

Now see-um



Article and photographs by Dr. John H. Epler

It's happened to all of us – you're enjoying a wonderful day outdoors in beautiful Florida, when the wind dies down, or the sun goes behind a cloud, or perhaps nothing changes – and suddenly you feel tiny areas of intense, fiery heat on any parts of your skin that are exposed. A check of the affected area reveals either nothing or what looks like a tiny, dark piece of dirt. A quick smash of your finger... take that! One or two, even four or five, you can deal with, but the attack continues. You can't keep up with them. You must either spray bug repellent on yourself or head for the great indoors. You've just experienced no-see-ums!

What are these tiny persistent purveyors of pain? They're actually tiny flies, members of the genus *Culicoides*. A whopping 49 species are known in Florida. Only about 30 of those species are known to bite people, and of those, only about seven are considered real pests. These tiny biters go by several

common names – the familiar “no-see-um” as well as punkie, sand fly and a few other names not fit to print.

They belong to the fly family *Ceratopogonidae*, the aptly named “biting midges.” They are second cousins to mosquitoes (*Culicidae*), blackflies (*Simuliidae*) and non-biting midges (*Chironomidae*). There are about 250 species of biting midges in Florida, and most do not bite people. Some feed on bird blood, some on the blood of other mammals, some on the blood of other insects. There are even some that suck blood from the wings of dragonflies. Others prey on other flies and insects, plus there are “nice” ones that forego blood and subsist on flower nectar or pollen.

Why do they bite? Well, they're females (males don't bite), and they're impolitely asking you for a tiny amount of blood they need to enable their eggs to mature. You're graciously helping the insects

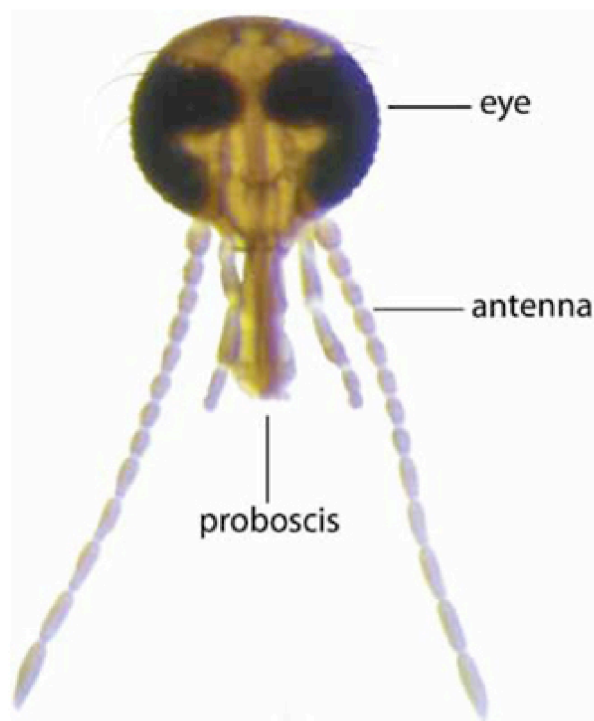
produce another generation that may come back in a few weeks and seek another donation.

Where do they come from? Like butterflies and moths, flies have a four-stage life cycle – egg, larva, pupa (often called a cocoon in moths and butterflies) and adult. The mud in salt marshes is a favorite hangout for the tiny, worm-like larvae of many species of no-see-ums, but larvae can also live in ponds, lakes, streams, rivers, treeholes, bromeliads, even in damp leaves on a forest floor or in rotting cactus. Most larvae eat an innocuous and unexciting diet of tiny pieces of broken-up plant material called “detritus.”

Like many other tiny critters, the intricate beauty of these insects isn’t realized until you use a microscope to view them. Many no-see-ums have beautifully patterned wings. But the head is where the action is.

In the picture, note that the compound eyes basically cover the whole side of the head. The long, multisegmented things hanging down are the fly’s antennae. Now, look at the bottom of the head.

There beneath the head, surrounded on each side by a multisegmented palp, is the proboscis. Think of it as a hypodermic needle, within which are two sets of sword-like blades whose tips are



Front view (above) and side view (facing page) of the no-see-um *Culicoides paraensis*. The length of this tiny fly is a mere 1.1 mm (about 1/25 of an inch). This specimen was captured after she bit the author at his house south of Wakulla Springs. The species breeds in treeholes.



Close-up view of the proboscis of *Culicoides mississippiensis*. Note the saw-like teeth near the tip of the sword-like mouthpart.

lined with tiny saw-like teeth. Now imagine that needle stuck in your skin, with those blades moving rapidly up and down and – OW!

But it’s most likely not the tiny, razor-sharp blades that create the pain. It’s the proteins in the no-see-um’s saliva that cause the pain and the itch, which may last up to a week.

What can be done about them? The short answer – not much. They simply breed in too many places and to conserve the general health of the environment, most of those places should not be disturbed. Spraying insecticides for adults only kills those that are flying when the spray is dispensed. Your best bet, other than staying indoors, is to use an insect repellent and wear protective clothing. Very fine mesh no-see-um netting is available for tents and outdoor enclosures. No-see-ums are a fact of life and you just have to deal with them. Fortunately, no-see-ums are not known to transmit diseases to humans in the United States.

But don’t be down on all biting midges unless you want to give up one of life’s great pleasures. Midges of the genus *Forcipomyia* (which do not bite people) are the main pollinators of cacao trees – the source of chocolate. Like chocolate bars? Thank a midge! Just don’t invite their cousins, the no-see-ums, to your party. **FW**