

***Megalagrion xanthomelas* (Sélys-Longchamps, 1876)**
Orangeblack Hawaiian damselfly
Odonata: Zygoptera: Coenagrionidae



Photo by David Preston, Hawaii Biological Survey

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SUMMARY

Megalagrion xanthomelas is endemic to the islands of Nihau, Oahu, Lanai, Molokai, Maui, Hawaii, and possibly Kauai. *M. xanthomelas* is extirpated on Maui and Kauai, and was believed to have been extirpated on Oahu until the discovery of a single population in 1994. Its limited habitat and small scattered populations may affect long-term stability. The species is susceptible to the effects of habitat loss and introduced species. Research should focus on habitat management and protection, control of invasive species, and translocation efforts.

CONSERVATION STATUS

Rankings:

Canada – Species at Risk Act: N/A

Canada – provincial status: N/A

Mexico: N/A

USA – Endangered Species Act: Candidate

USA – state status: S1S3 Imperiled

NatureServe: G2G3 Imperiled

IUCN Red List: VU Vulnerable

SPECIES PROFILE

DESCRIPTION

Megalagrion xanthomelas is in the family Coenagrionidae (pond damsels). It is one of the smaller Hawaiian damselflies, with adults about 33-37 mm (1.3-1.5 in.) in length, with a wingspan of 35-40 mm (1.4-1.6 in.). Males are black with bright red to salmon pink markings on the thorax, as well as on both the first three and the last three segments of the abdomen. Females

have a similar pattern but are tan instead of red, and the abdominal segments are black dorsally and tan on the sides and underside (Polhemus & Asquith 1996).

Nymphs reach up to 18-20 mm (0.7-0.8 in.) in length. They have three flattened leaf-like gills at the tip of the abdomen; the gills are longer than the combined length of the last five segments of the abdomen, and each comes to a small point at the tip (Polhemus & Asquith 1996).

TAXONOMIC STATUS

Megalagrion xanthomelas Séllys-Longchamps. The taxonomic status of this species is accepted as valid.

LIFE HISTORY

This lowland species breeds in a wide range of slow or standing water habitats and has broad ecological tolerances. It has a recorded range from 0-1000 m (0-3280 ft.) above sea level, and has been found at sites with salinity readings of up to 2 ppt, temperatures ranging from 20-31°C (68-87.8°F), and pH ranging from 6.6-9.2 (Polhemus & Asquith 1996). *M. xanthomelas* breeds primarily in coastal wetlands and lower or terminal stillwater reaches of perennial streams. In the absence of predators, especially introduced fish species, it can breed successfully in standing pools of intermittent mid-elevation streams, freshwater marshes, reservoirs, garden pools, and ornamental ponds. Adults do not disperse far from the nymphal habitat, and lay their eggs in the tissues of aquatic plants found in slow reaches of streams and in stream pools.

DISTRIBUTION

This species was historically common and abundant in a variety of lowland habitats through the 1970s, after which populations declined. Recent surveys have found populations on the islands of Hawaii, Lanai, Molokai, Maui, and Oahu. *M. xanthomelas* was extirpated on Kauai and was thought to be extinct on Oahu until a single remnant population was found on the grounds of the at the Tripler Army Medical Facility (Englund 2001). Additional populations are localized on: Lanai (artificial pond at Koele); Molokai (mouths of Pelekunu and Waikolu streams, Palaau wetlands on the south coast); Maui (Ukumehame Stream, and near anchialine pools at La Perouse Bay; Polhemus *et al.* 1999); and in coastal wetlands on Hawaii (Anaehoomalu Bay, Hawa Bay, Hilea Stream, Hilo, Honokohau, Kiholo Bay, Ninole Springs, Onomea Bay, and Whittington Beach; Polhemus 1995).

THREATS

M. xanthomelas is threatened by habitat loss due to stream de-watering and alteration for agriculture, and the presence of the highly invasive California grass (*Brachiaria mutica*), which forms dense stands that can completely eliminate open water. This species is also threatened by introduced species, particularly poeciliid fish, crayfish, and backswimmer bugs (Notonectidae). It may also be threatened by predation from introduced odonates, as Daigle (2000) reports seeing introduced *Enallagma civile* and *Ischnura ramburii* preying on teneral adults at the Ninole Springs, Hawaii population site. Hawaiian damselflies evolved in the presence of few predatory fish, and nymphs exhibit exposed swimming and feeding behaviors that make them vulnerable to predation by poeciliid fish introduced for mosquito control (McPeck 1990; Englund 1999). The remnant population on Oahu is thought to have survived due to mitigation ponds that were built upslope of the small area of stream in which they were re-discovered; when a flood eliminated the stream-dwelling population soon after, re-colonization of the site occurred from the surviving

population in the ponds. Is considered highly vulnerable, and efforts are being made to translocate individuals from this site to additional suitable habitat on Oahu (Englund 2001; Preston *et al.* 2007).

CONSERVATION STATUS

M. xanthomelas is a candidate for listing under the Endangered Species Act. Published and local observations as well as collection numbers indicate that this species was historically one of the most abundant Hawaiian damselflies, with the ability to breed in a wide variety of stillwater habitats. It has declined sharply since the 1970s and is currently found primarily in regions of habitat without non-native fish. Existing state regulatory mechanisms do not provide sufficient protection.

CONSERVATION NEEDS

Necessary actions include monitoring known populations and searching for new ones, habitat protection, and removal of invasive species.

RESEARCH NEEDS

Research into habitat management would be valuable. Breeding and translocation efforts are being pursued; successful translocation of *M. xanthomelas* into regions of restored habitat could be a model for other threatened *Megalagrion* species.

RESOURCES

CONTACTS

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WEBSITES

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Hawaii Biodiversity and Mapping Program,
<http://hbmp.hawaii.edu/printpage.asp?spp=IODO73120>

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