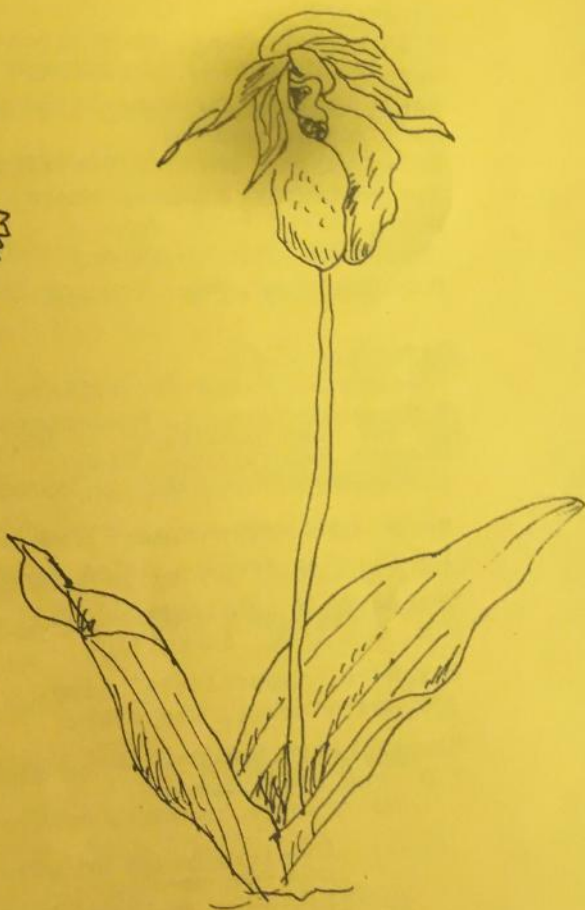
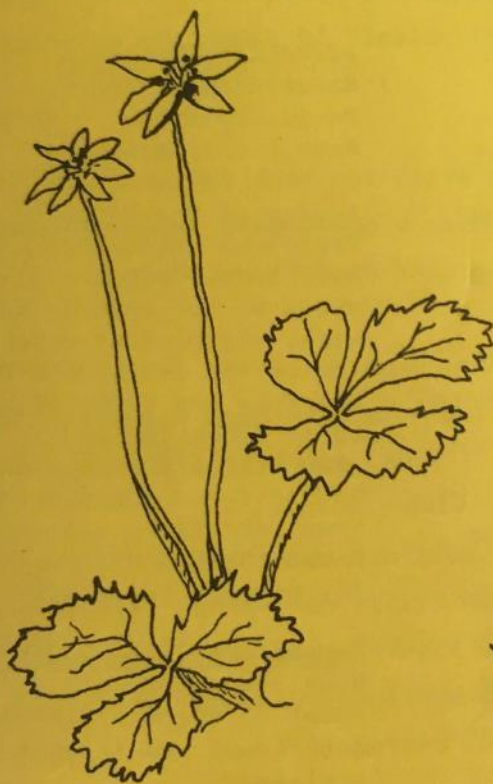


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N. B. FEDERATION OF NATURALISTS / FEDERATION DES NATURALISTES DU N.-B.
277 Douglas Avenue, Saint John, N. B., Canada E2K 1E5 Tel. 693-1196

The federation was formed in 1972 in order to

- develop an understanding interest in nature among amateur naturalists
- serve as a means of communication and cooperation among nature-oriented groups and individuals
- promote ecologically sound policies and programs of resource management
- foster public awareness of the relationships between man and nature.

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166 North Street, Moncton
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277 Douglas Avenue, Saint John
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P.O. Box 1590, Sackville
Miramichi Naturalists' Club
276 Heath Court, Newcastle
Kennebecasis Naturalists' Society
P.O. Box 1547, Sussex



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Editorial Committee

Barry King, *editor*
David Christie Mary Majka
Henrik Deichmann

Advice to Contributors

Preferred articles are those from one-half to two pages in length, having relevance to the natural history of New Brunswick. Authors of potentially longer articles are invited to contact the editors. Drawings and cover illustrations should be in black ink and in the same size and proportions they would occupy in the N.B. Naturalist. Observations for "Nature News" should be submitted promptly after March 15, May 31, August 15 and November 15, or more frequently.

Aux Naturalistes Francophones

Nous avons besoin d'articles en français, aussi de volontaires qui voudraient écrire des résumés en français des articles en anglais.

Memberships - Subscriptions

Mail to Janice Dexter, 956 Dever Road, Saint John West, N.B. E2M 4J3. Annual fees: \$3 (individual or family), \$1 (students to age 18), \$3 (libraries).

Correspondence

Re the N.B. Naturalist to editor, N.B. Naturalist, 277 Douglas Ave., Saint John, N.B. E2K 1E5. Articles and reports are always welcome.

Re federation policies and programs to Harry Walker, 276 Heath Court, Newcastle, N.B. E1V 2Y5.

STEWART RIDGE CAVE

Few people feel the urge to go underground; and for those who consider taking up the sport of "Spelunking" or "Caving", New Brunswick may seem an unlikely place to start.

Indeed, the province does not claim any Mammoth Cave or other underground wonder, but surprisingly there are caves which offer the enthusiast a fair sampling of both beauty and challenge.

One of the Caves, which has only recently begun to draw attention, is situated in the Berryton area of Albert County. It is becoming widely known as the Stuart Ridge Cave.

The cave entrance is in an isolated pod of limestone, near the top of a ridge extending north from Stuart Mountain. Although limestone areas tend to lie in rings about Albert County's gypsum deposits, this is (to my knowledge) the only limestone cave area in the county. A companion cave opens only ten (10) meters from the Stuart Ridge Cave, but is somewhat smaller.

The first serious exploration was made by Chris Majka, who made several expeditions to study the cave, and who produced a rough map. The map showed a long, straight cave, mostly of the classic "fissure" shape. This formation is "A" shape in cross-section, with ceilings generally six (6) meters high. He also marked several features of interest.

Incidentally, surveying a cave is an art in itself. In a world which is generally convoluted in all three dimensions, in total darkness, and where most surveying instruments are infeasible, mapping a cave is a difficult process.

My first successful expedition was largely exploratory, but all passageways seemed to come to an end far short of the map descriptions. Finally, a small squeeze-way was found to lead on into a large high domed room. The nature of the cave also changed. All limestone caves are formed by flowing water, and thus take on a variety of shapes. This passage was more oval in profile and rose and fell far more than the first section. This conflicted almost entirely with the original map, so the next expedition was a concerted effort to check out what we originally thought to be dead ends.

Indeed, on this trip we identified the passage that Chris Majka had marked because of a "False Floor" shown on the map and, unfortunately, the evidence of garbage and graffiti left by other inconsiderate cavers.

The certainty that there were two major passages had doubled the known size of the cave, now with 200 to 300 meters of passageway. Further explorations during the summer and fall of 1978 revealed still another major passageway which, after traversing a distance equal to the two others, forks into two branches which have not as yet been fully explored. This, as well as several possibilities in harder to get to areas, could easily again double or triple the known size of this cave.

Presently a number of interested parties are exploring the cave and a survey is being undertaken by Donald McAlpine.

The Stuart Ridge Cave is interesting in several respects. Its size makes it one of New Brunswick's largest caves. Its geology is also of interest.

Most limestone caves in this part of the country are quite young, having formed after the glaciers retreated perhaps 10,000 years ago. This means that the features which are usually associated with caves to the south, which were not destroyed by the weight of ice on the Earth, are unformed or very small in Maritime caves. Stuart Ridge Cave, however, shows a large variety of these formations.

The most commonly known formations are stalagmites and stalactites. Stalactites are actually hollow tubes which form in a manner similar to icicles. Water, carrying dissolved Calcium, drips out the bottom of the stalactite and leaves a minute deposit at the end of the tube. This water may also form an upward growing stalagmite if the drops also deposit a trace of Calcium on the ground under the stalactite. Rock and dirt floors found in Stuart Ridge Cave prevent the formation of stalagmites since these floors do not provide a base for the deposition process.

Simple stalactites are few and small, but other forms are found. One of these beautiful formations more common in this cave is called "Bacon Rind". It forms when water flows along a sloping ceiling prior to falling. Thus a ribbon of Calcium is left as each successive rivulet leaves its minute trace. Changes in the rate of water flow over the span of geological time may vary the thickness of this ribbon, giving a rippled visual effect similar to a strip of bacon. Shining a light behind one of these will show that it is beautifully translucent.

In other places where moisture stayed on a surface without movement or disturbance, crystals of the minerals contained in the water formed. They sparkle like jewels when struck by a beam of light.

If water moves too fast it will dissolve the rock rather than deposit on it. One might see a circular hole, only a couple of centimeters in diameter, which appears to be drilled deep into a rock floor under a fast drip.

One room of the cave has a wall which is a lattice of holes interconnected and woven through the rock. This was probably formed when water dissolved softer pockets of limestone. Another has a wall which is only millimeters thick separating it from an almost perfectly circular room.

The cave itself has a variety of shapes or types of passageways. As mentioned, a large part of the cave is fissure shape, others roughly oval. One passage is a very definite "keyhole" shape, formed by a small stream eroding a notch into the floor of an older passage. Still others are tube-like and circular, the walls and floor completely smooth.

This is only a partial list of the numerous formations which may be found in this cave.

It is unfortunate that a cave formed in rock over a time of thousands of years is still a very fragile thing. The very fact that the processes at work in a cave are so slow means that careless damage not only destroys the work of those thousands of years, but also remains in evidence for many more thousands of years until nature has had time to heal those wounds. Very rare forms of cave life may be specific to a single cave because of its isolation. Thus a cave's organisms may represent the only member of that species on Earth.

Caves such as Stuart Ridge deserve the utmost in care and understanding from us in our efforts to explore them and use them to gain knowledge of the processes and variety of nature.

MARC MAJKA

THE MISUNDERSTOOD FRIEND

The toad is an ugly yet good-natured, friendly creature who comes to our gardens and doorsteps where they find an abundance of food. A single toad eats thousands of harmful insects, worms and slugs during the summer in return for a safe hiding place under a doorstep or hedge.



The American Toad, Bufo americanus, has been much maligned. In spite of the common belief that toads cause warts, you may be assured that this is absolutely not true. The tiny lumps on their backs are not warts but actually tiny glands which discharge a bitter acid-tasting liquid when an animal picks up a toad in its teeth. Having no teeth or claws, this is the toad's only defence. Any animal who attempts to eat a toad seldom repeats it because of the memory of a mouth which burned for as much as 24 hours.

A toad has a tough skin which enables them to remain away from water for long periods of time. They go to water to breed in the spring, something all amphibians must do. Toads breed at an age 3 - 4 years and can live to be the ripe old age of 30 years. Their life cycle is similar to frogs with eggs being laid in the water where they hatch to tadpoles which leave the water as tiny toads after about 6 weeks.

A toad eats all kinds of worms and insects. As with frogs, toads can only recognize moving objects within a limited size range as food. This means unless a fly moves, a toad will not recognize it as a potential meal. They never drink water in the usual way. All water they get is absorbed through the skin or from food.

So the next time you are in the garden keep your eye open for Friend toad. If he flips over on his back when surprised and ceases all movement, don't be concerned; Toads also play dead!

BARRY KING

WHAT ARE FLIES?

Flies are not very popular to say the least, and you may think that you already know all that you want to know about them. However, the better you know your enemy, the better equipped you are to deal with him.

For instance, if you want to catch a fly that is sitting in front of you, move your hand into a position directly in front of him, then suddenly sweep toward him, and if you are quick you have a good chance of catching him. However, if you try the same thing from behind him, he will probably get away.

The reason for this is: The big eyes of a fly are so constructed and so situated on his head that he has a very wide field of vision and can almost see in every direction at the same time so that there is little point in trying to sneak up behind him; however, he normally takes off in the direction in which he is pointed, so that if you sweep in on him, head-on, then you interfere with his take-off, whereas, if you sweep in behind him you assist his take-off.

According to the way biologists classify insects, true flies have only one pair of wings, whereas, all other insects have either two pair or no wings at all. From this it follows that mosquitoes are flies whereas fireflies, dragonflies, and many other so-called flies are not flies at all.

Most people know only bad things about flies, but according to the experts, we have far more beneficial species than harmful ones. Many are parasites on injurious insects or prey on them; most of them help in pollinating blossoms; others are scavengers that aid in destroying carcasses or decayed vegetation; and they all provide food for fish, birds, and many other creatures.

Even the mosquito has its good points. A mosquito wiggler is supposed to purify about one quart of swamp water per day, so we might be worse off without mosquitoes than we are with them.

HARRY WALKER

EARTHWORMS



"Earthworms are the intestines of the earth."

Aristotle

The study of earthworms kept Charles Darwin interested for 40 years. Today, earthworms are seen as being used by the ton to process garbage, to restore fertility to our soils, to process sewage sludge and as a protein source for animal feeds.

The earthworm is a segmented animal, meaning their bodies consist of a series of extremely similar units segmented internally by membranes with the whole body appearing ringed or grooved. Most earthworms work underground, coming to the surface only at night as exposure to the ultra-violet rays from the sun kills them very quickly. Their burrow systems are extensive and help enhance soil conditions by aerating it, keeping it loose, breaking it, and mixing deep mineral layers with surface organic material. Their casting adds considerably to soil

fertility. Worm castings contain five times more nitrogen, seven times more phosphorous, eleven times more potassium and one-half more bacteria than ordinary soil.

Earthworms eat many kinds of organic materials, most of which are already rotting or decaying. In nature, they eat decaying organic material such as leaf litter, dead grass, rotting roots or plants, fruit and animal manure. Domesticated worms thrive on animal manure, sewage sludge, poultry mash, chopped hay, canning factory refuse and much, much more.

These creatures are an important part of your garden and someday may be a very important part of our waste disposal techniques.

BARRY KING

THE EARTHWORM: A FAMILIAR STRANGER

As a gardener, how many different kinds of earthworms do you think you are likely to uncover as you spade up your flower or vegetable plot? Some are fat, some are thin, some are long, and some are short. But that's about it. Right?

No, that's not right. In a recent book (Nomenclatura Oligochaetologica by Reynolds and Cook, 1976) most of the known scientific names for earthworm species up to 31 December 1975 were listed with references to their descriptions. There were nearly 6000 names listed, with about 200 of these known to be present in North America. The North American earthworm list is composed of introduced species from Africa (1), Asia (40+), Europe (35+) and South America (15+); the remainder are native North American species. Each year new species continue to be discovered by Scientists.

The dominant species on each continent, and region within a continent

differ. For example, in Canada 19 species have been recorded (see Reynolds, 1977): 17 from Europe and two from North America. The northern United States contains all the Canadian earthworms plus a few more European species. The southeastern United States is where most of the native North American species are found (Bimastos spp., Diplocardia spp., Eisenoides spp., Komarekiona eatoni and Sparganophilus spp.). This region also contains European, South American and Oriental specimens. On the west coast, the Californian earthworm population is almost exclusively from Europe and the Orient, but in the coastal belt of Washington and Oregon, North American native species (Argilophilus spp.) are present as well.

Most people are familiar with the nightcrawler or dew-worm (Lumbricus terrestris) from textbooks and high school laboratories. Nowhere in North America is this species dominant or even one of the six most abundant species present. In fact, south of the glacial boundary in North America, it is almost unavailable except from a bait dealer who has imported it from the north. A second species, the manure worm or brandling (Eisenia foetida), is known to many people and is sold by bait dealers under many trade names. The natural habitats for this species in North America are unknown and it, too, ranks very low in abundance throughout the continent.

The 'classical' method of reproduction in earthworms is in the hermaphroditic manner, that is, both sexes are in the same individual but mating to exchange sperm with another individual is still required. Most of the imported or exotic species in North America as well as the members of the native genus, Bimastos, are parthenogenetic. This means that they are able to produce offspring without fertilization -- a fact that has important implications for adaptation and spread into new areas as well as ease in culture. It is also impossible to hybridize parthenogenetic species as has been claimed by some bait dealers and worm growers.

Of the over 200 species of earthworms known to inhabit North America, we know the life history and general biology of only several species. In most cases the attributes given to many species are based on studies done in other parts of the world and are not applicable to the North American scene. This is particularly true for European exotics. Much misinformation has been written about particular earthworm species by non-specialists and laymen because of the popularity enjoyed by these organisms as bait and as horticulturally beneficial animals.

There is considerable basic knowledge on the biology and ecology of North American earthworms still to be discovered. The strength in unlocking this information will only be as sound as the current level of research on the identification and classification of earthworms. A solid foundation over the past half-century has been laid by Dr. G. E. Gates of Bangor, the well-known earthworm specialist. All biological attributes are peculiar to a given species, regardless of the organism -- plant or animal; therefore, the exact determination of the species will be essential to the future understanding of earthworms and their role in nature.

References:

- Reynolds, J. W. 1977. The Earthworms (Lumbricidae and Sparganophilidae) OF Ontario. Life Sciences Miscellaneous Publications, Royal Ontario Museum, 150 pages.
- Reynolds, J. W. and D. G. Cook. 1976. Nomenclatura Oligochaetologica, a catalogue of the names, descriptions and type specimens of the Oligochaeta. The University of New Brunswick, Fredericton, 227 pages.

JOHN WARREN REYNOLDS

ATTENTION: PHOTOGRAPHERS AND WRITERS

To commemorate the late Dr. W. A. Squires, the N. B. F. N. has appointed Michael Burzynski to prepare slide presentations dealing with various aspects of New Brunswick Natural History. These programs will be made available to anyone interested in using them and will be accessible from the New Brunswick Museum in Saint John.

Each presentation will consist of a series of 35mm slides, a cassette tape of natural sounds and/or commentary as well as a script with markings to indicate when to change slides. The duration of each talk will be from 20 to 30 minutes.

Some of the suggested titles include:

Bogs and Bog Life

Seashore Life

An introduction to the Natural History of New Brunswick

Spring Flowers of the Maritimes

We are looking for anyone interested in writing a script, recording sounds or donating photographs to be copied. If interested photographers would send a short list of their areas of interest (flowers, birds, rocks) we will have more of an idea of what is available. All possible care will be taken with slides submitted for copying. This is an excellent project for both photographers and writers who wish to help make a contribution to environmental education in the province.

We would like to hear suggestions on the project as well as ^{from} anyone interested in joining Michael on the committee.

The first two talks (Reptiles and Amphibians of New Brunswick and Bog Life) will be available for viewing in about two months.

If you are interested, please write:

MICHAEL BURZYNSKI
166 North Street
Moncton, New Brunswick

DO YOU USE WETLANDS?

The Hon. Eric Kipping, Minister of Environment, recently announced that the province would be starting a program of wetland protection, which should be good news for everyone interested in nature and conservation. To help us support the program, would you please provide some information about how much use you personally make of wetland areas and send it to the Secretary, N.B.F.N., 277 Douglas Avenue, Saint John, New Brunswick, E2K 1E5. Make an estimate for a one year period of the following:

Type of Use	Fresh Marsh		Salt Marsh		Sphagnum Bog	
	No. of visits	Avg. length of visit	No. of visits	Avg. length of visit	No. of visits	Avg. length of visit
Canoeing/ Boating						
Photography						
Birdwatching						
General Nature Study						
Fishing						
Hunting						
Scenery Enjoyment Relaxation						
Other						

NOTICE OF ANNUAL GENERAL MEETING
AND
CALL FOR NOMINATIONS

The seventh Annual General Meeting of the New Brunswick Federation of Naturalists will be held at 10.00 a.m. on Saturday, the 4th of August, 1979 in the New Brunswick Fisheries School at Caraquet, N.B.

The nominating committee, K. H. Deichmann, Chairman, and Michael Burzynski, have nominated the following persons for officers and director-at-large. Further nominations may be made by any member in writing to the Secretary by July 14, 1979.

Nominated by the committee are:

President: Harry Walker, Newcastle
Vice-president: Vernon Goodfellow, Newcastle
Secretary: David Christie, Saint John and Mary's Point
Treasurer: Janice Dexter, Saint John
Director-at-large: Daryl Linton, St. Stephen

D. S. CHRISTIE,
Secretary
277 Douglas Avenue
Saint John, N. B.

ANNUAL GENERAL MEETING

The following program has been outlined for our annual meeting at Caraquet.

August 4, 1979

8:00 AM - Morning walk taking in some beach, salt marsh, sand dunes, and bog at Lower Caraquet. Wear waterproof footwear.

Note: If enough fish is available for the fish packing plant, Products Belle Baie Ltd. to be operating on alternative tour will be available to the above walk. The tour takes about one hour and can be given to 10 - 12 people at one time.

10:00 AM - Short business meeting at the Fisheries School.

10:30 AM - A talk on the Living Rivers Program by Larry Morris at the Fisheries School.

12:00 PM - Lunch at the Fisheries School Cafeteria.

1:30 PM - Tour of Lameque Peat Moss Ltd., conducted by owner, Mr. Chiasson, followed by a walk through same bog.

- Alternative: A tour of Miscon Island.

6:00 PM - Supper at the Fisheries School Cafeteria.

7:30 PM - Slide presentation on bogs by Albert Crossman at the Fisheries School.

8:30 PM - A talk on The Effects of Pollution on Shellfish at Fisheries School.

August 5, 1979

10:00 AM - Boat trip from Nequac to Portage Island. Pre-registration required with a limit of 25 persons. There will be a charge to cover boat rental.

- Alternative: Trip to Newcastle to hike on the new nature trails at the fish hatchery property on the South Esk Road. Meet at the trails at 1:00 PM.

ACCOMODATIONS: There is a small camping park at Caraquet. There are also larger ones at Shippegan and Val Comeau. Reservations can be made for the motels in the area through the Department of Tourism.

N. B. NATURALIST

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