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These previously unpublished Hawaiian plant records report 7 new state records, 12 new island records, 2 new naturalized records, and 3 nomenclatural and taxonomic changes that affect the flora of Hawai‘i. These records supplement information published in Wagner et al. (1990, 1999) and in the Records of the Hawaii Biological Survey for 1994 (Evenhuis & Miller, 1995), 1995 (Evenhuis & Miller, 1996), 1996 (Evenhuis & Miller, 1997), 1997 (Evenhuis & Miller 1998), 1998 (Evenhuis & Eldredge, 1999), 1999 (Evenhuis & Eldredge, 2000), 2000 (Evenhuis & Eldredge, 2002), and 2001–2002 (Evenhuis & Eldredge, 2003). All identifications were made by the authors except where noted in the acknowledgments, and all supporting voucher specimens are on deposit at BISH except as otherwise noted.

Amaranthaceae

Amaranthus graecizans L. New state record
Amaranthus graecizans is an annual, prostrate or rarely ascending herb native to the western half of North America but naturalized elsewhere. In the key to the amaranths in Wagner et al. (1999: 186), the plant would key out to A. dubius but differs from that species in that it has three stamens and tepals instead of five.


Apocynaceae

Alstonia macrophylla Wall. ex G. Don New island record
Although grown in botanical gardens on the islands of Kaua‘i and O‘ahu and sparingly cultivated in gardens on the island of Hawai‘i, the species had become naturalized only in the Waiākea, Hilo, and Pepe‘ekeo areas of Hawai‘i Island (Wagner et al., 1997: 51). The following collection is the first documented naturalized plant on the island of O‘ahu.


Araceae

Xanthosoma robustum Schott Nomenclatural change
[Syn. X. roseum Schott]
Previously the name X. roseum was provisionally taken up for a naturalized aroid species found on Kaua‘i and O‘ahu (Staples & Woolliams, 1997). Additional gatherings showed the species was also naturalized on Maui (Oppenheimer & Bartlett, 2000: 2) and Hawai‘i (Imada et al., 2000: 10). While a comprehensive revision of Xanthosoma has yet to be published and species concepts remain vague, a worldwide checklist of aroid taxa has unambiguously taken up a different name for the species (Govaerts & Frodin, 2002).
Asteraceae
*Pseudognaphalium attenuatum* (DC.) A. Anderb.

In a recent paper reporting new records of *Pseudognaphalium* for the United States (Nesom, 2001), a new state record was included for the Hawaiian Islands of a naturalized Mexican species. There is no duplicate of the cited voucher specimen in the Bishop Museum, so we repeat the documentation here to call it to the attention of local botanists.


*Senecio madagascariensis* Poir.

This aggressive weed has previously been documented as naturalized on three islands: Kaua‘i and Hawai‘i (Lorence *et al.*, 1995: 24), and Maui (Starr *et al.*, 1999: 11; Oppenheimer & Bartlett, 2002: 4). The collections below document its presence on O‘ahu. The species probably was inadvertently introduced to O‘ahu as a contaminant in grass seed spread along road banks.

*Material examined.* **O‘AHU**: Along Hwy 50 headed west before Hulē‘ia Stream bridge, mostly located toward top of embankment on makai side of highway, 21º57’N, 159º25’W, ca 400 ft, 6 Feb 2001, *D. Arakaki*, s.n. (BISH 668939); Schofield Barracks, lower Wai‘eli Gulch, Firing Point Halo, covering 1/2 acre with many juveniles and seedlings, 400 ft, Feb 2003, *K. Kawelo* s.n. (BISH 695026); Schofield Barracks, South Range, Firing Point Halo, in an area ca 20 m × 30 m, probably from camping and military equipment from the Big Island, 1000 ft, Feb 2003, *K. Kawelo* s.n. (BISH 695028).

Campanulaceae

*Wahlenbergia* Schrader ex Roth

While preparing specimens in the BISH Hawaiian collection for data entry, a discrepancy was noticed between the annotation labels on the material of *Wahlenbergia* and the name used in the Manual (Wagner *et al.*, 1990, 1999) as well as in-house curatorial aids. While the Manual uses the name *Wahlenbergia gracilis* (G. Forst.) A. DC., nearly all the vouchers had been annotated by Tom Lammers in 1992 or 1994 as *W. marginata* (Thunb.) A. DC. Consultation with Lammers (pers. comm. 2002) revealed that a recent partial revision (Petterson, 1997) had changed taxonomic concepts for the widespread Pacific species, in part due to careful study of type specimens for the names involved in New Zealand. Comparison of the BISH specimens immediately disclosed that two quite distinctive morphologies were represented, and these correspond to Petterson’s taxonomic concepts for both *W. gracilis* and *W. marginata*. The following key is adapted from Petterson’s account. Selected specimen citations are provided to document the distribution for *W. marginata* in the Hawaiian Islands.

**Key to Wahlenbergia**

1. Corolla rotate, 10–20 mm in diameter; calyx teeth longer than sinus between corolla lobes ................................................................. *W. marginata*

1. Corolla deeply campanulate, 5–10 mm in diameter; calyx teeth shorter than sinus between corolla lobes ................................................................. *W. gracilis*
**Wahlenbergia gracilis** (G. Forst.) A. DC.  
**Taxonomic clarification**
Native to New Caledonia, Norfolk Island, and Lord Howe Island (Petterson, 1997); specimens from ‘Eua, Tonga, may possibly belong here also. This species has tiny, paler blue-violet, long-tubed flowers, with the corolla tube distinctly visible above the calyx lobes when viewed from the side. Hawaiian specimens are smaller and more delicate in all parts, with stems that are erect to sprawling and fruit capsules that are campanulate and broad in comparison to their length.

Most of the Hawaiian specimens in BISH belong to this species and the distribution remains as it was published in the Manual: Moloka‘i, Lāna‘i, Maui, and Hawai‘i (Wagner et al., 1990, 1999).

**Wahlenbergia marginata** (Thunb.) A.DC.  
**New state record**
Native to Japan (Honshu), where it extends as far as 37ºN (Petterson, 1997). The plants widespread in the Pacific and Asia that have been called *W. marginata* have not been evaluated taxonomically and may not be the same as the Japanese taxon (Petterson, 1997). This species typically has a bright blue-violet corolla, saucer-shaped with 5 spreading, elliptic lobes that present a star-like pattern when viewed from above. Hawaiian plants are distinctly larger in all parts than *W. gracilis*, with more erect, coarser stems, and fruit capsules that are slenderly elongate and visibly ridged lengthwise.


**Chenopodiaceae**

**Salsola tragus** L.  
**New island record**
Previously known from Maui (Oppenheimer & Bartlett, 2002: 5), Kaho‘olawe (Herbst & Wagner, 1999: 19), and Hawai‘i (Wagner et al., 1999: 540). The collection cited below documents its presence on O‘ahu.


**Commelinaceae**

**Palisota bracteosa** C. B. Clarke  
**New naturalized record**
This herbaceous, shade-loving species has been cultivated as an ornamental on O‘ahu since the early 1950s and has now begun to escape from cultivation in at least two widely separated locations, both near botanical gardens. Plants were found scattered in shady understory on steep slopes above planted areas in the Lyon Arboretum; the Waimea Arboretum voucher was collected from the humus-filled crotch of a monkeypod tree about eight feet above the ground. The fleshy, bright red fruit may be attractive to rats or birds, which are effectively dispersing the seeds from plantings into surrounding areas (D.
Orr, pers. comm.). *Palisota* was not included in the list of potentially invasive species of cultivated plants in Hawai‘i (Staples et al., 2000), but it should be monitored closely for its potential to invade shady, mesic forest habitats.

In the key to species of *Palisota* found in the second edition of the *Flora of West Tropical Africa* (Brenan, 1968: 33, 35), *P. bracteosa* is distinguished as follows: rosette-forming herb of the forest floor; inflorescence peduncle not or scarcely tomentose; inflorescence with conspicuous ovate bracts 5–10 mm broad, bract margins long-ciliate; leaf blade elliptic to oblanceolate or narrowly obovate, ca 25–40 cm long and 5.5–14 cm wide, gradually cuneate at the base, subsessile or with a petiole to 25 cm long; flowers white (or pinkish white); fruits pilose, beaked, bright red.


**Crassulaceae**

*Kalanchoe crenata* (Andrews) Haw. **New state record**

This is the first naturalized record for this African species in the Hawaiian Islands, although it was known in cultivation as an ornamental. Native throughout much of sub-Saharan Africa (Fernandes, 1983), *K. crenata* is a polymorphic taxon with an extensive synonymy. It is also believed to be naturalized in tropical America, India, and Malaysia. Distinctive features are the (usually) erect stems to 1 m long; opposite, crenulate leaves with distinct petioles; and spreading panicles of yellow, orange, salmon, brick, or red flowers with corolla tube longer than the lobes and anthers borne at the mouth of the corolla tube. Plants are often totally glabrous or there may be glandular indumentum on the inflorescence and flowers.

*Material examined.* O‘AHU: Mākua Valley, on rocky ledges, north-facing slopes of lower ‘Ohikilolo Ridge, plants seen over an area approximately 50 ft by 50 ft, but may extend farther, ca 200 ft, 7 May 2002, K. Kawelo, J. Rohrer & J. Beachy s.n. (BISH 687840).

**Cyperaceae**

*Rhynchospora radicans* subsp. *microcephala* (Bert. ex Spreng.) W. Thomas  **New island record**

This taxon was recently reported as a new state record based upon a collection from the island of Hawai‘i (Strong & Wagner, 1997: 46). The authors speculated that the species probably was inadvertently introduced by humans, as it was growing in cultivated land rather than near areas visited by waterfowl. On Maui the species appears to be much more abundant, more widely distributed, and in wetland areas where it potentially could have been brought from its native areas in Central or western South America by migrating shorebirds, such as the Pacific Golden Plover. It is more likely that the sedge was introduced to Maui, where it later could have been carried to Hawai‘i Island.

Fabaceae

*Indigofera hendecaphylla* Jacq.

New island record

Widespread throughout the Old World tropics, *Indigofera hendecaphylla* was previously known to be naturalized on the islands of Kaua‘i, O‘ahu, Moloka‘i, Maui, and Hawai‘i (Geesink et al., 1999: 675; Starr et al., 2002: 20; Oppenheimer, 2003: 13). The specimen cited below documents that the species also is present on the island of Lāna‘i. In Geesink et al. (1999), the species was incorrectly listed as *I. spicata*, a mistake that has since been rectified (Herbst & Wagner, 1999: 21).


Stylosanthes

The *Manual* (Wagner et al., 1999) included a single species of *Stylosanthes*, *S. fruticosa* (Retz.) Alston, as a naturalized element in the Hawaiian flora. A number of collections of *Stylosanthes* received in Bishop Museum between 1990 and 2003 did not fit the description of *S. fruticosa* and proved difficult to key out using the only revision of the entire genus (Mohlenbrock, 1958). Some of these new collections were made from plants cultivated at the USDA Plant Materials Center located on Moloka‘i, and others originated from wild plants growing in pastures, along roadsides, and in other seemingly naturalized places. Requests to legume specialists for identifications of the Hawaiian material were declined; *Stylosanthes* has a reputation as a taxonomically difficult genus with notoriously confused species limits. However, one specialist pointed out to us the publications of Len ‘t Mannetje (‘t Mannetje, 1984), who had worked on the genus for many years from an agricultural perspective. Our attempts to identify the Hawaiian specimens using the keys in ‘t Mannetje (1984) also proved inconclusive. Subsequently, Dr. ‘t Mannetje, now retired, agreed to try and identify the Hawaiian and Pacific material of *Stylosanthes* and the specimens were duly loaned to him for this purpose.

The results were surprising: there are 3 species, one comprising two varieties, of *Stylosanthes* present in the Hawaiian Islands, and none of them is *S. fruticosa*. We enumerate the 4 taxa here and cite voucher material for each, in order to provide a firm, specimen-based foundation for the taxonomic concepts we adopt. A key to identify the Hawaiian taxa of *Stylosanthes* is adapted from ‘t Mannetje (1984). It is essential to have fruiting material to use the key; flowering or sterile specimens cannot be successfully identified. The beak and upper articulation refer to the distal end of the segmented pod.

**Key to Stylosanthes** in Hawai‘i

1. Beak of fruit > 0.5 mm long ................................................................. *S. scabra*
2. Beak of fruit ≤ 0.5 mm long (2).

2(1). Beak distinctly coiled; upper articulation and beak glabrous or hairy .... *S. viscosa*

2. Beak uncinate (hooked or J-shaped), minute (uncurled length < 0.5 mm long); upper articulation and beak glabrous (3).

3(2). Pods with inconspicuous venation or weakly reticulate; inflorescence with > 4 flowers ................................................................. *S. guianensis* var. *guianensis*

3. Pods with conspicuous reticulate venation; inflorescence with up to 20 flowers ................................................................. *S. guianensis* var. *intermedia*
Stylosanthes guianensis (Aubl.) Sw.  New state record
This species has not previously been found on any of the Hawaiian Islands. Two varieties are represented among Hawaiian collections: var. guianensis and var. intermedia (Vogel) Hassler. The following collections document the first known occurrence for var. guianensis on Kaua‘i and Moloka‘i.


Stylosanthes guianensis var. intermedia (Vogel) New state record
Hassler


Stylosanthes scabra Vogel  Taxonomic change
[S. fruticosa misapplied, sensu Hawaiian authors, not of (Retz.) Alston]
This species has not previously been found on any of the Hawaiian Islands. The following collections document its occurrence on O‘ahu, Moloka‘i, Lāna‘i, and Maui. Three of the cited vouchers (the O‘ahu and Lāna‘i specimens) were ambiguously identified by ‘t Mannetje; apparently geographic provenance is required to separate S. fruticosa (African, SE Asian origin) from S. scabra (South American origin). With cultivated material, this criterion is useless. Wild provenance can only be inferred based on historical research to determine where Hawaiian introductions originated, and that is not known in this case. Because no bona fide specimens of S. fruticosa were found among Hawaiian specimens identified by ‘t Mannetje and S. scabra has been confirmed from two other islands, we have applied the name S. scabra to O‘ahu and Lāna‘i material as well.


Stylosanthes viscosa Sw.  New state record
This species has not previously been found on any of the Hawaiian Islands. The following collections document the first known occurrence for S. viscosa on O‘ahu and Maui. The first Starr specimen cited below, which has no fruits, was not identified to species by ‘t Mannetje; a later collection with legumes from the same locality was confirmed as S. scabra. We are calling both Starr specimens S. scabra.

Malvaceae
*Sida cordifolia* L. **New island record**
This species was formerly known from low elevation, dry, disturbed areas at Kaupō, East Maui; on the Kona coast, Hawai‘i; and in the Waimea and Kōloa Districts of Kaua‘i (Bates, 1999: 897, Lorence *et al.*, 1995: 41). The following specimen documents its presence on O‘ahu.


Molluginaceae
*Mollugo cerviana* (L.) Ser. **New island record**
Previously known from low, dry areas on the island of Hawai‘i, where it is well established on the northwestern side of the island, especially in the South Kohala District (Wagner *et al.*, 1999: 922). The following collection documents its presence on the island of O‘ahu.

*Material examined.* **O‘AHU:** Kahuku, next to abandoned airstrip, close to Marconi Rd, 21°42′N, 157°58′W, 10 ft, 25 May 2001, F.R. Warshauer 5180.

Plantaginaceae
*Plantago debilis* R. Br. **New island record**
Although *Plantago debilis* has been naturalized in Hawai‘i for at least 60 years, it has not been collected outside Honolulu and at that in only three localities (Wagner *et al.*, 1999: 1051). Based on the collection cited below, it is now known also from the Big Island.


Poaceae
*Digitaria divaricatissima* (R. Br.) Hughes **New naturalized record**
Native to New South Wales, Queensland, and Victoria, Australia, *Digitaria divaricatissima* previously was reported from a single collection made by E.Y. Hosaka (3611, US) on Hawai‘i Island in 1950 (O‘Connor, 1999: 1530). Three years later the species was again collected on the island (listed below). The species has recently been collected on Lāna‘i.


*Eragrostis elongata* (Willd.) Jacq. **New island record**
Previously documented from the islands of Kaua‘i, Moloka‘i, and Hawai‘i (Oppenheimer, 2003: 21), the species has since been found on O‘ahu.

*Material examined.* **O‘AHU:** Ko‘olau Mts, Kawaiola Training Area, Pu‘u Kapu helicopter landing zone, along Drum Rd (near ‘Opae‘ula and Kawaiinui Rds), only one plant seen, 1250 ft, 26 Feb 2003, K. Kavelo *et al.*, s.n. (BISH 695029); Ko‘olau Mts, military LZ west of Poamoho trailhead, on pu‘u that is marked 1652 ft on USGS topo map, hundreds of healthy reproductive individuals seen at this time with immature fruit, doesn’t look invasive, 10 Mar 2003, K. Kavelo, J. Rohrer & J. Beachy s.n. (BISH 695030).
Festuca arundinacea Schreb.  
New island record
Previously known from Kaua‘i (Wagner et al., 1997: 60), East Maui (Oppenheimer, 2003: 21), and Hawai‘i (O’Connor, 1999: 1547), *Festuca arundinacea* also is naturalized on O‘ahu.

Material examined. O‘AHU: Wai‘anae Mts, Mt Ka‘ala, present along Ka‘ala fence line portion near the road, along both road to FAA chain link exclosure and to the radio towers, 4000 ft, 7 May 2003, K. Kawelo s.n. (BISH 704671).

Schizachyrium condensatum (Kunth) Nees  
New island record
Previously documented from the island of Hawai‘i (O’Connor, 1999: 1590), where it is common in Hawai‘i Volcanoes National Park but recently found more commonly on other parts of the island. Otto and Isa Degener (1983: 128) report that it was first introduced in 1932 on O‘ahu, however there is no documentation backing this statement.


Setaria sphacelata (Schum.) Stapf & C.E. Hubb. ex M.B. Moss  
New island record
First reported from the island of Maui as a naturalized species in Hawai‘i (Starr et al., 2002: 23), *Setaria sphacelata* has now been documented from three additional islands: Kaua‘i, O‘ahu, and Hawai‘i.


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LITERATURE CITED


