

Aedes Vexans

INTRODUCTION: *Aedes vexans* (Meigen) is one of the most widespread pest mosquitoes in the world.

BIOLOGY: *Aedes vexans* overwinters in the egg stage. Eggs are laid singly in sites subject to inundation by rain water, overflow, seepage or tidal water.

Another environmental factor that affects selection of oviposition sites is that of dense cover over the soil. Detritus, piles of twigs and low herbal canopy are usually associated with the greatest numbers of eggs within an oviposition site. Eggs of *Ae. vexans* hatch when inundation of the oviposition site occurs; however, they do not all hatch at one time. Also, eggs must go through a period of drying before flooding, in order for hatching to take place. Most of the eggs of one laying will hatch after the first flooding, but some remain for the second and subsequent floodings. In fact, *Ae. vexans* eggs have been found to survive in numbers for three years when kept moist. Hatching is due directly to a reduction of the dissolved oxygen content of the water. Bacteria, yeast and other organisms stimulate *Ae. vexans* eggs to hatch by reducing the water's level of dissolved oxygen. This may contribute to the survival of the species, since natural water with a low content of dissolved oxygen would have a relatively large number of bacteria, and thus, an ample supply of food for the hatching larvae.

The larvae of *Ae. vexans* are found in a wide variety of habitats.

Larval development varies according to the time of year when the egg hatch. During the summer months, a six- to eight-day period is require for larval development.

Larvae develop normally in a relatively dispersed state, but are often greatly concentrated as result of receding water.

Since all *Ae. vexans* eggs do not hatch at the same time, it is sometimes possible to find young larvae (i.e. first or second instar) present within the same site as pupae, especially if reflooding of the habitat has taken place. The pupal stage of *Ae. vexans* is unremarkable. As with larvae, this stage varies in length according to temperature, but usually only last two to three days during the summer.

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Vexans larvae are collected from a number of different habitats. Among these are: sheet water or open rain pools, tire ruts, stormwater management facilities (this includes detention, retention and infiltration basins), dredge spoil sites, salt marsh impoundments, ditches, areas in which streams or creeks have flooded over their banks, flooded woodlands, around the edges of semipermanent swamps and bogs that are subject to some drying down, and woodland pools or any type of temporary rain pool. Larvae do not seem to exhibit a marked preference for either sunlight or shade within these habitats.

As can be expected from such an extensive list of larval habitats, there is a variety of mosquito species found in association with *Ae. vexans*. The list includes: *Ae. canadensis*, *Ae. cantator*, *Ae. sollicitans*, *Ae. sticticus*, *Ae. stimulans*, *Ae. trivittatus*, *An. bradleyi*, *An. punctipennis*, *An. quadrimaculatus*, *Cx. pipiens*, *Cx. restuans*, *Cx. salinarius*, *Ps. call* and *Ps. columbiae*.

ROLE IN DISEASE TRANSMISSION:

Ae. vexans have been implicated in the transmission of several important diseases. *Vexans* are a suitable host for *Dirofilaria immitis*, and it appears to be one of the primary vectors of dog heartworm. Western equine encephalitis, St. Louis encephalitis

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Adult female *vexans* feed on the nectar of flowers and blood. Nectar feeding occurs any time after emergence. Blood is apparently taken from whatever hosts are available, and blood feeding begins the second day after emergence and is very marked on the third day.

Ae. vexans is a serious nuisance pest. Females will feed in shady places during the day; however, they are very active at dusk and vigorously seek blood meals at this time. Peak activity appear to be thirty to forty minutes after sunset. Female *Ae. vexans* bite readily, but not very viciously, and the result are less painful than other species.

Emergence of *Ae. vexans* usually begins in mid-May and adult populations normally reach nuisance levels early in June. Adult activity persists through September and well into October, when autumn temperatures remain warm.

The average life span of adult *Ae. vexans* in nature is three to six weeks. Various experiments involving staining to determine longevity produced female *Ae. vexans* collected as long as 55, 104 and 113 days after staining. This species produces from 108 to 182 eggs for deposition at one time.

These are deposited singly and in rapid succession. They are white on first appearing, but soon turn a shade of steel blue. Embryos are usually fully developed in eight to ten days. There are several generations, or broods, per year.

Ae. vexans is a mosquito which disperses for considerable distances from its breeding sites. This species has a flight range of five, ten and even fifteen miles from its breeding site. Thus, nuisance from this species can be quite widespread.

LARVAL HABITATS AND ASSOCIATED MOSQUITO SPECIES:

Ae. vexans is one of the most widespread pest mosquitoes in the world, due to the wide range of habitats it utilizes.