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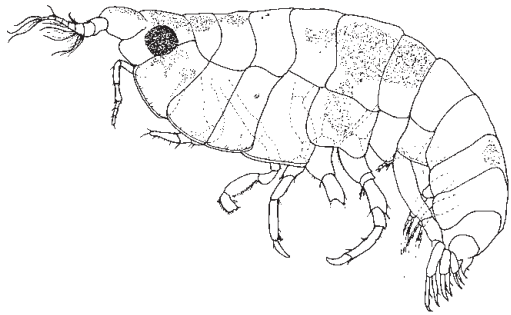
RECORDS OF THE HAWAII BIOLOGICAL SURVEY FOR 2006
PART 1: ARTICLES

NEAL L. EVENHUIS
AND
LUCIUS G. ELDREDGE, EDITORS



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Cover: *Pseudambasia kalaupapa,* Longenecker & Bolick, n. sp. from Moloka‘i and O‘ahu (see p. 3–8).

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RECORDS OF THE HAWAII BIOLOGICAL SURVEY FOR 2006
Part 1: Articles

Editors' Preface

We are pleased to present the annual compilation of *Records of the Hawaii Biological Survey*; this year for the year 2006. The number and diversity of taxa reported in these issues attest to the continuing value of the *Records* as part of the ongoing effort to inventory the Hawaiian biota accurately.

The Hawaii Biological Survey, established by the Hawaii State Legislature in 1992 as a program of Bishop Museum, is an ongoing natural history inventory of the Hawaiian Archipelago. It was created to locate, identify, and evaluate all native and nonnative species of flora and fauna within the state; and by State Law to maintain the reference collections of that flora and fauna for a wide range of uses. In coordination with related activities in other federal, state, and private agencies, the Hawaii Biological Survey gathers, analyzes, and disseminates biological information necessary for the wise stewardship of Hawaii's biological resources

Some of the highlights of *Records of the Hawaii Biological Survey for 2006* include:

- a new species of amphipod;
- six new species of the long-legged fly genus *Campsicnemus*;
- lectotype designations for long-legged flies of the genus *Campsicnemus*;
- bibliography and list of taxa described by C.H. Edmondson
- new records of plants, snails, and insects, resulting from field surveys and continued curation of Hawaiian collections at the Bishop Museum and elsewhere.

An intensive and coordinated effort has been made by the Hawaii Biological Survey to make our products, including many of the databases supporting papers published here, available to the widest user-community possible through our web server. Products currently available include taxonomic authority files (species checklists for terrestrial arthropods, flowering plants, nonmarine snails, marine invertebrates, fossil taxa, and vertebrates), bibliographic databases (vascular plants, nonmarine snails, and insects), specimen databases (fungi, fish, invertebrates, portions of the insect collection) and type specimens (entomology; botany—including algae and fungi; and vertebrates), collections data (lists of holdings for select groups of flies as well as Cicadellidae and Pentatomidae), detailed information and/or images on endangered, threatened, and extinct plants and animals; as well as our staff publication lists. Additional reference databases include: the list of insect and spider collections of the world (based on Arnett, Samuelson & Nishida, 1993, *Insect and spider collections of the world*) with links to institutional web pages where known; and the historical world Diptera taxonomists list with names of over 4,840 authors who have described flies.

Our Main Web Addresses:

Hawaii Biological Survey Home Page
http://hbs.bishopmuseum.org/

Hawaii Biological Survey Databases
http://hbs.bishopmuseum.org/hbsdbhome.html

Hawaii Endangered and Threatened Species Web Site
http://hbs.bishopmuseum.org/endangered/

Insect and Spider Collections of the World Web Site
http://hbs.bishopmuseum.org/codens/

Hawaii Biological Survey's "Good Guys/Bad Guys" website
http://hbs.bishopmuseum.org/good-bad/

World Diptera taxonomist list
http://hbs.bishopmuseum.org/dipterists/

The *Records of the Hawaii Biological Survey for 2006* were compiled with the assistance of HBS staff including Clyde Imada (botany), and Frank Howarth (entomology) who helped review papers. The *Records* are partially supported by funds from the John D. and Catherine T. MacArthur Foundation and donations from many indivuals, who are thanked for their support. Many of the new records reported here resulted from curatorial projects funded by the National Science Foundation and field surveys funded by the David and Lucile Packard Foundation, U.S. Geological Survey Biological Resources Division, U.S. Fish & Wildlife Service, and the Hawaii Department of Land and Natural Resources.

We encourage authors with new information concerning flora or fauna occurring in the Hawaiian Islands to submit their data to the editors listed below for consideration for publication in the next *Records.* Submission and format of papers must follow our guidelines. Information on submission of manuscripts and guidelines for contributors may be obtained on the web (via pdf format) at:

http://hbs.bishopmuseum.org/guidelines.pdf

or by mail from: Hawaii Biological Survey, Department of Natural Sciences, Bishop Museum, 1525 Bernice Street, Honolulu, Hawai'i 96817-2704, USA.

——*N.L. Evenhuis &*
L.G.Eldredge, editors
[email: neale@bishopmuseum.org]

Records of the Hawaii Biological Survey for 2006. Edited by
Neal L. Evenhuis & Lucius G. Eldredge. *Bishop Museum
Occasional Papers* 95: 3–8 (2007)

A New Species of *Pseudambasia* (Crustacea: Amphipoda: Lysianassidae) from Hawai‘i, with a Key to Species in the Genus[1]

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Abstract. *Pseudambasia kalaupapa*, **n. sp.** from Moloka‘i and O‘ahu is described and illustrated and marks the first record of the genus from Hawaiian waters. A key to species of *Pseudambasia* is presented.

Introduction

Barnard (1971) noted that lysianassids have been inadequately collected in Hawai‘i and predicted more than the one known benthic, shallow-water species, *Arugella ewa* (Barnard, 1970), should occur in the area. Here we describe a new lysianassid species from the marine intertidal zone of Kalaupapa Peninsula, Moloka‘i found in a rubble wash gathered to establish a natural history collection of invertebrates for Kalaupapa National Historic Park. The species was subsequently identified from material collected by suction sampling at 13 m on the forereef of Kāne‘ohe Bay, O‘ahu. The species keys to *Parambasia* in Barnard & Karaman (1991). However, because the type material was lost, and no new material has been reported, Lowry & Stoddart (1995) consider *Parambasia* a dubious genus. All but the type species, *Parambasia forbesi* Walker & Scott, 1903, are now placed in *Pseudambasia*. This is the first record of *Pseudambasia* from Hawaiian waters.

Materials and Methods

Specimens examined derive from material in the Bishop Museum collected by S. Godwin, H. Bolick, and M. Carnivale for research funded by the National Park Service and by K. Longenecker for doctoral research. The holotype and paratypes are deposited in the Bishop Museum. Morphological terminology follows Barnard & Karaman (1991).

Systematics

Pseudambasia kalaupapa Longenecker & Bolick, **n. sp.**
(Figs. 1–3)

Diagnosis. No constriction on the inner ramus of uropod 2.

Description. *Color:* shiny white with strong black pigment (that does not fade in alcohol) on head, pereon 1, coxa 1, pereon 4–6, and coxa 5; pigment may be present on antenna 1 article 1, pereons 2–3, and pleon 2; a spot is common in the center of coxa 7.

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1. Contribution No. 2007-010 to the Hawaii Biological Survey

Head: normal gammaridean; subequal to first 2 pereonites; rostrum absent; lateral lobe broadly rounded, extending 1/2 length of antenna 1 article 1; eyes large, ovoid, dark brown. *Antenna 1:* geniculate; subequal to antenna 2; 0.18 x body length; peduncular article 1 barrel-shaped; peduncular article 2 short, 0.5 x article 1; peduncular article 3 short, 0.3 x article 1; flagellum 7-articulate, 0.8 x peduncular length, densely setose ventrally in males; accessory flagellum 3-articulate. *Antenna 2:* strongly geniculate between peduncular articles 3 and 4; subequal to antenna 1; flagellum 4-articulate.

Mouthpart bundle: subquadrate; epistome and upper lip fused, straight. *Mandible:* incisors symmetrical, with convex margins; 3 accessory spines present; molar absent, represented by a single seta on left appendage; palp falcate, attached proximally, 3-articulate; article 2 longest, with a distal seta; article 3 with about 18 strong setae medially and 2 much more stout setae anteromedially. *Maxilla 1:* inner plate with a single apical seta; outer plate with 11 bifurcate spine-teeth in a 6/5 arrangement; palp 2-articulate, pointed apically, with setae along distal and lateral margin. *Maxilla 2:* inner plate with 7 terminal spines, 0.8 x outer plate; outer plate with 5 terminal spines. *Maxilliped:* inner plate large, subrectangular, minutely serrate terminally, with an apicolateral spine; outer plate medium-sized, subovate, medial margin crenulate distally and straight with 2 spines proximally; palp 4-articulate; article 2 with 9 medially directed, serrate spines; article 3 with 4 medially directed, serrate spines.

Gnathopod 1: subchelate; coxa large, anterior margin slightly concave, anteroventral margin rounded, posterior margin straight; basis long, slender, length 3 x breadth; ischium, merus and carpus subequal; carpus subtriangular, short, length 1.6 x breadth; female propodus large, subtriangular, length 2.3 x breadth, anterior margin straight, palm defined by a stout spine, extremely acute, slightly concave, posterior margin slightly convex, giving the entire margin a sinuous shape, margin of palm slightly crenulate with 3 stout spines slightly medially and equidistant along margin, 2 stout setae on medial face, a stout seta on posterior margin; male propodus slightly more elongate (length 2.7 x breadth) with a more sinuous shape: anterior margin slightly concave, palm more acute, nearly parallel with anterior margin distally, posterior margin more convex; female and male dactyl with subterminal spine. *Gnathopod 2:* subchelate; subequal in size to coxa 3; ischium long, length 3.9 x breadth; carpus long, length 3.4 x breadth, posterior margin convex; propodus subquadrate, short, length 1.4 x breadth, palm transverse, about 10 long, strongly recurved, posteriorly serrate spines guard articulation with finger; dactyl short, reaching corner of palm, concave posterior margin fits convexity of palm.

Pereopod 3: coxa large; propodus with 2 distal locking setae; dactyl, long, slender, 0.6 x length of propodus. *Pereopod 4:* coxa large, with large truncate posterior lobe, anterior margin convex, posterior margin concave, ventral margin straight; propodus with 2 distal locking setae; dactyl long, slender, 0.5 x length of propodus. *Pereopod 5:* coxa convex anteriorly, straight posteriorly; basis grossly expanded, 5 stout setae interspersed among closely spaced fine setae along anterodistal margin, posterior margin crenate; merus expanded with fine setae along anterior margin, convex posterior margin, posterodistal projection extending halfway along carpus; carpus with sharp posterodistal angle; propodus with a distal locking seta; dactyl long, 0.5 x length of propodus. *Pereopod 6:* coxa subquadrate; basis expanded with crenate posterior margin; merus expanded, posterior margin convex, posterodistal projection extending halfway along carpus; propodus with a distal locking seta, dactyl long, 0.5 x length of propodus. *Pereopod 7:* articles 5–7 missing from all specimens; coxa subtriangular; basis with large, rounded, crenate, posterodistal lobe.

Pleonites: dorsally smooth. *Epimera:* posteroventral corner rounded. *Urosomites:* dorsally smooth, 2 and 3 fused. *Uropod 1:* peduncle slightly longer than outer ramus, with 1 dorsal, 1 apicolateral and 1 apicomedial robust seta; outer ramus slightly longer than inner, each with one dorsal robust seta. *Uropod 2:* peduncle length equal to outer ramus; outer ramus slightly longer than inner, ornamentation as for uropod 1, inner ramus without constriction. *Uropod 3:* without ornamentation; peduncle short, length 0.9 x outer ramus; outer ramus 1-articulate; inner ramus reduced, length 0.75 x outer ramus. *Telson:* entire; length 1.1 x breadth; distal margin rounded, with 2 robust setae.

Type material. Holotype, male, 2.5 mm, (BPBM-S12815); Paratypes, (described) 2

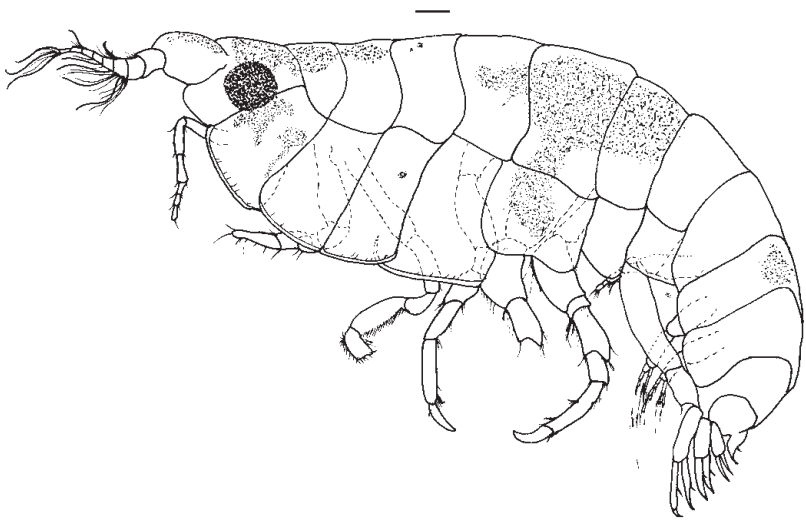

Figure 1. *Pseudambasia kalaupapa* Longenecker & Bolick n.sp., holotype male, 2.5 mm, BPBM-S12815, Kalaemilo Point, Kalaupapa NHP, Moloka‘i. Bar = 0.1 mm.

females, each 2.6 mm (BPBM-S12814, BPBM-S12817); 2 males, 2.0 and 2.5 mm (BPBM-S12818, BPBM-S12816); (examined) 12 specimens (BPBM-S12819): **MOLOKA‘I**: Kalaemilo Point, an embayment on the west coast of Kalaupapa Peninsula (UTM coordinates: 4N 0709347.21N, 2345785.62E), 11 Oct 2004, from intertidal rubble on a basaltic shoreline, S. Godwin, H. Bolick, M. Carnivale. Paratypes (examined) 2 specimens (BPBM-S13228): **O‘AHU**: Kāne‘ohe Bay (4N 0626569N 2375059E), 22 Feb 2001, 13 m on carbonate reef bench in spur and groove habitat of forereef, K. Longenecker.

Etymology. The name maintains the tradition, established by J.L. Barnard, of assigning names derived from the Hawaiian language to species discovered in Hawai‘i. It is intended to honor the residents, past and present, of Kalaupapa Peninsula.

Distribution. Known only from the intertidal zone of Kalaemilo Point, Kalaupapa Peninsula, Moloka‘i and from 13 m on the forereef of Kāne‘ohe Bay, O‘ahu.

Remarks. *Pseudambasia* contains four other species: *P. acuticauda* (Ledoyer, 1984), *P. indentata* (Ledoyer, 1986), *P. nui* (Myers, 1985), and *P. rossi* (Stephensen, 1927) all of which feature a constriction of the inner ramus of uropod 2 not found on *P. kalaupapa*.

The pigment pattern of *P. kalaupapa* superficially resembles *P. nui*. The strong pigmentation on coxa 5 and, frequently, pleon 2 of the former is not seen in the latter; only diffuse gray pigment is seen on coxa 5 (as well as coxae 1–4 and 6), and no pigment is reported from pleon 2 of *P. nui*. The inner plate of the maxilliped is subrectangular in *P. kalaupapa* but subtriangular in *P. nui*. *Pseudambasia kalaupapa* also lacks the central rounded lobe on the apex of telson of *P. nui*.

Pseudambasia rossi is also darkly pigmented, but the pattern differs markedly from *P. kalaupapa* in covering most of the body except for coxa 4 and the urosome.

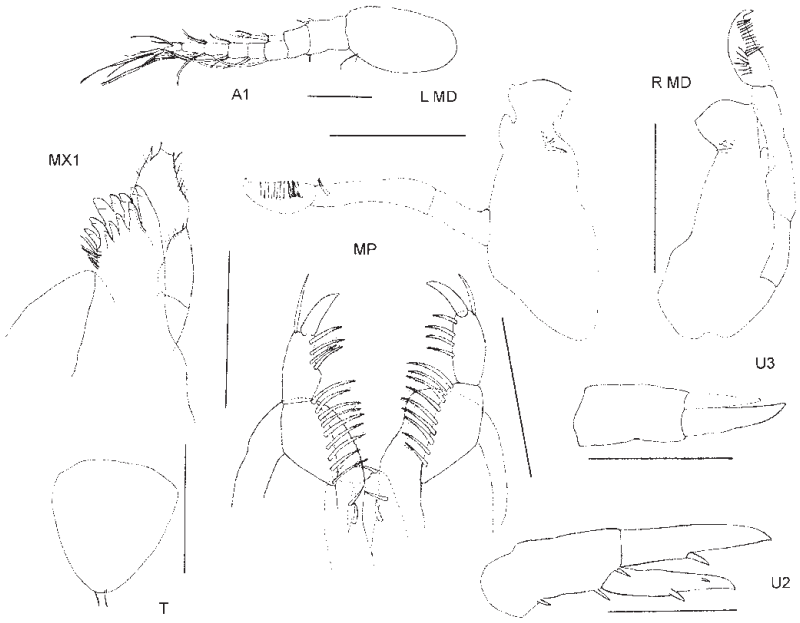

Figure 2. *Pseudambasia kalaupapa* Longenecker & Bolick n.sp., holotype male, 2.5 mm, BPBM-S12815, Kalaemilo Point, Kalaupapa NHP, Moloka‘i. Bars = 0.1 mm.

Pseudambasia kalaupapa has fewer articles in the flagellum of antenna 1, an accessory flagellum with 2 rather than 3 articles, a different spination pattern on the mandibular palp, and lacks the strong wrinkle in mandibular palp article 3.

The setation pattern on the mandibular palp, the pattern and appearance of setal-teeth on the inner plate of maxilla 1, and the nearly simple and only slightly sexually dimorphic gnathopod 1 are similar to *P. acuticauda*. The pointed distal article of the maxilla 1 palp in *P. kalaupapa* differs from the terminally serrate one of *P. acuticauda*. *Pseudambasia kalaupapa* also lacks the toothed epimeron 3 of *P. acuticauda*.

Pseudambasia kalaupapa has a 3-articulate accessory flagellum rather than the 2 long articles found in that of *P. indentata*. *Pseudambasia kalaupapa* also lacks the tooth found on epimeron 3 of *P. indentata.*

The text and figures describing *Parambasia forbesi* Walker & Scott, 1903; the sole member of a dubious genus that once included all *Pseudambasia* species (Lowry & Stoddart, 1995); are remarkably similar to *Pseudambasia kalaupapa*. They differ in the 2 distal locking setae on the propodus of pereopods 1 and 2 of *Pseudambasia kalaupapa*; only 1 spine is found on the carpus (none on the propodus) of *Parambasia forbesi*.

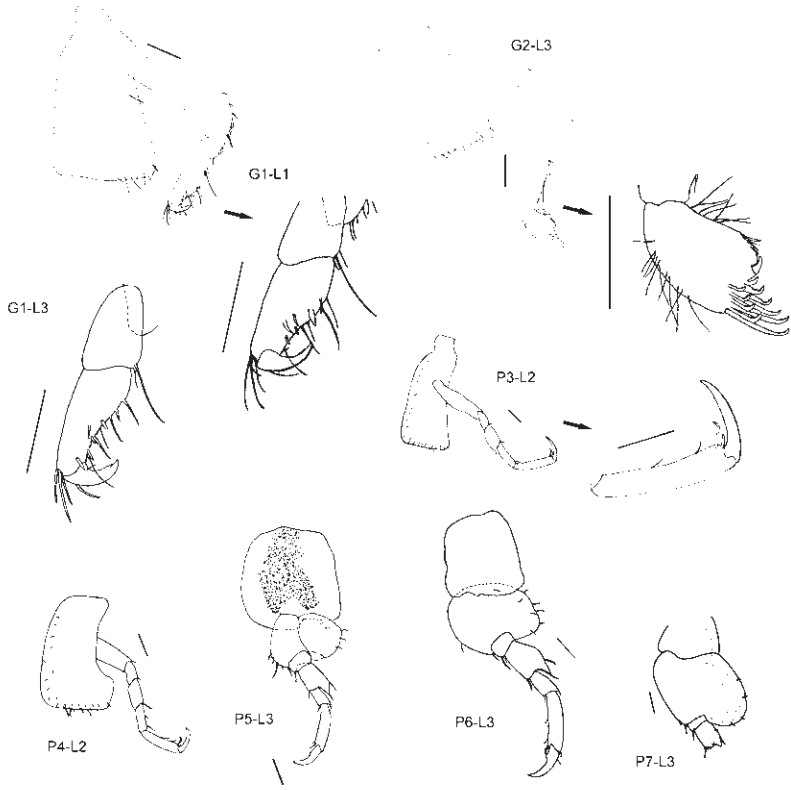

Figure 3. *Pseudambasia kalaupapa* Longenecker & Bolick n.sp., holotype male, 2.5 mm, BPBM-S12815 (L3), paratype female, 2.6 mm, BPBM-S12814 (L1), paratype male, 2.55 mm, BPBM-S12816 (L2), Kalaemilo Point, Kalaupapa NHP, Moloka'i. Bars = 0.1 mm.

KEY TO SPECIES IN THE GENUS *PSEUDAMBASIA*

1. No strong black pigment retained in alcohol (brown mottling may be present); epimeron 3 with a small posteroventral notch 2
–. Strong black pigment, retained in alcohol, on head and body; epimeron 3 rounded or serrate, not with a single posteroventral notch 3

2. Propodus of pereiopods 3 and 4 with a single, small, distal locking spine; telson entire ..... **acuticauda** (Ledoyer)
–. Propodus of pereiopods 3 and 4 with 2 long spines distally; telson cleft .... **indentata** (Ledoyer)

3. Pigment covering most of head and body, coxa 4 and urosome conspicuously unpigmented; epimeron 3 serrate posteroventrally; accessory flagellum 2-articulate ..... **rossi** (Stephenson)
–. Pigment concentrated in region of head and pereon 5; epimeron 3 rounded posteroventrally; accessory flagellum 3-articulate 4

4. Strong black pigment on coxa 5 (and frequently pleon 2); no constriction on inner ramus of uropod 2; inner plate of maxilliped subrectangular; no central rounded lobe on apex of telson ..... **kalaupapa**, **n. sp.**
–. No strong pigmentation on coxa 5 (but diffuse grey is found on coxae 1–6); a constriction on inner ramus of uropod 2; inner plate of maxilliped subtriangular; a central rounded lobe present on apex of telson ..... **nui** (Myers)

Acknowledgements

This work was funded by the National Park Service, Pacific Cooperative Studies Program, through contract #KALA-2004-SCI-0004 to Scott Godwin (Principal Investigator).

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Occasional Papers* 95: 9–16 (2007)

New Species of Hawaiian *Campsicnemus* (Diptera: Dolichopodidae)[1]

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Abstract. Six new species of endemic Hawaiian *Campsicnemus* are described and illustrated: *C. kokokekuku,* **n. sp.** (Hawai'i)**,** *C. maui,* **n. sp.** (Maui)**,** *C. maukele*, **n. sp**. (Kaua'i), *C. prestoni,* **n. sp**. (Hawai'i), *C. sinuosus*, **n. sp**. (Hawai'i), and *C. ui,* **n. sp.** (Kaua'i)**.**

Introduction

Recent aquatic and other arthropod surveys conducted by the Hawaii Biological Survey have resulted in a number of new findings of endemic Hawaiian dolichopodids. The new species here (from the islands of Kaua'i, O'ahu, Maui, and Hawai'i) are being described to allow their names to be used in further arthropod surveys of the Hawaiian Islands and phylogenetic and molecular analyses of Hawaiian and Pacific dolichopodids. The addition of the new species described herein brings the total number of Hawaiian *Campsicnemus* to 163, all of which are endemic to the islands.

Material and Methods

Material derives from the Bishop Museum, Honolulu (BPBM) where holotypes of new species described herein are deposited. Paratypes, where series allow, are deposited in the University of Hawai'i at Mānoa Insect Museum (UHM).

Terminology for morphological characters generally follows Evenhuis (2003).

New Taxa Descriptions

Campsicnemus kokokekuku Evenhuis, **new species**
(Fig. 6)

Diagnosis. This species appears to be the Big Island representative of the group of species that have a barb-like projection on the male mid tibia (*C. kuku* Evenhuis [Kaua'i] and *C. ephydrus* Hardy & Kohn [Maui]). It can be separated from *C. ephydrus* by the distinct sharp barb-like shape of the basal process (this process more bump-like without a distinct "barb" in *C. ephydrus*) and from *C. kuku* by the presence of strong black setae on the apical half of the mid femur (these setae in two patches [basally and apically] in *C. kuku*).

Description. Body: 2.60 mm; wing: 3.38 mm. **Male**. *Head*. Face and clypeus white, front and vertex shining black; oc and vt black, about one-half length of antennal arista; clypeus slightly yellowish pollinose; face only slightly constricted at middle, eyes dichoptic below antennae by 2 x width of

1. Contribution No. 2007-011 to the Hawaii Biological Survey.

median ocellus; palp small, brown; proboscis brown to yellowish-brown, extending below eye in lateral view; antennal scape and pedicel dark brown; both flagellomeres and aristae broken off and missing.

Thorax. Brown throughout, mesoscutum and scutellum darker brown; thoracic setae black: 4 dc; 2+1 np; 2+1 ph; 1 pa; 1 sc; ac absent.

Legs. Fore coxa yellow, mid and hind coxa brown; FI and II yellow, FIII yellow with brown color on apicodorsal half; tibiae and tarsi brown. Leg I unmodified, without MSSC. FII swollen basally, tapering to thin apex, row of short black stiff setae on apical half of ventral surface (MSSC); TII (Fig. 6) two times length of basitarsus, with basal barb-like projection bearing row of minute peg-like setae, single long lateral seta at basal 1/3, two long setae apically, otherwise, with fine setae along mesal and lateral surfaces (MSSC); IIt_1 two times length of IIt_2; IIt and leg III unmodified, without MSSC.

Wing subhyaline; halter stem and knob yellowish white.

Abdomen. Shining dark brown with short black hairs dorsally on each tergite, a few longer hairs laterally; venter paler brown. Hypopygium brown, not dissected.

Female. Unknown.

Types. *Holotype* ♂ (BPBM 16,743) from HAWAIIAN ISLANDS: **Hawai'i**: Mauna Loa Kīpuka Mosaic, Saddle Road, 19°39'59.9"N, 155°21'32.3"W, fogging mossy fallen koa, 5 Apr 2004, D.J. Preston & M.K.K. McShane.

Etymology: The specific epithet derives from the Hawaiian *kokoke* meaning "near, close"; referring to the close appearance of this species to *C. kuku* Evenhuis from Kaua'i.

Campsicnemus maui Evenhuis, **new species**
(Figs. 1, 7)

Campsicnemus new sp. 2: Englund *et al*., 2003: 7.

Diagnosis. Using the key in Tenorio (1969), this species runs to couplet 73 but is stymied there. It differs from *C. tibialis* Van Duzee by the presence of weak ventral hairs on the hind femur (with strong black setae in *C. tibialis*) and the lack of villosity on the fore basitarsus (all tarsomeres with fine villosity in *C. tibialis*); and it differs from *C. truncatus* Hardy & Kohn by the presence of pulvilli longer than the claws (pulvilli shorter than claws in *C. trunctatus*) and the 7 anterodorsal setae on the hind tibia (3 in *C. trunctatus*).

Description. Body: 2.96–3.02 mm; wing: 2.75–3.00 mm. **Male**. *Head*. Face, front and clypeus brownish black, vertex shining dark brown; oc and vt black; eyes dichoptic below antennae by approximately two times width of median ocellus; palp brown; proboscis brown, extending below eye in lateral view; antenna (Fig. 1) brown, flagellomere subconical, length slightly less than height.

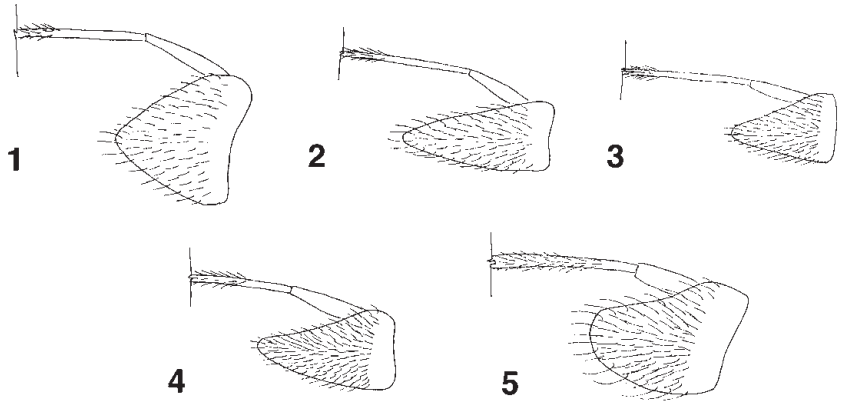
Thorax. Brown throughout, darker brown on dorsum of mesoscutum and scutellum and on anepimeron, brownish; thoracic setae black: 4+1 dc; 2+1 np; 1+1 ph; 1 pa; 1 sa; 1 sc; ac absent.

Legs. Fore coxae yellowish brown, remainder of legs brown. Leg I unmodified, without MSSC. FII broad basally, tapering to thin apex, with row of black setae along ventral surface (MSSC); TII (Fig. 7) straight, length subequal to length of FII, with 8 long thin black truncate setae on basomesal three-fourths, single strong long black seta at basal third and apical third, and subapically on lateral surface, numerous short fine hairs along apical one-fourth (all MSSC); IIt and leg III unmodified, without MSSC.

Wing subhyaline; halter stem and knob brown.

Abdomen. Dark brownish black with short black hairs dorsally on each tergite. Hypopygium brown, not dissected.

Female. Unknown.



Figures 1–5. *Campsicnemus* antennal flagellomeres and bases of aristae. **1**. *C. maui*, n. sp. **2**. *C. maukele*, n. sp. **3**. *C. prestoni*, n. sp. **4**. *C. sinuosus*, n. sp. **5**. *C. ui*, n. sp.

Types. *Holotype* ♂ (BPBM 16,746) and paratype ♂ from HAWAIIAN ISLANDS: **Maui**: W. Wailua Iki Stream, 1600–1800 ft, 20.80900°N, 156.14473°W, riffle/pool, R. Englund. Holotype and paratype in BPBM.

Etymology: The name derives from the island on which this species was collected. The specific epithet is treated as a noun in apposition.

Campsicnemus maukele Evenhuis, **new species**
(Figs. 2, 7)

Diagnosis. Using the key to Kaua‘i species of *Campsicnemus* in Evenhuis (2003), this species runs to *C. lipothrix* Evenhuis but can be easily separated from it by the different male mid tibial setation and pleural coloration.

Description. Body: 1.80 mm; wing: 2.13 mm. **Male**. *Head*. Face and clypeus yellowish white, frons and vertex shiny dark brown; oc and vt black, about one-third length of antennal arista; eyes dichoptic below antennae, separated by approximately two times width of median ocellus; palp small, brown; proboscis brown, extending below eye in lateral view; antenna (Fig. 2) brown, flagellomere subtriangular, length 2.5 times width, arista subequal to head height.

Thorax. Yellowish throughout, brown on dorsum of mesoscutum and scutellum and on proepimeron and anepimeron; thoracic setae black: 3+1 dc; 2 np; 2 ph; 1 pa; 1 sa; 1 sc; ac absent.

Legs. Mid and hind coxae and all tibiae and tarsi brown, remainder of legs yellow. Leg I unmodified, without MSSC. FII long, broad basally, tapering to thin apex, with sparse fine brown hairs ventrally (MSSC); TII (Fig. 7) length subequal to FII, slightly bowed, with three rows of long spiky setae on apical three-fourths, short fine setae elsewhere (all MSSC); IIt and leg III unmodified, without MSSC.

Wing subhyaline brownish; halter stem and knob white.

Abdomen. Yellowish brownish with brown posterior margins, short black hairs dorsally on each tergite. Hypopygium brown, not dissected.

Female. Unknown.

Types. Holotype ♂ (BPBM 16,742) from HAWAIIAN ISLANDS: **Kaua'i**: Mt. Wai'ale'ale summit area, Wainiha headwaters, 4890 ft, 18 May 2005, pyrethrin fogging of mossy logs and trunks, D.A. Polhemus.

Etymology: The name derives from the Hawaiian *maukele*, meaning "rainforest"; referring to the type locality of this species.

Campsicnemus prestoni Evenhuis, **new species**
(Figs. 3, 10)

Campsicnemus n. sp. near *truncatus*: Preston *et al*., 2004: 22.

Diagnosis. Using the key in Tenorio (1969), this species runs to *C. truncatus* Hardy & Kohn from Maui but can be easily separated from it by the all yellow legs (apices of femora and remainder of legs brown in *C. truncatus*), the lack of a comb of truncate long setae on the mesal surface of the male mid tibia (present in *C. truncatus*), and the presence of two patches of setae on the lateral surface (single setae in three places in *C. truncatus*).

Description. Body: 1.88–2.00 mm; wing: 2.17–2.30 mm. **Male**. *Head*. Face and clypeus brown, frons and vertex shining dark brown; oc and vt black, about one-half length of antennal arista; eyes holoptic below antennae; palp small, brown; proboscis pale yellow, extending well below eye in lateral view; antenna (Fig. 3) yellow, flagellomere subtriangular, slightly longer than wide, arista length subequal to head height.

Thorax. Brown throughout, darker brown on dorsum of mesoscutum and scutellum; thoracic setae black: 3+1 dc; 2+1 np; 2 ph; 1 pa; 1 sa; 1 sc; ac absent.

Legs. Fore coxae yellowish white, remainder of legs yellow with tarsomeres 4 and 5 yellowish brown. Leg I unmodified, without MSSC. FII broad basally, tapering to thin apex, with 4 long black setae on ventral surface, 4 shorter black setae on apical half (MSSC); TII (Fig. 10) long, straight, length 1.25 times length of FII, with vestiture as follows: patch of long thin hairs with wavy tips basomesally, row along anterior surface in two patches: 2 basally, 7 on apical half, 2 strong apicolateral setae, mesal surface with short fine hairs (all MSSC); IIt and leg III unmodified, without MSSC.

Wing subhyaline; halter stem and knob white.

Abdomen. Brown with short black hairs dorsally on each tergite. Hypopygium dark brown, not dissected.

Female. As in male except for lack of MSSC.

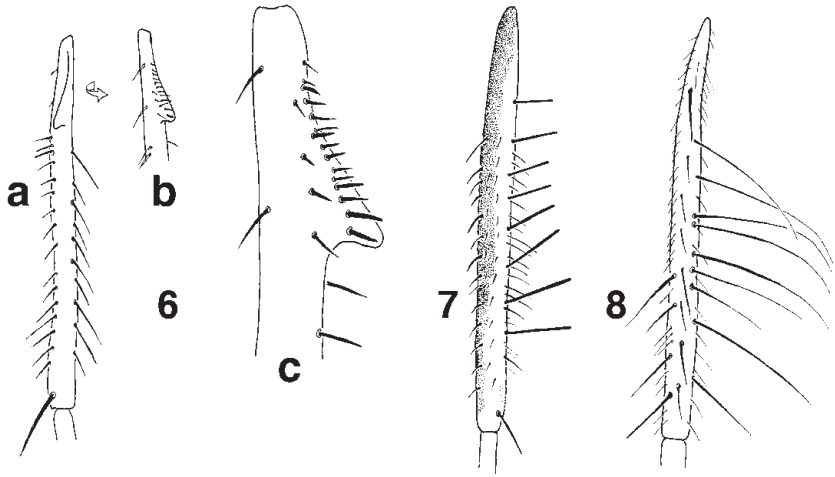
Types. *Holotype* ♂ (BPBM 16,741) and 1♂ *paratype* from HAWAIIAN ISLANDS: **Hawai'i**: Mauna Loa Kīpuka Mosaic, Upper Waiākea bog Sanctuary, 19°39'7.89"N, 155°21'19.91"W, 4 Mar 2004, yellow pan traps, D.J. Preston & M.K.K. McShane. *Other paratypes*: **Hawai'i**: 1♂, Mauna Loa Kīpuka Mosaic, Saddle Road, 19°40'14.71"N, 155°20'50.83"W, 7 Mar 2004, yellow pan traps, D.J. Preston & M.K.K. McShane; 2♂, 1♀, same data except: 19°40'22.09"N, 155°20'20.79"W, 9 Mar 2004. Holotype in BPBM; paratypes in BPBM and UHM.

Etymology. The species is named for David Preston, in appreciation for his entomological collecting efforts in Hawai'i throughout the years.

Campsicnemus sinuosus Evenhuis, **new species**
(Figs. 4, 11)

Campsicnemus n. sp. with "sinuous tibia": Preston *et al*., 2004: 22.

Diagnosis. Using the key in Tenorio (1969), this species keys to *C. coniculus* Hardy &



Figures 6–8. *Campsicnemus* mid tibiae. **6**. *C. kokokekuku*, n. sp. **a**) lateral view; **b**) mesal view of basal portion showing barb-like process; **c**) detail of barb-like process. **7**. *C. maui,* n. sp. **8**. *C. maukele*, n. sp.

Kohn but differs by the sinuous tibia (straight in *C. coniculus*) and the much shorter tibial setation (long wavy hairs medially in *C. coniculus*).

Description. Body: 2.00–2.05 mm; wing: 2.46–2.83 mm. **Male**. *Head*. Face, front and clypeus brownish black, vertex shining dark brown; oc and vt black, about one-half length of antennal arista; eyes dichoptic below antennae, separated by 2.5 times width of median ocellus; palp small, yellowish brown; proboscis brown, extending below eye in lateral view; antenna (Fig. 4) with scape and pedicel yellowish brown, flagellomere brown, subconical, length 1.25 times width, aristae subequal to head height.

Thorax. Brown throughout, darker brown on dorsum of mesoscutum and scutellum, brownish pollinose admedially; thoracic setae black: 3+1 dc; 2+1 np; 2 ph; 1 pa; 1 sc; ac absent.

Legs. Mid coxa brown, remainder of coxae and other leg segments pale yellow. Leg I unmodified, without MSSC. FII (broad basally, tapering to thin apex, with pair of long black setae on ventral surface (MSSC); TII (Fig. 11) length one and a third times FII, slightly sinuous, anterior surface with three patches of long setae in rows, setae with curved tips (1st and 2nd rows [counted from base] slightly overlapping), shorter stiff hairs on lateral and mesal surfaces, single apical dark brown seta apicolaterally (all MSSC); IIt and leg III unmodified, without MSSC.

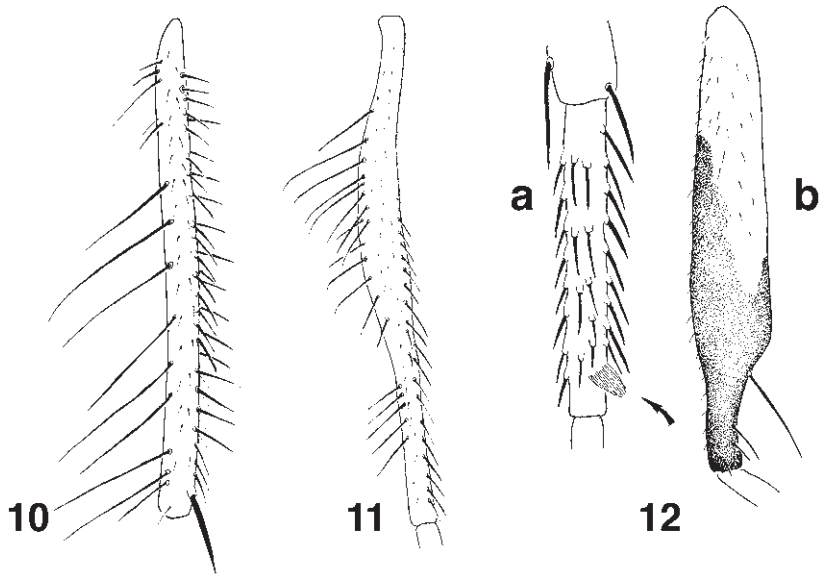
Wing subhyaline; halter stem and knob brown.

Abdomen. Dark brownish black with short black hairs dorsally on each tergite. Hypopygium brown, not dissected.

Female. Unknown.

Types. *Holotype* ♂ (BPBM 16,745) and 4♂ paratypes from HAWAIIAN ISLANDS: **Hawai'i**: Hakalau Forest Reserve, Pua ʻĀkala Tract, 4 Nov 2002, Malaise trap, F.G. Howarth, D.J. Preston, J. Jeffrey. *Other paratypes*: HAWAIIAN ISLANDS: **Hawai'i**: 1♂, Hakalau Forest Reserve, Mau lua Tract, 9 Jul 2002, Malaise, F.G. Howarth, D.J. Preston, J. Jeffrey; 2♂, Mauna Loa Kīpuka Mosaic, Saddle Road, 19°40'22.09"N, 155°20'20.79"W, 9

Figure 9. *Campsicnemus ui*, n. sp., male habitus.



Figures 10–12. *Campsicnemus* male legs. **10**. *C. prestoni*, n. sp. **11**. *C. sinuosus*, n. sp. **12**. *Campsicnemus ui,* n. sp., hind leg; **a.** Hind second tarsomere, showing apical pectin (arrow),**b**. Hind femur.

Mar 2004, yellow pan traps, D.J. Preston, M.K.K. McShane. Holotype in BPBM; paratypes in BPBM and UHM.

Etymology: The name derives from the Latin, *sinuosus* = "bend"; referring to the characteristic wavy/sinuous mid tibia of the male.

Campsicnemus ui Evenhuis, **new species**
(Figs. 5, 9, 12)

Diagnosis. Using the key to species in Tenorio (1969), this species runs to couplet 38 but is stymied there. It differs from *C. nigricollis* Van Duzee and *C. truncatus* by the lack of modifications of the male mid tibia (in *C. nigricollis* possessing truncate comb of setae mesally and in *C. truncatus* possessing long setae apically). It is also easily separated from these two species by the strongly constricted apex of the hind femur and the presence of a strongly produced pecten on the hind basitarsus.

Description. Body: 2.67 mm; wing: 2.62 mm. **Male** (Fig. 9). **Head**. Face, front and clypeus brownish black, vertex shining dark brown; oc and vt black, about one-half length of antennal arista; eyes dichoptic below antennae, separated by two times width of median ocellus; palp small, brown; proboscis brown, extending below eye in lateral view; antenna (Fig. 5) brown, flagellomere subtriangular, length about 1.25 times width, arista length subequal to head height.

Thorax. Brown on dorsum of mesoscutum and scutellum, yellowish laterally; pleura brown on upper sclerites, yellowish on lower sclerites; thoracic setae black: 3+1 dc; 2+1 np; 2 ph; 1 pa; 1 sa; 1 sc; ac absent.

Legs. Fore and hind coxae, and fore and mid femora, basoventrally on hind femur yellowish, remainder of legs brown. Leg I unmodified, without MSSC. FII unmodified, no MSSC; FIII (Fig. 12b) broad subapically, tapering to extremely thin rod-like apex, with pair of long black setae on ventral surface (MSSC); $IIIt_2$ (Fig. 12a) with large pecten apically (MSSC); TII with two strong setae at basal one-third, and one at apical one-fourth (MSSC); IIt and remainder of leg III unmodified, without MSSC.

Wing subhyaline; halter stem and knob white.

Abdomen. Yellowish brown, with darker brown on posterior margins, with short black hairs dorsally on each tergite. Hypopygium brown, not dissected.

Female. Unknown.

Types. Holotype (BPBM 16,744) from HAWAIIAN ISLANDS: **Kaua‘i**: Mt. Wai‘ale‘ale summit, 4950 ft, Upper Wainiha headwaters, 22°04'12"N, 159°30'03"W, 18 May 2005, pyrethrin fogging mossy logs and trunks, D.A. Polhemus.

Etymology: The name derives from the Hawaiian *‘ui* = “to squeeze, squeezed”; referring to the acutely narrowed apex of the male mid femur. The name is treated here as a noun in apposition.

Acknowledgments

This paper forms the partial results of surveys conducted for the Hawaii State Department of Land and Natural Resources and the U.S. Geological Survey, who are thanked for their support. Ronald Englund, David Preston, Myra McShane, Frank Howarth, Jack Jeffrey, and Dan Polhemus collected the material examined and are thanked for their efforts in the field.

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Lectotype Designations for Hawaiian *Campsicnemus* Haliday (Diptera: Dolichopodidae)

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Abstract. The type status for each of 31 species of endemic Hawaiian *Campsicnemus* described by Grimshaw, Parent, and Van Duzee is given. Lectotypes are designated for 23 species: *Campsicnemus bicoloripes* Parent, *C. breviciliatus* Parent, *C. contortus Parent, C. deficiens* Parent, *C. depauperatus* Parent, *C. flexuosus* Parent, *C. fragilis* Parent, *C. fumipennis* Parent, *C. gloriosus* Van Duzee, *C. grimshawi* Van Duzee, *C. longiciliatus* Parent, *C. macula* Parent, *C. membranilobus* Parent, *C. miser* Parent, *C. obtusus* Van Duzee, *C. octosetosus* Van Duzee, *C. olympicola* Parent, *C. pallidus* Parent, *C. putillus* Parent, *C. simplicipes* Parent, *C. tarsiciliatus* Parent, *C. tibialis* Van Duzee, *C. vafellus* Parent. The history of the type status of each species is given along with clarification of label data, sex, and current condition of newly designated lectotypes. Discussion is given on the "accidental" lectotype designations allowed by the I.C.Z.N. *Code*.

Introduction

The genus *Campsicnemus* Haliday is one of the most speciose genera of Diptera in the Hawaiian Archipelago. One hundred sixty-three species of *Campsicnemus* have been described from Hawai'i and approximately 100 more await description. All are endemic to the islands.

While conducting revisionary work of this genus in Hawai'i, it became apparent that the status of the types of some of the species were in need of clarification. Hardy & Kohn (1964), the last workers to comprehensively treat the Hawaiian species of the genus, mentioned where certain of the types of most species were deposited. However, some of the information they presented was misleading due the actual existence of syntype series in various collections (not all the syntypes of some species were identified in Hardy & Kohn 1964). In other cases, they mentioned the existence of a single "type" in a museum collection which, because the type series in reality consisted of syntypes, could be misconstrued as a *de facto* lectotype designation according to the I.C.Z.N. *Code* (1999; Article 74.5), which in most cases they are not.

This study provides information on the types of 31 species of Hawaiian *Campsicnemus* giving data on numbers of specimens upon which the species were originally described, numbers of specimens of type series recovered in this study and the collections where they are located, lectotype designations and/or lectotype status, and information on the condition of primary type.

1. Contribution No. 2007-012 to the Hawaii Biological Survey.

Materials and Methods

Material of type series for this study were examined in or borrowed from the following museums and collections: Bishop Museum, Honolulu (BPBM); California Academy of Sciences, San Francisco (CAS); Hawaii State Department of Agriculture, Honolulu (HDOA); Museum National d'Histoire Naturelle, Paris (MNHN); National Museum of Natural History, Washington, DC (USNM); the Natural History Museum, London (BMNH); University of Hawaii at Mānoa, Honolulu (UHM); Royal Museums of Scotland, Edinburgh (RMS).

Label data for newly designated lectotypes in this study is given verbatim. Ends of lines on a label are indicated by the use of a solidus (/); beginning and ending of labels are indicated by use of double quotes (“ ”). Square brackets ([ ]) are used to indicate information added to label data and in other portions of this paper for clarification. All newly designated lectotypes in BPBM bear an orange label with “LECTOTYPE / Campsicnemus / [species name author name] / des.N.Evenhuis2007”.

Hawaiian *Campsicnemus* Taxonomic History

The first species of Hawaiian *Campsicnemus* were described by Percy Hall Grimshaw (1869–1939) (Grimshaw, 1901; Grimshaw & Speiser, 1902) in his work on the Diptera in *Fauna Hawaiiensis*. The specimens of Hawaiian Diptera described by Grimshaw were collected by R.C.L. Perkins from 1892–1901. Some notes on Perkins's collections were published by Manning (1986); supplementary information was subsequently published by Evenhuis (2005); and a complete set of his journals and remembrances as well as associated correspondence was published most recently by Evenhuis (2007a). These notes provide crucial biological information as well as more accurate locality data than can be seen on the labels themselves and are essential for pinpointing exact habitats of these species, which may sometimes be found only in one small gully or stream.

The species *Campsicnemus calcaratus*, *C. distortipes*, *C. fimbriatus*, and *C. patelliferer* were the first four species to be described from the Hawaiian Islands. Grimshaw (*in* Grimshaw & Speiser, 1902) also described the flightless *Emperoptera mirabilis*, which was transferred to *Campsicnemus* by Hardy & Kohn (1964). Evenhuis (1997a), in his review of the flightless Hawaiian Dolichopodidae, resurrected the genus *Emperoptera* from synonymy and returned *mirabilis* to that genus.

United States National Museum dipterist John Russell Malloch (1875–1963) was the first person (1932) after Grimshaw to describe new Hawaiian *Campsicnemus* (*C. congregatus*, *C. inermipes*, and *C. rectus*), but it was Millard Carr Van Duzee (1860–1934), in his only publication devoted to Hawaiian Dolichopodidae (1933) and the antepenultimate one before his death one year later, who expanded upon the then meager knowledge of Hawaiian *Campsicnemus.* His material was collected primarily by entomologist Francis Xavier Williams, who was a prolific worker in Hawai‘i from 1916–1948 (with many travels to various Pacific locales during those years) and who made extensive biological observations and rearings of many Hawaiian insects including being one of the few to do so on Hawaiian *Campsicnemus* (Zimmerman, 1969).

Van Duzee's material derived from the collections of the Hawaii Sugar Planters' Association (HSPA), at the time the primary entomological research institution in Hawai‘i. After the research aspects of the HSPA declined, the HSPA Collection, which

contained a great deal of type material described by many entomologists throughout the decades, was transferred in the 1960s to the Hawaii State Department of Agriculture (HDOA) in Honolulu. In 1975 HDOA transferred all the material identified with "type" labels to the BPBM for deposit, retaining the remainder of the original HSPA Collection as a synoptic reference collection. A few of the remaining HSPA specimens in HDOA have been identified during this study as belonging to original type series and have been transferred to BPBM.

The Abbé Octave Parent (1882–1942) published 3 papers dealing with 26 new species of Hawaiian *Campsicnemus* (1934, 1937, 1940). The types of all of the species described in his 1937 paper were returned to Hawai'i and deposited in the collection of the Hawaiian Entomological Society (then at the same location as the HSPA on Makiki Street in Honolulu), which were transferred with the HSPA types to BPBM. Much of the Hawaiian material Parent used for descriptions of new species in his 1940 paper derived from HSPA collections, the Hawaiian Entomological Society collections at HSPA, or directly from F.X. Williams. Some of this material was exchanged with or given to the Imperial Institute of Entomology (IIE) in London, which subsequently transferred this material to BMNH in three accessions (one in 1936; two in 1938) (C.E. Dyte, pers. comm.). How Parent came to this material and identified it is unknown but most likely either through direct correspondence with F.X. Williams or having material sent to him for identification from IIE.

After Parent, little was done with Hawaiian *Campsicnemus* except , Marion Adachi, (1953, 1954) who described 5 species (one in *Emperoptera* was later transferred to *Campsicnemus*). D. Elmo Hardy & Marion Adachi Kohn (1964) provided a comprehensive treatment for the *Insects of Hawaii* series. On his first sabbatical after arriving in Hawai'i to teach at the University of Hawai'i, Hardy visited European museums in search of Hawaiian Diptera type material in 1954. Three of those months were spent at the BMNH (Evenhuis, 2004). The information Hardy obtained on those trips for Hawaiian dolichopodids was synthesized into volume 11 of the *Insects of Hawaii* co-authored with Kohn.

While a graduate student under Hardy at the University of Hawai'i, JoAnn Tenorio (1969) added 11 new endemic species in her supplement to Hardy & Kohn's work. This was to be the last taxonomic research done on the group until Evenhuis (1996) described two new species from the Wai'anae range on O'ahu (*C. halonae* and *C. charliechaplini*[2]). In a small publication, Evenhuis (2000) described another new species with an odd plant axil association (*C. gloriamontis*) at high elevations on West Maui; and a few years later Evenhuis (2003) revised the Kaua'i species of *Campsicnemus* where 19 new species were added to the endemic Hawaiian *Campsicnemus* fauna of that island. Including the six new species described in this volume (Evenhuis, 2007b), the total number of Hawaiian *Campsicnemus* now numbers 163, an incredible 70% of the world's total number of species in the genus.

2. The latter species is either now extinct or its populations are reduced dramatically because of the introduction of the weed, Maui pamakani [*Ageratina adenophora* (Spreng.) King & H.E. Robins (Asteraceae)] that has led to the destruction of the small pool habitat where it was only known (Evenhuis, pers. observ.). This water skating fly has not been seen since 1997.

Lectotypification by Accident

Before 1985, the I.C.Z.N. *Codes* did not specify explicitly how a lectotype was required to be worded. The third edition of the Code added wording dealing with lectotype designations from a syntype series(Article 74a), and stated that "an author may designate one of the syntypes as the lectotype, by use of that term or an equivalent expression (e.g., 'the type')". By stating the use of the phrase "the type" in that Article as an allowed "equivalent expression", it then opened the door to "accidental" lectotypifications (i.e., when an author unintentionally specified "the type" of a species-group name as being in a particular collection and that species was found only later to be based on syntypes).

The fourth edition of the Code (I.C.Z.N., 1999) kept the general wording of the third edition for the criteria to be met for designations of lectotypes (now Article 74.5):

> "In a lectotype designation made before 2000, either the term "lectotype", or an exact translation or equivalent expression (e.g. "the type"), must have been used or the author must have unambiguously selected a particular syntype to act as the unique name-bearing type of the taxon"

but added a clause to Article 74 for lectotype designations after 2000 that specify that only the wording "lectotype" can be used.

It is unfortunate that the third and fourth editions of the *Code* essentially grandfathered all past uses of the phrase "the type" to satisfy a lectotype designation because some of these have been found to be unintentional. Soon after embarking on revisionary studies of Hawaiian dolichopodids, I asked D.E. Hardy if his actions in the *Insects of Hawaii* were meant to be lectotype designations and he replied he never had any such intentions.

Hardy and others who did type studies on specimens housed in the BMNH and published a phrase such as "Type is in the British Museum (Natural History)" were essentially unwitting victims of an emergency labeling phenomenon in the BMNH during World War II, which did not get rectified until after the third edition of the *Code* appeared.

As with many other museums across Europe, measures were taken at the BMNH in the early 1940s to protect its natural history collections from bombing raids. Collections were evacuated from the BMNH and transported into the country in two separate moves. The types were housed in one country house and the remainder of the collection scattered elsewhere. Since only one specimen per species would be taken to the type collection locality, an arbitrary decision was made with regard to syntype series as to which specimen would bear the characteristic red ringed BMNH "Type" label (the same as those used for holotypes) while the remainder were given yellow-ringed "paratype" labels. This decision on selection of an arbitrary "type" was left up to the various section curators. In the case of Diptera, that duty resided with F.W. Edwards (C.E. Dyte, pers. comm.), primarily a specialist on Nematocera. Thus, some of the specimens chosen to bear those labels may not have matched up well to the descriptions. When the collections were returned and combined once again after the war, the labels for the syntypes were not immediately removed (in fact in the Diptera collection, no concerted effort was made to remove the labels until the 1990s). Thus for over 50 years, syntype series without a designated lectotype were indistinguishable from type series that had a holotype specimen.

This labeling of a single specimen as "Type" is what Hardy and others recorded in their papers when researching types in the BMNH, not the fact that they were designating

lectotypes. Hardy also used the same phrase for specimens found in the HSPA collection. This is no doubt because Parent normally only labeled one specimen of his series of specimens with the word "Type" although he never designated such as a holotype in any of his papers (C.E. Dyte, pers. comm.). Hardy then was merely quoting the label data for the Parent specimens in HSPA, the same as he did with those in BMNH. However, because Hardy consistently used the phrase "Type in …" and not "The type in …" it is clear that Hardy was not designating lectotypes according to the *Code* and therefore his statements in his papers should not be construed as lectotype designation.

Type Studies

acuticornis

Campsicnemus acuticornis Parent, 1940: 225. Hardy, 1952: 453; Hardy & Kohn, 1964: 39; Tenorio, 1969: 2; Bickel & Dyte, 1989: 409; Nishida, 1992: 93, 1994: 88, 1997: 74, 2002: 92; Yang *et al*., 2006: 454.

Originally based on an unspecified number of specimens of males and females from Lulumahu stream along the Konahuanui Trail on 27 October 1936. In this study, one male with a Parent cotype label was found in UHM (no doubt acquired through exchange of specimens between MNHN and Marian Adachi; C.E. Dyte, pers. comm.) and transferred to BPBM; two specimens were found in BMNH, and one male (with a cotype label) was found in MNHN. Hardy & Kohn (1964) stated "Type in the British Museum (Natural History). Cotypes from Konahuanui Trail are in the Parent collection at the Museum National d'Histoire Naturelle, Paris."

Status: Syntypes in BMNH, BPBM, and MNHN. No lectotype has been selected pending further research.

bicoloripes

Campsicnemus bicoloripes Parent, 1937: 73. Parent, 1940: 225; Hardy, 1952: 453; Hardy & Kohn, 1964: 44; Tenorio, 1969: 2; Bickel & Dyte, 1989: 409; Nishida, 1992: 94, 1994: 88, 1997: 74, 2002: 91; Yang *et al*., 2006: 456.

The species was originally based on an unspecified number of males from Mt. Olympus and Lanihuli on O'ahu. The Mt. Olympus specimens were collected at the 2000-foot level by F.X. Williams on 21 October 1935, who indicated they were water skaters. The Lanihuli material was collected on 19 October 1919 by H.T. Osborn. Two specimens were located in the BMNH, one (with a cotype label) is in MNHN, and two specimens (one from Mt. Olympus and the other the Osborn specimen—both males) are in BPBM (transferred from the HSPA collection).

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 14924). The lectotype is glued to a paper point and carries the labels: "Lanihuli [machine printed] / X.19.19 [handwritten] Oahu [machine printed]", "H.T. Osborn / collector [machine printed]", "Campsicnemus / bicoloripes n. sp. / O. Parent [Parent's handwriting]".

Condition: The lectotype is in fair condition missing the right antennal flagellomere and arista; missing the apical one-third of the left wing; the right wing is torn and punctured; both fore legs and mid legs beyond the coxa are broken off (the left mid leg femur, tibia, and basitarsus are glued to the base of the paper point). The specimen appears to have been re-glued to the point.

breviciliatus

Campsicnemus breviciliatus Parent, 1940: 225. Hardy, 1952: 453; Hardy & Kohn, 1964: 47; Tenorio, 1969: 2; Bickel & Dyte, 1989: 409; Nishida, 1992: 94, 1994: 88, 1997: 74, 2002: 91; Yang *et al*., 2006: 456.

The species was originally described by Parent based on an unspecified number of males and females from O‘ahu from Punalu‘u or Kaluanui on 18 October 1936. Two specimens were found in the BMNH; one male was found in HDOA (since transferred to BPBM). Hardy & Kohn (1964: 48) stated “Type in the British Museum (Natural History)”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 16,805). The lectotype is pinned with a minuten to a cork stage and carries the following labels: “Punalui [sic], or / Ka Luanui [sic] / Oahu 18.10.36 / F.X.W. [Williams’s handwriting]”, “Campsicnemus / breviciliatus n. sp. / O. Parent [Parent’s handwriting]”.

Condition: The lectotype is in excellent condition and only has the right wing folded on itself.

contortus

Campsicnemus contortus Parent, 1937: 75. Parent, 1940: 238; Hardy, 1952: 453; Hardy & Kohn, 1964: 65; Tenorio, 1969: 2; Bickel & Dyte, 1989: 410; Nishida, 1992: 94, 1994: 88, 1997: 74, 2002: 91; Yang *et al.,* 2006: 457.

This species was originally based on an unspecified number of male and female syntypes from “Moalua Str.”, 2100 feet on Moloka‘i (Hardy & Kohn 1964: 65) corrected the misspelling of the locality to “Moaula” Stream) collected by F.X. Williams on 29 November 1933. One male was found in BPBM (transferred from the HSPA collection). Hardy & Kohn (1964: 65) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4040). The male specimen is pinned with a minuten to a cork stage and carries the following labels: “F.X.W. Coll. / Moala Str. / 2100 ft. / 11-29-1933 [Williams’s handwriting]”, “Campsicnemus / contortus / Type / O. Parent [Parent’s handwriting]”.

Condition: The lectotype is only slightly damaged. It is missing the left mid leg beyond the coxa and the left hind leg beyond the femur.

deficiens

Campsicnemus deficiens Parent, 1940: 226. Hardy, 1952: 453; Hardy & Kohn, 1964: 71. Tenorio, 1969: 2; Bickel & Dyte, 1989: 410; Nishida, 1992: 94, 1994: 88, 1997: 74, 2002: 91; Yang *et al*., 2006: 458.

The species was originally based on an unspecified number of males from Lulumahu Stream, 1900 feet elevation on O‘ahu collected 27 September 1936 by F.X. Williams. A single male specimen was found in the BPBM in this study (transferred from the HSPA collection). Although there is no indication of the number of specimens in the original description, the fact that the species is keyed out in two different places in the key in Parent (1940) indicates there is some variation in characters, which implies there was more than one specimen in the type series when he constructed the key. The types were originally deposited in the collection of the Hawaiian Entomological Society (at the time housed in HSPA) (Williams *in* Parent 1940: 226). The HSPA types (including those from the Hawaiian Entomological Society) are now in BPBM. Hardy & Kohn (1964: 71) stat-

Figure 1. Labels showing style of F.X. Williams (far left) and O. Parent (far right). Example of square red "Type" label in center.

ed “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4057). The male specimen is mounted on a cork point via a minuten and carries the following labels (Fig. 1): “Lulumahu Str. / OAHU. 1900 ft. / slopes of Val. / Sept 27 • 36 / F.X.W. [Williams’s handwriting]”, “Type [handwritten on a square red label]”, “Campsicnemus / deficiens / Type / O. Parent [Parent’s handwriting]”.

Condition: The lectotype has the apical one-third of the left wing torn off and missing.

depauperatus

Campsicnemus depauperatus Parent, 1940: 226. Hardy, 1952: 453; Hardy & Kohn, 1964: 71; Tenorio, 1969: 2; Bickel & Dyte, 1989: 410; Nishida, 1992: 94, 1994: 88, 1997: 75, 2002: 92; Yang *et al*., 2006: 458.

The species was originally based on an unspecified number of males from Mt. Olympus O‘ahu collected October 1936 by F.X. Williams. A single male pinned with a minuten to a cork mount was found in BPBM in this study (transferred from the HSPA collection). Although there is no indication of the number of specimens, the fact that the species is keyed out in two different places in the key in Parent (1940) indicates there is some variation in characters, which implies there was more than one specimens in the type series when he constructed the key. The types were originally deposited in the collection of the Hawaiian Entomological Society (at the time housed in HSPA) (Williams *in* Parent 1940: 226). Hardy & Kohn (1964: 71) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4058). The lectotype carries the following labels: “Olympus, OAHU / ~~2000 ft.~~ 2200 [ft] / Oct. 10, 36 / F.X.W. [Williams’s handwriting]”, “Campsicnemus / depauperatus / Type / O. Parent [Parent’s handwriting]”, “Type [handwritten on a square red label]”.

Condition: The lectotype is missing the following: the left antennal flagellomere and arista; the left and right mid legs beyond the coxa; and the right hind leg beyond the tibia.

ferrugineus

Campsicnemus ferrugineus Parent, 1934: 298; Hardy & Kohn, 1964: 84; Tenorio, 1969: 3; Bickel & Dyte, 1989: 410; Nishida, 1992: 94, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 459.

This species was originally based on an unspecified number of females from "Sandwich Is." collected in November 1896 and from Ola'a on the Big Island of Hawai'i. One female specimen (bearing the locality "Sandwich Is., XI, 96") was located in the BMNH. Hardy & Kohn (1964: 84) mistakenly stated that the species was based on a single female and then stated "Type in the British Museum (Natural History)". Because there is no indication the species was based on a single specimen, this cannot serve to validate a lectotype designation and the specimen remains a syntype.

Status: Syntype female in BMNH. No lectotype has been selected pending further research.

fimbriatus

Campsicnemus fimbriatus Grimshaw, 1901: 13. Malloch, 1932: 122; Van Duzee, 1933: 336; Bryan, 1934: 448; Parent, 1940: 239; Hardy & Kohn, 1964: 85; Tenorio, 1969: 3; Bickel & Dyte, 1989: 410; Nishida, 1992: 94, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 459.

The type series was originally based on two males and three females from Kīlauea on the Big Island of Hawai'i, collected in August 1895 by R.C.L. Perkins. According to Perkins's journals and remembrances for August 1895, it is most probable that the specimens of this species were collected either in the vicinity of the Volcano House hotel or on the slopes of Mauna Loa near Kīpuka Pua'ulu [a.k.a., Bird Park] (Evenhuis, 2007a). One male and one female were found in BMNH; one female specimen is in BPBM (BPBM No. 15623); and two specimens are in RMS. Hardy & Kohn (1964: 85) stated "Known only from the type and allotype. Type in the British Museum (Natural History). The following description is based upon the type and allotype". Although incorrect in their assumption of the number of specimens upon which the species was based, the mention of "the type" in Hardy & Kohn (1964) is enough to validate the lectotype designation there.

Status: Lectotype male (designated in Hardy & Kohn, 1964: 85) in BMNH.

flexuosus

Campsicnemus flexuosus Parent, 1940: 226. Hardy, 1952: 453; Hardy & Kohn, 1964: 90; Tenorio, 1969: 3; Bickel & Dyte, 1989: 410; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 460.

This species was originally based on an unspecified number of male and female specimens from Lulumahu Stream, 1900 ft., slopes of valley, September 1936, collected by F.X. Williams and Konahuanui Trail, September 1936. Three specimens of the type series were found in the BMNH; one male from Konahuanui Trail (labeled as a cotype) was found in MNHN, and one male specimen with a Parent label "Campsicnemus flexuosus n. sp. O. Parent" from Konahuanui Trail at 2000 feet elevation was found in BPBM (transferred from the HSPA collection).

Status: **Lectotype** male **here designated** from Konahuanui Trail in BPBM (BPBM No. 14925). The lectotype is mounted on a cork stage with a minuten pin and carries the following labels: "Konahuanui / trail, O'ahu / 2000 ft, Sept 19, 36 / FXW [Williams's handwriting]", "Campsicnemus / flexuosus n. sp. / O. Parent [Parent's handwriting]".

Condition: The lectotype is in very good condition with only the right wing slightly torn posterobasally.

fragilis

Campsicnemus fragilis Parent, 1940: 227. Hardy, 1952: 453; Hardy & Kohn, 1964: 91; Tenorio, 1969: 3; Bickel & Dyte, 1989: 410; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 460.

This species was originally based on an unspecified number of males from Mt. Olympus, 2300–2400 ft, collected in August 1926. Two specimens were found in BMNH; four male specimens were located in MNHN (two of which have cotype labels), and two male specimens were found in BPBM (transferred from the HSPA collection).

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 10436). The lectotype is pinned with a minuten to a cork stage and carries the following labels: "Olympus, Oa / hu 2300 ft / Aug 23 36 / FXW [Williams's handwriting]", "Campsicnemus / fragilis n. sp. / O. Parent [Parent's handwriting]". There are two male specimens on the same cork mount. The lectotype is the one with an abdomen; the paralectotype male has the abdomen broken off and missing.

Condition: The lectotype is in fair condition and is missing both wings.

fumipennis

Campsicnemus fumipennis Parent, 1937: 76. Parent, 1940: 228; Williams, 1940: 295; Hardy, 1952: 454; Smith, 1952: 430; Hardy & Kohn, 1964: 92; Tenorio, 1969: 3; Montgomery, 1975: 77; Bickel & Dyte, 1989: 410; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 460.

This species was originally described from an unspecified number of females from Moa-Lua [= Moaula], Moloka'i, 2400 feet, 29 November 1929 collected by F.X. Williams. One female was found in the BPBM. Hardy & Kohn (1964: 92) stated "Type in the Hawaiian Sugar Planters' Association collection".

Status: **Lectotype** female **here designated** in BPBM (BPBM No. 4059). The lectotype is pinned on its right side with a minuten to a cork stage and carries the following labels: "Molokai / near Moa- / lua 2400 ± ft. / Nov. 29, 33 / F.X.W. [Williams's handwriting]", "Campsicnemus ♀ / fumipennis / Type / O. Parent [Parent's handwriting]".

Condition: In fair condition; it is missing the left antennal flagellomere and arista; and the left hind leg beyond the femur. There is a slight tear in the costa near the tip of both the left and right wings.

furax

Campsicnemus furax Parent, 1940: 228. Hardy, 1952: 454; Hardy & Kohn, 1964: 94; Tenorio, 1969: 3; Bickel & Dyte, 1989: 410; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 460.

This species was originally described based on an unspecified number of males and females from Mt. Ka'ala, O'ahu, 3600 feet elevation collected by F.X. Williams on 30 July 1936. A single male specimen was located in the BMNH. Hardy & Kohn (1964: 94) stated "Type in the British Museum (Natural History)".

Status: Syntype male in BMNH. No lectotype has been selected.

gloriosus

Campsicnemus gloriosus Van Duzee, 1933: 318. Williams *in* Van Duzee, 1933: 307; Bryan, 1934: 448; Parent, 1940: 237; Williams, 1940: 290, 292; Hardy & Kohn, 1964: 98; Tenorio, 1969: 3; Arnaud & Lee, 1979: 239; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Englund, 1994: 13; Polhemus, 1994a: 2, 1994b: 2; Evenhuis, 1997b: 146; Yang *et al*., 2006: 460.

This species was originally described based on "94 specimens of water striders; holotype, male; allotype, female, and five paratypes, taken by F. X. Williams at Pauoa headwaters, Tantalus, Oahu, on water, at 1,400 feet elevation, on February 14, 1932" (Van Duzee, 1933). In the type collection in BPBM there exist four specimens (transferred from the HSPA collection) with a type label (two males and two females) pinned with minutens to a cork stage bearing a label that indicates holotype and allotype on the pin. The holotype should be one of the two males but unfortunately there is no indication in Van Duzee (1933) or on the label as to which of the two specimens is the holotype. A lectotype is therefore needed.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4045). The lectotype (Fig. 2) is pinned with a minuten to a cork stage along with three other specimens. There are two males on the mount. The lectotype is the one with an abdomen (second specimen from the base of the cork; the paralectotype male on the same mount has its abdomen missing). The cork stage has been marked with an arrow in black India ink to assist in identification of the lectotype. It carries the following labels: "Pauoa-Tantalus / OAHU on water / 1400 ft / Feb. 14 - 32 / F.X. Williams [Williams's handwriting]", "Allotype & / Campsicnemus / gloriosus / [Van Duzee's handwriting] Holotype.VanDuzee [last line machine printed in red; label outlined in red]".

Condition: The lectotype is in excellent condition with only the eyes collapsed through air drying and the antennae hidden within the resulting concavities.

Remarks: Both Williams (1933) in his preface to the Van Duzee work and Van Duzee (1933) provide characters to describe *Campsicnemus gloriosus*. Since either Williams or Van Duzee can be considered as separately giving characters to validate the name, I hereby invoke the First Reviser Principle and select Van Duzee as the author of *Campsicnemus gloriosus*.

grimshawi

Campsicnemus grimshawi Van Duzee, 1933: 319. Bryan, 1934: 448; Parent, 1940: 237; Hardy & Kohn, 1964: 98; Tenorio, 1969: 3; Arnaud & Lee, 1979: 239; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 460.

Originally based on five specimens (four males, one female) collected by Otto Swezey and F.X. Williams in October 1931 at Nauhi Gulch on the eastern slopes of Mauna Kea on the Big Island of Hawai'i. Van Duzee (1933) stated that the specimens were taken at about 5,000 feet elevation on a forest pool. Arnaud & Lee (1979: 239) listed the specimens in CAS as syntypes. Hardy & Kohn (1964: 98) stated "Type in the Hawaiian Sugar Planters' Association collection".

Status: **Lectotype** male **here designated** in the BPBM (BPBM No. 4045). The lectotype is glued on its left side to a paper point and carries the following labels: "Nauhi Gulch / 5000–6000 ft. / Oct. 31 / Hawaii [machine printed]", "on forest pool [handwrit-

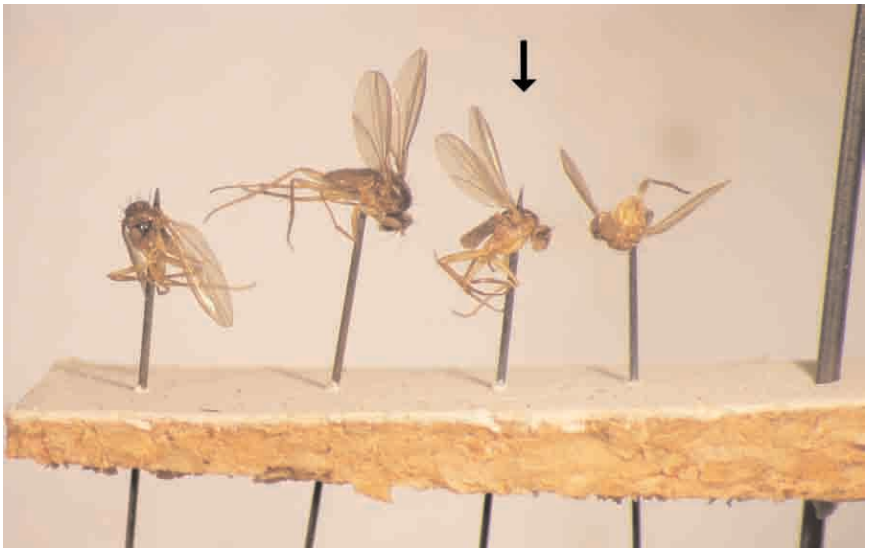

Figure 2. Part of the type series of *Campsicnemus gloriosus* on one pin with lectotype marked by an arrow. The females are the two distalmost specimens to the pin; the males are the two proximalmost specimens.

ten]", "Swezey & Williams / Collectors [machine printed] "Campsicnemus / grimshawi [Van Duzee's handwriting] / Holotype Van Duzee [machine printed red]" [entire label bordered with a thin red line].

Condition: Only slightly damaged; it is missing the right mid leg beyond the tibia.

longiciliatus

Campsicnemus longiciliatus Parent, 1940: 229. Hardy, 1952: 454; Hardy & Kohn, 1964: 113; Tenorio, 1969: 3; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 462.

This species was originally based on an unspecified number of males from Konahuanui Trail on O'ahu, 2000 feet elevation, collected by F.X. Williams on 19 September 1936. A single male specimen was found in BPBM (transferred from HSPA; incorrectly labeled as a holotype). Hardy & Kohn (1964: 113) stated "Type in the Hawaiian Sugar Planters' Association collection".

Status: **Lectotype** male **here designated** in the BPBM (BPBM No. 4063). The lectotype is pinned with a minuten to a cork stage and carries the following labels: "Konahuanui / Trail, OAHU / 2000 ft / Sept 19 36 / FXW [Williams's handwriting]", "Campsicnemus / longiciliatus / Type / O. Parent [Parent's handwriting]".

Condition: The lectotype is missing the head and the right wing.

macula

Campsicnemus macula Parent, 1940: 229. Hardy, 1952: 454; Hardy & Kohn, 1964: 116; Tenorio, 1969: 3; Gagné, 1979: 63; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 462.

Campsicnemus n. sp. near *macula*: Preston *et al*., 2004: 22.

The type series consisted of an unspecified number of males from Palikea in the Wai‘anae mountains of O‘ahu collected on 15 November and from Haleakalā on Maui collected at 2000 feet elevation on 20 December 1936. Two specimens labeled as cotypes from Haleakalā were found in MNHN; one male from Haleakalā was located in BPBM (transferred from the HSPA collection). Hardy & Kohn (1964: 116) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** from Haleakalā in BPBM (BPBM No. 4060). The lectotype is pinned with a minuten to a cork point and carries the following labels: “Haleakala / Maui. 3500 ft. / ground / Dec. 20, 36 / FXW” [in Williams’s handwriting], “Campsicnemus / macula / Type / O. Parent” [in Parent’s handwriting].

Condition: The lectotype specimen is missing the head and the fore leg beyond the tibia; the right wing is torn at the humeral crossvein.

Remarks: *Campsicnemus macula* is restricted to Maui and the Big Island. Parent’s specimen(s) from Palikea, O‘ahu belong to a similar species, *C. halonae* (see Evenhuis, 1996).

membranilobus

Campsicnemus membranilobus Parent, 1940: 230. Hardy, 1952: 454; Adachi, 1953: 120; Hardy & Kohn, 1964: 118; Tenorio, 1969: 3; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Yang *et al*., 2006: 463.

Campsicnemus membranilobus was originally described based on an unspecified number of males from Mt. Ka‘ala, 1800 feet elevation, collected on 30 August [no year given] by F.X. Williams and from Ke‘eke‘e Gulch, O‘ahu, collected from *Osmanthus* by O.H. Swezey on 25 September 1934. Two specimens from Mt. Ka‘ala were found in BMNH; one male from Mt. Ka‘ala (with a cotype label) is in MNHN; and one male from Ke‘eke‘e Gulch was found in HDOA (transferred to BPBM).

Status: **Lectotype** male from Ke‘eke‘e Gulch **here designated** in BPBM (BPBM No. 14926). The lectotype is tenuously glued to a paper point (Fig. 3) by its left wing and left mid leg and carries the following labels: “Keekee Gulch / 9-25-34 [handwritten]”, “O.H. Swezey / Collector [machine printed]”, “Osmanthus [machine printed]”, “Campsicnemus / membranilobus n. sp./ O. Parent [Parent’s handwriting]”.

Condition: Only slightly damaged; it is missing the right foreleg beyond the tibia.

miser

Campsicnemus miser Parent, 1940: 230. Hardy, 1952: 454; Hardy & Kohn, 1964: 121; Tenorio, 1969: 3; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 92; Evenhuis, 1997b: 146, 1997c: 30; Yang *et al*., 2006: 463.

Originally based on an unspecified number of males from Mt. Olympus, O‘ahu, collected by F.X. Williams in “Novembre” [no further data]. A male was found in BPBM (originally in HSPA). Hardy & Kohn (1964: 121) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Figure 3. Lectotype male of *Campsicnemus membranilobus* showing tenuous condition of attachment of specimen to paper point.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4061). The lectotype is pinned with a minuten to a cork point and carries the following labels: "Olympus / OAHU / Nov. 1, 1936 / FXW [Williams's handwriting]", "Campsicnemus / miser / Type / O. Parent [Parent's handwriting]".

Condition: Only slightly damaged; it is missing both antennae (all segments). The minuten was glued to the cork stage at some point and a small bit of glue got on the right hind tarsomeres.

nigroanalis

Campsicnemus nigroanalis Parent, 1940: 231. Hardy, 1952: 454; Hardy & Kohn, 1964: 128; Tenorio, 1969: 4; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 93; Yang et al., 2006: 463.

This species was originally described based on an unspecified number of males and females from Mt. Olympus, O'ahu, collected by F.X. Williams on 1 November 1936. Five specimens were found in BMNH and one male and one female (with cotype labels) were found in MNHN (2 additional males and one female from Mt. Olympus collected on dates in 1936 other than 1 November are not part of the type series). Hardy & Kohn (1964: 128) stated "Type in the British Museum (Natural History)".

Status: Syntypes in BMNH and MNHN. No lectotype has been selected pending further research.

obscurus

Campsicnemus obscurus Parent, 1937: 78. Parent, 1940: 236; Williams, 1940: 296; Hardy, 1952: 454; Hardy & Kohn, 1964: 129; Tenorio, 1969: 4; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 89, 1997: 75, 2002: 93; Yang *et al*., 2006: 464.

Originally based on an unspecified number of male and female specimens from Moalua Str [= Moaula], 2100 feet elevation, collected 29 February 1933 by F.X. Williams and from E. Molokai Mountains, 2400 feet, collected by F.X. Williams on 28 November 1933. Ten specimens of the type series were found in BMNH; four specimens from Konahuanui Trail were originally deposited in MNHN (two per cork point), three still survive (two males and one female; only the minuten pin remains of the fourth specimen); one female was found in BPBM (incorrectly labeled as a holotype). Hardy & Kohn (1964: 130) stated "Three cotypes (two males, one female) in the Parent Collection at the Museum National d'Histoire Naturelle, Paris; the type is evidently one of these male specimens but it has not been designated. Allotype female and two male cotypes in HSPA".

Status: Syntypes in BMNH, MNHN, and BPBM. No lectotype has been selected pending further research.

obtusus

Campsicnemus obtusus Van Duzee, 1933: 321. Bryan, 1934: 448; Parent, 1940: 240; Hardy & Kohn, 1964: 166; Arnaud & Lee, 1979: 240; Bickel & Dyte, 1989: 412; Yang *et al*., 2006: 469.

This species was based on six specimens (a holotype male, allotype female and four female paratypes) from Mt. Ka'ala on O'ahu. In the BPBM type collection are two specimens (transferred from the HSPA collection) with a single label indicating holotype and allotype. Unfortunately, both specimens on the pin are females. Hardy & Kohn (1964: 166) noted this mistake and stated "the type (Hawaiian Sugar Planters' Association collection)" and "The type of *obtusus* is a female". Had there been a single specimen to which this "the type" statement was directed, this could have sufficed as a lectotype designation. However, there is no indication in Hardy & Kohn (1964) nor on the pin with the female types as to which of the two specimens is the lectotype. Therefore, a lectotype designated is still needed.

Status: **Lectotype** female **here designated** in BPBM (BPBM No. 4049). the lectotype female is pinned with a minuten to the same cork stage as the paralectotype female. The lectotype can be recognized by an arrow mark in black India ink on the cork stage. It carries the following labels: "Kaala, Waianae / Oahu Mts. / 4000 ft. Jan. 17 / boggy poolet / F.X.W. 1932 [Williams's handwriting]", "Holotype and / Campsicnemus / obtusus / [Van Duzee's handwriting] Alotype [sic].VanDuzee [machine printed red] [entire label outlined in red]".

Condition: Excellent condition.

Remarks: As Hardy & Kohn (1964: 166) noted, this species is a junior synonym of *Campsicnemus williamsi* Van Duzee.

octosetosus

Campsicnemus octosetosus Van Duzee, 1933: 322. Bryan, 1934: 448; Parent, 1940: 240; Hardy & Kohn, 1964: 166; Arnaud & Lee, 1979: 240; Bickel & Dyte, 1989: 412; Yang *et al*., 2006: 469.

Campsicnemus octosetosus was originally based on twelve specimens (a holotype male, allotype female, and ten paratypes [no sex indicated]) from Kahana, O‘ahu collected by F.X. Williams on 29 November 1931. In the BPBM type collection is a pin with two specimens (transferred from the HSPA collection) over a label indicating holotype and allotype. Unfortunately, both specimens on the pin are females. Hardy & Kohn (1964: 166) pointed out this mistake and stated “The type (Hawaiian Sugar Planters’ Association collection) is a female, not a male”. Had there been a single specimen to which this “the type” statement was directed, this could have sufficed as a lectotype designation. However, there is no indication in Hardy & Kohn (1964) nor on the pin with the female types as to which of the two specimens is the lectotype. Therefore, a lectotype designated is still needed.

Status: **Lectotype** female **here designated** in BPBM (BPBM No. 4050). The lectotype is glued on its left side on the same paper point as the paralectotype female. It can be recognized by being the distalmost specimen on the paper point and by a mark in black India ink on the under side of the paper point. It carries the following labels: “Kahana, OAHU / 2000 ft. / ON WATER / Nov. 29, 1931 / F.X.W. [Williams’s handwriting]”, “Allotype and / Campsicnemus / octo-setosus / [Van Duzee’s handwriting] Holotype.VanDuzee [machine printed red] [entire label outlined in red]”.

Condition: The lectotype is very good condition with only the left antennal arista missing and the left wing slightly torn at the costa near the tip.

Remarks: As Hardy & Kohn (1964: 166) noted, this species is a junior synonym of *Campsicnemus williamsi* Van Duzee.

olympicola

Campsicnemus olympicola Parent, 1940: 231. Hardy, 1952: 454; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 90, 1997: 75, 2002: 93.
Campsicnemus olympicolus: Hardy & Kohn, 1964: 130; Tenorio, 1969: 4; Yang *et al*., 2006: 464.

This species was originally described based on an unspecified number of male and female specimens from Mt. Olympus, 2000 ft., ground, collected by F.X. Williams on “26 July” and from Konahuanui, 2000 ft., collected by F.X. Williams on “19 Sept”. Six specimens were located in BMNH; and a further six (three males and three females; all from Mt. Olympus) were found in MNHN (two females of this series are labeled as cotypes); one male from Konahuanui Trail was found in BPBM (originally in HSPA). Hardy & Kohn (1964) stated “Type in the British Museum (Natural History). Topotypic specimens (these are probably cotypes) in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** from Konahuanui Trail in BPBM (BPBM No. 10437). The lectotype is pinned with a minuten to a cork stage and carries the following labels: “Konahuanui / Trail, O‘ahu / 2000 ft / Sep 19, 36 / FXW Spt 19 36 [Williams’s handwriting]”, “Campsicnemus / olympicola n. sp. / O. Parent [Parent’s handwriting]”.

Condition: Fair condition; both hind legs beyond the coxa, the left mid leg beyond the tibia, and the right wing are broken off and missing.

pallidus

Campsicnemus pallidus Parent, 1940: 232. Hardy, 1952: 454; Hardy & Kohn, 1964: 132; Tenorio, 1969: 4; Bickel & Dyte, 1989: 411; Nishida, 1992: 95, 1994: 90, 1997: 75, 2002: 93; Yang *et al*., 2006: 464.

Campsicnemus pallidus was based on an unspecified number of females from Mt. Olympus, 2200 feet elevation, collected by F.X. Williams on damp ground, on herbage in March 1936. One female (labeled as a cotype) was found in MNHN; one female was found in BPBM [originally in Hawaiian Entomological Society collection (Williams *in* Parent, 1940: 226) and then in HSPA]. Hardy & Kohn (1964: 132) stated "Type in the Hawaiian Sugar Planters' Association collection".

Status: **Lectotype** female **here designated** in BPBM (BPBM No. 4064). The lectotype is pinned with a minuten to a cork point and carries the following labels: "Mt. Olympus / OAHU 2200 ft. / damp ground / on herbage / Mar. 29, 1936 / FXW [Williams's handwriting]", "Campsicnemus / pallidus / Type / O. Parent [Parent's handwriting]".

Condition: Excellent.

penicillatus

Campsicnemus penicillatus Parent, 1934: 300. Parent, 1940: 236; Hardy, 1952: 454; Hardy & Kohn, 1964: 135; Tenorio, 1969: 4; Bickel & Dyte, 1989: 411; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Yang *et al*., 2006: 465.

This species was based on an unspecified number of males from the R.C.L. Perkins *Fauna Hawaiiensis* collection (no specific locality other than "Sandwich Is."). Two specimens are in the BMNH. Hardy & Kohn (1964: 134) stated "Type in the British Museum (Natural History)".

Status: Syntypes in BMNH. No lectotype has been selected pending further research.

planitibia

Campsicnemus planitibia Parent, 1940: 232. Hardy, 1952: 454; Hardy & Kohn, 1964: 140; Tenorio, 1969: 4; Bickel & Dyte, 1989: 411; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Evenhuis, 1997b: 146; Yang *et al*., 2006: 465.

Campsicnemus planitibia was originally described based on an unspecified number of males from Mt. Ka'ala, trail, O'ahu, 1800 feet, August 1936, collected by F.X. Williams and from Palikea, 2800 feet elevation in the Wai'anae range, O'ahu collected in November. Fifteen specimens were located in BMNH; eleven (one with a cotype label) are in MNHN; and two female specimens were located in HDOA (transferred in this study to BPBM). Hardy & Kohn (1964: 140) stated "Type in the British Museum (Natural History). Cotypes from Palikea in the Museum National d'Histoire Naturelle, Paris".

Status: Syntypes in BMNH, MNHN, and BPBM. No lectotype selected pending further research.

putillus

Campsicnemus putillus Parent, 1937: 80. Parent, 1940: 238; Hardy, 1952: 454; Adachi, 1953: 122; Hardy & Kohn, 1964: 144; Tenorio, 1969: 4; Bickel & Dyte, 1989: 412; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Yang *et al*., 2006: 466.

Originally described based on an unspecified number of males from Moloka‘i, collected on 3 December 1933 by F.X. Williams. A single male was located in BPBM (originally in the HSPA collection). Hardy & Kohn (1964: 144) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4065). The lectotype is pinned with a minuten to a cork point and carries the following labels: “E. Molokai [locality blacked out] / Dec. 3, 33 / FXW [Williams’s handwriting]”, “Campsicnemus / putillus / Type / O. Parent [Parent’s handwriting]”.

Condition: Missing the following: right antennal flagellomere and arista; the left hind leg beyond the coxa; and the right wing.

simplicipes

Campsicnemus simplicipes Parent, 1937: 82. Parent, 1940: 240; Hardy, 1952: 454; Hardy & Kohn, 1964: 154; Tenorio, 1969: 4; Bickel & Dyte, 1989: 412; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Yang *et al*., 2006: 467.

This species was originally described based on an unspecified number of males and females from Moaula [in the original description and on the label spelled incorrectly as “Moaula”] Stream, 2100 feet elevation, on water, collected on 29 November, 1933 by F.X. Williams. Two specimens (one male and one female) were located in BPBM (transferred from the HSPA collection). Hardy & Kohn stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4067). The lectotype bears the following labels: “Molokai / Moalua Str / 2100 ft. on / water 11 / 29- 1933 / FXW [Williams’s handwriting]”, “Campsicnemus / simplicipes / Type / O. Parent [Parent’s handwriting]”.

Condition: The lectotype is greasy and the abdomen is compressed laterally.

tarsiciliatus

Campsicnemus tarsiciliatus Parent, 1940: 233. Hardy, 1952: 454; Hardy & Kohn, 1964: 157; Tenorio, 1969: 4; Bickel & Dyte, 1989: 412; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Yang *et al*., 2006: 467.

Campsicnemus tarsiciliatus was originally described based on an unspecified number of males from Palikea in the Wai‘anae range of O‘ahu, collected by F.X. Williams in November. A single male specimen was located in BPBM (transferred from the HSPA collection). Hardy & Kohn (1964: 157) stated “Type in the Hawaiian Sugar Planters’ Association collection”.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4068). The lectotype male is pinned with a minuten to a cork point and carries the following labels: “Palikea, OAHU / Nov. 29 / 1936 / FXW [Williams’s handwriting]”, “Campsicnemus / tarsiciliatus / Type / O. Parent [Parent’s handwriting]”, “Type [handwritten on a square red label]”.

Condition: The lectotype is missing the tip of the abdomen and the right hind leg beyond the coxa.

tibialis

Campsicnemus tibialis Van Duzee, 1933: 327. Bryan, 1934: 448; Parent, 1937: 74, 1940: 238; Hardy & Kohn, 1964: 159; Tenorio, 1969: 4; Arnaud & Lee, 1979: 240; Bickel & Dyte, 1989: 412; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Englund *et al*., 2002: 17; Englund *et al*., 2003: 7; Yang *et al*., 2006: 467.

This species was originally described based on thirteen specimens ("Holotype, male; allotype, female, and eleven paratypes [no sexes indicated]"). Hardy & Kohn (1964: 160) stated "Type in the Hawaiian Sugar Planters' Association collection". In the type collection of BPBM are two specimens (transferred from the HSPA collection) glued to the same paper point and labeled as holotype and allotype. Unfortunately, both specimens are males, so there is no way of knowing which specimen is the holotype. A lectotype is therefore needed.

Status: **Lectotype** male **here designated** in BPBM (BPBM No. 4055). The lectotype is the male in the better condition of the two males on the same paper point. It is marked in black India ink on the paper point to assist is future identification. The lectotype is glued on its right side and carries the following labels: "Nauhi Gulch / 5000-6000 ft / [machine printed] Oct. 31 [handwritten] Hawaii [machine printed]", "on forest pools [handwritten]", "Swezey & Williams / collectors [machine printed]", "Allotype and / Campsicnemus / tibialis / [Van Duzee's handwriting] Holotype.VanDuzee [machine printed in red; entire label outlined in red]".

Condition: The lectotype is in very good condition with only the right wing folded on itself and the left wing slightly wrinkled.

vafellus

Campsicnemus vafellus Parent, 1940: 233. Hardy, 1952: 454; Adachi, 1953: 117; Hardy & Kohn, 1964: 165; Tenorio, 1969: 4; Bickel & Dyte, 1989: 412; Nishida, 1992: 96, 1994: 90, 1997: 76, 2002: 93; Yang et al., 2006: 468.

Originally based on an unspecified number of males and females from the following localities and associated dates: (1): Mt. Olympus, July; (2): Lulumahu Stream, slopes of valley, 1900 feet, September; (3): Konahuanui, 3000 feet; (4): Mt. Ka'ala, 2900 feet. Twenty-two syntypes were located in BMNH; eleven (two with cotype labels) were found in MNHN; and four syntypes were found in HDOA (transferred in this study to BPBM). Hardy & Kohn (1964: 165) stated "Type in the British Museum (Natural History). One male and one female marked cotypes, plus specimens from "Olympus", in Parent collection, Museum National d'Histoire Naturelle, Paris. Also two topotypic specimens in the Hawaiian Sugar Planters' Association collection". It should be noted here that an additional male and female in HDOA (now in BPBM) are labeled as collected on Mt. Olympus in August 1936 and do not form part of the original type series as published by Parent (1940).

Status: **Lectotype** male **here designated** from Mt. Olympus in BPBM (BPBM No. 10438). The lectotype is pinned on its right side with a minuten to a cork stage and carries the following labels: "Mt. Olympus / Oahu, July 26 / 1936 FXW. Low, / 2300-2400 ft. [Williams's handwriting]"

Condition: Excellent condition.

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Records of the Hawaii Biological Survey for 2006
Part 1: Articles

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