N.B. NATURALIST

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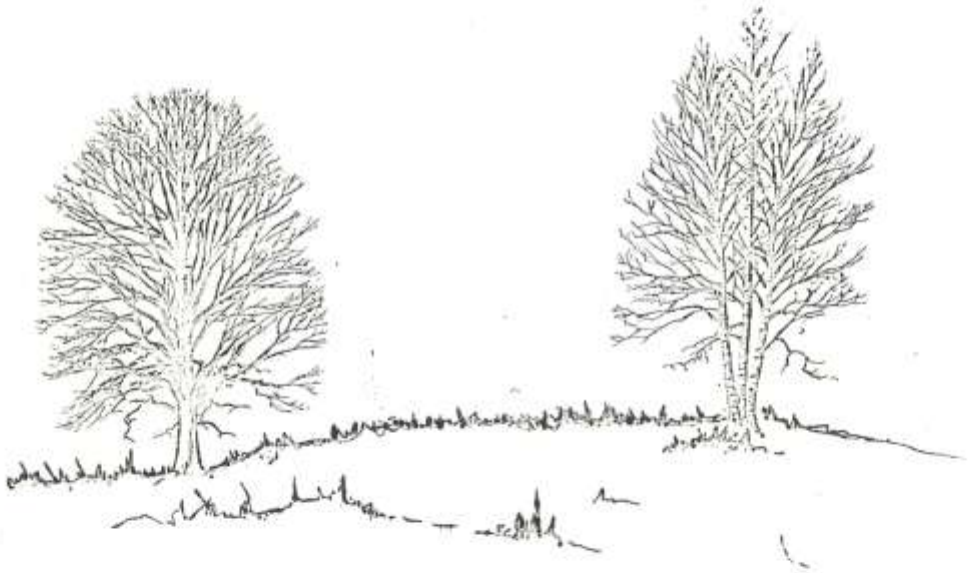
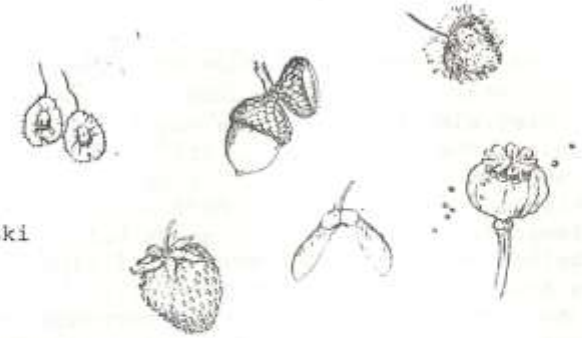


DISSEMINULES



Michael Burzynski

Most plants have now set their seeds. This is the best time of year to examine how plants move their reproductive bodies to new sites preventing next year's crop from growing overcrowded. Mobility of seeds also enables plants to establish themselves in other localities which provide suitable growing conditions. The myriad of adaptations that allow plants movement in this part of their life cycle are fascinating, and never more evident than in the Autumn.

The wind is the most common and familiar form of transportation for seeds. This is accomplished by a number of adaptations to the fruit or the tissue adhering to it. An example are the wings of maple, ash, and pine seeds which cause the seeds to rotate like a propeller, lengthening the time that it takes to fall to the ground as well as allowing the wind to catch and carry them.

Some seeds, like those of the elm, are small and flattened and since they fall from great heights have a good chance of being blown away from the parent tree. Dandelions, asters, poplars, fireweeds and others have seeds with parachute-like devices attached. These are caught by the wind and may be carried for miles. Some flowering plants and mosses rely on the wind to shake the stem bearing the reproductive body, thereby rattling the seeds or spores loose. The garden poppy is a good example of this as its seeds are contained in a "pod" resembling a salt shaker perched on a tall, thin stem. Holes appear around the top of the poppy "pod" when the seeds are ripe and dry and the seeds are shaken loose.

The wild orchids produce millions of tiny minute seeds in each ovary. These are among the smallest seeds found anywhere, almost requiring a magnifying glass to make them visible. The drying pod twists or splits open, releasing the seeds which are wafted for many miles on even the gentlest of air currents. Puff balls also contain tiny disseminules. They are not seeds but spores and are contained within a tough rind until ripe, at which point a hole appears in the top of the ball. The wind blowing over the surface of the ball sets up currents inside that catch spores and carry them out and away. Any animal that steps on the ball can eject millions of spores in a thick cloud or puff.

Some plants such as the yellow pond lily have seeds which are transported by water. The seeds of the yellow pond lily resemble popping corn and when released from the egg-sized "pod" they float and are moved by waves. These seeds gradually absorb water until they finally sink waiting until the warm waters of spring cause them to germinate and grow.

Animals are also used to transport seeds. Some travel on the fur of their unwitting and often unwilling host. The seeds of this group are equipped with spikes, hooks, barbs and glues that attach them to passing animals. The animals can carry them far from the parent plant before they are dislodged.

Seeds also travel inside animals, relying on the tasty outer flesh or fruit to lure animals to eat them. The flesh is digested but the seeds are protected by their tough outer coats. They are passed out of the animal in faeces and these find sufficient nutrients to grow. Examples of this form of transport are apples, blueberries and raspberries. Berry-eating birds are often responsible for fruit trees springing up where they haven't been seen before, or in the middle of areas cleared by fire or farmers.

Very large, heavy seeds such as those of walnuts, oak, butternuts and hazel can be moved and planted by animals. A thick husk full of bitter tannic acid protects some of the seed while it is ripening. Once ripe the seeds drop and the husk lose some of their bitterness. They are then found

by squirrels and either eaten on the spot or hidden for future use. Since not all are found again, some overwinter where they were buried and germinate in the spring. If not buried, most of the nuts will dry up and die.

Another method of dispersal of seeds is to hurl or shoot their seeds out away from themselves. The jewelweed or spotted-touch-me-not has seedpods with thick and thin walled partitions. As the seeds open, hydrostatic pressure builds up in the seed capsule until an animal or windblown branch brushes against it. The walls rupture and the thick walls quickly coil and hurl the seeds up to six feet away.

From these few examples of local plants one gets an idea of how varied and efficient the seed or spore dispersal mechanisms of plants can be. It's an aspect of plant "behavior" that tends to be overlooked, but is to me one of the most fascinating facets of plant life.

field trips

Fundy's Wild Coast

Hank Deichmann

"Blazes ended at a cliff and there were no directions from there" is a quote from a party travelling along the Bay Shore in the vicinity of Little Salmon River this past summer. Another experienced backpacker made this comment: "Anyone attempting this route should be in excellent condition and have good rock climbing skills."

The Upper Bay of Fundy Shore from Salmon River east to Fundy National Park's western boundary is not a well known section of New Brunswick. True, much of the highland and

plateau sections have been recently and thoroughly logged, but the shore zone, and the forest clinging to the bay, forested gulches are still quite wilderness-like in appearance.

Compared to the outer Bay with its multiplicity of islands, deep coves, and reefs, the upper Bay of Fundy shore at first seems abrupt, hostile and somewhat monotonous. Closer examination reveals intricate caves, unusual erosional features, combined with a scene that constantly changes with the tremendous 10-12 meter tidal ranges.

If hiking or backpacking is your game, you might consider particular sections to explore. It probably isn't feasible to tackle the whole route at one time unless you have lots of time, endurance and patience. (You'll need all three!)

Moving from east to west then, we might look at some of the highlights. A logical starting point is Point Wolfe Campground in Fundy National Park.

Point Wolfe to Goose River -

This section is easy travelling as it follows an old logging road. The total distance is 9.0 Km (5.5 mi.), and from the highest sections at 230 meters above the Day, you may get some sweeping views of the Bay to the west including Martin Head. At Goose River the river mouth bar of coarse gravel is protected by the steep sides of the valley. (This is an excellent tenting spot). As at Point Wolfe the gray-green cliffs here are mainly ancient pre-cambrian Andesites, a volcanic rock, underlaid by equally old arkosite sandstone.

Goose River to Martin Head -

Proceeding west from Goose River valley, the "first mile" is the "hardest mile!" The best plan is to shun the shore of the headland and cross over the ridge to west to come out at Rose Brook and Azor's Beach. From here it's fair travelling(at low

tide) to the mouth of a Goose Creek, a river as big as Goose River! Sawmill remains including an old boiler are all evident. Half way from the Goose Creek bar to Martin Head, there are refrigerator-sized blocks of quartz, littered along the beach, from a vein on the cliff.

Martin Head is the gem of this upper part of the coast, but unfortunately (or fortunately) depending on your point of view it's conveniently accessible by road from Sussex via Schoales Dam. During the summer it's heavily used by campers, clam diggers and A.T.V. enthusiasts. For those discerning of the signs, the remains of a sawmill, wharves and dikes are still visible along the Quiddy River, as is the lighthouse base on the Head itself. The light was operating till about 1950.

Martin Head west to Little Salmon River -

Immediately westward from Martin Head bar, there are some very unusual cliffs of soft very eroded yellowish sandstone. To proceed from here would require an inland passage for a distance of 1.5 Km over a very steep and rough headland. From this poin onward the passage west to Wolfe Brook and the mouth of Little Salmon River, would call for some rock scrambling, but other than this it is not difficult travelling, especially if timed to coincide with low tide.

Little Salmon River, as with Quiddy and the other major streams, was also the secene of sawmill activity, and many signs linger. In recent years, itinerate lobster fishermen have been using the old wharves to store traps. Other than this rather minor intrusion, this River Valley is relatively unvisited and secluded. Leaving the upper influence of tide, the valley walls steepen and the plunging nature of the river becomes evident in rapids, waterfalls, and steep bordering cliffs.

Little Salmon River to Big Salmon River -

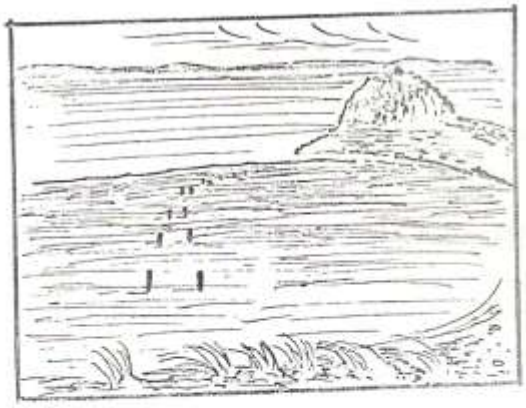
The first section is very difficult (rough, with steep rock faces towards the Bay), rendering an inland passage the only possible route for about 3 Km at least. Westward from Seely Beach then to Long Beach and to Big Salmon River is a cinch! At low tide or falling tide, it is possible to walk on great wide expanses of beach most of the way. Trees sliding from their foothold are good evidence of the unstable nature of the glacial and water deposited sands and gravels. Some brave pioneering spirit cleared the field on the east side of Long Beach Brook. It must have been a lonely spot!

Again, at Big Salmon the evidence of past lumbering endeavours is still at hand; crumpled piers, dams and various chunks of mill hardware.

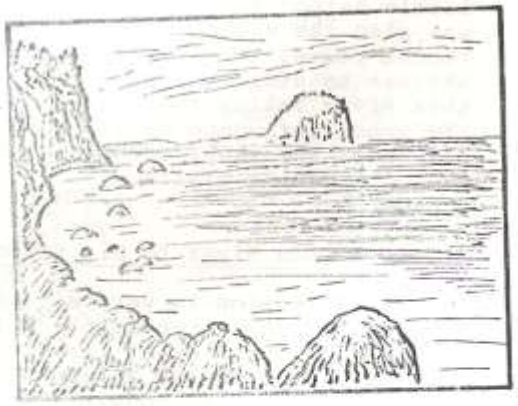
Afterword

A hiking trail covering the approximately 18 miles from the western boundary of Fundy National Park to Big Salmon River would be a difficult proposition, but would be astronomically less expensive than an auto route of any format. Let us all pray that if ever a vehicle road is constructed, that it be one of thos "lie lightly on the land" variety and that it not employ those massive cuts and fills, so characteristic of Trans-Canada and other commercial routes. Except for viewpoints it should be sited back from the high value scenic coast, in such a way that a road and a trail might reside in close proximity with a degree of harmony.

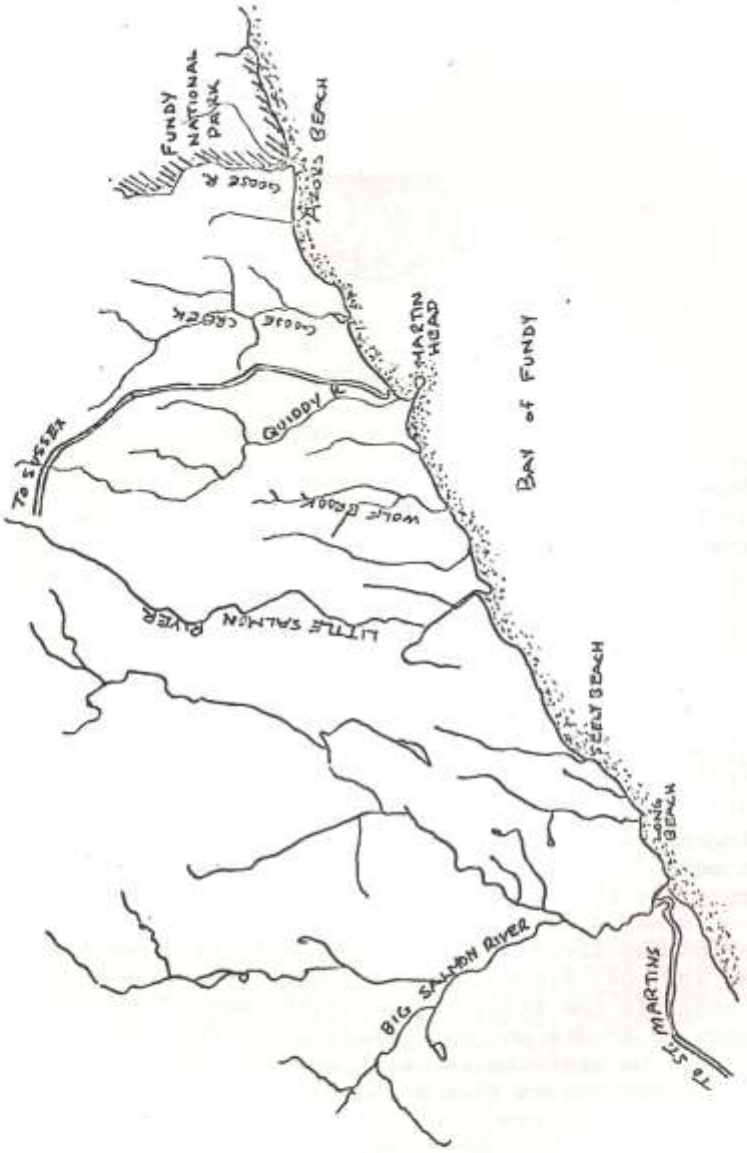
Footnote: Topographic maps of the 1:50,000 scale are best to locate details along this section.



Martin Head at Low Tide



Martin Head as seen from the West


FUNDY NATIONAL PARK
GOOSE R.
ALMA BEACH
MARTIN HEAD
BAY of FUNDY
GOOSE CREEK
GUIDDY
TO SUSSEX
WOLF BROOK
LITTLE SALMON RIVER
SEELY BEACH
LONG BEACH
BIG SALMON RIVER
TO ST. MARTINS

Secrets of an Oyster Shell

Peter Hicklin

Having worked on the Bay of Fundy mudflats for the past four years chasing shorebirds and mud creatures, I often remain bewildered and awed by the unfolding story of survival, the continuous cycle of death and new life, in the harsh and often inhospitable tidal environment of Fundy. The many mud animals I seek tell me much of the present, providing information by which I attempt to predict their future. However, they tell me little of their past. On one of our excursions to the mudflats of Mary's Point in December of last year, Leslie Linkletter and I found, protruding from the mud, an oyster shell. It was not unlike any other oyster shell one might find in any other locality but it was of interest to us since we knew that oysters do not occur in the Upper Bay of Fundy. I also knew that they were of particular interest to another biologist, Dr. Sherman Bleakney at Acadia University. Dr. Bleakney has been looking at mollusc shells in the Bay of Fundy to learn something of its tidal history. Many such molluscs have specific biological requirements which reflect the environment of the time at which they lived. By recording a shell's position, location, and age, Dr. Bleakney has been able to trace historical changes in the tidal regime of the Bay. Our oyster shell was taken to Acadia and enthusiastically received by Dr. Bleakney. In July he wrote to me about some of the results of his investigations on this particular oyster shell. I found it interesting to read that the "oyster died about 1090 AD (in fact it could have been 1066) which is some 500 years before John Cabot had his first picnic on these shores. Being a mere 900 years old it could well have been collected, eaten and discarded by an Indian. In any case, it probably was not transported from outside the upper Bay of Fundy and we can therefore assume a native population of oysters was flourishing near Mary's Point some 1000 years ago".

Even before receiving this aged remnant, Dr. Bleakney had discovered a bed of fossil oysters in Minas Basin. These dated back 3,700 years. Old shells hold many secrets.

nature news.

NATURE NEWS

David Christie

After preparation of the last issue, I received a compilation from Peter Barkhouse of spring bird arrivals as observed by staff of the Canadian Wildlife Service, Sackville office. The rarer birds seen in New Brunswick were a Snowy Egret at Ram Pasture Marsh, Sackville on May 7, another or the same at Rockport May 29, a Glossy Ibis at Bayfield April 17, and an adult Snow Goose at Cape Jourimain April 19.

Summer egrets, besides the Saint John West bird mentioned in the last issue, were a Snowy at Crystal Lake, Saint John on August 5 (Tom Page) and a "large white heron" (Great Egret?) at Harvey, Albert Co., about July 18 (Claude Wilbur).

More unusual was a male European Wigeon discovered July 11 at Red Head Marsh by Mike Bamford and seen also by Cecil Johnston. Jim Wilson saw about 120 American Wigeon there while looking unsuccessfully for the European bird.

But the accidental bird of this summer was the Little Stint at Castalia, Grand Manan. Davis Finch and a group of birders on a tour following the American Birding Association convention in Bangor discovered that small Eurasian sandpiper on June 30, and various observers (including one who came especially from Oklahoma) saw it until at least July 4. It is apparently the second Canadian record and the third in easter North America. On the far side of the continent Little Stints turn up more frequently in the Aleutian Islands.

Studies of shorebird migration at the head of the Bay of Fundy are continuing. This year we obtained some good observations of definite arrivals and departures. On the evening of May 30 the Majkas and I were out for a stroll and heard the sandpipers making a lot of noise on New Horton Flats. Flocks were flying back and forth about the mud, gaining height as they did, until about 3,000 (most of those present) departed, heading inland

in a NNW direction over the hills. They were presumably bound for the James Bay-Hudson Bay region.

During the southward flight, July 21 and 22 were the first days that many "peeps" were at Mary's Point, about 15,000 and 40,000 birds, respectively. On the evening of the 22nd, Henrik Deichmann stopped to watch some shorebirds in the marsh at Hamilton Creek on the NW shore of Shepody Bay and was surprised to see flocks dropping down from high in the sky and spreading along the shore in both directions. Directing his binoculars upward, he could see them arriving from the NW over Shepody Mountain.

On August 3 about 150,000 Semipalmated Sandpipers were on Mary's Point beach and Mike Majka observed them to be very noisy and restless, constantly flying back and forth rather than quietly roosting at high tide in the early evening. The next day he saw only about 3,000. Evidently there had been a massive exodus overnight and no new arrivals from the north. The fall migration of this species includes at least two major flights, one from James Bay to the Bay of Fundy and one from Fundy to northern South America. During each stopover of serveral days, the birds double their weight as they build up fat reserves to fuel the flight ahead.

Some shorebird arrivals were considerably earlier than those just noted. Small numbers of various species were at Grand Manan and Mary's Point in the first week of July and "lots" of Short-billed Dowitchers appeared on Saints Rest Marsh on July 7 (Cecil Johnston).

There was a disaster for the Semipalmated Sandpipers at their Grande Anse roosting area in late July when some irresponsible motorist drove through a large flock resting on the road while the adjacent beach was flooded by high spring tides. Peter Hicklin picked up about 1200 dead or injured birds: Other injured ones must have hidden in vegetation where they could not be found. Hopefully the publicity that followed may discourage such acts of vandalism and save the Grande Anse birds from a repeat occurrence.

Cecil Johnston saw Mockingbirds frequently in his Saint John West neighbourhood this summer. Suspicions of breeding there were confirmed by Harvie Benson who found a nest containing two young on June 28. On July 7 the adults were seen feeding two flying young. Also in Saint John West, but in completely different parts of the city, Paul Tracey had a Mockingbird "singing all day long" during the first half of June and Molly Smith saw one carrying a straw on June 2.

There was a Mockingbird singing loudly and continually at North Head July 3 - 5 and also a Wood Thrush (singing early only), a species which must be a relative newcomer as a summer resident on Grand Manan (DC).

Further reports of Cardinals, a few of which must be breeding in the province, came from Reg Newell who saw a male on Machias Seal Island for three weeks in May, from Reg Smith whose pair that appeared near South Bay in January were still present in June and from Tom Page who had a male singing in his Saint John backyard July 24. It could have been the same

male photographed nearby on July 8 (photo sent to museum). I'd be very interested to learn of evidence of nesting.

Another species spreading our way is the House Finch, which became established in the east after illegally captive cage birds were released at New York City in the early 1940's. Erwin and Marion Landauer report two male House Finches at Sisson Ridge, Victoria Co., on July 28. Erwin also says that Hal Hinds had seen one near Charlo in summer 1979, an observation on which I hope to get more details. New Brunswick birdwatchers should check the field marks and keep a close watch for this species.

A Rough-winged Swallow was at Pocologan July 11 (Ron Weir) and one, possibly two, Field Sparrows singing at Salmon Beach, Gloucester Co., May 14 (Peter deMarsh). I was surprised to see two Great Crested Flycatchers near the coast, at Musquash Head, on June 24 and during July a pair were at Renforth, Kings Co., where they are not usually present (Eleanor Parke).

One pair of Roseate Terns nested on Machias Seal Island this summer, following the first definite New Brunswick breeding record there in 1979, both nests having been found by Reg Newell who also reports that a Peregrine Falcon visited the island a couple of times in late May this year. He wonders whether it could be residing about the cliffs of Grand Manan.

On June 7 the Saint John Naturalists' Club visited The Wolves, 10 km off Beaver Harbour. During the boat trip past the five islands (and assorted rocks) and while ashore on East Wolf Island, many Common Eider, Black Guillemots, Double-crested Cormorants and Great Black-backed and Herring Gulls were seen. Of special interest were two Razorbills on Spruce Island, two Willets on Green Island and six adult Common Murres about halfway out from the mainland.

At East Wolf Island, there was a creche of 43 eider ducklings accompanied by 28 adults. The grouping of several families helps protect the vulnerable young from gull predation. But the gulls have to be watchful too. A male Great Black-backed Gull was repeatedly driving a Crow away from the area where his mate was incubating her eggs.

On July 13 at Grindstone Island at the mouth of Shepody Bay most Great Black-backed Gull young were ready to fly and Great Blue Herons were almost as big. When the lighthouse was automated a few years ago, herons began nesting for the first time since the early 1950's and gulls colonized the cleared lighthouse area.

1980 is the Nova Scotia Bird Society's 25th anniversary and as part of the celebrations they organized a week long field excursion around the Bay of Fundy. On August 17 Mary Majka and I hosted them in and around the Shepody National Wildlife Area to see ducks, shorebirds and other species of fresh-water and todal habitats. Surprise of the day was a Wilson's Phalrope at Waterside but the Marsh Hawks put on a better show. A male, harrying the the shorebirds at Mary's Point, knocked one Semipalmated Sandpiper onto the water but for some reason did not try to capture it as it came ashore. At Harvey a female was catching mice for its four or five flying young. She would drop the prey and the young birds tussled for it in the air.

On the 18th Hank Deichmann led the Nova Scotia group in the forested habitats of Fundy Park where several species of warblers were much in evidence but a female or young Summer Tanager was the definite highlight. From there the trip moved on to Grand Manan and to Maine.

Considering the abundance of Forest Tent Caterpillars this summer I am surprised not to have received many reports of Black-billed Cuckoos, a species usually numerous in areas where there is an ample supply of large insect larvae. The cuckoos are late migrants, seldom common before the last half of June. Fred Tribe saw his earliest one this year at Tomlinson Lake on June 20. A pair were mating in Gayl Hipperson's Saint John yard on July 21.

But what about the caterpillars? I saw some defoliation near Weldon and Rogersville in eastern New Brunswick, but the really big numbers were in the central and upper Saint John valley. I heard one report that cars were having trouble stopping at Fredericton because of the slippery remains of caterpillars killed while crossing the street. On June 30 in a defoliated poplar stand near St. Leonard the caterpillars had stopped eating and were spinning or had already spun their silken cocoons, usually protected inside the rolled up leaf of a maple or fern, and some of the aspens were producing sparse replacement crop of leaves. Looking up through the fresh green leaves one could almost imagine that it was early May (DC & Mary Majka).

George Stirrett wrote about the Forest Tent Caterpillar in his June 5 "Notes on Natural History" column in The Cataract Weekly.

"During the past two weeks or so, the caterpillars or worms have appeared in even larger numbers than last year and are defoliating the poplar and other deciduous trees in the Saint John valley from Edmundston south to about Pokiok ...

"According to one expert heard on 'New Brunswick Report' ..., this is the third year in which the caterpillars have been numerous enough to noticeably defoliate the trees. Usually such insect outbreaks occur in a regular cycle of years ..... If memory serves correctly, the forest tent caterpillar's cycle is of three years duration so we would expect that the present year is the climax of the cycle, when the insect is most numerous and when its build-up in population will come to an abrupt end or crash - the insects will die off and next year ..., they will be in such few numbers that it may be difficult to find them ....

"The caterpillar or larva eating the leaves of the trees at the present time, when full grown will stop eating (very soon now) and wander away from the trees and spin a silken cocoon for itself in some sheltered spot. The cocoon of this particular tent caterpillar is sparsely covered with a yellowish white powder and it is made with two distinct silken walls, one within the other.

"Inside the cocoon, the larva turns into the pupal or resting stage and within the pupa the moth stage is developed. When this transformation is completed, the adult or moth emerges. The pupal stage lasts about three weeks. The moth flies about in search of a mate and when ready the female lays her eggs in a ring-like cluster around a small twig or branch.... The

egg mass is covered with a glue-like substance from the female's body which protects the eggs and holds the mass together during the winter. The eggs hatch in spring into the well known caterpillars."

Stan Gorham was out as usual this summer in search of more information on the occurrence of the Gray Treefrog in New Brunswick. We know it from a small area near Fredericton and in southeastern Maine and he has been trying to find it in the New Brunswick portion of the St. Croix valley. In late June this year he found them calling at a couple of locations on the Maine side of the river, but not in New Brunswick.

Stan is currently caring for two six-legged Bullfrogs found near Saint John this summer. One with three rear legs on the right side seems to be able to move about much better than the other indicidual which has an extra pair of hind legs located just behind the first set. Both seem to be in their first year as adult frogs so they have not had to survive long with their extra legs. Finders of these odd frogs were Pat Riley and Shan Nesbitt.

Henrik and Jocelyn Deichmann went canoeing up Long Marsh Creek, Albert County, about June 15 in search of a good mussel bed they had heard about. Travelling up the muddy tidal creek little life could be seen until they reached the outlet of Lockhart Lake where, in clear shaoow water, the bottom was lined with Blue Mussels and where also there were a good number of Green Crabs, "most the size of silver dollars, but one ... 10 cm across the carapace". The area is near the head of the tide so much of the time these animals are living in the clear outflow from the lake.

The federation members who were led to the Shea Lake area by Erwin Landauer on June 28 and 29 were enchanged by the variety of orchids and other plants found in that unusual area. Erwin has found sixteen species of orchids on the bog and adjacent hill slopes. It is the only place in New Brunswick where the Round-leaved Orchis and a tiny buttercup, Ranunculus lapponicus, are known to grow although there apparently was a report years ago of the orchid near Summit Depot, Restigouche County. During our visits at the end June the Round-leaved Orchis was sporting its delicate, purple-spotted, white flowers and there were Yellow Ladyslipper, Arethusa and a few of the less colourful orchids also blooming. Unfortunately, it was a bit too early for the beautiful flowers of the Showy Ladyslippers, but it was exciting just to see several plants of that rare and local species. The Shea Lake which has been proposed for protection as an ecological reserve has such an interesting flora because the bog fringes are enriched by nutrients washed down from fertile soils above. As one proceeds towards the centre of the bog, the vegetation gradually changes to the species typical of acid, nutrient-poor bogs throughout the province. The variety of conditions in a small area make it truly unique. (While there we picnicked at the shore of the lake and were surprised to see the bloated bodies of a few Brown Bullheads (catfish in common parlance) a fish which Erwin had been told was found near Plaster Rock only in Shea Lake.

With a lot of rain in the early part of summer, good crops of the larger edible species of mushrooms were expected but from the reports I've had the high hopes were not fulfilled. However, conditions this year must have been just perfect for the ghostly while the Indian Pipe which has been super-abundant in our woods at Mary's Point. Michael Burzynski reports that they were unusually numerous also in the Fundy Park, Fredericton and Saint John areas.

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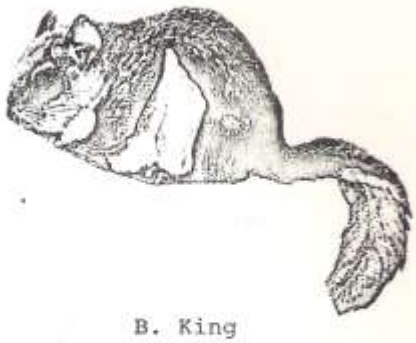

B. King

The Northern Flying Squirrel is a little known but common resident of our New Brunswick forest. These quiet, gentle animals are strictly nocturnal. Their large, dark eyes are an adaptation for night-time activity.

The flying squirrel does not fly but glides using the fold of skin joining the front and hind limbs to form a sort of parachute. Using its flattened tail as a rudder it is able to manoeuver and change direction in flight. These animals can glide over 150 feet and are incredibly agile in the air.

The flying squirrel lives in tree cavities during the winter months, but in summer prefers bark and twig nest. The nest is usually built of twigs,shredded bark, moss and lichens and is situated usually in a coniferous tree.

Their food consists of aboreal lichens and the buds, leaves, seeds, fleshy fruits and nuts of many trees and shrubs. It also has a fondness for meat,eating insects, birds and birds' eggs as well as scavenging on carcasses found in the forest.

In winter the northern flying squirrel is communal with as many as fifteen adults sharing a nest in a tree cavity as well as a cache of nuts and cones stored in hollow trees. They remain inactive in periods of extreme cold.

The young are born naked and blind, being weaned in six weeks. They leave the nest and begin to glide by eight weeks and have their first litter when a year old.

These gentle and intelligent animals are beautiful and graceful to watch. Just after dusk keep your eyes open and you may be fortunate enough to see one.