and white flowered forms occur in this population.

Scrophulariaceae

Veronica serpyllifolia L.

LANAI: Naturalized at Lanaihale at 3000 ft (914 m) elevation, Lanai, *Nagata 2658*, 20 Mar 1983 (HLA). **New island record.**

Solanaceae

Physalis ixocarpa Brot. ex Hornem.

MOLOKAI: Known from a single shrub in the arid scrubland in W Molokai, *Nagata 2547*, 11 Sep 1982 (K). This is something of an anomaly since this solitary individual was far from the nearest cultivated area. **New state record.**

Verbenaceae

Citharexylum caudatum L.

OAHU: This species is well-documented from the forests behind Honolulu especially in the Manoa-Pauoa Flats area (Wagner *et al*. 1990: 1317), but it has also been recorded from central Oahu. In 1966 it was documented as naturalized behind Schofield on the Wahiawa end of the Schofield-Waikane Trail at 1200 ft (365 m) elevation, *Nagata 46*, 5 Mar 1966 (HLA). Ten years later it was collected along the Poamoho Ridge Trail at 1800–2500 ft (548–762 m) elevation, *Little 31191*, 10 Sep 1976 (BISH). The seeds of *C. caudatum* are easily dispersed by birds and it is likely that the distributional range of this species is far wider than once believed.

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Contributions to the Flora of Hawai'i. IV. New Records and Name Changes

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Publication of the *Manual of the flowering plants of Hawai'i* (Wagner *et al.* 1990) has provided a modern accurate account of the angiosperms occurring indigenously and naturalized after introduction by humans directly or indirectly. Collecting efforts after the cut-off date for the *Manual* project (September 1987) have resulted in a substantial number of new distributional records and detection of additional naturalized species. Also,

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recent publications have resulted in new classifications or nomenclatural changes for species that occur in the Hawaiian Islands. This paper, alphabetically treating the flowering plant families, provides records for naturalized species documented for the first time in the Hawaiian Islands, new range extensions for naturalized and a few native species within the archipelago, and briefly outlines name changes in the literature affecting species in the Hawaiian flora. These records and changes can be considered a supplement to the *Manual* (Wagner *et al.* 1990). In reporting additions to the flora we give diagnostic characters so that this paper can be used in conjunction with the *Manual* for identifications. We use the same definition for "naturalized" as used in the *Manual* (Wagner *et al.* 1990: 1645). We report 32 new island records for naturalized species and 5 for endemic species. We also call attention to 15 newly naturalized species in the Hawaiian Islands. We discuss 15 species for which the correct name has changed, and 2 species that were misidentified in the *Manual* (*Lepidium africanum* and *Mucuna sloanei*) are discussed. All identifications have been made by the authors except for those made by specialists listed in the acknowledgments.

Acanthaceae

Blechum pyramidatum (Lam.) Urban

A.C. Smith (1991: 121–22) indicated that the correct name for the species of Acanthaceae treated by Wagner *et al.* (1990) as *Blechum brownei* Juss. is *B. pyramidatum*. We also report here a **new island record** for Hawaii.

Material examined. Hawaii: South Hilo District, Onomea, margin of the Hawaii Tropical Botanical Garden, 10 Jan 1990, *Matayoshi s. n.* (BISH).

Amaranthaceae

Alternanthera brasiliana (L.) Kuntze

The following collection represents a **new naturalized record** of *Alternanthera brasiliana* on Oahu. Wagner *et al.* (1990: 183) list this species as also naturalized on Molokai.

Material examined. Oahu: [Waianae Mountains] Pohakea Trail, 27 May 1982, *E. Funk 406* (BISH).

Amaranthus viridis L.

The following collection represents a **new naturalized record** of *Amaranthus viridis* on Midway Atoll. The species also occurs on Kure Atoll, Kaula, Kauai, Oahu, Lanai, Maui, Kahoolawe, and Hawaii (Wagner *et al.* 1990: 189); and recently reported from Molokai (Hughes, this volume) and Niihau (St. John 1990: 85).

Material examined. Midway Atoll: Sand Island, Jul 1988, *Herbst & Takeuchi 9074, 9080* (BISH).

Blutaplaron vermiculare (L.) Mears

The following collection represents a **new state record** to the naturalized flora of the Hawaiian Islands. *Blutaplaron* can be characterized by its opposite linear to oblanceolate fleshy leaves, the hermaphroditic flowers in elongate, cylindrical, axillary spikes 1–2.8 cm long, perianth segments 5, free to the base, in 2 series, the outer 3 flat and broad, and the inner 2 sharply curved and tending to enclose a stamen, staminal filaments distinct

nearly to the base, anthers 5, unilocular at anthesis with 1 line of dehiscence, stigma 2-lobed, lobes filiform (Eliasson 1988, Mears 1982). *Blutaplaron vermiculare* is distinguished from the other 3 species of the genus by its prostrate habit, spikes greater than 5 mm in diameter, leaves greater than 1 cm long, pedicels not inflated, and perianth segments with inconspicuous nerves (Mears 1982).

Material examined. Oahu: Kahuku Pacific Sea Farms property, growing at end of old runway in area where wastewater is left to pond, prostrate herb forming small mounds, growing among *Sesuvium portulacastrum* on coralline substrate, 4 Jul 1991, *Char s.n.* (BISH).

Gomphrena celosioides Mart.

The following collection represents a **new island record** from the island of Kauai. *Gomphrena celosioides* was previously known in the Hawaiian Islands only from Oahu.

Material examined. Kauai: Koloa District, Poipu, junction of Hoona Road and Lawai Road, ca. 20 ft, 3 Dec 1986, *Flynn 1977* (BISH, PTBG).

Apiaceae

Spermolepis hawaiiensis Wolff

The Lanai collections listed below represent island records inadvertently omitted by Constance & Affolter (1990: 212). The Molokai record shows that the species is still extant on that island.

Material examined. Lanai: Lanai District, Paomai, 18 Apr 1919, *Munro 310* (BISH), 18 Apr 1919, *Munro 340* (BISH); Kahinahina, 1200 ft, 11 Jun 1927, *Munro 46* (BISH); Naha Trail, Kapoho Gulch, extensive colony scattered on rock outcropping on a very steep slope, 750 ft, 21 Feb 1989, *Hobdy et al. 3017* (BISH). Molokai: Molokai District, W of Kamalo Canyon, fairly common in poor soil in ohia-pukiawe grassland, growing vigorously in patches in disturbed soil, plants robust and scented, 30 Mar 1989, *Hobdy et al. 3035* (BISH).

Aquifoliaceae

Ilex aquifolium L.

The following collection represents a **new island record** for *Ilex aquifolium*. It also is naturalized on the island of Hawaii.

Material examined. Maui: Makawao District, Olinda Prison Camp, growing wild, 8000 ft, 2 Jan 1961, *Tanabe 37* (BISH).

Asteraceae

Artemisia vulgaris L.

The following collection represents a **new island record** for *Artemisia vulgaris*. It also is naturalized on Kauai, Oahu, and Hawaii.

Material examined. Maui: East Maui, Makawao District, Makawao Town, an uncommon weed in gardens and along roadsides, 18 Jun 1986, *Hobdy 2567* (BISH).

Centaurea cyanus L.

The following collection represents a **new naturalized record** for *Centaurea cyanus*, bachelor's-buttons or cornflower, in the Hawaiian Islands.

Material examined. Lanai: Lanai District, a roadside weed on the outskirts of town, plants to 80 cm tall, 7 Jul 1986, *Hobdy 2576* (BISH, US).

Conyza canadensis L. var. ***pusilla*** (Nutt.) Cronq.

The following collection represents the first naturalized record for this species from Midway Atoll. This variety also occurs all of the main islands except Kahoolawe.

Material examined. Midway Atoll: Sand Island, Jul 1988, *Herbst & Takeuchi 9072* (BISH).

Eclipta prostrata (L.) L. [syn. *Eclipta alba* (L.) Hassk.]

As pointed out by A. C. Smith (1991: 274) 3 names compete for the correct epithet of this species if the types of both *Verbesina prostrata* L., Sp. Pl. 902. 1753 (TYPE: Herb. Plukenet (BM, lectotype, designated by Grierson, Fl. Ceylon 1: 212. 1980) and *Verbesina alba* L., Sp. Pl. 902. 1753 (TYPE: Herb Hort. Cliff. (BM, lectotype designated by Grierson, Fl. Ceylon 1: 212. 1980) are considered to represent the same species. The 3 epithets are: *Eclipta prostrata* (L.) L., Mant. Pl. Alt. 286. 1771; *E. alba* (L.) Hassk., Pl. Jav. Rar. 528. 1848; and *Eclipta erecta* L., Mant. Pl. Alt. 286. 1771, nom. superfl. *Eclipta alba* has long been used because it was believed that the first time that the 2 taxa were united was by Hasskarl in the above cited 1848 reference; however, Roxburgh (Fl. Ind. ed. 2. 3: 438. 1932) appears to be the first to have united the 2 taxa under the name *E. prostrata*, which is therefore to be used if the 2 are united in the genus *Eclipta* (ICBN 1994 Art. 11.5).

Lactuca serriola L.

The following collection represents a **new island record** of *Lactuca serriola* from Kauai. The species also occurs on Oahu, Lanai, Maui, and Hawaii.

Material examined. Kauai: Waimea District: Hanapepe Valley, roadside at low elevation, 18 May 1991, *Sugawa s. n.* (BISH 2 sheets).

Parthenium hysterophorus L.

The following collection represents a **new island record** of *Parthenium hysterophorus* from Oahu. The species also occurs on Kauai, Molokai, Maui, and Hawaii.

Material examined. Oahu: collected along Diamond Head Road at the turn-off into the crater, 17 Jul 1990, *E. Funk s. n.* (BISH).

Pluchea carolinensis (Jacq.) G. Don

Khan & Jarvis (1989) have shown that the name *Pluchea symphytifolia* resulted from an erroneous interpretation of the original material apparently associated with the name *Conyza symphytifolia* Mill. The typification by Gillis (1977) of this name was incorrect. Accordingly, his combination cannot apply to the species formerly and correctly known as *Pluchea carolinensis*. When following the typification by Khan and Jarvis, *Conyza symphytifolia* falls into the synonymy of *Neurolaena lobata* (L.) Cassini.

Soliva sessilis Ruiz & Pav.

The following represents a **new state record** (and only collection) of *Soliva sessilis*. This species appears to be at least locally naturalized in Hawaii Volcanoes National Park. This species, native to South America, is distinguished by: prostrate clumped habit, pinnate leaves, leaflets palmate, heads disciform, sessile in basal and cauline leaf axils, phyllaries 5–12 in 1–2 series, 2–3 mm long, receptacle naked, pistillate florets 10–12 without a corolla, staminate florets 4–6 with green translucent corollas 2–3 mm long.

Material examined. Hawaii: Kau District, Hawaii Volcanoes National Park, Kipukapuaulu,

4000 ft, tiny herb growing in ash soil on disturbed site adjacent to road and parking area, 24 Apr 1985, *Cuddihy & Tunison 1891* (BISH, US).

Brassicaceae

Brassica rapa L. [syn. *Brassica campestris* L.]

The correct name for the species treated as *Brassica campestris* in Wagner *et al*. (1990: 400) is *B. rapa* (Rollins 1993: 226; Al-Shehbaz, pers. comm.). The following collection represents a **new island record** of this species from Maui. It was previously known from Pearl and Hermes Atoll, Kauai, Oahu, Molokai, Lanai, and Hawaii.

Material examined. Maui: Makawao District, East Maui, Haliimaile Rd., 305 m, growing along the roadside as a weed, 13 Apr 1991, *Hobdy 3289* (BISH).

Capsella bursa-pastoris (L.) Medik. [syn. *Capsella rubella* Ruet.]

Recent specialists in the Brassicaceae (Rollins 1993: 245, Al-Shehbaz pers. comm.) no longer recognize the minor variations discussed in Wagner *et al.* (1990: 402) separating *Capsella rubella* as a distinct species from *C. bursa-pastoris*. Rollins (1993) summarizes the situation.

Lepidium africanum (N.L. Burm.) DC

This species was first reported from the Hawaiian Islands as *Lepidium hyssopifolium* Desv. by Rollins (1986) and incorrectly followed as such in the *Manual* (Wagner *et al*. 1990: 407). *Lepidium hyssopifolium* is an Australian endemic (South Australia, New South Wales, southwestern Victoria, and Tasmania) according to Hewson (1982). The problem in identification of the Hawaiian material stems from the previous confusion of these 2 species in Australia. We provide below a description of *L. africanum* that replaces the partly erroneous one in Wagner *et al*. (1990: 407).

Annual or perennial herbs; stems erect, usually 3–7 dm tall, branched in the upper half, the branches usually ascending, glabrous. Leaves variable; basal leaves usually oblanceolate, toothed, sometimes pinnately lobed, 2–8 cm long; cauline leaves usually linear-lanceolate 1–4 cm long, toothed to entire, usually sparsely ciliate. Flowers in elongate racemes, usually 10–18 cm long,; sepals 0.7–0.8 mm long, caducous; petals threadlike, shorter than sepals; stamens usually 2. Silicles ovate to obovate, 2–3 mm long, 1.5–2 mm wide, notch shallow, the margins scarcely exceeding the short style; pedicel ±flattened, adaxial side sparsely puberulent, ±curved. Seeds ca. 1.5 mm long. Native to Africa, naturalized in Australia and the Hawaiian Islands; in Hawaii naturalized in dry, disturbed sites, 820–2150 m, from scattered locations in Hamakua and North Kona Districts, Hawaii.

Material examined. Hawaii: Hamakua District: Mauna Kea, Ahumoa, abandoned radio facility, 7040 ft, 21 May 1975, *Herbst & Spence 5321* (BISH); Mauna Kea, Halepohaku, by old facilities, 27 May 1985, *Char & Stemmermann 85.019* (BISH); Mauna Kea, Puu Laau Road, in open mamane-naio forest, 2012 m, 19 Aug 1987, *Engilis 34* (BISH). North Kona District, Hualalai, Puu Waawaa, open rangeland with native canopy relicts, SE corner of 1986 burn, common among closely cropped grass or in patches on bare a‘a, 2700 ft, May 1989, *Takeuchi 5790* (BISH).

Lobularia maritima (L.) Desv.

The following collection represents a **new naturalized record** from Oahu. The

species also is naturalized on Kure and Midway Atolls and on Maui.

Material examined. Oahu: Kahuku Golf Course/cemetery, annual herb . . . of waste areas, fields, and pastures, 18 Feb 1975, *K. Ziegelbauer 20* (BISH).

Rorippa

Specialists in the Brassicaceae no longer recognize the segregate genus *Nasturtium* R. Br. (Rollins 1993: 736; Al-Shehbaz, pers. comm.). The following are the correct names for the 2 species naturalized in the Hawaiian Islands.

Rorippa microphylla (Boenn. ex Reichb.) Hylander ex Löve & Löve [syn. *Nasturtium microphyllum* Boenn. ex Reichb.]

Rorippa sarmentosa (G. Forster ex DC) J. F. Macbr. [syn. *Nasturium sarmentosum* (G. Forster ex DC) Schinz & Guillaumin]

Clusiaceae

Hypericum mutilum L. subsp. ***mutilum***

In a recent publication on *Hypericum*, Robson (1990: 116–19) has indicated that the Hawaiian populations of *Hypericum mutilum* (Wagner *et al.* 1990: 544) are subsp. *mutilum.*

Costaceae

Costus speciosus (J. König) Sm.

The following collection represents a **new island record** from Kauai. *Costus speciosus* previously was known to be naturalized only on Lanai.

Material examined. Kauai: Hanalei District, abundantly naturalized in *Syzygium cumini* forest, along Kuhio Hwy. near Limahuli Stream, 15 ft, 28 May 1988, *K. Nagata 3849* (BISH).

Cyperaceae

Cyperus compressus L.

The following collection of *Cyperus compressus* represents a **new naturalized record** from Maui. It also occurs on the island of Hawaii.

Material examined. Maui: Hana District, Kalahu Point, National Tropical Botanical Garden, Kahanu Garden, ca. 0–50 ft, disturbed area between *Pandanus* forest and lawn area around Piilani Heiau, common, 15 Oct 1987, *Flynn & Tully 2446* (BISH, PTBG).

Cyperus phleoides (Nees ex Kunth) Hillebr. var. ***phleoides***

The following collection represents a **new island record** for this endemic Hawaiian sedge. It previously was known from all of the main islands except Kahoolawe and Hawaii.

Material examined. Kahoolawe: Makawa District, Ale ale stacks, near Puu Koae, mixed native coastal shrubland with *Portulaca molokiniensis* . . . 10–90 m, 50+ plants on stack, 18 Mar 1992, *Wood et al. 1726* (BISH, PTBG).

Rhynchospora caduca Elliott

The following collection represents a **new island record** from Kauai. *Rhynchospora caduca* was previously known from Maui and Hawaii. Based on the recent introduction

of this species to the archipelago, it appears to be spreading rapidly.

Material examined. Kauai: Hanalei District, large bog mauka of Kilauea town, 450 ft, 10 Apr 1988, *Hume & Levine 332* (BISH, PTBG).

Fabaceae

Acacia aneura F. Muell. ex Benth.

The following collection is a **new naturalized record** of *Acacia aneura*, known as mulga in Australia, in the Hawaiian Islands. It is known in cultivation from Oahu, Molokai, Lanai, and Kahoolawe. It has been cultivated in the archipelago since 1931 and was introduced from Australia by C.S. Judd for forestry plantings (from *Judd s. n.*, BISH). It is easily recognized by its narrow, dull phyllodes 0.9–8 (12) mm wide with inconspicuous veins, flat winged pods, and flowers in slender dense bright yellow spikes 1–3 cm long.

Material examined. Lanai: Lanai District, W of Lanai City and N of Kaumalapau, Kiei Gulch, lowland dry flat grassland, with *Leucaena*, *Sida*, *Casuarina*, and *Panicum*, 320 m, abundant and starting to naturalize, 14 May 1990, *Wood et al. 336* (BISH, PTBG).

Adenanthera pavonina L.

The following collection represents a **new naturalized record** of *Adenanthera pavonina* being in the Hawaiian Islands. This species, known locally as false wiliwili, is most easily distinguished by its bipinnately compound leaves, racemes of mixed white and yellow flowers, spirally twisted pods after dehiscence, and 9–10 mm long red lenticular seeds.

Material examined. Kauai: Koloa District, near Hwy 50 just E of the halfway bridge, along turnoff into cane field, ca. 100 m, apparently planted, now regenerating and becoming naturalized locally, 30 Nov 1989, *Lorence 6413* (BISH, PTBG).

Canavalia sericea A. Gray

The following collection represents a **new island record** of this species on Kauai. It also is naturalized on Oahu and Maui.

Material examined. Kauai: Kawaihau District, Aliomanu, a vine at back of beach creeping across sand, ca. 5 ft . . . locally common with *Scaevola*, 3 Jan 1990, *Flynn & Schaeffer 3727* (BISH).

Crotalaria verrucosa L.

Crotalaria verrucosa, quickly distinguished from other species of *Crotalaria* in the Hawaiian Islands by its blue corolla, was inadvertently omitted by Windler & Skinner (1990) in their treatment of the genus for the *Manual*. Additional characters that distinguish this species include its striate, 4-angled stem, and the simple, lanceolate, ovate, rhomboid or elliptic leaves. This species is currently known to be naturalized at least on Oahu (D.R. Herbst, field observ., 1995). The Fosberg collection cited below is the earliest record indicating that the species was naturalized in the Hawaiian Islands. Several of these specimens were identified by R. Barneby.

Material examined. Oahu: West slope of Ulupau Head along abandoned road in thick *Leucaena* scrub, fairly common, 10 Dec 1978, *Fosberg & Evans 58853* (BISH); 31 May 1926, *A.F. Judd 53* (BISH); University of Hawaii, semi-moist ground, 4 Mar 1931, *Inafuku, s.n.* (BISH); Molokai: Mapulehu, H.S.P.A. introduction, 21 May 1944, *A.J. Mangelsdorf, s.n.* (BISH).

Desmanthus pernambucanus (L.) Thellung

In a recent monograph of *Desmanthus* (Luckow 1993), species of the *D. virgatus* complex were reinterpreted. The result is that the species naturalized on many Pacific islands, including the Hawaiian Islands, is now referred to *D. pernambucanus*.

Desmodium heterophyllum (Willd.) DC

The following collections represent records of a species previously not recorded as naturalized in the Hawaiian Islands. *Desmodium heterophyllum* can be distinguished from other species of *Desmodium* naturalized in the archipelago by its usually broadly elliptic leaflets, the terminal one (0.3–)1–2.5 cm long, (0.3–)0.8–1.4(–2) cm wide, stems with spreading hairs up to 2 mm long, the pedicels or peduncle 10–30 mm long, and the articles ultimately dehiscing along the lower suture.

Material examined. Maui: abundant along road shoulder from Kaupakulua to Keanae, 20 Aug 1987, *Hobdy 2918* (BISH); Honopu, along Lupi Road in Koolau Forest Reserve, common in ditch access road, 2 Sep 1987, *Hobdy 2920* (BISH). Molokai: Plant Materials Center, grass and legume groundcover trail, initial testing field 8A, row 2, plot 15 HA-4732, sprigs collected at Palau Airport, 440 ft, 11 Jul 1990, *Evans M-84* (BISH).

Medicago minima (L.) Bartal.

The following collection represents a **new island record** for Kauai. *Medicago minima* was previously recorded from Lanai, Maui, and Hawaii.

Material examined. Kauai: Lihue District, Niumalu flat, Nawiliwili Bay along small boat harbor, 5 ft, 3 Apr 1987, *Flynn & Lorence 2142* (BISH, PTBG).

Medicago sativa L.

The following collection represents a **new island record** from Maui for *Medicago sativa*. This species was previously known to be naturalized on Midway Atoll, Oahu, Lanai, and Hawaii.

Material examined. Maui: East Maui, Baldwin area near Halliimaile Rd. junction, a weed on road shoulder, 17 Jun 1991, *Hobdy et al. 3381* (BISH).

Melilotus alba Medik.

The following collection represents a **new island record** for Maui. *Melilotus alba* was previously known to be naturalized on Midway Atoll and Hawaii.

Material examined. East Maui: along Kulu Highway, an uncommon roadside weed, 5 Jun 1987, *Hobdy 2830* (BISH).

Mucuna sloanei Fawcett & Rendle [syn. *M. urens* sensu auct. non (L.) Medik.]

Geesink *et al.* (1990: 689) misidentified the Hawaiian populations of *Mucuna urens.* These plants actually represent populations of the South American and Pacific basin species, *Mucuna sloanei* (Wilmot-Dear 1990: 25–29). Thus this species is indigenous in the Hawaiian Islands rather than naturalized as treated by Geesink *et al.* (1990). Wilmot-Dear recognized 2 varieties of *M. sloanei*, both occurring in the Hawaiian Islands. The indigenous *M. sloanei* var. *sloanei* is known from Kauai, Oahu, West and East Maui, and Hawaii, while the newly described and rare *M. sloanei* var. *pererícea* Wilmot-Dear presently appears to be endemic to East Maui, from Makawao to Wailua Iki. The 2 vari-

eties can be distinguished by the amount of tomentum on their leaves and calyx. *Mucuna sloanei* var. *sloanei* has sparse to abundant fairly short, adpressed, fine silvery hairs covering the underside of the leaf and the calyx; the surface is usually visible through the hairs. *Mucuna sloanei* var. *persericea* has the underside of the leaf and calyx covered with a thick covering of rather coarse, long, yellowish white hairs that completely cover and hide the surface. In addition to the specimens cited by Wilmot-Dear the following collection of *M. sloanei* var. *persericea* should be noted.

Material examined. Maui: East Maui, Koolau Forest Reserve near Honopou Stream, makai of Ulalena, 1800 ft, open west-facing slope, 21 Feb 1986, *Hobdy 2571* (BISH).

Mucuna gigantea (Willd.) DC. subsp. ***gigantea***

Wilmot-Dear (1990: 5) placed the Hawaiian populations of *Mucuna gigantea* in the Asian and Pacific subsp. *gigantea*.

Senna septemtrionalis (Vogel) H. Irwin & Barneby

The following collections represent a **new island record** of *Senna septemtrionalis* on Hawaii. This species was previously recorded as naturalized on Kauai, Oahu, Molokai, and Maui.

Material examined. Hawaii: Hualalai, Olma [Ooma ?] Tract, Kaloka Mauka, 855 m, Ohia-fern forest, 17 Aug 1987, *Engilis 20* (BISH); Puuwaawaa, cattle paddock at 2700 ft, near SE corner of 1986 burn, common rangeland weed, May 1989, *Takeuchi 5784* (BISH).

Gentianaceae

Centaurium sebaeoides (Griseb.) Druce

Centaurium sebaeoides was previously known only from coastal sites on Kauai, Oahu, Molokai, and West Maui. The following collection represents a **new island record** for this relatively uncommon species on Lanai.

Material examined. Lanai: Maunalei Canyon, 228 m, growing on rocky ledges in a gully on the west side of the canyon, 11 May 1991, *Hobdy 3292* (BISH).

Juncaceae

Juncus bufonis L.

The following collection is a **new island record** of *Juncus bufonis* on Oahu. This species was previously recorded as naturalized on Kauai, Molokai, Maui, and Hawaii.

Material examined. Oahu: Waianae Mountains, Mt Kaala, occasional in parking lot at the Kaala Bog, 22 Mar 1988, *K. Nagata 3435* (BISH).

Lamiaceae

Hyptis capitata Jacq.

The following collection represents a **new state record** of *Hyptis capitata*. It is at least locally naturalized in Waikane Valley. Because it has become so common elsewhere in the Pacific basin, it is expected to spread in the Hawaiian Islands. It can be easily distinguished from the other species naturalized in the Hawaiian Islands (Wagner *et al.* 1990: 801–02) by its globose, densely-flowered inflorescences.

Material examined. Oahu: Koolau Mountains, Waikane Valley, Koolaupoko, 85 ft, 16 Jan 1988, *K. Nagata 3788* (BISH).

Hyptis suaveolens (L.) Poit.

The following collection represents a **new island record** for *Hyptis suaveolens* from Oahu. This species has been previously recorded as naturalized on Hawaii.

Material examined. Oahu: Lowland dryland grassland and forest W of Makakilo town below paved road leading toward Camp Timberline access road, occasional, 22 Oct 1990, *Imada et al., s.n.* (BISH).

Lauraceae

Cinnamomum burmanni (Nees) Blume

The following collections represent a **new naturalized record** of *Cinnamomun burmanni* on Maui. Previously, it was known to be naturalized on Oahu.

Material examined. Maui: East Maui, Hwy 360 between Paia and Hana, near mile 28, in stream bottom with *Hedychium*, 7 Mar 1988, *Flynn et al. 2717* (BISH, PTBG).

Menispermaceae

Cocculus orbiculatus (L.) DC [syn. *Cocculus trilobus* (Thunb.) DC]

In the *Manual* we followed L.L. Forman in his treatment of the genus *Cocculus* (Wagner *et al.* 1990: 921). Forman has recently published his treatment for *Flora Malesiana* (1986). In that work he used the older name *C. orbiculatus* for the species and placed *C. trilobus* in synonymy (Forman 1986: 231).

Moraceae

Fatoua villosa (Thunb.) Nakai

This is a **new state record** for *Fatoua villosa*. This Old World species is at least locally naturalized in the vicinity of Foster Botanic Garden and Lyon Arboretum. It can be distinguished from other Moraceae in the Hawaiian Islands by its diminutive herbaceous habit and the fruit an achene. Other characters that will differentiate this monoecious species from herbaceous members of the closely related Urticaceae include nonstinging hairs, the densely flowered cymose inflorescence, staminate flowers 4-merous, pistillate flowers 6-merous, and pendulous ovules.

Material examined. Oahu: Foster Botanic Garden. A weed growing in pots, in a slat house, 16 May 1986, *Lau 2403* (BISH); Lyon Arboretum, weed in holding area outside greenhouse, hairs not stinging, 29 Oct 1986, *K. Nagata 3566* (BISH).

Onagraceae

Epilobium billardierianum Ser. subsp. ***cinereum*** (A. Rich.) Raven & Engelhorn

Epilobium billardierianum was listed as "apparently very recently" naturalized on Kauai by Wagner *et al.* (1990: 995). The following collections document its occurrence on Kauai since at least 1986.

Material examined. Kauai: Waimea District: Kokee State Park, Puuokila lookout, mat forming herb along path, 18 Aug 1986, *Flynn 1865* (BISH, PTBG), 16 Sep 1987, *Lorence et al. 5555* (BISH, PTBG).

Oenothera laciniata Hill

The following collection represents a **new island record** for *Oenothera laciniata* from Kure Atoll. It was previously known to be naturalized on Midway Atoll, Maui, and

Hawaii.

Material examined. Kure Atoll: 8 May 1986, *Saito s. n.* (BISH).

Piperaceae

Peperomia obovatilimba C. DC

The following collection represents a range extension of *Peperomia obovatilimba*, previously considered by Wagner *et al.* (1990: 1034) endemic to East Maui and the Kohala Mountains, Hawaii.

Material examined. West Maui: Koolau Forest Reserve, 730 m, ridge E of Halehaku Gulch, 12 May 1986, *Hobdy 2648* (BISH).

Polemoniaceae

Collomia linearis Nutt.

The following collection represents a **new state record** for *Collomia linearis*. It appears to be locally naturalized in Haleakala National Park. It can be distinguished from *Gilia capitata* Sims, the only other species of Polemoniaceae naturalized in the Hawaiian Islands, by its simple toothed basal leaves, linear entire cauline leaves, white or pink corolla 8–15 mm long, and calyx with pleated to expanded sinuses, these not rupturing in maturity.

Material examined. Maui: Haleakala, in a rocky stream bed, 8200 ft, 18 Aug 1987, *Medeiros & Jessel s. n.* (BISH).

Pontederiaceae

Monochoria vaginalis (N. L. Burm.) K. Presl

The following collection represents a **new island record** for Hawaii. *Monochoria vaginalis* was previously known to be naturalized on Kauai and Oahu.

Material examined. Hawaii: Waipo Valley, 19 Jul 1987, *Stemmermann & Luce 7174* (BISH).

Poaceae

Brachiaria plantaginea (Link) Hitchc.

Brachiaria plantaginea apparently was originally introduced by the Hawaii Agricultural Experimental Station as part of their screening for grasses for pasture improvement in the Hawaiian Islands. It appears to have been naturalized on Oahu and Molokai for at least the past 15 years. It was inadvertently omitted by O'Connor (1990) in his treatment of the family in the *Manual*. This species, which is native to Mexico, and Central and South America, can be distinguished from other species of *Brachiaria* in the Hawaiian Islands as follows: coarse glabrous or sometimes pilose annuals to 60(–100) cm tall, spikelets 4–5 mm long, the first glume scarious, clasping, 1.5–2 mm long, second glume and sterile lemma similar, equal with slender prominent raised nerves and often with short ladderlike undulating raised veinlets between the nerves, the fertile lemma 3 mm long.

Material examined. Oahu: Waialua, Poamoho, Hawaiian Agricultural Experiment Station farm, planted in grass garden, 17 Oct 1940, *Hosaka 2551* (BISH), 23 Jun 1967, *Shinbara 0-81* (BISH); Honolulu, Hawaii Agricultural Experiment Station, Pensacola Station, near garage, 16 Oct 1941, *Hosaka 2609* (BISH); road leading to Barbers Point Beach Park, 24 Nov 1979, *Higashino et al. 8199*

(BISH). Molokai: Palaau District, along eastern edge of Waiahewahewa Gulch, 350 ft, 8 Mar 1976, *Herbst & Spence 5711* (BISH).

Eustachys petraea (Sw.) Desv.

Eustachys petraea was reported by O'Connor (1990: 1513) as *Chloris petraea* Sw., an adventive species on Midway Atoll and French Frigate Shoals. It is included in this report because we wish call attention to the naturalized status of this species. Further, we point out that the commonly accepted placement for this species is in *Eustachys* (e.g., Clayton & Renvoize 1986: 237). *Eustachys* is characterized by an obtuse to bilobed, distinctly awned upper glume, and nearly awnless dark brown lemma, while in *Chloris* the upper glume is acute to bidenticulate, awnless or rarely with a very short awn, and the lemma is nearly always long-awned and pallid.

Hyparrhenia hirta (L.) Stapf

O'Connor (1990: 1554) treated *Hyparrhenia hirta* as adventive on Molokai and Lanai. The following records establish this species as a naturalized element of the flora at least on Molokai and Lanai.

Material examined. Molokai: Mauna Loa, 26 Apr 1962, *Uehara 7* (BISH); road to Waikehua, 16 May 1962, *Uehara 3* (BISH). Lanai: southern beginning of Munro Trail, common, locally along road, 24 Aug 1963, *Degener & Degener 31106* (BISH); along upper Kaumalapua Hwy, near Lanai City, 1185 ft, clumpy grass in large field of *Psidium* trees, 18 Oct 1973, *Spence 309* (BISH); Puu Manu, Land of Kaohai, 1500 ft, dominant on arid slopes below Puu Manu, 8 Nov 1987, *K. Nagata 3715* (BISH); Puu Manu, 2000 ft, common, 8 Nov 1987, *K. Nagata 3717* (BISH).

Pennisetum clandestinum Chiov.

The following collection represents a **new naturalized record** of this species on Kauai. It also occurs on Oahu, Lanai, Maui, and Hawaii.

Material examined. Kauai: [Kokee State Park], Camp 10 Road, garden at Plews' residence, 23 Oct 1986, *Plews s. n.* (BISH); Waimea Canyon State Park, Puu Lua, Lua Reservoir, . . . around spillway on SW side of reservoir, ca. 3270 ft, 27 Jan 1988, *Flynn et al. 2712* (BISH, PTBG).

Polypogon interruptus Kunth

The following collection represents a **new naturalized record** from Kure Atoll. It also is known from Midway Atoll, Kauai, Oahu, Maui, and Hawaii.

Material examined. Kure Atoll: near tennis court, 8 May 1986, *Saito s. n.* (BISH).

Sporobolus pyramidatus (Lam.) Hitchc.

This species was recorded as adventive by O'Connor (1990: 1596), and was noted in coastal areas on Kure Atoll, French Frigate Shoals, and Oahu. As the label information cited below makes quite clear, this species is fairly widely naturalized in the archipelago. This species, which is native to North to South America, can be distinguished from the other species of *Sporobolus* in the Hawaiian Islands by the glumes, at least the second one, about as long as the spikelet, spikelets 1.5–2 mm long, the mature inflorescence is an open pyramidal panicle, the branches viscid and usually bare of spikelets on the lower 1/4–1/2, the lowest branches verticillate and spreading.

Material examined. Kure Atoll: Green Island, abundant along runway, also some near LORAN buildings, 4 Jan 1979, *Herbst 6271* (BISH). Laysan: SE border of guano hardpan in soil pockets, 22 Jun 1990, *McDermond & Niethammer s. n.* (BISH). French Frigate Shoals: Tern Island, very com-

mon grass, especially along SE half of the runway's border, 6ft, 11 Sep 1978, *Herbst 6232* (BISH). Oahu: Honolulu, Pensacola St., 25 Feb 1936, *Whitney 4040* (BISH); University of Hawaii campus, Manoa, lawn, edge of University Ave., 300 ft, 12 Apr 1956, *Stone 1243* (BISH), weed at construction site, 4 Jan 1969, *Herbst 1367* BISH); Kahakaaulana Island, Keehi Lagoon, 30 Apr 1978, *Herbst & Walker 6086* (BISH); "Burm Island," Keehi Lagoon, 30 Apr 1978, *Herbst & Walker 6073* (BISH); "Coconut Island," Keehi Lagoon, 29 Jul 1978, *Herbst 6159* (BISH).

Portulacaceae

Talinum fruticosum (L.) Juss. [syn. *Talinum triangulare* (Jacq.) Willd.]

This species was treated by Wagner *et al.* (1990: 1076) as *Talinum triangulare*. The synonymy of this species is detailed in Howard (1988: 206), which is followed here. The following collection represents a **new island record** from Oahu.

Material examined. Oahu: Honolulu, Makiki District Park, . . . growing as a weed which has recently escaped from an adjacent yard where the species is being cultivated, 9 Dec 1985, *Lau 1717* (BISH).

Potamogetonaceae

Potamogeton pectinatus L.

The following collection represents a **new island record** for *Potamogeton pectinatus* from Hawaii. It has been previously recorded from Niihau and Kauai.

Material examined. Hawaii: Hilo District, Hilo, Wailoa estuary, submerged aquatic, 25 Jul 1987, *Stemmermann & Luce 7179* (BISH).

Rubiaceae

Coprosma ternata W. Oliver

Coprosma ternata was previously known as an eastern Molokai endemic (Wagner *et al.* 1990: 1130). We report here a collection extending the range to include West Maui.

Material examined. Maui: West Maui, border of Lahaina and Wailuku Dists., Hanaula, rim of Ukumehame, N-facing aspect, *Metrosideros-Dicranopteris* montane wet forest, with *Platanthera, Myrsine, Vaccinium, Cibotium, Smilax, Touchardia, Boehmeria, Hedyotis, Wikstroemia, Dodonaea, Melicope, Pleomele, Dubautia, Cyrtandra, Scaevola, Styphelia, Bidens, Labordia, Sadleria, Rubus*, 3 m tree, 25 Aug 1991, *Wood & Perlman 1173* (BISH, PTBG).

Galium divaricatum Pourr. ex Lam.

The following collection represents a **new naturalized record** of *Galium divaricatum* on the island of Hawaii. It previously was recorded from the island of Maui.

Material examined. Hawaii: Hamakua District, Pohakuloa Training Area, along Saddle Road, between the 30 and 45 mile markers, within ca. 60 ft of road, 13 Dec 1990, *E. Funk PTA24* (BISH).

Paederia foetida L. [syn. *Paederia scandens* (Lour.) Merr.]

When we wrote the treatment of *Paederia* for the *Manual* (Wagner *et al.* 1990: 1160) we adopted the name *P. scandens* following numerous other floristic treatments in the Pacific, Malesian, and Asian regions. At the time we could not find a discussion of the reasons for the change, but because the switch from *P. foetida* to *P. scandens* appeared to be nearly universal we also made the switch. A recent detailed monograph treated both names as applying to the same species (Puff 1991: 210), thus the correct name for this species goes back to that used before the *Manual* (i.e., *P. foetida*).

Solanaceae

Nicotiana glauca Grah.

The following collection represents a **new island record** for *Nicotiana glauca*. It previously was recorded from the islands of Oahu, Lanai, Maui, and Kahoolawe.

Material examined. Hawaii: North Kona District, Mamalahoa Hwy near mile [marker] 28, 6 Aug 1987, *Flynn & Lorence 2280* (BISH, PTBG).

Physalis lanceifolia Nees

The following collection represents a **new naturalized record** for the Hawaiian Islands. *Physalis lanceifolia* can be distinguished from the 2 other naturalized species of this genus in the Hawaiian Islands by its sparse pubescence of erect or spreading simple non-glandular hairs, corolla yellow with a darker yellow inconspicuous center, leaves narrowly elliptic, pedicels 20–30 mm long, and seeds 1.5–2 mm long.

Material examined. Maui: East Maui, Kokomo, 1400 ft, pasture weed, 17 Nov 1985, *Hobdy 2458* (BISH).

Urticaceae

Pilea microphylla (L.) Liebm.

The following collection represents a **new island record** for *Pilea microphylla*. It previously was recorded from the islands of Kauai, Oahu, Maui, and Hawaii.

Material examined. Midway Atoll: Sand Island, 6 Jul 1988, *Herbst & Takeuchi 9069* (BISH).

Verbenaceae

Clerodendrum chinense (Osb.) Mabb. [syn. *Clerodendrum philippinum* Schauer; *C. fragrans* Willd.]

Mabberley (1989: 131, 707) indicated that the correct name for the plant treated by Wagner *et al.* (1990: 1319) as *Clerodendrum philippinum* is *C. chinense*.

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