

AN ANNOTATED LIST OF THE MOSQUITOES OF NEW YORK<sup>1</sup>RALPH C. BARNES, HERMAN L. FELLTON<sup>2</sup> AND CLIFTON A. WILSON<sup>3</sup>

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The mosquitoes of New York have been the subject of scientific study for many years. Among the early papers containing data on mosquito distribution in this state are those of Dyar(1), Johannsen(2), and Felt(3), which were published in 1902, 1903, and 1904, respectively. In the latter publication definite references were made to 30 species of mosquitoes from New York and eight others from neighboring states. In 1917 the extensive monograph of Howard, Dyar, and Knab(4) appeared. This work summarized most of the available distributional data for the mosquitoes of North America and included records of 33 species from New York. A list of the mosquitoes of New York, prepared by Dr. Robert Matheson, was published in 1926(5). This list, which included 43 species, was based on the Cornell University collection, Dr. E. P. Felt's collection, and published records of other workers. The works of Richards(6) and Matheson(7) added four species, and the present paper records five others which were previously unknown from the State. These records bring the total number of species of mosquitoes known from New York to fifty-two.

The data used in compiling the present list of species have been assembled from the Cornell University mosquito collection, from collections made by the

writers and other U. S. Public Health Service personnel (1942-45), from collections of the U. S. Army Sanitary Corps (1944-45), and from available literature records. The species herein reported for the first time are *Aedes flavescens*, *A. mitchellae*, *A. spencerii*, *Anopheles bradleyi*, and *Psorophora varipes*.

Most of the original records reported are based on collections made in and around Army and Navy installations. In addition, a considerable number of miscellaneous collections were made in various sections of the state as the opportunities presented themselves. Altogether, the authors have identified mosquitoes collected from 46 localities in 23 of the 62 counties in the state. Additional records from the Cornell University collection and from the literature increase these figures to 197 localities and 49 counties.

The species of mosquitoes now known to occur in New York are given in alphabetical order in the following list. The records are based upon identifications made by Service workers unless otherwise indicated. Under each species are included the localities where it has been taken, the types of collections, its abundance, and the earliest and latest months during which it was collected. The locality records are listed alphabetically under the counties in which they occur. An asterisk (\*) preceding the name of a species indicates a new state record.

Symbols are used to indicate the type of collections (when known) as follows: (B)—biting; (L)—larval; (R)—adults reared from larvae or pupae; (S)—diurnal resting stations; and (T)—light traps. Density ratings are based on the maximum number of specimens taken in a locality in a single collection. A species is generally considered to be rare in a given locality at a given time if no more than

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nine specimens were found in any one collection, common if from 10 to 99 specimens were taken in a single collection, and abundant if 100 or more were taken in a single collection. For some of the rarer species the exact number of specimens as well as the specific dates of collection are given. General statements relative to the abundance of species in the state are based on more than three years' experience in collecting mosquitoes in this and neighboring states.

*Aedes atlanticus* Dyar and Knab: This species occurs principally in the Southern states. The only New York records are by Richards(6) who collected a single larva in Nassau County at Island Park on April 17, 1937, and by Felt who reported it from Richmond County (Staten Island) according to Howard, Dyar, and Knab(4).

*Aedes atropalpus* (Coquillett): Breeds in rock holes along streams and waterfalls and may be found in considerable numbers where such breeding areas occur. Clinton County: Plattsburg, July (8). Essex County: Ausable Chasm, (B,L), common, Aug. Franklin County: Tupper Lake, Aug. (4). Greene County: Haines Falls, 1 male, Sept. 1, 1936 (9). Herkimer County: Old Forge, Aug. (8). Jefferson County: Deferiet (8). Oneida County: Forestport (8). Queens County: New York City, rare, July. Tompkins County: McLean, July (8). Westchester County: New Rochelle, (L,R,S), common, June-Aug.

*Aedes aurifer* (Coquillett): According to Matheson(7) this species occurs throughout northeastern United States and is abundant in certain sections of New York. The writers have taken it in numbers only in Schuyler County at Cayuta Lake and in Orange County at West Point. Cayuga County: North Fairhaven, June-July, (8). Port Byron, (B), 1 female, July 9, 1944. Dutchess County: Hyde Park, (B), rare, July-Aug. Essex County: Elizabethtown, June (8). Niagara County: Fort Niagara, rare, June-July. Oneida County: Utica, (S), rare, June.

Onondaga County: Baldwinsville, May (8). Syracuse, June (8). Orange County: West Point, (B,S), common, July-Aug. Queens County: New York City, a single male. Schuyler County: Cayuta Lake, (B,L), abundant, May-June (8, in part). Waneta Lake, June-July, (8). Suffolk County: Yaphank, (B,S), rare, June. Tompkins County: Ringwood, May, (8). Wayne County: Sodus Point, June-July, (8).

*Aedes canadensis* (Theobald). One of the two most common species of *Aedes* in New York. It is most abundant in early spring and is a very annoying pest especially in wooded areas. It occurs from early March until October, although it becomes much less common in late summer and fall. Reported from 56 localities in the following counties: Albany, Cayuga, Clinton, Dutchess, Essex, Franklin, Hamilton, Herkimer, Kings, Lawrence, Monroe, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Queens, Rensselaer, Richmond, Rockland, Seneca, Schuyler, Steuben, Suffolk, Tompkins, Wayne, and Westchester.

*Aedes cantator* (Coquillett). A severe pest along the coastal areas of New York where it breeds principally in brackish marshes. Dr. Matheson has also collected it in inland areas in Onondaga County around Syracuse and in Tompkins County around Ithaca where it was breeding in salt pools. It has been found in greatest numbers at Staten Island in Richmond County. Kings County: Brooklyn, (T), common, May-Aug. Jamaica Bay, (L), June-Sept., (6). Sheepshead Bay, June-July, (8). Nassau County: Baldwin, (B), rare, Aug. Bellmore, (6). Freeport, (6). Hempstead, (S,T), rare, June-Oct. Hewlett Neck, (6). Island Park, (6). Jones Beach, June-Sept., (6). Lido Beach, (6). Massapequa, (6). Merrick, June-Sept., (6). Oceanside, (6). Seaford, (6). Woodmere, Sept., (8). Wantagh, (6). Oneida County: Rome, (B), rare, June-July. Utica, (B), rare, June-July. Onondaga County: Syracuse, (L), (8). Orange County: West Point,

(S,T), rare, June-Aug. New York County: Governors Island, (S,T), rare, May-Oct. Queens County: Flushing, (B, L,R,S,T), common, March-Oct. New York City, common, Apr.-Aug. Richmond County: Staten Island, (B,L,R,S,T), abundant, Apr.-Oct. Rockland County: Orangeburg, (S,T), abundant, May-Sept. Suffolk County: Babylon, July, (4). Bellport, (4). Center Moriches, Sept., (4). Cold Spring Harbor, Apr.-May, (8). Northport, July, (4). Riverhead, Sept., (8). Suffolk County, July-Aug., (8). Yaphank, (B,S,T), rare. Tompkins County: Ithaca, June-July, (8).

*Aedes cinereus* Meigen: This species has been found sparingly throughout most of the State. Matheson(7) states that in central New York it breeds in shallow woodland pools with a dense floor of decaying leaves. The females are severe biters and have been especially noted in woodland areas. Albany County: Karner, May-June, (8). Cayuga County: North Fairhaven, June, (8). Port Byron, (B), rare, July. Chemung County: Elmira, July, (8). Clinton County: Plattsburg, (B), rare, Apr.-Sept., (4, in part). Dutchess County: Green Haven, (B), rare, June-July. Pawling, (L,R), rare, May. Poughkeepsie, May, (8). Erie County: Buffalo, Sept.-Nov. (5). Essex County: Elizabethtown, May-July, (8). Lake Placid, (B,S), rare, July-Aug. Franklin County: Duck Lake, June, (8). Tupper Lake, Aug., (8). Herkimer County: Big Moose, June, (8). Old Forge, Aug., (8). Nassau County: Hempstead, (T), rare, Aug. New York County: Governors Island, (B,T), rare, July-Aug. Niagara County: Fort Niagara, (L,S,T), rare, May-Aug. Oneida County: Rome, (B), rare, June-Aug. Utica, (B,L,S), rare, June-Aug. Onondaga County: Cross Lake, July, (8). Tully Lakes, July, (8). Ontario County: Geneva, (B), common, June. Orange County: West Point, (B, L,S,T), rare, Apr.-Sept. Queens County: Flushing, (T), rare, Aug. New York City, rare, Apr.-June. Rensselaer County: Nassau, May, (5). Richmond County:

Staten Island, (B,L,T), rare, May-Sept. Rockland County: Orangeburg, (B,S,T), rare, June-Aug. Schuyler County: Alpine Junction, July, (8). Cayuta Lake, (B), May-June, (8, in part). Waneta Lake, July, (8). Watkins Glen, May-July, (8). Steuben County: Bath, May-June, (8). Suffolk County: Suffolk Co., July-Aug., (8). Yaphank, (B,L,T), rare, July-Sept. Tioga County: Apalachin, July, (8). Owego, July, (8). Tompkins County: Freeville, (8). Ithaca, Apr.-Aug., (8). McLean, May-Aug., (8). Ringwood, May, (8). Wayne County: Sodus Point, June-Aug., (5). Westchester County: Dobbs Ferry, (L,R), rare, March.

*Aedes communis* (De Geer): The only specimens of *A. communis*, which have been identified by the writers, were collected in Essex County at Lake Placid by Lt. Edwin A. Kass. These collections indicate the presence of larvae in that locality in July and of adults in July and early August. A number of other localities are represented in the Cornell University collection. Albany County: Delmar, Aug., (8). Karner, May, (4). Clinton County: Plattsburg, Apr., (4). Essex County: Elizabethtown, May-June, (8). Lake Placid (B,L), 1 larva, July 26, 1945; 7 females, July 12, 1945; 5 females, July 20, 1945; 5 females, Aug. 2, 1945, Lt. Edwin A. Kass. Franklin County: Saranac Inn, July, (8). Herkimer County: Big Moose, June, (8). Old Forge, June, (8). Rensselaer County: Nassau, May, (8). Schuyler County: Cayuta Lake, (8). Tompkins County: McLean, May, (8). Ringwood, Apr.-May, (8).

*Aedes diantaeus* Howard, Dyar and Knab: An extremely rare species in New York. The writers have seen only two larvae which were collected in Essex County at Lake Placid by Lt. Edwin A. Kass. According to Matheson,(7) this species breeds almost exclusively in cold, shaded pools in forested areas, particularly coniferous forests. Essex County: Lake Placid, (L), 2, July 26, 1945, Lt. Edwin A. Kass. Tompkins County: Ringwood, June, (8).

*Aedes dorsalis* (Meigen): Breeds in a variety of habitats including both salt and fresh water marshes. It appears to be rather rare in New York as it has been found only in small numbers though in widely separated localities. Albany County: Albany, Aug.-Sept., (8). Niagara County: Fort Niagara, (S), 1 female, May 28, 1945; 1 male, Sept. 6, 1945 (det. genitalia). Oneida County: Utica, (T), 1 male, Sept. 12, 1945 (det. genitalia). Onondaga County: Baldwinsville, May, (8). Syracuse, (B,S), 1 female, Aug. 14, 1945; 6 females, Aug. 17-18, 1945, May-Sept., (8). Queens County: Flushing, (B), rare, June. Rockland County: Orangeburg, (S), 1 male, July 8, 1945, (det. genitalia). Tompkins County: Ithaca, May-Aug., (8).

*Aedes excrucians* (Walker): The distribution and abundance of *A. excrucians* are rather difficult to determine accurately from our data since in many cases it has been impossible to separate females of this species from those of *A. fitchii* and *A. stimulans*. The following records, except when based on reared specimens or male genitalia, must therefore be regarded as tentative. Albany County: Albany, May-June, (8). Delmar, May, (8). Karner, May-July, (8). Voorheesville, July, (8). Cattaraugus County: Salamanca, June, (8). Cayuga County: North Fairhaven, July, (8). Port Byron, (B), rare, July. Chemung County: Elmira, July, (8). Clinton County: Plattsburg, (B), rare, Apr.-Aug. (4, in part). Dutchess County: Green Haven, (B,S), rare, June-July. Hyde Park, (B), rare, July-Aug. Essex County: Elizabethtown, May, (8). Franklin County: Duck Lake, June, (8). Saranac Inn, July, (8). Greene County: Onteora Club, July, (5). Herkimer County: Herkimer, Aug., (8). Old Forge, Aug., (8). Kings County: Sheepshead Bay, June-July, (8). Monroe County: Honeoye Falls, June, (8). Niagara County: Fort Niagara, (L,R,S), rare, May-June. Niagara Falls, (B,S), rare, June-Aug. Olcott, June, (8) Oneida County: Rome, (B), common, July-Aug.

Trenton Falls, June, (8). Utica, (B,S,T), rare, June-July. Onondaga County: Syracuse, June-Aug., (8). Orange County: West Point, (B,L,T), rare, May-Aug. Queens County: Forest Park, June, (5). New York City, June, (8). Rensselaer County: Rensselaer, May, (5). Richmond County: Staten Island, (B,L,T), rare, Apr.-Aug. Rockland County: Orangeburg, (S,T), rare, May-Aug., (2 males det. genitalia). Saratoga County: Victory Mills, May, (8). Schuyler County: Alpine Junction, July, (8). Cayuta Lake, May, (8). Waneta Lake, July, (8). Watkins Glen, May-Aug., (8). Seneca County: Romulus, (B), rare, June. Seneca Falls, July, (8). Steuben County: Bath, May, (8). Suffolk County: Yaphank, (B,T), rare, May-July. Tompkins County: Cayuga Lake, May, (8). Ithaca, May-Sept., (8). McLean, May-July, (5). Ringwood, May-June, (8). Warren County: Lake George, Aug., (5). Washington County: Pearl Point, Aug., (8).

*Aedes fitchii* (Felt and Young): This species breeds in early spring pools where it often occurs in great numbers. Its habits are similar to those of *A. excrucians* and *A. stimulans* with which it is often associated. It is often difficult to distinguish *A. fitchii* from *A. excrucians* and *A. stimulans* and the following records, except when based on genitalia or larvae, must be regarded as tentative. Available information indicates that it is rather widely distributed in the State. Albany County: Delmar, May, (8). Karner, May-July, (8). Meadowdale, May, (8). Thacher Park, May, (8). Cattaraugus County: Salamanca, June, (8). Cayuga County: Atwaters, July, (8). Port Byron, (B), rare, June-July. Clinton County: Plattsburg, (B,S), rare, Apr.-Aug., (4, in part). Columbia County: Niverville, June, (8). Dutchess County: Green Haven, (B,S), rare, June-July, (one male det. genitalia). Hyde Park, (B), rare, June-Aug. Poughkeepsie, May, (8). Essex County: Elizabethtown, May-June, (8). Keene Valley, Aug., (8). Franklin County: Duck Lake, June, (8).

Greene County: Oteora Club, June-Aug., (5). Hamilton County: Wells, July, (8). Herkimer County: Herkimer, Aug., (8). Newport, June-Aug., (8). Kings County: Brooklyn, (T), rare, June. New York County: Governors Island, (T), rare, June. Niagara County: Fort Niagara, (S), rare, June-July. Niagara Falls, (B,S), common, June-Aug. Oneida County: Rome, (B), common, June-Aug. Trenton Falls, June, (8). Utica, (B,S), rare, June-Aug. Onondaga County: Jordan, July, (8). Syracuse, July, (8). Tully Lakes, July, (8). Ontario County: Geneva, (B), rare, June. Queens County: New York City, a single male, (det. genitalia). Rensselaer County: Nassau, May-June, (8). Richmond County: Staten Island, (B,T), rare, June. Rockland County: Orangeburg, (T), rare, May-Aug. Saratoga County: Victory Mills, May, (8). Seneca County: Romulus, (T), rare, June. Seneca Falls, July, (8). Schuyler County: Watkins Glen, May-Aug., (8). Suffolk County: Riverhead, June, (8). Yaphank, (L), rare, May. Tompkins County: Ithaca, June-July, (8). Lick Brook, May, (8). McLean, May-Aug., (8). Ringwood, May, (8). Wayne County: Sodus Point, June, (8). Westchester County: North Salem, July, (8).

\* *Aedes flavescens* (Muller): Previously known to be distributed from Ontario and Michigan, westward throughout the great plains, south to Northern Illinois and Iowa and north to Hudson Bay and Alaska (7). A single larva which was collected in Essex County at Lake Placid, New York, July 26, 1945 by Lt. Edwin A. Kass has been identified by Dr. Matheson as *A. flavescens*. Dr. Matheson (personal communication) states that he has two previous records of this species from New York which have not been published. One, a male, was collected in Tompkins County at Ithaca on May 18, 1913 and the other, also a male, was taken by Dr. E. P. Felt in Albany County at Albany on June 11, 1927.

*Aedes grossbecki* Dyar and Knab: An

extremely rare species which is known from only three localities in the State. Our collections include two males, both taken from southeastern New York in August. Dr. Matheson reports it from Tompkins County at Ithaca. Nassau County: Hempstead, (T), 1 male, Aug. 17, 1945, (det. genitalia), Rockland County: Orangeburg, (T), 1 male, Aug. 5, 1945, (det. genitalia). Tompkins County: Ithaca, (7).

*Aedes impiger* (Walker): A rare species in the United States. The authors have not identified it from New York but it has been previously reported from three localities. Clinton County: Plattsburg, April, (10). Essex County: Elizabethtown, Apr., (5). Schuyler County: Cayuta Lake, May, (8).

*Aedes implacabilis* (Walker): The writers have been unable to separate the females of this species from those of *A. punctor*. The following records, except when based on larvae or male genitalia, must therefore be regarded as being either *A. implacabilis* or *A. punctor*. Cayuga County: Port Byron, (B), 1 female, June 21, 1945. Clinton County: Plattsburg, (B), 6 females, June 14, 1945, Lt. J. J. Wurdack; (L), April 24, 1905, (4). Essex County: Chapel Pond, June, (5). Elizabethtown, June, (5). Greene County: Oteora Club, June, (5). Orange County: West Point, (T), rare, May. Ontario County: Geneva, (B), 2 females, June 20, 1945. Queens County: New York City, rare, (det. male genitalia). Rensselaer County: Nassau, May, (5). Rockland County: Orangeburg, (T), rare, May-June. Schuyler County: Cayuta Lake, (L), April, (8). Tompkins County: Ithaca, (L), April, (8). McLean, (5). Ringwood, May, (5).

*Aedes intrudens* Dyar: Matheson (7) considers this species to be common in New York and states that it breeds in woodland pools filled by melting snows and early spring rains. Our collections have revealed relatively few positively identified specimens and most of the following records are from the Cornell Uni-

versity collection. Albany County: Albany, May, (8). Delmar, May, (8). Karner, March-May, (8). Normanskill, May, (8). Clinton County: Plattsburg, (S), rare, June. Dutchess County: Hyde Park, (B), rare, June. Pawling, (S), rare, June-July. Essex County: Chapel Pond, June, (8). Elizabethtown, Apr.-June, (8). Franklin County: Duck Lake, June, (8). Saranac Inn, July, (8). Greene County: Onteora Club, June, (5). Herkimer County: Big Moose, June, (8). Old Forge, June, (8). Jefferson County: Watertown, (S), rare, June. New York County: Governors Island, (T), rare, June. Oneida County: Utica, (S), rare, June. Onondaga County: Tully Lake, July-Aug., (8). Orange County: West Point, (B,S), rare, May-July. Rensselaer County: Nassau, May-June, (8). Richmond County: Staten Island, (B,L,T), common, May-June. Rockland County: Orangeburg, (B,S,T), rare, May-July. Suffolk County: Suffolk County, July, (8). Yaphank, (B, S), rare, May-June. Tompkins County: Ithaca, Apr.-July, (8). Ringwood, May-Oct., (8). Wayne County: Sodus Point, July, (8).

\* *Aedes mitchellae* (Dyar): A common species in southeastern United States but has not been previously taken in New York. The specimens upon which this record is based were collected by Lt. Morris Silverman near Halloran General Hospital, Richmond County, Staten Island, New York. Richmond County: Staten Island, (L,T), 1 female, May 3, 1944; 6 larvae, June 23, 1944.

*Aedes punctor* (Kirby): As previously stated, the writers have been unable to separate the females of this species from those of *A. implacabilis* and therefore can give little information regarding its distribution and abundance. A single male has been identified from Richmond County at Staten Island and a few other records are available from the Cornell University collection and from the literature. Albany County: Karner, May-June, (8). Meadowdale, May, (8). Thacher Park, May, (8). Voorheesville, May, (8).

Cattaraugus County: Salamanca, June, (8). Cayuga County: North Fairhaven, July, (8). Clinton County: Peru, June, (8). Plattsburg, April, (10). Essex County: Chapel Pond, June, (8). Elizabethtown, May-July, (8). Marcy Pond, June, (8). Franklin County: Duck Lake, June, (8). Saranac Inn, July, (8). Herkimer County: Big Moose, June, (8). Old Forge, June-Aug., (8). Rensselaer County: Nassau, May, (8). Richmond County: Staten Island, (T), 1 male, Aug. 6, 1945, det. genitalia. Tompkins County: Ithaca, Apr.-Sept., (8). McLean, May, (8). Ringwood, May-June, (8). Washington County: Thomson, May, (8).

*Aedes riparius* Dyar and Knab: The writers have not encountered this species but Matheson(7) states that he has one larva which was taken in Onondaga County near Syracuse.

*Aedes sollicitans* (Walker): An important pest species along the coastal regions of the State where it breeds abundantly in the salt marshes. It has also been taken about the salt pools in Onondaga County at Syracuse (7). Dutchess County: Pawling, (T), 2 females, July 29, 1945. Kings County: Brooklyn, (S,T), common, May-Sept. Sheepshead Bay, June-Aug., (8). Nassau County: Baldwin, (B), common, Aug. Center Island, May, (4). Farmingdale, July, (8). Freeport, (6). Hempstead, (S,T), rare, June-Sept. Island Park, (6). Jones Beach, (6). Lawrence, (6). Merrick, (6). Oceanside, (6). Woodmere, Sept., (8). New York County: Governors Island, (B,S,T), rare, May-Oct. Onondaga County: Syracuse, June-Aug., (8). Orange County: West Point, (T), 1 female, July 19, 1945. Queens County: Flushing, (B,S,T), common May-Oct. Forest Park, June-Sept., (5). Jamaica, (L,R), abundant, Sept. New York City, abundant, May-Oct. Richmond County: Staten Island, (B,L,S,T), abundant, May-Oct. Rockland County: Orangeburg, (L,T), common, June-Sept. Suffolk County: Bellport, Aug., (4). Brentwood, (B,S), rare, July-Aug. Center Moriches, Sept., (4). Cold Spring Harbor, July, (4).

Hog Point, Aug., (8). Lloyd's Neck, Oct. (4). Northport, July, (4). Patchogue, June, (8). Riverhead, June-Sept., (8). Sag Harbor, July, (4). Suffolk County, July-Aug., (8). Wyandach, July, (6). Yaphank, (B,S,T), common, June-Oct.

\* *Aedes spencerii* (Theobald): According to Matheson(7), *A. spencerii* is the dominant species of the prairies. It has been previously reported from the plains and mountains of Utah, Idaho, and Wyoming; east to Illinois and Michigan. A single female from Lake Placid (Essex County), New York constitutes the only known record of the species from the eastern states. This mosquito was taken in a biting collection at the edge of a fir-spruce forest on July 26, 1945 by Lt. Edwin A. Kass. The specimen has been deposited in the Cornell University collection.

*Aedes sticticus* (Meigen): A single brooded floodwater species which is widely distributed over eastern United States and Canada. It often proves to be a very severe pest in New York. It was observed in tremendous numbers at Howland's Island near Port Byron on June 21, 1945, where it proved to be such a fierce biter that it was almost impossible to continue with outdoor activities. Liberal applications of the repellent dimethyl-phthalate afforded little protection from this mosquito. Albany County: Karner, June, (8). Cayuga County: Port Byron, (B,S), abundant, June-July. Chemung County: Elmira, July, (8). Clinton County: Plattsburg, (B,S), rare, June. Dutchess County: Pawling, (S), rare, June. Jefferson County: Watertown, (S), common, June. Kings County: Sheepshead Bay, July, (8). Niagara County: Fort Niagara, (L,R,S), rare, May-June. Onondaga County: Cross Lake, July, (8). Jordan, July, (8). Ontario County: Geneva, (B), common, June. Orange County: West Point, (B,S,T), common, May-Sept. Richmond County: Staten Island, (T), rare, July. Rockland County: Orangeburg, (S,T), common, June-Aug. Tioga County: Apalachin, July, (8). Tompkins County:

Ithaca, June-Sept., (8). Ringwood, June, (8). Washington County: Easton, May, (8).

*Aedes stimulans* (Walker): One of the most abundant and annoying woodland species of New York. It occurs principally during spring and early summer and seems to be more abundant than the closely related *A. excrucians* and *A. fitchii*. Albany County: Delmar, May, (8). Karner, May-June, (8). Cayuga County: Atwaters, July, (8). Port Byron, (B,S), common, June-July. Chautauqua County: Westfield, June, (5). Clinton County: Plattsburg, (B,S), rare, June; Apr., (4). Columbia County: Niverville, June, (8). Dutchess County: Green Haven, (B,S), rare, June-July. Hyde Park, (B,S), common, May-Aug. Pawling, (S), rare, June. Poughkeepsie, May, (8). Franklin County: Duck Lake, June, (8). Genesee County: Batavia, June, (8). Hamilton County: Piseco Lake, Aug., (8). Wells, July, (8). Herkimer County: Newport, June, (8). West Winfield, June, (8). New York County: Governors Island, (B,T), rare, July-Aug. Niagara County: Fort Niagara, (S), common, May-Aug., one male det. genitalia. Niagara Falls, (B,S), common, June-Aug. Olcott, June, (8). Oneida County: Rome, (B), common, July-Aug. Utica, (B,S,T), common, June-Aug. Onondaga County: Jordan, July, (8). Syracuse, June, (8). Tully Lakes, July, (8). Ontario County: Geneva, (B), common, June. Orange County: West Point, (B), rare, July. Queens County: New York City, rare, May-July. Rensselaer County: Nassau, June, (8). Richmond County: Staten Island, (B,LMS,T), rare, Apr.-July (one male determined genitalia). Rockland County: Orangeburg, (S,T), rare, June-July (one male determined by genitalia). Schuyler County: Alpine Junction, July, (8). Cayuta Lake, May-July, (8). Waneta Lake, July, (8). Watkins Glen, July, (8). Seneca County: Romulus, (B,S,T), common, June-July. Seneca Falls, July, (8). Steuben County: Bradford, (L), (8). Suffolk County: Amagansett, (10). Bellport, (10). Yap-

hank, (B), rare, June. Tioga County: Apalachin, July, (8). Owego, July, (8). Tompkins County: Ithaca, Apr.-July, (8). McLean, May-July, (8). Ringwood, Apr.-Aug., (5). Washington County: Easton, May, (8). Wayne County: Sodus Point, June, (8).

*Aedes taeniorhynchus* (Wiedemann): This is the small salt marsh mosquito which is an important pest of the South Atlantic coastal region. It occurs sparingly along the coast of southeastern New York and is seldom present in sufficient numbers to be of much importance. Kings County: Sheepshead Bay, Aug., (8). Nassau County: Merrick, Aug.-Sept. (6). Woodmere, Aug.-Sept., (6). New York County: Governors Island, (T), rare, July. Queens County: Flushing, (T), rare, Sept. Forest Park, (5). New York City, rare, June-Aug. Richmond County: Staten Island, (B,L,T), rare, June-Oct. Rockland County: Orangeburg, (T), 1 male, Aug. 4, 1945. Suffolk County: Amagansett, (1). Babylon, July, (4). Bellport, Aug., (4). Halfway Hollow Hills, June, (8). Hog Point, Aug., (8). Sag Harbor, (4). Suffolk County, July-Aug., (8).

*Aedes trichurus* (Dyar): The authors have but rarely encountered this species in New York. It has been taken from several localities by Dr. Matheson and most of the following records are from his collection. Albany County: Albany, May, (8). Delmar, May, (8). Karner, May, (8). Normanskill, May, (8). Clinton County: Peru, June, (8). Plattsburg, Apr., (4); (B), 1 female, June 8, 1945, Lt. J. J. Wurdack. Dutchess County: Hyde Park, (B), rare, June. Essex County: Center, May, (8). Elizabethtown, May, (8). Herkimer County: Herkimer, Aug., (8). Old Forge, June-Aug., (8). Rensselaer County: Nassau, May, (8). Schuyler County: Alpine, common, Apr., (8). Watkins Glen, Apr., (8). Tompkins County: Ithaca, Apr.-May, (8). Ringwood, Apr.-June, (8).

*Aedes triseriatus* (Say): A common and widely distributed species which breeds principally in tree holes. The females bite

readily but apparently do not fly far from their breeding places. Albany County: Albany, Aug., (8). Karner, May-Aug., (8). Cayuga County: North Fairhaven, July, (8). Dutchess County: Hyde Park, (T), rare, Aug.-Sept. Erie County: Erie County, June-Aug., (5). Essex County: Elizabethtown, July-Aug., (8). Lake Placid, (B), 1 female, Aug. 22, 1945. Herkimer County: Old Forge, Aug., (8). Nassau County: Hempstead, (T), rare, July-Sept. Lawrence, (L), Oct., (6). Niagara County: Fort Niagara, (S,T), rare, July-Sept. Oneida County: Rome, (B), common, June-Aug. Utica, (B,S,T). Onondaga County: Syracuse, June, (8). Orange County: Michigan Hollow, July, (8). Tuxedo, July, (9). West Point, (B,L,S,T), common, Apr.-Sept. Putnam County: Lake Mahopac, July, (8). Queens County: New York City, rare, June-Sept. Queens Village, (B), rare, Aug. Richmond County: Staten Island, (B,S,T), rare, June-Sept. Rockland County: Orangeburg, (B,S,T), rare, June-Sept. Ramapo, Oct., (8). Schuyler County: Cayuta Lake, (B,L,R), abundant, June-July. Watkins Glen, July, (8). Seneca County: Romulus, (S,T), rare, Sept. Suffolk County: Cold Spring Harbor, June, (8). Halfway Hollow Hills, July, (8). Suffolk County, July-Aug., (8). Wyandach, July, (8). Yaphank, July, (8). Tompkins County: Ithaca, June-Sept., (8). McLean, June-July, (8). Wayne County: Sodus Point, July, (8).

*Aedes trivittatus* (Coquillett): This species is known from a considerable number of localities in New York, though it has seldom been found in large numbers. According to Matheson (7) it was very common in central New York during the floods of 1935 where it proved to be a vicious biter. Albany County: Albany, June, (8). Karner, June, (8). Chemung County: Elmira, July, (8). Clinton County: Plattsburg, (B,S), rare, June-Sept. Nassau County: Hempstead, (T), rare, Aug. New York County: Governors Island, (T), rare, Aug. Niagara County: Fort Niagara, (S), rare, June. Oneida



County: Utica, (B,T), rare, Aug. Orange County: Tuxedo, July, (9). West Point, (B,T), rare, June-Sept. (3 males determined genitalia). Queens County: Flushing, (B), rare, July. New York City, rare, July. Queens Village, (B), common, July. Richmond County: Staten Island, (B,S), rare, June-Aug. Rockland County: Orangeburg, (S,T), rare, June-Aug. (1 male determined genitalia). Seneca County: Romulus, (T), rare, July. Steuben County: Bath, July, (8). Suffolk County: Yaphank, (T), rare, Aug. Tioga County: Apalachin, July, (8). Tompkins County: Ithaca, June-Sept., (8). Taughannock Falls, Sept., (8).

*Aedes vexans* (Meigen): This is the most abundant species of *Aedes* in New York. It is one of the most important of all pest mosquitoes as it is a vicious biter and a strong flyer. It will breed in almost any type of water and often occurs in fabulous numbers in roadside pools. Extensive collections indicate the breeding of *A. vexans* from March through October. It has been taken from 58 localities from the following counties: Albany, Cayuga, Clinton, Dutchess, Essex, Franklin, Hamilton, Herkimer, Kings, Monroe, Nassau, Niagara, Oneida, Onondaga, Ontario, Orange, Queens, Rensselaer, Richmond, Rockland, Schoharie, Schuyler, Seneca, Steuben, St. Lawrence, Suffolk, Tompkins, Ulster, Wayne, and Westchester.

*Anopheles barberi* Coquillett: Only two specimens of this small tree-hole-breeding anopheline were taken in the state. Matheson(7) states that it occurs commonly in the tree holes about Ithaca (Tompkins County). It is probable that a careful search would prove this species to be more widely distributed in New York than present records indicate. Orange County: West Point, (S), 1 female, under old smoke house, Aug., 1944. Rockland County: Orangeburg, (S), 1 male, under barracks, Aug. 16, 1944. Tompkins County: Ithaca, (L), common, July-Oct., (8).

\* *Anopheles bradleyi* King: Until recently *A. bradleyi* was considered to be

a brackish-water variety of *A. crucians* which it resembles closely in the adult stage. Larvae of *A. bradleyi* and *A. crucians* can, however, be readily distinguished, and many workers in this group now consider them to be distinct species. *A. bradleyi* has been known from the Atlantic and Gulf Coast from Maryland to Vera Cruz, Mexico. It was recently reported from more northern Atlantic coastal areas by the writers(11). At that time, definite larval records were available from southern New Jersey and tentative adult records from southeastern New York, New Jersey and Delaware. During the 1945 season two collections of larvae of *A. bradleyi* were made from slightly brackish coastal marshes near Idlewild Airport, Jamaica, Long Island, New York. The first of these collections was made on September 7, 1945, at which time 13 *A. bradleyi* larvae were taken. They were found in association with three larvae of *A. punctipennis* and many *Culex salinarius*. On Oct. 3, 1945, 32 *A. bradleyi* larvae were collected along with 16 larvae of *A. punctipennis*, 4 larvae of *A. quadrimaculatus* and a great number of *C. salinarius*. In both collections all anophelines were identified from living larvae which were then isolated and reared for confirmation.

*Anopheles crucians* Wiedemann: Ranges from Massachusetts to Texas, being most abundant in the southeastern states. It is a fairly common species in southeastern New York and has been taken as far upstate as West Point. Kings County: Brooklyn, (T), rare, June. Nassau County: Farmingdale, Aug., (6). Hempstead, (T), common, June-Oct. New York County: Governors Island, (T), rare, June-Oct. Orange County: West Point, (L,S,T), common May-Oct. Queens County: Flushing, (L,R), 10, Aug. 5, 1945. New York City, common, May-Oct. Richmond County: Staten Island, (S,T), rare, June-Oct. Rockland County: Orangeburg, (S,T), rare, May-Aug. Suffolk County: Bellport, (4). Yaphank, (S,T), rare, July-Aug.

*Anopheles occidentalis* Dyar and Knab: This anopheline has been taken in small numbers from scattered localities in northern and western New York and has been found rather abundantly in Schuyler County at Cayuta Lake. Larvae have been taken in cool waters in association with those of *A. punctipennis*. Clinton County: Plattsburg, (L,R,S), common, June-Sept. Cattaraugus County: Randolph, (S), 2 females, Sept. 14, 1945, L. E. Perry. Essex County: Lake Placid, (L,R), 1, Aug. 22, 1945. Raybrook, Aug., (12). Franklin County: Buttermilk Falls on Raquette River, (12). Herkimer County: Old Forge, Aug., (5). Oneida County: Boonville, (S), 2 males, Aug. 24, 1944. Utica, (S,T), 1 female, Aug. 2, 1944; 1 female, Sept. 5, 1944. Oswego County: Oswego, (S), 1 male, Aug. 2, 1944. Schuyler County: Cayuta Lake, (B,L,S), abundant, Apr.-Sept. Warren County: Loon Lake, (L,R), 2, Aug. 21, 1945.

*Anopheles punctipennis* Say: Occurs throughout the State of New York as well as most of the United States. It breeds in almost all types of aquatic situations and is found from April through October. The adults have been found in shelters throughout the winter. It is recorded from 60 localities from the following counties: Albany, Cayuga, Clinton, Cortland, Dutchess, Erie, Essex, Genesee, Herkimer, Jefferson, Kings, Lewis, Livingston, Nassau, Niagara, Oneida, Onondaga, Ontario, Orange, Oswego, Queens, Rensselaer, Richmond, Rockland, Schoharie, Schuyler, Seneca, Steuben, Suffolk, Tompkins, Warren, Wayne, Westchester.

*Anopheles quadrimaculatus* Say: This species is the malaria mosquito of eastern United States. It breeds principally in permanent ponds and marshes where the water is warm and well supplied with aquatic vegetation or floating debris. It has been taken in all sections of the state except in the mountains and has been found in considerable numbers as far north as Plattsburg and Port Byron. At Port Byron, for example, an estimated 1000 adults were observed in an ordinary

cow barn on July 6, 1944. Albany County: Albany, Aug.-Sept., (8). Cayuga County: North Fairhaven, July, (8). Port Byron, (L,S), abundant, July. Clinton County: Plattsburg, (B,L,R,S), abundant, June-Oct. Cortland County: Homer, (L,R), rare, Aug. Dutchess County: Hyde Park, (L), rare, July-Aug. Pawling, (B,L,S), abundant, May-Oct. Genesee County: Batavia, (S), common, July-Oct. Hamilton County: Wells, July, (8). Herkimer County: Old Forge, Aug., (8). Livingston County: Mount Morris, (8). Monroe County: Rochester, Sept., (8). Nassau County: Farmingdale, (6). Hempstead, (S,T), rare, June-Sept. Oyster Bay, (L,R,S), rare, Aug. Niagara County: Fort Niagara, (S), common, Aug.-Sept. Niagara Falls, (B,S), rare, July-Aug. Wilson, Aug., (8). Oneida County: Boonville, (L), rare, Aug. Utica, (L,S,T), rare, July-Oct. Onondaga County: Jordan, July, (8). Syracuse, (S), rare, Aug. Ontario County: Clifton Springs, Aug., (8). Geneva, (L,S), common, Aug. Orange County: Tuxedo, (13). West Point, (B,L,S,T), abundant, Jan.-Dec. Oswego County: Oswego, (S), rare, Aug. Queens County: Bayside, (4). Flushing, (T), rare, Aug. New York City, rare, July-Sept. Richmond County: Staten Island, Sept., (8). Rockland County: Orangeburg, (B,L,S,T), common, June-Oct. Schuyler County: Cayuta Lake, (B,L,R,S), abundant, May-Nov., (8, in part). Seneca County: Romulus, (S,T), rare, Aug.-Sept. Suffolk County: Bellport, Aug., (4). Brentwood, (S), rare, July. East Hampton, (13). Yaphank, (S,T), rare, Aug. Tompkins County: Ithaca, common, Jan.-Dec., (8, in part). McLean, Aug., (8). The Bronx: Bronx, (13). Wayne County: Sodus Point, June, (8). Westchester County: Mount Vernon, (13). South Salem, June, (8).

*Anopheles walkeri* Theobald: This species is probably more widespread and abundant than records indicate as both larvae and resting adults are more difficult to locate than are most anophelines. The adults are readily obtained in biting col-

lections and by means of light traps. Cayuga County: North Fairhaven, June-Sept., (8). Clinton County: Plattsburg, (B,L,R), rare, Aug. Dutchess County: Pawling, (L,T), rare, July-Aug. Essex County: Saranac Lake, (B), common, Aug. Franklin County: Barnum Pond, Aug., (8). Duck Lake, July, (8). Monroe County: Rochester, Aug., (8). Niagara County: Fort Niagara, (T), rare, Sept. Niagara Falls, (B,S), common, June-Sept. Oneida County: Utica, (L,S,T), rare, June-Sept. Ontario County: Fishers, Sept., (8). Orange County: West Point, (B,L,T), common, Apr.-Oct. Rockland County: Orangeburg, (S,T), rare, June-Sept. Schuyler County: Cayuta Lake, (B,L), common, June-Aug., (8, in part). Waneta Lake, July, (8). Seneca County: Romulus, (L,T), rare, June-Aug. Tompkins County: Dryden Lake, July, (8). Ithaca, June-Sept., (8). Warren County: Bolton Landing, Aug., (8). Wayne County: Sodus Point, Aug.-Sept., (8).

*Culex apicalis* Adams: One of the most widespread and abundant *Culex* in the state. Larvae of this species are found abundantly in swamps and grassy pools. The adults feed on cold blooded vertebrates and are not known to bite man. It has been taken from 57 localities during the months from March to November. It has been taken from the following counties: Albany, Cattaraugus, Cayuga, Clinton, Cortland, Dutchess, Essex, Franklin, Herkimer, Jefferson, Kings, Lewis, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Oswego, Queens, Rensselaer, Richmond, Rockland, Schoharie, Schuyler, Seneca, Steuben, Suffolk, Tompkins, Warren, Wayne, and Westchester.

*Culex pipiens* Linnaeus: This is the northern house mosquito which breeds in rain barrels and other artificial receptacles as well as in waters polluted with sewage. It often occurs in very great numbers in urban communities and is one of the most important pest mosquitoes in the state. Albany County: Albany, March-Sept., (8). Karner, Oct. (5). Voorheesville,

Aug., (8). Clinton County: Plattsburg, (B,L,S), rare, Sept.-Oct. Dutchess County: Hyde Park, (B,L,T), rare, June-Sept. Pawling, (L,S), common, July-Oct. Erie County: Erie County, July-Oct., (4). Essex County: Lake Placid, (L), common, July. Genesee County: Batavia, (S), rare, Oct. Kings County: Brooklyn, (B,S,T), rare, June-Oct. Sheepshead Bay, June-Sept., (8). Nassau County: Baldwin, May, (8). Hempstead, (L,R,S,T), common, June-Oct. Kings Point, (S), rare, Aug. Sands Point, (L,R), rare, Aug. New York County: Governors Island, (B,L,S,T), common, May. Niagara County: Fort Niagara, (L,R,S,T), common, May-Oct. Niagara Falls, (B,L,S), common June-Sept. Oneida County: Utica, (L,R,S,T), abundant, June-Oct. Onondaga County: Syracuse, (S), common, June-Aug. Ontario County: Geneva, (S), rare, Aug. Orange County: West Point, (B,L,S,T), abundant, Jan.-Dec. Queens County: Flushing, (B,L,R,S,T), common, June-Oct. New York City, abundant, Apr.-Oct. Queens Village, (L,R), common, July. Rensselaer County: Clinton Heights, Sept., (8). Nassau, Aug., (8). Richmond County: Staten Island, (L,R,S), common, May-Oct. Rockland County: Orangeburg, (L,S,T), abundant, May-Oct. Saratoga County: Schuyler, Aug., (8). Schuyler County: Cayuta Lake, Nov., (8). Seneca County: Romulus, (L,S,T), rare, Aug.-Sept. Suffolk County: Bellport, (4). Brentwood, (B,L,S), abundant, July-Oct. Yaphank, (B,L,S,T), common, May-Oct. Tompkins County: Ithaca, (L,S,T), common, (8, in part). The Bronx: Bronx, (B,L,S), abundant, Nov. Ulster County: Kingston, Sept., (8). Wayne County: Sodus Point, Sept., (8). Westchester County: New Rochelle, (L,S), rare, July-Aug.

*Culex restuans* Theobald: Very similar in appearance and habits to *C. pipiens*. It can usually be separated from it by the presence of small white dots on the mesonotum. This species appears to be very common throughout much of the state, Albany County: Albany, May, (8).

Karner, May-July, (8). Cayuga County: North Fairhaven, (L), July, (8). Chautauqua County: Westfield, June-Aug., (8). Clinton County: Plattsburg, (B,L,S), common, June-Sept. Dutchess County: Green Haven, (L), common June. Pawling, (L,S,T), common, July-Sept. Poughkeepsie, June, (8). Essex County: Elizabethtown, June-July, (8). Lake Placid, (L), rare, July-Aug. Franklin County: Saranac Inn, July, (8). Tupper Lake, Aug., (4). Greene County: Onteora Club, (5). Herkimer County: Mohawk, July, (8). Newport, Aug., (8). Old Forge, Aug., (8). Kings County: Brooklyn, (T), rare, May-July. Sheepshead Bay, June-Aug., (8). Nassau County: Hempstead, (L,R,S,T), common, June-Oct. Lawrence, (6). Merrick, (6). Woodmere, (6). New York County: Governors Island, (L,S,T), common, June-Sept. Niagara County: Fort Niagara, (S,T), rare, May-Aug. Niagara Falls, (B,L,S), rare, June-Aug. Oneida County: Forestport, June, (8). Utica, (L,R,S,T), abundant, June-Sept. Onondaga County: Syracuse, July, (8). Ontario County: Geneva, (S), rare, June. Orange County: West Point, (B,L,S,T), common, May-Oct. Queens County: Flushing, (B,L), rare, July-Sept. New York City, common, May-Sept. Queens Village, (L,R), rare, July. Rensselaer County: Clinton Heights, July-Sept., (8). Nassau, Sept., (8). Richmond County: Staten Island, (L,S,T), abundant, Apr.-Oct. Rockland County: Orangeburg, (L,S,T), abundant, May-Sept. Seneca County: Romulus, (L,T), common, June-Oct. Suffolk County: Bellport, (4). Brentwood, (S), abundant, July. Yaphank, (L,S,T), common, May-Oct. Ulster County: Binnewater, May-Aug., (8). Wayne County: Sodus, Aug., (5). Sodus Point, July-Sept., (8). Westchester County: New Rochelle, (L,S), rare, July.

*Culex salinarius* Coquillett: This species breeds in both fresh and brackish water and is common throughout most of the State. It has been found to be very abundant in the southeastern area, es-

pecially on Long Island. Albany County: Karner, May, (8). Chautauqua County: Westfield, Aug.-Sept. Clinton County: Plattsburg, (B,S), rare, Aug.-Sept. Dutchess County: Hyde Park, (L,T), rare, June-Sept. Pawling, (L,S), common, July-Sept. Genesee County: Batavia, (S), common, Oct. Kings County: Brooklyn, (S,T), rare, May-Sept. Sheepshead Bay, Aug.-Sept., (8). Nassau County: Hempstead, (S,T), common, June-Oct. Jones Beach, (6). Oyster Bay, July, (8). New York County: Governors Island, (B,S,T), common, June-Oct. Niagara County: Fort Niagara, (S,T), rare, June-Oct. Niagara Falls, (B,S), rare, July-Sept. Oneida County: Utica, (B,L,R,S,T), abundant, June-Oct. Onondaga County: Syracuse, June-July, (8). Orange County: West Point, (B,L,T), common, May-Nov. Queens County: Flushing, (B,L,R,S,T), abundant, May-Sept. Jamaica, (L,R), abundant, Sept.-Oct. New York City, abundant, June-Sept. Rensselaer County: East Schodack, May, (8). Nassau, Sept., (8). Schodack, May, (5). Richmond County: Staten Island, (B,S,T), common, May-Oct. Rockland County: Orangeburg, (L,S,T), abundant, May-Oct. Seneca County: Romulus, (T), rare, June-Sept. Suffolk County: Brentwood, (B,S), rare, Aug.-Oct. Yaphank, (B,L,S,T), common, June-Oct. Tompkins County: Dryden Lake, (8). Ithaca, (L,T), rare, July-Sept., (8, in part). Wayne County: East Sodus, May, (8). Westchester County: New Rochelle, (L,R), rare, July-Aug.

*Culiseta impatiens* (Walker): Extremely rare in New York. We have a single larva taken from a quarry pool near Plattsburg and two females collected with a light trap near Utica. Other records are available from the Cornell University collection. Cayuga County: North Fairhaven, (L), July, (8). Clinton County: Plattsburg, (L), 1 larva collected from a quarry pool on June 22, 1945 by Lt. J. J. Wurdack. Essex County: Cliff Mountain (Essex Co.), (5). Elizabethtown, Apr.-Aug., (4). Mt. Marcy, July, (8). Franklin

County: Saranac Inn, July, (8). Tupper Lake, (4). Oneida County: Utica, (T), 1 female, Sept. 13, 1944; 1 female, Sept. 15, 1944. Tompkins County: Ithaca, (L), (8).

*Culiseta inornata* (Williston): This large species has been taken sparingly from several scattered localities in New York. It is much less common here than in southern United States. Albany County: Albany, (4). Cayuga County: North Fairhaven, July, (8). Franklin County: Saranac Inn, Aug., (8). Herkimer County: Old Forge, June, (8). Niagara County: Fort Niagara, (S), 3 females, May 21-23, 1945; 1 female, June 6, 1945; 1 male and 1 female, Sept. 7, 1945. Niagara Falls, (L), 3, July 21, 1944. Oneida County: Utica, (L), 4, Sept. 28, 1945. Orange County: West Point, (T), 1 female, Aug. 24, 1945. Queens County: Flushing, (T), 1 female, June 26, 1945. New York City, rare, June. Richmond County: Staten Island, (T), 1 female, June 30, 1944; 3 females, May 28-June 6, 1945; 1 female, July 26, 1945. Rockland County: Orangeburg, (T), 2 females, July 6-7, 1944; 1 female, Aug. 26, 1944; 1 female, June 15, 1945; 1 female, Aug. 17, 1945. Suffolk County: Yaphank, (T), 1 female, Sept. 6, 1944; 1 male, Oct. 2, 1945; (B), 1 female, Sept. 19, 1945. Tompkins County: Ithaca, July-Nov., (8). Wayne County: Sodus Point, Aug., (8).

*Culiseta melanura* (Coquillett): This small mosquito closely resembles species of the genus *Culex*. It appears to be rather widely distributed in New York though the majority of our records are from the southeastern section. It has not been found in large numbers. Dutchess County: Pawling, (S), 1 female, Sept. 13, 1945. Franklin County: Duck Lake, Aug., (8). Tupper Lake, Aug., (4). Jefferson County: Watertown, (S), 3 females, 3 males, Sept. 8, 1943. Kings County: Brooklyn, (T), 1 female, June 9, 1945. Nassau County: Hempstead, (T), 1 male, Sept. 19, 1944; 1 male, Aug. 30, 1945; 1 male, Sept. 24, 1945. Merrick, (L), 2, May 6, 1937, (6). North Merrick, (L),

2, Apr. 28, 1937, (6). New York County: Governors Island, (S), 1 male, Sept. 13, 1945. Oneida County: Utica, (T), 1 female, Aug. 12, 1944; 3 females, Aug. 31-Sept. 1, 1944; 1 female, Sept. 7, 1944. Orange County: West Point, (S,T), rare, Aug.-Sept. Queens County: New York City, rare. Rockland County: Orangeburg, (T), 3 females, Aug. 31-Sept. 3, 1944; 5 females, Aug. 12-16, 1945. Schuyler County: Cayuta Lake, July, (8). Suffolk County: Yaphank, (T), 1 male, Sept. 20, 1945. Tompkins County: Ithaca, Sept., (8).

*Culiseta morsitans* (Theobald): Widely distributed throughout New York. It is apparently the most common species of *Culiseta* in the State. Cortland County: Homer, (S), 1 female, June 23, 1945. Dutchess County: Hyde Park, (T), rare, Sept. Pawling, (S,T), rare, May-Sept. Essex County: Elizabethtown, May-June, (8). Franklin County: Tupper Lake, Aug., "larva in cold swamp," (4). Herkimer County: Big Moose, June, (8). Niagara County: Fort Niagara, (T), 2 females, Aug. 31, 1945. Niagara Falls, (S), rare, July-Aug. Oneida County: Boonville, (S), rare, Aug. Utica, (S,T), rare, July-Sept. Onondaga County: Syracuse, (S), rare, Aug. Orange County: West Point, (L,S,T), rare, May-Sept. Queens County: Flushing, (T), rare, Aug. Rensselaer County: Nassau, May-June, (8). Rockland County: Orangeburg, (S,T), common, June-Sept. Schuyler County: Cayuta Lake, July-Sept., (8). Suffolk County: Yaphank, (S,T), rare, Aug.-Sept. Tompkins County: Ithaca, May, (8). McLean, June-July, (8). Ringwood, May-June, (8).

*Mansonia perturbans* (Walker): This large mosquito is a fierce biter and a severe pest in many localities in New York. We have found it in large numbers from such widely separated points as Staten Island, West Point, Niagara Falls, and Saranac Lake. Breeding takes place in marshes and ponds with a thick growth of vegetation. The larvae and pupae cannot be collected by ordinary means since

they remain below the water surface with their air tubes attached to stems and roots of plants. Cayuga County: North Fairhaven, July-Aug., (8). Spring Lake, June, (6). Clinton County: Plattsburg, (B), rare, July. Dutchess County: Pawling, (T), rare, June. Essex County: Lake Placid, (S), rare, July. Saranac Lake, (B), common, Aug. Genesee County: Le Roy, June, (8). Herkimer County: Old Forge, July, (8). Kings County: Brooklyn, (T), rare, July. Sheepshead Bay, July, (8). Monroe County: Rochester, June-July, (8). Nassau County: Hempstead, (T), rare, June-Aug. New York County: Governors Island, (T), rare, July. Niagara County: Fort Niagara, (T), rare, July-Aug. Niagara Falls, (B,L), common, June-Sept. Oneida County: Utica, (T), rare, June-Sept. Orange County: West Point, (B,T), common, June-Aug. Queens County: Flushing, (B,L), common, June-July. New York City, common, June-Sept. Richmond County: Staten Island, (B,S,T), common, June-Sept. Rockland County: Orangeburg, (S,T), rare, June-Sept. Schuyler County: Waneta Lake, June-July, (8). Watkins Glen, June-July, (8). Seneca County: Romulus, (T), rare, July-Aug. Suffolk County: Calverton, June, (6). Yaphank, (B,T), rare, July. Tompkins County: Dryden Lake, June, (8). Ithaca, June-Aug., (8). Wayne County: Sodus, July, (5). Sodus Point, June-July, (8).

*Orthopodomyia alba* Baker: Described from Ithaca, New York and has not since been collected in the State. It breeds in tree holes as does the closely related *O. signifera*. Adults of these two species are very difficult to separate with certainty. Tompkins County: Ithaca, (L,R), Aug.-Nov., (8).

*Orthopodomyia signifera* (Coquillett): This tree-hole-breeding species is rare in New York. It has been taken in small numbers from six localities. Nassau County: Baldwin, (L), 1, Aug. 29, 1945, H. Schiff. Hempstead, (T), 1 female, Sept. 4, 1945; 1 female, Sept. 8, 1945. New York County: Governors Island, (S),

1 female, Aug. 20, 1945. Queens County: New York City, rare, Aug.-Sept. Rockland County: Orangeburg, (T), 1 female, July 20, 1945; 1 female, Aug. 22, 1945; 1 female, Sept. 25, 1945. Tompkins County: Ithaca, Aug.-Nov., (8).

*Psorophora ciliata* (Fabricius): This is the largest species of mosquito known from New York and is also one of the most vicious biters. It has been taken at several widely scattered points but has not been found in important numbers. Albany County: Albany, Aug., (8). Karner, June-July, (8). Clinton County: Plattsburg, (L), 4, July 19, 1945; (B), 3 females, July 27, 1945. Valcour Island, (8). Dutchess County: Arlington, July, (8). Pawling, (T), 1 male and 1 female, July 30-Aug. 4, 1945. Erie County: North Evans, Aug., (5). Franklin County: Duck Lake, Aug., (8). Herkimer County: Little Falls, Aug., (8). Kings County: Sheepshead Bay, May-July, (8). Niagara County: Fort Niagara, (T), 9 females, July 30-Aug. 9, 1945. Niagara Falls, Aug., (8). Oneida County: Utica, (T), 1 male, July 6, 1944. Ontario County: Clifton Springs, Aug., (8). Orange County: Warwick, July, (8). Queens County: New York City, rare, Aug. Richmond County: Staten Island, (T), 1 female, Aug. 7, 1945; Sept., (8). Rockland County: Orangeburg, (T), 1 male and 1 female, Aug. 3-4, 1945. Seneca County: Romulus, (T), 2 females, July 28-29, 1945. Suffolk County: East Quogue, (6). Tompkins County: Ithaca, (8). Wayne County: Lyons, July, (4). Sodus Point, July-Sept., (8). Westchester County: Larchmont, (4).

*Psorophora confinnis* (Lynch-Arribalza): A very important pest in southern United States, but is rare in New York. Except for a single specimen taken from Utica all records are from the southeastern part of the state. Nassau County: Hempstead, (T), 1 female, Aug. 13, 1945; 1 female, Aug. 25, 1945. New York County: Governors Island, (T), 2 females, Aug. 13-14, 1945. Oneida County: Utica, (T), 1 female, Aug. 30, 1945. Queens County:

Flushing, (B), 1 female, Aug. 22, 1944. New York City, rare, June-Oct. Richmond County: Staten Island, (L,T), 6 adults and 2 larvae, Aug.-Oct. (U. S. Army collections identified by New Jersey Agricultural Experiment Station). Rockland County: Orangeburg, (T), 5 females, Aug. 22-23, 1945; 1 female, Aug. 29, 1945. Suffolk County: Cold Spring Harbor, (4).

*Psorophora ferox* (Humbolt): This species is known as the white-footed woods mosquito. It is a severe biter in wooded areas but is very rare in New York. Dutchess County: Hyde Park, (B), 1 female, Aug. 2, 1944. Poughkeepsie, Aug., (8). Kings County: Sheepshead Bay, July, (8). Orange County: West Point, (B), 1 female, Aug. 29, 1945. Richmond County: Staten Island, (B), 3 females, Aug. 11, 1945. Tompkins County: Ithaca, Apr., (8).

\**Psorophora varipes* (Coquillett): This southern species has not been previously reported north of Maryland. This record is based upon a single female which was taken in a biting collection at Willowbrook Park, Staten Island (Richmond County), New York on Aug. 11, 1945 by H. M. Schiff. This specimen has been deposited in the Cornell University collection.

*Uranotaenia sapphirina* (Osten Sacken): This small brilliantly colored mosquito is fairly common in New York. It is not a pest species as it seldom bites man. Albany County: Albany, Aug., (8). Cayuga County: Port Byron, (L), rare, July. Clinton County: Plattsburg, (L), rare, Aug.-Sept. Cortland County: Homer, (L), rare, Aug. Dutchess County: Hyde Park, (L,T), July-Sept. Pawling, (L), common, Aug.-Sept. Kings County: Brooklyn, (4). Nassau County: Farmingdale, Aug., (6). Hempstead, (T), rare, Aug.-Oct. Oyster Bay, (L,T), common, Aug. New York County: Governors Island, (L,T), rare, Aug.-Sept. Niagara County: Niagara Falls, (S,T), rare, Aug.-Sept. Oneida County: Utica, (T), common, July-Oct. Orange County: Pine Island, (I.), Aug.,

(8). West Point, (L,T), common, May-Oct. Queens County: Flushing, (T), rare, Aug.-Sept. New York City, common, June-Oct. Rensselaer County: Greenbush, Aug., (5). Richmond County: Staten Island, (L,T), rare, June-Aug. Rockland County: Orangeburg, (L,T), rare, May-Sept. Seneca County: Romulus, (T), rare, Sept. Suffolk County: Bellport, Sept., (4). Yaphank, (T), rare, Aug.-Oct. Tompkins County: Ithaca, Aug.-Oct., (8). Wayne County: Sodus Point, Aug., (8).

*Wyeomyia smithii* (Coquillett): This is a very small dark species which breeds in the water contained in pitcher plants. The females are not known to bite man. The writers have reared a series of specimens from larvae collected from a bog near Plattsburg (Clinton County) on Aug. 24, 1945. Clinton County: Plattsburg, (L,R), common, July-Aug. Franklin County: Duck Lake, July, (8). Saranac Inn, July-Aug., (8). Tupper Lake, Aug., (4). Herkimer County: Big Moose, June, (8). Old Forge, June-July, (8). Lawrence County: East Crooked Pond, July, (8). Tompkins County: Ithaca, June-Aug., (8). McLean, June-Aug., (8).

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