

The

This is Young Naturalist Year: 1966-67
Do you have a Young Naturalists Club in your town?

Young Naturalist



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Bees and Blossoms

Naturalists have long been aware of the harmonious relationship that exists between flowering plants and bees. Each seems to be well suited to supply the needs of the other, and each stands to gain from this bee-flower relationship.

In the course of their evolution, flowering plants have developed various means of attracting insect visitors. Their petals are often large and showy, and tend to stand out against the background of green foliage. They usually produce an attractive perfume that is very effective in guiding insects to them. As a final offering the

blossom may contain a rich source of food in the form of nectar and/or pollen.

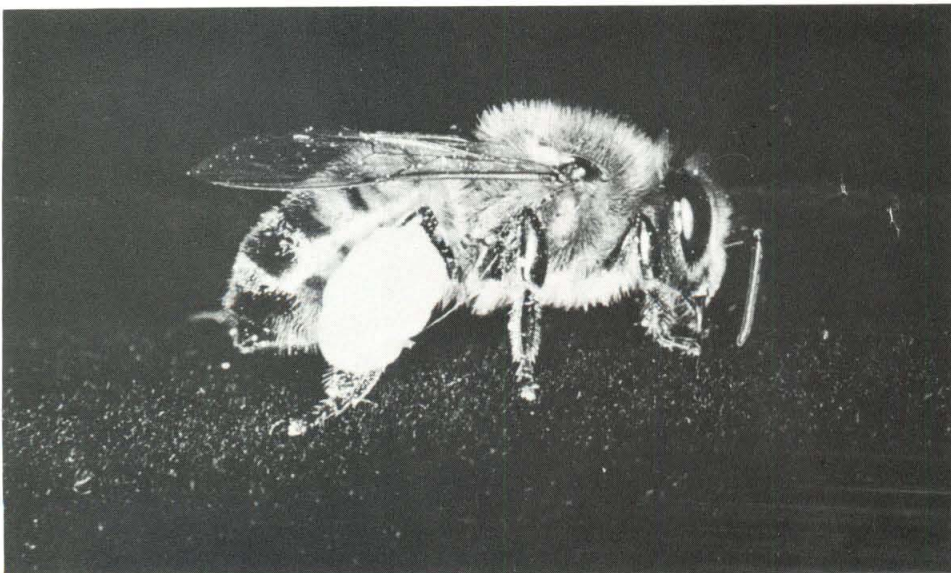
Of the many insects that visit flowers for food, bees and particularly honeybees, are of prime importance. The honeybee depends on flowering plants for the whole of its food supply. Nectar, sucked from the depths of the blossom with its long tongue, and carried to the hive in its honey stomach, supplies the bee with its carbohydrate requirements. The protein, mineral, vitamin and fat components of the bees' diet are supplied by plant pollens. As the bee brushes against

the flower parts, pollen adheres to its mouth-parts and to the compound hairs that thickly cover its body. Slightly moistened with nectar, the pollen is raked back by the legs and accumulated in the form of pellets in hair-fringed "pollen baskets" on the hind legs. The pollen is carried to the hive and packed in wax cells until it is required for feeding the growing larvae.

Although early investigations seemed to indicate that the honeybee was colour-blind, the eminent Austrian scientist, Dr. Karl von Frish, refused to believe that the brightly coloured blossoms were of no significance to the flower-visiting honeybee. He eventually proved that the honeybee had indeed a well-developed colour vision.

It has been estimated that at least 3 million blossoms must be visited for the bees to collect one pound of pollen or nectar. Since one strong hive of honeybees may gather up to 70 pounds of pollen and 400 pounds of nectar in the course of a season, the number of blossom visits carried out by its busy workers is truly staggering.

We can readily see how the bee benefits from the blossom, but what does the plant gain in return? In order to produce seed or fruit, flowers must be pollinated. As it gathers food, the honeybee transports pollen on its hairy body from blossom to blossom, thus aiding in the vital process of



University of Guelph

The bee rakes back pollen from the hair of its body. The pollen forms pellets that are collected in the "pollen baskets" on the hind legs.

The Short-Tailed Shrew—An Appetite On Four Legs

That fleeting glimpse you had of a small, furry creature disappearing under a log, or the faint scurrying you heard in the bush and casually dismissed as a mouse, may well have been a shrew.

Because of their small size and general form, shrews are often confused with mice. Actually a shrew is no more closely related to a mouse than it is to the mouse's traditional enemy, the cat.

They belong to a colourful and widespread but generally little known Order of mammals called the *Insectivora* (insect eaters). The moles and hedgehogs are perhaps the members of the group best known to the general public. They are relatively primitive mammals and exhibit a generalized skeletal structure. It is thought that the early mammals were probably, in the main insectivora-like, and that some ancient stock or stocks of this group were ancestral to most of the more highly-specialized mammals, such as the mice or cats of today.

If the animal we heard or saw momentarily was indeed a shrew, there is an excellent chance that it was a mole or Short-tailed Shrew. This is the most common of the six species of shrews found in Ontario. The combination of large body size (four to five inches in length) and one-inch tail, with long, dark, slate-coloured fur and purplish-brown tipped teeth, will separate it from any other small Ontario mammal.

Some plant material is eaten but the Short-tail feeds mainly on insects, worms, in fact any small creature available, including at times other small mammals. It was discovered fairly recently that glands in the mouth of this shrew secrete a nerve poison that is capable of paralysing a mouse and rendering it prey to the shrew. Shrews have been known to destroy as many as 95% of the cocoons of the larch sawfly, and they play an important role in controlling this and other injurious forest pests.

The Short-tail will construct its own burrows but will also make use of the workings of other animals. The four



Sketch by Paul Geraghty

The Short-tailed Shrew is the most common of the six species of shrews that are found in Ontario. A shrew is very different from a mouse.

to eight young are born during the warmer months, in a nest of grass sometimes lined with mouse fur, in a chamber one to twelve inches below a stump or log.

It is prey to all the flesh eaters—hawks, owls, snakes, fish, and the numerous mammalian predators such as foxes and weasels. The latter, however, sometimes discard the shrew after killing it, apparently discouraged by the strong musky odour or taste of a secretion emitted from the side glands of the shrew.

Shrews do not hibernate, and I have often wondered how in the depth of winter, when much of its normal prey is dormant or even absent, such a mite as the Short-tailed Shrew finds enough food to satisfy its enormous appetite and keep the fierce internal fires burning. But it does. Shrews have been observed in the open, away from the warm protective cover of the snow,

when the air temperature registered 20 degrees below zero.

S. C. DOWNING

BEES — From Page 1

cross-pollination. Each spring thousands of colonies of honeybees are rented by fruit growers and moved into orchards for this very purpose. Additional bees are used during the summer months to pollinate clover seed crops. Is it any wonder that the honeybee is sometimes referred to as the "Spark-plug of Agriculture"?

M. V. SMITH

A student of English deduces,
Though the plural of goose is not
gooses,

And we do not say mice
Nor should we use louses,
That mongeese is not right, but
mongoosees.

A. A. OUTRAM

Club News



Several new clubs have been formed in Ontario recently. In Western Ontario, a group of students have started the Norfolk Young Naturalists and have been holding meetings since October. The club, affiliated with the Norfolk Field Naturalists Club, has about ten members so far and Jane Ryerse of Port Dover is the president.

From Downsview, Stefan Parusinski writes that the club he formed has increased its membership from four to twelve and meets every week at his school. His natural science teacher is arranging field trips in May and June, at which time they hope to study birds and trees, and, to take notes and photographs.

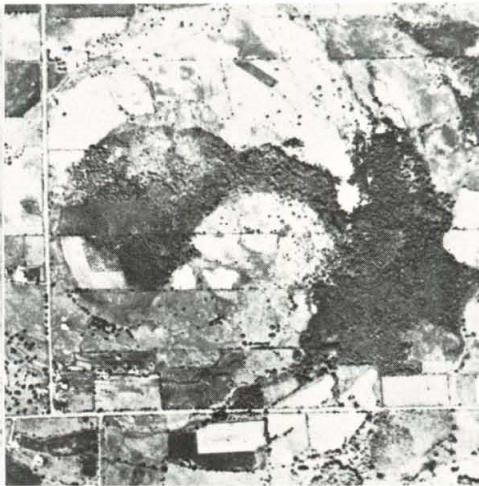
In Port Hope the president of the Willow Beach Field Naturalists, Mrs. Lawson, arranged a number of nature

hikes during the winter months for six boys and girls, children of club members. They studied animal tracks, winter birds and beaver lodges, as well as a Turkey Vulture kept by another club member, Mrs. Audrey Wilson.

BARBARA WILKINS

Many boys and girls have organized a natural science club in their school or classroom. If you have such a club, you are invited to share your experiences with others by reporting your activities in this column. We would be pleased to have pictures of your outings and projects. Be sure to describe your activities fully, giving the names of the leaders and assistants. Write to Mrs. Barbara Wilkins, Editor of Club News, 213 Rosedale Heights Drive, Toronto 7, Ontario.

Meteorite Craters In Ontario



C. S. Beales, Dominion Observatory

The Brent Crater, shown on the left, is in Algonquin Park. The Holleford Crater (right) is a few miles north of Kingston near the town of Verona.

The most obvious features on the surface of the moon are the craters which cover almost the entire area of its visible and far sides. The planet Mars is now known to possess surface craters as well. One of the two most popular theories for the origin of these craters is that they were formed by impact of large bodies from interplanetary space. (The author is one

of a minority of astronomers who believe that volcanic action produced the lunar craters).

If meteorites were responsible for the craters on the moon and on Mars, we should expect to find craters on the other planets and satellites in the solar system and, in particular, on the Earth. And indeed this is so; there are

a number of circular depressions on the Earth which are generally thought to be meteorite craters. Several of these are located in Ontario. Most of the craters have been discovered on aerial photographs and their meteoritic nature verified after extensive drilling into the underlying rock. All of them have suffered from the effects of wind and water erosion and this accounts for the small number of terrestrial craters relative to lunar craters.

The Brent Crater, one of the best known in Ontario with an original diameter of 2 miles, is located in Algonquin Park. Aerial photographs show a circular depression with a diameter of 9500 feet that has been almost completely filled-in with sedimentary rock. Drilling indicates that the original depth was 1000 feet and that the underlying rock was extensively broken and cracked by the original meteorite impact. Tecumseh and Gilmour Lakes are situated on opposite edges of the crater.

Holleford Crater is a few miles north of Kingston near the small town of Verona and east of highway #38. Its present diameter is 1½ miles, very close to the original diameter. Like Brent Crater, Holleford has been almost completely filled with sediment and is presently covered with trees. When viewed from the ground it is impossible to tell that a crater really does exist here, and this is true of most of the terrestrial meteorite craters. Near the edge of the crater one will find a small metal plug sticking up out of the ground. This covers one of the drill holes made by scientists of the Dominion Observatory in their original study of the area.

The Brent and Holleford Craters are two of the oldest terrestrial meteorite craters known, both having ages of more than 400 million years.

There are probably other craters in Ontario and several are known in other parts of Canada which are larger than the two discussed here. It has recently been suggested that Hudson Bay, James Bay, and the Gulf of St. Lawrence may also have been formed by meteorites but as yet no studies have been made to prove or disprove this theory.

DOUGLAS P. HUBE

WOODLORE FOR THE NATURALIST

— John Macfie —

Equipping for a Canoeing-Camping Trip

Deciding what to take on a canoeing-camping trip is a perplexing problem. Taking too much is almost as bad as taking too little. Individual needs and preferences vary. Start with this list, modify it as you see fit; then, near the end of your first trip, sit down and compile the perfect equipment list for use on future expeditions. A "camper's provisions" list will appear in the next issue of *The Young Naturalist*.

General equipment

Canoe: A light canvas covered cedar strip or aluminum model, 14 or 15 feet long for two people, 16 feet

long for three. Equip it with paddles for each person plus one spare, life preservers, 24 feet of sash cord and a repair kit if it is a canvas covered canoe.

Tent: A 7 by 9 foot wall tent for two, 8 by 10 foot for three, with a mosquito screen. Tents of silk or synthetic material are lighter than canvas.

Cooking outfit: A set of three nesting cooking pails, fry pan, plastic water pail and wash basin, nesting plates, bowls and cups, cutlery, butcher knife, egg turner, can opener, dish towels, paper towels, aluminum foil. A two-burner gasoline stove (and a gallon of fuel) will permit cooking in the tent, and it will lower the risk of starting a forest fire in dry weather, but it adds weight and bulk, too.

Miscellaneous: A 2½ pound axe with

28" handle and sheath, file, whetstone, first aid kit, plastic garbage bags for waterproofing cargo, 10 by 12 foot sheet of polyethylene for tent fly and emergency shelter from rain, candles, matches, toilet paper, insect bomb, flashlight and a chlorination kit if water purity is doubtful.

Personal gear

Sleeping bag: A light, down-filled bag (or one of the better synthetic fibre-filled types) with waterproof shell.

Air mattress: Be sure someone in the party has a rubber patching kit.

Packsack: Large enough to contain most of your personal gear if the trip requires portaging. If not, a duffel bag will do.

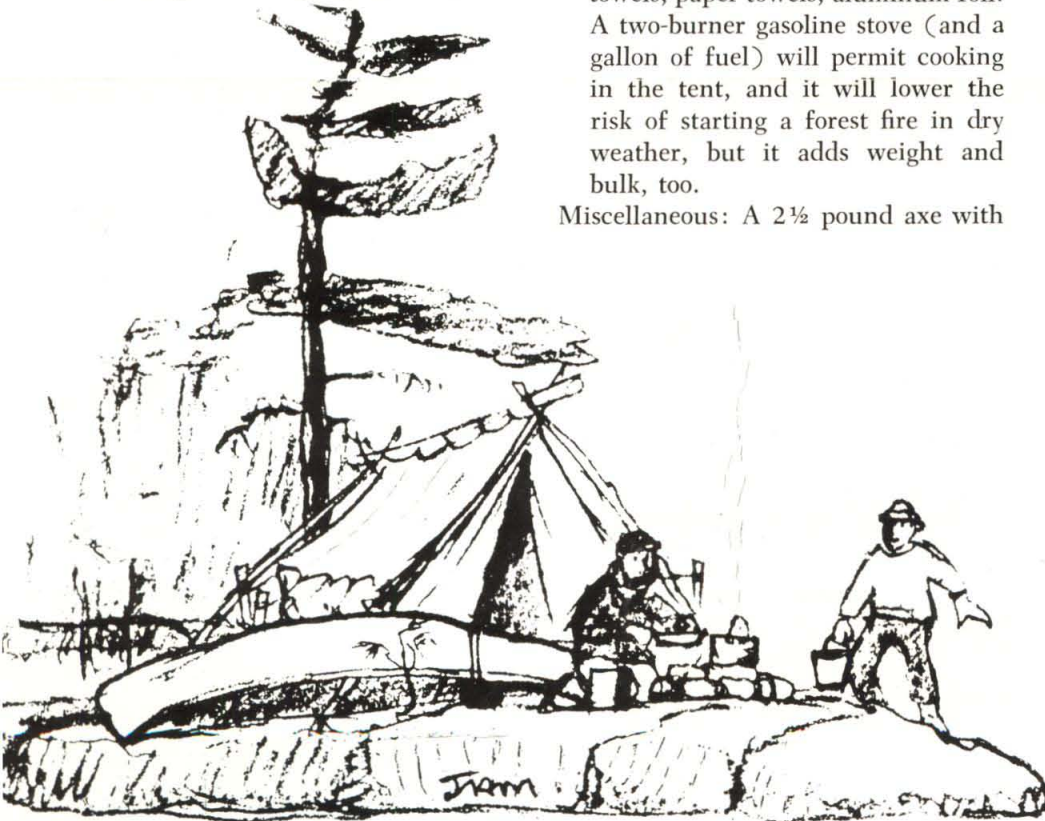
Toiletry: Soap, towel, tooth brush and dentifrice, comb, aspirins.

Map and compass: Each member of the party should have one. A one or two mile to the inch topographical map is best for canoe tripping.

Clothing: Two sets of underwear, cotton shirt, sturdy cotton trousers, sweater or hooded sweatshirt, windbreaker, plastic rain cape, cap, leather boots, canoe shoes (e.g. moccasins), three pairs of sox, handkerchiefs, bathing suit.

Miscellaneous: Insect repellent, small hunting knife, waterproof matches, small sewing kit.

Optional: binoculars; bird, animal, insect, mineral, plant identification guides; camera, fishing equipment; something to read (not light reading, as it is too quickly consumed) on a rainy day in camp.



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