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LIVING

Midges in motion

The pulsating mass of insect life is a behavioural adaptation for finding mates

Soon after the ice goes out, a careful look out over a lake or river in early spring will sometimes reveal large numbers of tiny, dark insects flying about. These harmless, mosquito-like flies are known as midges (Chironomidae), and we can thank



OUR CHANGING SEASONS
Drew Monkman

them for fuelling the spring tree swallow migration which will begin each year at the end of March. Midges spend most of their life as larvae in the mud bottom of bodies of water. A few species, however, live in soil or in rotting material. Having overwintered in the larval stage, the insect transforms

into a pupa which rises to the water's surface. The adult midge then crawls out of the cocoon-like pupal case and flies off.

The real entertainment for insect watchers, however, is happening on shore. Dense clouds of thousands of midges often swarm over the top of prominent objects such as trees. Along the River Road between Peterborough and Lakefield, I have often seen these insects congregating over the tops of cedar trees. The pulsating mass of insect life is a behavioural adaptation for finding mates. In other words, it allows male and female midges to get together. The swarm itself is usually composed almost entirely of males who are awaiting the arrival of females. Like many moth species, the males have long, feather-like antennae which can detect the sound of an approaching female. These antennae are many times larger than those of the female.

Female midges produce an "erotic" flight buzz which attains just the right pitch when she becomes sexually mature. The males are attracted to this pitch when the female is within about 30 centimetres of them. Rumours that the sound is something akin to non-stop talking are probably greatly exaggerated! Confusion with the flight buzz of other male midges is avoided because the male buzz is lower and out of their own "hearing" range. When the female flies into the swarm, the males move towards her like iron shavings to a magnet. One male will attach himself to her and the impassioned pair will leave the throng for a nearby location to mate. The female then leaves to lay eggs, while the male heads back to the swarm for more amorous action.

Mosquitoes, which are closely related to midges, also locate mates based on their buzz pitch. The flight buzz of one common species is around middle C on the piano. If you sing or somehow produce this pitch near a swarm of male mosquitoes, they will all immediately head in your direction. Luckily, male mosquitoes do not bite.

The female midge deposits her eggs in water or in some other damp material. They exit her body in long connected strands. A day



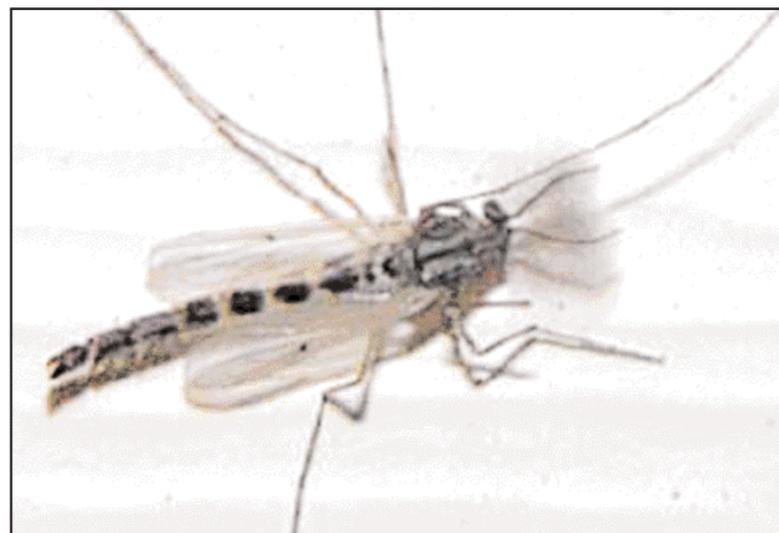
Swarms of mating midges hover above cedar trees (above), and a closer view of a midge.

Illustration by Kim Caldwell

or two later, the eggs hatch and the larvae, depending on the species, often construct tiny shelters of debris around themselves in which they feed and mature. They reach the adult stage in a matter of a few weeks and proceed to mate. There are many different generations over the course of the spring, summer and fall. The larvae of the last brood overwinter.

If you happen to come across a throng of midges, take time to observe their movements. There is no need to worry about being bitten because midges do not bite. In fact, the adults of many species do not appear to feed at all; their life expectancy is only a day or two. As long as there is no wind, the insect cloud remains more or less at the same height.

It will, however, sometimes move sideways. When a breeze comes up, the swarm moves lower, only to rise up again when the gust subsides. These movements often suggest a plume of smoke or



Bob Patterson, special to The Examiner

the synchronized wheels of a tightly-knit flock of shorebirds or starlings. The swarm seems to function as if controlled by a single

brain.

Midge swarms tend to occur at the same place and time for a number of days in a row. The tim-

ing is different for each species and is probably triggered by light level. Quite often the swarming occurs in the morning and then again in late afternoon or evening. Some types of midges will also swarm at mid-day. If you see a mating swarm of midges one day and then return to the same location at the same time the following day, you are likely to see the spectacle once again.

Not all midges swarm over tree tops. Some will congregate just beneath the tip of a branch, in a patch of light in a forest clearing or even right over your head. Where the throng gathers to swarm is called a swarm marker. The insects typically stay within a specific distance of the marker. This may have something to do with the midges' limited vision. As explained above, most movement of the swarm is in response to wind. The insect cloud moves lower when the wind comes up so it can remain close to the marker without getting blown away. The various responses to the changing breezes often makes it look like the flies are dancing. Some movements, however, do not appear to have anything to do with breeze activity. Many are seemingly synchronized, and the mechanisms and purposes involved are poorly understood.

Unlike most other insects, midges have the ability to fly at very low temperatures, often just a few degrees above freezing. Mating swarms can often be seen as late as November and right in suburban backyards. It is amazing that these delicate insects are able to fly at such low temperatures when much larger and more robust insects like butterflies are totally unable to coax their wing muscles into action unless the temperature is at least 15 C or more.

Early migrants such as tree swallows are especially grateful for the cold weather flying ability of midges. The swallows feed heavily on these hardy insects as they emerge from the water almost immediately after ice-out. The birds not only catch midges in the air but also take a lot of dead or moribund individuals directly from the water's surface. Swallows will continue to feed on midges over much of the summer. They can often be seen in large numbers foraging over the sewage lagoons in Lakefield, probably because of the large numbers of midges that the lagoons produce.

What to watch for this week

When out for a walk, take a close look at dark objects such as fallen leaves and the bases of tree trunks. They absorb sunlight and transform it into heat. This heat melts the surrounding snow, sometimes allowing the object to sink down. Since debris that has accumulated in the snow over the course of the winter is usually dark, it is a major factor in helping to melt the surrounding snow.

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