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New Hawaiian plant records from Lāna‘i for 2019

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Since the mandatory cutoff for incorporation of new information and inclusion in the landmark *Manual of the Flowering Plants of Hawai‘i* in 1987, and its subsequent publication in 1990, there has been intensive field work and collection effort throughout the Hawaiian Islands. However, new naturalized taxa continue to be found, as well as new distributional records of plants established on other neighbor islands, including native species. In this paper we document and share this information with the broader botanical and conservation community. We discuss 14 taxa in 13 families. All are non-native.

Information regarding the formerly known distribution of flowering plants is based on the *Manual of the Flowering Plants of Hawai‘i* (Wagner *et al*. 1990) and information subsequently published in the *Records of the Hawaii Biological Survey*.

All voucher specimens are deposited at B.P. Bishop Museum *Herbarium Pacificum* (BISH), Honolulu, with a duplicate deposited at the National Tropical Botanical Garden (PTBG), Lāwa‘i, Kaua‘i, unless otherwise indicated. In the latter case, the herbarium acronym is cited following the voucher data.

Apocynaceae

Stapelia gigantea N.E. Br. **New island record**

Previously documented from O‘ahu, Moloka‘i, both East and West Maui, Kaho‘olawe, and Hawai‘i (Wagner *et al*. 1999: 241; Oppenheimer *et al*. 1999: 7; Wysong *et al*. 2007: 2; Oppenheimer 2010: 33; Parker & Parsons 2012: 57; Starr & Starr 2017: 3), this succulent species was found on Lāna‘i recently, where it was locally common. It was also observed in Lōpā Gulch on the east side of the island.

Material examined. **LĀNA‘I:** Ka‘a, near road to Ka‘ena, locally common succulent in dry area, 180 m, 19 Apr 2018, *Oppenheimer & K. Bogner #H41807.*

Cactaceae

Cylindropuntia fulgida Engelm. **New naturalized record**

The jumping cholla or hanging chain cholla is native to Sonora, Mexico and the southwestern United States. This cactus seems to have escaped from a nearby residence, where several naturalized succulent species have originated. Sections of the rounded stem are easily detached and dispersed when the long spines come in contact with people or animals. Axis deer in the area are likely dispersal agents. Pūlama Lāna‘i has initiated control efforts.

Material examined. **LĀNA‘I:** Kaumalapau, on roadcuts and cliffs, 18 m, 24 Oct 1999, *Oppenheimer H109918* (BISH); *loc. cit.,* 1 Mar 2010, *Duvall & Costales s.n.* (BISH).

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Convolvulaceae

Ipomoea ochracea (Lindl.) G. Don **New island record**

This morning glory has been documented from Kauaʻi, Oʻahu, Maui, and Hawaiʻi (Wagner *et al.* 1999: 559). It was recently collected on Lānaʻi.

Material examined. **LĀNAʻI:** vicinity of Lānaʻi Airport, 380 m, naturalized vines growing in waste area on *Lantana camara* and *Urochloa maxima*, 14 Mar 2019, *Oppenheimer, K. Bogner & K. Bustamente #H31918.*

Cyperaceae

Cyperus fulvus R. Br. **New state record**

This species, known as sticky sedge, is native to New Guinea and northern and eastern Australia. It has not been previously recorded in Hawaiʻi. Over 100 plants were found scattered across several sites in degraded *Dodonaea* Lowland Dry Shrubland, and with more search effort additional plants probably could be found.

Material examined. **LĀNAʻI:** Kaʻa, vicinity of Kapukaloa, 530 m, 11 Oct 2018, *Oppenheimer, K. Bogner, & M. Kier #H101808* (BISH, US).

Cyperus meyenianus Kunth **New island record**

[Syn. *Mariscus meyenianus* (Kunth) Nees]

Previously documented as a naturalized species on Kauaʻi, Oʻahu, Molokaʻi, Maui, and Hawaiʻi (Wagner *et al.* 1999: 1420; Hughes 1995: 4; Oppenheimer 2003: 10; Oppenheimer 2006: 12), this plant was recently found on Lānaʻi, where it grew with *C. fulvus* R. Br. (see above discussion). How two weedy Cyperaceae taxa came to be growing together in the same area on a new island is of some interest regarding dispersal and pathways.

Material examined. **LĀNAʻI:** Kaʻa, vicinity of Kapukaloa, 540 m, 11 Oct 2018, *Oppenheimer, M. Kier, & K. Bogner #H101809* (BISH, US).

Euphorbiaceae

Euphorbia antiquorum L. **New naturalized record**

Native to India, where it grows in dry scrub habitats (Staples & Herbst 2005: 285), this erect cactus-like species known as Malayan spurge tree, is similar to *E. lactea* Haw. but differs in the lack of mottled white patches on the flat sides of the 3-angled branches. Like *E. lactea,* it also seems to be able to spread and reproduce vegetatively (Frohlich & Lau 2012: 35) and appears to have escaped from a nearby residence, where several other succulents have originated.

Material examined. **LĀNAʻI:** Kaumalapau, 1 Mar 2010, *Duvall & Costales s.n.* (BISH).

Orchidaceae

Arundina graminifolia (D. Don) Hochr. **New island record**

Documented from Kauaʻi, Oʻahu, East and West Maui, and Hawaiʻi (Wagner *et al*. 1999: 1471; Oppenheimer & Bartlett 2000: 7), this orchid was recently found on Lānaʻi growing along an unpaved road. Only a single large clump was observed and removed, and no plants have been subsequently found.

Material examined. **LĀNAʻI:** Munro Trail, 1000 m, 28 Sep 2016, *Oppenheimer & M. Padgett #H91644* (BISH).

Papaveraceae

Argemone mexicana L. **New island record**

Naturalized on Kauaʻi, Oʻahu, Molokaʻi, and Maui (Wagner *et al*. 1999: 1005; Wysong *et al.* 2007: 6), Mexican poppy was recently found on Lānaʻi. All plants were removed by Pūlama Lānaʻi staff at Nininiwai Hill and the site is being monitored for recruitment and continued control. Single immature plants have also been found and removed near Naio Gulch, in Kuahua Gulch, and along Polihua Road. The Keōmuku Road site has several hundred plants, mostly immature, and control efforts are being evaluated.

Material examined. **LĀNAʻI:** mauka of Lānaʻi City, near Kaiholena and Iwiʻole Gulches, north of Nininiwai Hill, naturalized at edge of waste area with other weeds from discarded yard clippings, 545 m, 18 Jun 2018, *K. Bogner KKB0021*; Keōmuku Rd., north of ʻĀwehi Rd., sandy soil along unpaved roadside, 5 m, 3 Apr 2019, *Oppenheimer & K. Bogner #H41901* (BISH).

Poaceae

Urochloa distachya (L.) T.Q. Nguyen **New island record**

Tropical signalgrass is known to be naturalized on Kauaʻi, Oʻahu, Maui, and possibly Molokaʻi (Wagner *et al.* 1999: 1503; Lorence *et al.* 1995: 44; Frohlich & Lau 2014: 13). It has been known as both *Brachiaria distachya* (L.) Stapf and *B. subquadriparia* (Trin.) Hitchc.

Material examined. **LĀNAʻI:** Mānele, 10 m, 12 Dec 2008 *Oppenheimer #H120825*.

Pontederiaceae

Eichhornia crassipes (Mart.) Solms **New island record**

Introduced as an ornamental, water hyacinth has been known in Hawai`i from the islands of Kauaʻi, Oʻahu, Maui, and Hawaiʻi, where it is naturalized and locally abundant in 9tanding or slow-moving water (Wagner *et al.* 1990: 1604–1606). On Lānaʻi this species covers at least 75% of an old water feature in a former golf course.

Material examined. **LĀNAʻI:** Kōʻele, west of Nininiwai Hill, 550 m, 27 Sep 2018, *Oppenheimer & K. Bogner #H91802*.

Solanaceae

Solanum torvum Sw. **New island record**

Known from Kauaʻi, Oʻahu, East and West Maui, and Hawaiʻi (Wagner *et al*. 1999: 1276; Oppenheimer *et al.* 1999: 10; Starr *et al*. 2003: 32; Frohlich & Lau 2012: 48), this thorny shrub or small tree was recently found in two locations on Lānaʻi, both sites adjacent to golf courses. Efforts to control or eradicate it have been initiated by Pūlama Lānaʻi staff.

Material examined. **LĀNAʻI:** mauka of Lānaʻi City, between Kaiholena and Kapano Gulches, vicinity of Nininiwai Hill, naturalized among new and old, neglected landscaping trees and weeds such as *Acacia confusa*, *Eucalyptus* sp., *Psidium cattleianum*, & *Schinus terebinthifolius*, 520 m, 27 Jun 2018, *Oppenheimer & K. Bogner #H61810*.

Verbenaceae

Stachytarpheta cayennensis (Rich.) Vahl **New island record**

[Syn.: *S. dichotoma* (Ruiz & Pav.) Vahl; *S. urticifolia* (Salisb.) Sims]

Naturalized on Kauaʻi, Oʻahu, Molokaʻi, Maui, and Hawaiʻi (Wagner *et al.* 1999: 1322; Herbst & Wagner 1999: 32; Staples & Herbst 2005: 555), this is a widespread species on Lānaʻi.

Material examined. **LĀNA‘I:** Kanepu‘u Preserve, ‘Ahakea Unit, in remnant dry forest, 520 m, 22 Jan 2015, *Oppenheimer #H11505*; Munro Trail, between Ha‘alelepa‘akai and Lāna‘ihale, 1000 m, 3 Jun 2015, *Oppenheimer #H61502.*

Zingiberaceae

Alpinia zerumbet (Pers.) B.L. Burtt & R.M. Sm. **New island record**

Shell ginger is a common ornamental and already reported as naturalized on Kaua‘i, O‘ahu, Moloka‘i, and Maui (Flynn & Lorence 2002: 16; Oppenheimer 2008: 35; Oppenheimer 2010: 38–39; Frohlich & Lau 2014: 15). On Lāna‘i scattered individuals were observed in shady understory of landscaping and neglected waste areas.

Material examined. **LĀNA‘I:** Kō‘ele, 500 m, 27 Sep 2018, *Oppenheimer & K. Bogner #H91803* (BISH).

ADVENTIVE SPECIES SHOWING SIGNS OF NATURALIZATION

Crassulaceae

Kalanchoe crenata (Andrews) Haw.

Widespread across tropical Africa to South Africa, where it is used medicinally, this succulent species with yellow flowers was observed outside its cultivated location under hedges in neglected areas. As with other Crassulaceae, it is called mother-of-millions as well as never-die, referring to the numerous bulbils on the leaves from which new plants arise. Subsequent observations show that plants persisted for several years but seem to have died out lately. It is apparently naturalized in Egypt, tropical America, India, and Malaysia (Hyde *et al*. 2018).

Material examined. **LĀNA‘I:** Lāna‘i City, 490 m, 11 Dec 2008, *Oppenheimer & S. Perlman #H120822*.

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