

1975. Chironomid midges and their control in Spring Valley Lake, California. *Mosq. News* 35:389-95.
- Mulla, M. S., W. L. Kramer and D. R. Barnard. 1976. Insect growth regulators for the control of chironomid midges in residential-recreational lakes. *J. Econ. Entomol.* 69:285-91.
- Mulla, M. S., R. L. Norland, T. Ikeshoji and W. L. Kramer. 1974. Insect growth regulators for the control of aquatic midges. *J. Econ. Entomol.* 67:167-70.
- Mulla, M. S., R. L. Norland, D. M. Fanara, H. A. Darwazeh and D. W. McKean. 1971. Control of chironomid midges in recreational lakes. *J. Econ. Entomol.* 65:300-7.
- Pelsue, F. W., G. C. McFarland and C. Beesley. 1974. Field evaluation of two insect growth regulators against chironomid midges in water spreading basins. *J. Econ. Entomol.* 42:157-63.

## AN ANNOTATED LIST OF THE MOSQUITOES OF NEBRASKA

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**ABSTRACT.** In 1944 Tate and Gates listed 33 species of mosquitoes in Nebraska. By 1976 there were published records of an additional 16 species. Four of the 49 species could not be

verified and have been deleted from the list. Presented here is an annotated list of the 45 species of mosquitoes known to occur in Nebraska.

The first comprehensive publication on the mosquitoes of Nebraska (Tate and Gates 1944) listed 33 species. Since that time additional species added to the list are: *Aedes fitchii* (Felt and Young), *Ae. sollicitans* (Walker), and *Culiseta melanura* (Coquillett) (Olson and Keegan 1944a, 1944b); *Psorophora cyanesens* (Coquillett) and *Ps. howardii* Coquillett (Keener 1951); *Anopheles barberi* Coquillett, *Culex territans* Walker, and *Ps. discolor* (Coquillett) (Rapp 1956); *Ps. horrida* (Dyar and Knab) (Rapp 1958); *Ae. canadensis* (Theobald) and *An. franciscanus* McCracken (Rapp 1959); *Ae. melanimon* Dyar (Nebraska State Health Department Mosquito Light Trap Summary for 1960); *Ae. increpitus* Dyar and *Ps.*

*longipalpus* Randolph and O'Neill (Rapp and Harmston 1961); *Ae. hendersoni* Cockerell (Lunt 1969) and *Orthopodomyia alba* Baker (Lunt and Peters 1976).

Nebraska has considerable variation in climatic, topographic and biological conditions which provide suitable habitats for a fairly rich variety of mosquito species. The altitude ranges from 1780 m near the Wyoming border to 275 m in the extreme southeastern region of the state. Variable weather conditions are the result of movement of warm, moist air from the Gulf of Mexico; hot, dry air from the southwest; cool, dry air from the north Pacific Ocean; and very cold, dry air from the north polar region. The average number of days the temperature is above freezing is over 170 in the southeast and less than 120 in the northwest. Precipitation varies somewhat in amount and distribution, but generally averages less than 38 cm in the west and over 91 cm in the

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southeast. About 75–80% of the precipitation falls as rain during April through September. Generally, the western half of the state is semiarid and the eastern half is subhumid.

In addition to precipitation, Nebraska has other water sources. Beneath 59% of the land surface is a considerable quantity of accessible groundwater. Furthermore, several rivers carry water into the state. Nebraska ranks third in the nation in total irrigated acreage. The soil varies from one area to another and, to some extent, within a given area; but generally the eastern, southern, southwestern, and panhandle area is wind-blown silt and clay or loess, the northcentral (Sandhills) area is wind-blown sand, and the southeastern area is old glacial till and loess. A surprising amount of variation in major vegetation exists in the state. In general, the eastern portion is tallgrass prairie, the central area is mixed grass prairie, and the western part is shortgrass prairie. However, most of the state is now crop and pastureland with relatively small, scattered remnants of these vegetation types existing in their native condition. A considerable portion of the northcentral region of the state is a sandhills prairie, characterized by rolling sandhills, numerous lakes and marshes, considerable ground water, ca 51 cm average annual precipitation, and late summer droughts. In the extreme northwestern portion of the state is the Pine Ridge, a north-facing escarpment rising conspicuously above the surrounding prairie. Much of the flora (e.g., ponderosa pine) and fauna of the Pine Ridge area is similar to that found in mountain ranges in states west of Nebraska. The western extremity of the eastern deciduous forest biome is found along the Missouri River, and to some extent, along some other rivers in the central and eastern parts of the state. The only place in the Great Plains where the western and eastern forests meet is on the Niobrara River valley in the northcentral area of Nebraska. Lastly, the valleys associated with some of the rivers

provide a habitat for the flood plain prairie and forest.

Because of its location in the center of a large land mass, Nebraska occupies an interesting geographical position in the distribution of mosquitoes in the United States. Approximately one-third of the species found in Nebraska reach the limit of their geographical distribution within the state. Furthermore, the 100th parallel, which runs through the center of the state, appears to be an approximate dividing line between some eastern and western species of mosquitoes in Nebraska (Lunt and Peters 1976).

In the discussion that follows, the species are presented alphabetically without subgeneric designation. Because we have been unable to verify the presence of *Aedes fitchii* (Felt and Young), *Ae. implicatus* Vockeroth, *Culex quinquefasciatus* Say and *Culiseta melanura* (Coquillett) in Nebraska, they are not included in the list presented here. We are reporting on 8 genera and 45 species. The number appearing after the name of each species indicates the number of counties (93 possible) in which each species has been collected to date. Detailed collection records are not presented here because they will be included in a monograph which is in preparation.

*Aedes campestris* Dyar and Knab. 8. Collected in the western, central and northeastern portions of the state. County records: Kimball, Knox, Morrill, Phelps, Sheridan, Sioux, Thurston, Valley.

*Ae. canadensis* (Theobald). 2. Collected only in the central and eastern parts of the state. This species is locally abundant and annoying in wooded areas. County records: Custer, Lancaster.

*Ae. cimevus* Meigen. 7. Collected in western, central, and eastern Nebraska, County records: Howard, Kimball, Lancaster, Morrill, Phelps, Valley, Washington.

*Ae. dorsalis* (Meigen). 51. Widespread, but especially abundant in irrigated areas in the western half of the state. County records: Adams, Arthur, Box Butte, Brown, Burt, Cedar, Chase, Cherry, Cheyenne, Dakota, Dawes, Dawson, Deuel, Douglas, Dundy, Frontier, Furnas, Garden, Gosper, Grant,

- Hall, Harlan, Holt, Jefferson, Kearney, Keith, Knox, Lancaster, Lincoln, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Sheridan, Sherman, Sioux, Thurston, Valley, York.
- Ae. flavescens* (Müller). 21. Collected throughout the state. County records: Buffalo, Cherry, Cheyenne, Dawes, Gosper, Holt, Jefferson, Kimball, Lancaster, Merrick, Morrill, Nance, Pawnee, Red Willow, Saline, Saunders, Scotts Bluff, Sheridan, Sherman, Thurston, Valley.
- Ae. hendersoni* Cockerell. 26. Common tree-hole breeder throughout the state. County records: Buffalo, Butler, Cass, Colfax, Dawes, Dawson, Deuel, Dodge, Douglas, Dundy, Garden, Hall, Hamilton, Kearney, Keith, Knox, Lincoln, Merrick, Morrill, Phelps, Polk, Red Willow, Sarpy, Saunders, Scotts Bluff, Thomas.
- Ae. increpitus* Dyar. 4. Collected in the extreme northwestern and northcentral parts of the state. This species appears to reach its eastern limit in Nebraska. County records: Brown, Dawes, Scotts Bluff, Sioux.
- Ae. melanimon* Dyar. 1. Collected only in one county in the extreme western part of the state. This species appears to reach its eastern limit in Nebraska. County records: Kimball.
- Ae. nigromaculis* (Ludlow). 57. This species is found throughout Nebraska, but it is the most abundant and annoying in surface irrigated areas in the western part of the state. County records: Adams, Box Butte, Brown, Burt, Chase, Cherry, Cheyenne, Clay, Dakota, Dawes, Dawson, Deuel, Douglas, Dundy, Frontier, Furnas, Garden, Gosper, Hall, Harlan, Hitchcock, Holt, Howard, Jefferson, Johnson, Kearney, Keith, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Thurston, Valley, Washington, York.
- Ae. sollicitans* (Walker). 1. Collected only in salt marshes west of the city of Lincoln, in east-central Nebraska. In the past, this species was abundant in this habitat, but the salt marshes have been destroyed. County records: Lancaster.
- Ae. spencerii idahoensis* (Theobald). 1. Collected only in one county in extreme northwestern part of the state. This species appears to reach its eastern limit in Nebraska. County records: Sioux.
- Ae. spencerii spencerii* (Theobald). 6. Collected only in the eastern half of the state. County records: Knox, Lancaster, Red Willow, Rock, Thurston, Valley.
- Ae. sticticus* (Meigen). 14. Collected in large numbers in scattered areas throughout the state. County records: Buffalo, Burt, Cedar, Dawes, Dixon, Douglas, Knox, Lancaster, Nemaha, Richardson, Sioux, Thayer, Thurston, Washington.
- Ae. stimulans* (Walker). 9. Collected in small numbers throughout the state. County records: Cuming, Dawes, Holt, Madison, Nance, Nemaha, Rock, Sarpy, Sioux.
- Ae. triseriatus* (Say). 13. Common tree-hole breeder in the eastern half of the state. This species reaches its western limit in Nebraska. County records: Cass, Dawson, Dixon, Douglas, Hall, Hamilton, Kearney, Merrick, Polk, Richardson, Saline, Sarpy, Saunders.
- Ae. trivittatus* (Coquillett). 61. Very common throughout the state. This species is abundant and a nuisance in flood-plain areas. County records: Adams, Boyd, Brown, Buffalo, Burt, Cass, Chase, Cherry, Cuming, Dakota, Dawes, Dawson, Deuel, Dixon, Douglas, Franklin, Frontier, Furnas, Gage, Garfield, Gosper, Greeley, Hall, Harlan, Holt, Howard, Jefferson, Johnson, Kearney, Keya Paha, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Thayer, Thurston, Valley, Washington, York.
- Ae. vexans* (Meigen). 70. Very common throughout the state. This is the most abundant species in Nebraska, especially the eastern half of the state. County records: Blaine, Boyd, Brown, Buffalo, Burt, Cass, Cedar, Chase, Cherry, Cheyenne, Cuming, Custer, Dakota, Dawes, Dawson, Deuel, Dixon, Dodge, Douglas, Dundy, Fillmore, Furnas, Gage, Garden, Gosper, Grant, Greeley, Hall, Harlan, Hitchcock, Holt, Howard, Jefferson, Johnson, Kearney, Keith, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Stanton, Thayer, Thomas, Thurston, Valley, Washington, Wheeler, York.

- Anopheles barberi* Coquillett. 13. A tree-hole breeder found in small numbers in the eastern two-thirds of the state. County records: Butler, Colfax, Furnas, Hall, Hamilton, Knox, Lincoln, Nuckolls, Platte, Richardson, Saline, Sarpy, Saunders.
- An. earlei* Vargas. 2. Collected only in 2 counties in the northwestern part of the state. This species appears to reach its southern limit in Nebraska. Tate and Gates (1944) listed this species as *An. occidentalis* Dyar and Knab. County records: Scotts Bluff, Sioux.
- An. franciscanus* McCracken. 3. Collected only in the westcentral and southcentral areas of the state, where it may be locally abundant. This species appears to reach its eastern limit in Nebraska. County records: Franklin, Scotts Bluff, Webster.
- An. punctipennis* (Say). 44. Collected throughout the state, but decreases in occurrence from east to west. This species appears to be restricted to cold water habitats. County records: Adams, Brown, Buffalo, Burt, Butler, Cass, Cedar, Cherry, Cheyenne, Clay, Dawson, Douglas, Franklin, Furnas, Gage, Gosper, Hall, Harlan, Holt, Howard, Knox, Lancaster, Lincoln, Madison, Merrick, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Saline, Sarpy, Saunders, Scotts Bluff, Thayer, Thurston, Valley, Washington, York.
- An. quadrimaculatus* Say. 31. Collected in small numbers in the eastern half of the state. This species appears to reach its western limit in Nebraska. In the past, large populations were found in the east-central part of the state; now only small numbers are found. County records: Brown, Buffalo, Burt, Cass, Dakota, Dawson, Douglas, Furnas, Gage, Hall, Harlan, Holt, Knox, Lancaster, Madison, Merrick, Nance, Nuckolls, Otoe, Phelps, Platte, Red Willow, Richardson, Saline, Sarpy, Saunders, Thayer, Thurston, Valley, Washington, York.
- An. walkeri* Theobald. 19. Collected only in very specific habitats—usually freshwater marshes containing emergent and floating vegetation and debris—throughout the state. It has been found in large numbers in some local areas. This species appears to reach its western limit in Nebraska. County records: Burt, Cherry, Dawson, Deuel, Douglas, Garden, Grant, Howard, Keith, Lincoln, Madison, Morrill, Nuckolls, Richardson, Rock, Sarpy, Scotts Bluff, Sheridan, Valley.
- Coquillettidia perturbans* (Walker). 11. Collected throughout the state. County records: Brown, Chase, Cherry, Garden, Kimball, Lancaster, Rock, Saline, Scotts Bluff, Sherman, Sioux.
- Culex erraticus* (Dyar and Knab). 9. Collected only in the eastern half of the state. This species appears to reach its western limit in Nebraska in the Midwest; however, it is found in New Mexico (Wolff et al. 1975). County records: Douglas, Hall, Harlan, Lancaster, Nuckolls, Otoe, Richardson, Sarpy, Thurston.
- Cx. pipiens* Linnaeus. 47. Collected throughout the state, but appears to be most common along the Missouri River. County records: Adams, Buffalo, Burt, Cass, Chase, Cherry, Clay, Dakota, Dawes, Dawson, Douglas, Franklin, Furnas, Gage, Garden, Gosper, Hall, Harlan, Howard, Jefferson, Kearney, Keith, Knox, Lancaster, Lincoln, Madison, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Polk, Red Willow, Richardson, Rock, Saline, Sarpy, Scotts Bluff, Sheridan, Sherman, Thurston, Valley, Washington.
- Cx. restuans* Theobald. 51. Collected throughout the state. County records: Brown, Burt, Cass, Cedar, Chase, Cherry, Dakota, Dawes, Dawson, Douglas, Franklin, Furnas, Garden, Gosper, Greeley, Hall, Harlan, Holt, Howard, Jefferson, Johnson, Kearney, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Thayer, Thurston, Valley, Washington, York.
- Cx. salinarius* Coquillett. 46. Collected throughout the state. This species may be locally abundant. County records: Blaine, Brown, Buffalo, Burt, Butler, Cass, Cherry, Clay, Dakota, Dawes, Dawson, Douglas, Franklin, Furnas, Gage, Garden, Gosper, Hall, Harlan, Holt, Howard, Jefferson, Johnson, Keith, Knox, Lancaster, Lincoln, Madison, Morrill, Nemaha, Nuckolls, Otoe, Phelps, Pierce, Polk, Red Willow, Richardson, Saline, Sarpy, Scotts Bluff, Seward, Sherman, Thayer, Thurston, Valley, Washington.
- Cx. tarsalis* Coquillett. 72. Collected throughout the state. This species is generally found in low numbers in eastern Nebraska and greater numbers in the western part of the state. At times, this is the most abundant species in western Nebraska. County records:

- ords: Adams, Blaine, Box Butte, Brown, Buffalo, Burt, Butler, Cass, Cedar, Chase, Cherry, Cheyenne, Clay, Dakota, Dawes, Dawson, Deuel, Douglas, Dundy, Franklin, Frontier, Furnas, Gage, Garden, Gosper, Grant, Greeley, Hall, Harlan, Hitchcock, Holt, Howard, Jefferson, Johnson, Kearney, Keith, Keya Paha, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Pawnee, Perkins, Phelps, Pierce, Platte, Polk, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Seward, Sheridan, Sherman, Sioux, Stanton, Thayer, Thurston, Valley, Washington, Wayne, York.
- Cx. territans* Walker. 23. Collected in small numbers throughout the state. County records: Cherry, Custer, Douglas, Furnas, Garden, Harlan, Keith, Kimball, Knox, Lancaster, Lincoln, Morrill, Otoe, Phelps, Pierce, Richardson, Saline, Sarpy, Scotts Bluff, Sherman, Sioux, Thurston, Valley.
- Culiseta impatiens* (Walker). 4. Collected in one western and 3 eastern counties. Generally this species is rare but it may be common locally. County records: Lancaster, Morrill, Saline, Washington.
- Cs. incidens* (Thomson). 3. Collected only in northwestern Nebraska. County records: Dawes, Scotts Bluff, Sioux.
- Cs. inornata* (Williston). 56. Collected throughout the state. This species is abundant in the spring and fall, but uncommon in the summer. County records: Blaine, Brown, Buffalo, Burt, Cass, Cedar, Chase, Cherry, Cheyenne, Dakota, Dawes, Dawson, Deuel, Dixon, Douglas, Furnas, Garden, Gosper, Greeley, Hall, Harlan, Holt, Howard, Jefferson, Johnson, Kearney, Keith, Kimball, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nuckolls, Otoe, Pawnee, Phelps, Pierce, Platte, Red Willow, Richardson, Rock, Saline, Sarpy, Saunders, Scotts Bluff, Sheridan, Sherman, Sioux, Thayer, Thurston, Valley, Washington, York.
- Orthopodomyia alba* Baker. 2. A tree-hole breeder occasionally found in small numbers in the eastern part of the state. This species appears to reach its western limit in Nebraska in the Midwest; however it is found in New Mexico (Zavortink 1968, Wolff et al. 1975). County records: Colfax, Sarpy.
- Or. signifera* (Coquillett). 8. A tree-hole breeder collected only in the eastern two-thirds of the state. County records: Buffalo, Butler, Colfax, Dawson, Douglas, Lincoln, Sarpy, Saunders.
- Psorophora ciliata* (Fabricius). 31. Collected in small numbers in the eastern half of the state and in one county in the southwestern part of the state. County records: Brown, Burt, Cass, Dakota, Furnas, Gage, Gosper, Hall, Harlan, Holt, Johnson, Kimball, Knox, Lancaster, Madison, Merrick, Nance, Nemaha, Nuckolls, Pawnee, Phelps, Platte, Richardson, Saline, Sarpy, Saunders, Sherman, Thurston, Valley, Washington, York.
- Ps. columbiae* (Dyar and Knab). 12. Collected in small numbers, mainly in the southeastern section of the state. This species was listed as *Ps. confinnis* (Lynch Arribalzaga) by Tate and Gates (1944). County records: Dawes, Furnas, Garden, Harlan, Lancaster, Nance, Nemaha, Nuckolls, Otoe, Richardson, Saline, Washington.
- Ps. cyanescens* (Coquillett). 9. Collected in the southern half of the state. This species appears to reach its northern and western limit in Nebraska in the Midwest; however, it is found in New Mexico (Wolff et al. 1975). County records: Johnson, Lancaster, Lincoln, Merrick, Nuckolls, Pawnee, Saline, Scotts Bluff, Valley.
- Ps. discolor* (Coquillett). 13. Collected in extreme northwestern, eastcentral and southeastern parts of the state. In the Great Plains area this species appears to reach its northern and western limit in Nebraska; however, it is found in New Mexico (Wolff et al. 1975). County records: Box Butte, Burt, Dawes, Douglas, Lancaster, Nemaha, Nuckolls, Otoe, Phelps, Richardson, Saline, Sioux, Washington.
- Ps. ferox* (Humboldt). 7. Collected in small numbers in the eastern, southern and northwestern portions of the state. This species appears to reach its western limit in Nebraska. County records: Blaine, Dakota, Dawes, Frontier, Furnas, Otoe, Richardson.
- Ps. horrida* (Dyar and Knab). 12. Collected in small numbers mainly in the southeastern section of the state. This species appears to reach its western limit in Nebraska. County records: Douglas, Frontier, Gosper, Jefferson, Nuckolls, Pawnee, Platte, Richardson, Saline, Scotts Bluff, Sherman, Valley.
- Ps. howardii* Coquillett. 3. Collected in small numbers only in the southcentral part of the state. This mosquito appears to reach its northern limit in Nebraska. County records: Franklin, Nuckolls, Thayer.
- Ps. longipalpus* Randolph and O'Neill. 3. Collected only in central, eastern and southeastern Nebraska. County records: Custer, Lancaster, Pawnee.

*Ps. signipennis* (Coquillett). 47. This species has been collected throughout the state. It is quite common, but generally not abundant. County records: Adams, Burt, Chase, Cherry, Cheyenne, Dakota, Dawes, Dawson, Douglas, Dundy, Furnas, Garden, Gosper, Greeley, Hall, Harlan, Holt, Howard, Jefferson, Johnson, Kearney, Keith, Knox, Lancaster, Lincoln, Madison, Merrick, Morrill, Nance, Nemaha, Nuckolls, Otoe, Phelps, Platte, Red Willow, Richardson, Rock, Saline, Saunders, Scotts Bluff, Sheridan, Sherman, Sioux, Thurston, Valley, Washington, York.

*Uranotaenia sapphirina* (Osten Sacken). 32. Collected throughout the state. The larvae are commonly found in ponds supporting large growths of duckweed (*Lemma*). This species appears to reach its western limit in Nebraska in the Midwest; however it is found in New Mexico (Wolff et al. 1975). County records: Brown, Burt, Cherry, Cheyenne, Dawes, Dawson, Douglas, Furnas, Gage, Gosper, Holt, Howard, Johnson, Knox, Lancaster, Lincoln, Madison, Merrick, Nance, Nuckolls, Otoe, Pawnee, Phelps, Platte, Richardson, Rock, Saline, Scotts Bluff, Sherman, Thurston, Valley, Washington.

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#### References Cited

Keener, G. W. 1951. Mosquito investigations in the Republican River Basin. U.S. Public Health Service, Communicable Disease Center, Atlanta, Georgia. 82 pp.

Lunt, S. R. 1969. The occurrence of *Aedes hendersoni* Cockrell in Nebraska (Diptera: Culicidae). Proc. Nebr. Acad. Sci. 79:9-10.

Lunt, S. R. and G. E. Peters. 1976. Distribution and ecology of tree-hole mosquitoes along the Missouri and Platte Rivers in Iowa, Nebraska, Colorado, and Wyoming. Mosq. News 36:80-84.

Olson, T. A., and H. L. Keegan. 1944a. The mosquito collecting program of the Seventh Service Command for 1942-1943. J. Econ. Entomol. 37:780-85.

Olson, T. A. and H. L. Keegan. 1944b. New mosquito distribution records from the Seventh Service Command Area. J. Econ. Entomol. 37:847-848.

Rapp, W. F., Jr. 1956. Notes on the mosquitoes (Culicinae) of the Crete (Nebraska) region. J. Kan. Entomol. Soc. 29:55-57.

Rapp, W. F., Jr. 1958. The mosquitoes of the Missouri Valley region of Nebraska. Mosq. News 18:27-29.

Rapp, W. F., Jr. 1959. A distributional checklist of Nebraska mosquitoes. J. Kan. Entomol. Soc. 32:128-133.

Rapp, W. F., Jr. and F. C. Harmston. 1961. New mosquito records from Nebraska. I. J. Kan. Entomol. Soc. 34:86-87.

Tate, H. D., and D. B. Gates. 1944. The mosquitoes of Nebraska. Univ. Neb. Agr. Expm. Sta. Res. Bull. 133. 27 pp.

Wolff, T. A., L. T. Nielsen, and R. O. Hayes. 1975. A current list and bibliography of the mosquitoes of New Mexico. Mosq. Syst. 7:13-18.

Zavortink, T. J. 1968. Mosquito studies (Diptera, Culicidae) VIII. A prodrome of the genus *Orthopodomyia*. Contrib. Am. Entomol. Inst. 3(2):1-221.