

## New Plant Records from Kaho‘olawe Island and Midway Atoll

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The following contributions include fourteen new island records from Kaho‘olawe Island and Midway Atoll. All records are for nonindigenous species. Images of most of the material examined can be seen at [starrenvironmental.com](http://starrenvironmental.com). Voucher specimens and collections mentioned in the text are housed in Bishop Museum’s Herbarium Pacificum (BISH), Honolulu, Hawai‘i.

### Amaranthaceae

#### *Alternanthera caracasana* Kunth

#### New island record

This low-growing weed of dry disturbed areas in Hawai‘i was previously documented from the islands of Kaua‘i, O‘ahu, Moloka‘i, Lāna‘i, and Maui (Wagner *et al.* 1999). It was recently also found on the island of Kaho‘olawe, growing along a dirt path near the camp at Hakioawa.

*Material examined.* **KAHO‘OLAWE:** Hakioawa, near camp on path, lowland scrub with *Portulaca pilosa*, *Prosopis pallida*, and *Megathyrsus maximus*, not much, 15 ft [5 m] (755,028 E, 2,278,883 N), 13 Dec 2015, Starr & Starr 151213-04.

#### *Atriplex suberecta* I. Verd.

#### New island record

Naturalized in Hawai‘i in dry disturbed areas of French Frigate Shoals and all the main islands, except Ni‘ihau and Kaho‘olawe (Wagner *et al.* 1999; Lorence *et al.* 1995). Previously not recorded from Midway Atoll. First found and collected February 2012 on Sand Island from Bulky Dump to the east along the cart path, where several sprawling patches were observed in the lawn area running along the runway (Aspey 2012). In 2015, despite searches in the same area, no plants were found (Starr & Starr 2015), although it could have been overlooked. A seedbank likely exists.

*Material examined.* **MIDWAY ATOLL:** Sand Island, along the northern edge of the lawn running along the southern side of the active E-W Runway from the GPS mark to the separation of the cart track from the runway, coastal scrub, several sprawling patches, 10 ft [3 m] (463,235 E, 3,119,757 N), Feb 2012, Aspey *s.n.* (Starr & Starr 150404-05).

### Apocynaceae

#### *Stapelia gigantea* N.E. Br.

#### New island record

The Zulu-Giant, or carrion flower, was previously known from dry areas of Hawai‘i on the islands of O‘ahu, Moloka‘i, Maui, and Hawai‘i (Wagner *et al.* 1999; Oppenheimer *et al.* 1999; Wysong *et al.* 2007; Oppenheimer 2010; Parker & Parsons 2012). It is now also reported from the island of Kaho‘olawe, where it was found scattered along the upper portions of the Hakioawa South Trail. It was also observed along the main road, K1, on the Pu‘u Moiwi bypass section.

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*Material examined.* **KAHO'OLAWE:** Upper Hakioawa, Hakioawa South Trail, lowland disturbed shrubland, with *Prosopis pallida*, *Cenchrus ciliaris*, and *Lantana camara*, few patches here and there along upper part of trail, 450 ft [137 m] (754, 434 E, 2,278,164 N), 13 Dec 2015, *Starr & Starr 151213-06*.

### Asteraceae

#### *Eclipta prostrata* (L.) L.

#### New island record

Known previously in Hawai'i from all of the main islands except Kaho'olawe (Wagner *et al.* 1999; Oppenheimer 2003). It is now also documented from the latter island, where it was found growing on the landing platform on the beach by the camp at Hakioawa.

*Material examined.* **KAHO'OLAWE:** Hakioawa, near ocean by LZ for camp, coastal strand with *Batis maritima* and *Sesuvium portulacastrum*, 1 plant, 5 ft [1.5 m] (755,072 E, 2,278,957 N), 13 Dec 2015, *Starr & Starr 151213-05*.

### Caryophyllaceae

#### *Cerastium glomeratum* Thuill.

#### New island record

In Hawai'i, first reported as a new state record from the island of Maui, where it was found scattered in a lawn in Makawao (Starr *et al.* 2004). On Midway Atoll, first reported by Aspey (2012) from a few locations on Sand Island: near the Seaplane Hangar, Catchment Basin, South Beach Cart Path, and Cargo Pier. Starr & Starr (2015) also observed and collected this plant from a moist low spot on the edge of the runway tarmac near the Fire Station. It was not found anywhere else, but given the previously known distribution this ephemeral herb could likely come and go in any moist area on Midway.

*Material examined.* **MIDWAY ATOLL:** Sand Island, near the Fire Station, on tarmac in moist vegetated spot, coastal/urban with *Sagina japonica*, *Oenothera laciniata*, and *Pseudognaphalium sandwicensium* var. *sandwicensium*, few plants here, 15 ft [5 m] (462,514 E, 3,120,063 N), 30 Mar 2015, *Starr & Starr 150330-02*; Sand Island, Sea Plane Hangar, south side near Fuel Tanks in gaps between concrete slabbing, also observed in a few other locations, including: Cargo Pier, Catchment, S. Beach Trail, several plants in coastal scrub with *Verbesina encelioides*, 15 ft [5 m] (463,671 E, 3,120,517 N), Jan 2012, *Aspey s.n. (Starr & Starr 150404-02)*.

#### *Sagina procumbens* L.

#### New island record

This small herb was first reported as a new state record for Hawai'i from the islands of Lāna'i and Maui in 2003 (Oppenheimer 2003). On Midway Atoll, first collected in 2012 on Sand Island near the Water Catchment area (Aspey 2012). In 2015, it was also found in a moist vegetated spot on the margins of the runway tarmac near the Fire Station.

*Material examined.* **MIDWAY ATOLL:** Sand Island, near Fire Station on tarmac in moist vegetated spot, coastal/urban with *Pseudognaphalium sandwicensium* var. *sandwicensium*, *Sagina procumbens*, and *Oenothera laciniata*, common here, 15 ft [5 m] (462,512 E, 3,120,064 N), 30 Mar 2015, *Starr & Starr 150330-04*; Sand Island, at Water Catchment, in coastal scrub, 15 ft [5 m] (462,377 E, 3,119,770 N), Jan 2012, *Aspey s.n. (Starr & Starr 150404-04)*.

### Euphorbiaceae

#### *Euphorbia hyssopifolia* L.

#### New island record

In Hawai'i, previously reported as naturalized in low dry, disturbed sites on the islands of Midway Atoll, Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, and Hawai'i (Wagner *et al.* 1999; Herbarium Pacificum Staff 1999; Bruegmann 1999; Oppenheimer 2003). Recently, it was also found and collected on the island of Kaho'olawe in the Upper Hakioawa area.

*Material examined.* **KAHO'OLAWE:** Upper Hakioawa, near outplantings, lowland scrub with *Dodonaea viscosa*, 950 ft [290 m] (754,155 E, 2,277,356 N), 12 Dec 2015, *Starr & Starr 151212-01*.

***Euphorbia serpens* Kunth**

**New island record**

First reported as a new state record for Hawai'i from the island of Kaua'i (Wagner *et al.* 1997), *E. serpens* has since been documented from West Maui (Oppenheimer 2003), and now from Midway Atoll, where it was found in disturbed coastal sites.

*Material examined.* **MIDWAY ATOLL:** Sand Island, near Cable Co. building in sandy disturbed site, coastal with *Fimbristylis cymosa*, *Verbesina encelioides*, and *Casuarina equisetifolia*, several plants here, also seen at Brackish Pond, previously misidentified in 2008 on Midway as *E. maculata*, 15 ft [5 m] (462,860 E, 3,121,179 N), 29 Mar 2015, *Starr & Starr 150329-01*.

**Fabaceae**

***Macropitium lathyroides* (L.) Urb.**

**New island record**

Cow pea was previously known in Hawai'i from all the main islands (Wagner *et al.* 1999, Herbarium Pacificum Staff 1996). On Midway Atoll, first found and collected in January 2012 on Sand Island by Nik Aspey, who reported one patch growing on the south side of the most easterly concrete inspection ramp of the Seaplane Hangar (Aspey 2012). In 2015, the location, an unloading dock for gravel and other items, was surveyed, though due to recent control work, was devoid of vegetation. The Aspey collection included fertile material, so a seedbank could potentially persist (Starr & Starr 2015).

*Material examined.* **MIDWAY ATOLL:** Sand Island, growing against the south side of the most easterly concrete inspection ramp south of the Sea Plane Hangar, coastal scrub/urban, 10 ft [3 m] (463,657 E, 3,120,604 N), Jan 2012, *Aspey s.n.* (*Starr & Starr 150404-07*).

**Lamiaceae**

***Leonotis nepetifolia* (L.) R. Br.**

**New island record**

Lion's ear, originally introduced to Hawai'i for use in dried floral arrangements and in landscaping, is now naturalized in lowland sites, sometimes forming thickets, on the islands of Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, and Hawai'i (Wagner *et al.* 1999; Oppenheimer 2003; Oppenheimer 2010). It is here reported from Kaho'olawe, where it is growing along the base of a rocky ledge near camp at Hakioawa.

*Material examined.* **KAHO'OLAWE:** Hakioawa, near camp, lowland scrub with *Prosopis pallida* and *Megathyrsus maximus*, many plants along the edge of a rocky ledge bordered by Guinea grass, 15 ft [5 m] (754,949 E, 2,278,864 N), 13 Dec 2015, *Starr & Starr 151213-03*.

***Ocimum gratissimum* L.**

**New island record**

Previously documented in Hawai'i as naturalized in lowland dry, disturbed habitat on the islands of Ni'ihau, Kaua'i, O'ahu, Moloka'i, Maui, and Hawai'i (Wagner *et al.* 1999; Lorence *et al.* 1995), wild basil is here reported from Kaho'olawe, where scattered patches grow along the upper section of the South Hakioawa Trail.

*Material examined.* **KAHO'OLAWE:** Upper Hakioawa, Hakioawa South Trail, lowland scrub with *Leucaena leucocephala*, *Acacia farnesiana*, *Prosopis pallida*, and *Cenchrus ciliaris*, common along trail, 450 ft [137 m] (754,435 E, 2,278,164 N), 13 Dec 2015, *Starr & Starr 151213-01*.

***Stachys arvensis* (L.) L.****New island record**

In Hawai'i, known from all of the main islands except Ni'ihau and Kaho'olawe (Wagner *et al.* 1999), *S. arvensis* was previously recorded by Herbst & Wagner (1992) and noted by Brueggemann in 1995 as rare on Sand Island (Brueggemann 1998). It was not observed in 1999 (Starr & Martz 1999) or 2008. It was collected for the first time in 2012 by Nik Aspey (Aspey 2012), who reported this species reappeared after some trenching along the south side of Peters Ave. north of the Citrus Grove. In 2015, about two dozen plants were further observed in the Community Garden and field by the Cargo Pier (Starr & Starr 2015). Though reported previously, these recent collections represent a new island record for Midway.

*Material examined.* **MIDWAY ATOLL:** Sand Island, in Community Garden, NE corner, coastal inland/urban with *Carica papaya* and *Rosmarinus officinalis*, couple dozen plants here, also few found in field by Cargo Pier, 15 ft [5 m] (463,074 E, 3,120,896 N), 30 Mar 2015, *Starr & Starr 150330-01*; Sand Island, south side of Peters Ave, north of Citrus Orchard, coastal inland/urban with *Casuarina equisetifolia*, *Citrus* spp., and *Verbesina encelioides*, several plants in a 30–40 ft long stand, 15 ft [5 m] (463,361 E, 3,120,777 N), Jan 2012, *Aspey s.n. (Starr & Starr 150404-01)*.

**Portulacaceae*****Portulaca pilosa* L.****New island record**

In Hawai'i, this small succulent plant is documented from dry coastal sites on all the main islands except Lāna'i and Kaho'olawe (Wagner *et al.* 1999). It is now also known from Kaho'olawe, where scattered plants were found growing on a rocky ledge just outside of camp at Hakioawa.

*Material examined.* **KAHO'OLAWA:** Hakioawa, near camp along rocky wall, lowland scrub/camp in association with *Prosopis pallida*, *Cenchrus ciliaris*, *Leonotis nepetifolia*, and *Ageratum conyzoides*, 15 ft [5 m] (755,028 E, 2,277,833 N), 13 Dec 2015, *Starr & Starr 151213-02*.

**Solanaceae*****Solanum torvum* Sw.****New island record**

Turkey berry is a Federal and Hawai'i State Noxious weed (USDA 2016). In Hawai'i, it was previously documented from the islands of Kaua'i, O'ahu, Maui, and Hawai'i, where this large thorny shrub can form dense thickets in lowland disturbed sites, such as pastures and waterways (Wagner *et al.* 1999; Oppenheimer *et al.* 1999; Starr *et al.* 2003; Frohlich & Lau 2012). Turkey berry is also cultivated for its edible fruits used in curries, which was the reason it was introduced to Midway Atoll. This species was first observed and collected on Midway in 2008 from the Community Garden, where there were a few large plants and several seedlings nearby (Starr & Starr 2008). Plants were also observed at a residence. Removal was recommended. By 2015, all the plants had been successfully controlled, except for a couple next to the Community Garden that appeared to have grown back from very large stumps. These were treated again, but had gone to fruit, so a seed-bank likely exists (Starr & Starr 2015).

*Material examined.* **MIDWAY ATOLL:** Sand Island, Community Garden, coastal urban/garden with *Carica papaya* and *Musa ×paradisiaca*, 15 ft [3 m] (463,101 E, 3,120,879 N), 1 Jun 2008, (*Starr & Starr 080601-12*).

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