Report on Aquatic Insect Monitoring of May 2000 in Pelekunu Valley, Molokaʻi, Hawaiʻi

Submitted to:

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Saldula exulans, left. *Scatella clavipes*, right. Pelekunu Stream, 800 ft.

Telmatogeton torrenticola, Pelekunu Stream, 800 ft

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Introduction

Between 24-25 May 2000 collections of aquatic insects were made in Pelekunu Stream, Molokaʻi, in elevations ranging from sea level to approximately 800 ft in elevation. This sampling was conducted in conjunction with fish surveys conducted by biologists from the Hawaii Division of Aquatic Resources. A description of aquatic habitats and stream morphology of Pelekunu Stream can be found in Polhemus (1991). Sampling consisted of aerial netting of adult aquatic insects, visual observations, and overnight sets of yellow-pan traps in and along riffles at the 800 ft. elevation level. Aquatic insect species determinations were made by R. Englund, N.L. Evenhuis, and K. Arakaki of the Hawaii Biological Survey, Bishop Museum.

Results

A total of 17 aquatic insect species were collected or observed in Pelekunu Stream during approximately 8 hours of sampling between 24-25 May 2000. Of the taxa collected, 83% were native species, which is similar to the 79% native aquatic insect species collected in Pelekunu Stream in 1991 during earlier Bishop Museum surveys (Polhemus 1991) conducted in lower Pelekunu Stream. A significant finding is the continued absence of alien fish species, with the crustacean *Macrobrachium lar* currently the only species of introduced macrofauna occurring in Pelekunu Stream. The introduced aquatic insect species currently found in Pelekunu Stream (Table 1) should be considered relatively innocuous.

Another important finding of this survey was the discovery of the second currently known population of the rare aquatic fly *Campsicnemus ridiculus*. This species was common in riffle areas in Pelekunu Stream at the 800 ft elevation level. *Campsicnemus ridiculus* is currently known elsewhere from only Waiehu Stream, Maui (Evenhuis 2000), and is one of the rarest aquatic insects in Hawaii.

In addition, native damselflies such as *Megalagrion pacificum* are extinct on islands such as Oʻahu and Kauaʻi, yet remain abundant in Pelekunu Stream. Another rare species, *Megalagrion xanthomelas* was also captured during this survey near the Pelekunu Stream mouth close to the ocean. Native damselflies are considered sensitive to disturbance and are a good indication of the health of the native aquatic ecosystem (Polhemus and Asquith 1996).

Table 1. Aquatic insect species collected or observed in Pelekunu Stream, 24-25 May 2000, and Threatened, Endangered, Species of Concern, or Candidate status for listing on the Federal Register (updated as of November 29, 1999).

Taxon	Elevation Observed	Threatened, Endangered or Candidate Status[1]	Biogeographic Status
Aquatic Insects			
Dragonflies (Anisoptera)			
Pantala flavescens	sea level	None	Indigenous
Anax junius	sea level	None	Indigenous
Anax strenuus	800 ft	None	Endemic
Damselflies (Zygoptera)			
Ischnura ramburii	sea level	-	Introduced
Megalagrion xanthomelas	0-40 ft	C	Endemic
Megalagrion pacificum	0-800 ft	C	Endemic
Megalagrion blackburni	10-800 ft	None	Endemic
Megalagrion hawaiiense	800 ft	None	Endemic
Megalagrion nigrohamatum nigrohamatum	800 ft	SOC	Endemic
True flies (Diptera)			
Canacidae			
Procanace acuminata	200-800 ft	None	Endemic
Chironomidae			
Telmatogeton torrenticola	800 ft	None	Endemic
Dolichopodidae			
Campsicnemus ridiculus	800 ft	None	Endemic
Ephydridae			
Scatella clavipes	200-800 ft	None	Endemic
Tipulidae			
Limonia advena	800 ft	-	Introduced
Aquatic Moths (Lepidoptera)			
Hyposmocoma sp.	800 ft	None	Endemic
Caddisflies (Trichoptera)			
Cheumatopsyche pettiti	0-800 ft	-	Introduced
True bugs (Heteroptera)			
Saldula exulans	200-800	None	Endemic

[1]Species status: **E** = Endangered; **T** = Threatened; **C** = Candidate for listing; **SOC** = species of concern (USFWS 1999).

Discussion and Recommendations

Because of a low number of introduced aquatic species and no fish introductions, Pelekunu Stream is one of the most important watersheds for the preservation of native biodiversity in Hawaii. For instance, native species of damselflies that have become extinct or had their ranges severely restricted on Oahu (Englund 1999) remain abundant in Pelekunu Stream. Because many rare native aquatic insect species are found there, Pelekunu Stream should be given the highest level of protection from disturbance and species introductions.

At a minimum, annual monitoring of aquatic invertebrates in Pelekunu Stream should be conducted in conjunction with annual native fish monitoring to help effectively manage and preserve native aquatic biodiversity. Additionally, attempts should be made to minimize feral ungulate disturbance in this watershed as native aquatic species usually fare poorly in heavily sedimented streams and disturbed wetlands. Heavy pig damage and "rototilling" impacts were observed in lower Pelekunu Stream.

References

Englund, R.A. 1999. The impacts of introduced poeciliid fish and Odonata on endemic *Megalagrion* (Odonata) damselflies on O'ahu Island, Hawai'i. *J. Insect Conserv.* 3: 225-243.

Evenhuis, N.L. 2000. New Hawaiian Diptera records, with special reference to the Diptera of Kaho'olawe. *Bishop Mus. Occas. Pap*. 64: *in press*.

Polhemus, D.A. 1991. A preliminary report on the aquatic insect fauna of lower Pelekunu Valley, Moloka'i, Hawai'i. Bishop Museum ARG Life Sciences Report, Honolulu, Hawai'i. 5 pp.

Polhemus, D.A. and A. Asquith. 1996. Hawaiian damselflies: a field identification guide. Bishop Museum Press, Honolulu. 122 pp.

USFWS (United States Department of the Interior Fish and Wildlife Service). 1999. Listed and Candidate Species, as designated under the U.S. Endangered Species Act. Published on November 29, 1999 at (http://www.r1.fws.gov/pacific/wesa/mesa/hianimals.PDF).