

New Hawaiian bryophyte records from *Herbarium Pacificum* for 2022

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The continued processing of plant material at Bishop Museum's *Herbarium Pacificum*, as well as new collections from the field, have manifested in five new records for bryophytes on the islands of O'ahu and Maui—*Chiloscyphus greenwelliae*, *C. laceratus*, *Physcomitrium eurystomum*, *Plagiochila hawaica*, and *Trachypodopsis serrulata* var. *crispatula*. Hawai'i is currently undergoing a renaissance in the study of bryology, and as the collections at Bishop Museum continue apace, more new records will be published.

Funariaceae

Physcomitrium cf. *eurystomum* Sendtn.
record

New island

This is the first record of this genus for the island of O'ahu. Plants were first seen at Lyon Arboretum in 2021 and are frequent along trails throughout the gardens, especially on shaded dirt banks under shrubs. This genus was reported for the first time in the Hawaiian Islands on Kaua'i by Shevock *et al.* (2019). The location was described as "a cultivated setting on nylon shade cloth of a greenhouse," and it is no surprise that this species would be found on O'ahu under similar circumstances. It is very similar in general appearance to the endemic *Entosthodon subintegrus*, but can be differentiated using the following key adapted from Crum & Anderson (1955) for the identification of genera in the Funariaceae. The full key can be found at: [efloras.org]

Material examined. O'AHU: Mānoa, Lyon Arboretum on dirt hill next to greenhouse and along trails in garden, 200 m, 27 Mar 2022, M.K. Thomas & J. Adams MKT 300.

Key to the genera of Funariaceae in Hawai'i [adapted from Crum & Anderson (1955)]

- 1a. Capsules inclined and asymmetrical, with 2 rows of teeth. ***Funaria***
- 1b. Capsules erect and symmetrical, teeth very rudimentary or absent
 - 2a. Capsules subcylindric to narrowly pyriform; most exothelial cells oblong to oblong-linear, rarely isodiametric; calyptra cucullate, costa not reaching apex of leaf. ***Entosthodon***
 - 2b. Capsules urn-shaped, broadly pyriform, to cupulate; most exothelial cells irregularly hexagonal, ± isodiametric; calyptra mitrate to irregularly mitrate, sometimes appearing cucullate, costa reaching apex of leaf. ***Physcomitrium***

Lophocoleaceae***Chiloscyphus greenwelliae*** (H.A. Mill.)

H.A. Mill.

New island record

According to Staples & Imada (2006), this species was only known from the islands of Kauaʻi, Maui, and Hawaiʻi. Upon inspection of the liverwort collection at *Herbarium Pacificum*, one specimen was located from the Waiʻanae Mountains collected by E. Funk and annotated as “*Chiloscyphus greenwelliae*, determination in absence of comparative materials.” I cross-referenced this specimen with unpublished figures done by H.A. Miller (Miller n.d.), as well as with other verified specimens, and found that this plant is indeed *C. greenwelliae*. Photos from the field were also sent to hepatic experts Emmet Judziewicz and Virginia Friere, who both agreed on the ID (pers. comm.). Field work in the Koʻolau Mountains at Puʻu Eleao and near Puʻu Keahiakahoe revealed that this species is locally abundant, often growing on trees and under shrubs along the Koʻolau summit. It will most likely be found wherever similar habitat exists on all the Hawaiian Islands.

Material examined. **OʻAHU:** Mokuleʻia Distr., northern Waiʻanae Mts., at head of Makaleha Valley in wet *Metrosideros* forest, 1,250 m, 10 Jun 1978, *E. Funk, s.n.* (BISH 478393); Koʻolau Mts., Puʻu Eleao, in mixed native cloud forest along summit ridge growing on shrubs and ground with *Plagiochila deflexa*, *Chiastocaulon combinatum*, and others, 829 m, 20 Jan 2022, *M.K. Thomas, S. Ching-Harbin, K. Togikawa, J. Serrano, D. Sischo, C. Hee, S. Steifel & M. Tsuneshige* MKT 228; Koʻolau Mts., summit of Kauakaulani near Puʻu Keahiakahoe, growing on ground under *Dicranopteris linearis* and *Diplopterygium pinnatum*, 812 m, 28 Ja 2022, *M.K. Thomas, M. LeGrande, C.T. Imada & K. Magnacca* MKT 243.

Chiloscyphus laceratus Steph.**New island record**

Staples & Imada (2006) list this taxon as occurring on the islands of Molokaʻi, Maui, and Hawaiʻi. It has recently been collected at Kōnāhuanui and near the head of Helemano in the Koʻolau Mountains. Numerous observations have also been made in the vicinity of Puʻu Kaiwipoʻo and Wailupe in the same mountain range. This species has probably been overlooked on many occasions because it often grows appressed against tree bark among similar-looking species such as *Cuspidatula* and *Odontoschisma*, and may also be buried or intertwined with species of *Plagiochila*, *Herbertus*, *Bazzania*, etc. It is easily identified by the imbricated, rounded, lateral leaves and the smaller, ciliated underleaves with 4–6 long teeth. No observations of this species have been made in the Waiʻanae Mountains, but it will most likely occur there in wet forests.

Material examined. **OʻAHU:** Koʻolau Mts., Puʻu Kōnāhuanui, at summit, epiphytic on *Metrosideros polymorpha* in wet/cloud forest, 940 m, 14 Jan 2022, *M.K. Thomas, M. Brown & G. Nastase* MKT 221; northern Koʻolau Mts., Helemano, growing in *Metrosideros*, *Cibotium*, *Sadleria*, *Antidesma*, *Cheirodendron*, *Kadua*, *Psychotria*, *Syzygium*, *Dicranopteris*, *Diplopterygium*-dominated forest, 960 m, 03 Apr 2022, *M.K. Thomas, S. Ching-Harbin, K. Togikawa, M. Browning, J. Serrano & M. Tsuneshige* MKT 305.

Plagiochilaceae***Plagiochila hawaica*** Steph.**New island record**

Previously undocumented from the island of Oʻahu, three recent collections document its presence in both mountain ranges: Palikea in the southern Waiʻanae Mountains, Mount Kaʻala in the northern Waiʻanaes, and Kōnāhuanui in the Koʻolau Mountains, where it will most likely be found in other localities along the summit ridge. The material was identified using the key provided in Inoue (1976).

Material examined. **O‘AHU:** Wai‘anae Mts., Palikea, on rocks and trees in mixed alien/native mesic forest, 812 m, 20 May 2021, *M.K. Thomas, S. Ching-Harbin, K. Togikawa & J. Serrano* MKT 72; northern Wai‘anae Mts., Ka‘ala, growing in bryophyte mat in native shrubland along the FAA road with *Philonotis sullivanii* and others, 800 m, 01 Mar 2022, *M.K. Thomas, S. Ching-Harbin, K. Togikawa, J. Serrano & M. Tsuneshige* MKT 280; southern Ko‘olau Mts., Pu‘u Kōnāhuanui, on *Metrosideros polymorpha* growing intermixed with *Frullania apiculata*, *Cuspidatula robusta*, *Herbertus* spp., *Chiloscyphus ciliolatus*, and others, 03 Apr 2022, *M.K. Thomas* MKT 315.

Trachypodaceae

Trachypodopsis serrulata (P. Beauv.) M. Fleisch.

var. *crispatula* (Hook.) Zanten

New island record

According to Staples *et al.* (2004), this taxon was only known from the island of Hawai‘i. A specimen was sent to *Herbarium Pacificum* by Plant Extinction Prevention Program Botanist Hank Oppenheimer and was examined by Bishop staff using a key in a publication by van Zanten (1959). The specimen was also similar in appearance and in habitat with collections made on the island of Hawai‘i.

Material examined. **MAUI:** East Maui, Makawao Distr., Honomanu drainage basin, TNC Waikamoi Preserve & Haleakalā Ranch, along trail & unpaved road in forestry plantings of *Pinus*, *Cryptomeria*, *Cupressus*, 1,970–2,031 m, 07 May 2021, *H. Oppenheimer* H52112; Kīpahulu Valley, Haleakalā National Park, National Park Service Expedition III, West Camp, transect 5, in *Metrosideros-Cheirodendron-Dryopteris* forest, on *Metrosideros* branch in partial shade, 2,000 m, 28 Feb 1984, *C.A. Russell* 522.

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