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ESTABLISHMENT OF THE TUNGID FLEA, *TUNGA MONOSITUS* (SIPHONAPTERA: PULICIDAE), IN THE UNITED STATES

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Key words: *Tunga monositus*, *Siphonaptera*, *distribution*.

The flea genus *Tunga*, containing 9 species, has a Neotropical origin occurring on Edentates (*T. bondari* Wagner, *T. penetrans* Linnaeus, *T. terasma* Jordan, *T. travassosi* Pinto & Dreyfus) and rodents of the families Muridae [*T. caecata* (Enderlein), *T. callida* Li & Chin, *T. caecigena* Jordan & Rothschild] and Cricetidae (*T. libis* Smit, *T. monositus* Barnes & Radovsky, 1969). Introduced specimens of *T. penetrans* have been reported several times in the United States, but established populations have not been documented. Of particular interest, eggs and adults of *T. penetrans* were reportedly taken from the remains of a dog removed from the cists of Basket-Maker Indian excavations in northeastern Arizona (Wilson, 1933), but Smit (1960) examined 4 of Wilson's slide preparations and was unable to verify such findings.

During a recent collection trip to southwestern Utah (11–13 January 1997), I collected 7 specimens of *T. monositus* adjacent to the southwest boundary of Zion National Park, Washington County, Utah (elevation 1275 m). Previously this species had been reported only at the type locality of Cape of San Quintin (30° 27' N, 116° 12' W), Baja California, Mexico, by Barnes and Radovsky (1969) and on San Martin Island (elevation sea level–200 m). Specimens on San Martin Island originally reported as *T. caecata* by Banks (1964) later proved to be *T. monositus* according to Barnes and Radovsky (1969).

This paper presents the 1st record of *Tunga* (*T. monositus*) established in the continental United States. Twenty-one rodents were examined and 6 (29%) harbored this flea. Positive hosts included *Peromyscus eremicus* (Baird) (2 ♀), *P. crinitis* (Merriam) (1 ♀ 2 ♂), and *Neotoma lepida* Thomas (1 ♀). All attachment sites were restricted to the external base of the ear

pinna. Two rodents had 2 *T. monositus* each: 1 newly attached and the other a fully developed neosome. One of the 6 rodents had scarring reminiscent of a recent postneosomic infestation. Based on descriptions of the degree of engorgement during the feeding processes of *T. monositus* by Lavoipierre et al. (1979), I estimated that 2 of the fleas had been attached for less than 24 h, while the others had attained complete neosomy.

As a corollary to the presence of *T. monositus* in northern latitudes (north of 31° N to 37° N), 2 allied species (*T. caecigena* and *T. callida*) are found north of 25° N, and the former extends as far north as 33° N. All other species of *Tunga*, with exception of the widely distributed *T. penetrans*, are found at latitudes south of these. It is reported in Jordan (1962) that *T. caecigena* (China and Japan) is thought to be a univoltine species collected only during the cold season with optimal temperatures between 10° and 16° C and *T. callida* (southern China) is found only during winter months (November–March). Such evidence would suggest that *T. monositus* might also be collected in the mild, but temperate, Utah locality from October through April.

Although the 2 localities are separated by 1435 km and differ in elevation by more than 1000 m, they have similar mild, xerotic climatic conditions, desert flora, and host populations, e.g., *P. maniculatus* (Wagner), *P. eremicus*, and *Neotoma* spp. It is therefore not surprising that *T. monositus* was collected in the unique habitat and mild climate of southwestern Utah. Thorough examination for sessile fleas throughout the Southwest during the winter months may result in future collections of this peculiar flea. Perhaps it would be prudent to collect in the locality in which Wilson (1933) claims

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to have found "*Tunga penetrans*" among the Basket-Maker Indian ruins in Arizona.

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