

ADDITIONS AND CORRECTIONS TO THE RECORDS OF *Aedes* MOSQUITOES IN ALBERTA

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ABSTRACT. *Aedes schizopinax* is reported for the first time from Canada, and *Ae. euedes* and *Ae. mercurator* for the first time under these names for the province of Alberta. *Ae. hexodontus*, *Ae. implicatus* and *Ae. increpitus* are now known to occur in the southern parts of the province, as well as the

north. Six other species, previously known only from Banff and northern Alberta, have been found in the southern foothills.

A number of earlier records are now known to be invalid, and others appear to be suspect.

The most recent list of mosquito records for Alberta was published by Pucat in 1965. Since then, studies carried out mainly in the south of the province have revealed the presence of 1 species not previously recorded from Canada, and 2 which are now recorded for the 1st time from Alberta. In addition, there are 3 new records for the southern part of the province (south of 52°N), and another 6 which are the 1st for the southern parts of Alberta outside Banff National Park.

The new records are as follows: *Aedes schizopinax*, for the 1st time in Canada; *Ae. euedes* and *Ae. mercurator*, for the 1st time in Alberta; *Ae. hexodontus*, *Ae. implicatus* and *Ae. increpitus*, for the 1st time in Alberta south of 52°N. Details of these species in Alberta follow. All of the species are placed in the subgenus *Ochlerotatus*.

Ae. schizopinax Dyar. The author collected larvae of this species in a roadside slough at Morleyville Settlement, in the foothills about 30 miles west of Calgary, in May 1976. The slough was fairly deep and clear, but with a heavy growth of slough grass, and it was partly surrounded by shrub willows in a generally open, unshaded area. Associated species were *Ae. excrucians*, *Ae. hexodon-*

tus, *Ae. implicatus*, *Ae. mercurator*, and *Ae. punctor*.

Twenty adults were reared from the larvae obtained, and these are preserved in the Canadian National Collection in Ottawa and in the Department of Biology at the University of Calgary.

Robins (1972) and Scholefield (1973) reported that *Ae. schizopinax* constituted 3% and 2% respectively of the mosquito larvae sampled in Calgary during the City's control program. One slide, of a 4th instar larval skin, made by Robins, confirms that the species was in fact present in Calgary.

Previous records show that *Ae. schizopinax* occurs throughout the western United States, from Montana to New Mexico westwards (Carpenter and LaCasse 1955; Carpenter 1968, 1970 and 1974).

Ae. euedes Howard, Dyar and Knab. This species was first identified in Alberta by the author as *Ae. barri* Rueger in 1975, using the key in Barr (1958), (Enfield 1976). Previously the species was known by workers in Calgary and Edmonton as *Ae. riparius*, since this is the name given by Rempel (1950). The larva which Rempel figured and described almost certainly belonged to the species later described by Rueger (1958) as *Ae. barri*, and reported by Danilov (1975) as *Ae. becklemishevi* Denisova, but which is now known to be

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correctly named *Ae. euedes* (Wood 1977).

In the spring of 1976, larvae of *Ae. euedes* were collected by the author from many sloughs in the aspen parkland and foothills region of southern Alberta, and from open prairie near Brooks. The species was also identified in samples taken by workers for Alberta Environment from Wainwright and Fort McMurray. Two adults were captured in August 1975, while feeding on the author, between Banff and Lake Louise.

Material collected by Wada (1965) and Tawfik and Gooding (1970) in the Edmonton area has been examined by the author and found to contain many specimens of *Ae. euedes*, all of which in the case of Wada's collection were labeled *Ae. riparius*.

Ae. mercurator Dyar. Specimens taken at Edmonton by Dyar and described by him as *Ae. stimulans albertae* (Dyar 1920a, b), are now known to be specimens of *Ae. mercurator* (Wood 1977). This species has apparently been treated by a number of authors (e.g. Gjullin et al. 1961, Gjullin and Eddy 1972) as a subspecies of *Ae. stimulans*, following Dyar (1920 b), but, according to Danilov (1974) and Wood (1977), it is a distinct species, which occurs throughout the northern parts of North America and Eurasia.

In 1975, the author found larvae of *Ae. mercurator* with those of *Ae. euedes* in a slough about 10 miles northwest of Calgary, and adults were captured while biting people in the city. During the spring of 1976, many larvae were collected in the aspen parkland and foothills of southern Alberta, and at Red Deer, Wainwright and Fort McMurray.

All specimens named by Wada (1965) as *Ae. increpitus* were found to be *Ae. mercurator*, and 6 adults, with associated larval skins, were found amongst Tawfik and Gooding's collection.

Ae. increpitus Dyar. Larvae of this

species were collected from sloughs along the eastern edge of the foothills west and south of Calgary, in 1975 and 1976. This is the first record of the species for the south of Alberta, though there are records for the Edmonton area and Flatbush, farther north (Pucat 1965, Schaaf 1970, Tawfik and Gooding 1970). However there must be some doubt about all of these records, since Wada's specimens are definitely *Ae. mercurator*, and no specimens of *Ae. increpitus* were found in other collections in Edmonton. Furthermore, the type of habitat in which *Ae. increpitus* was found near Calgary does not occur in the Edmonton area.

Ae. implicatus Vockeroth. This species has been recorded from central and northern Alberta by Rempel (1950), under the name *Ae. impiger*, and by Pucat (1965), but has not been reported from the south of the province. The author has found the larvae in several widely-scattered localities, sometimes commonly, in the parkland and foothills from near Red Deer southwards.

Ae. hexodontus Dyar. Northern records for this species have been published by Pucat (1965), Graham (1969), and Tawfik and Gooding (1970). It was first found farther south by the author, in 1975, at Morleyville Settlement. Since then *Ae. hexodontus* has been found in other parts of the foothills and at Red Deer. Larvae were found both in open grassy sloughs and in shaded woodland pools, often, but not always, associated with *Ae. punctor*.

Six species which were collected as larvae by the author in the southern foothills were collected in Banff by Hearle (Rempel 1950) but have not otherwise been reported from southern Alberta. These species are: *Ae. canadensis* (Theobald), *Ae. pionips* Dyar, *Ae. punctor* (Kirby), *Ae. communis* (De-Geer), *Ae. trichurus* (Dyar) and *Ae. pullatus* (Coquillett). *Ae. communis* is prob-

ably the most common mosquito species in the forested parts of the foothills, while *Ae. trichurus* and *Ae. pul-latus* were both first reported from the Calgary area by Scholefield (1973).

A fairly comprehensive survey of *Aedes* larvae was carried out in southern Alberta in April and May 1976, but the following 5 species, which have been reported as occurring in the area, were not found: *Ae. nigromaculis* (Ludlow) and *Ae. melanimon* (Dyar) are prairie species which would have been affected by the dry spring of 1976 and were probably missed in the survey for this reason. *Ae. riparius* was not collected from the area south of 52°N, though specimens were seen from Wainwright, Edmonton and Fort McMurray. Undoubtedly, many records of this species refer to *A. euedes*, as a result of misidentifications from the use of Rempel's key.

Ae. sticticus (Meigen) has been reported from many places in Alberta (Pucat 1965), despite the fact that its usual habitats, namely river flood plains (Carpenter and LaCasse 1955), are not at all common in the province. The author has seen larvae of both *Ae. implicatus* and *Ae. mercurator* misidentified as *Ae. sticticus* as a result of using the key of Carpenter and LaCasse (1955). It is therefore suggested that the presence of the species in Alberta needs verification.

Ae. stimulans (Walker) is almost certainly not present in Alberta, and existing records probably all refer to *Ae. mercurator*, *Ae. increpitus* or *Ae. fitchii*. As noted by Dyar (1920a), the usual breeding sites of the species are generally not found in Alberta, and Wood (1977) has found that most, if not all, northern and western "*A. stimulans*" are, in fact, *Ae. mercurator*.

ACKNOWLEDGMENTS. I would like to thank my supervisor, Dr. Gordon Pritchard, for assistance during the

course of the studies which led to the above findings. My thanks also to Dr. Ron Gooding of the University of Alberta for assistance with the examination of specimens and documents in Edmonton; to Mr. Bruce Taylor, Mr. Wayne Inkpen and Ms. Dianna Smith of Alberta Environment, for making available to me collections of larvae made in the spring of 1976; and to Dr. Monty Wood, of the Biosystematics Research Institute, Ottawa, for his help with identification and nomenclature. Financial support was made available through grants from the National Research Council of Canada and from Alberta Environment to Dr. Pritchard.

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THE STATUS OF *Aedes sollicitans* AS AN EPIDEMIC VECTOR OF EASTERN EQUINE ENCEPHALITIS IN NEW JERSEY¹

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ABSTRACT. The status of *Aedes sollicitans* (Walker) as an epidemic vector of eastern equine encephalitis in New Jersey is examined from available literature. Data indicate that *Ae. sollicitans* has met the basic criteria necessary to prove vector involvement. Virus has been isolated from specimens during outbreaks of the disease in humans and tests have shown that *Ae. sollicitans* can become infected and transmit the virus under

experimental conditions. The blood-feeding habits of the mosquito and geographic distribution of human cases clearly reveal that *Ae. sollicitans* is associated with human outbreaks. Data show that *Ae. sollicitans* must be considered as an epidemic vector of EEE in New Jersey and should be controlled for the prevention of this disease during the season when EEE virus is active.

INTRODUCTION. The salt-marsh mosquito, *Aedes sollicitans* (Walker), was incriminated as an epidemic vector of eastern equine encephalitis in New Jersey in 1959 when 32 humans contracted the disease in coastal areas of the southern portion of the State (Hayes et

al. 1962). Kandle (1960) was the first to state that *Ae. sollicitans* must be considered as one of the vectors responsible for transmission, and epidemiological data collected during the outbreak led Hayes et al. (1962) to hypothesize that *Ae. sollicitans* served as the primary epidemic vector in the coastal area where most of the human cases occurred. Considerable epidemiological evidence has been gathered since that

¹ Paper of the Journal Series, New Jersey Agricultural Experiment Station, Rutgers—The State University, New Brunswick, N. J. 08903