

SURVEY OF THE MOSQUITOES OF NEW BRUNSWICK



Submitted to: **Dr. B. Christofer Balram**
Provincial Epidemiologist
Provincial Epidemiology Service
Department of Health and Wellness
Fredericton, NB
E3B 5G8

Submitted by: **Reginald P. Webster & Marie-Andrée Giguère**
24 Millstream Drive
Charters Settlement, NB
E3C 1X1
rwebster@nb.sympatico.ca

Patrick Maltais, Jocelyne Roy and Leah Gallie
University of Moncton
Moncton, NB
E1A 3E9

Jim Edsall
59 Anne St.
Moncton, NB
E1C 4J4

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EXECUTIVE SUMMARY

The West Nile Virus (WNV) has so far affected 44 U.S. states and districts and 7 Canadian provinces: Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Nova Scotia. This arbovirus causes a form of encephalitis and is transmitted to humans by mosquitoes. The arrival of WNV in this region has led to an increased awareness of the potential role that mosquitoes play as vectors for this disease in New Brunswick. In view of this, a preliminary survey of mosquitoes was conducted at six sites in the Fredericton area during 2002.

During the 2002 study, protocols for sampling and monitoring mosquito populations were developed, and personnel were trained capable of conducting future mosquito surveys. Over 26,000 adults, represented by 29 species of mosquitoes were captured in CDC CO₂ baited traps in the Fredericton area. Sufficient numbers of adults of most species were captured during the 5-month sampling period to obtain detailed data on their seasonal pattern abundance. Information was also obtained on the larval breeding habitats of potential WNV vector species of mosquitoes from the Fredericton area.

In 2003, the study was expanded to include the entire province. Nineteen sampling stations were established in all seven health regions. Over 39,000 adults were captured, represented by 35 species. An additional nine species of mosquitoes new to New Brunswick were found in 2003. A total of 13 species not previously reported from New Brunswick in Wood et al. (1979) were detected in this two year study, bringing the total number of species known from New Brunswick to 38. Twenty of the 38 species are potential WNV vector species. Information on the distribution of the mosquitoes found in New Brunswick, and their seasonal pattern of abundance in different regions was obtained in 2003. Data on the breeding habitats and time periods larvae were present has been obtained for 27 species of mosquitoes in New Brunswick.

Between 12 and 27 species of mosquitoes were captured at each site during 2002 and 2003 (mean number per site was 22.5 and 20.7 in 2002 and 2003, respectively). Although the relative individual abundance of the species varied between sites, a significant proportion (55%) of the total number of species known from the province was caught at each site with this sampling protocol. Often, species not collected at a given site were rare species like *Cs. impatiens*, *Cx. salinarius*, *Cx. territans*, and *Oc. aurifer* in which only a few individuals were collected. This suggests that sampling only 2 sites with different wetland types may be sufficient to obtain a significant proportion of the species of mosquitoes that occur in a given region.

Species richness and abundance appeared to be closely related to the proximity of wetlands to the sampling stations. In general, highest species richness occurred at sites with a variety of wetland types and lowest at sites with few wetland types. Urbanized sites with few wetlands often exhibited the lowest species richness and abundance of mosquito species found in this study.

Relatively few problems were encountered during the course of this study. In 2002, the high number (1000's per week) of adults trapped from late spring to mid summer created a backlog of specimens to be identified and it was not possible to identify an entire week's trap catch during the same week. However, in 2003, only minimal backlogs occurred. In 2003, on a few occasions data was lost due to a trap

malfunction or a delayed arrival of samples (resulting in moldy specimens that could not be identified). However, at the Miramichi, a significant amount of data was lost due to recurrent “trap malfunctions” and stolen traps.

Some problems were also encountered in 2003 with larval sampling. It was apparently difficult for the WNV technicians to locate breeding sites for larvae once many of the early season snowmelt pools had dried. As a result, at a number of sites relatively few larval collections were made after early July (even after the heavy rains of late July and August).

Mosquito species occurring in New Brunswick and WNV vector and pest status.				
Species	Potential WNV Vector*	Human Pest Status	Adult Preferred Hosts	Larval Breeding Habitats in N.B.
Aedes				
<i>cinereus</i> Meigen	X	Major	Mammals	Sedge and Cattail marshes
<i>vexans</i> Meigen	X	Major	Mammals	Drainage ditches, flooded fields
Ochlerotatus				
<i>abserratus</i> (Felt & Young)		Major	Mammals	Snowmelt pools, sedge marshes
<i>atropalpus</i> Coquillett	X	Rarely bites man	Mammals	Rock pools near rivers
<i>aurifer</i> (Coquillett)		Rare species		
<i>canadensis</i> (Theobald)	X	Major	Mammals, will feed on birds and amphibians	Marshes, bog pools, puddles, artificial containers
<i>cantator</i> (Coquillett)	X	Major	Mammals	Salt marshes
<i>communis</i> (DeGeer)		Major	Mammals	Snowmelt pools
<i>decticus</i> Howard, Dyar & Knab		Rare species		Sphagnum lined pools in bogs
<i>diantaeus</i> Howard, Dyar & Knab		Rare species		Sphagnum lined pools in bogs, snowmelt pools
<i>euedes</i> Howard, Dyar & Knab		Rare species		
<i>excrucians</i> (Walker)		Major	Mammals	Floodplain forest pools, drainage ditches, marshes
<i>fitchii</i> Felt & Young	X	Major	Mammals	Drainage ditches
<i>hendersoni</i> Cockerell		Rare species		
<i>implicatus</i> Vockeroth		Rare species		Snowmelt pools, drainage ditches
<i>intrudens</i> Dyar		Uncommon	Mammals	Floodplain forest pools
<i>pionips</i> Dyar		Rare species		Sphagnum lined pools in bogs, snowmelt pools
<i>provocans</i> (Walker)	X	Major	Mammals	Snowmelt pools
<i>punctor</i> (Kirby)		Major	Mammals	Snowmelt pools, puddles, marshes
<i>sollicitans</i> (Walker)	X	Major	Mammals	Salt marshes
<i>sticticus</i> (Meigen)	X	Uncommon	Mammals	
<i>stimulans</i> (Walker)	X	Major	Mammals	
<i>triseriatus</i> (Say)	X	Minor (locally common)	Mammals?	Artificial containers
Anopheles				
<i>earlei</i> Vargas		Minor	Mammals	Drainage ditches
<i>punctipennis</i> (Say)	X	Uncommon species	Mammals	Artificial containers, drainage ditches, marshes
<i>walkeri</i> Theobald	X	Uncommon species	Mammals	

Mosquito species occurring in New Brunswick and WNV vector and pest status. (Continued)				
Species	Potential WNV Vector*	Human Pest Status	Adult Preferred Hosts	Larval Breeding Habitats in N.B.
<i>Coquillettidia</i>				
<i>perturbans</i> (Walker)	X	Major	Mammals and birds	Marshes (attached to roots)
<i>Culex</i>				
<i>pipiens</i> Linnaeus	X	Rarely bites man	Birds, but will feed on man	Artificial containers, drainage ditches
<i>restuans</i> Theobald	X	Rarely bites man	Birds, but will feed on man	Artificial containers
<i>salinarius</i> Coquillett	X	Rarely bites man	Birds, but will feed on man	Artificial containers
<i>territans</i> Walker	X	Rarely bites man	Reptiles and amphibians but may feed on man	Artificial containers, drainage ditches, marshes
<i>Culiseta</i>				
<i>impatiens</i> (Walker)		Rarely bites man		Artificial containers
<i>melanura</i> (Coquillett)	X	Rarely bites man	Birds, rarely bites man	Sphagnum lined pools in bogs
<i>minnesotae</i> Barr		Probably does not feed on man	Birds, small mammals, turtles	Boggy ditch
<i>morsitans</i> (Theobald)		Rarely bites man	Birds, small mammals, snakes	Marshes, sphagnum lined pools in bogs
<i>Psorophora</i>				
<i>ferox</i> (Humboldt)	X	Rare species	Mammals	
<i>Wyeomyia</i>				
<i>smithii</i> (Coquillett)		Does not bite man	Does not feed	Water-filled pitchers of pitcher plants

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INTRODUCTION

The West Nile Virus (WNV) has so far affected 44 U.S. states and districts and 7 Canadian provinces: Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Nova Scotia. This arbovirus causes a form of encephalitis and is transmitted to humans by mosquitoes. The arrival of WNV in this region has led to an increased awareness of the potential role that mosquitoes play as vectors for this disease in New Brunswick.

Relatively little was known about the species of mosquitoes that occur in New Brunswick and the number of potential WNV mosquito vectors, their distribution, seasonal abundance and breeding sites, particularly in relation to human populations. Assessment of the distributions and densities of potential WNV-carrying mosquitoes is critical for allowing one to (1) determine the potential for the establishment of WNV in N.B., (2) determine the potential impact WNV could have on humans and (3) establish appropriate arboviral surveillance and mosquito control initiatives. In view of this, a preliminary survey of mosquitoes was conducted in the Fredericton area during 2002.

The focus of the 2002 study was to develop the expertise required to conduct a mosquito surveillance program in New Brunswick and to obtain information on the seasonal pattern of abundance of the mosquito species found in the Fredericton area. Protocols for sampling and monitoring mosquito populations were developed, personnel were trained capable of conducting future mosquito surveys, and detailed information was obtained on the seasonal abundance and breeding habitats of the species of mosquitoes found in the Fredericton area.

In 2003 this survey was expanded to include sites throughout New Brunswick. This report summarizes the results obtained during 2002 and 2003.

METHODS AND MATERIALS

This study focused on the sampling of adult and larval mosquitoes, each of which will require different sampling methods. The methods used by Foss & Dearborn (2002) were followed with minor changes during this study.

Adults

CDC miniature CO₂ light traps (J.W. Hock Co.) were used to sample adult mosquitoes during 2002 and 2003 (Figure 1). These traps utilize a combination of CO₂ (from dry ice) and light to attract the mosquitoes to the vicinity of the trap. Usually only females are attracted to the CO₂ traps, although males are sometimes captured in small numbers. A small fan sucks the mosquitoes into a collection container. During early May 2002, the mosquito traps were tested to determine the length of time that dry ice

(source of CO₂) would last in the traps. An 18 cm x 8cm x 5cm block of dry ice was wrapped in newspaper and placed in the dry ice receptacle. Our tests showed that the block of dry ice wrapped in newspaper lasted 22-26 hours.

Traps were hung 5-6 ft. off the ground on a tree branch in an area protected from the wind. Approximately 24 hr later the samples were frozen with dry ice in a cooler and then kept frozen until they could be processed for identification. Adults were sampled at one-week intervals from May 16 to September 22, 2002, and May 22 to October 15,



Fig. 1. CDC miniature CO₂ trap.

2003. During 2002, traps were usually set out on Wednesday and samples collected the following day. During 2003 traps were usually deployed on Tuesday and the samples were collected the following day.

During 2003, mosquito trap samples were collected by West Nile Virus Technicians (New Brunswick Department of Public Health and Wellness) in Health Regions 2, 4, 5, 6, and 7. After the samples were frozen they were transferred to plastic Petri dishes and frozen again until they were mailed (overnight) in a cooler to either Moncton or Fredericton for identification.

Larvae

Mosquito larvae were sampled on the days that sites were visited for the establishment and removal of the CDC miniature light traps. Larvae (and any pupae) were sampled using a standard mosquito larval dipper. Ponds, snow melt pools, marshes, puddles, and artificial water filled containers such as tin cans, and tires were sampled near each adult sampling station. Usually, three scoops of water were taken at each site. However, when few larvae were present, additional samples were collected to insure that sufficient numbers of larvae were collected. The larvae and pupae were removed from each scoop with an eyedropper and placed into 100 ml plastic container (urine sample bottle) with water from the sample site. Later, most last (fourth) instar larvae were removed from the containers (with an eyedropper) and preserved in glass screw cap vials containing a 50/50 mix of water and 70% isopropyl alcohol. All pupae were allowed to emerge as adults and the resultant adults were preserved. Earlier instar larvae were kept in 0.5 liter clear plastic containers until they reached the fourth instar. During 2002 a sample of last instar larvae were allowed to pupate and emerge as adults. This allowed one to have a sample of larvae with associated adults.

The date, the number of larvae and pupae, a brief description of the habitat, and a GPS reading were recorded for each larval collection site. The habitat description included an estimated size and depth of the water body, the plant community, and the type of bottom (leaves, grasses, mud etc). Sites were often revisited as long as water remained to gather information on larval abundance and species composition as the season progressed.

Field Training of WNV Technicians

WNV Technicians were field trained for sampling adults and larvae on May 22 and 23 or May 23 and 24, 2003, in regions 2, 4, 5, and 7. Training had to be delayed to May 28 in region 6 because necessary equipment had not yet arrived. All information necessary to sample adults and larvae were presented to the technicians during the training sessions.

Mosquito Trap Sites, 2002

Six sampling stations were established in the Fredericton area on May 8, 2002 (Figure 2). Sites were selected to maximize the potential diversity and abundance of mosquitoes (areas with a diverse range of breeding sites). The Fredericton area was chosen in part because of the high diversity of potential breeding areas (many wetland types) and proximity of these breeding sites to relatively dense human populations. A brief description of each site is given below.

Site 1

This site was located in Sunbury Co. (Burton) near Sunpoke Lake and the Oromocto River (45.7575N, 66.5722W). The major type of habitat at this site was a seasonally flooded marsh or fen complex. Near the river were seasonally flooded silver maple floodplain forests with temporary pools and ponds. This habitat type extends to the outskirts of Oromocto and may be one of the major breeding sites for mosquitoes in this region. The trap was placed in a forested area about 3 meters from the marsh.

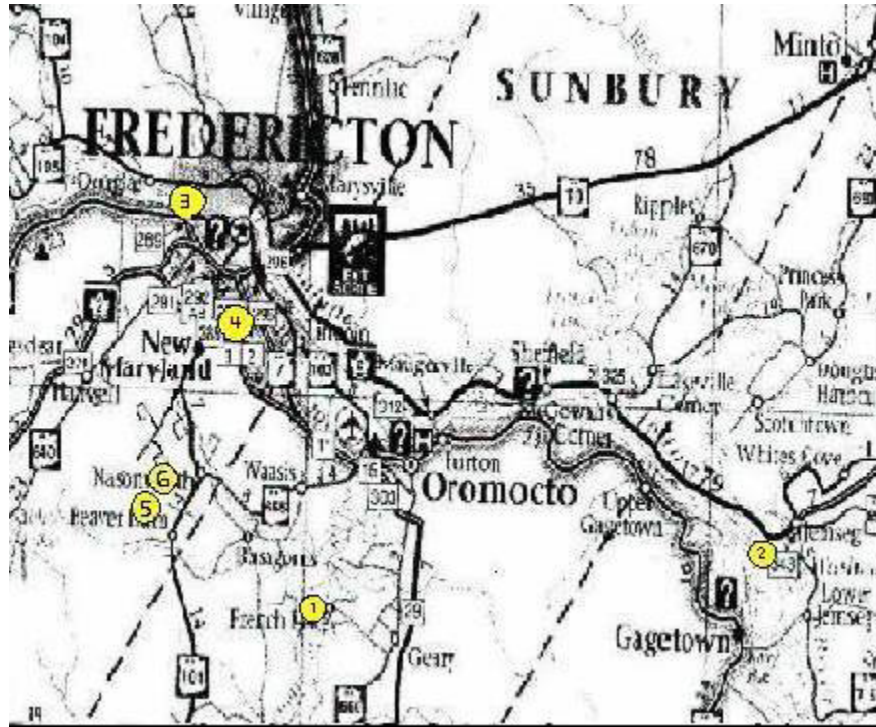


Fig. 2. Map of Fredericton area showing locations of the 6 sampling sites.

Site 2

This site was located in Queens Co., (Cambridge) just west of Jemseg near the Jemseg River (45.8216N, 66.1235W). The habitat at this site was a seasonally flooded silver maple floodplain forest. There were a variety of other wetland types, such as sedge/reed marshes, willow thickets, oxbows, numerous vernal ponds and pools, and permanent ponds in adjacent areas. Floodplain forests like this occur along much of the Saint John River valley including the Fredericton area.

Site 3

Site 3 was located in York Co. (Douglas) near the Nashwaaksis River (45.9844N, 66.6890W). The trap was placed in small grove of balsam fir about two meters from a cattail marsh bordered by alders. Permanent stagnant ponds and floodplain forests occurred within a kilometer of this site. Snowmelt pools were common in the adjacent conifer forests. The marshes at this site differed from the above two sites in that these

were not part of a seasonally flooded wetland, and thus a different complex of species of mosquitoes were expected. Residential areas occur near this site.

Site 4

This site was located in York Co. near the Fredericton/ New Maryland limits (45.9113N, 66.6690W). The habitat at this site was a dwarf shrub black spruce bog. The trap was placed in the forested bog portion of the bog adjacent to the open bog. Sphagnum lined pools and snowmelt pools (early in spring and summer) occurred throughout the forested portion of the bog and in the adjacent mixed forest areas. Cattail and sedge marshes occurred within a kilometer of this site.

Site 5

The site was located near a sedge marsh (acidic fen) complex adjacent to a permanent pond in York Co. (New Maryland) west of Charters Settlement (45.8265N, 66.7352W). The trap was placed in the adjacent forest (spruce, balsam fir, hemlock, maple) about 30 meters from the open marsh. Snowmelt pools were common at this site early in the season. This wetland and forest type is common throughout much of New Brunswick.

Site 6

This site was located in York Co. (New Maryland) in a subdivision (Country Squire Estates) in the Charters Settlement area (45.8392N, 66.7395W). The habitat was a mixed forest with cedar, balsam fir, spruce, red maple, and birch near an alder swamp along an intermittent stream behind a residential home. Forest snowmelt pools, roadside drainage ditches with semi-permanent water, and small permanent streams were the major wetlands types in the area. This is a common habitat type around many subdivisions and homes outside Fredericton.

Mosquito Trap Sites, 2003

Nineteen sites for sampling mosquito adults and larvae were selected between May 6 and 16, 2003. Two to five sites were chosen in each of the seven Health Regions of the province. When possible, in each health region one site was chosen to maximize the potential diversity and abundance of mosquitoes. This was usually a location that was relatively undisturbed and had a wide range of wetland types. A second site was chosen that was within or near an urban or residential area. In some cases this was a site, such as park or campground, frequented by people from nearby urban centers.

Region 1

Moncton, Mapleton Park. This public park is located in Westmoreland Co. in Moncton's north end off Mapleton Rd (46.1259N, 64.8299W). The trap was located in a mature forest with red spruce, balsam fir, birch and maple. Numerous slow moving streams lined with alders occurred nearby. Snowmelt pools, drainage ditches, and a small permanent marsh provided breeding habitats for mosquitoes.

New Scotland Bog. This bog is situated in Westmoreland Co. (New Scotland) north of Moncton near the junction of Hwy 126 and New Scotland Road (46.2135N, 64.9882W). The trap was located in a forested area five meters from a large raised peat bog bordered by alders, black spruce and tamarack. The forest was largely balsam fir, red spruce and birch. Many snowmelt pools within the forest and permanent and semi-permanent (sphagnum lined) pools within the open bog provided breeding habitats for mosquitoes.

Region 2

Saint John, Rest Area. This site was located in Saint John Co. within the city limits of Saint John near the rest area and information booth off Hwy 1 (45.2318N, 66.1215W). The trap was deployed in a spruce forest adjacent to a large salt marsh. Only a few small fresh water wetlands occurred near the salt marsh. This salt marsh is probably the source of many of the mosquitoes in West Saint John.

Grand Bay-Westfield. This site was situated in Kings Co. a short distance from the city limits of Saint John in Grand Bay-Westfield adjacent to the sewerage treatment plant (45.3005N, 66.1893W). A beaver pond and cattail marshes are located adjacent to the site. Seasonally flooded forest predominates along the perimeter of the lake in this area. The trap was placed in a forest with spruce, fir and maple.

Oak Bay. This site was located in Charlotte Co. (St. David) at the Oak Bay Campground in Oak Bay east of St. Stephens (45.2258N, 67.1923W). A small stream and alder swamp occur near the trap site within the mixed forest. Few wetlands occurred close to this site.

St. Stephen. This site was located in Charlotte Co. off St. Stephen Road within the limits of St. Stephen (45.2079N, 67.2844W). Small marshy areas and a small slow moving stream and alder swamp occurred near the trap site within the mixed forest.

Region 3

Fredericton, Saunders St. This site was located in York Co. in downtown Fredericton at a private residence (45.9590N, 66.6480W). No wetlands occur within 0.5 km of this site. This site is representative of most urban areas within the center of Fredericton.

Fredericton, Lincoln Rd. The site was located in York Co. in a residential area along Lincoln Rd (45.9130N, 66.5880W). Seasonally flooded silver maple forest habitats and the associated wetlands (vernal forest and open field pools and marshes) occur within 0.25 km along the St. John River.

Region 4

Grand Falls. This site was located in Victoria Co. within the city of Grand Falls in a small seasonally flooded forest (balsam poplar, some silver maple) adjacent to the Little

River (47.0518N, 67.7410W). Rock pools occurred along the shores of the Little River. Otherwise, no other wetlands occurred close to this site.

Grand Falls, N.B. Agriculture. This site was situated Victoria Co in a woodlot adjacent to N.B. Agriculture off Hwy 2 (47.0694N, 67.7805W). Small sedge marshes and drainage ditches occur near this site. Many of these sites dried early in the summer and refilled after heavy summer rains late in July. Relatively few wetlands occur in this predominately agricultural region.

Region 5

Kedgwick, Stillwater Rd. The Stillwater Road site was in Restigouche Co. (Grimmer) within a spruce fir forest about 7 kilometers north of Kedgwick (47.7238N, 67.3408W). Numerous snowmelt pools, alder swamps, small marshes and streams occurred within a short distance of this site.

Kedgwick, Morin Bog. Morin bog is located about 4 kilometers N of Kedgwick in Restigouche Co. (Grimmer) (47.6814N, 67.3157W). A variety of wetlands occur within and adjacent to this dwarf shrub black spruce bog. Numerous sphagnum lined pools of various sizes occurred within the open bog and the surrounding forested bog. Semi-permanent sedge marshes and numerous snowmelt pools occurred close to the trap site. The trap was deployed within the black spruce forest bog a few meters from the open bog. A number of northern species of plants and insects known from no other areas in N.B. has been found in this bog.

Region 6

Bathurst, Daly Point Reserve. The Daly Point Reserve is located within the city limits of Bathurst off Carron Drive in Gloucester Co. (47.6392N, 65.6159W). Salt marshes, snow melt pools, and cattail marshes occur within a short distance of the trap site. The trap was deployed in an aspen, red maple and balsam fir forest.

Bathurst, Bathurst Welcome Sign. This site was located near the city limit of Bathurst off Hwy 8 in Gloucester Co. (47.5621N, 65.1083W). Snow melt pools, small cattail margined ponds, alder swamps, and boggy areas occurred near the trap site within a mixed forest of balsam fir, aspen and red maple.

Village Acadien. This site was in Gloucester Co. (Bertrand) near the Village Acadien near a Ducks Unlimited marsh off Hwy 11 (47.7951N, 65.0906W). The trap site was situated adjacent to a large salt marsh on one side and a cattail marsh and boggy area on the other side. Snow melt pools and other wetland types occurred within the spruce fir forest in this area. The trap was deployed within a spruce forest adjacent to the salt marsh.

Shippagan, Camping Shippagan. Camping Shippagan is located about 4 km west of the village of Shippagan in Gloucester Co. (47.7549N, 64.7686W). The trap was

installed within a spruce forest near the campground. A large salt marsh occurred about 0.5 kilometers from the site. Snowmelt pools were common at this site early in the season.

Shippagan, 15th Street. This trap site was located at a private residence on 15th Street in the village of Shippagan in Gloucester Co. (47.7663N, 64.2069W).

Region 7

Miramichi, Industrial Park. This site was situated in Northumberland Co. in Miramichi near the industrial park off Princess St (46.6971N, 65.4691W). The trap was deployed in a second growth forest off a walking trail near a small permanent marsh adjacent to a wet meadow. Red maple, balsam fir and birch were the predominant forest species. During the spring there were many snowmelt pools and water-filled drainage ditches that dried during the early summer, but refilled after heavy summer rains.

Miramichi, Nowlanville. This site was near a private residence and farm near Miramichi at the end of Nowlanville Road off Hwy 126 in Northumberland Co. (46.9503N, 65.4972W). The trap was set in a forest at the edge of formally cultivated land with young black spruce, tamarack and alders. Numerous springs and seeps and a nearby large permanent marsh provided breeding sites for mosquito larvae.

Mosquito Identification

Training

Jim Edsall, Marie-Andrée Giguère and Reginald Webster took a 3-day course on mosquito identification given by Dr. John Burger at the University of New Hampshire in Durham during the first week of June 2002. This course included identification of larvae and adults of mosquitoes occurring in the Northeast and specimen collection and preservation techniques (proper specimen preservation is a requirement for proper identification of mosquitoes).

Specimen Preparation

Adult mosquitoes were removed from the freezer and glued to cardboard points (mounted on insect pins) using clear nail polish. Labels, with collection locality information (site number, locality, date etc) were placed on each specimen. The specimen was then kept in the freezer for 2 weeks. This process allowed the specimen to become partially freeze dried making later identification much easier. For species with large numbers of individuals, only samples were mounted from each site. Those not mounted were identified and then stored in plastic vials.

Identifications to species was done using a binocular LEICA MS5 dissecting stereomicroscope and standard keys to adults and larvae by Burger (2001), and Wood et al. (1979). The vast majority of the mosquitoes collected in CDC traps were females and these were identified to species. Males of only a few species were identified to species, thus far. The specimens and pertinent information was recorded in a database. Voucher

specimens have been deposited with the New Brunswick Museum. A reference collection containing all species collected in New Brunswick is also available (Reginald P. Webster) in Fredericton for future use.

RESULTS AND DISCUSSION

During this two year survey, 65,300 adult mosquitoes, represented by 37 species were collected at the 25 sampling stations in New Brunswick (6 in Fredericton area in 2002, and 19 throughout the province in 2003) (Tables 1 and 2). Twenty of these species are potential WNV vector species (Table 3). Larvae of 27 species of mosquitoes were collected in various habitats in the province. Thirteen of these are potential WNV vector species. The pest status of the species of mosquitoes occurring in New Brunswick is shown in Table 3. Data on the wetland habitats and time period when larvae of each species were collected are shown in Tables 4 and 5. Data for each species of mosquito collected during this survey is presented below. The tables and figures for the species accounts are given at the end of the report.

Potential WNV Vector Species

The following twenty species of mosquitoes are species from which WNV has been isolated, West Nile RNA detected, or West Nile antigen detected using various diagnostic tests. The data were obtained from CDC field investigations or reported by state surveillance programs to ArboNet as of August 23, 2003 and obtained from the CDC web site < <http://www.cdc.gov/ncidod/dvbid/westnile/mosquitoSpecies.htm> >.

Please note that evidence that WNV has been found in a mosquito species does not necessarily incriminate that species as a competent vector. It only means that the species has come into contact with the WNV transmission cycle. Additional information is required to incriminate the species as a true vector.

***Aedes cinereus* (Meigen)**

A total of 3,895 adults of *Ae. cinereus* were collected during this study. This accounted for about 6.0 % of the total number of adult mosquitoes collected during this study. *Ae. cinereus* was found throughout New Brunswick (Table 6). Adults were most common at sites near fresh water marshes.

Wood et al. (1979) reported that *Ae. cinereus* overwinters in the egg stage. A proportion of the eggs laid by adults from the overwintered eggs hatch and one or more additional generations of adults may be produced during a season. During 2002, *Ae. cinereus* first appeared during the week of June 11, and then peaked in adult numbers during late June and early July (Table 6, Figure 3A). A second smaller peak occurred during mid to late August, and then the number of adults collected progressively declined to mid October, when only a few adults were captured. In 2003, the second peak occurred in late August and early September and was larger than the earlier peak (Table 6, Figure 3B). It is possible the larger second peak was related to the heavy rains of late July and early August 2003, which may have provided additional breeding areas for larvae.

Larvae of *Ae. cinereus* were most frequently collected in water filled depressions along margins of sedge and cattail marshes. However, larvae were found in a wide variety of other wetland types, including temporary pools in seasonally flooded forests and bog margins, and water filled tire depressions, and roadside drainage ditches (Table 4). Larvae were present almost continuously from early May to late September. The early season larvae were probably from overwintered eggs; larvae from July, August and September were likely from eggs laid by adults from overwintered eggs.

Female *Ae. cinereus* are active at dusk and will bite humans, often on the legs, although the adults are not very aggressive (Wood et al. 1979). This species is considered to be a major pest.

***Aedes vexans* (Meigan)**

A total of 5,394 adults of *Ae. vexans* were collected in this study (about 8.2% of all mosquito adults). *Ae. vexans* was found throughout New Brunswick and was collected at all sites (Tables 1, 2, and 7). In New Brunswick, this species was most common in and near seasonally flooded forests. In much of Canada *A. vexans* is often most abundant near seasonally flooded river bottomland forests and often breeds in shallow grass filled depressions in pastures or in temporary woodland pools (Wood et al. 1979). These breeding sites were abundant throughout the seasonally flooded forest habitats along the St. John and Oromocto River valleys.

Ae. vexans overwinters in the egg stage. Eggs do not hatch until later in May and will produce adults during late June and July. Eggs from the first generation adults will remain dormant during dry periods, but will hatch shortly after being inundated by water after heavy summer rains. This species can potentially have several generations during wet summers and can become extremely abundant after heavy summer rains (Wood et al. 1979). During 2002, *Ae. vexans* appeared in the Fredericton area in numbers during the third week of July after heavy rains earlier in the month (Table 7, Figure 4A). Adult numbers peaked during early August and then the number captured progressively declined to late September, when only a few adults were caught. In 2003, heavy summer rains did not occur in New Brunswick until late July and early August. Adults did not become common until late August and adults persisted in relatively high numbers until late September at many sites (Table 7, Figure 4B).

Larvae from overwintered eggs were collected in water filled depressions in a cattail marsh and an alder swamp during late May and mid June (Table 4). During 2002, larvae from first generation adults were found abundantly during mid to late July in water filled depressions in pastures in the Jemseg area after heavy summer rains (Table 5). Larvae from subsequent generation adults were found in water filled tire depressions along forest roads during September. In 2003, larvae appeared later in August after the heavy rains in early August. Larvae were found in drainage ditches and woodland pools.

Females of *Ae. vexans* are most active at night and adults are aggressive biters and is considered to be a major pest (Wood et al. 1979).

***Ochlerotatus atropalpus* Coquillett**

Six adults of *Oc. atropalpus* were collected in New Brunswick, all at Grand Falls (Table 8). Larvae of this species breed in rock pools along the shores of rocky rivers (Wood et al. 1979). Rock pools occur along the Little River and were probably the source of the adults at Grand Falls. This species could occur along any rocky rivers in New Brunswick.

Oc. atropalpus overwinters in the egg stage and eggs hatch early in the spring when red maples begin to flower (Shaw and Maisey 1961). This species can breed continuously into October, as long as water remains in the rock pools. The New Brunswick adults were caught mid July and mid August. Although this species has tested positive for WNV, it is probably of little concern to humans, as it rarely bites man (Wood et al. 1979).

***Ochlerotatus canadensis* (Theobald)**

A total of 6,741 adults of *Oc. canadensis* were captured, 10.3% of all adults caught in CDC traps. This species was found throughout New Brunswick and was captured at all sites (Tables 1, 2, and 9). In New Brunswick this species was common in a variety of habitats.

Oc. canadensis overwinters in the egg stage, but egg hatch is staggered compared to other species of *Ochlerotatus*, resulting in a prolonged emergence of adults (Wood et al. 1979). In New Brunswick adults were present from late May to mid-October (Table 9). There were two distinct peaks in adult abundance throughout most of the province, one during late June to mid July and another from mid- to late August, showing that *Oc. canadensis* has two generations in New Brunswick (Figure 5). However, there were fewer individuals in the second peak. Adult emergence appeared to be somewhat later in northern portions of the province (Table 9).

In New Brunswick, larval habitats were diverse including vernal woodland pools, roadside ditches, cattail and sedge marshes, sphagnum lined pools in sphagnum bogs, puddles, water-filled tire depressions, and artificial containers (tractor tires) (Table 4). In the Portland area of Maine most larvae were found in shaded vernal pools (Foss & Dearborn 2002). Larvae were present almost continuously from early May until late September. The larvae collected in late September may have been from eggs laid by 2nd generation adults.

Females of *Oc. canadensis* prefer mammals, but will also feed on birds, amphibians, and reptiles (Wood et al. 1979). This species is considered to be a major pest (Table 3).

***Ochlerotatus cantator* (Coquillett)**

A total of 6,049 adults of *Oc. cantator* were collected, about 9.3% all adults caught in CDC traps. This species was generally collected only near coastal areas of New Brunswick and was most common in Mapleton Park, near the Saint John Rest Area, Daly Point Reserve in Bathurst, Village Acadien, and Camping Shippagan (Table 2). This species breeds in coastal salt and brackish marshes (Wood et al. 1979). All of the above sites were adjacent to or close to large salt marshes.

Oc. cantator passes the winter in the egg stage and is multivoltine (Wood et al. 1979). In New Brunswick, adults were present from late May until mid-October (Table

10). At most sites there were two peaks in adult abundance. However, the time of the peaks varied regionally. In Moncton, the first peak occurred in mid to late June, the second in early September (Figure 6A, Table 10). At the Daly Point Reserve in Bathurst and the Village Acadien, peaks occurred during mid July, early August and early September (Figure 6B, Table 10).

Larvae of *Oc. cantator* breed in salt marshes, most frequently in pools periodically refilled by extra high tides and heavy summer rains (Wood et al. 1979). In New Brunswick, larvae were found in similar sites, although a few larvae were found in a roadside drainage ditch in fresh water at Mapleton Park in Moncton (Table 4).

Oc. cantator is noted for its migrations inland from the coastal salt marsh breeding sites. In New Brunswick, this species was collected at several sites that were several kilometers from the closest salt marshes (New Scotland Bog, Grand Bay-Westfield, St. Stephen, Bathurst Welcome Sign). One individual was collected in Fredericton, nearly 100 kilometers from the closest salt marsh (Table 2).

Oc. cantator is an aggressive biter and is a major pest species near most coastal areas with salt marshes.

***Ochlerotatus fitchii* (Felt & Young)**

Oc. fitchii accounted for 1.3% of adults (853) captured in 2002 and 2003 and occurs throughout New Brunswick (Tables 1, 2 and 11). This insect overwinters in the egg stage and has one generation per year (Wood et al. 1979). In New Brunswick larvae were most frequently found in roadside drainage ditches and snowmelt pools (Table 4). Elsewhere in Canada larvae have been found in temporary snow melt pools, near the margins of permanent marshes, seasonally flooded marshes, and seasonally flooded forest pools, often in association with *Oc. excrucians* and other spring species (Wood et al. 1979).

Adults of *Oc. fitchii* were caught from late May to early to mid-September (Figure 7). Peak abundance was reached in late June in southern New Brunswick and mid-July in northern regions of the province (Table 11). Larvae were collected from mid- May to mid-June (Table 5).

Oc. fitchii is considered to be a major pest and bites man readily. However, in New Brunswick this species was not particularly common at the sites sampled in 2002 and 2003.

***Ochlerotatus provocans* (Waker)**

Oc. provocans accounted for 1.6% of the adult mosquitoes (1,022) collected in 2002 and 2003. This species occurs throughout New Brunswick, but was common only near St. Stephen, the Daly Point Reserve in Bathurst, and near the industrial park in Miramichi (Tables 1, 2, and 12). This species is most common in forested areas.

Oc. provocans overwinters in the egg stage and has one adult generation per year, early in the season (Wood et al. 1979). Adults appeared during the third week of May and reached peak abundance during mid-June, and then trap catch progressively declined to late July (Figure 8, Table 12). In New Brunswick, larvae were most frequently found in woodland snowmelt pools and along the edges of freshwater marshes (Table 4). Larvae and pupae of this species were found only during the first week of May. During 2003 larvae were present in snowmelt pools that still had ice on shaded margins.

This species will bite humans and can be a major pest early in the season in forested areas.

***Ochlerotatus sollicitans* (Walker)**

Only 158 adults of *Oc. sollicitans* were collected in CDC traps. This is another species that breeds in salt marshes and was generally collected only near coastal areas of New Brunswick. However, it appeared to be far less widespread than *Oc. cantator*. Nearly all adults were collected at sites in northeastern New Brunswick. This species was relatively common only at the Daly Point Reserve in Bathurst (Table 2). One individual was collected near Moncton.

Oc. sollicitans passes the winter in the egg stage and is potentially multivoltine (Wood et al. 1979). Eggs hatch in the early summer after the marshes have been flooded by warm water. As a result this species usually appears later in the season than *Oc. cantator*. In New Brunswick, adults were present from early July to late August with a peak in abundance during the third week of August. A few adults were collected in late September (Figure 9, Table 13). During 2003, *Oc. sollicitans* appeared to have only one generation in northeastern New Brunswick. No larvae of this species were collected during the survey.

Oc. sollicitans, like *Oc. cantator* is noted for its migrations inland from the coastal salt marsh breeding sites (Wood et al. 1979). In New Brunswick, this species was collected at a few sites that were several kilometers from the closest salt marshes (Mapleton Park, Bathurst Welcome Sign). This species is an aggressive biter and will bite in full sun even under windy conditions (Wood et al. 1979).

***Ochlerotatus sticticus* (Meigen)**

Only 73 adults of *Oc. sticticus* were captured during the 2002 and 2003 seasons. Although widespread in New Brunswick, this species was generally rare and was not found at many sites (Table 14). During 2002, adults were collected at all 6 sites in the Fredericton area, but were only collected at 7 of the 19 sites sampled in 2003 (Table 14). The greatest number of adults was collected in Fredericton off Lincoln Rd. This site was near bottomland and floodplain forests associated with the St. John River. In 2002, most adults were captured during the first week of July, and then sporadically into late August (Figure 10). During 2003, adults appeared in early June and were caught through early July (Table 14). A few adults were caught in September.

Oc. sticticus is most often associated with bottomlands and floodplains of large rivers (Wood et al. 1979). Eggs overwinter and will usually hatch during late spring after spring flooding. However, eggs may remain dormant (for 5 or more years) should spring flooding not occur, and the species may not appear some years. Egg also may hatch after very heavy summer rains that create large temporary pools that flood the eggs. Depending on summer rains more than one generation per year is possible (Wood et al. 1979). This species is often associated with *Ae. vexans*. No larvae of *Oc. sticticus* were found during this study.

This species is normally a minor pest, but can become abundant after extensive flooding. Females bite during the day, but are more prone to bite during the evening.

***Ochlerotatus stimulans* (Walker)**

Oc. stimulans is another species associated with bottomlands and floodplains of large rivers, especially those dominated with silver maple (Wood et al. 1979). The larvae can occur in huge numbers in silver maple floodplains inundated by snowmelt and spring runoff (Wood et al. 1979). In New Brunswick *Oc. stimulans* was widespread and generally uncommon in the southern, central and eastern areas (Table 2). It appeared to be absent from the Grand Falls and Kedgwick areas in the northwestern part of the province. However, this insect was abundant in the Jemseg area in the seasonally flooded silver maple forest of the St. John River valley (Table 1). Over 77% of the 917 individuals collected during 2002 and 2003, were captured at this site in 2002.

Oc. stimulans overwinters in the egg stage (Wood et al. 1979). Eggs hatch as the waters from the spring floods recede. In New Brunswick the first adults appeared during late May, abundance peaked during the first week of July, and then numbers declined to only a few individuals in early September (Table 15, Figure 11). Larvae of this species were not found during this survey.

Adults are very long-lived and are very troublesome biters (Wood et al. 1979). This species can be a major pest near flood plain forests of large river systems.

***Ochlerotatus triseriatus* (Say)**

499 adults of *Oc. triseriatus* were captured during 2002 and 2003 (Tables 1 and 2). This mosquito species was caught at most sites in New Brunswick. However, adults were not captured in the Kedgwick area. *Oc. triseriatus* was generally captured in CDC CO₂ traps in low numbers, but was collected in relatively good numbers in Charters Settlement (site 6) during 2002 (Table 16).

Oc. triseriatus overwinters in the egg stage and has one generation per year (Wood et al. 1979). Larvae require at least a 12 hr photoperiod for completion of development. As a result the adult flight season usually begins later in the season than most other species of *Ochlerotatus* (Wood et al. 1979). During 2002, in the Fredericton area, the first adults were captured during the first week in July, and peak abundance was reached during mid-August (Figure 12). Thereafter, adult abundance progressively declined to late September when trap catch was only a few individuals. In 2003, adults appeared a week later and were caught as late as early October. Adult numbers were too low at most sites in 2003 to establish when peak-seasonal abundance occurred (Table 16).

The natural habitat of the larvae of *Oc. triseriatus* is tree holes, especially those rich in organic material (Wood et al. 1979). However, this species will utilize various artificial containers, such as rain barrels, tires, bottles, cans, and gutters, as long as they are filled with organic debris, such as leaves, and are shaded (Wood et al. 1979). In Fredericton, larvae of this species were found in tractor tires with organic material on the bottom. These tires were found in an open field. *Oc. triseriatus* larvae were also found abundantly in auto tires filled with decaying leaves in a wooded site near New Maryland. In the Moncton area, larvae were found in plastic containers and a metal bucket. Larvae were present continuously from late May to the first week in November in the tractor and auto tires (Table 5). Pupae (that produced adults at room temperature) were present well into October. The larvae (last instar) collected in November were very sluggish. Additional sampling was not attempted on later dates as the breeding sites had frozen over. *An. punctipennis*, *Cx. pipiens*, *Cx. restuans*, and *Cx. territans* were also found in

the tires with *Oc. triseriatus*. Since the greatest number of adults of *Oc. triseriatus* was captured in a forested area in a small residential area, it is possible that this species was breeding in leaf filled gutters and other artificial containers in the subdivision.

Females of *Oc. triseriatus* are suspected vectors of a number of arboviruses, including California encephalitis, and Eastern, Western, and Venezuelan equine encephalitis (Wood et al. 1979). The La Cross strain of the California encephalitis has been shown to be transmitted transovarially in this species (Watts et al. 1973). The virus in an infected female overwinters in the eggs and will be present in the resultant adults the following season. This is probably the mode of overwintering of other arboviruses in this species. Females of *Oc. triseriatus* feed on birds and mammals and are active biters both during the day and night. This species will also enter homes.

***Anopheles punctipennis* (Say)**

Only 189 adults of *An. punctipennis* were collected in 2002 and 2003 (Tables 1 and 2). This mosquito species appears to be widespread in New Brunswick, but was collected in low numbers at the sites where it was found (Table 17).

An. punctipennis overwinter in the adult stage and are often among the first mosquitoes to appear during the spring (Wood et al. 1979). This species usually has 2 or 3 generations per season (Wood et al. 1979). In New Brunswick, adults were collected sporadically from mid-May until late September (Table 17, Figure 13). The adults collected in mid-May were likely overwintered adults. Two apparent peaks in abundance were observed in this study which may represent second and third generation adults (Figure 13).

Larvae of *An. punctipennis* were found in a variety of habitats in New Brunswick, including water filled depressions among alders, water filled tire depressions, seasonally flooded forest pools and water filled tractor tires. Larvae were found most consistently in artificial containers (Tires). Larvae have also been reported from tree holes in southern Ontario (James 1964). *An. punctipennis* larvae were collected from the second week of July to mid-October in this study.

An. punctipennis females seek blood early in the evening and will feed throughout the night (Wood et al. 1979). This uncommon species appears to be a minor pest in New Brunswick.

***Anopheles walkeri* Theobald**

Only 72 adults of *An. walkeri* were collected during 2002 and 2003 (Tables 1 and 2). This species was found at only seven of the 25 sites sampled during the two year study (Table 18). Adults were collected in the St. Stephen area, the Fredericton area, the northeast areas around Bathurst and Village Acadien and in Miramichi. Most individuals were collected at site 5 (New Maryland, marsh forest) in 2002, and at the Village Acadien in 2003.

An. walkeri passes the winter in the egg stage, unlike most other species of *Anopheles*, and as result adults first appear later in the season than other *Anopheles* (Wood et al. 1979). In 2002, adults were collected sporadically from late June to mid-September. In 2003, adults were collected almost continuously from mid-July to mid-September (Figure 14).

The normal habitat for the larvae of this species is ponds with emergent vegetation and stable water levels (Wood et al. 1979). No larvae of this species were collected in this study. Site 5, where most adults were collected was located near a sedge marsh/fen complex adjacent to a permanent pond. The Village Acadien site was adjacent to permanent sedge and cattail marsh complexes.

Adults are mainly nocturnal, but they will bite humans during the day if disturbed (Wood et al. 1979). This is an uncommon species in New Brunswick.

***Culex pipiens* (Linnaeus)**

One hundred adults of *Cx. pipiens* were collected during this two year study (Tables 1 and 2). This species is widespread in New Brunswick. It was caught at 22 of the 25 sites sampled in 2002 and 2003, but in low numbers (Table 19). *Culex* species are usually less attracted to CO₂ baited mosquito traps than species of other genera of mosquitoes, and thus the abundance of *Culex* species caught in CDC traps may be underestimated.

Adults of *Cx. pipiens* overwinter and several adult generations are possible. Population numbers usually peak during late summer (Wood et al. 1979). In New Brunswick adults were collected during the third week of May (probably overwintered individuals) and then from early July to late September (Table 19, Figure 15). No apparent peaks in abundance could be observed from the data.

Cx. pipiens is often called the rain-barrel or northern house mosquito and has a close association with man. Larvae inhabit artificial containers (rain barrels), tree cavities, rain puddles, roadside ditches, and other water filled containers, especially those polluted with sewerage or barnyard wastes (Wood et al. 1979). In this study most larvae were collected in tractor tires, although a few were also collected in water filled tire depressions and roadside drainage ditches (Table 4). Larvae were collected almost continuously from late May to early November (Table 5). It is unlikely that these late season larvae would be able to produce adults, although this could be possible during an unusually late warm spell. Late season adults would overwinter and do not take a blood meal (Wood et al. 1979).

Adults feed predominately on birds and only rarely on small mammals and humans (Wood et al. 1979). Adults feed at night and will enter houses freely. *Cx. pipiens* may be a vector for several arboviruses, including western equine encephalitis and St. Louis encephalitis (Hammon et al. 1945, Stage et al. 1952).

***Culex restuans* Theobald**

Only 15 adults of *Cx. restuans* were captured in CDC traps during 2002 and 2003 (Tables 1 and 2). *Cx. restuans* appears to be widespread in New Brunswick, as it was caught at 12 of the 25 sites sampled in 2002 and 2003, but in very low numbers (Table 20). At most sites only 1 or 2 individuals were captured during the entire season

Cx. restuans has a life cycle similar to that of *Cx. pipiens*. Adults overwinter in basements and hollow trees and multiple generations are possible (Wood et al. 1979). In New Brunswick, adults were captured sporadically, from late May (overwintered adults) to the third week of August (Table 20).

Cx. restuans larvae live in artificial containers, rock pools, tree cavities, and temporary puddles and ditches, as long as decaying vegetation is present. In New

Brunswick, larvae were collected from a cattail marsh, water filled tire depressions with emergent vegetation and most frequently in artificial containers (tractor tires) (Table 4). Larvae were present in tractor tires almost continuously from the first week of July to mid September (Table 5).

Like *Cx. pipiens*, *Cx. restuans* prefers to feed on birds, but will feed on reptiles and mammals, including man (Wood et al. 1979). Feeding usually takes place at dusk or during the day in shaded places. This species has been implicated in the transmission of eastern equine encephalitis (Wood et al. 1979).

***Culex salinarius* (Coquillett)**

Cx. salinarius is a more southern species and was not mentioned as occurring in Canada in Wood et al. (1979). Four adults were collected on July 26, 2002 at sites 1 (Burton, Sunbury Co.) and 2 (Cambridge, Queens Co.) in 2002 (Table 21). In 2003, *Cx. salinarius* was captured in Moncton (Westmoreland Co.), Saint John (Saint John Co.) and near the Village Acadien (Gloucester Co.), (Table 21). Larvae were collected in Fredericton (York Co.) in 2002 and in Moncton in 2003. Although this species appears to be rare in New Brunswick, it may be more widespread in the province than these records indicate, as *Culex* species are usually less attracted to CO₂ baited mosquito traps than species of other genera of mosquitoes.

The life history of *Cx. salinarius* is similar to other *Culex* species. Adults overwinter and several generations are possible each year. In New Brunswick, adults were captured from late July to late September during 2002 and 2003 (Table 21).

In Maine, larvae of *Cx. salinarius* were often found in the same habitats as *Cx. territans*, *Cx. restuans*, and *Cx. pipiens* (Foss & Dearborn 2002). Near Portland, ME, larvae were found in flooded grassy depressions, a metal washtub and a shaded permanent pool with emergent decaying vegetation. In New Brunswick larvae were found in artificial containers, such as plastic containers and tractor tires. Larvae were collected in mid- and late July and the first week of August (Table 5).

Like the other *Culex* species *Cx. salinarius* is an indiscriminant feeder on birds and mammals and will bite humans.

***Culex territans* (Walker)**

Only 22 adults of *Cx. territans* were collected in this study (Tables 1 and 2). Adults were collected at scattered locations throughout New Brunswick (9 out of the 25 sites sampled), (Table 22). Although this species appears to be rare in the province, it may be more widespread in the province than these records indicate.

Cx. territans, like other *Culex* species is multivoltine and overwinters as an adult (Wood et al. 1979). Adults were collected sporadically from early June to early October (Table 22).

Larvae of *Cx. territans* prefer vegetation choked permanent marshes, but can also be found in artificial containers and tree cavities (Wood et al. 1979). In New Brunswick, larvae were frequently found in permanent sedge and cattail marshes, sphagnum lined pools in black spruce bogs, drainage ditches and in tractor tires (Table 4). In tractor tires near Fredericton, larvae were present almost continuously from early June to early November. It is unlikely that the larvae still present in November would be capable of producing overwintering adults.

Females of *Cx. territans* prefer to feed on frogs, but will feed on birds and reptiles. It is unclear whether this species feeds on mammals (Wood et al. 1979).

***Culiseta melanura* (Coquillett)**

The 221 adults of *Cs. melanura* were collected from widely scattered localities in New Brunswick (Tables 2 and 23). This species was generally rare or uncommon at most sites. The greatest number of adults was caught in the New Scotland Bog north of Moncton, and in Miramichi. This species was not collected in Fredericton and Grand Falls areas, and was only found at one site in the northeast (Bathurst Welcome Sign).

Cs. melanura overwinters in the larval stage (Jamnback 1961) and may have at least two generations in Canada (Wood et al. 1979). In New Brunswick, adults were present from mid-June to early October (Table 23). The seasonal pattern of abundance of *Cs. melanura* from the Moncton area suggests that two generations occurred at this site in 2003 (Figure 16). One occurred in June and July, followed by a second in August and September.

In the United States larvae of *Cs. melanura* have been collected from small semi-permanent pools, such as tree holes and artificial containers. In Canada larvae have been collected from water filled depressions in bogs (Wood et al. 1979). In New Brunswick a larva of *Cs. melanura* was collected from a small sphagnum lined pool in a black spruce tamarack bog (New Scotland Bog) during the third week of May.

Females of *Cs. melanura* prefer birds as hosts and will feed on small mammals and snakes (Wood et al. 1979). This species rarely bites man.

***Coquillettidia perturbans* (Walker)**

Cq. perturbans was the most abundant species of mosquito collected during this study. A total of 16,963 individuals of this species were collected. This represented nearly 26% of the total number of adult mosquitoes collected during 2002 and 2003 (Tables 1 and 2). This insect occurs throughout New Brunswick and was collected at all survey sites in 2002 and 2003 (Table 24). It was one of the most abundant species of mosquito at several sites. The greatest number of adults any species, was caught in CDC traps at site 3, near Douglas (York Co.). Here 7,690 adults of *Cq. perturbans* were captured in 2002, 85.9% of all the mosquitoes collected at this site.

Cq. perturbans overwinters in the larval stage and has one adult generation per year. In Canada, adults usually start to emerge during the latter part of June and peak in seasonal abundance during July (Wood et al. 1979). In New Brunswick *Cq. perturbans* adults first appeared the third week of June, and then adult abundance rapidly increased reaching a peak during the first week of July in 2002 and the second week of July in 2003. Thereafter, abundance rapidly declined and only a few adults were caught after the first week of August. The seasonal pattern of abundance for 2002 is shown in Figure 17.

The preferred larval breeding habitats of this species are permanent marshes (Wood et al. 1979). The larvae of this species remain buried in mud at the bottom of permanent marshes and obtain oxygen from air tubes inserted into the roots of emergent aquatic plants, such as cattails, arrowhead, pickerelweed, reeds and sedges (Wood et al. 1979). This species requires marshes that are permanently flooded throughout the year. Adults of *Cq. perturbans* were often most abundant at sites adjacent to permanent

marshes, such as at site 3 (Table 24). The larval feeding behavior makes sampling larvae very difficult. Larvae of this species were not encountered during this study.

Females of this species feed on birds and mammals, including humans and it is considered a serious pest especially in areas adjacent to permanent marshes (Wood et al. 1979). Peak feeding activity occurs at dusk.

***Psorophora ferox* (Humboldt)**

One adult of this species was collected on August 16, 2002 at site 2 (Jemseg, Cambridge, Queens Co.) in a seasonally flooded silver maple forest near the Jemseg River. This species has only been reported a few times from Canada, and may not be a resident species (Wood et al. 1979). The individual collected in this study may be a stray from the United States.

Non WNV Vector Species

The following 17 species of mosquitoes have not yet been implicated in the transmission of WNV.

***Ochlerotatus abserratus* (Felt & Young)**

A total of 2,568 individuals were caught in CDC traps and adults were found throughout New Brunswick (Tables 1, 2, and 25). This species accounted for 3.9% of all adults caught in 2002 and 2003.

Oc. abserratus overwinters in the egg stage and has only one adult generation per year, early in the season (Wood et al. 1979). In New Brunswick adults first appeared during the third week of May and were captured to mid August, with a sharp peak in abundance during the second and third weeks of June (Figure 18).

In New Brunswick larvae were most frequently collected from snowmelt pools, but were also found (sometimes abundantly) in pools along the margins of black spruce bogs, the edges of sedge and cattail marshes, and roadside ditches (flooded by melting snow). Larvae were found from early May to early June (Table 5).

This species feeds on mammals and the virus of California encephalitis has been isolated from females (Wood et al. 1979). This species can be a major pest early in the season.

***Ochlerotatus aurifer* (Coquillett)**

Oc. aurifer is considered to be an uncommon species in Canada (Wood et al. 1979). Five individuals of this species were collected in the Fredericton area, all at site 5, adjacent to a sedge marsh (Table 26). Adults were collected on June 11, 21, and 28, 2002. This species probably overwinters in the egg stage. Larvae have been found in marshes with emergent vegetation choked with rotten plant material (Wood et al. 1979). Larvae of this species were not found in New Brunswick during this survey.

***Ochlerotatus communis* (DeGeer)**

Oc. communis is one of most abundant species of *Ochlerotatus* in Canada according to Wood et al. (1979), and was the second most abundant species in this study, accounting for 14.9% of all the mosquito adults (9,760) captured during 2002 and 2003 (Tables 1 and 2). This mosquito species was found at nearly all sites that were sampled in New Brunswick during the two year study (Table 27).

Like *Oc. abserratus*, *Oc. communis* overwinters in the egg stage and has only one adult generation per year, early in the season. In southern New Brunswick, adults were captured from mid-May to early August, with a peak in abundance in early June (Table 27, Figure 19A). In northern New Brunswick adults first appeared in early June, peaked in abundance during early to mid July, and then numbers progressively declined to mid-August (Table 27, Figure 19B). Curiously, a second group of adults was collected from late August to mid-September at the Morin Bog (Table 27). Some of these individuals were freshly emerged and may represent rare second generation adults.

Eggs hatch early in the spring often before the snow has completely melted (Wood et al. 1979). In the New Maryland area in late April 2003, larvae were present in snowmelt pools that had ice on shaded margins. In New Brunswick, larvae were most abundant in temporary forest snow melt pools with high tannic acid content, and in roadside drainage ditches flooded by snowmelt (Table 4). Larvae were also common in sphagnum lined pools in the lag zone of black spruce bogs and water-filled depressions along the margin of sedge marshes. The larvae can be extremely abundant in some of the snowmelt pools. During 2002, near New Maryland larvae were present in the 1000's per m² in snow melt pools. Larvae and pupae were present from late April to early June (Table 5).

This species readily bites humans and can be a severe pest early in the season.

***Ochlerotatus decticus* (Howard, Dyar, & Knab)**

Oc. decticus is considered to be an uncommon to rare species in Canada (Wood et al. 1979). Only 40 adults were collected in New Brunswick during 2002 and 2003 (Tables 1 and 2). Adults of this species were collected at only 8 of the 25 sampling stations (Table 28). This species appears to be local and was most commonly collected in or near bogs (Site 4, Fredericton; Morin Bog near Kedgwick) and sedge marshes or acidic fens (Site 5, New Maryland).

This species probably overwinters in the egg stage and has one generation per year (Wood et al. 1979). In New Brunswick, adults were captured from late May to late July (Table 28).

Larvae of this insect have been collected in sphagnum bogs, along with *Oc. abserratus* and *Oc. punctor* (Wood et al. 1979). In New Brunswick larvae of this species were most frequently collected from sphagnum lined pools in the open portion of black spruce bogs (Morin bog, New Scotland Bog), (Table 4). At the Morin Bog these pools were often only 1 or 2 cm deep and 10-15 cm in diameter. Near New Maryland (Site 5) larvae of *Oc. decticus* were collected during late May in sphagnum lined water filled depressions at the margin of a sedge marsh. Larvae were collected from the third week of May to early June (Table 5).

This species is not considered to be a pest.

***Ochlerotatus diantaeus* (Howard, Dyar, & Knab)**

A total of 1,085 adults of *Oc. diantaeus* were captured at 19 of the 25 survey sites (Tables 1 and 2). Although widespread in New Brunswick, this species was relatively common at only 3 sites (Mapleton Park in Moncton, New Scotland Bog, and Stillwater Road north of Kedgwick), (Table 29).

Oc. diantaeus probably overwinters in the egg stage and has one generation per year. During 2002 and 2003 in southern New Brunswick, adults were present from the second week of June to early August, with a peak in abundance during mid-June (Figure 20A, Table 29). In northern areas adults did not appear until mid- to late June, peaked in abundance during early July and were present into late September at some sites (Figure 20B, Table 29).

In Canada, larvae of *Oc. diantaeus* develop in temporary snow melt pools, often with high tannic acid content (Wood et al. 1979). In much of Canada, larvae have been reported to be most common in boggy areas and were frequently associated with the much more common *Oc. communis* larvae. In New Brunswick, single larva of *Oc. diantaeus* were found in a saturated sphagnum mat on June 11, 2003, near Shippagan and on May 28, 2003, in a roadside pool flooded by snowmelt (Morin Bog near Kedgwick).

This species is not considered to be a pest.

***Ochlerotatus euedes* Howard, Dyar & Knab**

Oc. euedes is widespread, but an uncommon species in Canada (Wood et al. 1979). One adult, tentatively determined to be this species, was collected on June 18, 2003, in Fredericton at Lincoln Rd. Larvae of *Oc. euedes* have been collected in large open marshes with dense masses of decaying sedges and cattails (Wood et al. 1979). Marshes like this occur within a kilometer of this site.

***Ochlerotatus excrucians* (Walker)**

Oc. excrucians is widespread in New Brunswick and was collected at 22 of the 25 sites sampled during 2002 and 2003 (Tables 1, 2 and 30). A total of 1,477 adults were captured, 2.3% of all mosquito adults caught. *Oc. excrucians* was most common near seasonally flooded forests (Site 2, Cambridge).

Oc. excrucians overwinters in the egg stage and has one generation per year, relatively early in the season (Wood et al. 1979). In southern New Brunswick, adults were present from late May to mid-September (Figure 21). Peak adult abundance occurred between mid and late June. In northern areas peak abundance was reached in early to mid July (Table 30).

In Canada, larvae of *Oc. excrucians* were most commonly found near the margins of seasonally flooded marshes and seasonally flooded forest pools, as well as temporary snowmelt pools. In New Brunswick, larvae were most often found in seasonally flooded floodplain forest pools, seasonally flooded marshes, and roadside drainage ditches flooded by snowmelt (Table 4). Larvae were also collected from permanent sedge marshes (in water filled depressions on marsh edge), sphagnum lined pools in open black spruce bogs and the adjacent forested lag zone, and in temporary puddles. Larvae were present from the third week of May to mid June.

Females of this species feed on mammals, including humans and as its name implies, is considered to be a major pest.

***Ochlerotatus hendersoni* Cockerell**

Oc. hendersoni is an uncommon species in Canada and is very similar to *Oc. triseriatus* (Wood et al, 1979). One specimen, tentatively determined to be this species, was collected on September 17, 2003 in St. Stephen. The biology is similar to that of *Oc. triseriatus*. Larvae have usually been collected in tree holes (Wood et al. 1979).

***Ochlerotatus implicatus* Vockeroth**

Oc. implicatus is widespread in Canada and seldom common (Wood et al. 1979). Seventy-one adults were collected at 11 of the 19 sites sampled in 2003 (Table 31). This species was most frequently collected in the northern portion of the province, but in low numbers.

Oc. implicatus is a forest species with one generation per year, early in the season (Wood et al. 1979). Adults were collected in New Brunswick from the third week of May to mid July (Figure 22).

In Ontario larvae of this species were found under willow thickets in small shallow pools left from receding steam waters (Wood et al. 1979). In New Brunswick *Oc. implicatus* larvae were found in roadside drainage ditches (near a small stream), a sedge marsh, and forest snowmelt pools (Table 4). Larvae were collected during the last three weeks of May (Table 5).

This species is not considered to be a pest.

***Ochlerotatus intrudens* (Dyar)**

A total of 701 individuals of *Oc. intrudens* were captured at 21 of the 25 sites sampled in New Brunswick (Tables 1, 2, and 32). This species was most common near seasonally flooded forest sites (Site 2, Cambridge; Fredericton at Lincoln Rd.) and was uncommon at most other sites.

Oc. intrudens overwinters in the egg stage and has one generation per year (Wood et al. 1979). In New Brunswick, adults were captured from the third week of May to mid July, with peak abundance during the third week of June (Figure 23, Table 32). However, in 2002 individuals were captured as late as the third week of August (Table 32).

Larvae live in vernal woodland snowmelt pools (Wood et al. 1979). In New Brunswick larvae of this species were most frequently found temporary forest pools in seasonally flooded forests in the Jemseg area. Larvae were also found in roadside ditches flooded by snowmelt.

This species is considered a troublesome biter and attacks during the day (Wood et al. 1979). However, it is not considered to be a serious pest as it is generally not abundant.

***Ochlerotatus pionips* (Dyar)**

Oc. pionips is a species of the northern coniferous forest and is considered to be rare and local. Twenty-three individuals of this species were collected during 2002 and 2003 (Tables 1, 2, and 33). This insect was collected at several sites in the Fredericton area, Moncton and Miramichi.

This species overwinters in the egg stage and there is one adult generation per year (Wood et al. 1979). Most adults were captured during the last three weeks of June in New Brunswick (Table 33).

The larvae have been found in snowmelt pools (Wood et al. 1979). In this study larvae were found in a temporary forest pond and in a saturated sphagnum mat.

This species is uncommon to rare in the southern portion of its range and is not considered to be a pest (Wood et al. 1979).

***Ochlerotatus punctor* (Kirby)**

Oc. punctor is one of the most common mosquitoes of the boreal forest regions of Canada (Wood et al. 1979). The 3,413 adults of *Oc. punctor* represented 5.3% of all mosquitoes captured in 2002 and 2003. This species was collected at all sites and was abundant at a number of sites (Tables 1, 2 and 34).

Oc. punctor overwinters in the egg stage and there is one adult generation per year, early in the season (Wood et al. 1979). Adults were collected from late May to early August in 2002 with peak abundance at the end of the first week of June (Figure 24A). In 2003 the adult flight period was about one week later (Figure 24B, Table 34)

The larvae of *Oc. punctor* typically live in snowmelt pools in coniferous forests, often near sphagnum bogs or grassy marshes. In New Brunswick this species was most abundant in snowmelt pools, but also was found in sedge marshes in sphagnum lined pools among sedges, cattail marshes, sphagnum-lined pools in bogs, roadside drainage ditches flooded by snowmelt, and water-filled tire depressions and puddles (Table 4). Eggs of *Oc. punctor* hatch early before the ice has disappeared (Wood et al. 1979). Near New Maryland larvae were present in late April in snowmelt pools that still had ice present. Larvae were collected from late April to early June (Table 5).

***Anopheles earlei* Vargas**

In 2002, 42 adults of *An. earlei* were captured at sites 1 (near Sunpoke Lake), 2 (near Jemseg), 3 (Douglas), and 5 (near New Maryland) (Tables 1, 2, and 35). In 2003, two individuals were caught at Grand Bay-Westfield, and one at the Morin Bog near Kedgwick. The greatest number of adults was collected at Site 2. In 2003, larvae were collected in Mapleton Park near Moncton, near Bathurst (Bathurst Sign), and near Kedgwick off the Stillwater Road. *An. earlei* is probably widespread in New Brunswick, but adults are rarely collected in traps.

An. earlei overwinter as adults in buildings, mammal burrows, and possibly beaver lodges (Wood et al. 1979). Overwintered adults appear early in the season and more than one subsequent generation is possible. In New Brunswick, adults were collected from mid-May (probably overwintered adults) to mid-September (Figure 25). There are probably two generations of adults in New Brunswick.

All larvae of *An. earlei* from New Brunswick were collected from roadside drainage ditches during third week of June (Tables 4 and 5). *An. earlei* is a rare to uncommon species in New Brunswick and is probably a minor pest.

***Culiseta impatiens* (Walker)**

Only 4 adults of *Cs. impatiens* were collected in 2002 and 2003 (Tables 1, 2, and 36). One individual was collected at site 5 (near New Maryland) near a sedge marsh and

pond in 2002. In 2003, two individuals were caught at the Morin Bog near Kedgwick, and one at Stillwater Road near Kedgwick. Larvae were collected in Fredericton during 2002 and 2003. *Cs. impatiens* is probably widespread in New Brunswick, but is collected uncommonly in CO₂ baited traps.

Cs. impatiens overwinters as adults and is among the first species of mosquitoes likely to bite during the spring (Wood et al. 1979). Only one generation of adults is produced each year. Adults are long-lived and may be present throughout the summer. In New Brunswick adults were collected sporadically from mid-May (probably overwintered adult) to late September (Table 36).

Larvae of *Cs. impatiens* have been found in semi-permanent ponds, bog pools, and heavily shaded permanent forest pools (Carpenter & LaCasse 1955, Wood et al. 1979). In New Brunswick, larvae were collected from tractor tires in Fredericton from Early June to late July (Table 5). Larvae of *An. punctipennis*, *Cx. pipiens*, *Cx. restuans*, and *Cx. territans* were also found in the tires with *Cs. impatiens*.

Although, females can be vicious biters they rarely bite man and are considered to be a minor pest.

***Culiseta minnesotae* Barr**

Adults of *Cs. minnesotae* are seldom collected as adults in CO₂ baited traps (Wood et al. 1979). In this study, 25 adults of *Cs. minnesotae* were collected in low numbers at scattered localities throughout New Brunswick in 2002 and 2003 (Tables 1, 2, and 37).

Cs. minnesotae overwinters as an adult and probably has only one adult generation per year. In New Brunswick, adults were captured sporadically from the third week of May to late August.

Larvae of *Cs. minnesotae* live in sedge and cattail marshes, often among dense clumps of vegetation (Wood et al. 1979). Larvae were collected from a “boggy” ditch on May 22, 2003 in the Mapleton Park in Moncton.

This species prefers to feed on birds, but will also feed on small mammals and turtles. *Cs. minnesotae* does not feed on humans (Wood et al. 1979).

***Culiseta morsitans* (Theobald)**

Cs. morsitans was the most abundant species of *Culiseta* collected in this study. A total of 1,946 adults were captured in 2002 and 2003 and adults were collected at nearly all sites in New Brunswick (Tables 1, 2 and 38). This mosquito species was most abundant at Camping Shippagan (Table 38).

Cs. morsitans overwinters in the egg stage (Morris et al. 1976) and has only one generation of long-lived adults per season (Wood et al. 1979). Adults were captured from the third week of June (one in mid-June at Fredericton) to mid-October (Table 38, Figure 26). Peak adult abundance was reached in mid-July.

The larvae of *Cs. morsitans* live in shaded woodland pools and ponds, in springs, and in sphagnum bogs (Wood et al. 1979). In New Brunswick larvae were most frequently collected from cattail and sedge marshes, and from sphagnum lined pools in black spruce tamarack bogs (Table 4). A few larvae were also collected in a tractor tire. Larvae were present from late May to the first week of July (Table 5).

This species prefers to feed on birds, but will occasionally feed on small mammals and snakes (Wood et al. 1979). It rarely bites man.

***Wyeomyia smithii* (Coquillett)**

Larvae of *Wy. smithii* live in the water filled leaves of pitcher plants, *Sarracenia purpurea*. This species passes the winter as third instar (stage) larvae frozen within the leaves of pitcher plants. The larvae can be found throughout the year in pitcher plants. There is only one adult generation per year, during mid summer. Female *Wy. smithii* are fully autogenous (do not require a blood meal to develop their eggs), and thus do not feed on blood (Wood et al. 1979) and do not pose any threat to humans. Larvae of this species were collected during May, June, and August from pitcher plant leaves in a black spruce bog near site 4 in Fredericton and in the New Scotland Bog north of Moncton. Some of the larvae were reared to adults in artificial containers indoors. *Wy. Smithii* is probably widespread in New Brunswick in bogs.

Seasonality of Potential WNV Vector Species

The seasonal pattern of adult abundance of the 20 potential WNV vector species of mosquitoes caught in CDC traps in 2002 in the Fredericton area is shown in Figure 27. Data on adult abundance in 2003 in southern and northern New Brunswick is shown in Figures 28 and 29, respectively. During 2002, most potential WNV vector species were caught between late June and the third week of August in the Fredericton area (Figure 27). If one excludes *Cq. perturbans*, peak abundance of the other potential WNV vector species was between late July and the third week of August. Potential WNV vector mosquitoes were present from late May to late September in the Fredericton area (Figure 27).

During 2003, there were two distinct peaks in adult abundance of potential WNV vector species in southern New Brunswick, one large peak in early July, and another smaller peak in late August (Figure 28). A similar pattern of seasonal abundance was observed in northern New Brunswick (Figure 29). The second peak in abundance consisted mainly of *Ae. vexans*, *Oc. triseriatus*, and second generation *Ae. cinereus*, *Oc. canadensis*, and *Oc. cantator* (coastal areas only). *Ae. vexans* flew later in 2003 than in 2002, and *Oc. cinereus* had a larger second generation flight at several sites (Table 6). Heavy rains in late July and early August followed by unseasonably warm weather in late August and September created conditions ideal for the production of large late season flights of these two species, and for *Oc. canadensis*. This shows that the seasonal pattern of abundance of potential WNV vector species will vary depending on the occurrences of heavy rains. In 2003, potential WNV vector mosquitoes were present from late May to mid October. They were most abundant during late June and July and in late August and September (Figures 28 and 29). Some of the earliest records were species such as *An. punctipennis*, *Cx. pipiens*, and *Cx. restuans* that overwinter as adults.

Seasonality of Non WNV Vector Species

The seasonal pattern of adult abundance of the non-vector species of mosquitoes caught in CDC traps in the Fredericton area during 2002 is shown in Figure 30. Data on the non-vector species from southern and northern New Brunswick in 2003 is shown in Figures 31 and 32, respectively.

In southern New Brunswick during 2002 and 2003, non-vector species were present from mid May to late September. Greatest abundance occurred during the last 3 weeks of June (Figures 30 and 31). In northern areas greatest abundance generally occurred from the third week of June to mid-July (Figure 32). The major components of this abundance were early season species that develop in snowmelt pools. These species are often the troublesome biters of late spring and early summer. In general, peak abundance of non-vector species of mosquitoes preceded peak abundance of the potential WNV potential vector species throughout New Brunswick.

Overall Seasonality of Adult Mosquitoes

The seasonal pattern of abundance of all mosquitoes caught in the Fredericton area in 2002 is shown in Figure 33. Data from mosquitoes collected in 2003 in southern and northern New Brunswick is shown in Figures 34 and 35, respectively. Mosquitoes first appeared in mid- to late May (some overwintered adults have been observed as early as mid-April in New Maryland) and are present until mid October. In southern New Brunswick mosquitoes were most abundant from mid-June to early July. In northern areas of the province adults were most abundant from the third week of June to mid-July. Throughout the province a second smaller peak in adult abundance occurred in 2003 during late August into September. This second peak in abundance was not apparent from the data from 2002 (Figure 33). As mentioned previously, wet weather in late July and August (and mild late summer and early fall weather) provided ideal conditions for the development of second generation adults of several species of mosquitoes.

Breeding Habitats of Potential WNV Vector Species

Habitats where mosquito larvae were found during 2002 and 2003 are summarized in Table 4. Larvae of potential WNV vector species were found in a variety of wetland habitats. These included salt marshes, sedge marshes, seasonally flooded marshes, cattail marshes, sphagnum lined pools in black spruce bogs, snowmelt pools and other temporary pools in swamps and seasonally flooded forests, drainage ditches, water-filled tire depressions, rain-filled pools in fields, water-filled tire depressions and puddles, and artificial containers, such as tires and buckets. The greatest number of potential

WNV vector species was collected from artificial containers, roadside drainage ditches, cattail marshes and water-filled tire depressions. The larvae of known arbovirus vectors, like *An. punctipennis*, *Cx. pipiens*, *Cx. restuans*, and *Oc. triseriatus*, often breed in artificial containers (normal breeding sites are tree holes). Larvae of these 4 mosquito species were common in tractor tires in Fredericton. *Oc. triseriatus* was also collected from auto tires in a forest site in New Maryland and other artificial containers in Moncton. These species of mosquitoes may pose a significant threat for the transmission of WNV in urban areas of New Brunswick. Removal of artificial containers may reduce breeding sites for these species and reduce the potential threat of WNV.

Species Richness in New Brunswick

Thirty-seven species of mosquitoes were collected during this two-year study. The only species previously recorded from New Brunswick not found during this two-year study was *Ochlerotatus dorsalis* (Meigen). At least 21 to 22 species of mosquitoes (55% of all species known from New Brunswick) were captured at 18 of 25 sites sampled in 2002 and 2003 (Table 39). The greatest number of species (27 and 26) was captured at site 5 in New Maryland and at the Mapleton Park in Moncton. The least number (12 and 13) was collected at the rest area in Saint John, Grand Falls, and in Shippagan (15th St.). In general, highest species richness occurred at sites with the greatest variety of wetland types and lowest at sites with few wetland types. Mapleton Park and Site 5 had a large variety of wetland types (snowmelt pools, drainage ditches, marshes). In contrast, other than the adjacent salt marsh, freshwater breeding sites were nearly absent from the Saint John rest area site. Larval breeding sites were also nearly absent at Grand Falls and Shippagan (15th St.). This was also reflected in the low number of individuals collected at these two sites (Table 39). Only 120 adults were collected at Grand Falls during the entire 2003 season. Low numbers of adults were also collected in downtown Fredericton at Saunders St. and at N.B. Agriculture near Grand Falls. No larval breeding sites were detected near Saunders St., and only a small cattail marsh and drainage ditch occurred near the N.B. Agriculture trap site. The N.B. Agriculture site is typical of many areas in this highly agricultural part of the province. In general, wetlands are uncommon in this region, compared to the forested areas of the province.

Twenty potential WNV vector species of mosquitoes were found in New Brunswick during this study. In 2002 and 2003, the mean number of potential WNV vector species collected per site was 12.3 and 11.8, respectively (overall mean was 11.9 per site) (Table 39). The greatest number caught at one site was 15 (Jemseg, both Moncton sites, and St. Stephen), and least was 8 (Saint John rest area, Stillwater Rd near Kedgwick and Shippagan, 15th St.). As noted above, the highest species richness occurred at sites with a variety of wetland types and lowest at sites with few wetland types

Urban and Residential Sites

Mosquito abundance and species richness in urban sites appears to be closely linked to the proximity of larval breeding habitats. Species richness and abundance of mosquito species was generally lowest in the most urbanized sites. Near downtown Fredericton at Saunders St., only 16 species of mosquitoes and 228 individuals were collected during 2003 (Table 39). Similar results were obtained at 15th St. in Shippagan. These sites were highly developed and no wetlands were detected within 0.5 km of these sites. Low numbers of species and individuals were also found in Grand Falls. This site was within a forested area near a rocky river within Grand Falls. However, no standing water (snow melt pools, drainage ditches) or marshy areas were located within 0.5 km of this site.

Several residential areas (subdivisions) were also sampled during this study. These included a subdivision in Charters Settlement west of New Maryland (Site 5), and a residential area off Lincoln Rd. in Fredericton. Species richness and abundance was much higher at these two sites than in the more urbanized sites (Table 39). Twenty-one species and over 1600 adults were found at each of these two locations. Species richness and abundance was also relatively high at Mapleton Park within the city limits of Moncton. In contrast to the more urbanized sites, many wetland types were present close to all of the above residential sites.

There was no evidence that a significantly greater number or proportion of species that breed in artificial containers were present in urbanized sites than in less urbanized areas.

Summary and Comments on Sampling Methods

Protocols for sampling and monitoring mosquito populations were developed and information was obtained on the seasonal abundance and breeding habitats of species of mosquitoes found in the Fredericton area during 2002. During 2002, over 26,000 adults, represented by 29 species were captured in CDC CO₂ baited traps at the 6 sampling stations in the Fredericton area. Sufficient numbers of adults of most species were captured in CDC traps during the 5 month sampling period to obtain detailed data on their seasonal pattern abundance. Information was also obtained on the larval breeding habitats of potential WNV vector species of mosquitoes from the Fredericton area.

During 2003, the study was expanded to include the entire province. Nineteen sampling stations were established in all seven health regions. Over 39,000 adults were captured. Thirty-five species, including an additional nine species of mosquitoes new to New Brunswick were identified from New Brunswick. A total of 13 species not previously reported from New Brunswick in Wood et al. (1979) were detected in this two year study, bringing the total number of species known from New Brunswick to 38. *Ochlerotatus dorsalis* (Meigen) was the only species previously recorded from New Brunswick not found during this two-year study. Twenty of the 38 species are potential WNV vector species. Important information of the distribution and seasonal pattern of abundance of these mosquito species was obtained in 2003. Data on the breeding habitats and time periods larva were present was obtained for 27 species of mosquitoes.

Between 12 and 27 species of mosquitoes were captured at each site during 2002 and 2003 (mean number per site was 22.5 and 20.7 in 2002 and 2003, respectively). At most sites 55% of all species known from New Brunswick were captured. Although the relative individual abundance of the species varied between sites, a significant proportion of the total number of species known from the province were caught at each site with the sampling protocol used in this study. Often, species not collected at a given site were rare species like *Cs. impatiens*, *Cx. salinarius*, *Cx. territans*, and *Oc. aurifer* in which only a few individuals were collected. This suggests that sampling only 2 sites with different wetland types may be sufficient to obtain a significant proportion of the species of mosquitoes that occur in a given region.

Few problems were encountered during the course of this study. In 2002, the high number (1000's per week) of adults trapped from late spring to mid summer created a backlog of specimens to be identified and it was not possible to identify an entire week's trap catch during the same week. However, in 2003, only minimal backlogs occurred.

Relatively few problems were encountered with adult sampling in 2003 at most of the 19 sampling stations. On a few occasions data was lost due to a trap malfunction or a delayed arrival of samples (resulting in moldy specimens that could not be identified). At the Miramichi, a significant amount of data was lost due to recurrent "trap malfunctions" and stolen traps.

Some problems were also encountered in 2003 with larval sampling. It was apparently difficult for the WNV technicians to locate breeding sites for larvae once many of the early season snowmelt pools had dried (although, at several sites breeding habitats were present in nearby marshes and roadside ditches). As a result, at a number of sites relatively few larval collections were made after early July (even after the heavy rains of late July and August).

Recommendations for Future Work

We now have some excellent information on the species of mosquitoes that occur in New Brunswick, their distribution, seasonal abundance and breeding sites, and the species that are potential WNV mosquito vectors. However, there are a few gaps in the data that should be addressed. There is a large area in central New Brunswick that has not been sampled adequately. Due to trap malfunctions, etc in the Miramichi area in 2003, a significant amount of data was lost on the mosquito species of that region. Miramichi should therefore, probably be sampled again, and additional sampling should be done at sites in central and west-central New Brunswick, such as the Blackville and Woodstock areas.

Additional larval sampling should be done in 2004 to gain a better picture of breeding habitats and periods when larvae are present. Sampling should concentrate on the potential WNV vector species, especially *Oc. sollicitans*, *Oc. sticticus*, and *Oc. stimulans*, as we have little data on the larval habitats of these species in New Brunswick.

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Table 1. Total female mosquito trap catch in miniature CDC CO₂ traps in the Fredericton area during 2002. Species in red* are potential WNV vector species.

Species	Trap Sites						
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Total
<i>Aedes cinereus</i> *	277	708	428	58	78	60	1609
<i>Aedes vexans</i> *	923	2304	17	14	2	8	3268
<i>Ochlerotatus abserratus</i>	35	3	16	193	396	196	839
<i>Ochlerotatus aurifer</i>					5		5
<i>Ochlerotatus canadensis</i> *	14	60	50	408	206	207	945
<i>Ochlerotatus communis</i>	11	6	418	750	745	345	2275
<i>Ochlerotatus decticus</i>				12	4	1	17
<i>Ochlerotatus diantaeus</i>		4	4	11	59	9	87
<i>Ochlerotatus excrucians</i>	15	400	44	180	47	46	732
<i>Ochlerotatus fitchii</i> *	1	36	96	80	15	7	235
<i>Ochlerotatus intrudens</i>	48	175	8	21	46	11	309
<i>Ochlerotatus pionips</i>	2			1	10	5	18
<i>Ochlerotatus provocans</i> *	3	2	56	38	93	33	225
<i>Ochlerotatus punctor</i>	68	9	53	218	458	268	1074
<i>Ochlerotatus punctor/abserratus</i>	41	5	25	172	269	140	652
<i>Ochlerotatus sticticus</i> *	6	6	1	8	8	3	32
<i>Ochlerotatus stimulans</i> *	3	707	25		1		736
<i>Ochlerotatus triseriatus</i> *	4	20			1	96	121
<i>Anopheles earlei</i>	1	25	1		15		42
<i>Anopheles punctipennis</i> *	3	15	20	29	22	24	113
<i>Anopheles walkeri</i> *		2	6		28		36
<i>Culex pipiens</i> *	2	6	2	13			23
<i>Culex restuans</i> *		1	1	2	1	1	6
<i>Culex salinarius</i> *	1	3					4
<i>Culex territans</i> *	2				1	5	8
<i>Culiseta impatiens</i>					1		1
<i>Culiseta minnesotae</i>	1		2	2	1		6
<i>Culiseta morsitans</i>	10	84	18	66	11	9	198
<i>Coquillettidia perturbans</i> *	749	519	7690	1077	2317	224	12576
<i>Psorophora ferox</i> *		1					1
Total number of individuals	2220	5101	8981	3353	4840	1698	26193
Total number of species	22	23	21	21	27	21	29
Potential WNV species	13	15	12	10	13	11	16

Table 2. Total female mosquito trap catch in miniature CDC CO₂ traps during 2003.

Species in red* are potential WNV vector species.

Species	Trap sites and Health Regions																Total capture				
	1	1	2	2	2	2	3	3	4	4	5	5	6	6	6	6		7	7		
	Moncton, Mapleton Park	New Scotland Bog	Saint John, Rest Area	Grand Bay-Westfield	Oak Bay	St. Stephen	Fredericton, Lincoln Rd.	Fredericton, Saunders St.	Grand Falls	Grand Falls, NB Agric.	Kedgwick, Morin Bog	Kedgwick, Stillwater Rd.	Bathurst, Daly Point Reserve	Bathurst, Welcome Sign	Village Acadlen	Shippagan, Camping Shippagan	Shippagan, 15th St.	Miramichi, Industrial Park	Miramichi, Nowlanville		
<i>Aedes cinereus</i> *	29	166	38	53	18	36	148	19	10	18	22	105	522	583	276	56					2286
<i>Aedes vexans</i> *	112	51	25	71	60	39	750	109	11	21	18	52	546	61	30	28	8	88	46		2126
<i>Ochlerotatus abserratus</i>	301	639		3	38	50	149	7	1	4	97	5	186	90	30	31	13	24	61		1729
<i>Ochlerotatus abserratus/punctor</i>							30		1	2	152	40	138	71	16	37	3				490
<i>Ochlerotatus atropalpus</i> *									6												6
<i>Ochlerotatus canadensis</i> *	1195	649	14	69	140	481	67	20	54	113	541	677	481	369	199	294	9	116	308		5796
<i>Ochlerotatus cantator</i> *	1087	29	588	53	15	12	1						913	22	1233	1653	429	12	2		6049
<i>Ochlerotatus communis</i>	2818	1422	2	2	88	176	45	1		16	381	1430	232	444	42	126		173	87		7485
<i>Ochlerotatus decticus</i>	3	4									16										23
<i>Ochlerotatus diaetaeus</i>	373	214	1		11	21	21			1	10	278	12		2	46		1	7		998
<i>Ochlerotatus euedes</i>							1														1
<i>Ochlerotatus excrucians</i>	228	127			37	65	33	7		10	20	34	24	40	8	76	1	25	10		745
<i>Ochlerotatus fitchii</i> *	81	10		1	23	64	5	4	1	16	26	44	5	35	2	256	5	30	10		618
<i>Ochlerotatus hendersoni</i>						1															1
<i>Ochlerotatus implicatus</i>	9				3					2	13	2	2	6	20	7		4	3		71
<i>Ochlerotatus intrudens</i>	15	5			2		183	2	1	1	15	61	5	13	14	18		27	30		392
<i>Ochlerotatus pionips</i>	2					1															5
<i>Ochlerotatus provocans</i> *	58	5			18	176	43	6	3	4	6	7	145	39	3	40	1	236	7		797
<i>Ochlerotatus punctor</i>	256	531	1	4	53	121	157	9	3	4	419	85	76	251	35	95	3	26	210		2339
<i>Ochlerotatus sollicitans</i> *	1												140	1	11	2	3				158
<i>Ochlerotatus sticticus</i> *		2				1	35	1				1							1		41
<i>Ochlerotatus stimulans</i> *	24	1		1	47	31	12						18			1		46			181
<i>Ochlerotatus triseriatus</i> *	10	31	1	10	24	1	4	1	27	10			38	9	1	2		13	7		189
<i>Anopheles earlei</i>				2							1										3
<i>Anopheles punctipennis</i> *	6	2		1	3	16	12	1		1	3	8	5	6				7	5		76
<i>Anopheles walkeri</i> *						1								4	22				9		36
<i>Culex pipiens</i> *	4	3	18	1	6	6	16	2	1	2	1		1	2	2	3	3	5	1		77
<i>Culex restuans</i> *		2			1	1					1			1							9
<i>Culex salinarius</i> *	1		5												1						7
<i>Culex territans</i> *	2	5										1	2		1	2				1	14
<i>Culiseta impatiens</i>											2	1									3
<i>Culiseta melanura</i> *	7	37		1	3	10					1			1				114	47		221
<i>Culiseta minnesotae</i>	1				1						4							10	3		19
<i>Culiseta morsitans</i>	21	80	8	11	31	73	4	5			33	4	161	39	35	1172	19	46	6		1748
<i>Coquillettidia perturbans</i> *	120	105	28	212	77	742	214	34	1	3	39	35	601	404	1097	8	3	42	622		4387
Total number of individuals	6765	4117	729	495	699	2125	1930	228	120	228	1820	2869	4253	2491	3080	3953	500	1161	1559		39122
Total number of species	27	23	12	16	22	23	21	16	13	17	23	18	22	22	22	21	13	21	25		34
Potential WNV species	15	15	8	11	13	15	12	10	9	9	10	8	13	14	13	12	8	12	12		19

Table 3. Mosquito species occurring in New Brunswick and WNV vector and pest status.

Species	Potential WNV Vector*	Human Pest Status	Adult Preferred Hosts	Larval Breeding Habitats in N.B.
Aedes				
<i>cinereus</i> Meigen	X	Major	Mammals	Sedge and Cattail marshes
<i>vexans</i> Meigen	X	Major	Mammals	Drainage ditches, flooded fields
Ochlerotatus				
<i>abserratus</i> (Felt & Young)		Major	Mammals	Snowmelt pools, sedge marshes
<i>atropalpus</i> Coquillett	X	Rarely bites man	Mammals	Rock pools near rivers
<i>aurifer</i> (Coquillett)		Rare species		
<i>canadensis</i> (Theobald)	X	Major	Mammals, will feed on birds and amphibians	Marshes, bog pools, puddles, artificial containers
<i>cantator</i> (Coquillett)	X	Major	Mammals	Salt marshes
<i>communis</i> (DeGeer)		Major	Mammals	Snowmelt pools
<i>decticus</i> Howard, Dyar & Knab		Rare species		Sphagnum lined pools in bogs
<i>diantaeus</i> Howard, Dyar & Knab		Rare species		Sphagnum lined pools in bogs, snowmelt pools
<i>euedes</i> Howard, Dyar & Knab		Rare species		
<i>excrucians</i> (Walker)		Major	Mammals	Floodplain forest pools, drainage ditches, marshes
<i>fitchii</i> Felt & Young	X	Major	Mammals	Drainage ditches
<i>hendersoni</i> Cockerell		Rare species		
<i>implicatus</i> Vockeroth		Rare species		Snowmelt pools, drainage ditches
<i>intrudens</i> Dyar		Uncommon	Mammals	Floodplain forest pools
<i>pionips</i> Dyar		Rare species		Sphagnum lined pools in bogs, snowmelt pools
<i>provocans</i> (Walker)	X	Major	Mammals	Snowmelt pools
<i>punctor</i> (Kirby)		Major	Mammals	Snowmelt pools, puddles, marshes
<i>sollicitans</i> (Walker)	X	Major	Mammals	Salt marshes
<i>sticticus</i> (Meigen)	X	Uncommon	Mammals	
<i>stimulans</i> (Walker)	X	Major	Mammals	
<i>triseriatus</i> (Say)	X	Minor (locally common)	Mammals?	Artificial containers
Anopheles				
<i>earlei</i> Vargas		Minor	Mammals	Drainage ditches
<i>punctipennis</i> (Say)	X	Uncommon species	Mammals	Artificial containers, drainage ditches, marshes
<i>walkerii</i> Theobald	X	Uncommon species	Mammals	

Table 3. Continued.

Species	Potential WNV Vector*	Human Pest Status	Adult Preferred Hosts	Larval Breeding Habitats in N.B.
Coquillettidia				
<i>perturbans</i> (Walker)	X	Major	Mammals and birds	Marshes (attached to roots)
Culex				
<i>pipiens</i> Linnaeus	X	Rarely bites man	Birds, but will feed on man	Artificial containers, drainage ditches
<i>restuans</i> Theobald	X	Rarely bites man	Birds, but will feed on man	Artificial containers
<i>salinarius</i> Coquillett	X	Rarely bites man	Birds, but will feed on man	Artificial containers
<i>territans</i> Walker	X	Rarely bites man	Reptiles and amphibians but may feed on man	Artificial containers, drainage ditches, marshes
Culiseta				
<i>impatiens</i> (Walker)		Rarely bites man		Artificial containers
<i>melanura</i> (Coquillett)	X	Rarely bites man	Birds, rarely bites man	Sphagnum lined pools in bogs
<i>minnesotae</i> Barr		Probably does not feed on man	Birds, small mammals, turtles	Boggy ditch
<i>morsitans</i> (Theobald)		Rarely bites man	Birds, small mammals, snakes	Marshes, sphagnum lined pools in bogs
Psorophora				
<i>ferox</i> (Humboldt)	X	Rare species	Mammals	
Wyeomyia				
<i>smithii</i> (Coquillett)		Does not bite man	Does not feed	Water-filled pitchers of pitcher plants

Table 4. Larval breeding habitats of mosquito species found in New Brunswick during 2002 and 2003. Species in red* are potential WNV vector species. A large **X** denotes the most frequent habitat(s) where larvae were found.

Species	Salt marsh	Sedge marsh	Seasonally flooded sedge marsh	Cattail marsh	Water filled depressions in swamps	Seasonally flooded floodplain forest pools	Snowmelt pools	Temporary pond	Sphagnum lined pools in open black spruce bog	Pools in forested margin of black spruce bog	Pitcher plant in black spruce bog	Roadside drainage ditches	Rain filled pools in fields	Water filled (tires and puddles) depressions	Rock pools (streams and rivers)	Artificial Containers (Tires, bucket, plastic containers)
<i>Aedes cinereus</i> *	x	X	x	X	x	x		x		x		x		x		
<i>Aedes vexans</i> *				x	x							X	X	x		
<i>Ochlerotatus abserratus</i>		X					X	x		x		x				
<i>Ochlerotatus atropalpus</i> *																
<i>Ochlerotatus aurifer</i>																
<i>Ochlerotatus canadensis</i> *		x		X	x		x	x	X	x		X		X	x	X
<i>Ochlerotatus cantator</i> *	X											x				
<i>Ochlerotatus communis</i>		x					X		x			x				
<i>Ochlerotatus decticus</i>		x							X							
<i>Ochlerotatus diantaeus</i>							x		x							
<i>Ochlerotatus euedes</i>																
<i>Ochlerotatus excrucians</i>		x	X		x	X			x	x		X		x		
<i>Ochlerotatus fitchii</i> *				x			x					X				
<i>Ochlerotatus hendersoni</i>																
<i>Ochlerotatus implicatus</i>		x					x					x				
<i>Ochlerotatus intrudens</i>						X		x				x				
<i>Ochlerotatus pionips</i>								x	x							
<i>Ochlerotatus provocans</i> *		x					X									
<i>Ochlerotatus punctor</i>		x		x	x		X	x	x	x		x		x	x	
<i>Ochlerotatus sollicitans</i> *																
<i>Ochlerotatus sticticus</i> *																
<i>Ochlerotatus stimulans</i> *																
<i>Ochlerotatus triseriatus</i> *																X
<i>Anopheles earlei</i>												X				
<i>Anopheles punctipennis</i> *				x	x	x						x		x		X
<i>Anopheles walkeri</i> *																
<i>Culex pipiens</i> *							x					x		x		X
<i>Culex restuans</i> *				x										x		X
<i>Culex salinarius</i> *																X
<i>Culex territans</i> *		x		x	x				x			x				X
<i>Culiseta impatiens</i>																X
<i>Culiseta melanura</i> *									x							
<i>Culiseta minnesotae</i>									x**							
<i>Culiseta morsitans</i>		x	x	X					X							x
<i>Coquillettidia perturbans</i> *																
<i>Psorophora ferox</i> *																
<i>Wyomyia smithii</i>											X					
No. WNV species per habitat type	2	4	1	7	5	2	4	2	3	2	0	8	1	6	1	7

** Boggy ditch (sphagnum lined)

Table 5. Weeks during which mosquito larvae were collected in New Brunswick in 2002 and 2003.

Species in **red*** denotes potential WNV vector species.

Species	Week																											
	30-Apr	7-May	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov
<i>Aedes cinereus*</i>		▲	▲	▲	▲	▲	▲	▲	▲		▲	▲	▲	▲	▲	▲	▲			▲	▲	▲						
<i>Aedes vexans*</i>					▲		▲					▲	▲	▲	▲	▲	▲			▲	▲							
<i>Ochlerotatus abserratus</i>		▲	▲	▲	▲	▲																						
<i>Ochlerotatus canadensis*</i>		▲	▲	▲	▲	▲	▲	▲	▲		▲	▲	▲	▲	▲	▲	▲	▲			▲	▲						
<i>Ochlerotatus cantator*</i>			▲	▲	▲	▲	▲	▲	▲	▲												▲	▲					
<i>Ochlerotatus communis</i>	▲	▲	▲	▲	▲																							
<i>Ochlerotatus decticus</i>				▲	▲	▲																						
<i>Ochlerotatus diantaeus</i>					▲		▲																					
<i>Ochlerotatus excrucians</i>				▲	▲	▲	▲	▲																				
<i>Ochlerotatus fitchii*</i>				▲	▲	▲	▲	▲																				
<i>Ochlerotatus implicatus</i>			▲	▲	▲																							
<i>Ochlerotatus intrudens</i>			▲	▲	▲	▲	▲	▲																				
<i>Ochlerotatus pionips</i>						▲	▲																					
<i>Ochlerotatus provocans*</i>	▲	▲																										
<i>Ochlerotatus punctor</i>	▲	▲	▲	▲	▲	▲																						
<i>Ochlerotatus triseriatus*</i>					▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Anopheles earlei</i>								▲								▲		▲										
<i>Anopheles punctipennis*</i>											▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Culex pipiens*</i>					▲		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Culex restuans*</i>											▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲						
<i>Culex salinarius*</i>											▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Culex territans*</i>						▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<i>Culiseta impatiens</i>						▲	▲	▲	▲	▲	▲																	
<i>Culiseta melanura*</i>				▲																								
<i>Culiseta minnesotae</i>				▲																								
<i>Culisetas morsitans</i>					▲	▲	▲	▲	▲		▲																	
<i>Wyeomyia smithii</i>				▲			▲	▲	▲						▲													

Table 6. Female *Aedes cinereus* trap catch in miniature CDC CO₂ traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT	6	2	6	1	7	1	47	128	22	15	14	5	13	5	4	1	NT	NT	NT
Site 2, Cambridge	3				NT	39	138	187	123	35	26	15	27	13	19	34	27	9	20	5	1	NT	NT	NT
Site 3, Douglas	3				NT	20	7	159	128		28	7	8		23	10	16		12	6	4	NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	1	1	7	8			2	5	2	8	12	3	2	4	2	1	NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT		1	5	6				2	4	14	17	6	6	15	1	1	NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT	1		5	2				1	2	25	9	7	1	3	1	3	NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT				1	1	2	8	3	2			1	1		3	4		3				
New Scotland Bog	1	NT				1	6	6	16	1	1	1	3		2	34	48	29	8	7	7	4	1	
Saint John, Rest Area	2	NT									NT	1		8		16	1	3	4	3	2			
Grand Bay-Westfield	2	NT									1		1			3	39	4	4		1	NT	NT	NT
Oak Bay	2	NT				3	1	1	1	NT			3	1	4	1	1	2						
St. Stephen	2	NT				3	4	8	6	1						9	1			1		3		1
Fredericton, Saunders St.	3					3	3	2	1		1						8	1						
Fredericton, Lincoln Rd.	3				1	11	46	5	5	1	1	1		1		3	65	27	7	1	1			1
Grand Falls	4	NT					1								2	3	3	1		1				
Grand Falls, NB Agric.	4	NT					3	1							1	1	10	1	3					
Kedgwick, Stillwater Rd.	5	NT					6	NT	7	1	10	4	3	7	24	19	1	6			3		3	
Kedgwick, Morin Bog	5	NT					3	3	3		2		2		1	1	1	14	6	2	NT		1	
Bathurst, Daly Point Reserve	6	NT	NT				4		59	14	46	10	19	16	21	1	6	134	65	50	76			1
Bathurst, Bathurst Welcome Sign	6	NT	NT			3	31	17	21	7	14	2	1	3	15	13	11	109	143	145	53	7		
Village Acadien	6	NT	NT				5	3	4	21	15	1	4	2	14	4	1	62	89	24	14	6	1	8
Shippagan, Camping Shippagan	6	NT	NT					1		26	13	4	1	2				6		2		1		
Shippagan, 15th St.	6	NT	NT																					
Miramichi, Industrial Park	7	NT				5	10	NT	1		2	7	NT	1	24	1	NT	63	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT			10	4	4		13		NT	40	NT	NT	NT	NT	NT	NT

Table 7. Female *Aedes vexans* trap catch in miniature CDC CO₂ traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT						13	317	368	42	75	23	14	23	30	13	5	NT	NT	NT
Site 2, Cambridge	3				NT	1			1		106	333	565	172	321	395	243	91	47	15	14	NT	NT	NT
Site 3, Douglas	3				NT						2	4	3	3		3	1	1				NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT								3	2	6	2	1					NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT										1	1						NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT							2	1	3					2			NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT							1			2				39	13	5	3	37	7	5		
New Scotland Bog	1	NT														24	12	7	5	4				
Saint John, Rest Area	2	NT									NT					4	3	3	11	1	3			
Grand Bay-Westfield	2	NT														14	12	8	23	8	6	NT	NT	NT
Oak Bay	2	NT						2		NT						5	5	3	32	4	3	1	1	4
St. Stephen	2	NT							1							5	10		3	11	5	3		
Fredericton, Saunders St.	3							2	1							8	36	18	29	9	3	3		
Fredericton, Lincoln Rd.	3					5			1	1	1		1	1	108	181	140	156	93	43	17	2		
Grand Falls	4	NT														2	3	2		1	2	1		
Grand Falls, NB Agric.	4	NT											1	3	1	8		4	2	1				1
Kedgwick, Stillwater Rd.	5	NT					NT							7	4	3	6	1	1	6				
Kedgwick, Morin Bog	5	NT							2			1			2	2	9	11	4	11	NT			
Bathurst, Daly Point Reserve	6	NT	NT					1	8	3	7	4	1	5	2		5	102	64	218	131	6		2
Bathurst, Bathurst Welcome Sign	6	NT	NT					2						4	3	1	24	12	8	8	1			
Village Acadien	6	NT	NT					1	1	1					3		12	7	9		1			1
Shippagan, Camping Shippagan	6	NT	NT						1	4	1	1			3			7	3	2	8			
Shippagan, 15th St.	6	NT	NT														3	1	3	1				
Miramichi, Industrial Park	7	NT						NT				2	NT	1	2		NT	81	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT	46	NT	NT	NT	NT	NT	NT

Table 8. Female *Ochlerotatus atropalpus* trap catch in miniature CDC CO₂ traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT									2			4											
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT					NT																	
Bathurst, Bathurst Welcome Sign	6	NT	NT					NT																	
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT					NT																	
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 9. Female *Ochlerotatus canadensis* trap catch in miniature CDC CO₂ traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT			1	1	1		3	2	1	1	2		1		1		NT	NT	NT
Site 2, Cambridge	3				NT	6			2				30	16		1	4				1	NT	NT	NT
Site 3, Douglas	3				NT	6	4	20	3			3	6	1	2	2	2				1	NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	12	54	60	44	3	7	9	34	36	73	35	19	11	3	7	1	NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	26	41	15	15	2	9	2	8	30	26	10	8	5	6	2	1	NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT	21	38	22	10	5	12	13	13	21	17	15	7	4	2	1	1	NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT			7	101	113	448	149	108	102	24	40	7	8	20	17	18	14	11	5	3		
New Scotland Bog	1	NT				14	51	197	122	53	106	2	33		24	5	11	18	6	1	1	5		
Saint John, Rest Area	2	NT							3	1	NT					4			4	2				
Grand Bay-Westfield	2	NT				1			25	4	6		5			6	15		5	1	1	NT	NT	NT
Oak Bay	2	NT				4	7	6	18	NT	8	27	38	5	2	4	11	1	8	1				
St. Stephen	2	NT				15	27	65	118	71	93	18	19	1	14	12	17		3	2	2	4		
Fredericton, Saunders St.	3					3	1	5	3	1	1	1		1		1		2					1	
Fredericton, Lincoln Rd.	3			1	3	10	21	7	11		2			2	1	3	2	1	2	1				
Grand Falls	4	NT							2	5	2	3	11		4	20	5	2						
Grand Falls, NB Agric.	4	NT					5	1	16	2	5	2		1	37	5	28	1	1	9				
Kedgwick, Stillwater Rd.	5	NT				2	25	NT	85	79	68	15	44	5	77	93	27	56	12	10	15	2	1	
Kedgwick, Morin Bog	5	NT					23	38	79	24	118	37	40	21	26	27	40	69	35	23	NT	3	1	
Bathurst, Daly Point Reserve	6	NT	NT				12	27	205	31	64	50	26	39	13	2		8	2		1			2
Bathurst, Bathurst Welcome Sign	6	NT	NT			1	22	39	74	37	38	14	13	8	10	7	6	36	16	25	21	3		
Village Acadien	6	NT	NT				3	7	25	42	36	22	13	5	12	2	3	10	13	2	3		1	
Shippagan, Camping Shippagan	6	NT	NT				8	7	6	50	110	48	15	5	16	4		18	3	2	5	2		
Shippagan, 15th St.	6	NT	NT								5	2							2					
Miramichi, Industrial Park	7	NT				1	4	NT	2	4	8	30	NT	4	58	1	NT	4	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT				5	NT	8	0	120	21	95	4	51			NT	4	NT	NT	NT	NT	NT	NT

Table 10. Female *Ochlerotatus cantator* trap catch in miniature CDC CO₂ traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT		1	93	122	209	197	104	7	4	2				4	135	163	9	20	6		11		
New Scotland Bog	1	NT				5	6	10	2		4								2						
Saint John, Rest Area	2	NT				1			17	189	NT	6	13	75	72	115	12		68	9	4	4	3		
Grand Bay-Westfield	2	NT							6	4	5			1	10	7	20					NT	NT	NT	
Oak Bay	2	NT				1	4		2	NT			3				3			2					
St. Stephen	2	NT									1					5	1		1			4			
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																1								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT				13	19	119	25	11	77	26	259	221	5	3	62	12	15	24	7		1	
Bathurst, Bathurst Welcome Sign	6	NT	NT				3	3	2	1	1				1	1		7		2					
Village Acadien	6	NT	NT		1	3	42	59	86	98	44	25	51	126	156	82	58	224	62	68	9	31	2	2	
Shippagan, Camping Shippagan	6	NT	NT			2	288	14	44	283	197	162	43	115	171	58		124	77	56		12			
Shippagan, 15th St.	6	NT	NT			3	15	31	2	40	39	14	17	42	61	31	9	81	33	4	7				
Miramichi, Industrial Park	7	NT					3	NT				4	NT	3	1		NT	1	NT	NT	NT	NT	NT	NT	
Miramichi, Nowlanville	7	NT						NT					2				NT		NT	NT	NT	NT	NT	NT	

Table 11. Female *Ochlerotatus fitchii* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3			1	NT																		NT	NT	NT
Site 2, Cambridge	3				NT	14	16	3	3														NT	NT	NT
Site 3, Douglas	3				NT	14	5	53	16	1	6	1											NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	8	11	31	8	9	2	5	5		1								NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT		3	12															NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT	2	1			1	2		1										NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT		1		12	22	17	5	6	4	8	2	1	2	1									
New Scotland Bog	1	NT				2	3	3		2															
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT											1										NT	NT	NT
Oak Bay	2	NT				10	8	1		NT	1	3													
St. Stephen	2	NT				4	18	3	11	10	9	6	1			1	1								
Fredericton, Saunders St.	3								4																
Fredericton, Lincoln Rd.	3						2			1			2												
Grand Falls	4	NT							1																
Grand Falls, NB Agric.	4	NT				1	14		1																
Kedgwick, Stillwater Rd.	5	NT				3	NT	5	11	3		10	4	1	5										
Kedgwick, Morin Bog	5	NT				2	1	7	2	3	1	6	4					1	1		NT				
Bathurst, Daly Point Reserve	6	NT	NT					1	2		1		1												
Bathurst, Bathurst Welcome Sign	6	NT	NT			13	4	12	1	2	1	1							1						
Village Acadien	6	NT	NT			1			1																
Shippagan, Camping Shippagan	6	NT	NT			4	10	1	78	66	15	29	18	29	5			1							
Shippagan, 15th St.	6	NT	NT					2		2					1										
Miramichi, Industrial Park	7	NT				6	1	NT			14	7	NT	2					NT		NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT		2	4	3	1						NT		NT	NT	NT	NT	NT

Table 12. Female *Ochlerotatus provocans* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT	1	1	1															NT	NT	NT
Site 2, Cambridge	3				NT		1				1												NT	NT	NT
Site 3, Douglas	3		6	6	NT	12	8	16	1	4	3												NT	NT	NT
Site 4, Fredericton (forested bog)	3			1	NT	9	7	16	4	1													NT	NT	NT
Site 5, New Maryland (marsh/forest)	3			5	NT	41	33	6	6	2													NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3			2	NT	15	7	2	5	1													NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT		3	21	13	6	12	1		2														
New Scotland Bog	1	NT				3	1			1															
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT	1		11	5	1			NT															
St. Stephen	2	NT	1		57	87	14	14	1	1	1														
Fredericton, Saunders St.	3				2		2			1	1														
Fredericton, Lincoln Rd.	3				13	8	15		4	2															
Grand Falls	4	NT					1	1					1												
Grand Falls, NB Agric.	4	NT				2	1			1															
Kedgwick, Stillwater Rd.	5	NT					3	NT	3		1														
Kedgwick, Morin Bog	5	NT						1	2	2	1												NT		
Bathurst, Daly Point Reserve	6	NT	NT				96	1	21	11	7	9													
Bathurst, Bathurst Welcome Sign	6	NT	NT			12	21	3	1	2															
Village Acadien	6	NT	NT				2		1																
Shippagan, Camping Shippagan	6	NT	NT			6	32			1	1														
Shippagan, 15th St.	6	NT	NT				1																		
Miramichi, Industrial Park	7	NT			202	32	2	NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT			5	2	1	NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 13. Female *Ochlerotatus sollicitans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT														1									
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																					NT		
Bathurst, Daly Point Reserve	6	NT	NT						1	9	16	1	30	27	51	1						2			
Bathurst, Bathurst Welcome Sign	6	NT	NT								1	1													
Village Acadien	6	NT	NT							2		1	2	4	2										
Shippagan, Camping Shippagan	6	NT	NT								2														
Shippagan, 15th St.	6	NT	NT							1			2												
Miramichi, Industrial Park	7	NT						NT					NT						NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT											NT	NT	NT	NT	NT	NT	NT

Table 14. Female *Ochlerotatus sticticus* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT							5	1										NT	NT	NT
Site 2, Cambridge	3				NT				4						1	1							NT	NT	NT
Site 3, Douglas	3				NT		1																NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT				2	5			1										NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT				5	3													NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT				3														NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT											2												
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																	1						
Fredericton, Saunders St.	3							1																	
Fredericton, Lincoln Rd.	3				5	7	8	8	6									1		1					
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT							1										
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT				1																		
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT					NT		NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT							1		NT		NT	NT	NT	NT	NT	NT	NT

Table 15. Female *Ochlerotatus stimulans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT			2		1													NT	NT	NT
Site 2, Cambridge	3			9	NT	53	75	75	174	77	58	68	47	22	28	16	5						NT	NT	NT
Site 3, Douglas	3				NT	3		5	10	1	3		2	1									NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT			1															NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT					7	3	3	2	3		1	2	1	2									
New Scotland Bog	1	NT				1																			
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT							1														NT	NT	NT
Oak Bay	2	NT				7	22		8	NT	1	3	4	1	1										
St. Stephen	2	NT				5	3	5		3	4		4	2	3	2									
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3					2	2		4	2	1			1											
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																					NT		
Bathurst, Daly Point Reserve	6	NT	NT						2	3		4	4	4	1			2							
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT									1													
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT	5		13	15	NT	12				NT	1	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT										NT		NT	NT	NT	NT	NT	NT

Table 16. Female *Ochlerotatus triseriatus* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT							2				2							NT	NT	NT
Site 2, Cambridge	3				NT	1			1		2	2	7		1		6						NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT											1							NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT						6	6	10	4	33	19	9	2	4	2			NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT										1	1			3	3				2				
New Scotland Bog	1	NT										1	2		8	4	4	3	4	2	1	2			
Saint John, Rest Area	2	NT									NT				1										
Grand Bay-Westfield	2	NT														5	5						NT	NT	NT
Oak Bay	2	NT								NT		1	13			6	2		2						
St. Stephen	2	NT														1									
Fredericton, Saunders St.	3													1											
Fredericton, Lincoln Rd.	3															3							1		
Grand Falls	4	NT							1	5	1	12				1	1		1						
Grand Falls, NB Agric.	4	NT									2	1			1	3	2	1							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																					NT		
Bathurst, Daly Point Reserve	6	NT	NT								5	1	2	2	5	2		4	7	6	4				
Bathurst, Bathurst Welcome Sign	6	NT	NT											1	3			3	1	1					
Village Acadien	6	NT	NT										1												
Shippagan, Camping Shippagan	6	NT	NT																2						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT			1		NT		5		NT	7	NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT			1			1	1		NT	4	NT	NT	NT	NT	NT	NT	NT

Table 17. Female *Anopheles punctipennis* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT			2	1														NT	NT	NT
Site 2, Cambridge	3				NT				1			7	1	1	3	1	1						NT	NT	NT
Site 3, Douglas	3				NT			7	6		3						3		1				NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	1			7	1		1	2		13	3	1						NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT			5	5	2			2	1	2	2	1		2				NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3	1	1		NT			7	3		1				7		2						NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT						1	1		1					2				1					
New Scotland Bog	1	NT														1		1							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT											1										NT	NT	NT
Oak Bay	2	NT				1				NT				2											
St. Stephen	2	NT			1	2	2	3	2	2	1					3									
Fredericton, Saunders St.	3													1											
Fredericton, Lincoln Rd.	3					3	1	1		2	1		3	1											
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT												1											
Kedgwick, Stillwater Rd.	5	NT		1				NT	1	1	1		1	1									1		
Kedgwick, Morin Bog	5	NT							1				1			1		1				NT			
Bathurst, Daly Point Reserve	6	NT	NT								3	1			1										
Bathurst, Bathurst Welcome Sign	6	NT	NT	1									1	1	1	1	1								
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT				5	NT	1			NT	1	NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT				1		3	1		NT		NT	NT	NT	NT	NT	NT	NT

Table 18. Female *Anopheles walkeri* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT				1										1				NT	NT	NT
Site 3, Douglas	3				NT			2			1				1				2				NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT			7	20									1					NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																	1						
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT									2				2									
Village Acadien	6	NT	NT								2	1		1	10	1	2	2	1	2					
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT		1					8		NT		NT	NT	NT	NT	NT	NT	NT

Table 19. Female *Culex pipiens* trap catch in miniature CDC CO2 baited traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT							1		1								NT	NT	NT
Site 2, Cambridge	3				NT					1		2		2	1							NT	NT	NT
Site 3, Douglas	3				NT							1	1									NT	NT	NT
Site 4, Fredericton (forested bog)	3		1		NT							2	1	1	4	4		1				NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																	NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																	NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT	1								2					2								
New Scotland Bog	1	NT				1				1	1					1								
Saint John, Rest Area	2	NT	1								NT		1			3	5					6		2
Grand Bay-Westfield	2	NT									1											NT	NT	NT
Oak Bay	2	NT							3	NT	1	2												
St. Stephen	2	NT							2		1				1	2								
Fredericton, Saunders St.	3											1					1							
Fredericton, Lincoln Rd.	3								1		6	1	1		1	1	2		2		1			
Grand Falls	4	NT											1											
Grand Falls, NB Agric.	4	NT														2								
Kedgwick, Stillwater Rd.	5	NT						NT																
Kedgwick, Morin Bog	5	NT									1											NT		
Bathurst, Daly Point Reserve	6	NT	NT								1													
Bathurst, Bathurst Welcome Sign	6	NT	NT												1				1					
Village Acadien	6	NT	NT								2													
Shippagan, Camping Shippagan	6	NT	NT													1		2						
Shippagan, 15th St.	6	NT	NT										1		1		1							
Miramichi, Industrial Park	7	NT						NT				2	NT	2	1		NT		NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT					1				NT		NT	NT	NT	NT	NT	NT

Table 20. Female *Culex restuans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT									1									NT	NT	NT
Site 3, Douglas	3				NT						1												NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT									1	1								NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT						1												NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT										1								NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT												2											
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT							1	NT															
St. Stephen	2	NT				1																			
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT											1										NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT													1									
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT	1																					
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT						3			NT		NT	NT	NT	NT	NT	NT	NT

Table 21. Female *Culex salinarius* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT							1											NT	NT	NT
Site 2, Cambridge	3				NT							3											NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT															1								
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT						4					1			
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																1						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 22. Female *Culex territans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT	1						1											NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT														1				NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT									1				4					NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT															1					1			
New Scotland Bog	1	NT														3				1	1				
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																1	
Kedgwick, Morin Bog	5	NT																				NT			
Bathurst, Daly Point Reserve	6	NT	NT						1												1				
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT													1									
Shippagan, Camping Shippagan	6	NT	NT																			2			
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT					NT		NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT							1			NT		NT	NT	NT	NT	NT	NT

Table 23. Female *Culiseta melanura* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT						1	5							1									
New Scotland Bog	1	NT				4	15	2		1	2				2	8	1	1	1	1	2	1			
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																	1				NT	NT	NT
Oak Bay	2	NT								NT						2						1			
St. Stephen	2	NT										1				4	4								1
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT							1														NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT													1									
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT		50	63	NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT				6	5	2	34		NT		NT	NT	NT	NT	NT	NT	NT

Table 24. Female *Coquillettidia perturbans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT			53	191	135	121	164	69	8	8								NT	NT	NT
Site 2, Cambridge	3				NT			6	135	106	103	112	40	12	5								NT	NT	NT
Site 3, Douglas	3				NT	4	1670	2673	309	2373	377	258	15	8	2	1							NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT			91	784	71	98	18	13		2								NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	2	378	1216	69	441	105	52	31	18	4	1							NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT			12	140	20	27	19	1	3	2								NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT						1	23	46	41	4	5												
New Scotland Bog	1	NT						2	17	23	43	10	4	4	2										
Saint John, Rest Area	2	NT							8	8	NT	8	4												
Grand Bay-Westfield	2	NT							24	11	83	65	27	2									NT	NT	NT
Oak Bay	2	NT						1	13	NT	18	33	2												
St. Stephen	2	NT							499	93	82	14	53	1											
Fredericton, Saunders St.	3							3	7	7	9	6	2												
Fredericton, Lincoln Rd.	3							5	42	61	50	49	6	1											
Grand Falls	4	NT									1														
Grand Falls, NB Agric.	4	NT								1		2													
Kedgwick, Stillwater Rd.	5	NT						NT	5	11	16		2	1											
Kedgwick, Morin Bog	5	NT								2	25	7	5									NT			
Bathurst, Daly Point Reserve	6	NT	NT						12	26	364	184	13	2											
Bathurst, Bathurst Welcome Sign	6	NT	NT					4	12	195	121	48	14	6	3	1									
Village Acadien	6	NT	NT					1	57	671	297	48	21	7	4										
Shippagan, Camping Shippagan	6	NT	NT							3	5														
Shippagan, 15th St.	6	NT	NT							2	1														
Miramichi, Industrial Park	7	NT						NT		10		31	NT		1		NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT	18		372	178	36	15	3		NT		NT	NT	NT	NT	NT	NT	NT

Table 25. Female *Ochlerotatus abserratus* trap catch in miniature CDC CO2 traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3			2	NT	17	15	1														NT	NT	NT	
Site 2, Cambridge	3				NT	2		1														NT	NT	NT	
Site 3, Douglas	3		1		NT	5	4	6														NT	NT	NT	
Site 4, Fredericton (forested bog)	3				NT	99	31	54	3	5			1									NT	NT	NT	
Site 5, New Maryland (marsh/forest)	3				NT	195	182	17		2												NT	NT	NT	
Site 6, New Maryland (Charters Settlement)	3			6	NT	132	36	13		3					1							NT	NT	NT	
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT	6	4	6	160	69	39	13	3						1									
New Scotland Bog	1	NT			5	293	248	62	30		1														
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT				2			1													NT	NT	NT	
Oak Bay	2	NT		3	1	15	15	4		NT															
St. Stephen	2	NT		5	1	21	9	11		1	1				1										
Fredericton, Saunders St.	3				1	2	2	1	1																
Fredericton, Lincoln Rd.	3				15	54	51	15	14																
Grand Falls	4	NT							1																
Grand Falls, NB Agric.	4	NT				1		1	2																
Kedgwick, Stillwater Rd.	5	NT						NT	4	1															
Kedgwick, Morin Bog	5	NT				10	17	9	32	7	16	4	2									NT			
Bathurst, Daly Point Reserve	6	NT	NT				110	9	53	4	3	4		3											
Bathurst, Bathurst Welcome Sign	6	NT	NT				31	25	13	13	2	5	2												
Village Acadien	6	NT	NT			7		8	8	3	3	1													
Shippagan, Camping Shippagan	6	NT	NT			5		3	5	9	5	1			3										
Shippagan, 15th St.	6	NT	NT					3			7		3												
Miramichi, Industrial Park	7	NT			7	10	5	NT			2		NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT				26	7	NT	2		21	2	3				NT		NT	NT	NT	NT	NT	NT	NT

Table 26. Female *Ochlerotatus aurifer* trap catch in miniature CDC CO₂ traps during 2002 and 2003.

NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	1	2	2															NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																					NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 27. Female *Ochlerotatus communis* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT	3	4			3		1										NT	NT	NT
Site 2, Cambridge	3				NT	1			1	3	1											NT	NT	NT
Site 3, Douglas	3			12	NT	322	20	40	18	3	2	1										NT	NT	NT
Site 4, Fredericton (forested bog)	3			63	NT	235	229	161	38	27	11	3										NT	NT	NT
Site 5, New Maryland (marsh/forest)	3		9	74	NT	367	156	78	24	23	6	3	4					1				NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3	2	6	62	NT	148	42	43	6	14	8	5	1	2								NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT	6	762	784	402	441	241	129	30	14	4	4	1		1								
New Scotland Bog	1	NT		144	275	353	123	392	97	24	9	1	4	1	1									
Saint John, Rest Area	2	NT								2	NT													
Grand Bay-Westfield	2	NT							2													NT	NT	NT
Oak Bay	2	NT	3	7	21	34	14	3	3	NT	1		2											
St. Stephen	2	NT			3	34	22	36	23	23	26	4	5											
Fredericton, Saunders St.	3							1																
Fredericton, Lincoln Rd.	3			7	9	8	8	8	3	2														
Grand Falls	4	NT																						
Grand Falls, NB Agric.	4	NT		1		5		1	7	1	1													
Kedgwick, Stillwater Rd.	5	NT				118	162	NT	347	400	95	162	88	33	14	3								
Kedgwick, Morin Bog	5	NT			6	20	40	10	155	54	55	21	17	3			1	4	1	2	NT			
Bathurst, Daly Point Reserve	6	NT	NT			3	93	19	90	6	9	11	1											
Bathurst, Bathurst Welcome Sign	6	NT	NT		6	168	180	26	45	13	4	2												
Village Acadien	6	NT	NT			9	10	16	1	4														
Shippagan, Camping Shippagan	6	NT	NT			32	81	1	1	3	5	2												
Shippagan, 15th St.	6	NT	NT																					
Miramichi, Industrial Park	7	NT			51	99	9	NT	4	1	5	6	NT				NT		NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT		10	9	25	7	NT	5	1	17	6	6	1			NT		NT	NT	NT	NT	NT	NT

Table 28. Female *Ochlerotatus decticus* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT		2	5	3		2												NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	1	2	1															NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT			1															NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT		3																					
New Scotland Bog	1	NT							4																
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT												1					
Kedgwick, Morin Bog	5	NT					3	4	3		2		4										NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT				1																		
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT						NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT											NT	NT	NT	NT	NT	NT	NT

Table 29. Female *Ochlerotatus diantaeus* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT			3		1													NT	NT	NT
Site 3, Douglas	3				NT	3		1															NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT		4	7															NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT		41	12	5			1											NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT		5	3			1												NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT				181	172	56	30	7	4		1												
New Scotland Bog	1	NT				16	40	130	22	12	8		3		2										
Saint John, Rest Area	2	NT								1	NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT				2	8	1		NT															
St. Stephen	2	NT				1	4	3	4	4	5														
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3					14	6	2		1															
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT							1																
Kedgwick, Stillwater Rd.	5	NT						NT	101	63	35	14	37	8	12	7									
Kedgwick, Morin Bog	5	NT						4	2		2			1	1			1					NT		
Bathurst, Daly Point Reserve	6	NT	NT				1		3	1	2		2										3		
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT				1				1														
Shippagan, Camping Shippagan	6	NT	NT				1	5	8	6	15	8	3												
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT				1	NT						NT		NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT	1		3	2	1						NT		NT	NT	NT	NT	NT

Table 30. Female *Ochlerotatus excrucians* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT	2		1			6	2	2	1		1						NT	NT	NT
Site 2, Cambridge	3			15	NT	123	59	22	44	32	57	11	14	17		3	1	1	1			NT	NT	NT
Site 3, Douglas	3				NT	2	2	27	8	1	1	2	1									NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	4	16	81	28	19	1	11	9		3	7				1		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	5	22	13		3		1			1			2				NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT	1	11	12	3	3	2	3	2		1	2						NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT				73	97	22	22	7	3	2			1	1								
New Scotland Bog	1	NT				8	5	63	26	6	6	2	5	2	2	1		1						
Saint John, Rest Area	2	NT									NT													
Grand Bay-Westfield	2	NT																				NT	NT	NT
Oak Bay	2	NT				13	20			NT	1		1	2										
St. Stephen	2	NT				2	17	9	8	12	7	5	2	2		1								
Fredericton, Saunders St.	3						2	1	3		1													
Fredericton, Lincoln Rd.	3					6	17		6	1	1			2										
Grand Falls	4	NT																						
Grand Falls, NB Agric.	4	NT				1	1	2	1	3					1		1							
Kedgwick, Stillwater Rd.	5	NT						NT	5	4	4	2	6	4	3	1		1	1					
Kedgwick, Morin Bog	5	NT				1		2	2	3	3	3	3	1	1	2	1	3	1		NT			
Bathurst, Daly Point Reserve	6	NT	NT					1	6	2	5	2	2	5	1									
Bathurst, Bathurst Welcome Sign	6	NT	NT			2	2	4	14	4	3	4	2	2	1			2						
Village Acadien	6	NT	NT					1		1	2	1	1	1	1									
Shippagan, Camping Shippagan	6	NT	NT					6	22	26	9	3	5	4	1									
Shippagan, 15th St.	6	NT	NT														1							
Miramichi, Industrial Park	7	NT				5		NT			2	16	NT		1		NT	1	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT	1	2	1	2	4				NT		NT	NT	NT	NT	NT	NT

Table 31. Female *Ochlerotatus implicatus* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT	1			4		4																	
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT	1	2						NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT		1			1																		
Kedgwick, Stillwater Rd.	5	NT					1	NT		1															
Kedgwick, Morin Bog	5	NT		8					1		4												NT		
Bathurst, Daly Point Reserve	6	NT	NT						1	1															
Bathurst, Bathurst Welcome Sign	6	NT	NT			2	3			1															
Village Acadien	6	NT	NT				12	2	4	2															
Shippagan, Camping Shippagan	6	NT	NT			2	3			2															
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT			4			NT						NT					NT		NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT			3				NT										NT		NT	NT	NT	NT	NT

Table 32. Female *Ochlerotatus intrudens* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3			13	NT	12	16	5							1	1							NT	NT	NT
Site 2, Cambridge	3		1	18	NT	50	78	22	5		1												NT	NT	NT
Site 3, Douglas	3			3	NT		2	3															NT	NT	NT
Site 4, Fredericton (forested bog)	3			1	NT	5	3	3	5	1	1		2										NT	NT	NT
Site 5, New Maryland (marsh/forest)	3			1	NT		10	15	6	2	5	5		1	1								NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3			1	NT	3	2		2	2			1										NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT		5	4	3	2	1																	
New Scotland Bog	1	NT		3		1					1														
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT				1	1			NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3				1							1													
Fredericton, Lincoln Rd.	3			10	58	20	65	19	8	3	2														
Grand Falls	4	NT							1																
Grand Falls, NB Agric.	4	NT					1			1															
Kedgwick, Stillwater Rd.	5	NT				1	53	NT	5	5															
Kedgwick, Morin Bog	5	NT				3		1	9	2													NT		
Bathurst, Daly Point Reserve	6	NT	NT				1		2	1	1														
Bathurst, Bathurst Welcome Sign	6	NT	NT			1	3	2	3																
Village Acadien	6	NT	NT			3	6	2	3																
Shippagan, Camping Shippagan	6	NT	NT			1	2	4	1	2	7														
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT			21	5	1	NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT		1	13	16		NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 33. Female *Ochlerotatus pionips* trap catch in miniature CDC CO₂ baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT	1				1													NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT	1																	NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT	4	5			1													NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT	1	2	2															NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT					2																		
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT				1																			
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT																					NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT					NT		NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT				1	NT	1										NT		NT	NT	NT	NT	NT	NT

Table 34. Female *Ochlerotatus punctor* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT	35	24	1		7	1												NT	NT	NT
Site 2, Cambridge	3				NT	2	7																NT	NT	NT
Site 3, Douglas	3			12	NT	17	6	15		2			1										NT	NT	NT
Site 4, Fredericton (forested bog)	3			4	NT	101	18	90	3	2													NT	NT	NT
Site 5, New Maryland (marsh/forest)	3			13	NT	233	159	46		6		1											NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3			9	NT	153	45	31		8		2		1									NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT				40	32	114	46	5	12	1	2	2	2										
New Scotland Bog	1	NT				201	217	32	61	12	6	1	1		1										
Saint John, Rest Area	2	NT								1	NT														
Grand Bay-Westfield	2	NT							4														NT	NT	NT
Oak Bay	2	NT				13	10	10	NT	13	3	4													
St. Stephen	2	NT				43	38	9	21	8		2													
Fredericton, Saunders St.	3					1	5		3																
Fredericton, Lincoln Rd.	3				9	33	65	13	29	4	2	1		1											
Grand Falls	4	NT						1	1					1											
Grand Falls, NB Agric.	4	NT					2		2																
Kedgwick, Stillwater Rd.	5	NT				1	11	NT	33	13	6	5	10	6											
Kedgwick, Morin Bog	5	NT				10	68	10	110	52	98	26	26	16	3								NT		
Bathurst, Daly Point Reserve	6	NT	NT				59		14	2		1													
Bathurst, Bathurst Welcome Sign	6	NT	NT			51	192	2	1	4		2	1												
Village Acadien	6	NT	NT			3	28		1	3															
Shippagan, Camping Shippagan	6	NT	NT			5	84	1	2	1	2														
Shippagan, 15th St.	6	NT	NT				1				2														
Miramichi, Industrial Park	7	NT				1	1	NT		12		6	NT		6		NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT	8		81	69	43	4	4		NT		NT	NT	NT	NT	NT	NT	NT

Table 35. Female *Anopheles earlei* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT			1															NT	NT	NT
Site 2, Cambridge	3	2	3		NT			4	1		1	1	4		6			1	2				NT	NT	NT
Site 3, Douglas	3				NT													1					NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3			1	NT			9		3			1		1								NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT					1										1						NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT							1													NT			
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 36. Female *Culiseta impatiens* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3				NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT																		NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT																		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3	1			NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT																							
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT								NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT				1		NT																	
Kedgwick, Morin Bog	5	NT		1						1												NT			
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT																						
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT						NT					NT				NT		NT	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT									NT		NT	NT	NT	NT	NT	NT	NT

Table 37. Female *Culiseta minnesotae* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																							
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	
Site 1, Burton	3			1	NT																		NT	NT	NT
Site 2, Cambridge	3				NT																		NT	NT	NT
Site 3, Douglas	3				NT								2										NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT				1	1													NT	NT	NT
Site 5, New Maryland (marsh/forest)	3		1		NT																		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT																		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	
Moncton, Mapleton Park	1	NT														1									
New Scotland Bog	1	NT																							
Saint John, Rest Area	2	NT									NT														
Grand Bay-Westfield	2	NT																					NT	NT	NT
Oak Bay	2	NT	1							NT															
St. Stephen	2	NT																							
Fredericton, Saunders St.	3																								
Fredericton, Lincoln Rd.	3																								
Grand Falls	4	NT																							
Grand Falls, NB Agric.	4	NT																							
Kedgwick, Stillwater Rd.	5	NT						NT																	
Kedgwick, Morin Bog	5	NT	1			1					1			1									NT		
Bathurst, Daly Point Reserve	6	NT	NT																						
Bathurst, Bathurst Welcome Sign	6	NT	NT																						
Village Acadien	6	NT	NT						1																
Shippagan, Camping Shippagan	6	NT	NT																						
Shippagan, 15th St.	6	NT	NT																						
Miramichi, Industrial Park	7	NT	5			1		NT				4	NT						NT		NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT			1		1		1				NT		NT	NT	NT	NT	NT

Table 38. Female *Culiseta morsitans* trap catch in miniature CDC CO2 baited traps during 2002 and 2003. NT denotes no trap deployed. Numbers in bold denote incomplete data due to trap malfunction or poor condition of sample.

Sites 2002	Health Region	Week																						
		16-May	23-May	30-May	4-Jun	11-Jun	20-Jun	27-Jun	4-Jul	11-Jul	18-Jul	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct
Site 1, Burton	3				NT			4	1		1						1		3			NT	NT	NT
Site 2, Cambridge	3				NT			5	34	2	1		6	12	13	4		2	4	1		NT	NT	NT
Site 3, Douglas	3				NT			2	1		1		2	1			1	4	4		2	NT	NT	NT
Site 4, Fredericton (forested bog)	3				NT		1	2	2	9	1	5	13	4	5	13	2	3	5	1		NT	NT	NT
Site 5, New Maryland (marsh/forest)	3				NT			2				1		1	1	3		1	1	1		NT	NT	NT
Site 6, New Maryland (Charters Settlement)	3				NT			1		1			1	1	1	1	1	1	1	1		NT	NT	NT
Sites 2003	Health Region	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct
Moncton, Mapleton Park	1	NT						1	1	1	1		1	1	1	7		2	2	3				
New Scotland Bog	1	NT						6	7	11	4	8	3	31		6		2	2	1	1			
Saint John, Rest Area	2	NT							2		NT	1	1	3		2								
Grand Bay-Westfield	2	NT									1		2				1		7			NT	NT	NT
Oak Bay	2	NT							4	NT	2	7	1			1	5	3	2	1	4			1
St. Stephen	2	NT					4	14	6	6	10		2			11	6			2	12			
Fredericton, Saunders St.	3								3								2							
Fredericton, Lincoln Rd.	3					1				1										2				
Grand Falls	4	NT																						
Grand Falls, NB Agric.	4	NT																						
Kedgwick, Stillwater Rd.	5	NT						NT	1		2									1				
Kedgwick, Morin Bog	5	NT							7		13	4	2	5	1	1	1					NT		
Bathurst, Daly Point Reserve	6	NT	NT						3	5	13	44	6	50	7		9	4	3	1	13	3		
Bathurst, Bathurst Welcome Sign	6	NT	NT						1	5	2	16	1	1	1	2	1	3	1	2		1		
Village Acadien	6	NT	NT						1	5	4	7	1	9		2		2			1	1		
Shippagan, Camping Shippagan	6	NT	NT						8	125	591	188	104	34	12	25		52	25	4	3			
Shippagan, 15th St.	6	NT	NT						1		3		6		1		4	1	2	1				
Miramichi, Industrial Park	7	NT						NT			2	28	NT	3	6	1	NT	5	NT	NT	NT	NT	NT	NT
Miramichi, Nowlanville	7	NT						NT			1	1			1		NT	3	NT	NT	NT	NT	NT	NT

Table 39. Summary of female mosquito trap capture at all sites sampled in 2002 and 2003.

	Total number of species	Number of potential WNV vector species	Total number of individuals
2002			
Site 1, Sunpoke Lake	22	13	2220
Site 2, Jemseg	23	15	5101
Site 3, Douglas	21	12	8981
Site 4, Fredericton (black spruce bog)	21	10	3353
Site 5, New Maryland (sedge marsh)	27	13	4840
Site 6, Charters Settlement (subdivision)	21	11	1698
Mean number per site	22.5	12.3	4365.5
2003			
Moncton, Mapleton Park	26	15	6765
New Scotland Bog	23	15	4117
Saint John, Rest Area	12	8	729
Grand Bay-Westfield	16	11	495
Oak Bay	22	13	699
St. Stephen	23	15	2125
Fredericton, Lincoln Rd.	21	12	1930
Fredericton, Saunders St.	16	10	228
Grand Falls	13	9	120
Grand Falls, NB Agric.	17	9	228
Kedgwick, Morin Bog	23	10	1820
Kedgwick, Stillwater Rd.	18	8	2869
Bathurst, Daly Point Reserve	22	13	4253
Bathurst Welcome Sign	22	14	2491
Village Acadien	22	13	3080
Shippagan, Camping Shippagan	21	12	3953
Shippagan, 15th St.	13	8	500
Miramichi, Industrial Park	21	12	1161
Miramichi, Nowlanville	25	12	1559
Mean number per site	20.7	11.8	2124.0

Fig. 3a. Female *Aedes cinereus* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

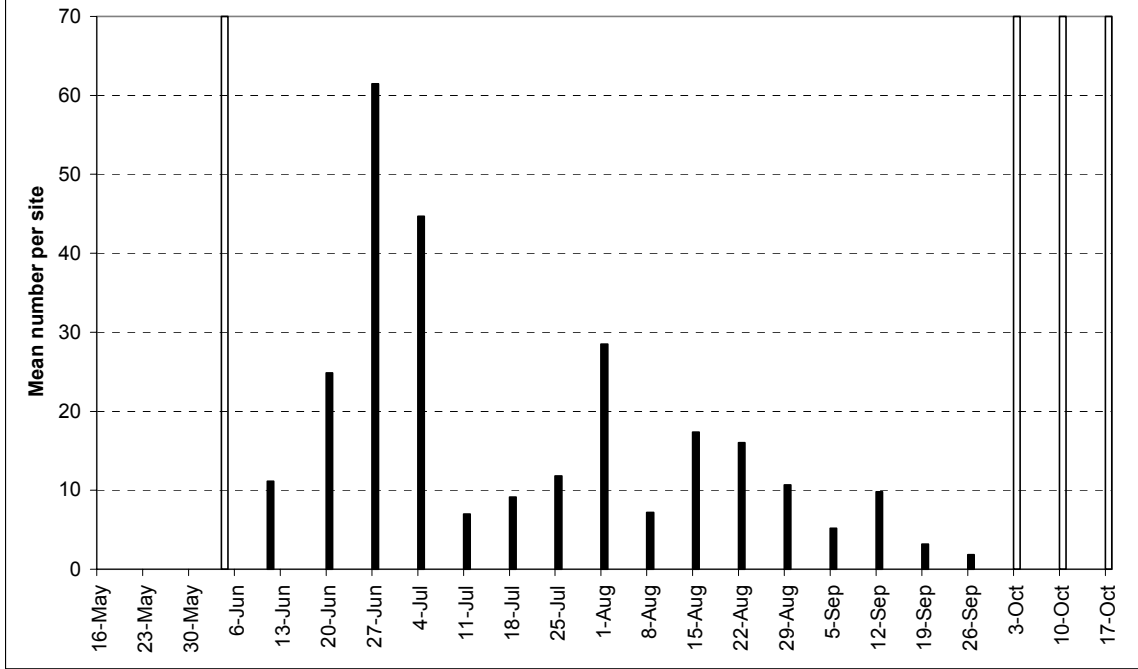


Fig. 3b. Female *Aedes cinereus* in the Bathurst area and near the Acadian Village during 2003.
(Open bar denotes no trap)

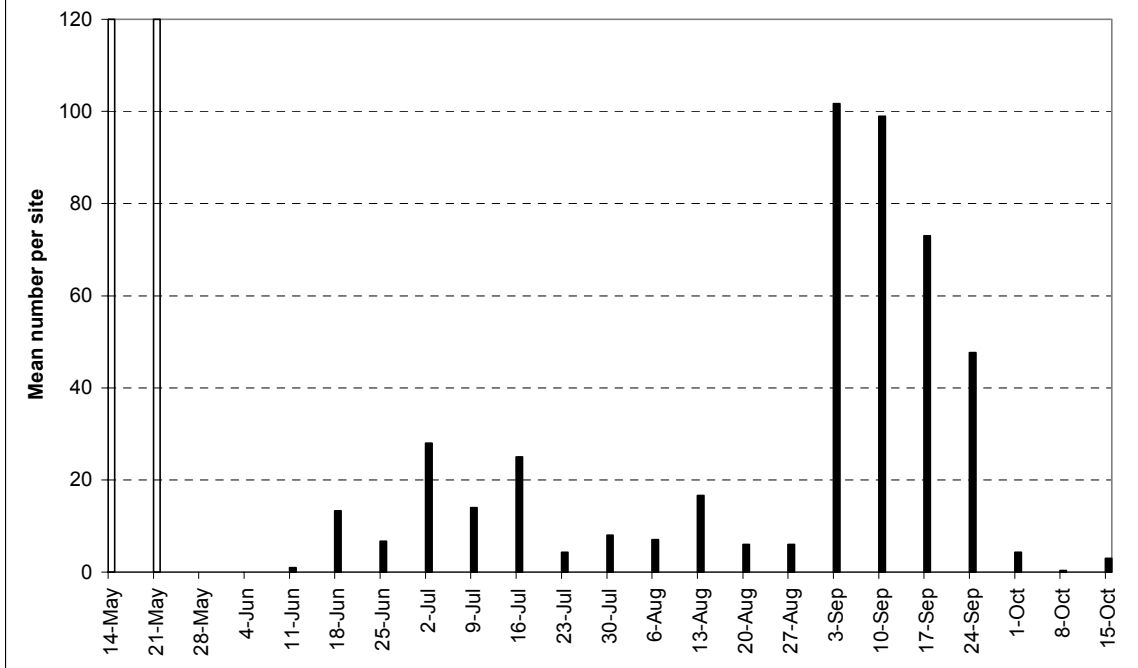


Fig. 4a. Female *Aedes vexans* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

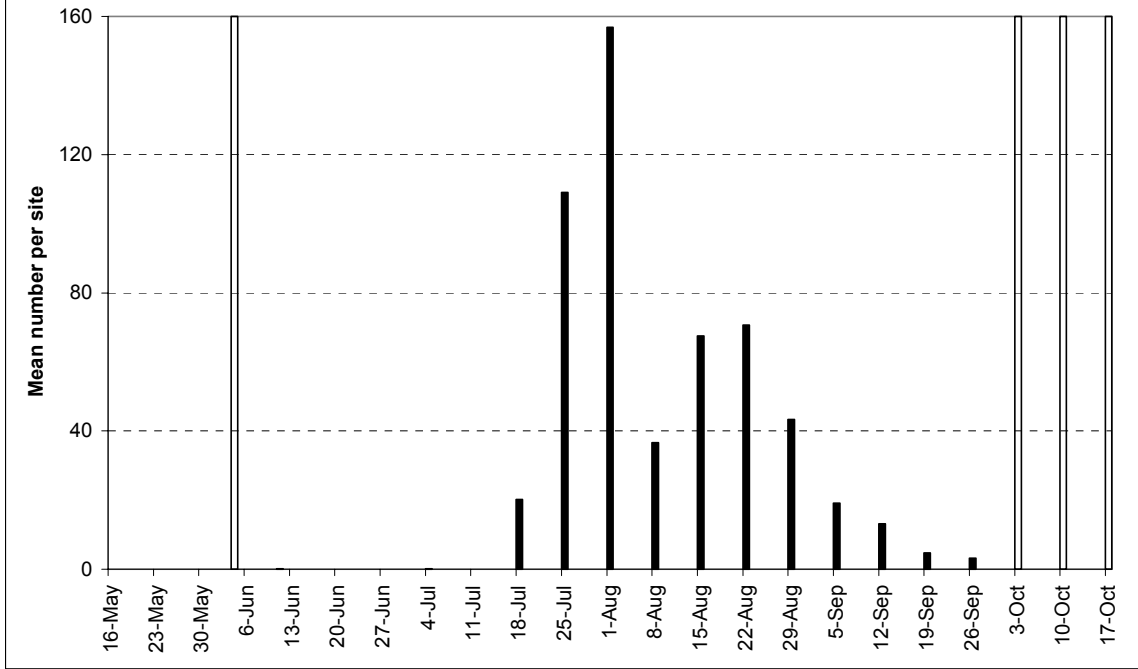


Fig. 4b. Female *Aedes vexans* in the Fredericton during 2003.

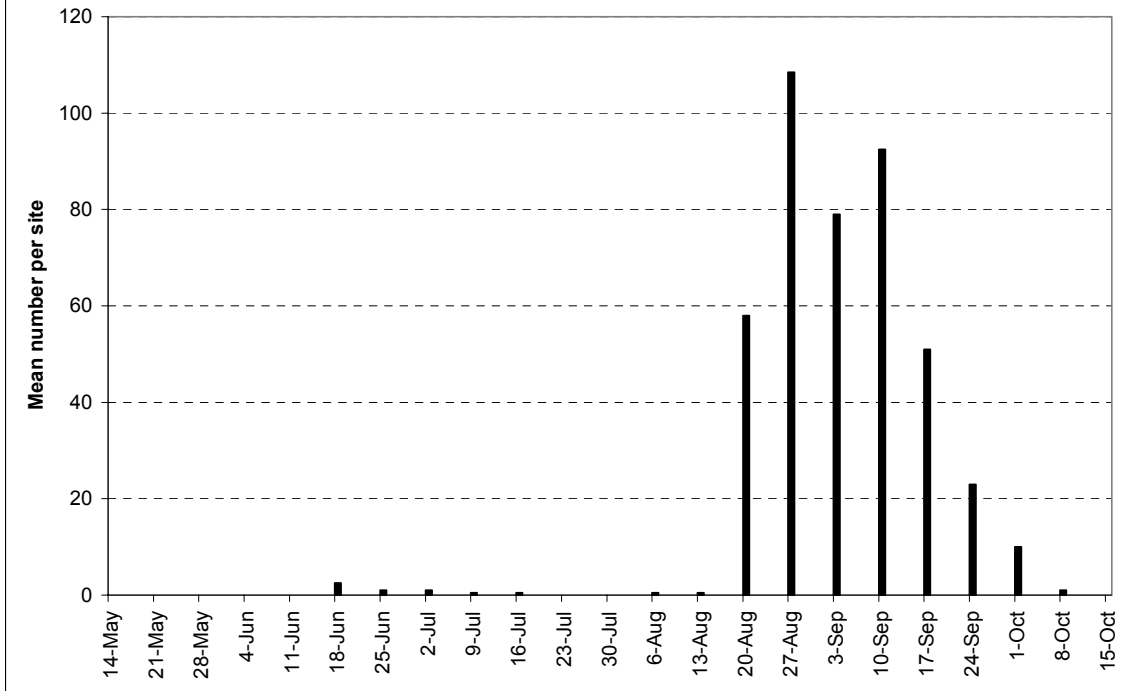


Fig. 5. Female *Ochlerotatus canadensis* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

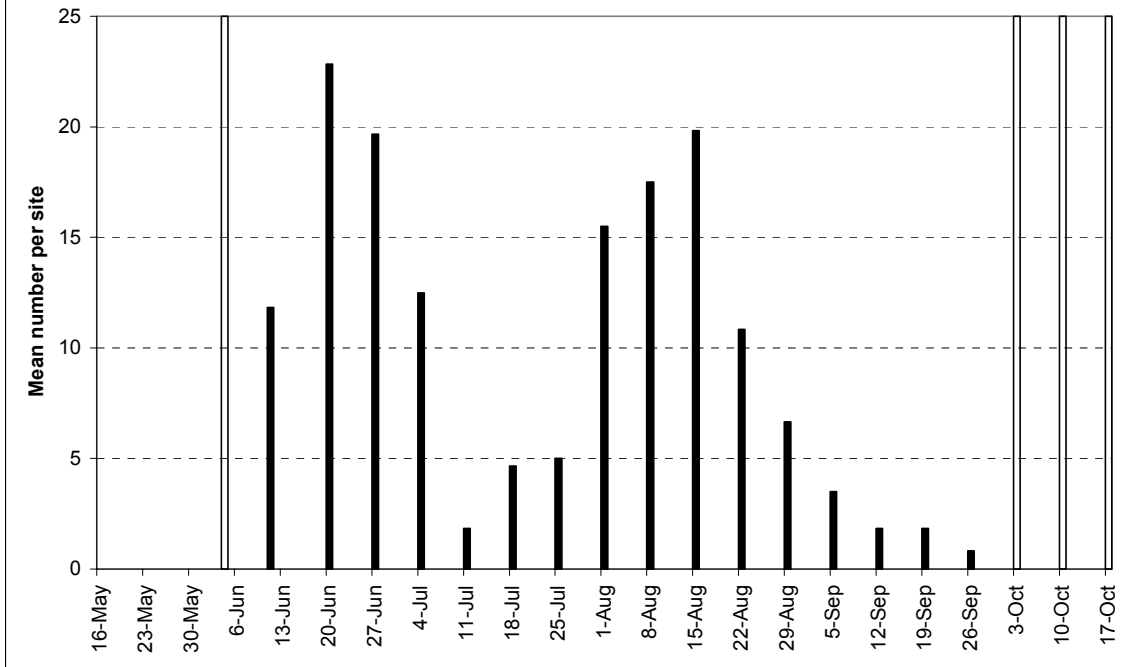


Fig 6a. Female *Ochlerotatus cantator* trap catch in Moncton (Mapleton Park) during 2003. (Open bar denotes no trap)

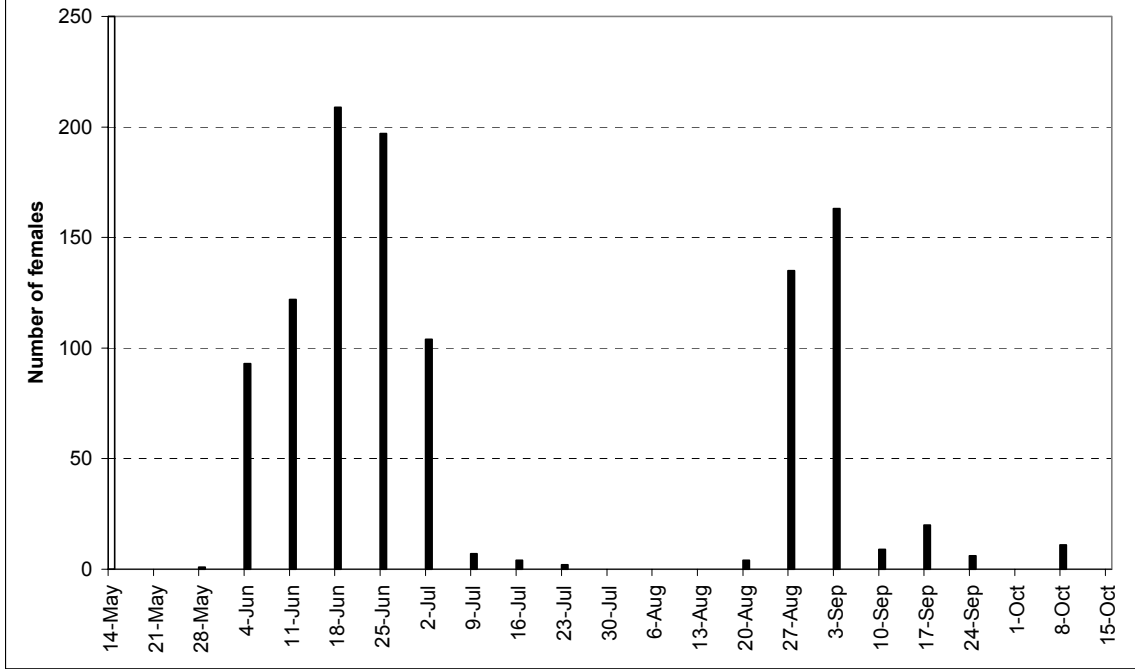


Fig. 6b. Female *Ochlerotatus cantator* at the Daly Point Reserve, Bathurst and Acadian Village in 2003. (Open bar denotes no trap)

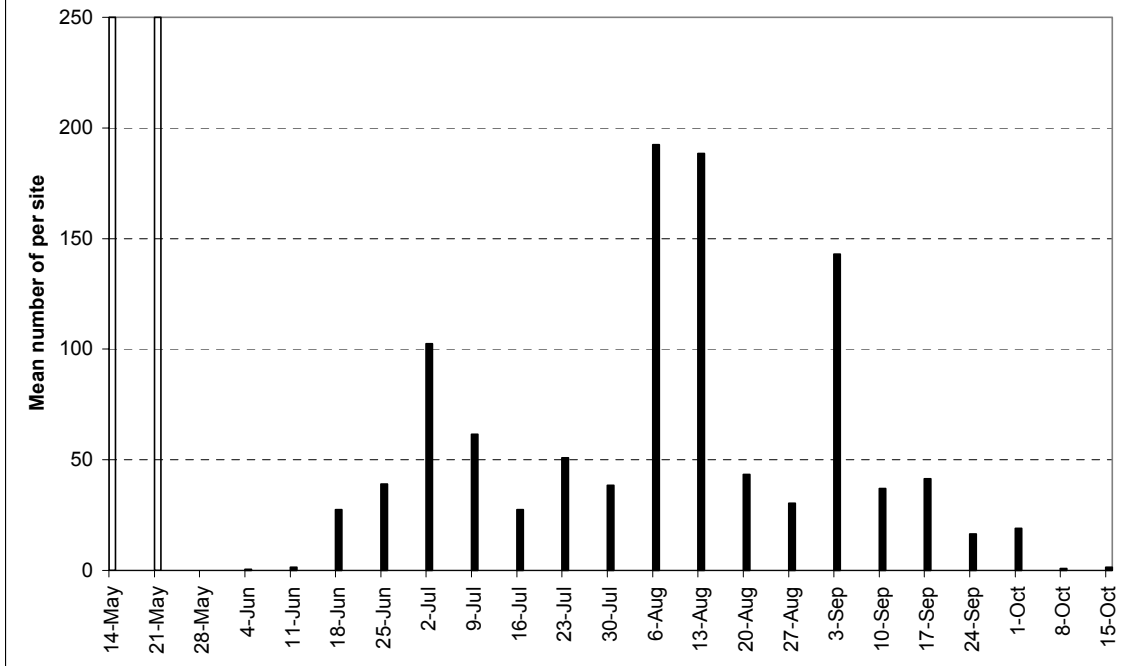


Fig. 7. Female *Ochlerotatus fitchii* trap catch in the Fredericton area in 2002.
(Open bar denotes no trap)

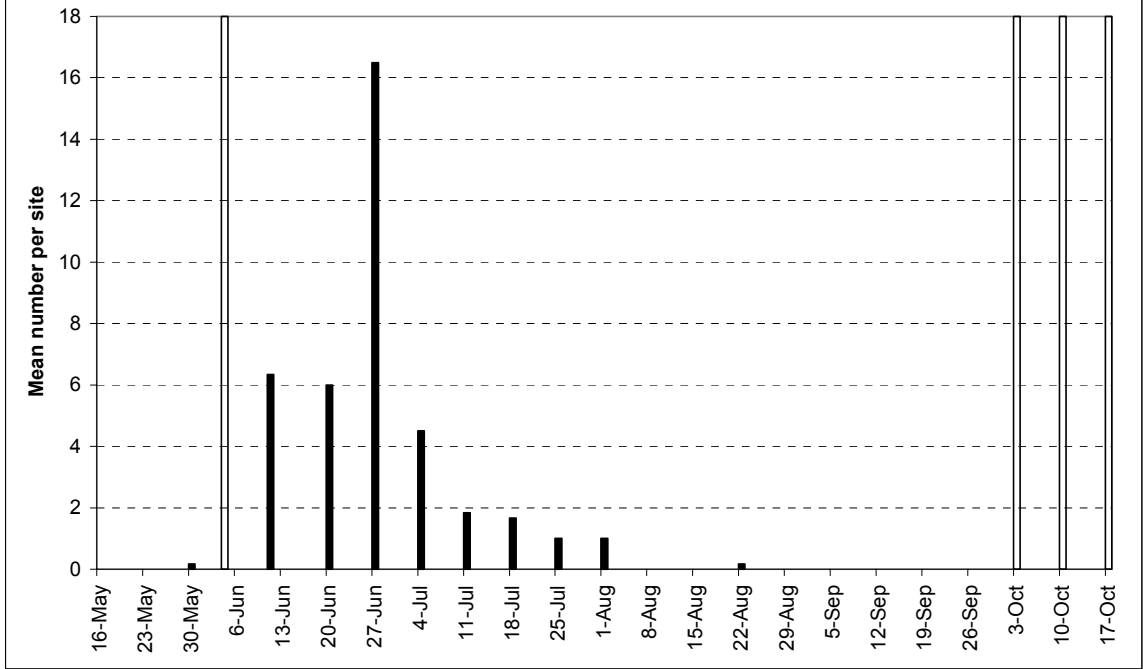


Fig. 8. Female *Ochlerotatus provocans* trap catch in the Fredericton area in 2002.
(Open bar denotes no trap)

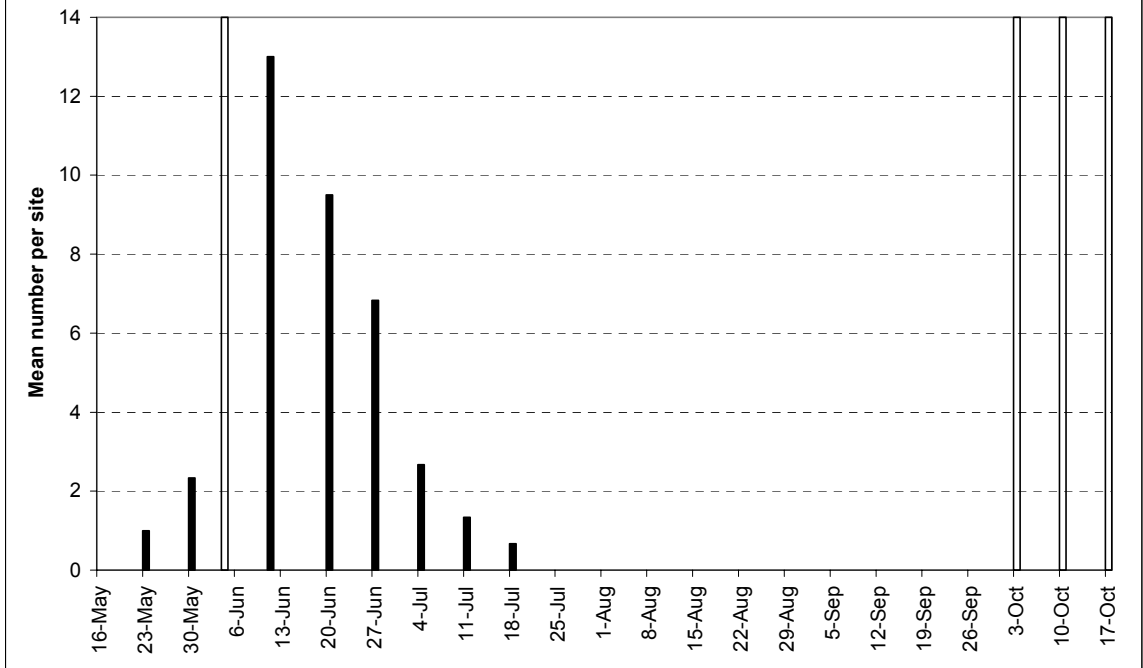


Fig. 9. Female *Ochlerotatus sollicitans* trap catch at the Daly Point Reserve, in Bathurst, in 2003. (Open bar denotes no trap)

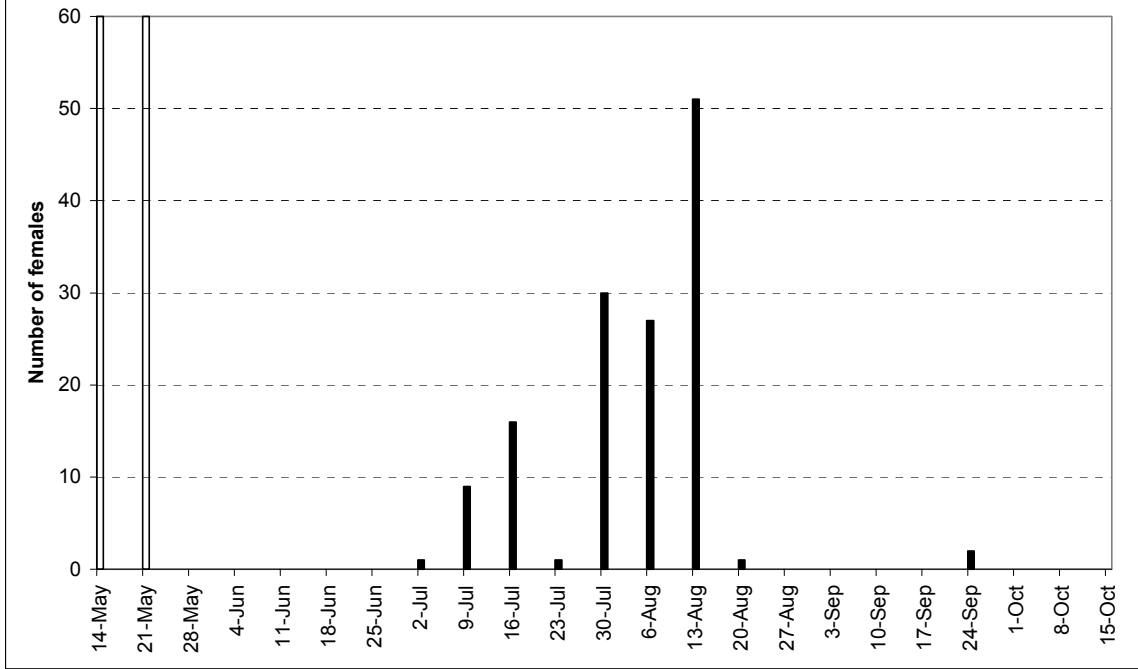


Fig. 10. Female *Ochlerotatus sticticus* trap catch in the Fredericton area in 2002. (Open bar denotes no trap)

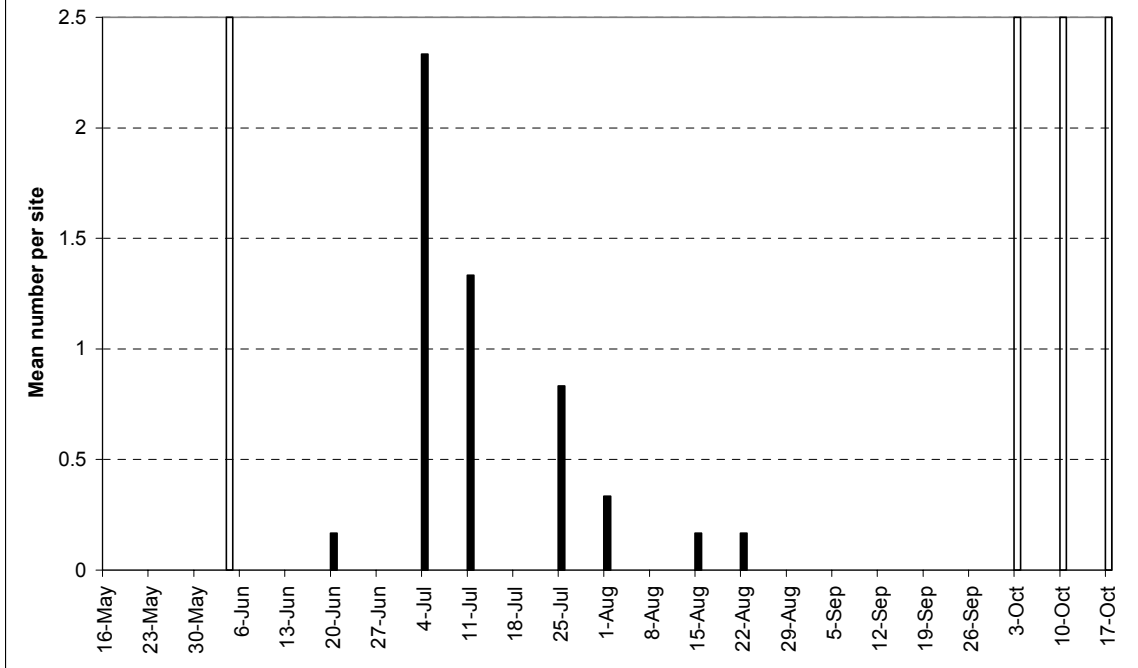


Fig. 11. Female *Ochlerotatus stimulans* trap catch at Site 2 (Cambridge) during 2002.
(Open bar denotes no trap)

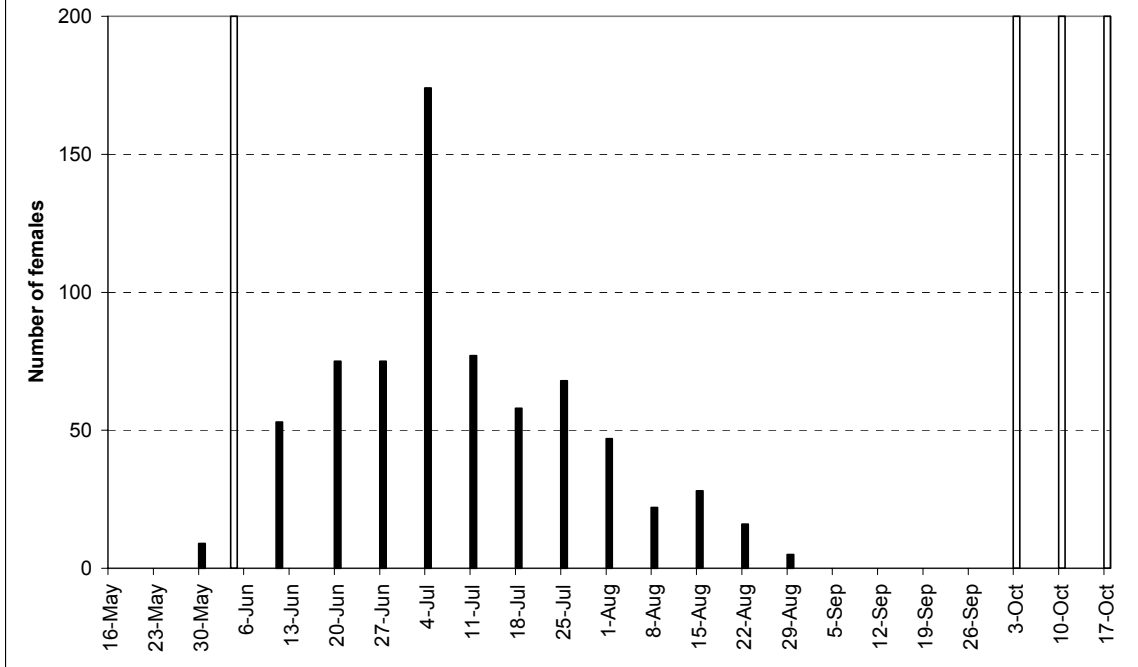


Fig. 12. Female *Ochlerotatus triseriatus* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

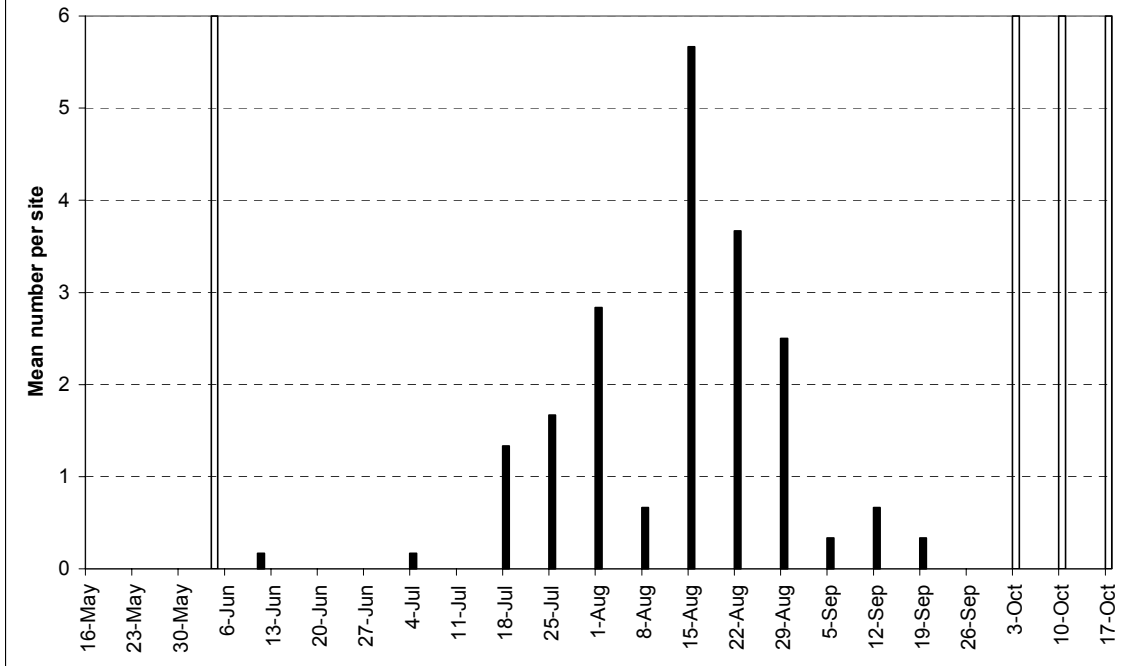


Fig. 13. Female *Anopheles punctipennis* trap catch in the Fredericton area during 2002. (Open bar denotes no trap)

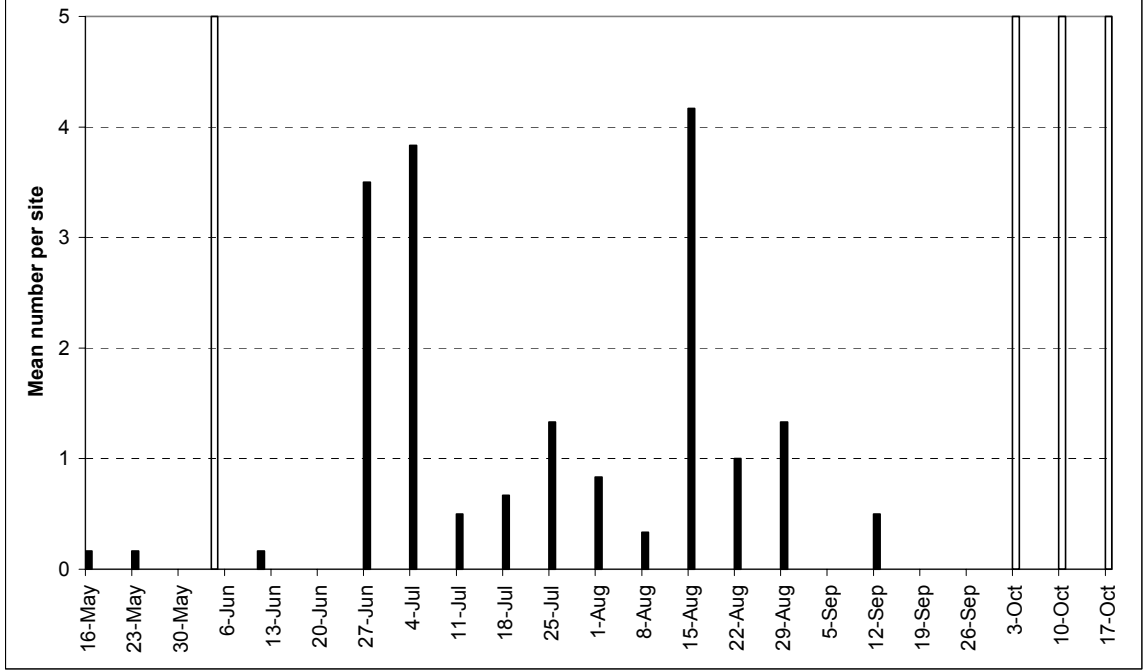


Fig. 14. Female *Anopheles walkeri* trap catch near the Acadian Village during 2003. (Open bar denotes no trap)

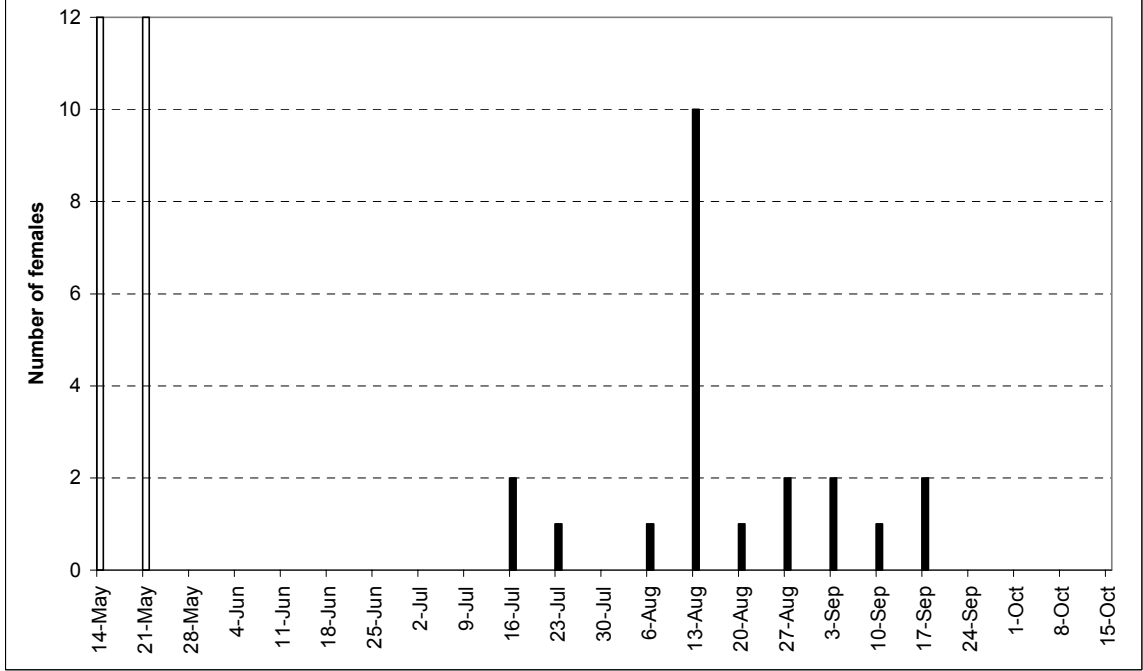


Fig. 15. Female *Culex pipiens* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

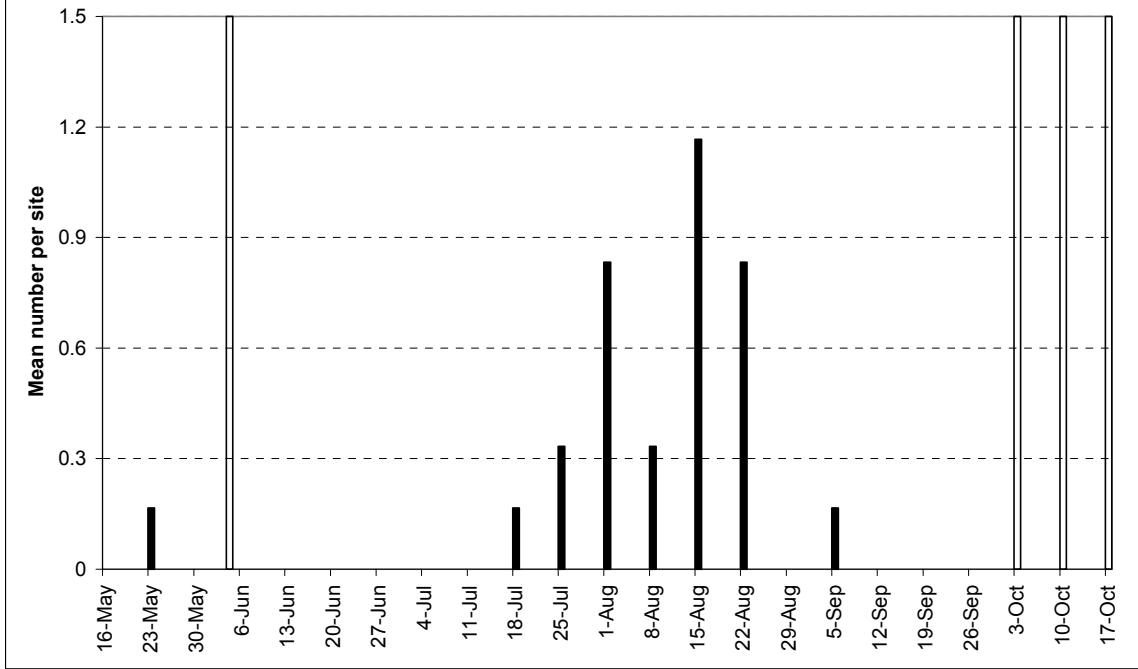


Fig. 16. Female *Culiseta melanura* trap catch near the New Scotland Bog during 2003.
(Open bar denotes no trap)

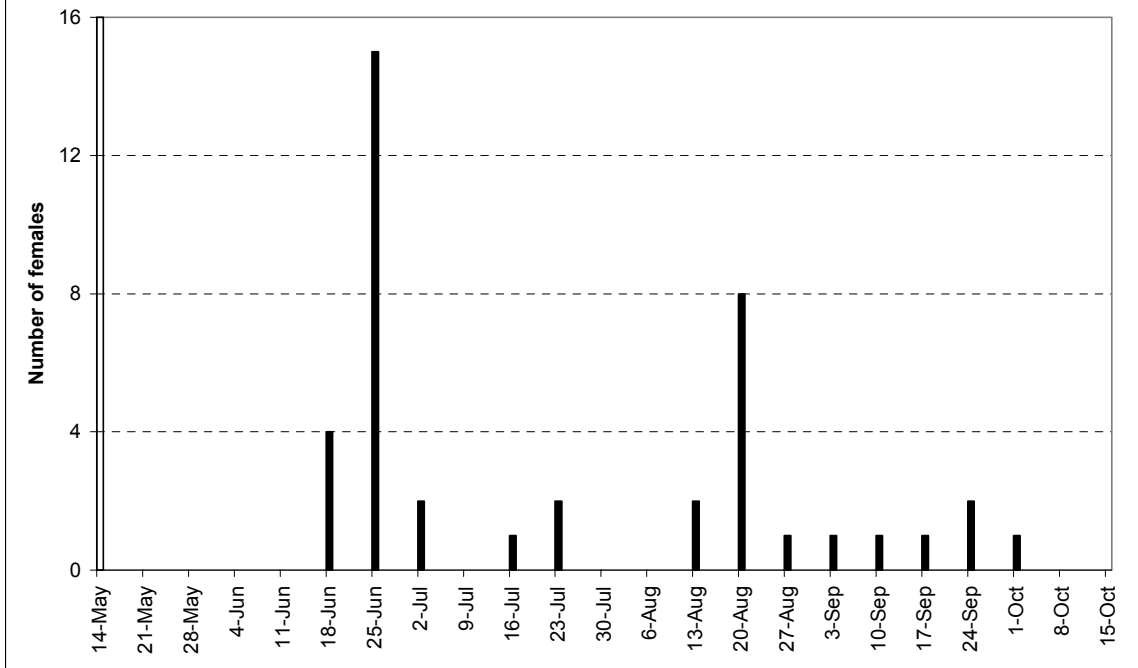


Fig. 17. Female *Coquillettidia perturbans* trap catch in the Fredericton area during 2002. (Open bar denotes no trap)

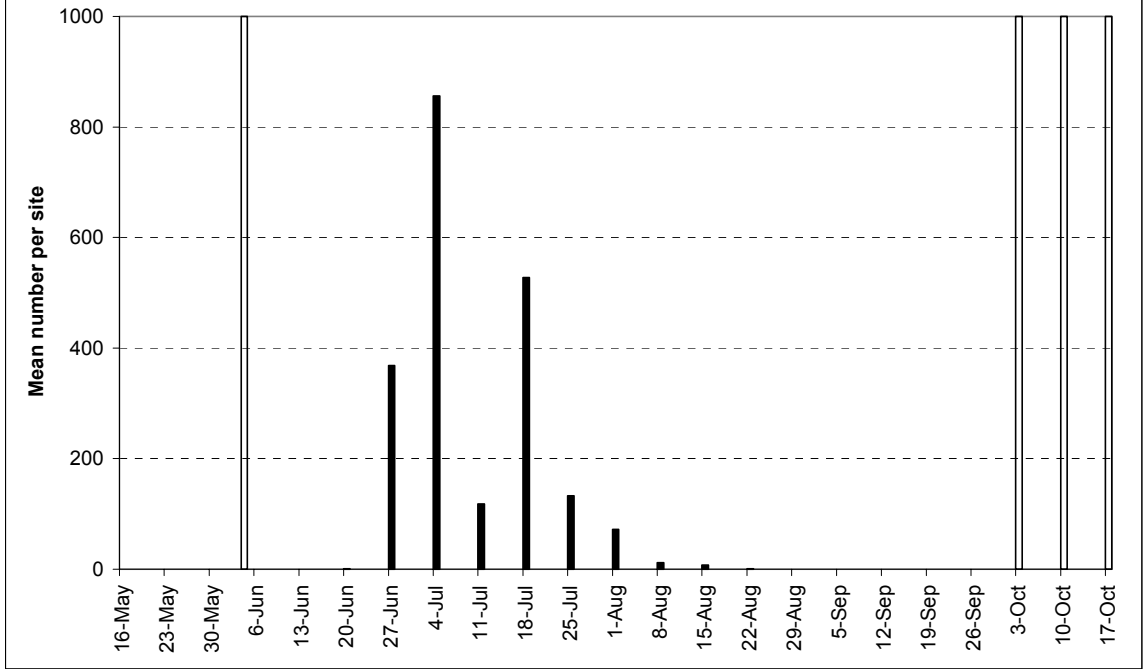


Fig. 18. Female *Ochlerotatus abserratus* trap catch in the Fredericton area during 2002. (Open bar denotes no trap)

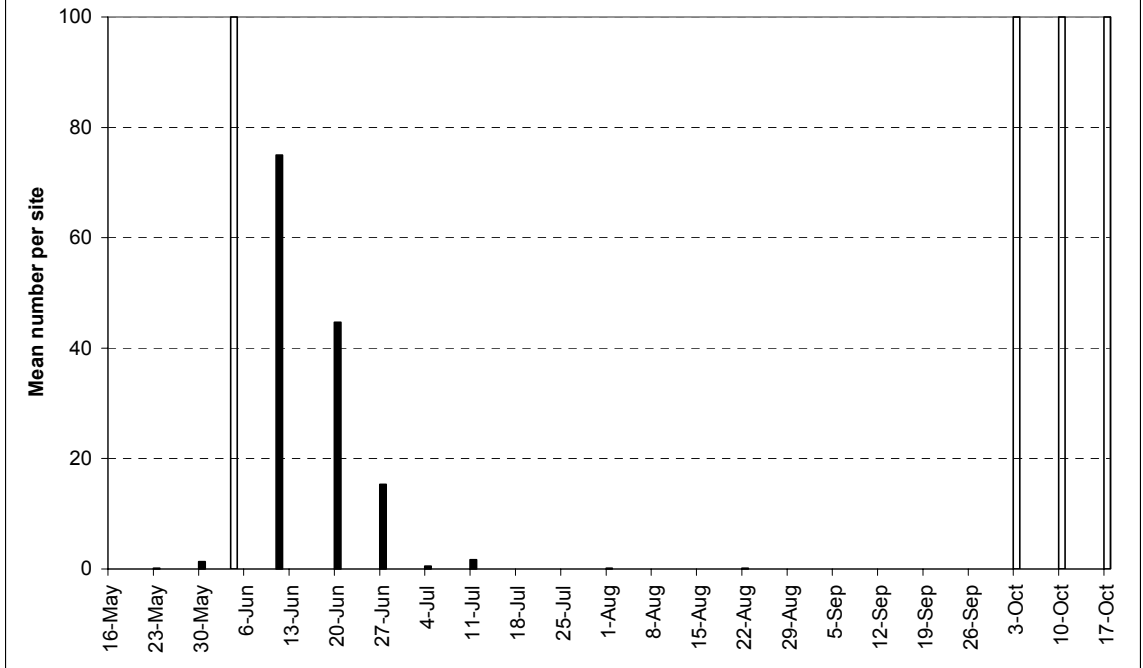


Fig. 19a. Female *Ochlerotatus communis* trap catch at the Mapleton Park in Moncton and near the New Scotland Bog during 2003. (Open bar denotes no trap)

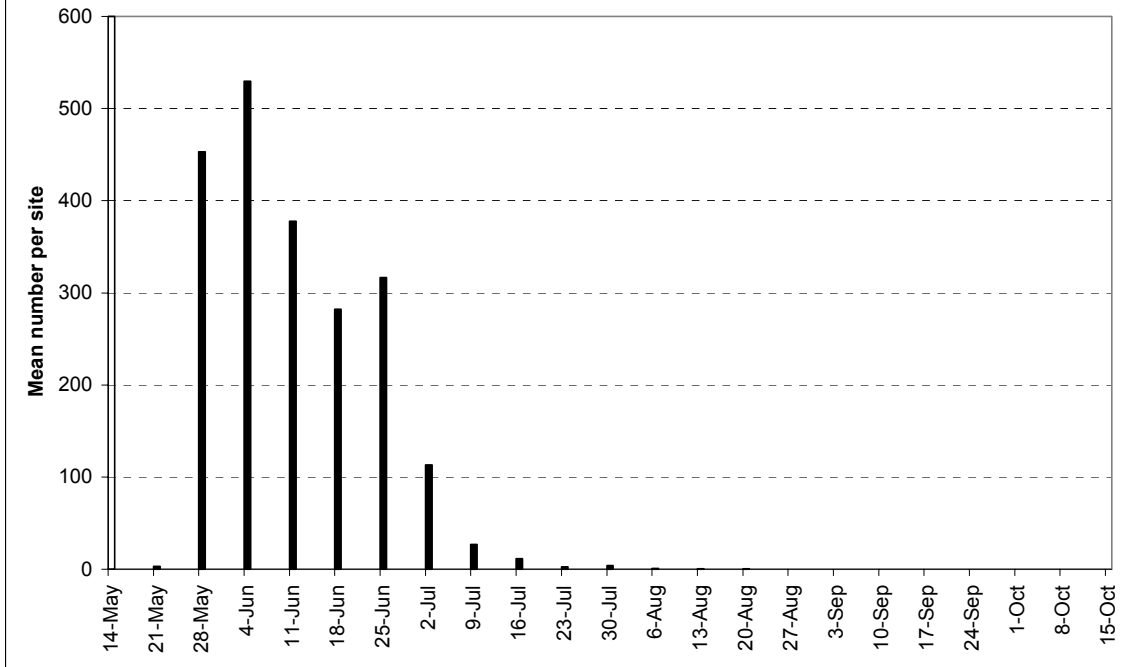


Fig. 19b. Female *Ochlerotatus communis* trap catch at the Stillwater Rd. and Morin Bog near Kedgwick during 2003. (Open bar denotes no trap)

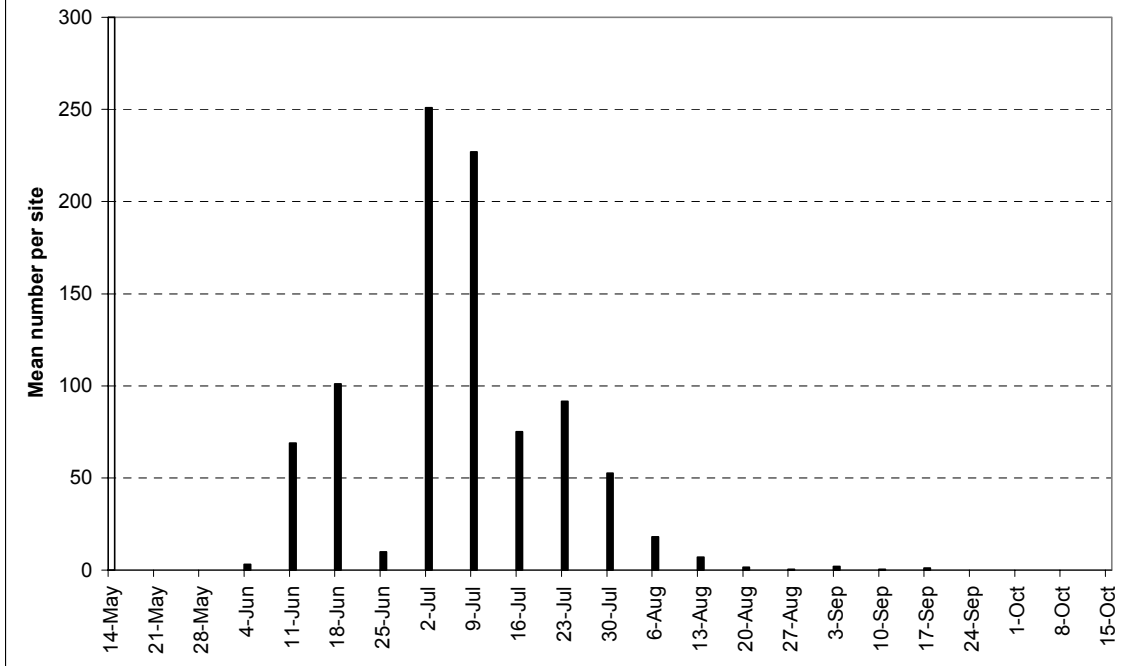


Fig. 20a. Female *Ochlerotatus diantaeus* trap catch at the Mapleton Park in Moncton and near the New Scotland Bog during 2003. (Open bar denotes no trap)

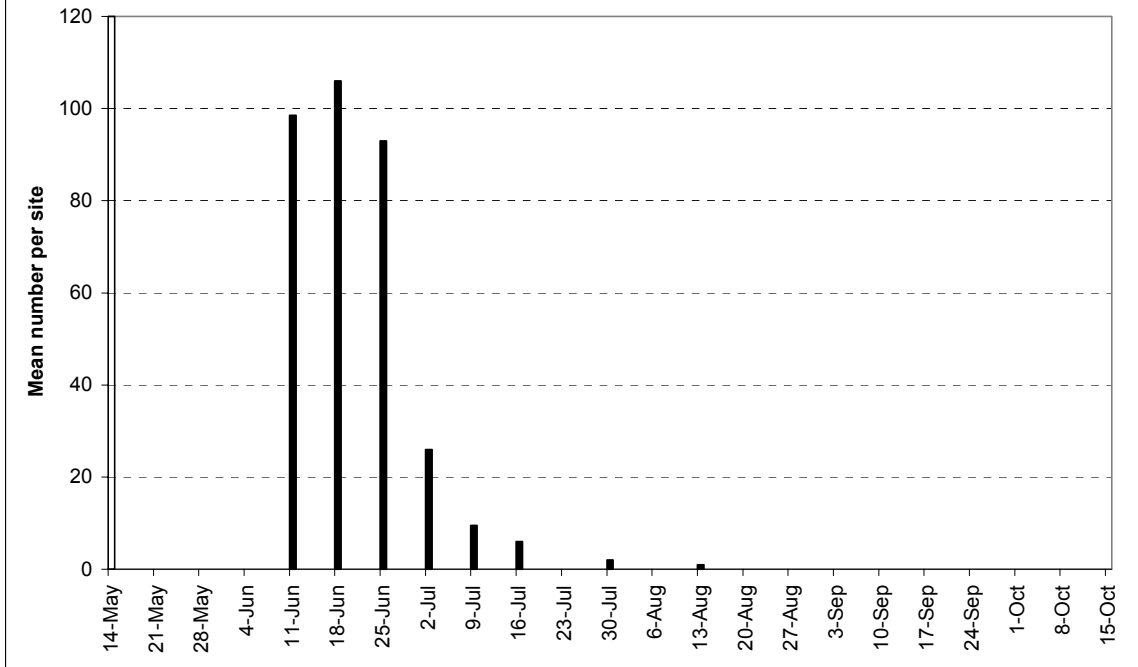


Fig. 20b. Female *Ochlerotatus diantaeus* trap catch at the Stillwater Rd. and Morin Bog near Kedgwick during 2003. (Open bar denotes no trap)

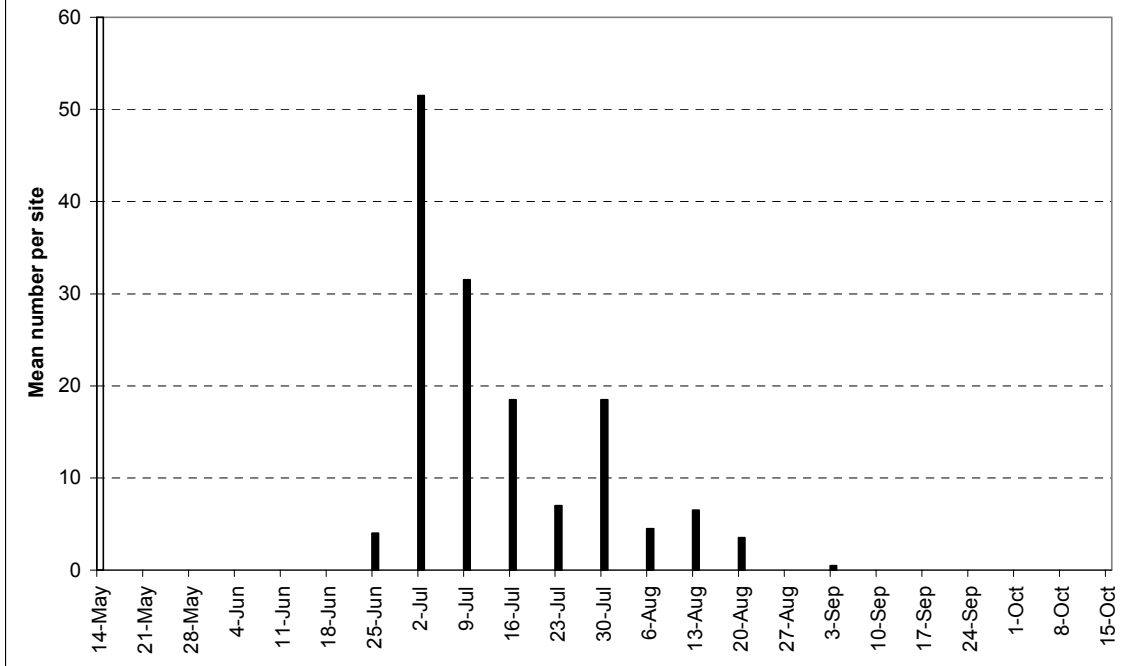


Fig. 21. Female *Ochlerotatus excrucians* trap catch in the Fredericton area during 2002.
(Open bar denotes no trap)

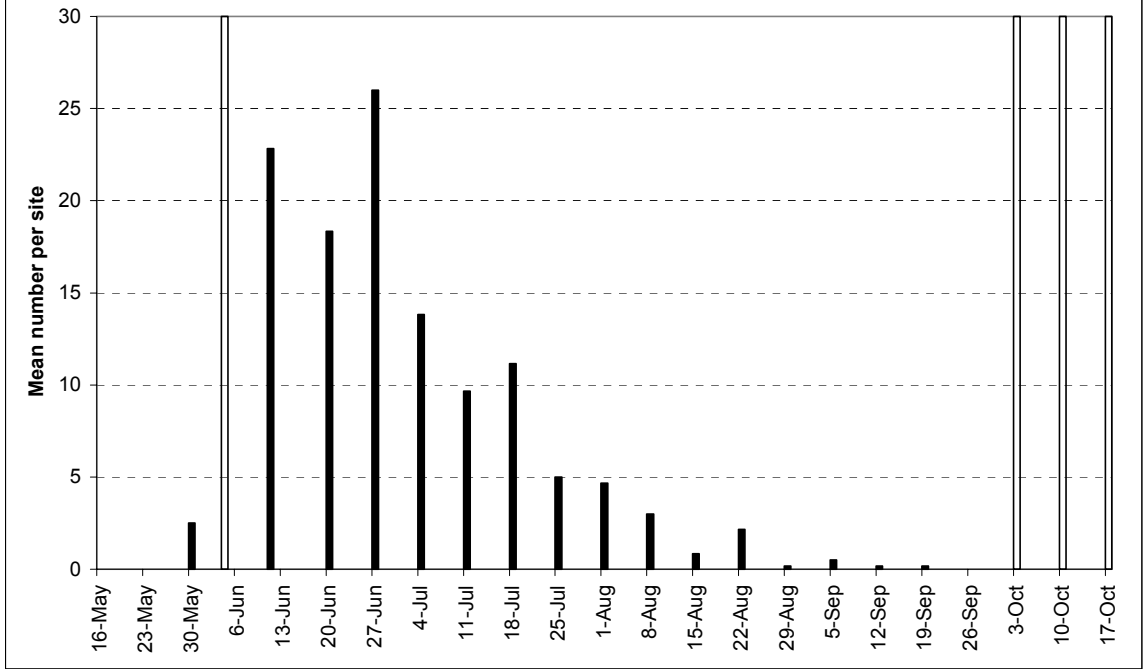


Fig. 22. Female *Ochlerotatus implicatus* trap catch in northern New Brunswick during 2003.
(Open bar denotes no trap)

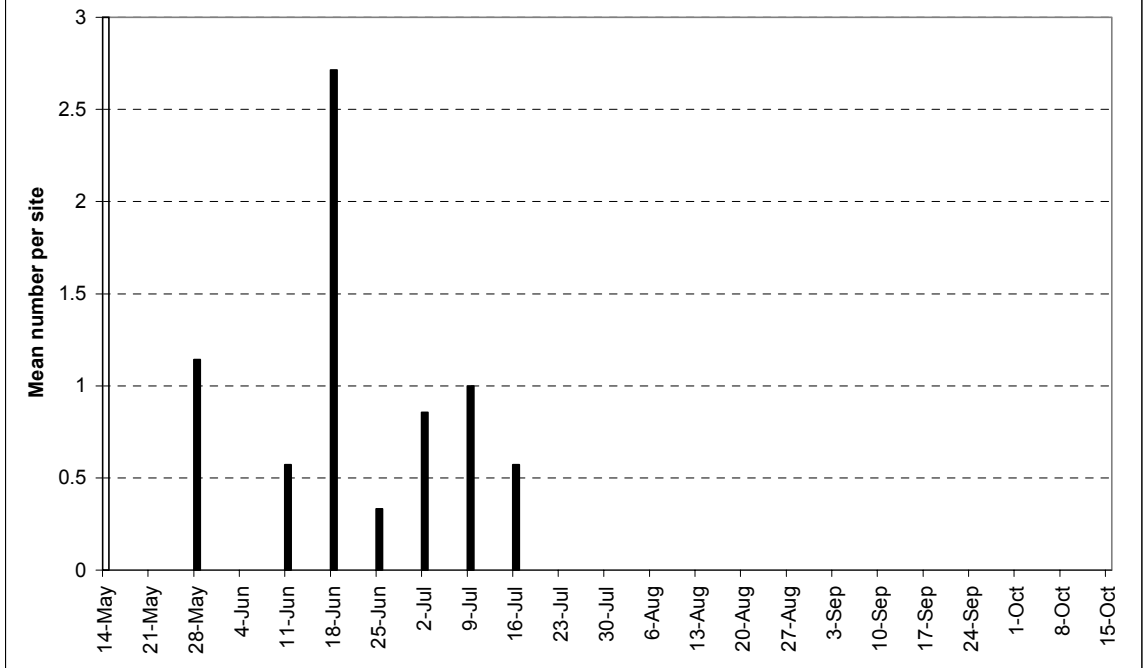


Fig. 23. Female *Ochlerotatus intrudens* trap catch in Fredericton (Lincoln Rd.) during 2003.

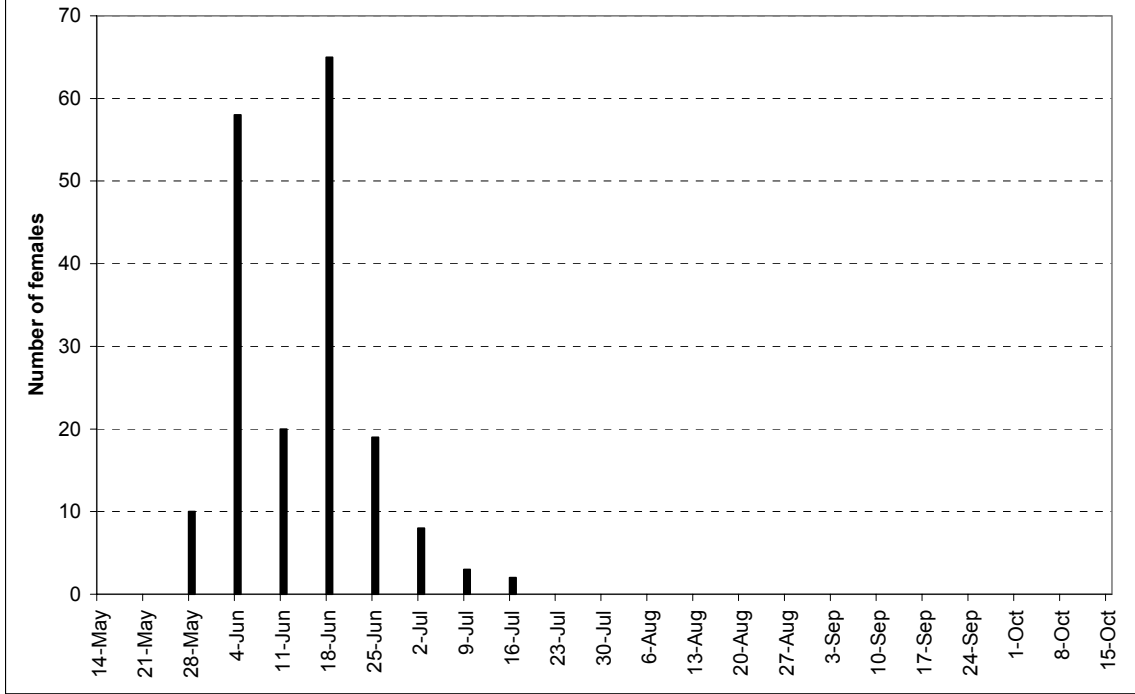


Fig. 24a. Female *Ochlerotatus punctor* trap catch in the Fredericton area during 2002. (Open bar denotes no trap)

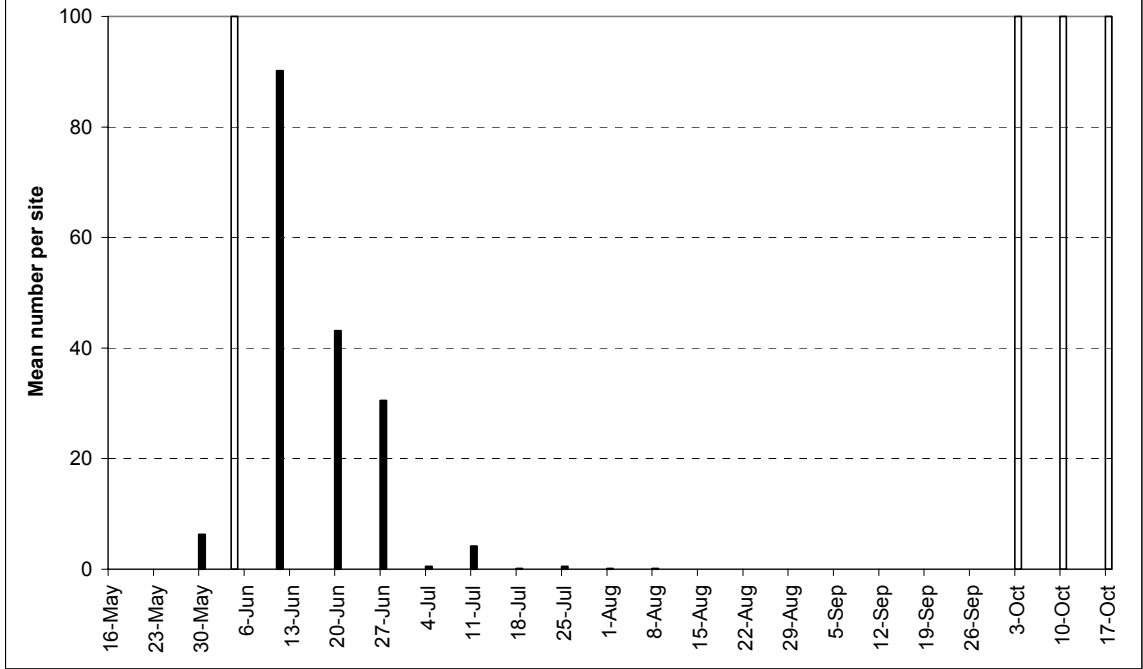


Fig. 24b. Female *Ochlerotatus punctor* trap catch at the Mapleton Park in Moncton and near the New Scotland Bog during 2003. (Open bar denotes no trap)

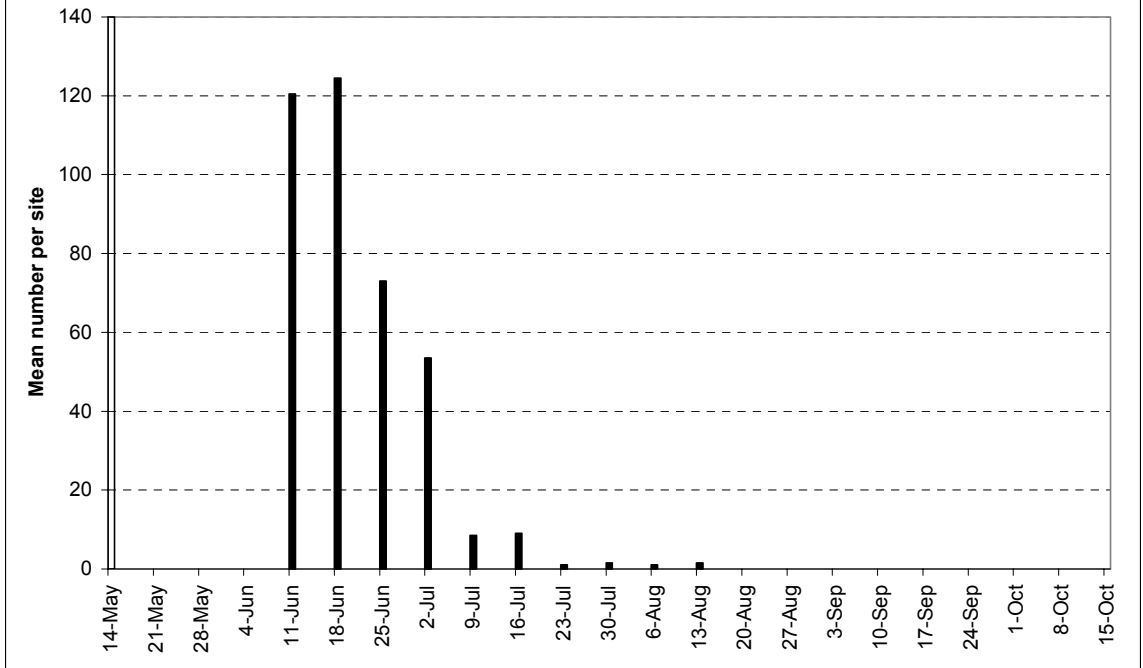


Fig. 25. Female *Anopheles earlei* trap catch in the Fredericton area during 2002. (Open bar denotes no trap)

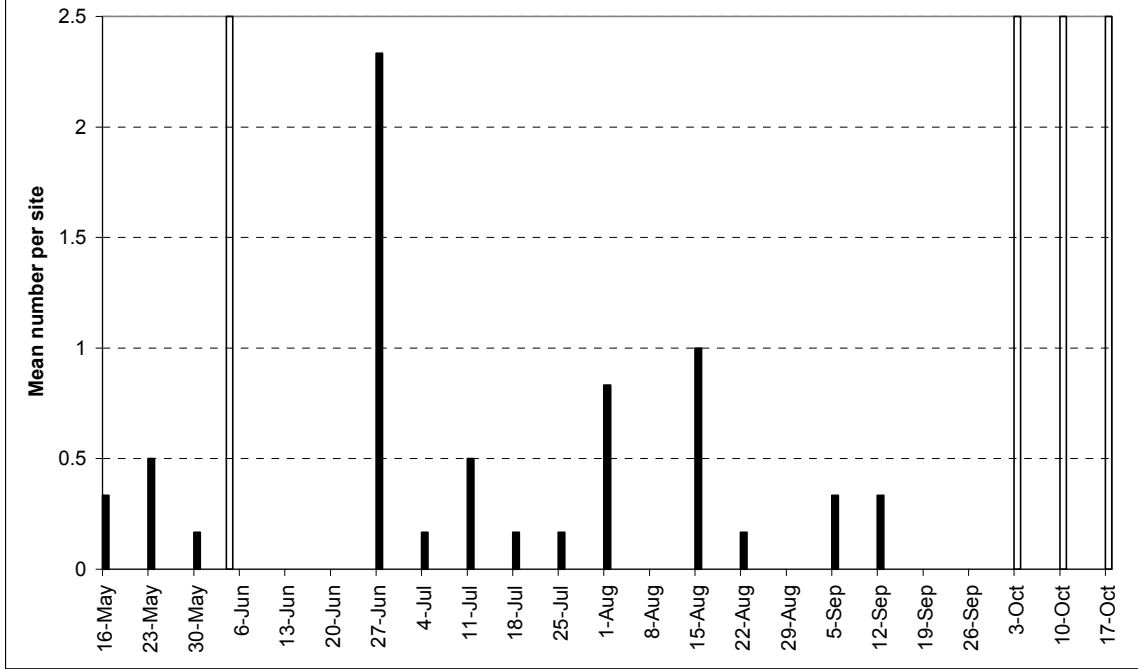


Fig. 26. Female *Culiseta morsitans* trap catch at Camping Shippagan (Shippagan) in 2003. (Open bar denotes no trap)

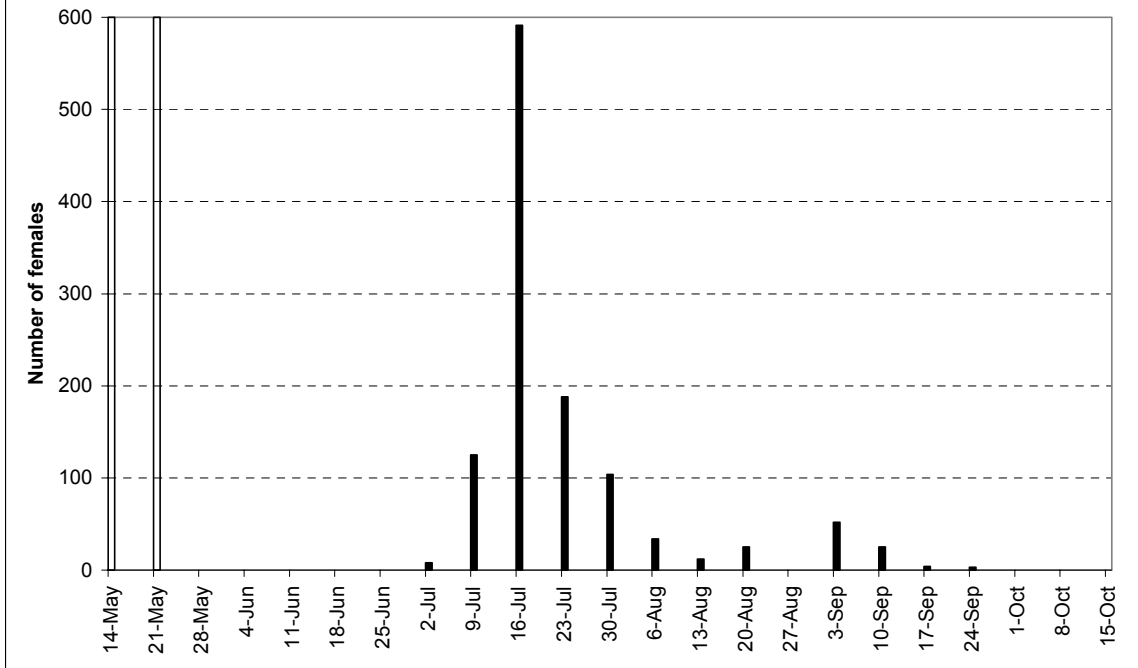


Fig. 27. Seasonal pattern of abundance of potential WNV vector mosquito species collected in the Fredericton area during 2002.

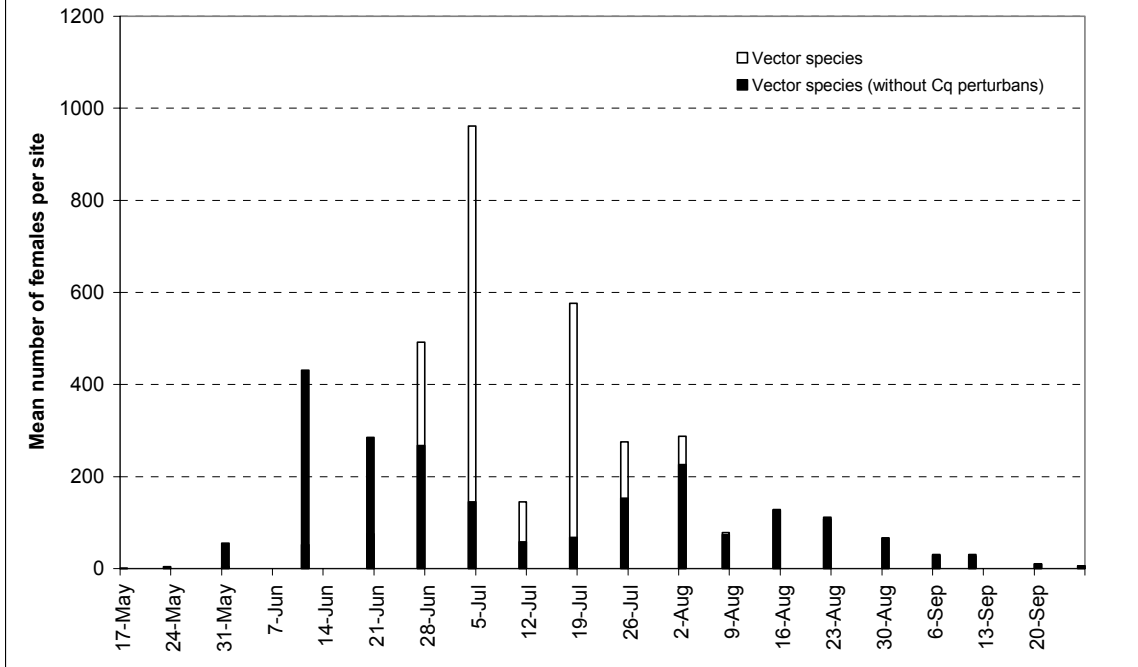


Fig. 28. Seasonal pattern of abundance of potential WNV vector mosquito species collected in southern New Brunswick (Moncton area, Oak Bay, St. Stephen, Fredericton area) during 2003.

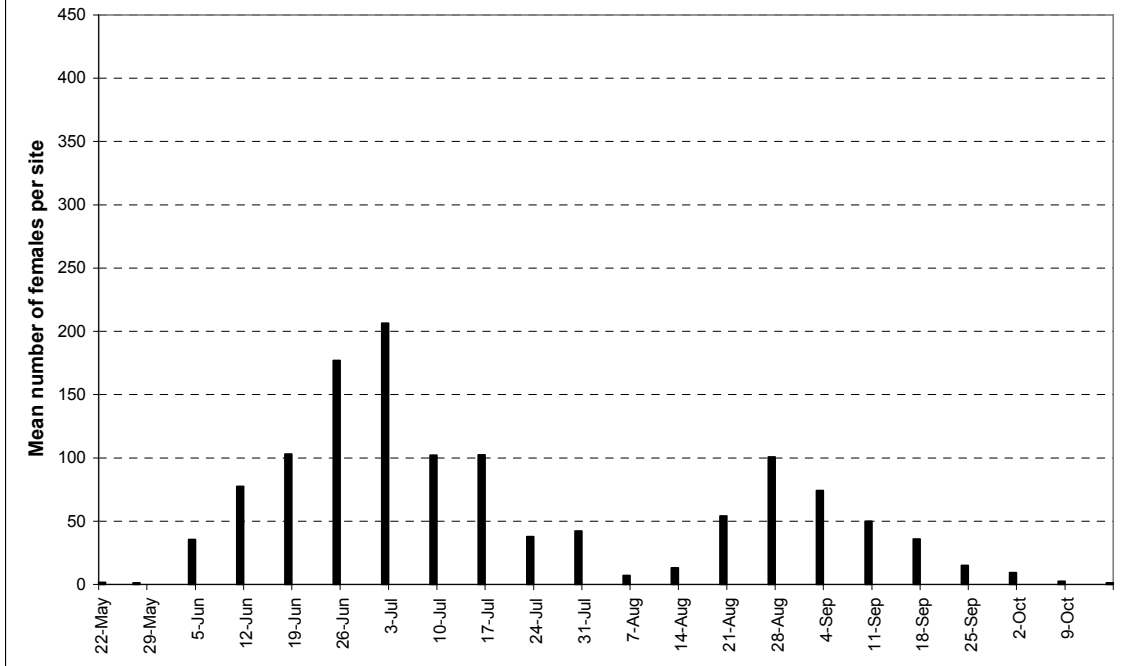


Fig. 29. Seasonal pattern of abundance of potential WNV vector mosquito species collected in northern New Brunswick (Grand Falls area, Kedgwick area, and the northeast region) during 2003.

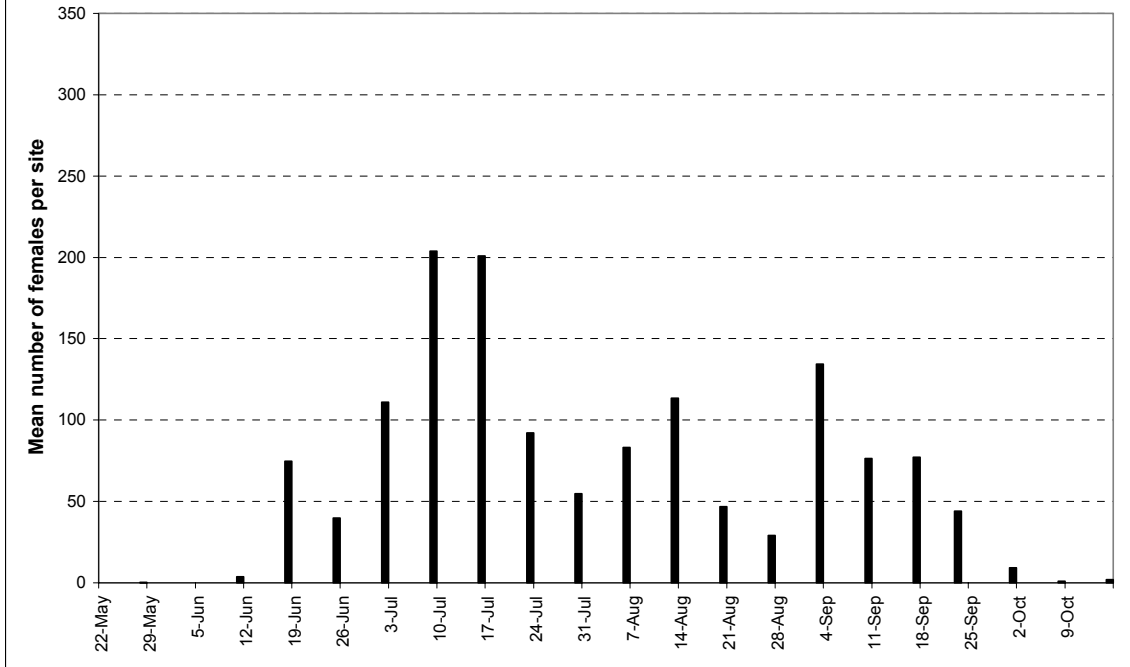


Fig. 30. Seasonal pattern of abundance of non-WNV vector mosquito species collected in the Fredericton area during 2002.

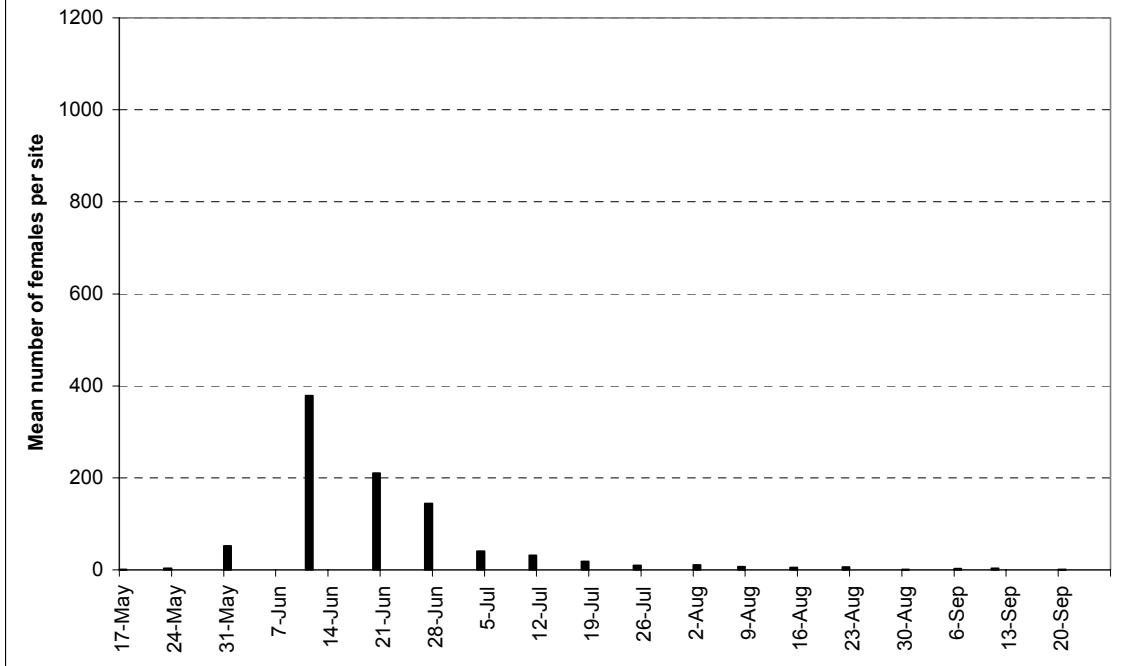


Fig. 31. Seasonal pattern of abundance of non-WNV vector mosquito species collected in southern New Brunswick (Moncton area, Oak Bay, St. Stephen, Fredericton area) during 2003.

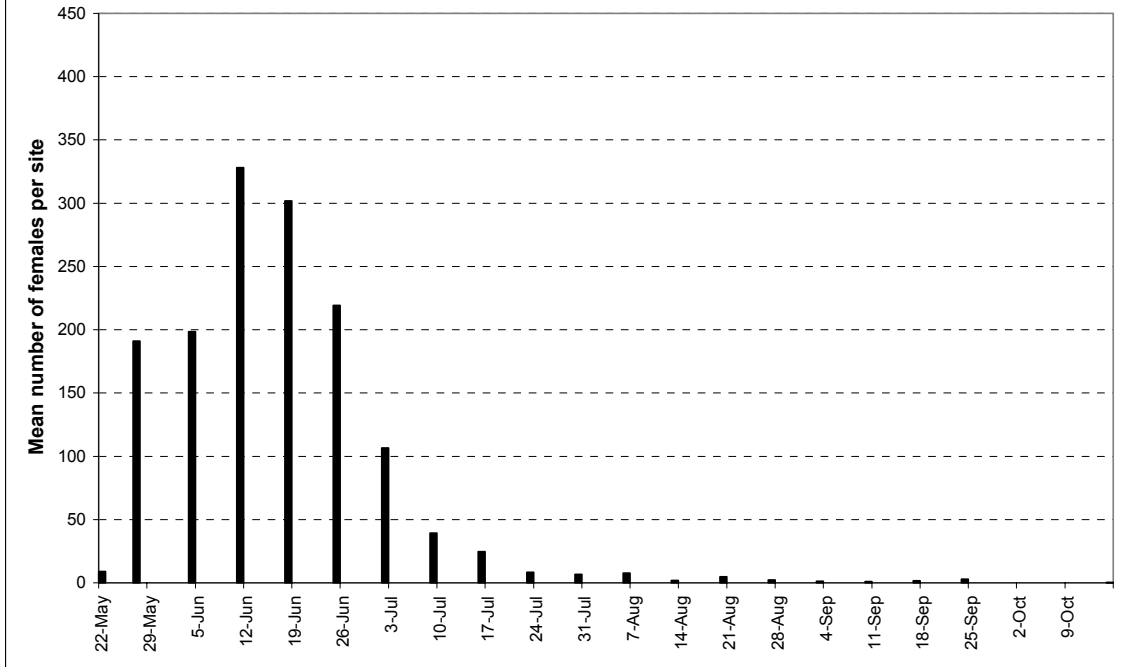


Fig. 32. Seasonal pattern of abundance of non-WNV vector mosquito species collected in northern New Brunswick (Grand Falls area, Kedgwick area, and the northeast region) during 2003.

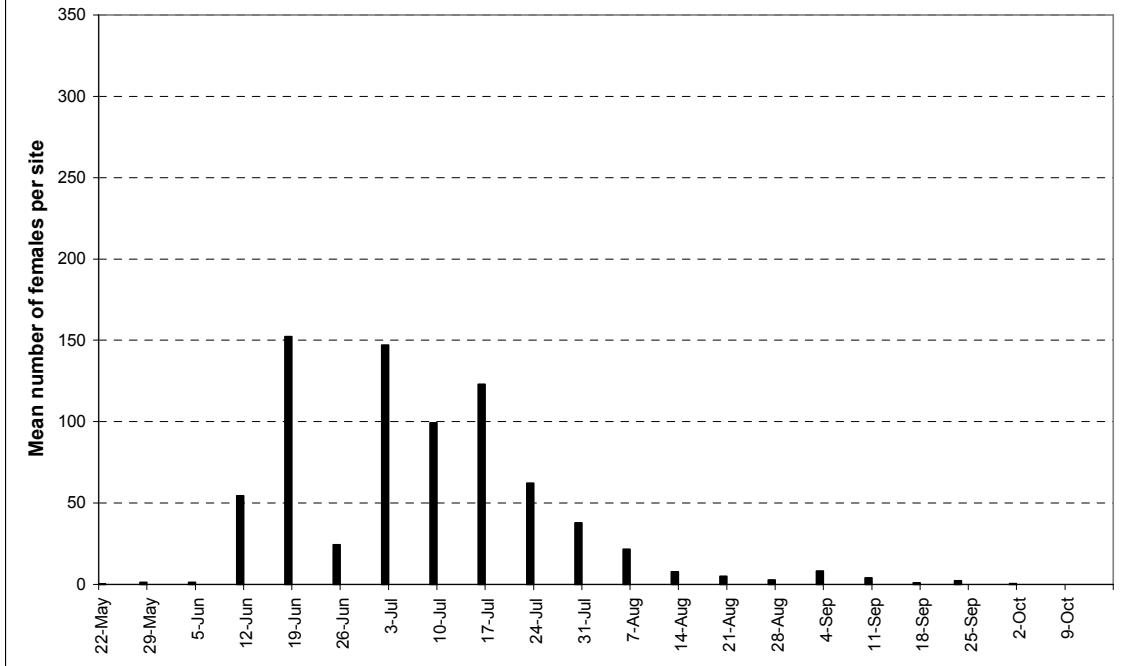


Fig. 33. Seasonal pattern of abundance of all mosquito species collected in the Fredericton area during 2002.

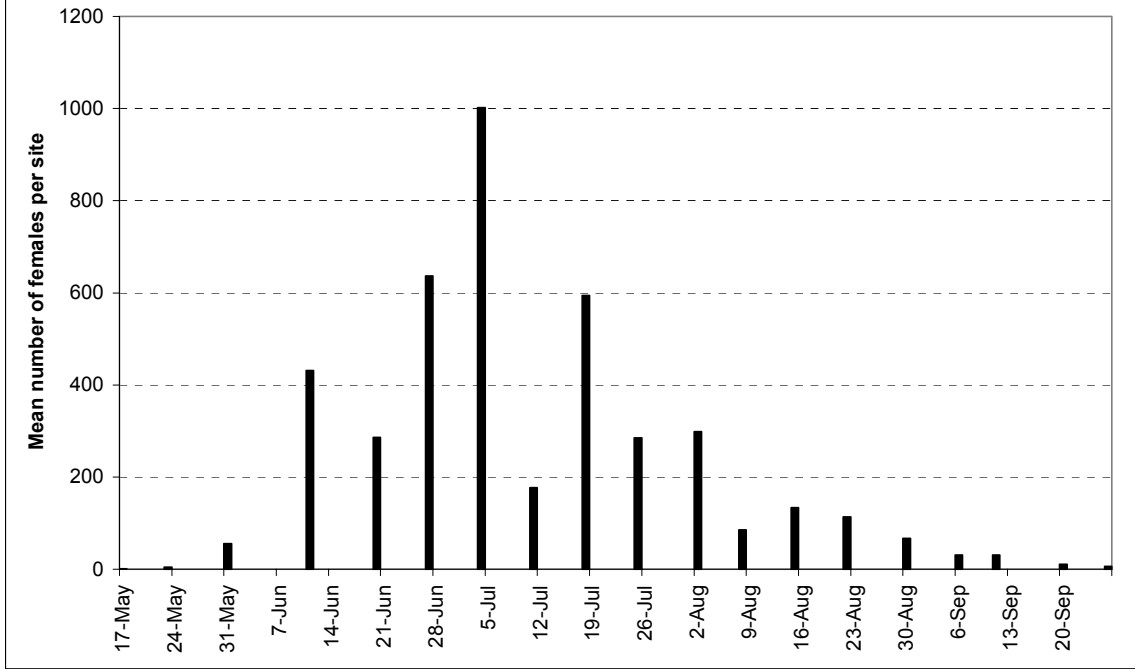


Fig. 34. Seasonal pattern of abundance of all mosquito species collected in southern New Brunswick (Moncton area, Oak Bay, St. Stephen, Fredericton area) during 2003.

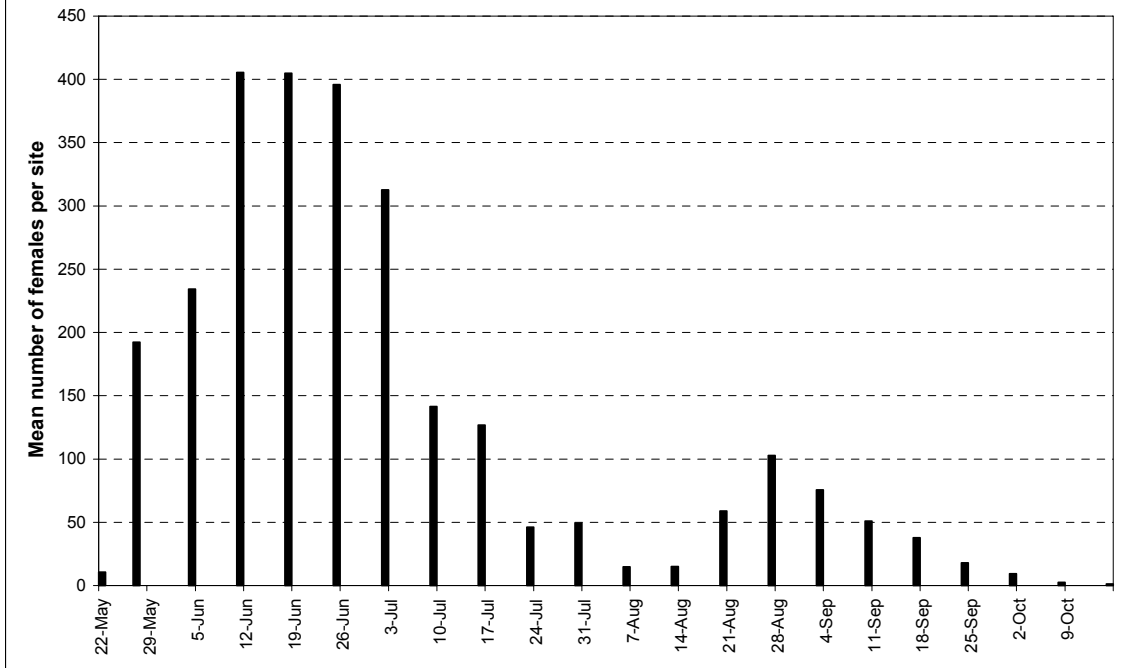


Fig 35. Seasonal pattern of abundance of all mosquito species collected in northern New Brunswick (Grand Falls area, Kedgwick area, and the northeast region) during 2003.

