: Along Saddle Road, 21 mi. from Hilo, *Degener* 19924. New to Kauai. Additionally reported from Oahu and Maui.
- Campylopus tubulosus* Bartr. KAUAI: S of Nawiliwili Bay, *Degener* 22288F. HAWAII: Waipio Valley, *Degener*, 22278C; Keauohana Forest Reserve, near Pahoa, Puna, *Degener* 22282. New to Hawaii. Additionally reported from Maui.
- Dicranodontium falcatum* Broth. OAHU: S Kipapa Ridge Trail, Koolau Mts., 2,000 ft., *Miller* 2100, 2133; Wahiawa, central ridge to Mt. Kaala, 3,900 ft., *Chock & Lambertson* 477M. New to Oahu. Additionally reported from Kauai, Maui and Hawaii.
- Dicranum speirophyllum* Mont. KAUAI: E of Kalalau Lookout, *Degener & Greenwell* 21620C; Kalalau Lookout, *Degener* 22284. MAUI: Koolau Gap, Haleakala, 7,500 ft., *Lohman* 4252A. HAWAII: Above Kulani Prison, *Degener & Greenwell* 22335, 22338. Additionally reported from Oahu and Molokai.
- Leucoloma molle* (C. Müll.) Mitt. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22356A, 22357A. New to Hawaii. Additionally reported from Oahu and Maui.
- Octoblepharum albidum* Hedw. KAUAI: Second point E of Haupu, Kipu, 1,000-1,700 ft., *Miller* 3097. New to Kauai. Additionally reported from Oahu and Maui.
- Leucobryum gracile* Sull. KAUAI: E of Kohala Lookout, *Degener & Greenwell* 21620B; along Mohihi Road, *Degener & Greenwell* 22285, 22287A; S of Nawiliwili Bay, *Degener* 22286B, 22289; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22309, 22310; Alakai Swamp, *Degener & Greenwell* 22295, 22301, 22307, 22346E. OAHU: S Haleauau Valley, below Kaala summit, *Degener* 21217E. HAWAII: Kulani Prison Road, 4,000 ft., *Degener* 21755F; near Pahoa, Puna, in woods, *Degener* 21758; Keauohana Forest Reserve near Pahoa, Puna, *Degener* 22282E; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22348. Additionally reported from Molokai, Lanai, and Maui.
- Leucobryum solfatarae* C. Müll. [= *L. hawaiiense* var. *solfatarae* (C. Müll.) Bartr.] MOLOKAI: Head of Waikolu Valley, *Degener & Tousley* 24446. MAUI: Above McGregor, 2,500-4,000 ft., *Degener* 24536. Additionally reported from Kauai and Hawaii.
- Leucobryum solfatarae* var. *hawaiiense* (Reichardt) Wijk & Marg. [= *L. hawaiiense* (Reichardt) Bartr.] KAUAI: S of Nawiliwili Bay, *Degener* 22286D. MOLOKAI: Head of Waikolu Valley, rainy region, *Degener & Tousley* 24404; Nualele Valley, rain forest E of Waikolu, *Degener et al.* 24422, 24425, 24430. Additionally reported from Oahu, Maui, and Hawaii. Reichardt's original spelling of the name for this taxon was "*hawaiiensis*" (Reichardt, 1877), not "*hawaiiense*" (Wijk & Margadant, 1962).
- Leucobryum pachyphyllum* C. Müll. KAUAI: Alakai Swamp, *Degener* 22301B, *Degener & Greenwell* 22303; S of Nawiliwili Bay, *Degener* 22286C. Additionally reported from Oahu, Molokai, Lanai, and Maui.
- Syrrophodon oahuensis* Broth. HAWAII: Kulani Prison Road, 4,000 ft., *Degener* 21755C. MAUI: 9 mi. W of Hana, 1,500 ft., Haleakala, *Miller* 4547. New to Hawaii and Maui. Additionally reported only from Oahu.

- Syrrhopodon hawaiiicus* C. Müll. MOLOKAI: Pipe-line trail, head of Waikolu Valley, 4,000 ft., Miller 3830. New to Molokai. Additionally reported from Oahu, Maui, and Hawaii.
- Calymperes tenerum* C. Müll. OAHU: Papali Gulch, Hauula, Koolau Range, 1,500 ft., Miller 2600. HAWAII: Keauohana Forest Reserve near Kalapana, Miller & Lamberton 5080; Kalapana Beach, Miller & Lamberton 5085. New to Oahu and Hawaii. Additionally reported from Kauai and Maui.
- Merceyopsis crassinervis* (Broth.) Bartr. HAWAII: Above Kulani Prison, Mauna Loa, Degener & Greenwell 21933A; summit of Hualalai, Greenwell 185. New to Hawaii. Additionally reported from Oahu and Maui.
- Anoetangium euchloron* (Schwaegr.) Mitt. KAUAI: Ridge behind Papaa, Moloaa Forest Reserve, Degener & Greenwell 22309. OAHU: SW side of Poamoho Gulch, SW of Brodie Camp, 500 ft., Degener 21198. HAWAII: Above Kulani Prison, Mauna Loa, Degener & Greenwell 21933B; Waipio Valley, Degener 22278E; Pololu-Honokanenui Valley, Kohala, Degener & Greenwell 22335A, 22341C, 22353C, 22360A. New to Kauai. Additionally reported from Molokai, Lanai, and Maui.
- Anoetangium haleakalae* (C. Müll.) Par. KAUAI: Ridge behind Papaa, Moloaa Forest Reserve, Degener & Greenwell 22309C. MOLOKAI: Cliffs and ledges overlooking Kalaupapa, Degener et al. 24387. HAWAII: Pololu Valley, Kohala, Degener & Greenwell 22340. New to Kauai and Molokai. Additionally reported from Oahu and Maui.
- Weissia viridula* Hedw. OAHU: SW side of Poamoho Gulch, SW of Brodie Camp, 500 ft., Degener 21201, 21207. HAWAII: Above Kulani Prison, Mauna Loa, Degener & Greenwell 21933C. Additionally reported from Kauai.
- Weissia ovalis* (Williams) Bartr. KAUAI: S of Nawiliwili Bay, Degener 22288C. Additionally reported from Oahu, Molokai, Lanai, Maui, and Hawaii.
- Trichostomum maiiense* Broth. KAUAI: S of Nawiliwili Bay, Degener 22288D. MOLOKAI: Cliffs and ledges overlooking Kalaupapa, Degener et al. 24383. New to Molokai. Additionally reported from Oahu, Maui, and Hawaii.
- Trichostomum oblongifolium* Bartr. OAHU: E spur of E ridge, W branch of East Makaleha Valley, Degener 20878D. HAWAII: Honokanenui Valley, Kohala, Degener & Greenwell 22342C, 22353B. Additionally reported from Maui.
- Pseudosymblepharis maiiensis* (C. Müll.) Broth. OAHU: E spur of E ridge. W branch of East Makaleha Valley, Degener 20878B. HAWAII: Pololu-Honokanenui region, Kohala, Degener & Greenwell 22350, 22351B. New to Hawaii. Additionally reported from Maui.
- Tortella caespitosa* (Schwaegr.) Limp. OAHU: Koko Head, 100 ft., in gulches, Miller & Lohman 2026. New to Oahu. Additionally reported from Lanai, Maui, and Hawaii.
- Barbula vinealis* ssp. *cylindrica* (Tayl.) Podp. OAHU: DuPont Trail, N slope of Kaala, 3,000 ft., Degener 20530. New to Oahu. Additionally reported only from Maui.
- Tortula princeps* De Not. HAWAII: Edges of caves and surrounding area, Mauna Kea, 13,000 ft., Greenwell B146. New to Hawaii. Additionally reported from Maui.
- Tortula alpina* var. *inermis* (Milde) De Not. HAWAII: NE of Halepohaku, Mauna Kea, on exposed lava, 9,500 ft., Degener 20425A, 20427. Additionally reported from Maui.
- Rhacomitrium lanuginosum* var. *pruinatum* Hook. f. & Wils. OAHU: Waianae Mts., Mt. Kalona, E ridge on exposed rocks, 950 m, Fosberg 13004. HAWAII: In *kipuka* on S side of Saddle Road near Milepost 16, Degener 22277B. New to Oahu. Additionally reported from Kauai, Molokai and Maui.
- Funaria subintegra* Broth. KAUAI: Kokee Camp, 3,700 ft., Miller 3007. HAWAII: Greenwell Ranch above Captain Cook, 2,500-5,000 ft., Miller & Lamberton 5380. Additionally reported from Oahu, Molokai, Lanai, and Maui.
- Pohlia maiiensis* (Broth.) Schultze-Mot. HAWAII: Honokanenui Valley, Kohala, Degener & Greenwell 22356C. New to Hawaii. Additionally reported from Maui.
- Bryum vino-viride* Bartr. HAWAII: Papaloa, above Captain Cook, Kona, 5,000 ft., Degener 20423. New to Hawaii. Additionally reported from Kauai and Oahu.
- Bryum megalostegium* Sull. KAUAI: E of Hanalei, road bank, 400 ft., Degener & Hatheway 20466. Additionally reported from Oahu, Maui and Hawaii.
- Bryum atrovirens* Vill. ex Brid. [= *B. erythrocarpum* Schwaegr.] MAUI: Near Hana, Degener 21928. HAWAII: Kilauea region, on bare *pahoehoe* lava, O. & I. Degener 23817. Additionally reported from Oahu.
- Bryum caespiticium* Hedw. HAWAII: NW of Halepohaku, Mauna Kea, in crevices of lava, 9,500 ft., Degener 20425B. New to Hawaii. Additionally reported from Maui.



- Bryum decaisnei* Dozy & Molk. HAWAII: Above Kulani Prison, *Degener & Greenwell* 22338B. New to Hawaii. Additionally reported from Maui.
- Bryum argenteum* var. *lanatum* (P. Beauv.) B.S.G. OAHU: Kealia Trail, Kealia, Waianae Mts., 1,700 ft., *Miller* 2554; summit of Mt. Kaala, 4,000 ft., *Miller* 1431. New to Oahu. Additionally reported from Kauai, Maui and Hawaii.
- Rhodobryum giganteum* (Hook.) Schimp. MAUI: Above McGregor, 2,500-4,000 ft., *c. fr.*, *Degener* 24533. Additionally reported from Kauai and Oahu. This is the first report of a sporophyte from Hawaii.
- Mnium rostratum* Schrad. KAUAI: Waioli Stream, *Degener & Greenwell* 22304F. OAHU: Kaipapau Valley, 1,100-1,500 ft., *Miller* 2362; E West Manoa Falls, Manoa Valley, *Miller* 2574; Papali Gulch, Hauula, Koolau Range, 1,500 ft., *Miller* 2629. New to Kauai and Oahu. Additionally reported from Maui.
- Rhizogonium pungens* Sull. KAUAI: S of Nawiliwili Bay, *Degener* 22286A; Waioli Stream, *Degener & Greenwell* 22298D; Alakai Swamp, *Degener & Greenwell* 22301. HAWAII: Keauohona Forest Reserve near Pahoia, Puna, *Degener* 22282A; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22343A. Additionally reported from Oahu, Molokai, Lanai, and Maui.
- Rhizogonium spiniforme* (Hedw.) Bruch. KAUAI: Waioli Stream, *Degener & Greenwell* 22304A; Alakai Swamp, *Degener & Greenwell* 22346. OAHU: Near Summit Ridge overlooking head of Makua Valley, *Degener* 21164; S Haleauau Valley below Kaala summit, *Degener* 21217. HAWAII: Honokanenui Valley, Kohala, *Degener & Greenwell* 22356E. Additionally reported from Molokai, Lanai, and Maui.
- Sciaromium tricostata* (Sull.) Mitt. [= *Limbella tricostata* (Sull.) C. Müll.] KAUAI: Along Mohihi Road, *Degener & Greenwell* 22285, 22287; Alakai Swamp, *Degener & Greenwell* 22302A. OAHU: Central Haleauau Gulch, S of Kaala, partly and completely submerged in rock stream, 3,100 ft., *Degener & Caimbec* 20679; S Haleauau Valley below Kaala summit, *Degener* 21217A. MOLOKAI: Nualele Valley, rain forest, *Degener et al.* 24369. MAUI: Above McGregor, 2,500-4,000 ft., *Degener* 24526, 24529, 24542. Additionally reported from Hawaii. This is the oldest legitimate name for the taxon according to the *Index Muscorum*.
- Philonotis hawaïca* (C. Müll.) Broth. KAUAI: S of Nawiliwili Bay, *Degener* 22288E. LANAI: NE summit, *Degener* 21929D. MAUI: Keanae, dripping rocks, *O. & I. Degener* 23821. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22335, 22356B. New to Lanai. Additionally reported from Oahu and Molokai.
- Philonotis falcata* (Hook.) Mitt. OAHU: S Haleauau Valley below Kaala summit, *Degener* 21217B. Additionally reported from Kauai, Molokai, and Maui.
- Philonotis turneriana* (Schwaegr.) Mitt. OAHU: E spur of E ridge, W branch of East Makaleha Valley, *Degener* 20878E. MOLOKAI: Nualele rain forest, *Degener et al.* 24371, 24372; head of Waikolu Valley, rainy region, *Degener & Tousley* 24367. HAWAII: Waipio Valley, *Degener* 22278D; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22262A, 22335C, 22351, 22362A; Below Kulani Prison, dense forest, 4,000 ft., *Degener* 22283; E of Honokanenui Valley, Kohala, *Degener & Greenwell* 22342. Additionally reported from Kauai, Lanai, and Maui.
- Zygodon tetragonostomus* A. Br. HAWAII: Above Kulani Prison, Mauna Loa, *Degener & Greenwell* 21933, 22364. Additionally reported from Oahu and Maui.
- Orthotrichum hillebrandii* C. Müll. OAHU: S Kipapa Ridge Trail, Koolau Mts., 1,200-2,500 ft., *Miller* 2101, 2108. New to Oahu. Additionally reported from Maui and Hawaii.
- Macromitrium brevisetum* Mitt. KAUAI: Waioli Stream, *Degener & Greenwell* 22305A. MOLOKAI: Mapulehu Valley, *Degener & Tam* 22467. New to Molokai. Additionally reported from Oahu, Maui, and Hawaii.
- Macromitrium emersulum* C. Müll. MOLOKAI: Mapulehu Valley, *Degener & Tam* 24473. New to Molokai. Additionally reported from Kauai, Oahu, Maui, and Hawaii.
- Macromitrium piliferum* Schwaegr. KAUAI: Waioli Stream, *Degener & Greenwell* 22304D; Ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22309B; Alakai Swamp, *Degener & Greenwell* 22300B, 22346C. MOLOKAI: Nualele Valley, rain forest, *Degener et al.* 24392, 24420; Waikolu Valley, rainy region, *Degener & Tousley* 24407. LANAI: NE summit, *Degener* 21929C. HAWAII: Kulani Prison Road, 4,000 ft., *Degener* 21754B, 21755D; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22343, 22353C. Additionally reported from Oahu and Maui.

- Macromitrium owahiense* C. Müll. KAUAI: Mohihi Road, *Degener & Greenwell* 22287D; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22309B. MOLOKAI: Head of Waikolu Valley, epiphytic, *O. & I. Degener* 23837. Additionally reported from Oahu, Lanai, Maui and Hawaii.
- Rhacopilum cuspidigerum* (Schwaegr.) Mitt. KAUAI: E side of Hanalei Valley, road cut, 400 ft., *Degener & Hatheway* 20465, 20471; S of Nawiliwili Bay, *Degener* 22288, 22294; Waioli Stream, *Degener & Greenwell* 22298; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22301B, 22309. OAHU: E spur of E ridge, W branch of East Makaleha Valley, *Degener* 20876A; Kahana Valley, *Degener & Silva* 21080; SW side of Poamoho Gulch, SW of Brodie Camp, 500 ft., *Degener* 21200, 21206; S. Haleauau Valley, below Kaala summit, *Degener* 21217C. MOLOKAI: Mapulehu Valley, *Degener & Tam* 24373, 24468, 24472; cliffs and ledges overlooking Kalaupapa, *Degener* 24378; Waikolu Valley, *Degener & Tousley* 24411, 24444, 24445; Nualele Valley, *Degener et al.* 24459. HAWAII: Near Pahoa, Puna, *Degener* 21758A; Honokanenui Valley, Kohala, *Degener & Greenwell* 22353; Waipio Valley, *Degener* 22278A; E of Honokanenui Valley, Kohala, *Degener & Greenwell* 22360; Pololu Valley, Kohala, *Degener & Greenwell* 22339, 22340, 22354B; Kaumana Caves, near Hilo, *Degener* 22276C. Additionally reported from Lanai and Maui. Reported as "*Rhacomitrium cuspidigerum*" by Crosby (1965).
- Trachypus bicolor* Reinw. & Hornsch. HAWAII: Hualalai, Mt. Laalau, *Kondo & Miller s.n.* New to Hawaii. Additionally reported from Maui.
- Aerobryopsis longissima* (Dozy & Molk.) Fleisch. KAUAI: Waioli Stream, *Degener & Greenwell* 22298C; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22309E. OAHU: S Haleauau Valley below Kaala summit, *Degener* 21217D. MOLOKAI: Nualele Valley, rain forest, E of Waikolu, *Degener et al.* 24417, 24418. HAWAII: Near Pahoa, Puna in woods, *Degener* 21758D; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22335B, 22354. Additionally reported from Lanai and Maui.
- Barbella trichophora* (Mont.) Fleisch. *in Broth.* HAWAII: E of Honokanenui Valley, Kohala, *Degener & Greenwell* 22342A; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22355D, 22362B. Additionally reported from Kauai, Oahu, and Molokai.
- Floribundaria floribunda* (Dozy & Molk.) Fleisch. OAHU: S Haleauau Valley below Kaala summit, *Degener* 21217E. HAWAII: Dry water course, Holokaolele, Kona, *Greenwell* B109. New to Hawaii. Additionally reported from Maui.
- Baldwinella kealeensis* (Reichardt) Bartr. KAUAI: S of Nawiliwili Bay, *Degener* 22291C. OAHU: Narrow gulch SW of Dillingham Ranch, Mokuleia, dark forest, 2,500 ft., *Degener* 21189; S Haleauau Valley below Kaala summit, *Degener* 21217B. MOLOKAI: Head of Waikolu Valley, *Degener & Tousley* 24449, 24451. HAWAII: Pololu-Honokanenui region, Kohala, *Degener* 22337. Additionally reported from Maui.
- Homaliodendron flabellatum* (Sm.) Fleisch. KAUAI: Kapiwai Trail, Kokee region, *Degener & Greenwell* 21621A; S of Nawiliwili Bay, *Degener* 22291A; Alakai Swamp, *Degener & Greenwell* 22295; Waioli Stream, *Degener & Greenwell* 22298, 22304B, 22308; Mohihi Road, *Degener & Greenwell* 22311. OAHU: E spur of E ridge, W branch of East Makaleha Valley, dark gulch, 1,800 ft., *Degener* 20876B, 20878F. MOLOKAI: Nualele Valley, *Degener et al.*, 24458. HAWAII: Below Kulani Prison, dense forest, 4,000 ft., *Degener* 22275. Additionally reported from Lanai and Maui.
- Thamnum speciosum* Broth. HAWAII: Greenwell Ranch, Kealakekua, 4,200-5,000 ft., *Greenwell* B-229. New to Hawaii. Additionally reported from Maui.
- Daltonia contorta* C. Müll. KAUAI: Kalalau Lookout, 4,000 ft., *Miller* 2818; Waimea, Alakai Swamp Trail, 4,000 ft., *Miller* 2883. MOLOKAI: NW of Mt. Kolekole, Kawela, 3,800 ft., *Miller & Lamberton* 3432; W rim of Waikolu Valley, 4,000 ft., *Miller & Lamberton* 3737, 3746; Mt. Kolekole, 3,700 ft., and below to 3,000 ft., Kawela, *Miller & Lamberton* 3681. HAWAII: Kohala Mts., Waimea Forest Reserve, 4,000 ft., *Miller & Lamberton* 4877; in *kipuka* in 1843 lava flow, Saddle Road, 15 mi. from Hilo, *Miller & Lamberton* 5047. New to Kauai, Molokai, and Hawaii. Previously known only from Maui.
- Daltonia rufescens* Broth. OAHU: Halawa Trail, Koolau Mts., 2,300 ft., *Miller* 2781F. HAWAII: Near Halepohaku, Mauna Kea, 8,000 ft., *Lamberton* 1345; Kohala Mts., forest gate above Waimea 3,000 ft., *Miller & Lamberton* 4819A. New to Oahu and Hawaii. Previously known only from Maui.
- Daltonia pseudostenophylla* Bartr. OAHU: Halawa Trail, Koolau Mts., 2,300 ft., *Miller* 2786A. HAWAII: 6 mi. below Kulani Prison, *Miller & Lamberton* 5262B; in *kipuka* in 1843 lava

- flow, Saddle Road, 15 mi. from Hilo, *Miller & Lamberton 5047* (mixed with *D. contorta*). New to Oahu and Hawaii. Previously known only from Maui.
- Distichophyllum paradoxum* (Mont.) Mitt. KAUAI: Waioli Stream, *Degener & Greenwell 22299B*. MOLOKAI: Head of Waikolu Valley, rainy region, *Degener & Tousley 24366*; Nualele Valley, *Degener et al. 24397, 24456*. HAWAII: Kulani Prison Road, 4,000 ft., *Degener 21754C, 21755*; near Pahoa, Puna, in woods, *Degener 21758C, 22282C*; below Kulani Prison, dense forest, 4,000 ft., *Degener 22281A*. Additionally reported from Oahu and Maui.
- Distichophyllum freycinetii* (Schwaegr.) Mitt. MOLOKAI: Waikolu Valley, rainy region, *Degener & Tousley 24406*. HAWAII: Below Kulani Prison, dense forest, 4,000 ft., *Degener 22279*; Keauohana Forest Reserve, near Pahoa, Puna, *Degener 22282C*. Additionally reported from Kauai, Oahu, and Lanai.
- Hookeria acutifolia* Hook. & Grev. HAWAII: Kulani Prison Road, 4,000 ft., *Degener 21754A*. New to Hawaii. Additionally reported from Oahu and Maui.
- Hookeriopsis purpurea* (C. Müll.) Broth. HAWAII: Pauahi Clinkers, in old *aa* lava flows, 4,000 ft., *Greenwell B7A*. Additionally reported from Kauai, Oahu, Molokai, and Maui.
- Fabronia degeneri* Bartr. OAHU: Kealia Trail, Kealia, Waianae Mts., 1,700 ft., *Miller 2555*. HAWAII: Christ Church yard, 1,300 ft., *Greenwell B-34*. New to Oahu and Hawaii. Previously reported only from Molokai.
- Claopodium whippleanum* (Sull.) Ren. & Card. [= *Claopodium hawaiiense* Williams.] KAUAI: W side, Nonou, Wailua, *St. John & Bishop 24942, 24946*. New to Kauai. Additionally reported from Oahu and Maui.
- Thuidium plicatum* Mitt. KAUAI: Kōpiwai Trail, Kōkee region, *Degener & Greenwell 21621A*; Waioli Stream, *Degener & Greenwell 22305*; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell 22310A*; Mohihi Road, *Degener & Greenwell 22311A*. HAWAII: Puu Oo Trail, 6,000 ft., *Degener 20713*; in *kipuka*, S side of Saddle Road near milepost 16, *Degener 22277C*; Pololu-Honokanenui region, Kohala, *Degener 22337A, 22354A*. Additionally reported from Oahu, Molokai, and Maui.
- Thuidium hawaiiense* Reichardt. [= *T. hawaiiense* Reichardt.] KAUAI: Alakai Swamp, *Degener & Greenwell 22295C*; Waioli Stream, *Degener & Greenwell 22304E*. OAHU: E spur of E ridge, W branch of East Makaleha Valley, dark gulch, 1,800 ft., *Degener 20876, 20877*. MOLOKAI: Nualele Valley rain forest, *Degener et al. 24393*; head of Waikolu Valley, *Degener & Tousley 24443*. Additionally reported from Lanai, Maui, and Hawaii. The original spelling of the name for this taxon was "*hawaiiense*" (Reichardt, 1877).
- Pleuropus wilkesianus* (Sull.) Broth. KAUAI: Waioli Stream, *Degener & Greenwell 22298B*. MOLOKAI: Cliffs and ledges overlooking Kalaupapa, *Degener et al. 24380*. HAWAII: Kaumana Caves, near Hilo, *Degener 22276*; above Kulani Prison, *Degener & Greenwell 22338C*; Pololu-Honokanenui region, Kohala, *Degener & Greenwell 22355C*. Additionally reported from Oahu, Lanai, and Maui.
- Pleuropus wilkesianus* var. *sciuroides* (C. Müll.) Bartr. LANAI: NE summit of Lanai, *Degener 21929*. HAWAII: Honokanenui Valley, Kohala, *Degener & Greenwell 22353A*. Additionally reported from Kauai, Oahu, Molokai, and Maui.
- Brachythecium rutabulum* (Hedw.) B.S.G. MAUI: Above McGregor, W Maui, 2,500-4,000 ft., *Degener 24532, 24537*. Known only from Maui.
- Brachythecium hawaiiicum* Bartr. HAWAII: Edges of caves and surrounding area, Mauna Kea, 13,000 ft., *Greenwell B149*. New to this altitude on Mauna Kea. Additionally reported from Maui.
- Eurhynchium selaginellifolium* (C. Müll.) Bartr. KAUAI: Waioli Stream, *Degener & Greenwell 22299B, 22305*. OAHU: S Haleauau Valley below Kaala summit, *Degener 21237, 21217F*; E spur of E ridge, W branch of East Makaleha Valley, dark gulch, 1,800 ft., *Degener 20878*. MOLOKAI: Mapulehu Valley, *Degener & Tam 24472, 24475, 24476*; Nualele Valley rain forest, *Degener et al. 24394*. HAWAII: Kaumana Caves, near Hilo, *Degener 22276A*; Pololu-Honokanenui region, Kohala, *Degener & Greenwell 22351A, 22339A*. New to Molokai. Additionally reported from Maui.
- Rhynchostegiella hawaiiica* (C. Müll.) Broth. OAHU: S Haleauau Valley, below Kaala summit, *Degener 21217G*. Known only from Oahu.
- Entodon solanderi* (Angst.) Jaeg. KAUAI: Wainiha Valley, below Honoona Pali, 750 ft., *Miller 3181*. New to Kauai. Additionally reported from Oahu and Maui.
- Entodon subcuspidatus* (Hampe ex C. Müll.) Bartr. KAUAI: Wainiha Valley, 0.5 mile below



- water intake, 750 ft., *Miller* 3225. New to Kauai. Previously reported only from Maui.
- Plagiothecium draytonii* (Sull.) Bartr. OAHU: Summit of Mt. Kaala, 4,000 ft., *Miller* 1409A. New to Oahu. Additionally reported from Kauai, Molokai, Maui, and Hawaii.
- Heterophyllum subauriculatum* (Hampe ex C. Müll.) Broth. HAWAII: Kohala Mts., Waimea Forest Reserve, 4,000 ft., *Miller & Lamberton* 4853; open *koa-Myoporum* forest area, Puulehua, South Kona, 5,000 ft., *Greenwell* B-80. New to Hawaii. Previously reported only from Maui.
- Brotherella opaedon* (Sull.) Broth. KAUAI: Mohihi Road, *Degener & Greenwell* 22285B; E of Kalalau Lookout, *Degener & Greenwell* 21620A. OAHU: S Haleauau Valley below Kaala summit, *Degener* 21217H. MAUI: Gulch above The Needle, Iao Valley, *Degener* 21930. HAWAII: Keauohana Forest Reserve, near Pahoa, Puna, *Degener* 22282B.
- Sematophyllum hawaiiense* (Broth.) Broth. KAUAI: Nualolo Trail, Kokee to Na Pali coast, 2,800-3,500 ft., *Miller* 2962; Halemanu Cliff Lookout, Waiahulu Stream, Waimea, 3,000 ft., *Miller* 3024, 3025. New to Kauai. Additionally reported from Oahu, Maui, and Hawaii.
- Acroporium fusco-flavum* (C. Müll.) Broth. KAUAI: Alakai Swamp, *Degener & Greenwell* 22297, 22300; Waioli Stream, *Degener & Greenwell* 22304C, 22306. MOLOKAI: Nualele Valley rain forest, E of Waikolu, *Degener et al.* 24421. HAWAII: Near Pahoa, Puna, in woods, *Degener* 21758B; Kulani Prison Road, 4,000 ft., *Degener* 21755A; below Kulani Prison, dense forest, 4,000 ft., *Degener* 22280A, 22281; Keauohana Forest Reserve, near Pahoa, Puna, *Degener* 22282D; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22335, 22352, 22362; above Kulani Prison, *Degener & Greenwell* 22358A. Additionally reported from Oahu, Lanai, and Maui.
- Trichosteleum hamatum* (Dozy & Molk.) Jaeg. KAUAI: Alakai Swamp, *Degener & Greenwell* 22297A. MAUI: E branch, Makapipi Gulch, 9 mi. W of Hana, 1,500-3,500 ft., *Miller & Lamberton* 4597. HAWAII: Kulani Prison Road, 4,000 ft., *Degener* 21754, 22280; in *kipuka*, S side of Saddle Road, near milepost 16, *Degener* 22277.
- Taxithelium mundulum* (Sull.) Bartr. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22343D. Additionally reported from Kauai, Oahu, and Lanai.
- Glossadelphus baldwinii* Broth. KAUAI: Second point E of Haupu, 1,000-1,400 ft., *Miller* 3086. OAHU: S Haleauau Valley, below Kaala summit, *Degener* 21217H; narrow Gulch SW of Dillingham Ranch, Mokuleia, dark forest, 2,000 ft., *Degener* 21189. MOLOKAI: Upper Waikolu Valley, Pipe-line Trail, 4,000 ft., *Miller* 3785. New to Kauai, Oahu, and Molokai. Previously reported only from Maui.
- Glossadelphus zollingeri* var. *flicaulis* (Fleisch.) Fleisch. KAUAI: Waioli Stream, *Degener & Greenwell* 22305AA; ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22310C. MOLOKAI: Head of Waikolu Valley, aquatic in rivulet, *O. & I. Degener* 23838. New to Kauai and Molokai.
- Ectropothecium sandwichense* (Hook. & Arnott) Mitt. KAUAI: Wainiha Valley, 0.5 mi. below water intake, 750 ft., *Miller* 3237. OAHU: Manoa Valley, E of West Manoa Falls, Koolau Mts., 800 ft., *Miller* 2074, 2075. HAWAII: Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22355A. New to Kauai and Oahu. Additionally reported from Maui.
- Ectropothecium viridifolium* Bartr. MAUI: Along Makamakaole Stream, W Maui, *Degener* 21151. New to Maui. Additionally reported from Oahu and Lanai.
- Isopterygium albescens* (Hook.) Jaeg. KAUAI: Alakai Swamp, *Degener & Greenwell* 22301C. Additionally reported from Oahu, Molokai, Lanai, Maui, and Hawaii.
- Vesicularia perviridis* (Angst.) C. Müll. [= *V. graminicolor* (Angst.) Broth.] KAUAI: Ridge behind Papaa, Moloaa Forest Reserve, *Degener & Greenwell* 22309G. OAHU: Near summit ridge overlooking head of Makua Valley, *Degener* 21164; S Haleauau Valley below Kaala summit, *Degener* 21217I. MOLOKAI: Mapulehu Valley, *Degener & Tam* 24374. LANAI: NE summit of Lanai, *Degener* 21929B; near wharf, S side of Lanai, dripping cliffs, 20 ft. from ocean, *Degener* 21931. MAUI: Makamakaole Stream, *Degener* 21151, 21153; Maliku, Maui, spring-fed ledges at ocean, *Degener* 21932. HAWAII: Kaumana Caves, near Hilo, *Degener* 22276B; Keauohana Forest Reserve, near Pahoa, Puna, *Degener* 22282C; Pololu-Honokanenui region, Kohala, *Degener & Greenwell* 22349, 22351C. New to Kauai, Molokai, and Lanai.
- Ctenidium decurrens* (Sull.) Broth. OAHU: E spur of E ridge, W branch of East Makaleha Valley, dark gulch, 1,800 ft., *Degener* 20878A. MAUI: Koolau Gap, Haleakala, 7,500-8,000 ft., *Miller & Lamberton* 4283. HAWAII: Above Kulani Prison, Mauna Loa, *Degener & Greenwell* 21933F, 22338C, 22361. Additionally reported from Kauai and Molokai.

- Ctenidium elegantulum* Broth. OAHU: Kaaawa Gulch, Mt. Kaala, Kamananui, 1,300 ft., *Miller* 2500. HAWAII: Honokanenui Valley, Kohala, *Degener & Greenwell* 22356. New to Oahu and Hawaii. Previously known only from Maui.
- Pogonatum baldwinii* (C. Müll.) Par. KAUAI: Near Kokee, road cut, *Degener* 20471; Mohihi Road, *Degener & Greenwell* 22287B. MOLOKAI: Head of Waikolu Valley, vertical bank, *O. & I. Degener* 23836. HAWAII: Below Kulani Prison, dense forest, 4,000 ft., *Degener* 22281. Additionally reported from Oahu, Lanai, and Maui.

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