

Mosquitoes of the Island of Newfoundland -  
A Report of New Records and Notes on the Species

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**ABSTRACT.** Twenty-three mosquito species belonging to three genera are reported from the Island of Newfoundland. Seven species, *Aedes atropalpus*, *Ae. decticus*, *Ae. diantaeus*, *Ae. hexodontus*, *Ae. pionips*, *Ae. sticticus* and *Culiseta melanura* are reported from the Island for the first time. The distribution and abundance of the species are also discussed.

INTRODUCTION

The Province of Newfoundland includes the Island of Newfoundland and Labrador. This report is concerned only with insular Newfoundland whose mosquito fauna, until recently, has been poorly known. Only four publications have appeared with information concerning the species on the Island. Freeman (1952) reported eight species, but from only two localities, Gander in the eastern portion and Harmon Field in the southwestern region. Pickavance, Bennett and Phipps (1970) listed 10 species from the Avalon Peninsula, of which, five were reported as new records. Vockeroth (1954) noted the presence of five species, three of which were previously unreported. Wood, Dang and Ellis (1979) listed 15 species from the Island, three of which were new records. Personnel of the Research Unit on Vector Pathology (RUVP), Memorial University of Newfoundland at St. John's have made extensive culicid collections in the Avalon Peninsula region. They have obtained two additional records (unpublished) for the Island, *Ae. decticus* and *Ae. sticticus*, and have extended the known distribution of several other species.

During May and June, 1981, we made an extensive mosquito survey of portions of the Island, including the Northern Peninsula, an area which had not previously been systematically collected. During this survey four additional unreported species were found, *Ae. diantaeus*, *Ae. hexodontus*, *Ae. pionips* and *Cs. melanura*.

The following checklist of species now known to occur on the Island includes 19 *Aedes*, 3 *Culiseta* species, and *Wyeomyia smithii*. Species reported for the first time are marked with an asterisk:

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- Aedes abserratus* (Felt and Young)
- \* *Aedes atropalpus* (Coq.)
- Aedes canadensis* (Theobald)
- Aedes cantator* (Coq.)
- Aedes cinereus* Meigen
- Aedes communis* (De Geer)
- \* *Aedes decticus* Howard, Dyar and Knab
- \* *Aedes diantaeus* H., D. & K.
- Aedes excrucians* (Walker)
- Aedes fitchii* (Felt and Young)
- \* *Aedes hexodontus* Dyar
- Aedes implicatus* Vockeroth
- Aedes intrudens* Dyar
- Aedes nigripes* (Zett.)
- \* *Aedes pionips* Dyar
- Aedes pullatus* (Coq.)
- Aedes punctator* (Kirby)
- \* *Aedes sticticus* (Meigen)
- Aedes stimulans* (Walker)
- Culiseta impatiens* (Walker)
- \* *Culiseta melanura* (Coq.)
- Culiseta morsitans* (Theobald)
- Wyeomyia smithii* (Coq.)

## NOTES ON THE SPECIES

(First published record is noted after each species name)

*Aedes abserratus*. Freeman (1952) reported this species from Harmon Field. This species appears to be widely distributed over the entire Island. We found larvae at most collection sites. They were usually associated with those of *punctator*, in shallow boggy pools in forested and open areas.

*Aedes atropalpus*. NEW RECORD. This species was first collected on the Island in splash pools at Grand Falls in 1961, by Marion E. Smith, but the record was never published (R. A. Ellis in litt. 1982). It also has been collected by RUVF personnel at Piper's Hole River Provincial Park, Burin Peninsula. Larvae were found along the river in rock pools left by spring floods.

*Aedes canadensis*. Freeman (1952) reported collections at Gander and Harmon Field. The species is one of the commonest on the Island. We found larvae in a variety of small pools in both forested and open areas at virtually every collection site. The ability of this species to invade a wide range of habitats is illustrated by the fact that larvae have been found associated with ten other culicine species. Pickavance et al. (1970) reported both *Ae. canadensis canadensis* and *Ae. canadensis mathesoni* from Newfoundland. The latter subspecies record was based on a single female which had the hind tarsal characters of *mathesoni*. Wood et al. (1979) questioned the validity of this record of a subspecies which previously was known only from the southeastern United States. All of our female material from seven different localities on the Island have broad, white rings on segments 1-4 of the hind tarsi and with segment 5 entirely white scaled as is typical of *canadensis canadensis*. This, plus recent work by Bickley (1981) in which he examined over 1,400 specimens of *canadensis canadensis* and *canadensis mathesoni*, including over 200 from Canada, and found no specimens referable to *mathesoni* north of Georgia, casts considerable doubt on the occurrence of subspecies *mathesoni* in Newfoundland.

*Aedes cantator*. Vockeroth (1954) reported 1951 collections of larvae at St. Anthony. In Newfoundland where the typical salt marsh habitat is lacking, this species has moved into a unique niche. It occurs along coastal areas in rocky depressions where a mixture of ocean spray and precipitation has produced a favorable saline environment. It has been collected on the Avalon Peninsula, Burin Peninsula and at the tip of the Northern Peninsula, but probably occurs along all of the rocky coastal areas.

*Aedes cinereus*. Wood et al. (1979) reported this species from one unidentified locality in the north central part of the Island. We found *cinereus* to be widely distributed. Although never abundant, larvae were collected from small forest pools on the Avalon Peninsula and throughout the Northern Peninsula to the St. Anthony area. They were usually associated with *decticus* and *punctator*.

*Aedes communis*. Wood et al. (1979) reported this species from two localities in western Newfoundland. Although one of the most abundant species in the forested regions of Canada, this species appears to be uncommon on the Island. We found larvae only at the northernmost portion of the Northern Peninsula. They were associated with larvae of *punctor*, *canadensis* and *cinereus* in shaded forest pools but were not abundant.

*Aedes decticus*. NEW RECORD. This species is relatively common on the Avalon Peninsula and is usually associated with *abserratus* and *punctor*. We collected larvae on VI-4-81 on the Northern Peninsula, 50 km E. of Plum Point, in a boggy, grassy pool at the edge of the forest. Here, this species was associated with *cinereus*, *diantaeus*, *punctor* and *Culiseta morsitans*.

*Aedes diantaeus*. NEW RECORD. Larvae were collected at the locality noted above for *decticus* on the Northern Peninsula.

*Aedes excrucians*. Freeman (1952) reported *excrucians* collections at Gander and Harmon Field. This species is widely distributed over the Island. We collected it at several localities on the Avalon Peninsula and at the northern tip of the Northern Peninsula at St. Anthony. It occurs in a variety of habitats, but larvae are more often found in deeper, more permanent pools in open areas.

*Aedes fitchii*. Freeman (1952) reported *fitchii* from Harmon Field. This species does not appear to be common. Wood et al. (1979) showed three widely scattered records across the main body of the Island. It has been reported from the Avalon Peninsula (Pickavance et al. 1970) where it probably occurs in limited numbers. We did not find it on the Northern Peninsula but have a single record of a biting female on the Avalon.

*Aedes hexodontus*. NEW RECORD. This species was found in two localities north of Hare Bay on the Northern Peninsula, 8 km SW of the Milan Arm of Pistolet Bay, VI-2-81, and 5 km S. of Straightview along Hwy. 436, VI-3-81. Larvae were found in open meadows in grassy, boggy pools. They were not abundant and were associated with *abserratus*, *pionips* and *punctor*.

*Aedes implicatus*. Wood et al. (1979) reported the only record of this species from a single locality in southwestern Newfoundland.

*Aedes intrudens*. Pickavance et al. (1970) reported larval collections of this species at Manuel's River on the Avalon Peninsula. Females have also been collected by the junior author biting at dusk on the Avalon.

*Aedes nigripes*. Vockeroth (1954) reported this high arctic species from St. Anthony at the tip of the Northern Peninsula. This record appears to be near the southern limits of this species in North America.

*Aedes pionips*. NEW RECORD. We found larvae of *pionips* at the following localities on the Northern Peninsula: 4 km E. of Spudgels Cove, VI-1-81; St. Anthony area, VI-2-81; 5 km S. of Straightview, VI-3-81. The greatest

concentrations of larvae were found away from the forest or in disturbed sites such as roadside barrow pits and open areas where timber had been removed. Larvae were usually found in pure culture although in some of the disturbed sites larvae were found associated with those of *canadensis*. Both of these species apparently readily invade newly formed habitats which may not be attractive to other species.

*Aedes pullatus*. Vockeroth (1954) reported *pullatus* from 1951 collections at St. Anthony. This species appears to be rare on the Island. We collected immatures in two localities on the Northern Peninsula, at St. Anthony in a rocky pool within 30 meters of the sea associated with *excrucians* and at Conche in a disturbed site, a bare, unshaded pool which also contained larvae of *canadensis*. As is the case with *canadensis* and *pionips*, *pullatus* will also readily invade pools formed by human activity.

*Aedes punctor*. Freeman (1952) reported this species from Harmon Field. Undoubtedly, *punctor* is the most abundant and widespread species on the Island. Personnel at RUVF have found it to be exceptionally common on the Avalon Peninsula and surrounding areas. We found larvae at virtually every collection site in our survey. It is most often found in sphagnum bogs associated with *abserratus*, *canadensis* and *decticus*. Over most of its range in North America larvae of *punctor* are usually confined to pools in forested areas. In Newfoundland larvae occur commonly in forest pools, but were also frequently collected in pools in open areas, often at considerable distances from the forested areas.

*Aedes sticticus*. NEW RECORD. One female of this species was reared from a larva collected on VI-15-79, at Little Power Pond on the Avalon Peninsula near St. John's.

*Aedes stimulans*. The Newfoundland records are based on larvae collected at Logy Bay near St. John's (Pickavance et al. 1970). Wood et al. (1979) believed this record to be probably based on misidentified material and suggested that this species was restricted to the Maritime Provinces of New Brunswick, Nova Scotia and Prince Edward Island. However, as these localities are in close proximity to Newfoundland, we consider it very probable that the species does occur on the Island, and we, at least tentatively, accept the validity of the Logy Bay record.

*Culiseta impatiens*. Freeman (1952) reported *impatiens* from both Gander and Harmon Field. This species is apparently widespread on the Island, and the females are a source of annoyance in early spring. Biting females were collected in several localities during our survey.

*Culiseta melanura*. NEW RECORD. A single larva of this species was collected on the Avalon Peninsula 20 km SW of St. John's, V-28-82, and was reared to an adult male. The larva was found in small, deep, flooded depression at the base of roots in a boggy area where the forest had been cleared to install a power line. The larva was associated with those of *Culiseta morsitans*. Although the habitat was characteristic of *melanura*, a repeat visit failed to turn up more larvae.

Collection of this species in Newfoundland is a considerable northern extension of its range and was unexpected. The only previous Canadian records were from southern Ontario and Quebec (Chant et al. 1973; Ellis and Wood 1974). *Culiseta melanura*, the principal sylvan vector of eastern equine encephalitis (EEE) in birds, is the only medically important culicid species now known to occur in Newfoundland. The presence of EEE virus in birds on the Island, however, has not been established.

*Culiseta morsitans*. Pickavance et al. (1970) reported *morsitans* from Logy Bay near St. John's. This species appears to be relatively abundant and widespread on the Island. It is common on the Avalon Peninsula, and we collected larvae in several localities on the Northern Peninsula. Larvae occur in a wide variety of boggy and grassy habitats as is evidenced by the fact that larvae were associated with those of nine different *Aedes* species and *Culiseta melanura*.

*Wyeomyia smithii*. Freeman (1952) reported this species from Gander. Larvae are found in water-filled leaves of the pitcher plant, *Sarracenia purpurea*. The plant, the Provincial Flower of Newfoundland, is very abundant in boggy areas on the Island and *smithii* larvae have been collected wherever it occurs. Mogi and Mokry (1980) described the biology of this species from near St. John's.

#### ACKNOWLEDGMENTS

The authors are grateful to the National Geographic Society whose support made the senior author's participation possible and to Dr. Marshall Laird, Director of the Research Unit on Vector Pathology, Memorial University of Newfoundland, for providing facilities and personnel to aid in this study. We would also like to thank Dr. Murray Colbo and Dr. Jean Finney for the invaluable help they provided during the course of this investigation. The junior author also expresses his thanks to Dr. Roy Ellis, Winnipeg Parks and Recreation Department, who during a visit to RUVF brought attention to the presence of *Ae. cantator* and *Ae. decticus* at the Logy Bay area near St. John's.

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