The Young Naturalist

YOUNG NATURALISTS CLUB F. O. N.

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What Happened to the Big Pines?

Over three hundred years ago Champlain wrote that the Ottawa Valley was one vast 'brûlé', meaning 'a burned-over country'.

Wherever white pine trees survived, however, their seeds, scattered by the wind, found good conditions for germination on the exposed soil and flourished. The result, three hundred years later, was large forests of old white pine that the lumbermen harvested and shipped to Europe as squared timber.

Photo by D. A. MacLulich

This White Pine at Big Crow Lake, Algonquin Park, Ontario, is 200 years old. It measures 136 feet in height with a diameter of 31 inches.

Tree-sized square logs or timber bolts were convenient to build into rafts to float down the Ottawa and St. Lawrence Rivers and to pile in ships. Lumber was sawn from them in England. Squaring these timbers in the woods was a highly skilled job done with a special large broad axe while standing on top of the felled tree.

Some of the timber rafts were so big that a work gang of thirty lumberjacks could live on them. Running a rapids or riding a raft through a chute that was made to by-pass a falls or impassable cataract was an exciting experience.

From other more recent fires resulted younger pine stands that were still large enough to be cut in the hand-logging era in Ontario from 1860 to 1930. In addition to pure white and red pine forests, much of the upland country from Algonquin Park southward and westward supported mixed forests of sugar maple and white pine. The pine seedlings kept starting up in the shaded forest; wherever an opening occurred as a result of the death of a tree, a pine tree might grow up through the hole in forest canopy.

A representative sample of a particular kind of forest requires an area at least a half-mile square, to allow conditions natural to that forest to develop in the interior unaffected by different situations at the edges. Each type of forest has its own peculiar grouping of kinds of insects, birds and plants that make up its whole living system.

See BIG PINES — Page 2

Land Speculators Sometimes Help The Hawks

The next time you drive through the outskirts of an Ontario city, look in the trees along the old fence-bottoms, and you will frequently see the large dark shape of a hawk inspecting the grass-lands below. Often the hawks will be soaring over these former farmlands, looking for mice that teem in the long grass. This is particularly true of the outskirts of Toronto and Hamilton, where large areas of former farmland has been bought by land speculators.

The land speculators buy up the farmlands and hold them for future subdivisions of houses, or for industrial development. Since the speculators are not interested in farming these lands, usually no crops are grown, and the grass is allowed to grow high all summer long. The population of field mice build up to enormous levels, unaffected by the farmer's plow or thrashing machine. The Rough-legged and Red-tailed hawks, migrating either to the north or the south, depending on the time of year, find good hunting in these abandoned fields, and hence they tend to linger. All winter long the Rough-leg driven south by King Winter from his Arctic home, takes up residence along the edge of the Golden Horseshoe, that vast city stretching almost from Oshawa to Niagara.

Red-tailed Hawk *Photo by D. Gunn*

Usually the snow cover in this part of Ontario is light, and the hawks are able to forage for their prey without too much trouble. If, however, a winter of deep continuous snow cover occurs, many of the hawks fly down to Pennsylvania and Ohio where snow cover is more sporadic.

Ecology is the study of relationships between living organisms. In this case, you might say that the land speculator has an ecological relationship with some of our hawk species. At the same time, you must remember that many of our best food-growing farmlands are being over-run by urban expansion, and this is beginning to worry our agronomists and planners. Rapid consumption of farmland is taking place when our population is increasing at an enormous rate. Only the hawks can benefit.

M. D. Kirk

BIG PINES — from Page 1

Very few stands of either mixed maple-pine or solid white and red pine have escaped the lumberman's axe and saw. In the whole Algonquin Park only two stands of maple-pine forest over 150 years old were to be found in 1967. There are probably other areas of such mixed stands and also some pure pine forests still in a natural state elsewhere in Ontario.

While lumbering is a legitimate and economic use of Canada's natural resources, it is clearly our duty to ensure that samples of all kinds of forest are allowed to grow for future generations to study and enjoy.

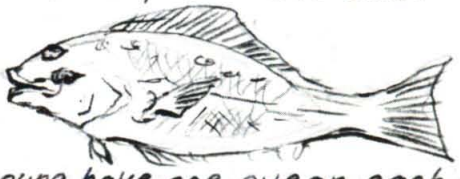
D. A. MacLulich

A LOOK AT SIGHT

The short-eared owl has eyes set wide apart in the front of his head. This is the ideal arrangement for a hunter who must spot mice in a field below. It is called binocular vision and is very accurate for judging distance. The woodcock doesn't use its eyes for feeding. It probes the ground for insects Its eyes are placed near the back of its head so it can see an attacker from any angle.

Most fishes have an eye on each side of their head, but the mudskipper, which spends much of its time hunting food on land, has eyes on the top of its head so they can project above the water.

Flat fishes like the halibut feed on the ocean floor & have both eyes on one side.



The young have one eye on each side but, as they mature, one eye travels over the top of the head to the other side.

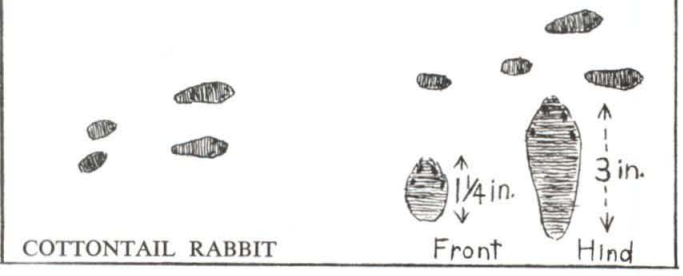
Eyes of moles, living almost entirely underground, have degenerated so that the animals are sightless.

Deer mice have very large eyes since they are active at night & must have sensitive sight.

John Bateman

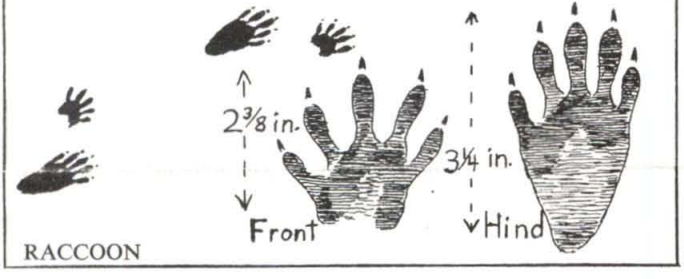
FEBRUARY: focus on ANIMAL TRACKS

ANIMALS THAT BOUND

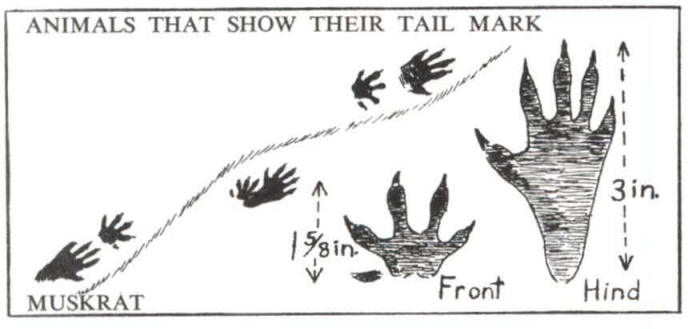


ANIMALS THAT RUN ON THEIR TOES

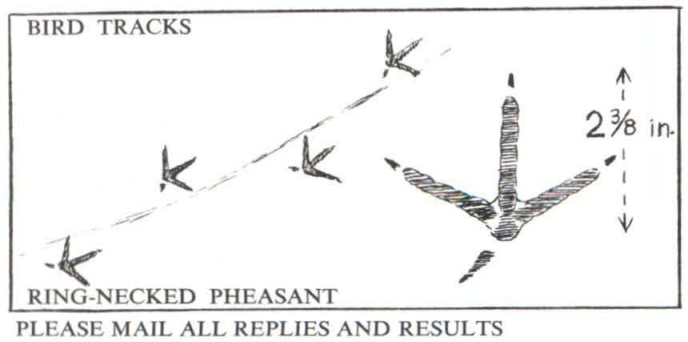
ANIMALS THAT WALK ON THEIR HEELS AND TOES



ANIMALS THAT SHOW THEIR TAIL MARK



BIRD TRACKS



PLEASE MAIL ALL REPLIES AND RESULTS
To: Mr. B. GRIFFITHS
c/o Federation of Ontario Naturalists,
1262 Don Mills Rd.,
Don Mills, Ontario

When the snow has fallen, the tracks of passing animals wait to tell their stories to inquisitive youngsters. Consider certain questions about the tracks:

How was the animal moving . . . walking, running, or hopping? Was the animal light or heavy? How are the front footprints related to each other? How are the back footprints related to each other?

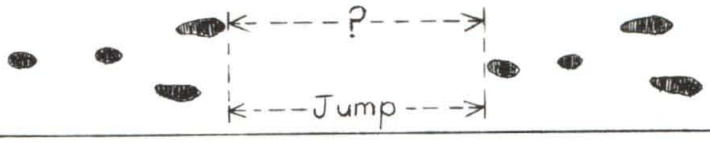
The clues will present many opportunities for stimulating discoveries and will give a great deal of satisfaction.

ACTIVITY PROJECT #1

COTTONTAIL RABBIT

(A) What is the average length of a cottontail rabbit's jump?

(B) What is the longest jump that you can measure?



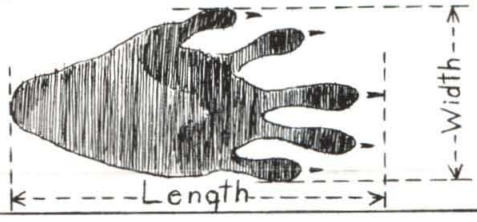
ACTIVITY PROJECT #2

RACCOON

What is the (A) longest paw size;

(B) widest paw size;

(C) average paw size that you can find in your part of Ontario?



ACTIVITY PROJECT #3

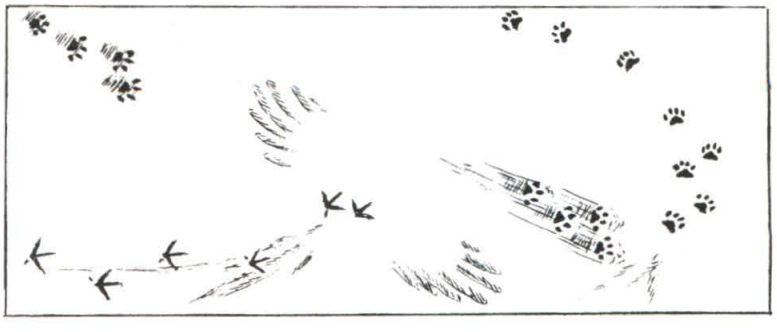
MUSKRAT

(A) What is the average length of the steps of a muskrat when it is running? . . . . . when it is walking?

(B) What is the total number of different muskrat tracks that you find in your area?

WHAT HAPPENED HERE?

The first three young naturalists to correctly tell what has happened in this picture and send in their answer to the F.O.N. Office will receive *A Field Guide To Animal Tracks* for their school resource centre.



EDITOR'S NOTE: This continuing series is designed to provide information and activity ideas for teachers who want to encourage their pupils to become actively involved in nature study as an exciting feature of their outdoor education program. Text by Barry Griffiths, sketches by Don Foxall. Results will be published in future issues.

Club News

We have news from some of our members this month. Ann Wilson has started a club in Willowdale, of which she is President, Cherly Lyford Secretary and David Warlow Treasurer. They have nine members so far and are planning to hold meetings at Kenton Drive Public School. Most of the members are in Grade six. Marie MacMurdo, who lives on Burnhamthorpe Road in Mississauga, is hoping to start a science club in the spring; one of its first field trips would be an outing to identify trees. Patricia MacKaracher of Orillia, a new Young Naturalist, has been treating a squirrel to peanut butter, and Giina Anna Sauks of North Bay has sent a poem she wrote, called "Bison":

As the sun peeped over the horizon,
It revealed the plains which were
full of bison.
This a dream no longer true,
For white men killed 'till there were
few.
Now there's more, but less than then.
There will be more some day, but
when?

PLEASE — would the girl or boy who wrote to me here on Rosedale Heights Drive in December, enclosing a dollar for Young Naturalist membership, write again, with his or her name and address?

BARBARA WILKINS

Apollo 8, Something new; something old.

The world has hailed the flight of Apollo 8 as a great step into the future, and rightly so. For the first time, Man has left his planet and travelled to a neighbouring body in space. Yet while we exalt in this achievement it is appropriate to consider that the physical laws which determined every motion of Apollo 8 were discovered 300 years ago by Isaac Newton. The astronauts themselves gave credit to this great genius of physics by answering the inquiry "who was driving the spacecraft?" with the statement "Isaac Newton as much as anyone". The journey of Borman, Lovell and Anders in Apollo 8 is a great triumph of American technology; it is also a tribute to Newton, the discoverer of the Laws of Motion and Gravitation.

What then are these laws and where did they appear in the flight. The Laws of Motion are three in number.

I Every body continues in its state of rest or of uniform motion in a straight line, unless it is compelled to change that state by forces acting on it.

II If a force acts upon a body, the body accelerates in the direction of the force, its momentum changing at a rate equal to the force.

III For every force acting on a body, the body reacts with an equal and opposite force.

An important application of the Laws of Motion is the rocket in which a great mass of gas is expelled at high velocity from one end. The reaction pushes the rocket upward and forward. The rocket exhaust does not push against the earth, air or anything except the chamber of the rocket motor. Law II describes how the rocket acts under the force: it accelerates. The amount of acceleration depends on the force acting and the mass of the rocket. This means that if all the forces acting on the spacecraft are known its motion can be determined. Thus the path and position of Apollo 8 could be predicted for any time.

The First Law was demonstrated by the behavior of men and objects in the weightless state; that is, a state with no forces acting on them. A pencil left in mid cabin stays there until the cabin moves or the hand returns. An object pushed across the cabin continues in motion until it hits a wall.

The instant the rockets shut down the spacecraft is under the influence of but one force, Gravity, which is described by Newton's Law of Universal Gravitation. "Between any two objects anywhere in space there exists a force of attraction that is in proportion to the product of the masses of the objects divided by the square of the distance between them." It is this concept, this Law, which allows man to calculate the motions of planets and orbits of spacecraft. Three hundred years ago, Newton solved the mathematical problem of orbiting an object about the Earth. However the number and precision of the computations required for a Moonflight could not be completed in the lifetimes of a million Newtons. Only the modern computer could use the Laws of Motion and Gravitation with sufficient speed and accuracy to predict and correct the position of the spacecraft at every stage of its journey.

As with much of science so with Apollo 8; the discoveries and triumphs of today are built on the foundations of the past.

THOMAS CLARKE

Feed the Birds!

During these cold winter months, don't forget to continue to feed the birds. If you did not start at the beginning of winter, you may still be able to attract birds to your garden feeder as natural food is now harder for them to find.

Birds you might expect at a feeder—particularly if the feed mixture contains a high percentage of sunflower seeds—are black-capped chickadees, blue jays, white-breasted nuthatches, cardinals and purple finches.

Among Ontario winter birds there are several species that prefer to feed on the ground. Thus, the seeds spilled by the sloppy feeding habits of other birds at the feeder are utilized by these ground feeders, such as slate-coloured juncos, tree sparrows, mourning doves and pheasants.

The basic food for attracting birds is a mixture of millet, cracked corn, sunflower seeds, cracked peanuts and some grain. Suet is excellent for woodpeckers, chickadees and nuthatches.

Once you start feeding birds, it is important to keep it up, because they will soon become dependent on you, especially when their natural food in the woods and fields is covered with ice and snow.

WOODLORE
FOR THE NATURALIST

John Macfie

A STORY IN THE SNOW

I drew the accompanying illustration from a sketch made on the back of an envelope I happened to be carrying during a walk in the woods last November. It tells an interesting story.

The tree is a Yellow Birch perhaps 200 years old. About fifty years ago a ground fire driven by a west wind scorched the west side of the birch, killing the bark for about two feet above the base. The exposed wood eventually rotted away at ground level, and a porcupine enlarged the opening for a den. The thick deposit of droppings suggests that several generations of Porcupines have used it for a home. A large patch of bark had been gnawed from the base of the tree by Porcupines emerging hungry from the den and feeling the need of a snack, they would have to plod farther afield for smaller stems whose succulent bark is not sheathed in an armour plating of thick scales.

Early that November morning an inch of snow fell on the previously bare ground. When I chanced upon the den tree the fresh tracks of a Fisher led to the den mouth and indicated that he had paused briefly, and continued on his way. I don't think I scared him off, for he had apparently left at the same leisurely lope with which he approached it. But his visit must have occurred only moments before, for the Porcupine remained in the defensive position illustrated, with bristling back to the den mouth, and tail stiff and ready to plant barbed quills in the nose of an intruder.

The Fisher, you see, is the porcupine's only real enemy in nature. No animal but the Fisher has the special skill necessary to cope with that fearsome armour of quills. A half a century or more ago over-exploitation of the Fisher for its valuable pelt, aided by indiscriminate use of poisoned baits for wolves (the Fisher is a scavenger as well as a predator) exterminated this large member of the weasel family in much of Ontario. The Porcupine, freed of this one natural control, multiplied to the point where it became a serious pest, destroying tracts of forest and chewing to pieces and fouling camps and cottages. A re-stocking program undertaken a few years ago by the Department of Lands and Forests has since re-established the Fisher throughout most of forested Ontario, and the Porcupine population is now back in balance.

But why did the Fisher in our picture story show only passing interest in the porcupine? To kill one, a Fisher must catch a Porcupine out of its den where he can attack from all sides and, after a lengthy sparring match, seize its unprotected belly. Probably a Porcupine is most vulnerable in the deep, fluffy snow of mid-winter when a Fisher may waylay it on its trail from den to feeding tree. I have found the eaten out skins of porcupines along these trails. And the Fisher may sometimes be an eventual loser in one of these encounters. One found dead for no apparent reason, proved, upon examination, to have died of a pierced heart — pierced by a porcupine quill!

A porcupine always dens in a confined space where the defensive tactic illustrated serves to thwart his age-old enemy. This den probably is visited regularly by the Fisher as he patrols his territory of several square miles. Perhaps he ate its former occupant, and he keeps hoping to arrive at the right moment to catch this one.

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