

New Plant Records from Hawai'i Island

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The following plant records from the island of Hawai'i include 2 new state records, 6 new island records, 3 new records of naturalized species previously known to be present on the island, and 1 range extension of an orchid recently reported as naturalized. All cited voucher specimens are deposited at BISH.

Asteraceae

Leucanthemum ×*superbum* (Bergmans ex J.W. Ingram) **New naturalized record**

D.H. Kent

Leucanthemum ×*superbum* (Shasta daisy) is a cultivated plant of hybrid origin from two European species (Staples & Herbst 2005). Although not currently recognized as naturalized in the Hawaiian Islands (Wagner *et al.* 1999), this hybrid plant has apparently persisted more than 50 years without cultivation in Hawai'i Volcanoes National Park since the 1940s, when it was reported as “escaping from gardens into the forest near the Park residential area” (Fagerlund 1947). The following specimen is the first record of the species in a disjunct location and indicates that the Shasta daisy is now becoming naturalized on Hawai'i Island.

Material examined. **HAWAI'I:** Hawai'i Volcanoes National Park, Crater Rim Rd between entrance and Headquarters, Ka'ū Distr, elevation ca 1200 m, in disturbed area near road through developed area, 23 Jul 2001, *L.W. Pratt & K. Bio* 3259; Hawai'i National Park residence area, 22 September 1942, *G.O. Fagerlund & A.L. Mitchell* 94.

Cornaceae

Cornus kousa F. Buerger ex Hance

New state record

An ornamental tree, *Cornus kousa* (Japanese dogwood, kousa dogwood), was not previously known to be present in the Hawaiian Islands, either as a naturalized plant (Wagner *et al.* 1999) or a cultivated species (Staples & Herbst 2005). There are no other vouchers of this species in the Bishop Museum *Herbarium Pacificum*. In 2011, Mark Wasser of the Natural Resources Management Division of Hawai'i Volcanoes National Park collected a flowering specimen of this species from a group of young trees established near the western boundary of the Park's Kahuku Unit, where they had probably originated from a forestry planting in an enclosure downslope within sight of the boundary fence. *Cornus kousa* is native to mountains of Japan, Korea, and China (Ohwi 1965). The tree is considered a desirable ornamental in mainland North America, and it produces a red fruit, edible to humans and attractive to birds (Gilman & Watson 1993). The species is apparently naturalized in New York State (U.S. Department of Agriculture 2011a). The following specimen documents the Japanese or kousa dogwood as a naturalized species on Hawai'i Island.

Material examined. **HAWAI'I:** Hawai'i Volcanoes National Park, Kahuku Unit just above

boundary in northwest corner, Ka'ū Distr, elevation ca 2175 m, four trees spreading into Park from planted enclosure below boundary, in *Sophora/Myoporum* woodland with grass, small tree ca. 3 m tall, flower bracts cream tinged with red, 27 Jul 2011, *M. Wasser 107*.

Fabaceae

Crotalaria sagittalis L.

New state record

Crotalaria sagittalis (arrowhead rattlebox) is native to the eastern and central United States, where it is found in 31 states (U.S. Department of Agriculture 2011b). An annual or perennial subshrub, this rattlebox is covered with golden hairs and has the following characteristics: simple ovate leaves, prominent stipules that are decurrent on the stem and arrowhead-shaped above, flowers pale yellow and less than 1.2 cm long, and glabrous, inflated fruits, black at maturity and up to 2.5 cm long (Britton & Brown 1970). This species was not recognized as part of the Hawaiian flora by Wagner *et al.* (1990, 1999). *Crotalaria sagittalis* is now documented from a single site in Hawai'i Volcanoes National Park, along a boundary fence adjacent to Kapāpala Ranch, where it was found in 1994.

Material examined. HAWAII: Hawai'i Volcanoes National Park, Ka'ū District, along fence-line with Kapāpala Ranch near Halfway House in native shrubland with scattered *Metrosideros polymorpha* trees, elevation ca 885 m, 31 May 1994, *L.W. Pratt 2779*.

Lathyrus latifolius L.

New island record

The vine *Lathyrus latifolius* (everlasting sweet pea) was first collected as a naturalized component of the Hawaiian flora at Olinda on East Maui in 1985 (Wagner *et al.* 1999). Subsequently, the species was collected at an additional site near Kula on Maui (Starr *et al.* 2002). It is now known to occur on Hawai'i Island within Hawai'i Volcanoes National Park at 'Āinahou, a former ranch. The vine has persisted in this place since 1984, when a collection was made at the same locality (*Dina Kageler 1984-48*, January 1984, Hawai'i Volcanoes National Park Natural History Collection). Both *L. latifolius* and *L. odoratus* L. are cultivated in cool regions of Hawai'i, Maui, and Kaua'i (Staples & Herbst 2005).

Material examined. HAWAII: Hawai'i Volcanoes National Park, 'Āinahou Ranch house, near abandoned nursery south of house, elevation 913 m, one or few vines in grassy area near old plant nursery, climbing vine with rose-pink flowers, no pods, 8 Apr 2011, *L.W. Pratt 3749*.

Lupinus angustifolius L.

New naturalized record

Only one *Lupinus* was previously known to be naturalized in the Hawaiian Islands; this was *Lupinus hybridus* collected once at Volcano on Hawai'i Island (Wagner *et al.* 1999). *Lupinus angustifolius* (narrowleaf lupine, blue lupine) is an annual herb native to the Mediterranean region that is rarely cultivated at higher elevations in the Hawaiian Islands (Staples & Herbst 2005). This lupine is now naturalized in Hawai'i Volcanoes National Park, where it was collected in 2005 growing along a jeep road following a powerline near the boundary with Kapāpala Ranch. *Herbarium Pacificum* contains one other specimen annotated as "*Lupinus* probably *angustifolius*" by S.M. Saufferer in 1996. This was collected by E.Y. Hosaka in 1939 on Kapāpala Ranch at slightly lower elevation than the site of the 2005 naturalized collection. This lupine species appears to have moved into the Park from the adjacent ranch where it was present, perhaps introduced as a forage plant, more than 70 years ago.

Material examined. HAWAII: Hawai'i Volcanoes National Park, Mauna Loa Powerline Rd, near boundary of Park and Kapāpala Ranch, Ka'ū Distr, elevation ca 1370 m, on side of jeep road through *Acacia koa* forest with alien grasses, herb with hairy leaves, ca 1 m tall, flowers blue and white, fruit green and yellow, 15 Dec 2005, *J. Makaie & P. Keliihoomalu s.n.*; Ka'ū, 'Ōhaikea, Kapāpala, elevation [1220 m], a local patch, flowers blue, 18 Apr 1939, *E.Y. Hosaka 2484*.

Sophora tomentosa* L.*New naturalized record**

Sophora tomentosa (yellow necklacepod, silverbush) is a pantropical strand plant (Rau-lerson & Rinehart 1991), which is widespread in the Pacific (Fosberg *et al.* 1979). The shrubby legume is also native to North America, where it is distributed on the shores of Texas and Florida (U.S. Department of Agriculture 2011c). This species appears to be naturalized on Hawai'i Island on the coastline between Nīnole and Punalu'u, Ka'ū District. *Sophora tomentosa* was recently (2011) collected growing in thick coastal shrubland of *Scaevola taccada* in the same area that Otto and Isa Degener collected the plant in 1983. The site of the 2011 collection is far from any residences or landscaped areas of the Punalu'u Beach Park. The invasive potential of this *Sophora* is likely low in Hawai'i; the species is not recognized as invasive in the Hawai'i Weed Risk Assessment, which rated it as -3, a low value (Daehler & Denslow 2011).

Material examined. **HAWAI'I:** Coastline between Punalu'u and Nīnole, Ka'ū Distr, near sea level, 3 shrubs mixed with thick *Scaevola taccada* about 10 m from the rocky shore, low shrub 1.5 m tall with green and brown legumes, 8 May 2011, *D. Foote s.n.*; Punalu'u, Ka'ū, Hawai'i in black lava sand near beach, 9 Apr 1983, *O. Degener & I. Degener 35,763.*

Stylosanthes viscosa* Sw.*New island record**

This species, an introduced pasture legume, is known to be naturalized on both O'ahu and West Maui (Herbst *et al.* 2004), but it has not been previously collected on Hawai'i Island (Imada 2008). Recently (2011), this small shrubby legume was observed at one site on the side of the Crater Rim Rd in Hawai'i Volcanoes National Park. Another *Stylosanthes*, *S. scabra* Vogel, was previously documented from the Park (Kennedy *et al.* 2010). The two species may be distinguished by the length and shape of the beak on the fruit, but specimens without fruiting material cannot be identified (Herbst *et al.* 2004). It is likely that both *Stylosanthes* species now known from Hawai'i Island spread into Hawai'i Volcanoes National Park from adjacent ranchlands.

Material examined. **HAWAI'I:** Hawai'i Volcanoes National Park, Crater Rim Rd between Keanakāko'i and Chain of Craters Rd intersection, Ka'ū Distr, elevation ca 1120 m, disturbed area on roadside through montane wet *Metrosideros polymorpha* forest, low shrub with red-streaked flowers and tiny fruit, 18 May 2011, *L.W. Pratt & J. Seide 3766.*

Vigna hosei* (Craib) Backer*New island record**

A vine cultivated in tropical countries, *Vigna hosei* was first reported naturalized in the Hawaiian Islands on O'ahu, in a pineapple field near Poamoho Experiment Farm (Staples *et al.* 2006). The species also occurs on Hawai'i Island, where the following specimen was collected in a Hilo field in 2006.

Material examined. **HAWAI'I:** Hilo, in field at low elevation (below 150 m), growing in disturbed area of field, thin vine with grayish green foliage and pale yellow flowers, 19 Jun 2006, *L. Yoshida s.n.*

Onagraceae***Oenothera biennis* L.****New island record**

A biennial herb native to North America and Canada, *Oenothera biennis* (common evening primrose) was recently documented as a naturalized species on East Maui, where it was found growing on a roadside in Kula (Starr *et al.* 2008). The species has now been collected on Hawai'i Island, where it was established on a roadside in Volcano Golf Course Subdivision in a patch measuring 5 × 10 m with plants of different sizes. Plants have persisted in this roadside site for more than 3 years, and the species appears to be naturalized in Volcano.

Material examined. **HAWAII:** Volcano Golf Course Subdivision adjacent to Hawai'i Volcanoes National Park, on side of Pukeawe Circle, Ka'ū Distr, elevation ca. 1200 m, disturbed area on side of road, patch has persisted in place for more than 3 years, herb with bright yellow flowers, stem with red pustular hairs, plants of different sizes seen in patch 5 × 10 m, 11 May 2011, *L.W. Pratt & T.K. Pratt 3756*.

Orchidaceae

Cymbidium dayanum Rchb. f.

Range extension

Recently, Ackerman *et al.* (2011) published a new record of the widespread Asian orchid *Cymbidium dayanum* as a naturalized species on Hawai'i Island; they collected the orchid at Kalopā State Recreation Area near Honoka'a in Hāmākua Distr, where it was growing on *Eucalyptus* trees and logs. We found this orchid also naturalized at several sites in Ka'ū District, where the following specimens were collected. The orchid is established in Hawai'i Volcanoes National Park near Kīpuka Nēnē, where it grows as an epiphyte on dead *Metrosideros polymorpha* trees in open *Metrosideros* woodland. *Cymbidium dayanum* has also been collected on Keauhou Ranch east and north of the Park. The elevations of these two collections range from 850 to 1400 m. The speed with which this orchid has established on the island and the wide range of habitats occupied indicate that the species may have invasive tendencies.

Material examined. **HAWAII:** Hawai'i Volcanoes National Park near Kīpuka Nēnē, ca. 1 km from Hilina Road, Ka'ū Distr, elevation ca 850 m, common on dead trees in *Metrosideros polymorpha* woodland near fuel break/jeep road, epiphytic orchid with flowers white and purple striped and fruits green, 11 Aug 2011, *L.W. Pratt & C.M. D'Antonio 3779*; Keauhou Ranch east and north of Hawai'i Volcanoes National Park, Ka'ū District, elevation ca 1400 m, rare in pasture with scattered *Acacia koa* and *Metrosideros polymorpha* trees, epiphytic on dead *koa* tree, apparently naturalized, flowers white with red-purple stripes, 12 Nov 2008, *A. Christie 20081*.

Rosaceae

Pyracantha angustifolia (Franch.) C.K. Schneid.

New island record

When Wagner *et al.* (1990) published the *Manual of the flowering plants of Hawai'i*, *Pyracantha angustifolia* (firethorn) was listed as naturalized on both Kaua'i and Hawai'i, where it was said to be present near the Volcano dump. Subsequently, it was realized that there were actually three species of *Pyracantha* present in the Hawaiian Islands, and *P. angustifolia* was thought to be limited to Kaua'i (*Herbarium Pacificum* Staff 1999). A new island record of *P. angustifolia* for Maui was reported by Starr *et al.* (2008) on East Maui, where the shrub was scattered in a pasture in Kula. Now this species of firethorn has also been collected on Hawai'i Island along Hwy 11 not far from Volcano Village. With the collection of the following specimen, there are now three species of *Pyracantha* known from Hawai'i Island: *P. angustifolia*, *P. crenatoserrata*, and *P. koidzumii*. Based on recent weed surveys (L. Pratt, pers. observ.), *P. crenatoserrata* appears to be the most common *Pyracantha* species in the Volcano area and within Hawai'i Volcanoes National Park. *Pyracantha angustifolia* may have invasive potential on the island; the Hawai'i Weed Risk Assessment rated the species as 13 H, likely to be invasive in Hawai'i (Daehler & Denslow 2011). Several *Pyracantha* species are frequently cultivated in Hawai'i and may become weeds because of their bird-dispersed fruit (Staples & Herbst 2005).

Material examined. **HAWAII:** Hwy 11 near Volcano Village, mile marker 27, east of Hawai'i Volcanoes National Park, Puna Distr, elevation ca 1120 m, rare on side of road in disturbed vegetation, thorny shrub with orange berries, 9 Sep 2005, *L.W. Pratt & K. Bio 3520*.

Rubiaceae***Richardia scabra* L.****New island record**

Richardia scabra, a weedy herb with no common name, was first reported as a new state record in 1995 from collections made on the island of Kaua'i (Lorence *et al.* 1995). Subsequently, the species was documented from Maui (Oppenheimer 2003). After review of specimens identified as *R. brasiliensis* in the Bishop Museum *Herbarium Pacificum*, several vouchered specimens were reassigned to *R. scabra* (Imada *et al.* 2008), and *Richardia scabra* was recognized as present on O'ahu and Moloka'i, as well as Kaua'i and Maui. The species is now known also from Hawai'i Island, where the following specimen was collected in a disturbed area near buildings at the Kahuku Unit of Hawai'i Volcanoes National Park in 2005.

Material examined. **HAWAII:** Hawai'i Volcanoes National Park, Kahuku Unit, in grounds of ranch house, Ka'u Distr, elevation ca 700 m, uncommon between house and jeep road, prostrate weed, 11 Oct 2005, *L.W. Pratt 3556*.

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