

BITING MIDGES OF COASTAL FLORIDA

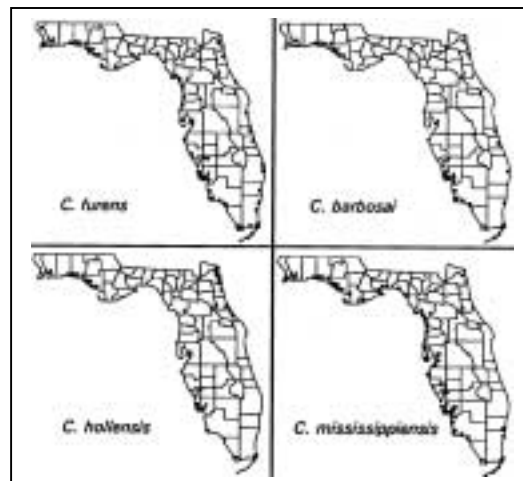
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Coastal area residents and visitors in Florida often know that something is biting, but when they look for the offender, nothing can be seen, or only an apparent speck on the skin. Florida, unfortunately, is home not only for abundant mosquitoes, but also for minute biting insects known locally as “sandflies” (elsewhere as “no-see-ums” or “punkies”), although the more correct name is “biting midges.” They are especially troublesome in coastal areas, where most of Florida’s population lives. Biting midges are particularly abundant in the vicinity of mangrove swamps or salt marshes.

WHAT ARE BITING MIDGES?

These insects are all extremely small, less than 1/8” long. They belong to the insect order Diptera (2-winged flies), family Ceratopogonidae, genus *Culicoides*. Florida has 47 species in this genus, but only 7 are significant pests of man. The 4 most important, in order of pest status, are *Culicoides furens*, *C. mississippiensis*, *C. hollensis* and *C. barbosa*. All are coastal in distribution.

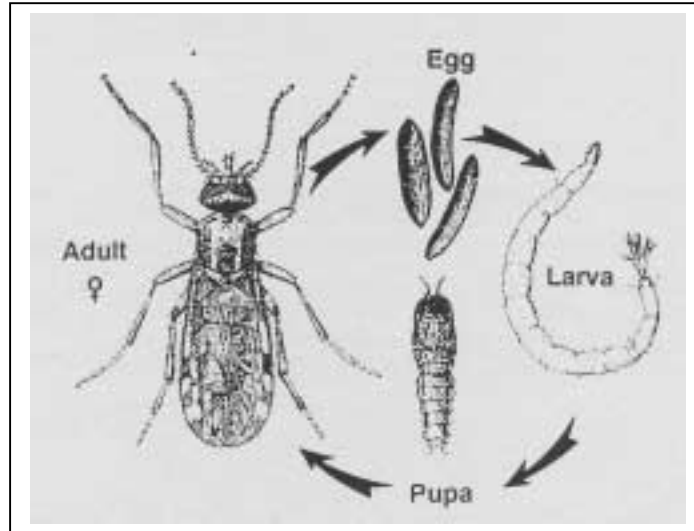
Of the other 3 species, *C. melleus* is another coastal biter, while *C. floridensis* and *C. tissoti* are species of minor concern, occasionally encountered inland. The remainder of the information in this factsheet is concerned with the 4 major species, and can be discussed as two groups of two closely related species; *C. furens*/*C. barbosa* and *C. mississippiensis*/*C. hollensis*. Facts given for *C. furens* and *C. mississippiensis* also apply to the related species in each case, unless otherwise stated.



APPEARANCE, LIFE CYCLE AND BREEDING SITES

Adult midges are gray in color, with distinct wing patterns. When biting, or at rest, the wings are folded, scissor-like over the abdomen. The eyes on each side of the head are black and the proboscis, used for biting, protrudes forwards and downwards. The eggs are minute, cigar or sausage shaped, and black in color. The eggs of *C. furens* take about 3 days to hatch at 80°, those of *C. barbosai*, *C. mississippiensis*, and *C. hollensis*, 5 days.

Eggs, which cannot survive drying, are laid on wet mud in breeding places. That is the habitat where juvenile stages (larvae) are found. The larvae are confined to areas where there is abundant moisture, primarily in wet mud in and around mangrove swamps and salt marshes. The larvae develop through 4 stages, or instars, and are creamy-white in color and eel-like. They normally live in the mud, and are predaceous, feeding on other small organisms. Full grown larvae are 1/8 to 1/4" long. The total time spent in the larval stage depends greatly on temperature and; therefore, on the season. *C. furens* completes its larval stages in 3-5 weeks in the summer and in 6-10 weeks in the winter. *C. mississippiensis* seems to have only 2 generations per year, so the larval stages may occupy several months. When mature, the larvae change to pupae and remain in this stage for about 2 (*C. furens*) or 3 (*C. mississippiensis*) days.



BITING HABITS

Only the female midge bites and takes blood. When biting, the midge uses small cutting teeth on the elongated mandibles in its proboscis to make a small cut in the skin. At the same time, a chemical in the saliva is injected to prevent blood clotting. Capillaries severed by the cut bleed and form a tiny pool of blood, which is then sucked up. Feeding takes approximately 2-5 minutes. By far, the greatest biting activity in both species is

around dawn and dusk. Some biting may continue through the night, but rarely during the day, unless the sky is heavily overcast and the winds are calm.

REPRODUCTION

Female midges suck blood to provide a source of protein for egg production. However, female *C. furens* and *C. mississippiensis* may be autogenous, which means that some individuals are able to develop eggs immediately after they emerge from the pupal stage, without taking blood. When blood is taken, it is digested as the eggs in the female midge's two ovaries grow to maturity. The number of eggs produced from one blood meal depends on the size of the female and how much blood she takes. *C. furens* females will produce between 50 and 110 eggs per blood meal, *C. mississippiensis* 25-50.

SEASONAL ABUNDANCE

C. furens is primarily a warm weather species that begins to appear in large numbers as soon as the spring warming trend begins. Biting females are abundant throughout the summer, with numbers decreasing as temperatures drop in the fall and winter months. Depending on local conditions, *C. furens* may continue to be a pest in south Florida even during the winter.

C. mississippiensis has two major population peaks, one from March through May, the other from late September through December. Populations are low during the summer.

HUMAN DISEASE TRANSMISSION

Both *C. furens* and *C. barbosai*, especially the former, are known to be vectors of a human nematode parasite, *Mansonella ozzardi*. This worm, which rarely produces symptoms of disease in infected persons, is native to South America and is found also in several islands in the West Indies. The worms live primarily in the blood, but the juvenile forms (microfilariae) are found also in the skin. Female midges ingest the microfilariae when they take blood and then transmit the parasite to uninfected persons.

CONTROL

The general method of control for all biting midge pests in the state is by application of insecticides to control the adults. Usually, the pesticide applications used for controlling mosquitoes work also for midges in heavily infested areas, or during severe outbreaks, may be made at the request of the public. The Adulticiding method employed by most county mosquito control organizations is ULV (ultra-low-volume) spraying. Because the amount of chemicals used in ULV spraying is so low, trucks often appear not to be

spraying anything. If you look closely, or shine a light on the spray nozzle, you will see the chemicals.

Large areas of swamp, particularly in several counties on the east coast, are impounded; that is, surrounded by dikes and kept flooded with water. This is an environmental control method that involves changing the breeding habitat of the midges so that the females no longer lay their eggs there, and the larvae can no longer develop in the flooded mud. Impounding is an effective control method for both salt-marsh mosquitoes and biting midges.

For more information...

...on the Biting Midges of Florida, contact **Dr. Roxanne Rutledge at the Florida Medical Entomology Laboratory, IFAS-University of Florida, 200 9th Street Southeast, Vero Beach, FL 32962, 407/778-7200.**

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