

SANDFLY DISTRIBUTION IN THE UNITED STATES,
WITH A FIRST RECORD FOR COLORADO
(DIPTERA: PSYCHODIDAE)

R. B. Eads

Abstract.—The 11 species and subspecies of *Lutzomyia* known to occur in the United States are listed, with their known distribution and host preferences. *Lutzomyia oppidana* (Dampf) is recorded in Colorado for the first time.

The isolation of three strains of a new *Phlebotomus* fever group virus from the grey woodrat, *Neotoma micropus*, in Cameron County, Texas, in December 1973 and March 1974, (Calisher et al., 1977) has focused attention upon the species and distribution of sandflies in the United States and their possible role in virus transmission. The International Catalogue of Arboviruses (Berge, 1975) lists 20 serologically related viruses in the *Phlebotomus* fever group, 13 of which have been recovered from phlebotomine flies. The new virus, called Rio Grande, was not recovered from hematophagous insects (principally mosquitoes), including several hundred *Lutzomyia* spp., tested by this laboratory during the 1971 outbreak of Venezuelan equine encephalitis (VEE) in south Texas and during the next two years (Vector-Borne Diseases Division (VBDD) unpublished data).

VBDD personnel collected three species of *Lutzomyia*—*texana* (Dampf), *cruciata* (Coquillett) (=diabolica) and *anthophora* (Addis)—in CDC light traps on the same ranch in Cameron County, Texas, during 1971-73, from which the Rio Grande virus isolations were made. The most likely candidate for *Neotoma* to *Neotoma* transmission of Rio Grande virus is *L. anthophora*, since it is known to feed on rabbits and rodents (Addis, 1945), and it uses woodrat nests as diurnal resting sites (Young, 1972). *Lutzomyia cruciata* feeds readily on rodents in the laboratory. The only thing known of its feeding habits in south Texas is that in localized areas it is annoying to human beings. Addis (1945) reported that this species entered homes in Uvalde, Texas, and bit people during the summer of 1944. We encountered a similar situation at Del Rio, Texas, in 1964. *Lutzomyia texana* feeding habits are not known, but it is considered likely that reptiles are the usual hosts.

The fact that New World sandflies reach greatest specific diversity and population density in the tropics has, perhaps, kept to a minimum the interest displayed in these insects in temperate to cold zones. However,

Table 1. *Lutzomyia* recorded in the United States.

Species	Distribution	Authority	Hosts	Authority
<i>L. aquilonia</i> (Fairchild and Harwood, 1961)	Alberta, Washington	Fairchild and Harwood, 1961; Harwood, 1965	Probably reptiles	—
<i>L. anthophora</i> (Addis, 1945)	Texas, Mexico	Addis, 1945; Vargas and Najera, 1953; Easton et al., 1968	Rabbits, rodents No records biting man	Addis, 1945
<i>L. californica</i> (Fairchild and Hertig, 1957)	California, Texas, Washington	Fairchild and Hertig, 1957; Fairchild and Harwood, 1961; Easton et al., 1967	Reptiles	Chaniotis, 1967
<i>L. cruciata</i> (Coquillett, 1907) (= <i>P. diabolicus</i>)	Texas, Mexico, Central America	Hall, 1936; Eads, et al., 1965; Addis, 1945; Easton et al., 1967	Mammals, bites man	Hall, 1936; Addis, 1945; Christensen and Herrer, 1973
<i>L. oppidana</i> Dampf, 1944)	Mexico, Colorado, Montana, Texas, Washington, British Columbia	Vargas and Najera, 1953; Fairchild and Harwood, 1961; Chaniotis, 1974	Reptiles	Harwood, 1965

Table 1. Continued.

Species	Distribution	Authority	Hosts	Authority
<i>L. shannoni</i> (Dyar, 1929)	Louisiana to N. Carolina and Florida, Mexico south to Argentina	Stone et al., 1965; Rosabel and Miller, 1970	Mammals, bites man	Rosabel and Miller, 1970; Christensen and Herr, 1973
<i>L. stewarti</i> (Mangabeira and Galindo, 1944)	California, Mexico	Mangabeira and Galindo, 1944; Vargas and Najera, 1953	Reptiles	Chaniotis, 1967
<i>L. texana</i> (Dampf, 1938)	Texas, Mexico	Eads et al., 1965; Vargas and Najera, 1953; Easton et al., 1967	Probably reptiles	—
<i>L. vexatrix occidentis</i> (Fairchild and Hertig, 1957)	California, Montana, Washington, Texas, Mexico, Alberta	Fairchild and Hertig, 1957; Fairchild and Hertig, 1959; Chaniotis, 1974	Reptiles	Chaniotis, 1967
<i>L. vexatrix vexatrix</i> (Coquillett, 1907)	Louisiana, Maryland, Connecticut, Ontario	Stone et al., 1965; Rosabel and Miller, 1970; Aitken et al., 1977	Reptiles	Fairchild and Harwood, 1961; Shannon, 1913; Rosabel and Miller, 1970
<i>L. cubensis</i> (Fairchild and Trapido, 1950)	Cuba, Florida (Big Pine Key)	Fairchild and Trapido, 1950; Young, 1972	Unknown	—

the growing number of reports of sandfly recoveries in the United States and southern Canada suggests that the comparatively small number of species present are widely distributed (Fairchild and Harwood, 1961; Harwood, 1965; Eads et al., 1965; Easton et al., 1967; Easton et al., 1968; Downes, 1972; Chaniotis, 1974; and Aitken et al., 1977).

The 11 species and subspecies of *Lutzomyia* recorded from the United States are listed in Table 1, with their known distribution and host preferences. Selected authorities for these data are included. A key to the *Lutzomyia* species known to inhabit the United States has been provided by Rosabal and Miller (1970).

Only two of the tropical, man-biting species of *Lutzomyia* seem sufficiently adaptable to diverse climatic conditions to extend their distribution into the United States. *Lutzomyia cruciata* has been reported from Central America, Mexico and Texas. *Lutzomyia shannoni* (Dyar) is even more widely distributed, having been taken from Argentina to Louisiana, North Carolina and Florida. *Lutzomyia anthrophora* is the only other species recorded from the United States known to feed on mammals.

The species collected in the more northern latitudes of the United States are known or suspected to feed on coldblooded vertebrates. Ground squirrel and other rodent burrows are used for larval and pupal development (Chaniotis, 1967).

We have recently collected a female (7/19/77) and a male and female (7/23/77) *L. oppidana* in Larimer County, Colorado, in CDC light traps. To our knowledge, those were the first *Lutzomyia* recovered in the state. The CDC light traps were operated some 200 trap nights in Larimer County during June–September 1977, in conjunction with extensive western encephalitis investigations. Our small catch indicates low population densities of this sandfly—or that the CDC traps are not attractive to these insects. Thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) burrows were common around both trapping sites from which *L. oppidana* were taken.

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Vector-Borne Disease Division, Center for Disease Control, Public Health Service, Department of Health, Education and Welfare, Fort Collins, Colorado 80522.



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