"Mosquito Hygiene"
throughout the Life Cycle of Culex* Mosquitoes

Egg Stage

Source: Dr. L. Patrican, NYS DOH

Eggs (1-2 days) – laid in "rafts" of ~150-300, typically on the surface of standing water (often in water polluted with organic matter—*e.g.,* storm sewer catch basins, sewage treatment plant lagoons, stagnant pools & ponds, puddles, scrap tires, & other artificial containers).

- **Breeding site "source reduction":** Eliminate standing water. Clean up garbage. Store tires *dry* & under cover. Fill puddles. Remove decaying vegetation & floating debris from ponds & treatment plant lagoons. Change water weekly in bird baths, other containers.
- **Life cycle disruption:** Eggs, larvae & pupae live in standing water. Keep rain gutters, roadside ditches, etc. free of debris so water can flow. Aerate garden ponds.
- **Mosquito predation:** To control immature stages, encourage natural aquatic ecosystems (*e.g.*, with fish, frogs & insect life). Introduce permitted fish in closed water bodies.

Larval Stage

Source: Dr. T. DiEdwardo, Rutgers University

"Wrigglers" (7-12 summer days)** – feed on organic debris in water. Breathe air through siphon tube on terminal end.

- **"Source reduction" & habitat modification** (see "Egg Stage")
- **Larvicide:** If elimination or modification of breeding sites is not possible, consider applying larvicide to water bodies containing larvae. Certified pesticide applicators have several "reduced risk" options, including bacterial toxins specific to mosquitoes, monomolecular films that coat water bodies, and methoprene insect growth regulator (IGR). A product permitted for use by the "lay person" is *Mosquito Dunks*™ (a formulation of *Bacillus thuringiensis israelensis*)—sold in garden supply stores.

Pupal Stage

Source: Dr. T. DiEdwardo, Rutgers University

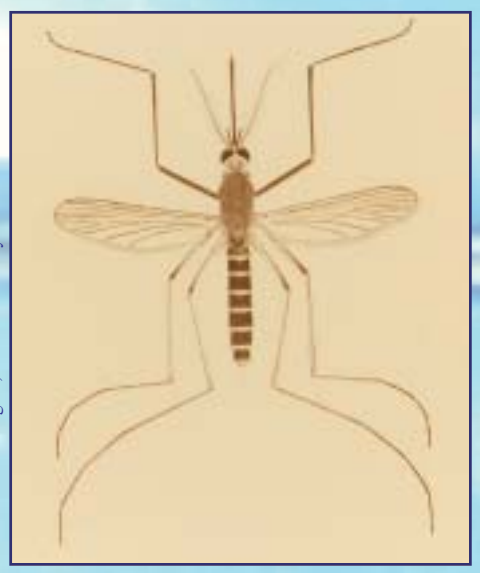
"Tumblers" (2-3 summer days)** – float near water surface. Non-feeding.

- **"Source reduction" & habitat modification** (see "Egg Stage")

Adult emerging from pupa

Source: Dr. L. Harrington, Cornell

Adult Stage



Source: Dr. L. Harrington, Cornell University

Adults – hibernate in winter as mated females; become active in spring & produce several generations during the "mosquito season." *C. pipiens* population numbers peak in August. Females require a "blood meal" to form each batch of eggs & typically search for blood source near the breeding site. Some species usually bite birds, but will also bite mammals. *C. pipiens* & *C. quinquefasciatus* are most active in evenings.

- **Reduce exposure to biting mosquitoes:**
  - Use screens on houses & tents.
  - Avoid places & times when mosquitoes bite.
  - If in places where mosquitoes are biting, wear long-sleeved clothing.
  - Apply mosquito repellents (such as 30% DEET products) to skin &/or clothing. Read label instructions & precautions. Pay attention to the type & concentration of "active ingredients" (a.i.) in the product.
  - Use yellow "bug lights"—insects don't see the light, but people do.
  - "Mosquito attractant" devices (*e.g.*, the *Mosquito Magnet*™) are effective & appropriate in some situations.
- **Pesticides:** Only consider applying mosquito adulticides (pesticides that kill mosquito adults) if disease in the human population is detected or suspected in your area.

Several generations a year!

Eggs, larvae, pupae in water

* *Culex pipiens*, the "northern house mosquito," breed in polluted waters. *C. quinquefasciatus* fill this niche in the southern US. *C. salinarius*, primarily a coastal species, breed in fresh, foul & brackish waters. Some other *Culex* species breed in clean standing water. Habitat, behavior and appearance of other mosquitoes differ somewhat from *Culex*.

** Length of life stage is temperature- & food resource-dependent.

ERAP

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