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The bugs of winter

Even people who don't like winter will usually admit that "at least, there's no bugs." Well, guess again. Insects are indeed out and about in the winter woods. The good news, however, is that the species you're most likely to encounter - the minuscule snow flea - prefers algae, bacteria and mouldy leaves to human blood. Not only is this fascinating species completely harmless, it is also another sign that spring is just around the corner.

The snow flea (*Hypogastrura nivicola*) is not related to true fleas such as those your dog or cat may bring home. It belongs to an ancient group of wingless insects called Collembola, commonly known as springtails because of their amazing ability to jump. Less than 2 mm in length, snow fleas accomplish their incredible leaps thanks to two tiny tail-like appendages that are folded under the abdomen and held in place by a kind of hook. When the hook is released, the tails act as a catapult, sending the insect rocketing skyward. They can, in fact, hurdle themselves an impressive 13 cm, which represents 65 times the insect's body length. In human terms, that's like being able to jump the length of a football field!

Late winter is the best time to look for snow fleas. On mild, sunny days, carefully examine the snow adjacent to open ground where leaves and soil have been exposed through melting. The base of a tree along the edge of a woodland trail is a good place to try. What may initially appear like pinhead-sized particles of soot or pepper scattered on the snow will suddenly start jumping about in front of you. You'll need to get down on your hands and knees, however, to really see what's going on.

Snow fleas are also attracted to the sheltered depressions of cross-country ski trails, where they sometimes congregate in such numbers as to turn sections of the trail black. I often see them on the trails of the Kawartha Nordic Ski Club on Highway 28 near Haultain.

What are snow fleas doing out on the snow, when most self-respecting insects are sleeping away the winter as eggs or larvae? First of all, they are finding food in the form of microscopic algae, bacteria, and fungi. Their black colouration allows them to absorb heat from the sun and therefore remain active. The microclimate in the sheltered spaces between the ice crystals is also substantially warmer than the surrounding air.

It also appears that these large get-togethers on the snow allow the tiny insects to find a mate. After fertilization takes place, the female moves back onto areas of exposed soil where she lays her eggs. The eggs hatch in the late spring or summer and the young become sexually active adults the following winter.

Snow fleas, along with other species of springtails, are among the most abundant insects known to science. Tens of thousands are to be found in a square metre of rich forest soil. Not only are they harmless but they actually play a key ecological role in nature. They are part of a complex of organisms known as decomposers that dine on leaf mould and other organic matter on the forest floor. After the decomposers are done with them, soil nutrients are once again in a form that plants can use to grow. In turn, this allows other animals to feed on the plants which are the foundation of the food chain.

Another insect to watch for at this time of year is the winter stonefly. On mild, sunny days, adult stoneflies can be seen crawling over the snow in areas close to running water. They are weak fliers and do not stray far from the water's edge. As with snow fleas, skunks and great

horned owls, stoneflies are getting together early to beat the spring mating rush. After mating, the female returns to the frigid water of the stream to lay her eggs.

The life cycle of the winter stonefly is quite unusual. After the eggs hatch in the spring, the larvae bury themselves in the mud of the streambed, where they lie dormant all summer. In this way they avoid dangers such as fish predation, low summer oxygen levels and fluctuating water flows. They emerge from the mud in late November, grow quickly into the adult stage and are ready to mate by mid-winter.

One species commonly seen along Jackson Creek in Peterborough is the small winter stonefly (Capnis genus). It can often be found in large numbers right along the walking trails adjacent to the creek. It is black, measures about 8 mm in length, and its wings are folded flat over its back. It has two prominent tails (cerci). Since stoneflies are able to survive only in clean, moving water, their presence is usually an indicator of good water quality. In parts of the United States, winter stonefly numbers are monitored each year in order to gauge the health of rivers and streams.

There are a couple of other insects to watch for if you're out in the woods this winter. One species that is sometimes found in Petroglyphs Provincial Park is the snow scorpionfly (*Boreus brumalis*). These are small insects, about 7 mm in length, which are sometimes found walking across the surface of the snow. Their dark body makes them fairly visible. The females do not have wings.

Near streams, keep an eye open for the wingless winter crane fly (*Chionea* genus). At first, you may dismiss it simply as a lost spider. However, a quick count of the legs - six, instead of eight - will prove that it is indeed an insect. Dark-brown in colour, it is easy to see against the snow. You may be familiar with the crane flies seen in summer. They look like giant mosquitoes with a wingspan of 3 - 5 cm and extremely long legs. The winter crane fly has evolved to a wingless, smaller-sized version with special adaptations to winter life.

What to watch for this week:

Crow numbers are increasing as late February rolls around. Returning migrants are bolstering the ranks of the those crows that never left. Watch for long, scattered flocks often flying at high altitudes. Giant Canada geese that have wintered in the central United States should also begin arriving back in the coming days.

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