

Additions and amendments to the Hawaiian flora 2025¹

MILES THOMAS^{2,4} , KARL MAGNACCA^{3,5} , SCOTT HEINTZMAN⁴ ,
SUSAN DEANS⁴ , KEVIN FACCENDA² 

A comprehensive analysis of the native Hawaiian flora has revealed several taxonomic questions that are addressed here. Among these are distributional corrections for *Acacia heterophylla* subsp. *koaia*, *Canavalia pubescens*, *Carex wahuensis* subsp. *herbstii*, and *Clermontia lindseyana*. New combinations are provided for *Dracaena hawaiiensis*, *Hibiscus hanneriae*, and *Touchardia sandwicensis*, along with new hybrid combinations in *Cibotium* and *Adenophorus*. These changes are to be reflected in an upcoming checklist of the Hawaiian flora (Imada *et al.* in prep.) and for the book *Ferns and lycophytes of the Hawaiian Islands* (Palmer & Thomas in press). All specimens are stored at the Bernice Pauahi Bishop Museum (BISH) unless otherwise noted.

Asparagaceae

Dracaena hawaiiensis (O.Deg. & I. Deg.) Magnacca, **comb. nov.**

Basionym: *Pleomele hawaiiensis* O.Deg. & I. Deg., Fl. Haw., fam. 68. 1980.

≡ *Chrysodracon hawaiiensis* (O.Deg. & I.Deg.) P.L.Lu & Morden, Syst. Bot. 39: 101. 2014.

= *Dracaena hawaiiensis* Fosberg, Occas. Pap. Bernice P. Bishop Mus. 23: 32. 1962, nom. inval.

= *Pleomele hawaiiensis* O.Deg., Fl. Haw., fam. 68. [sub] *Pleomele aurea*. 1932, nom. nud.

= *Pleomele konaensis* H.St.John, Pacific Sci. 39: 185 (1985).

≡ *Dracaena konaensis* (H.St.John) Jankalski, Sansevieria 18: 21. 2008, nom. superfl.

= *Pleomele kaupulehuensis* H.St.John, Pacific Sci. 39: 183. 1985.

The Hawai'i Island species of halapepe (also known as le'ie) has had a confusing nomenclatural and taxonomic history. *Pleomele hawaiiensis* O.Deg. was first published as a *nomen nudum*, as it was only passingly referenced during the treatment of *Pleomele aurea* (H.Mann) N.E.Br. (Degener 1932). This name was later transferred to *Dracaena hawaiiensis* (Fosberg 1962), but this name is both invalidly published as it is based on a *nomen nudum* basionym (Art. 41.5) and is illegitimate and superfluous as it includes the validly published *Pleomele fernaldii* H.St.John in synonymy (Art. 52.1; Turland *et al.* 2018). A valid name for the Big Island halapepe was finally provided when Degener and Degener (1980) effectively published *Pleomele hawaiiensis* O.Deg. & I.Deg.

However, Jankalski (2008), while transferring all *Pleomele* to *Dracaena*, created the new combination *Dracaena konaensis* (H.St.John) Jankalski using the basionym *Pleomele konaensis* H.St.John. This combination by Jankalski is superfluous, as it includes *Pleomele hawaiiensis* O.Deg. & I.Deg. in its synonymy (Art. 52.1; Turland *et al.* 2018),

1. Contribution No. 2025-009 to the Hawaii Biological Survey.

2. Herbarium Pacificum, Bernice Pauahi Bishop Museum, 1525 Bernice St, Honolulu, Hawai'i 96817-2704, USA; emails: miles.thomas@bishopmuseum.org, kevin.faccenda@bishopmuseum.org.

3. Center for Conservation Research and Training, University of Hawai'i at Mānoa, Honolulu, Hawai'i 96822, USA; email: knm956@gmail.com.

4. Plant Extinction Prevention Program, 3190 Maile Way, Honolulu, Hawai'i 96822, USA; emails: mileskt@hawaii.edu, scott.m.heintzman.researcher@hawaii.gov, smdeans@gmail.com

5. Research Affiliate, Hawaii Biological Survey, Bishop Museum, 1525 Bernice Street, Honolulu, Hawai'i 96817-2704, USA

despite this name having five years of priority over their basionym *Pleomele konaensis* H.St.John, published by St. John (1985). Therefore, we create a new combination in *Dracaena* using the basionym with the oldest priority.

Campanulaceae

Clermontia lindseyana Rock

Correction

In the *Manual of the Flowering Plants of Hawai'i* (Wagner *et al.* 1990:431), the distribution of *Clermontia lindseyana* is given as East Maui and Hawai'i. Reviewing the Maui specimens at BISH, we found that all specimens formerly identified as *C. lindseyana* are best identified as *C. kakeana* Meyen (*Oppenheimer H90637*, *Rock 8688*, *R. Hobdy s.n.* [BISH 572237], *C.N. Forbes 1888M*). Some of these specimens were also formerly annotated as *C. kakeana* by Richard Pender (OSH) in 2013. Pending further studies, the distribution of *C. lindseyana* is restricted to the island of Hawai'i.

Cibotiaceae

Cibotium × *palmeri* Miles K. Thomas, **nothosp. nov.**

(Fig. 1)

Holotype: Hawai'i, O'ahu, northern Wai'anae Mountains, Ka'ala summit, near boardwalk with both parents, 1200 m elevation, 13 Aug 2025, *M.K. Thomas 1175* (BISH!).

Description: Intermediate between *Cibotium glaucum* (Sm.) Hook. & Arn. and *C. menziesii* Hook. (Fig. 2). Caudex up to 1 m tall. Petioles 1–1.5 m long, 3–5 cm thick, base rough-hairy as in *C. menziesii*, covered in a mix of rigid dark red and soft tan hairs, (on some fronds, the hairs mostly red). Fronds deltate, 1–1.5 m long, 1 m wide, coriaceous, undersurface semi-glaucous, some of the ultimate segments nearest the midrib bearing small auricles as in *C. glaucum* but not uniformly found on all fronds. Sterile fronds 2-pinnate-pinnatifid, ultimate segments typically 0.5 cm long from tip to sinus, mostly cut halfway to the costules, sometimes $\frac{1}{3}$ of the way. Fertile fronds 3-pinnate, cut all the way to the costules, with revolute margins.

In August 2025 a small mixed patch of *Cibotium glaucum* and *C. menziesii* was studied at the summit of Ka'ala, O'ahu. Within this patch several plants of intermediate character were noted, displaying a range of variability in hair and frond pinnae characters, often on a single plant. Despite a lack of genetic study, this situation clearly suggests that hybridization is taking place between *C. glaucum* and *C. menziesii*. This hybrid will most likely be found wherever the two parents exist sympatrically and will likely vary in character along a range of intermediates. The selected holotype displays the best representation of this mix of characters. This hybrid will be recognized in the field by the combination of stiff, dark-red and softer lighter colored hairs on the petiole and the semi-glaucous undersurface of the frond. The basiscopid pinnules will often bear small auricles, although these will be somewhat less pronounced than that of *Cibotium glaucum*. The name *Cibotium* × *palmeri* honors the late Daniel D. Palmer, who was an authority on the Hawaiian species of *Cibotium* and author of *Hawai'i's Ferns and Fern Allies* (Palmer 2003).

Material examined: O'AHU: Manana Ridge trail, 520 m, 4 Jun 1992, *D.D. Palmer 876* (BISH!); summit of Ka'ala, 8 Apr 1992, *D.D. Palmer 865* (BISH!).



Figure 1. Field photos of *Cibotium ×palmeri*: **A**, frond. **B**, undersurface of frond. **C**, ultimate segments of frond from the holotype. **D**, hairs on the petiole base from the holotype. **E**, caudex of plant with size 10 boot for scale. **F**, *Cibotium ×palmeri* pinnule (left) compared to *C. menziesii* (right).

Cyperaceae

***Carex wahuensis* C.A.Mey. subsp. *wahuensis* New synonymy**

= *Carex wahuensis* subsp. *herbstii* T.Koyama.

Carex wahuensis subsp. *herbstii* was published by T. Koyama (Wagner *et al.* 1989) and accepted by Wagner *et al.* (1990) as an O‘ahu endemic subspecies. However, recent fieldwork has shown a continuous variation between this narrow-leaved form and the wider-leaved, nominate subspecies, with both forms often occurring within meters of one another (e.g., Perlman *et al.* 21101). Such observations have also been made in Wailupe by Miles K. Thomas and Kobey Togikawa of the O‘ahu Plant Extinction Prevention Program. On the basis of this continuous variation it does not seem appropriate to accept *C. wahuensis* subsp. *herbstii* as a biologically valid subspecies and we hereby synonymize it with the nominate subspecies.



Figure 2. *Cibotium menziesii* sensu stricto: **A**, undersurface of frond. **B**, stiff, dark red hairs on petiole base.

Fabaceae

Acacia heterophylla (Lam.) Willd.

subsp. *koaia* (Hillebr.) Morden & Faccenda **New island record**

Acacia heterophylla subsp. *koaia* was noted as occurring on “perhaps O‘ahu” (as *Acacia koaia*; Wagner & Herbst 1999) but never unambiguously published, although two well known populations have existed for decades. St. John (1979) highlighted that in the 1930s, seed from all variations of Hawaiian *Acacia* from across the islands were mixed together and used in reforestation practices by the Board of Agriculture and Forestry. This mixed seed batch almost certainly contained what is now recognized as *A. koaia* from other islands, but the location of these plantings is not precisely known and assumed to be widespread across several O‘ahu forest reserves.

Collections of this species made in Wa‘ahila and Wailupe confirm the existence of *A. koaia* on O‘ahu. A single remnant tree on Wa‘ahila Ridge is possibly from a forestry planting in the early 1900s, as that ridge was extensively planted with reforestation species, including koa (Skolmen 1980), and its morphology is typical of the material that comes from Hawai‘i Island. The Wailupe population, however, has slightly wider pods but maintains the longitudinal seed orientation typical of *koai‘a*. This Wailupe locality is composed of over 20 trees that form a cluster on a steep slope off a ridge in an area that was unlikely to be affected by reforestation efforts, since the topography is very steep, with the surrounding vegetation dominated by old growth *Diospyros*, *Metrosideros*, *Sideroxylon*, *Planchonella*, *Notelaea*, and other native taxa that are generally slow growing.

Observations by Miles Thomas and Ryan Chang in ‘Aiea show that there are intermediates between koa and koai‘a, where a single tree can bear transverse, diagonal, and longitudinal seeds within separate pods on different branches (Miles Thomas, pers. obs., 2024). It is possible that plants of *Acacia heterophylla* subsp. *koaia* exist nearby or in the adjacent mesic forests of the central Ko‘olau Mountains and should be searched for to confirm its presence.

Material examined. O‘AHU: Southeastern Ko‘olau Mountain Range, Wa‘ahila, 300 m, 15 Aug 2023, *M.K. Thomas & R. Chang* 596; Wa‘ahila Ridge, 27 Aug 1998, *D. Chung* s.n. (BISH 652754); Wailupe, east branch of central ridge overlooking Laulaupoe Gulch, 430 m, 4 Jun 2025, *M.K. Thomas et al.* 1132.

Canavalia pubescens Hook. & Arn.

Correction

Canavalia pubescens was previously reported from the islands of Kaua‘i and Ni‘ihau in the *Manual of the Flowering Plants of Hawai‘i* (Wagner *et al.* 1990). Kaua‘i botanists noticed that all of the extant populations previously referred to as *C. pubescens* should be re-evaluated due to the lack of differences with nearby populations of *C. napaliensis* H.St.John (Scott Heintzman, pers. obs.). Upon re-examination and comparison to the type specimen and other material from Lāna‘i and Maui housed at the Bishop Museum, it was determined that the Kaua‘i and Ni‘ihau plants (*St. John* 23637, *Stokes* s.n. [BISH 642542], *C. Christensen* 47, *St. John* 23163, *Neal* s.n. [BISH 54945], *Forbes* 56K, *Christensen* 233, *Hobdy* 2) are typical of *C. napaliensis*, based on the seed morphology, as well as the thin texture and sparse hairs of the leaves. Most of the Kaua‘i specimens were originally annotated as *C. napaliensis* prior to publication of the *Manual* (Wagner *et al.* 1990) and they have been re-annotated back to this name.

Malvaceae

Hibiscus hanneriae (O.Deg. & I.Deg.) S. M. Heintzman & S. M. Deans, **comb. et stat. nov.**

Basionym: *Hibiscus waimeae* A.Heller var. *hanneriae* O.Deg. & I.Deg., Fl. Haw., fam. 221. *Hibiscus waimeae*. 1962.

Originally described as *Hibiscus waimeae* var. *hanneriae* O.Deg. & I.Deg. (Degener & Degener 1962), and later reclassified as a subspecies (Wagner *et al.* 1990), *H. waimeae* subsp. *hanneriae* is restricted to the northern portion of Kaua‘i and is geographically isolated from populations of *H. waimeae* subsp. *waimeae*. The two varieties occupy distinct habitats—*H. waimeae* subsp. *hanneriae* occurs in wet forests, whereas *H. waimeae* subsp. *waimeae* is found in mesic to dry forests. Additional evidence for their separation comes from differences in floral morphology: the flowers of subsp. *hanneriae* are smaller than those of subsp. *waimeae*. Calyx tubes range from 1–2 cm long in subsp. *hanneriae*, and 2.5–4.5 cm in subsp. *waimeae* (S. Deans, unpubl. data), with similarly smaller corolla, staminal column, and involucre bracts. Genetic analyses by Huppman (2013) further support this distinction, revealing that *H. waimeae* subsp. *waimeae* is genetically closer to the Moloka‘i species *H. immaculatus* M.J.Roe than to *H. waimeae* subsp. *hanneriae*. Based on Huppman’s genetic work, the isolated populations, and field observations by Kaua‘i botanists, this taxon is best treated at the species level as *Hibiscus hanneriae*.

Hibiscus waimeae* A.Heller*Note**

Formerly recognized at the subspecific rank by Wagner *et al.* (1990), *Hibiscus waimeae* subsp. *waimeae* is best recognized at the specific level (see further discussion for *H. han-nerae* above).

Polypodiaceae

Adenophorus* × *bishopii W.H.Wagner ex Miles K.Thomas, **nothosp. nov.**

Holotype: Hawai'i, O'ahu, Pu'u Lanihuli, growing epiphytically with both parents, 1400 ft elevation, 3 Nov 1968, L.E. Bishop A110368 (HAW!).

Description: Plants small, epiphytic, growing with one or both parents. Rhizomes short, erect. Fronds 3–10 cm long, erect or arching, foliar trichomes few and scattered over dorsal surface, of 2–6 cells, often glandular. Stipes 0.2–0.5 mm in diameter, terete at very base, soon alate distally and merging with the lamina. Blades coriaceous, long-elliptic, incised 2/3 the way to the midrib or less, with obliquely deltoid to oblong lobes or occasionally merely crenate, often provided with an unlobed elongated apex when well developed (occasionally bifurcating in some plants). Veins in each lobe generally 1–3-forked, rarely somewhat pinnate in the largest lobes, if once-forked, then with furcation usually in the proximal half of vein. Sori 1–2 mm in diameter, developed to the apex of fully fertile fronds, mostly solitary on each lobe; glandular paraphyses present. Sporangia with 10–12 thickened bow cells; spores fertile or not, mostly 36–45 µm in diameter.

This taxon was first described by Luther Earl Bishop (Bishop 1974) in his monograph on the genus *Adenophorus* as a hybrid between *Adenophorus oahuensis* L.E.Bishop and *A. pinnatifidus* Gaudich. This O'ahu endemic is currently only known from the Ko'olau Mountains. In this monograph, he only listed the hybrid combination and a description. In an unpublished checklist, Warren H. Wagner elevated the former subgenus *Oligadenus* to genus level and made combinations for several species. In that same checklist, he provided the hybrid name *Oligadenus* × *bishopii* but never formally described it. Currently, subg. *Oligadenus* is no longer recognized based on molecular studies by Ranker *et al.* (2003). Here we formally describe the nothospecies *Adenophorus* × *bishopii*. This hybrid is named in honor of Luther Earl Bishop (1943–1993).

According to Bishop (1974), the frond form of the hybrid is variable, and extremes may superficially resemble either parent. However, this hybrid is readily distinguished from *Adenophorus pinnatifidus* by the comparatively small, fertile fronds with very irregularly crenated to sinuous margins and by the long-caudate frond tip. Bishop also notes that a large proportion of the hybrid plants show affinities to *Adenophorus haalilioanus* (Brack.) K.A.Wilson, but can be separated by the very irregular lobing of the fronds and the forking of the veins. Examination of the spores shows that this hybrid is at least partially fertile (D. Palmer, pers. comm., 2022), but the hybrid is rare and seems to only appear where the two parents are found.

Material examined: O'AHU: Pālolo Crater, 14 Jun 1908, H.L. Lyon s.n. (BISH!); Pālolo, large boulder along streambed, 1100 ft, 30 May 1988, W. Takeuchi 3883 (BISH!).

Urticaceae***Touchardia sandwicensis* (Wedd.) Magnacca, comb. nov.****Basionym:** *Urera sandwicensis* Wedd., Ann. Sci. Nat., Bot., sér. 4, 1: 178. 1854.= *Procris glabra* Hook. & Arn., Bot. Beechey Voy.: 96 (1832).≡ *Urera glabra* (Hook. & Arn.) Wedd., Arch. Mus. Hist. Nat. 9: 149 (1856).≡ *Urera sandwicensis* var. *glabra* (Hook. & Arn.) Wedd., de Candolle, Prodr. 16: 92. (1869).≡ *Touchardia oahuensis* T. Wells & A.K. Monro, Molecular Phylogenetics and Evolution, 158(201) p. 13 (2021).= *Urera glabra* var. *mollis* Wedd., Arch. Mus. Hist. Nat. 9(1–2): 149 (1856-1857).≡ *Urera sandwicensis* var. *mollis* (Wedd.) Wedd., de Candolle, Prodr. 16: 93. (1869).= *Urera konaensis* H.St. John, Pacific Sci. 30: 11 (1976).= *Urera sandwicensis* var. *kauaiensis* Rock, Indig. trees Haw. Isl. 123. (1913).

Wells *et al.* (2021) published the name *Touchardia oahuensis* T.Wells & A.K.Monro as a replacement name for *Urera glabra* (Hook. & Arnott) Wedd. when placed in *Touchardia*, due to its being precluded by *Touchardia glabra* H.St.John. However, under Article 11.4, a new name should be chosen only if no other specific epithets are available among existing synonyms (Turland *et al.* 2018). In this case, the next available specific epithet is *Urera sandwicensis* Wedd., a name by which it had previously been long commonly known (Wagner *et al.* 1990). Therefore, we make this new combination to make the name available.

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