

NATURAL HISTORY AND OBSERVATIONS

First Record of *Culex tarsalis* (Diptera: Culicidae) in the Yukon**DANIEL A. H. PEACH¹**

ABSTRACT— The first record of *Culex tarsalis* in the Yukon is reported from a larva collected in Kluane National Park in 2017. Details on the location and the specimen are provided, and background information on the biology of *Cx. tarsalis* and its role in arbovirus transmission are discussed.

Key words: *Culex tarsalis*, Western encephalitis mosquito, Culicidae, Yukon, mosquito distribution

The western encephalitis mosquito, *Culex tarsalis* Coquillett, is a medium-sized mosquito (wing length 4.0–4.4 mm) with bands of white scales on the tarsi and a broad ring of white scales on the proboscis at mid-length (Belton 1983). Adult females overwinter in sheltered areas such as caves, rodent burrows, and under rock piles (Wood *et al.* 1979), and larvae are found in a wide variety of habitats including ponds, marshes, ditches, and irrigation water (Belton 1983). Adults have been observed feeding from flowers of goldenrod (*Solidago spp.*) (Sandholm and Price 1962) and common tansy (*Tanacetum vulgare*), from which they carry pollen (Peach and Gries 2016). Females take blood from birds and mammals (Wood *et al.* 1979).

Cx. tarsalis is an important vector of several viruses in southern Canada, including West Nile virus (Roth *et al.* 2010, Kulkarni *et al.* 2015), western equine encephalitis (McLintock *et al.* 1970), and St. Louis encephalitis (Hammon and Reeves 1943), although these are not known from the Yukon (Artsob 1990). Snowshoe hare virus, in the California Encephalitis (CE) group, is endemic in the Yukon (McLean *et al.* 1973) but is not reported to have been isolated from *Cx. tarsalis*. However, CE itself has been isolated from *Cx. tarsalis* in California (Hammon *et al.* 1952). Northway virus is also endemic to the Yukon (McLean and Lester 1983), but little is known about this virus or its vectors.

The known range of *Cx. tarsalis* extends throughout much of central and western North America (Darsie and Ward 2005), including southern British Columbia (Belton 1983) and southern Alberta (Wood *et al.* 1979). It has also been found in Norman Wells, (65°N) in the Northwest Territories (Freeman 1952) and Belton and Belton (1990) believed the species was likely to occur in the Yukon as well, based on its inclusion in a list of Yukon mosquitoes by Nelson (1977). Nelson cites a personal communication from D. M. Wood to support this, but Wood *et al.* (1979) show no records of *Cx. tarsalis* in the Yukon.

A *Culex* sp. larva was collected in a shallow pond in Kluane National Park, Yukon, Canada just outside the Slims River Flats (60°59'23.6"N, 138°29'31.9"W) on 24 June, 2017 as part of the Kluane Park bioblitz (research permit number KLU-2017-25041). The larva was successfully reared to adulthood, and the female was identified as *Cx. tarsalis* (Fig. 1) using the key of Wood *et al.* (1979). This specimen represents the first confirmed record of this species in the Yukon. Of note is the incomplete white-scaled ring at midpoint of the proboscis of this specimen as it possesses dark scales dorsally, possibly due to phenotypic plasticity related to thermal melanism (Trullas *et al.* 2007) or poor larval habitat conditions (Talloen *et al.* 2004). The pond was adjacent to the Alaska Highway, approximately 10 metres in diameter, shallow, and contained clear water.

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Nearby vegetation included willow (*Salix spp.*), spruce (*Picea sp.*), fireweed (*Chamaenerion sp.*), and patches of unidentified grass. Larvae of *Anopheles earlei*, *Aedes excrucians*, and *Culiseta alaskaensis* were also collected from the pond, and adults captured nearby included *Ae. campestris*, *Ae. cataphylla*, *Ae. communis*, *Ae. excrucians*, *Ae. fitchii*, and *Ae. implicatus*. The *Cx. tarsalis* specimen has been deposited for reference in the Beaty Biodiversity Museum at the University of British Columbia, Vancouver, British Columbia. Due to the short summer season and the likeliness that only small populations may be present it seems unlikely that *Cx. tarsalis* currently poses a major human health risk in the Yukon. However, if temperatures rise these limiting conditions may no longer apply (Chen *et al.* 2013).

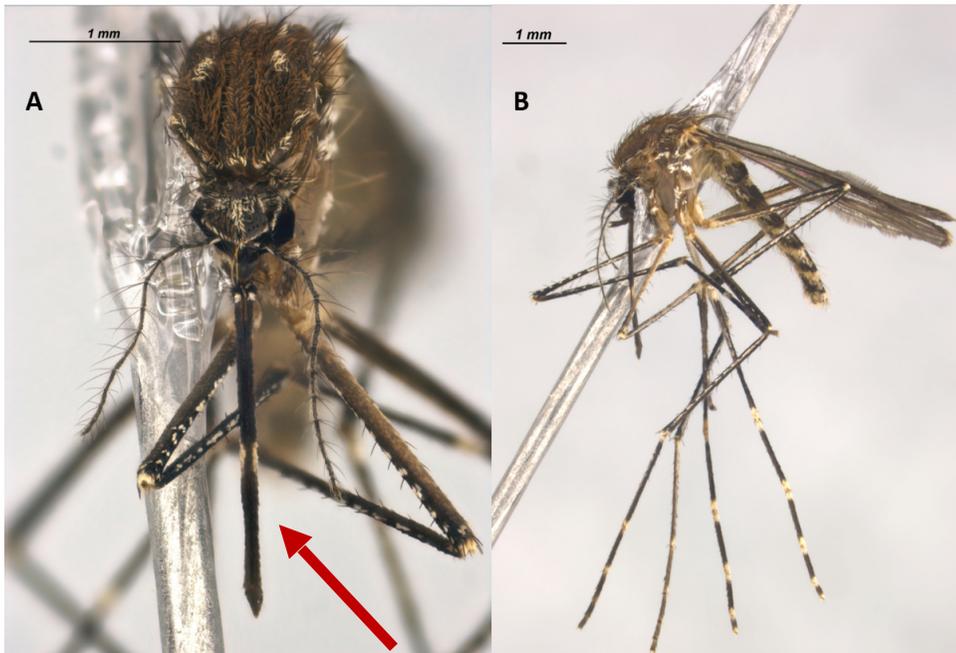


Figure 1. Antero-dorsal (A) and lateral (B) views of the *Cx. tarsalis* specimen collected in the Yukon. Note incomplete band of white scales at mid-proboscis in (A), indicated by an arrow.

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