

# Entomologist Challenge – *Aedes cinereus*

John Shepard

Department of Environmental Sciences  
Center for Vector Biology & Zoonotic Diseases  
The Connecticut Agricultural Experiment Station  
New Haven, CT



Sean McCann (Flicker)

## Quick Facts

- “True” *Aedes*
  - Described by German dipterist, Johann Wilhelm Meigen, in 1818
  - Type species for the subgenus *Aedes*
  - *Has not been subject to name changes*
- Synonym Species in the Northeastern US
  - *Aedes fuscus*, described from male and female specimens collected in Cambridge, MA by Osten Sacken, 1877
  - *Culex pallidothirta*, described from female specimens collected in Orange Mts., NJ by Grossbeck, 1905

Refernce: Knight K. L, and A. Stone. 1977. A catalog of the mosquitoes of the world (Diptera: Culicidae): Vol. VI. The Thomas Say Foundation, Entomolgical Society of America, College Park, MD.

## Quick Facts

- Holarctic distribution
  - northern latitudes of North America, Europe and northern Asia (Mongolia, Russia)
- Does not have a “flashy” appearance as an adult
  - Medium-sized
  - Brownish-tan
  - Wings and legs with all dark scales
- Nuisance
  - Aggressive biter during morning and early evening
  - Biting activity in wooded areas, near larval habitat
  - “Ankle biter”
- Medical and Veterinary Importance
  - Vector of a variety of pathogens

# Life History

- Desiccation-resistant eggs laid in a variety of temporary and permanent water habitats
- Larvae develop in a wide variety of freshwater habitats
- Major generation in spring with sporadic egg hatch late
- Overwinters in egg stage

Similar life cycle with *Ochlerotatus canadensis* and *Oc. sticticus*

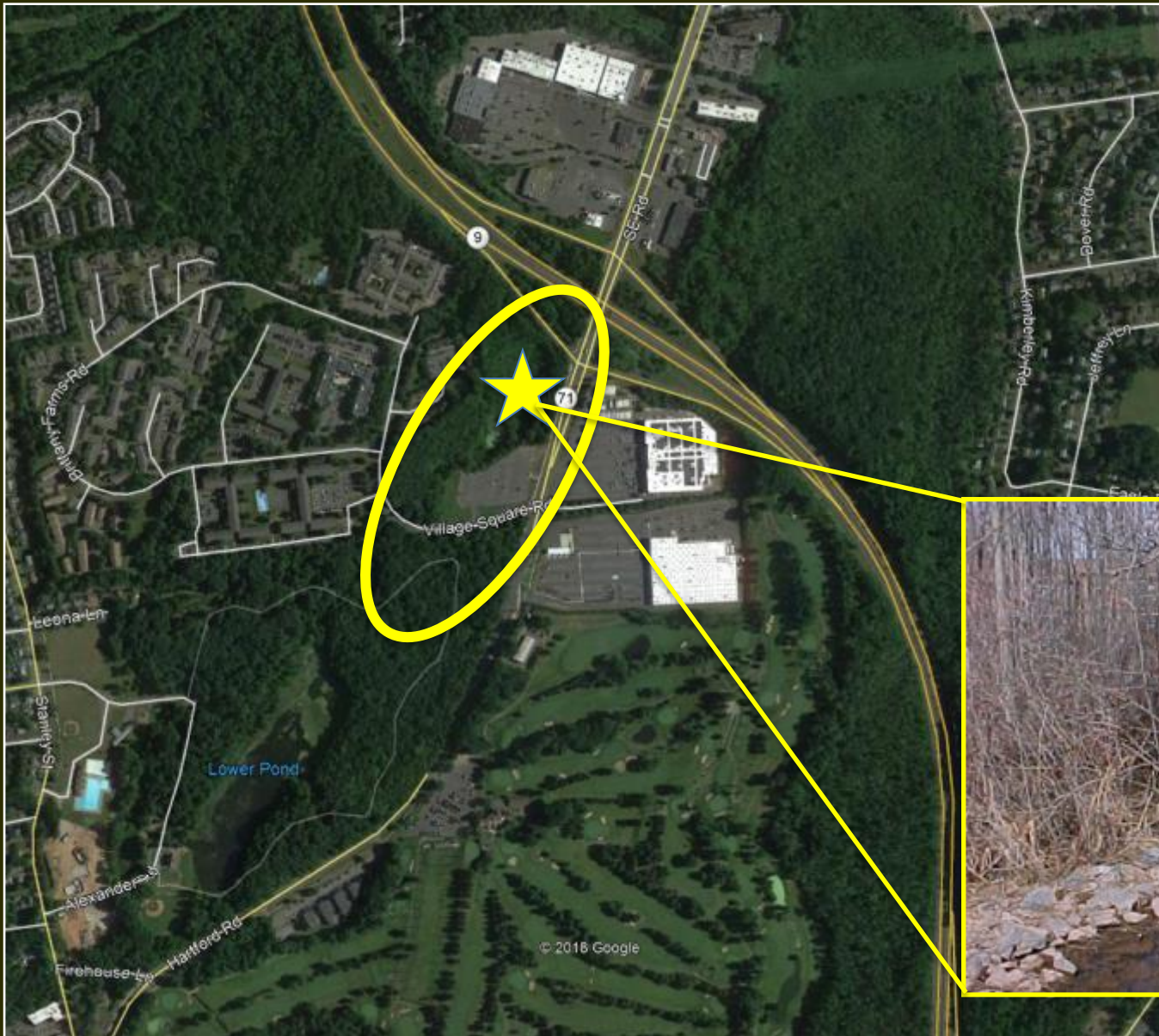
Reference: Crans W. A classification system for mosquito life cycles: life cycle types for mosquitoes of the northeastern United States. J. Vector Ecol. 2004. (1) 1-10.

# Larval Habitat

- Larvae found in Temporary and Semi-Permanent pools
  - Shallow leaf-lined pools
    - Heavy to light shade
  - Deeper pools - associated with emergent vegetation
    - Sedge tussocks and boggy areas of ponds and swamps
- Associated species in larval habitats include:
  - *Oc. canadensis*
  - *Oc. abserratus*
  - *Oc. excrucians*
  - *Oc. fitchii*
  - *Oc. stimulans*
  - *Cs. morsitans*
  - *Cx. territans*
  - *An. walkeri*
  - *An. punctipennis*

# Larval Habitat

- *Ae. cinereus* can be found in habitats associated with residential and commercial activity



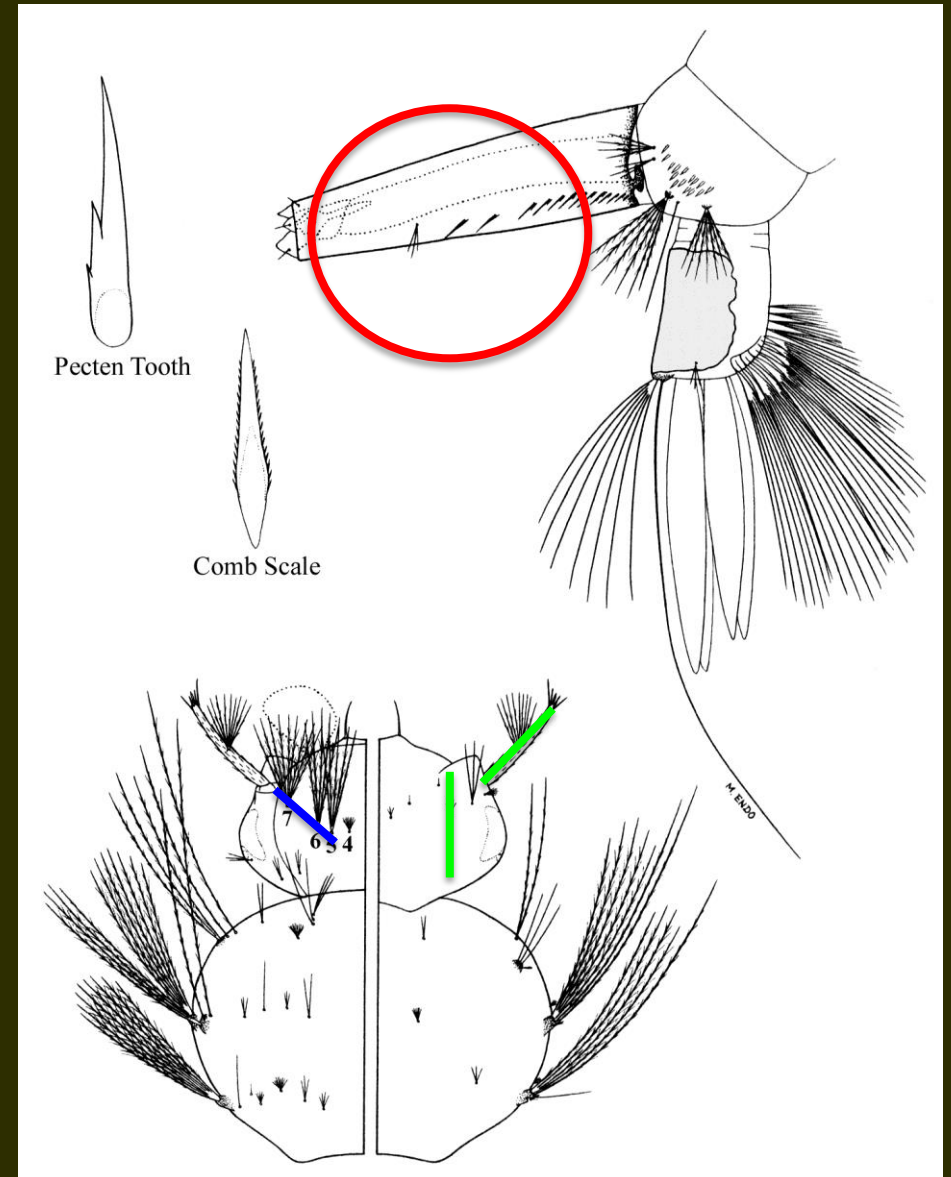


# Larval Habitat



# Larval Identification

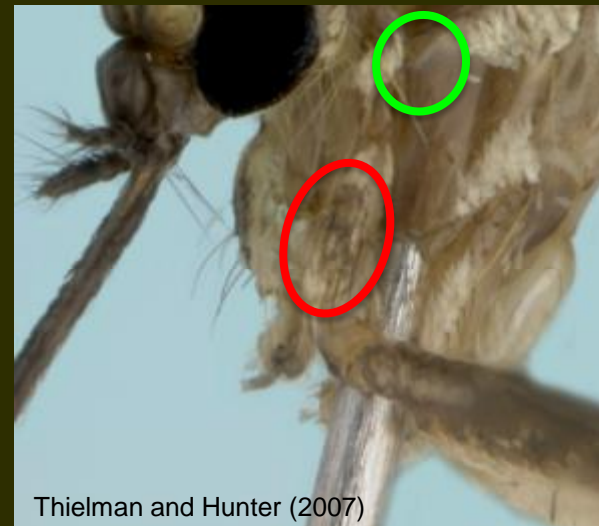
- Siphon with tuft inserted beyond distally detached pecten teeth
  - Saddle incomplete
- Antennae shorter than head
- Head hairs 5, 6, & 7 in straight line



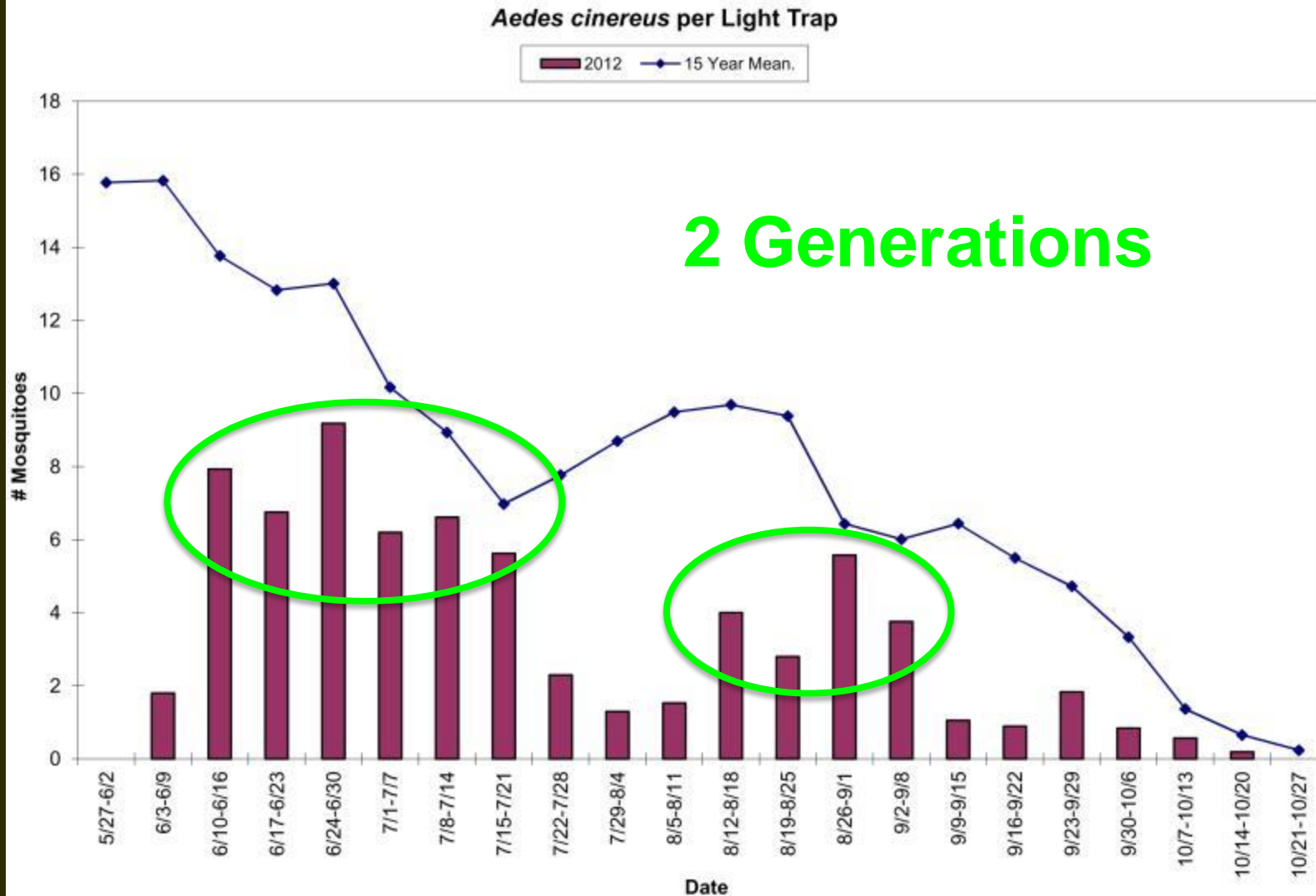


# Adult Female Identification

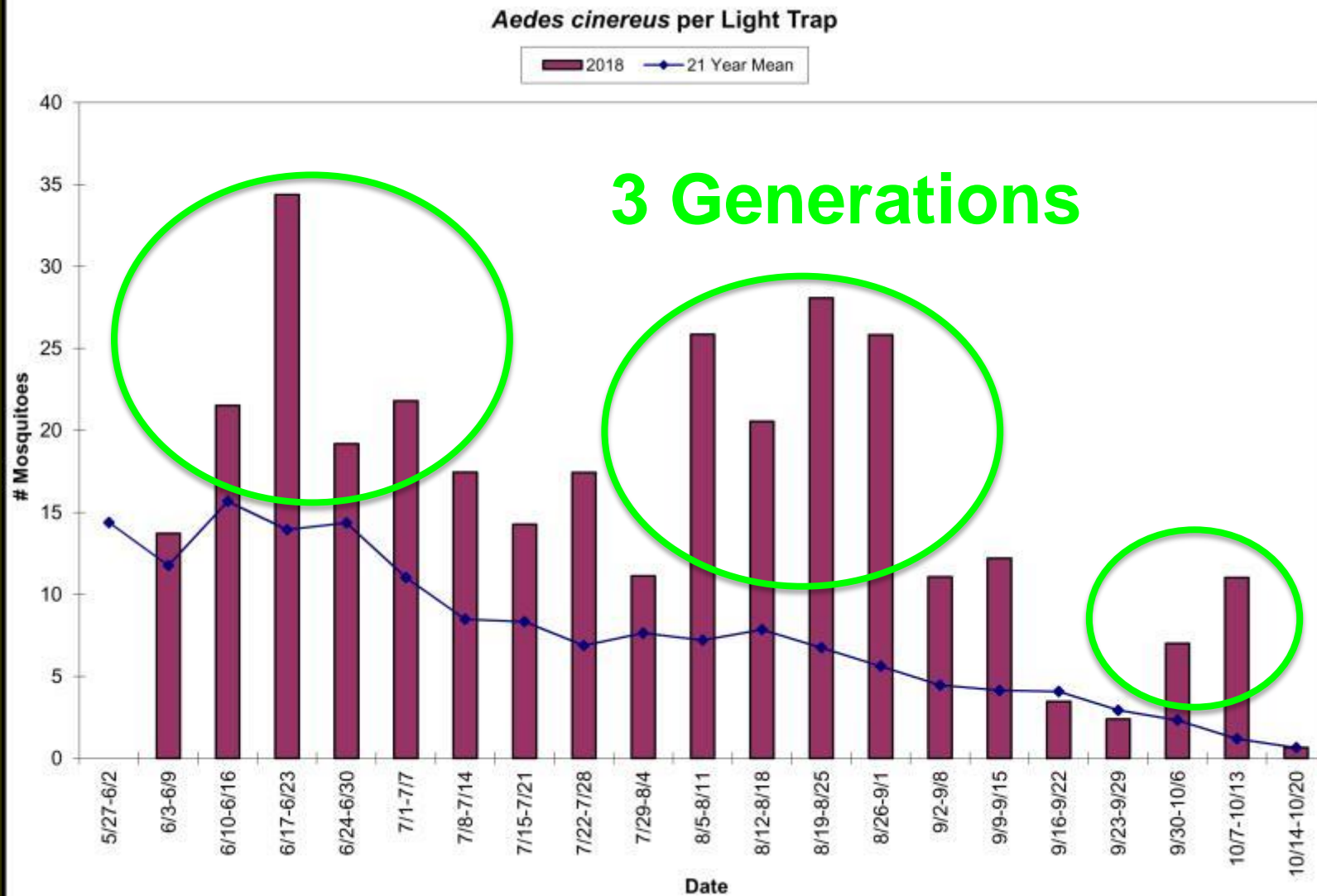
- Leg tarsi and wings dark scaled
- Abdomen with narrow transverse basal bands of light scales
- Dark-scaled forecoxae
- Similar species in keys (CT, NY)
  - *Oc. intrudens*
  - *Oc. communis*
  - *Oc. sticticus*



# Adult Seasonal Abundance – Dry Season



# Adult Seasonal Abundance – Wet Season



# Host Associations

- Obtains blood meals from a wide range of mammalian hosts (CT, MA, NY)
  - White-tailed deer
  - Human
  - Horse
  - Chipmunk
  - Raccoon
  - Cat
  - Rat
  - Squirrel
- Limited data on blood meals acquired from avian hosts (CT)
  - American Robin
  - Eastern Flycatcher
  - Scarlet Tanager





# Medical and Veterinary Importance

- Arboviruses Isolated in CT (1997-2018)
    - Eastern Equine Encephalitis (18)
    - West Nile (13)
    - Highlands J (7)
  - Jamestown Canyon (12)
  - LaCrosse Encephalitis (2)
  - Cache Valley (13)
  - Potosi (30)
  - Trivittatus (1)
- } • Dependent on late-season abundance
- Additional evidence of avian feeding
- Ockelbo virus (Sindbis variant) in northern Europe
  - *Dirofilaria immitis*

# References

- Andreadis TG, Thomas MC, Shepard JJ. Identification guide to the mosquitoes of Connecticut. Bull Conn Agric Exp Stn. 2005;966. 173pp.
- Apperson CS, Hassan HK, Harrison BA, Savage HM, Aspen SE, Farajollahi A, et al. Host-feeding patterns of established and potential mosquito vectors of West Nile virus in the eastern United States. Vector Borne Zoonotic Dis. 2004;4:71–82.
- Carpenter SJ and LaCasse WJ. Mosquitoes of North America north of Mexico. University of California Press, Berkeley, 1955. 360 pp
- Darsie Jr RF, Ward RA. Identification and geographical distribution of the mosquitoes of North America, north of Mexico. University of Florida Press. 2005. 384pp.
- Means RG. 1979. Mosquitoes of New York. Part I. The genus *Aedes* Meigen. With identification keys to genera of Culicidae. Bull NY State Mus 430a:1–221.
- Molaei G, Andreadis TG, Armstrong PM, Diuk-Wasser M. Host-feeding patterns of potential mosquito vectors in Connecticut, U.S.A.: molecular analysis of bloodmeals from 23 species of *Aedes*, *Anopheles*, *Culex*, *Coquillettidia*, *Psorophora*, and *Uranotaenia*. J Med Entomol. 2008;45:1143–51
- Nasci RS, Edman JD. Blood-feeding patterns of *Culiseta melanura* (Diptera: Culicidae) and associated sylvan mosquitoes in southeastern Massachusetts eastern equine encephalitis enzootic foci. J Med Entomol. 1981;18:493–500.
- Thielman, A.C, and Hunter, F.F. 2007. Photographic Key to the Adult Female Mosquitoes (Diptera: Culicidae) of Canada. Canadian Journal of Arthropod Identification No. 4, 14 December 2007, available online at doi: 10.3752/cjai.2007.04.