

The nuisance marine midge, *Kiefferulus longilobus*, is established in Hawai‘i (Diptera: Chironomidae)¹

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Chironomidae

Kiefferulus longilobus (Kieffer, 1916)

New state record

On 13 December 2012, we were invited to investigate a potentially pestiferous midge inhabiting sea urchin rearing tanks at the Anuenue Fisheries Research Center on Sand Island, O‘ahu. The midge was breeding in large numbers in rearing tanks containing seawater, and the adults were annoying workers there. Collected adults proved to belong to *Kiefferulus longilobus* (Kieffer)—a species new to the Hawaiian Islands. A subsequent search of collections at Bishop Museum produced additional specimens from the island of Maui, which had been reported as *Chironomus* sp. nr. *hawaiiensis* in Howarth *et al.* (2012). The species may already be widespread in coastal habitats in Hawai‘i.

This non-biting midge is widespread in coastal and marine incursion habitats in the Indo-Pacific Region. Swarming adults occasionally become nuisances in saline aquaculture farms and marine resort areas in the western Pacific from the Ryukyu Is. to Australia (Cranston *et al.* 1990). The larvae are blood worms, which live in dirt-covered mucous cases in highly saline benthic situations. They occasionally occur in huge numbers and cover large areas of the walls and floor of seawater ponds and aquaculture tanks where they may interfere with commercial operations. Emerging adults may annoy persons visiting or working near breeding areas (Sasa 1987).

Living adults of *K. longilobus* are mostly pale green to light brown in color and resemble the native *Chironomus hawaiiensis* Grimshaw except for their smaller size (wing length 2.10–2.75 mm for *K. longilobus* vs. 3.0–3.5 mm for *C. hawaiiensis*) and by the conspicuously dark brown *r-m* crossvein in wings of *C. hawaiiensis* vs. the pale veins in *K. longilobus*. The male genitalia are very different especially the presence of elongate dark-brown, blade-like superior volsella, which are diagnostic for this species. Tokunaga (1964) re-described the adults and figured the male genitalia under the combination *Chironomus longilobus*. Cranston *et al.* (1990) described all stages and reassessed its taxonomic status placing it in the genus *Kiefferulus*.

The insect fauna of shallow marine habitats in Hawai‘i remain poorly known; thus the date of arrival as well as distribution of this species in the islands are unknown. Since marine adapted species are better able to disperse across oceans than are freshwater or terrestrial species, this species might be native. However, its emerging pest status indicates that it is most likely adventive and became established in Hawai‘i recently. The expansion of aquaculture farms and artificial canals and lagoons at coastal resorts during the past few decades has provided the midge with abundant new habitats both in the source areas in the western Pacific and in Hawai‘i. Recent large tsunamis have also created new habitats (Cranston 2007). The increase in habitats would be expected to intensify the propagule

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pressure and facilitate the establishment of the midge in new areas. Emerging adults are attracted to lights, and one can envision that during population outbreaks, numerous individuals could become stowaways on craft at nearby airports and shipping ports where they can be transported to new areas. Another possible pathway is via larvae attached to marine vessels either in crevices or within ballast holds.

Material Examined. **O'AHU:** Sand I; 21°18'N; 157°52.2'W, 13 Dec 2012, in DLNR/DAR, Anuenue Fisheries Research Center, FG Howarth, DE Oishi collectors, 8 males, 2 females at large in building and many larvae in seawater tanks (HDOA); **MAUI:** Kahului Airport Environs, Kanahā Pond State Wildlife Sanctuary, 20°53'49"N; 156°27'23"W, 19 Sep 2006, MV bulb in wetland, FG Howarth, DJ Preston, collectors, 6 males, 3 females (HBS/ BPBM voucher KA-0060); same data except 20°53'48"N; 156°27'22"W, 14 Nov 2006, 7 males, 4 females (HBS. BPBM voucher KA-0168).

Acknowledgments

We thank Dr. Peter Cranston, Adjunct Professor, ANU, Australia, for confirming the identity of this species, and Mr. David L. Cohen, Hawaii DLNR, Division of Aquatic Resources, Sand Island, O'ahu, for access to the Anuenue Fisheries Research Center.

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