

## **A new species of *Campsicnemus* (Diptera: Dolichopodidae: Sympycninae) from Kaua‘i, Hawaiian Islands, with remarkable leg ornamentation<sup>1</sup>**

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**Abstract.** A new species of endemic long-legged flies, *Campsicnemus pulumi* n. sp. from the island of Kaua‘i is described and illustrated. It’s mid-tibial ornamentation exhibits one of the longest setae on record for Hawaiian dolichopodids.

**Keywords:** Dolichopodidae, Hawaiian Islands, taxonomy, male secondary sexual characters

### **INTRODUCTION**

The long-legged fly genus *Campsicnemus* Haliday is one of the most speciose Diptera genera in Hawai‘i with an estimated 250–300 species. Evenhuis (2003) reviewed the genus occurring on Kaua‘i and described 19 new species, bringing the total number of species on the island to 26. Many parts of the island are yet to be explored and undoubtedly many more species await discovery. The new species described here, *Campsicnemus pulumi* n. sp. exhibits one of the more remarkable leg modifications in Hawaiian *Campsicnemus* with two patches of long setae on a swollen portion of the male mid tibia.

### **MATERIAL AND METHODS**

Material derives from collections made by Dan Polhemus and are deposited in the Bishop Museum, Honolulu, Hawai‘i, USA (BPBM). Morphological terminology follows Evenhuis (2016). Confocal images were accomplished by using a Leica M165C stereo dissecting scope via the Leica Microsystems LAS Multifocus software (v. 4.12.0) and using Zerene Stacker<sup>®</sup> software (v. 1.04) (Zerene Systems, LLC, Richmond, Washington, USA) to align and stack-focus each final image.

### **TAXONOMY**

#### ***Campsicnemus* Haliday**

*Campsicnemus* Haliday in Walker, 1851: 187. Type species: *Dolichopus scambus* Fallén, 1823, by validation of I.C.Z.N., 1958: 351. *Nomen protectum* (see Evenhuis, 2003: 3).

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**Fig. 1.** *Campsicnemus pulumi* n. sp., male habitus.

***Campsicnemus pulumi* Evenhuis, new species**

(Figs. 1–4)

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**Diagnosis.** This species cannot be placed using the key to Kaua‘i *Campsicnemus* in Evenhuis (2003) as it is stymied at the first couplet: it has a yellowish brown mesonotum, but also has brown admedian vittae. There are no Kaua‘i *Campsicnemus* that have a large basal projection as in *C. pulumi* n. sp. and also no Kaua‘i species that have a swollen portion of the male mid tibia located medially (others are at the basal third). *Campsicnemus pulumi* n. sp. can be separated from all other congeners in the Hawaiian Islands by the presence of two patches of dense long setae on a medially situated swollen portion of the male mid tibia (these dual patches of long setae not found in other species of Hawaiian *Campsicnemus*).

**Description. Male** (Fig. 1). Body length: 1.9 mm. Wing length: 2.1 mm. *Head.* Shining black; oc and vt black, about one-half length of antennal arista; face constricted at middle,



**Figs 2–4.** *Campsicnemus pulumi* n. sp. **2**, dorsal view of head and thorax; **3**, mid leg, lateral view; **4**, detail of mid tibia.

eyes holoptic, contiguous below antennae for length of 3 ommatidia; palp small, dark brown; proboscis brown, slightly extending below eye in lateral view; antennae (Fig. 2) yellowish brown; postpedicel conical with blunt apex, length about 2× greatest width; arista slightly longer than head height.

*Thorax* (Figs. 1, 2). Dorsum of mesoscutum and scutellum yellowish brown, with pair of thin admedian brown vittae extending posterior to just above prescutellar area; upper pleura concolorous with mesoscutum, lower pleura yellowish; thoracic setae long, strong, black: 3 dc; 2 np; 1 ph; 1 pa; 1 sc; ac absent; halter stem and knob yellowish brown.

*Legs*. CI, CIII yellowish white, CI with 4 strong white setae apically, numerous smaller curved stiff setae; CII brown and yellowish white; remainder of legs pale yellow; foreleg and hindleg [both hindlegs broken off beyond femur] unmodified, without MSSC; midleg (Fig. 3) with FII unmodified, without MSSC; TiII (Fig. 4) with large swollen area medially bearing two patches of dense, long setae, curved at apex (MSSC), two rows of minute setulae mediolaterally; apical one-fourth of TiII bearing large thick yellowish white spine-like projection (MSSC). IIt<sub>1</sub> long, ca. 2× length of IIt<sub>2</sub>; remainder of tarsi without MSSC.

*Wing*. Subhyaline, with typical normal venation for *Campsicnemus*.

*Abdomen*. Tergites I–IV concolorous with mesonotum, tergites V–VI brown, each tergite with short stiff curved black hairs dorsally; sternites yellowish white. Hypopygium yellowish brown, not dissected.

**Female**. Unknown.

**Types**. *Holotype* ♂ from Hawaiian Islands: **Kaua‘i**: Koaie Stream gauging station, 3700 ft. [1128 m], 7 Jan 1999, pyrethrum fog on mossy ōhi‘a log, D.A. Polhemus. *Holotype* (in fluid) in BPBM.

**Etymology.** The specific name derives from the Hawaiian, *pulumi* = broom; referring to the patches of long setae on the male mid tibia.

**Remarks.** Goodman *et al.* (2014) conducted a molecular analysis of 70 species of *Campsicnemus* from the Hawaiian islands and included another 14 from French Polynesia, Europe, and North America. The resulting phylogeny showed support for a number of clades of endemic Hawaiian species and is a useful template for further taxonomic and systematic studies on the group in the Pacific. *Campsicnemus pulumi* n. sp. fits in Node C of Goodman *et al.* (2014), species of which are found on Kauaʻu, Oʻahu, Molokaʻi, and Hawaiʻi islands, and is characterized morphologically by the male midleg having a swollen middle portion bearing setae of various sizes and patterns. The presence or absence of and variously-shaped (and placements) of) basal projections in some species in addition to the swollen area (e.g., basal projection present in *C. bellulus* Van Duzee, *C. gloriosus* Van Duzee, and *C. sinuatus* Van Duzee; absent in *C. pherocteis* Hardy & Kohn and *C. williamsi* Van Duzee) was initially (pre-molecular analysis) hypothesized as representative of discrete species groups; however, the molecular analysis grouped all together into Node C. *Campsicnemus pulumi* n. sp. possesses a large basal projection, but the presence of large setal patches on the swollen portion of the mid tibia appears to be of stronger phylogenetic significance. Further molecular analysis on more species of *Campsicnemus* in Hawaiʻi will undoubtedly refine the limits and definitions of species groups represented and is strongly encouraged.

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