

## Chironomid Midges

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Chironomid midges (Fig. 1) are small mosquito-like flies, which vary in length from 2 to 18 millimeters depending on the species. Color and markings also vary with species; they range from shades of light, pale green to almost black. One distinguishing characteristic common to all species is the conspicuous pair of brush or fern-like antennae on the males. Swarms of midges can be seen hovering, particularly in the early morning or evening, near lake shorelines and almost anywhere else near standing or open running water. Unlike mosquitoes, chironomid midges do not bite, nor do they carry disease. However, dense numbers have aggravated asthma victims in the past.

### Biology

Several hundred species of chironomids occur worldwide, and different species may dominate populations in closely neighboring lakes, ponds, or streams. Some species favor water of drinking quality while others prefer sewage treatment ponds and similar habitats that are rich in nutrients. A few species thrive in brackish water, and one small group, the Clunioninae family, inhabits coastal marine environments.

Unlike mosquito larvae, which live mostly at the water surface and depend on quiet water in order to breathe, chironomid midge larvae live at the bottom or on submersed plants and objects. The food of most species consists of plankton algae and decaying matter. Some species live in silt-covered silken tubes, which they spin either on smooth surfaces or in bottom sediments. Tubes may be discerned through clear water as short narrow tunnels surrounded by areas clear of sediment where larvae have extended to feed. Some species are free-roaming and feed on both algae and other midge larvae. In favorable conditions, midge larvae may number several thousand per square meter.

Adult midges usually live less than a day but few may survive up to a week. These do not feed, and emerge only to mate, lay eggs, and die.

### Life History

Chironomid midges, like all Dipterans, have four life stages: egg, larva, pupa, and adult. The life cycle from egg to adult ranges from less than a week to more than a year, depending on the species and time of year. Most adults emerge within one to two weeks, starting in late spring and finishing in early fall.

Chironomid midges mate mostly in aerial swarms, however some species mate on the ground. They lay eggs shortly thereafter in gelatinous packets which expand into complicated structures after placement in water. Egg masses either sink to the bottom or become attached by a gelatinous anchor cord to submerged plants and structures. A few species lay eggs that float upon the surface of the water in wafer-like gelatinous

masses. Each egg mass, according to the species, contains from less than 100 to nearly 2000 eggs. Eggs usually hatch within 24 to 36 hours.

### **Economic Importance**

Chironomid midge larvae play a highly beneficial role in the aquatic food web. Plus, they help to break down organic sediments. Birds prey on adult midges, and both larvae and adults are important as fish food.

### **Economic Nuisance**

Chironomid midges, although basically harmless, may also become a severe nuisance when their numbers become excessive. This frequently occurs near newly formed aquatic habitats such as man-made lakes and reservoirs. Population explosions also occur near more permanent systems that have been ecologically disrupted by organic pollution or the removal of fish. Sewage oxidation ponds and blocked tidal estuaries may also become problem sources, as can be shallow, eutrophic lakes and rivers.

The most common nuisance comprises dense midge swarms that are attracted to light and rest in shrubbery, on patio surfaces, and on the sides of homes. This nuisance is often enhanced by the accumulation of large numbers of spiders and occasional bird droppings.



**Fig. 1. Chironomid midge.  
By K. Grey.**

Spider webs, stains from egg masses deposited upon painted surfaces instead of water, and decomposing adult midges create an unsightly situation. Midge swarms may also smear windshields and create dangerous driving conditions on highways. And, occasionally an isolated midge larva may be found in a glass of drinking water. Such larvae may be aesthetically unappealing, but actually pose no harm toward humans.

## **Management**

Source management of chironomid midges is rarely possible, and probably impractical for reasons of expense or ecological impact. Few chemical controls are available, and midge populations quickly develop resistance when the chemicals are applied.

The German carp, *Cyprinus carpio*, is the best biological control agent in some situations, but fish and game departments seldom permit its use.

Site management of adult midges by chemicals is also impractical due to its brief adult life span, and also because fresh emergence may continue for several days.

Where midges create a frequent nuisance, some relief may be achieved by strategic lighting or shrubbery placement. By situating bright security lights between the midge source and the site of concern, and by relying on spill light from these floods, and using yellow incandescent bulbs at the site, most midges will be intercepted by the security light. Likewise, a windbreak barrier of trees and shrubs may serve as an effective alternate midge resting site between the source and the area of concern