HALIFAX FIELD NATURALISTS NEWSLETTER

SEPTEMBER-NOVEMBER 1982 No.29

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MEETINGS are held on the first Thursday of every month at 8 p.m. in the Auditorium on the ground level of the Nova Scotia Museum, 1747 Summer Street, Halifax.

FIELD EXCURSIONS are held at least once a month.

MEMBERSHIP is open to anyone interested in the natural history of Nova Scotia. Memberships are available at any meeting or by writing to: Membership, Halifax Field Naturalists, c/o N.S. Museum. Until January 1983 individual membership is $5.00 yearly; Family membership $7.00, but from January dues will be increased to $7.00 for an Individual and $10 for Family membership. Members receive the newsletter and notices of all excursions and special programs.

DIRECTORS for 1982-82

Co-Presidents	Doris Butters John vanderMeer
Vice-President	Bill Freedman
Membership Secretary . . .	Colin Stewart
Treasurer	Bernice Moores
Directors	Joe Harvey Pierre Taschereau Edna Staples

NEWSLETTER . . . . . Edna Staples
Colin Stewart
Doris Butters

MAILING ADDRESS

Halifax Field Naturalists
c/o Nova Scotia Museum
1747 Summer Street
Halifax, N.S. B3H 3A6.

HFN is a member organisation of the Canadian Nature Federation.
HFN is incorporated under the Nova Scotia Societies Act.
HFN Newsletter is produced by courtesy of the Nova Scotia Museum.

PRESIDENTIAL MESSAGE -

Our first meeting of the fall season, the slide/talk by Scott Cunningham on the Magic of Mushrooms was a great success. The fire regulations limit of 150 persons was exceeded by six or seven would-be participants who regrettably had to be turned away (one lass spent an hour getting in, most of it waiting time for buses, only to be disappointed). Pity. They missed a great evening.

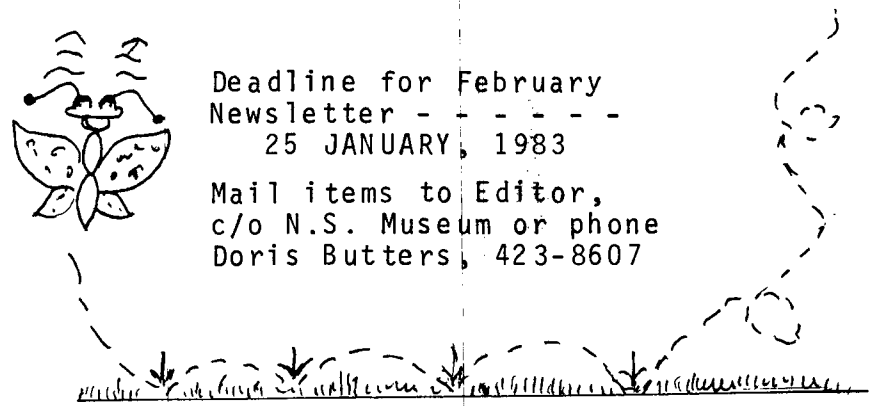
However, your greenhorn President blotched her copybook by NOT returning the room divider to its proper position, and bits of moss from Scott's lovely display eluded our efforts with a corn broom and drifted around the room like dandelion fluff. Also, efforts to mop up tea spills with paper towelling were not entirely successful and the freshly polished floor was badly smeared. My apologies to the N.S. Museum maintenance staff. We must be more careful in future.

For several years past we have been indebted to the N.S.M. for producing our HFN Newsletter. However, recent budget cuts have made it necessary that we supply our own paper, the Museum to continue providing free printing service. In view of the cost of paper and increased postage for the Newsletter it has become necessary for us to raise HFN membership dues in January 1983 to:

$7.00	annually per	individual membership
$10.00	"	" family "
$15.00	"	" sustaining "

Since May we have been joined by many new members; a list of their names appears elsewhere in this Newsletter. Welcome to the group! We hope that they as well as our old members will contribute suggestions and leadership for talks and field trips, and - of course - send in offerings or black-and-white drawings to the Newsletter. Our address is c/o N.S. Museum, 1747 Summer Street, Halifax, B3H 3A6.

John vanderMeer. Doris Butters.



Deadline for February Newsletter - - - - - -
25 JANUARY, 1983

Mail items to Editor, c/o N.S. Museum or phone Doris Butters, 423-8607

hfn news

CANADIAN BIRD CONSERVATION-

A recent memo from Eric Tull of the Canadian Nature Federation advises that the Bird Conservation Committee has been formed as a Canadian section of the International Council for Bird Preservation (ICBP) and to prepare, promote and conduct programs of bird conservation in Canada. Objectives are:

1) to represent Canada and her conservation groups on the international body of ICBP;
2) to engender support in Canada for international bird conservation programs;
3) to encourage Canadian action on Canadian bird conservation questions of international concern.

These tasks could be performed by one or a few individuals reporting to a small board of directors chosen from national conservation groups. Meetings could be held without great difficulty and expense and the national groups could report to their provincial and local affiliates.

At a meeting in Guelph in May 1981 the Canadian national section of ICBP was formed as a committee of the Canadian Nature Federation rather than as an independent organisation.

This committee - which is now trying to find its feet - has

a) expressed concern on the capture and sale of gyrfalcons from the N.W.T.;
b) answered enquiries from the international body on treatment of oiled seabirds and on the theft of the Ross' gull nest;
c) had input to ICBP on the Convention on International Trade in Endangered Species (CITES).

The international body of ICBP held its quadrennial meeting last August in Cambridge, England. Mr. Tull planned to attend as ICBP Canadian representative and called on all groups interested in birds to submit issues that Canada should put forward at the conference.

Our ex-President, Anne Greene, wrote to Mr. Tull suggesting that a worthwhile issue to raise would be the problems of Newfoundland seabirds resulting from the decline in capelin stocks (see HFN newsletter No.27).

If HFN members have any questions on bird conservation that they feel the committee should be acting upon, contact:

C. Eric Tull, Chairman ICBP-Canada,
Canadian Nature Federation
75 Albert St., Suite 203
Ottawa K1P 6G1

or put the questions before HFN so that we could perhaps make a joint effort to place such matters before the committee.

PEREGRINE FALCON RELEASE PROGRAM -

(from Environment Canada, Atlantic Region,Newsletter, August 1982)

The Canadian Wildlife Service recently released locally six Peregrine Falcons obtained from Alberta - three in Fundy Park; three in north east Nova Scotia - with the intention of establishing a breeding population of Falcons in the region. Pesticides were believed responsible for the disappearance of the original native population of these birds by the early 1960's.

Six more are to be released each year until falcons are re-established. Anyone observing Peregrine Falcons with red legbands should contact the Canadian Wildlife Service - Myrtle Bateman, CWS., Environment Canada, P.O. Box 1590, Sackville, New Brunswick, E0A 3C0, phone 506) 536-3025.

THINGS KNOT WHAT THEY USED TO BE -

One of the common weeds around Nova Scotia is knotgrass which, as its name says, is not a grass but is a member of the dock family (Polygonaceae). It is a common annual weed of gardens, fields and the urban scene. It has the ability, shared with greater plantain and pineapple weed, to germinate and grow under conditions of trampling and is common in the cracks in sidewalks, tracks across lawns and football fields, or at least it was until football fields turned to plastic.

A recent publication by John McNeil in the Canandian Journal of Botany has shown that what has been regarded as one species is in fact two and this has implications for the scientific name.

The two can be recognised fairly easily from their appearance and the habitat preference. One entity has leaves all more or less the same size on the young shoots and grows in compacted soil, especially footpaths. It is the common form around Halifax and other urban areas. The other has the leaves in two sizes, the primary shoot leaves being large and the axillary ones much smaller in a tuft. This second form likes looser soil and tends to grow in flower beds and as a weed among agricultural crops where trampling is not a factor. It occurs in Halifax but is not at all common, at least on the basis of casual observations over the past summer.

Now this is where a collective groan comes up because these forms have to be given names and the old name which some of us at least use may have to go. The traditional name is *Polygonum aviculare L.* and has been used ever since Carl Linnaeus (the "L.") used it as a binomial in 1753.

The common Halifax species of trampled ground is *P.arenastrum*, the more arable, slightly larger species has a choice of names: it can be called *P.aviculare* in the strict sense, or if it is maintained that this results in confusion, which it would, then it is *P.monspeliensis*.

So, when the Flora of Nova Scotia is next revised expect this as one of the changes, there must be some hundred or so other name revisions which need incorporating in the next edition since a lot of old and cherished scientific names have bit the dust since the last revision in 1968. Better get used to this one now then the rest won't be so painful.

M.J. Harvey.

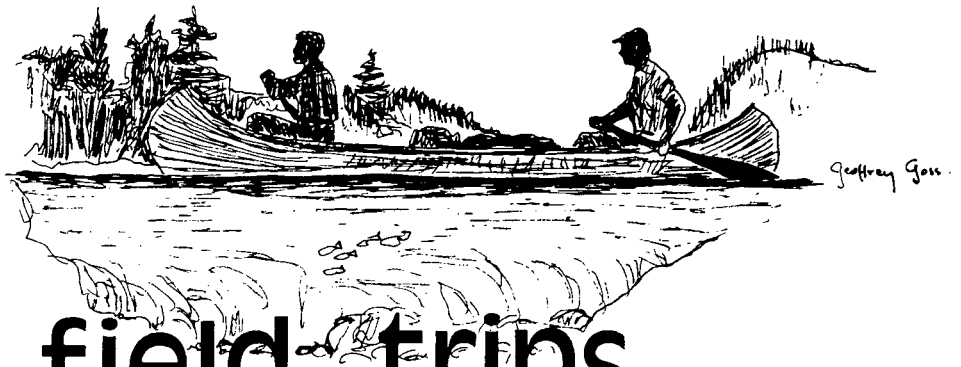
ON THE SHELF -

Some recent additions to the HFN Library Shelf behind the reception desk in the foyer of N.S. Museum:

- Nature Canada, beautifully illustrated and containing interesting articles on the anticipated appearance of Halley's Comet in 1985; the unexpected flower show amid the sand flats of Banks Island in the high arctic; Terra Nova National Park, Newfoundland, and its surprisingly moderate climate; and an editorial on "the fickle hand of governments".

- Environment Update, the entire issue devoted to the many aspects of water and water-related problems across Canada and the border areas of the U.S.A.

- Citizens Bulletin by Friends of the Earth and Environment Canada contains among other items a rather controversial viewpoint by Charles Osterberg, former director of the International Laboratory of Marine Radioactivity in Monaco. Read P.19, his philosophy on the ocean as a 'preferable receptacle for many pollutants'. Comments anyone?



field trips

A DAY ON McNAB'S ISLAND -

On August 28 a score or so of die-hard members braved a grey, drizzly morning and boarded the boat from Halifax to McNab's Island. We were met at Garrison Pier by a Parks Canada guide who took us on a tour westward to Fort Ives, and by the time we were halfway there the sun had come out and most of the rain-coats were packed away for the day.

Unfortunately, the intended leader of the trip was unable to be with us and the observations made in his absence do not justify a long report. But a brief description may be of some interest to members who wonder what sort of place McNab's Island is.

The Island, ofcourse, has a long military history because of its obviously strategic position, especially under earlier methods of warfare. It also has a social history about which Parks Canada can provide abundant detail, and was earlier in the century a bustling recreation centre with an amusement park which drew up to 4000 people a day until it closed in 1923. Lynch is the name that impresses people today, Bill having apparently got his first inspiration for a future career from that very park, when he was a boy.

There remains from the late 19th century estates the ruin of what was an outstanding "English" garden. Here Bayberry, Japanese Maple, Copper Beech and Lily-of-the-Valley can be found. There are huge, well-shaped Elm and Horse Chestnut trees. As we walked, early uses of some of the plants we passed were discussed - Goldthread for quinine; Eastern Hemlock for tannin and a tea "to promote sweating in hot weather"; * St. John's Wort worn as a cure or a protection against insanity; Yellow Birch as a source of wintergreen; Japanese Knotweed (also known as American bamboo or Indian rhubarb) eaten like rhubarb in the early spring, and in the fall when the segmented stems are hard and hollow, used in candle-making.

The most impressive things about Fort Ives itself were the muzzle-loading rifled cannon, state-of-the-art in 1860 and obsolete by 1880 capable of throwing a 300 pound cannon ball over three miles. Relatively thin at the muzzle, they bulge out in a series of steps towards the rear to withstand the tremendous pressures. Too massive to move or break up, they have lain there for a century, looking rather like clumsy iron clubs left scattered by some giant ancient warriors, and likely to remain there for another century for unborn generations to marvel at - built to last forever and obsolete in 20 years.

At the fort, the party stopped for lunch and was greatly refreshed by a flask (homemade blackberry juice only - honestly! DEB) passed around by Doris Butters. We then broke up into smaller groups to explore different parts of the island.

In general, McNab's is mostly forested with Spruce, Fir, Birch and Maple. Wide and attractive lanes and trails abound, and there is little vehicle traffic, making for pleasant walking. There are a few occupied houses still, but for the most part the cultivated areas are in a very pleasant stage of being overgrown, and access is free to most places. Wild Blueberries, Raspberries and Blackberries are abundant.

McNab's Island is well-populated with birds, though no long list was compiled on this outing. Visitors to the Back Beach area and the marshed near the lighthouse reported good viewings of Cormorants, Herons, Kingfishers and Ospreys.

A few hardy individuals bush-wacked to Thrum Cap but found the view at that low level rather a disappointment, though they were rewarded for their efforts by findings of Spiranthes Cornua, (Nodding Ladies Tresses) and a solitary white Orchid.

Harbour Island Tours operates a boat from the bottom of Sackville Street to NcNab's on a regular schedule from May until the end of September. At the time of this outing the cost was $4 the round trip for a party the size of ours.

Michael Downing

- Maud's additional note to the McNab's walk:

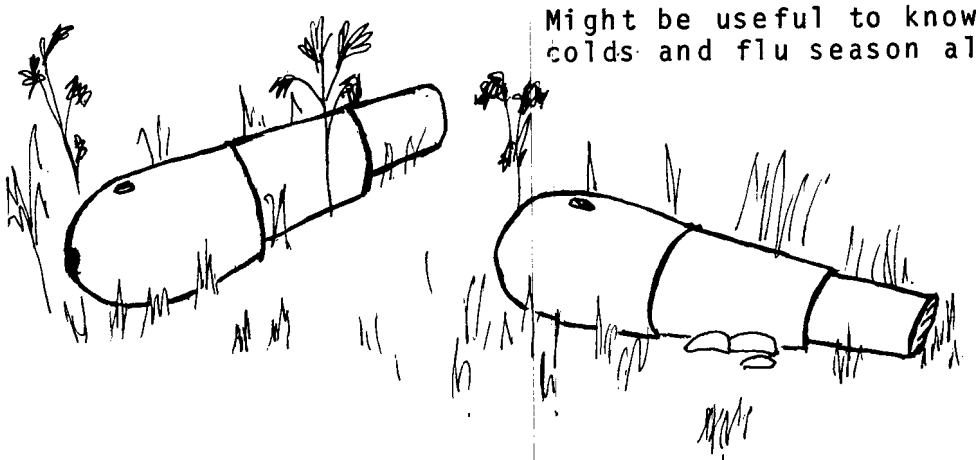
Mary Primrose and I opted for a leisurely ramble after lunch, going back along the morning's path to look at it from a slightly different perspective. At the outset we flushed a lively covey of Myrtle Warblers. About half a dozen or so kept just ahead of us along the edges of the path, flashing their brilliant yellow side and rump patches as they busily foraged for insects.

The brilliant red of bunchberry fruit gleamed from the ground cover and above it the whorled asters raised fragile blooms. At a certain point an Osprey seemed to object to our presence, putting on quite a noisy show overhead as we passed that point both going and returning. Mary didn't find anything in just the right light for photographing, but both of us enjoyed the play of sun and shadow in the woods. One woodland pool we photographed with our mind's eye, a picture to cherish for the future, myriad coloured jewels gleaming mysteriously in the still, dark depths.

Maud Godfrey.

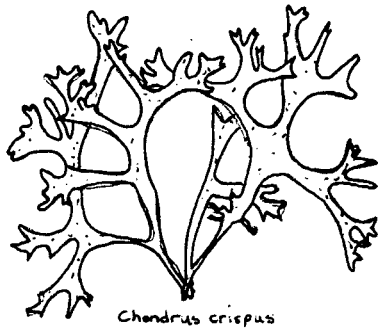
* Catherine Parr Traill had this to say about hemlock tea "...As a remedy for a severe cold, I believe a cup or two of hemlock-tea, drunk quite warm in bed, is excellent as it promotes perspiration; it is also a powerful diuretic, as well as sudorific.... not the poisonous plant known by that name...but a species called the hemlock spruce..."

Might be useful to know with the colds and flu season almost upon us!



A FALL SEAWEED HUNT -

The weather forecast had not been favourable - cold with possible showers or even snow flurries, but once again the weatherman was wrong and Sunday, October 17, dawned clear and sunny. By noon it was still reasonably mild but a westerly wind was freshening making it feel much colder. When Caroline Bird (our leader) and I arrived at the Museum near 1.00 o'clock, there wasn't a soul in sight and I feared everyone had stayed home. I needn't have worried; within 10 minutes about 20 people had assembled and we were off to Peggy's Cove. The drive from Halifax was most enjoyable as the coloured trees were still near their prime and on the barrens the gray boulders and bright red huckleberry shrubs provided spectacular contrasts.


Chondrus crispus

When we arrived at the turnoff to the village it was clear the waves were too rough for us to go to Caroline's favourite spot near the lighthouse, so we had to settle for a more sheltered area nearer Cranberry Cove. Our first stop was at a high tide pool where the rock surrounding the pool was covered with a dry black film of blue-green algae which are, in reality, species of photosynthetic bacteria. In the tide pool itself was a dense fringe of green *Enteromorpha intestinales* whose hollow tube-like structure reflects its name. Also prominent in the tide pool were the crustose red alga *Hildenbrandia prototypus* growing closely oppressed to the rock, and the crustose brown alga *Ralfsia sp.*

Just below this tide pool there was a good assemblage of coarse brown seaweeds commonly known as "rock weeds" because they grow on intertidal rock surfaces. These included *Ascophyllum rodosum, Fucus vesiculosus and Fucus spiralis.* A number of smaller algae were also present here, the most abundant being *Polysiphonia harveyi,* a bushy, light-brown plant attached to several of the larger algae; bright red, unattached clumps of *Trailliella,* and in the deeper pools pink crusts of the calcified red alga *Corallina officinalis.* On some of the *Ascophyllum* plants we also found an almost black red alga called *Polysiphonia lanosa* which can only grow attached to *Ascophyllum.*

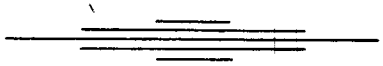
Next we moved to the more exposed intertidal zone where the waves were breaking and the wind whistled around our ears so strongly that Caroline had to shout to be heard by the people knotting around her. She pointed out the zone of *Chondrus crispus* (Irish Moss) below the rockweed zone, and beyond that the zone of kelps clearly visible just under the surging water. Kelps are the largest brown algae and we succeeded in finding *Laminaria longicruris,* a long, sash-like plant, *L. digitata* which is shaped like a hand with giant fingers, and *Alaria esculenta* whose prominent narrow midrib distinguishes it from the other kelps. Further down the shore, in a low tide pool we found several more species including the edible alga *Palmaria palmata* (Dulse) and its close relative *Halosaccion ramentaceum* (recently renamed *Devalaria* but it takes me a while to get used to the new names). Both of these algae have unusual life cycles in which male plants are large whereas female plants are microscopic. Other species found were *Ulva lactuca* (Sea Lettuce), *Spongomorpha sp.* which was very prominent as green tufts attached to

other algae, the beautifully delicate *Rhodomela confervoides*, *Ceramium rubrum* and the dark-brown alga *Chordaria flagelliformis*. Undoubtedly there were several others I have forgotten.

By this time the cold wind was beginning to sap even the hardiest among us and we beat a retreat away from the shore. While returning around a brackish back-water, we found cast specimens of several algae, the most interesting being a large brown alga *Desmarestia* which releases sulphuric acid and cannot be stored in a collecting bag with other algae as it soon kills them. On the mud surrounding this back-water were black mats of blue-green algae and white or yellowish deposits formed by chemosynthetic sulphur bacteria.

Near the parking lot we found ourselves in the midst of huckleberry bushes still bearing fruit. This discovery stimulated a round of late-season berry picking, an altogether satisfying way to end a field trip.

John van der Meer



WALK IN THE PUBLIC GARDENS -

Despite a somewhat chilly wind on 10 October, there was a good turn-out of maybe 30 people for the tour led by Colin Stewart and Joe Harvey. The number of people varied since members of the public kept stopping to listen to the various stories and at the Ginkgo tree where Joe was saying that he had never seen fruit on it, but that the trees were either male or female with the fruit of the latter having a rotten stink, a Chinese lady who had stopped, pointed out that if it were female the nuts inside the fruit were delicious to eat despite the smell of the outside flesh.

The walk started by the ornamental gates which, for unknown reasons, lacked their colourful crests. Just outside the gates was the site of Pyke's bridge accounting for the start of Tower Road just across the former bridge from South Park. Victoria Park represents the filled-in stream bed. The site of the skating rink and pavilion were next inspected with Joe confessing that the five-needled pines still were of uncertain name.

The rest of the walk consisted of following the map round the various sections of the garden with Colin commenting on the history of the particular parts. There are a few mistakes on the map, for instance the recently-planted *Davidia*, the ghost tree, No.27, was misplaced by being put alongside a small pond instead of by the nearby walk - and a gremlin put a ghost, ghost tree near the Victoria fountain; this one should be erased from your map.

Some of the puzzling trees were inspected, No.18 is probably a walnut but the other nearby compound-leaved tree still remains a question mark. The yellow-leaved elms may be a form of *Ulmus procera*, the english elm not the scotch elm. It is unlikely that the long-leaved pine is *Pinus palustris* but no better name was forthcoming. However, despite a few deficiencies the people present seemed to think that the map and key was a great improvement over the nothing that existed previously. We hear that the City is intending to make up a leaflet for the benefit of visitors and that our account will help guide them.

We are still looking for various other comments and corrections. These should be sent to the editor.

M.J. Harvey

FIELD TRIP REPORT-WRITING -

Following the simple,neat, concise report by Filip Volckaert on the June "Early Bird Walk..." published in our last Newsletter, here is Filip's model, which should be of great help to those of us willing to cover a field trip but not sure "how to get started" -

Date: *(e.g. Sunday, 22 November 1981)*

Number of Participants: *(e.g. 21)*

Site: City/town/community/local name - (co-ordinates if very isolated) *(e.g. Crystal Crescent Beach to Pennant Point)*.

Weather: Precipitation, approximate temperature, wind direction, speed etc. *(e.g. Early morning fog; 20°C.; chilly sea breeze from S.E., etc.)*

Report: Describes the observations during the trip: particular things worth remembering - the landscape - animals - plants - rocks etc. Names of flora and fauna should be underlined and given their English names (except where confusion exists, in which case the Latin name should be used). Alternately, animals and plants seen could be listed separately. It would be useful if eventually we could add an indication of their abundance (extremely rare observations of nesting birds, butterflies, reptiles, plants, etc., are preferably not mentioned in the report).

What is the sense of this business?

* Those who wanted to go but could not, or forgot to do so, are able to read what they missed.
* It provides participants with reference points (what was the name of that special yellow flower I photographed? - which bird was hovering above the lake?)
* It's a good way to prepare for a trip by what was seen in the area last year/season, especially if the site is only visited occasionally.
* The most important reason for writing the report is the availability of hard-core data in case "disaster" threatens the area ---

(EXAMPLE: *Over the past five years some seven guided walks were organised to (say) the Gaspereau River near White Rock, Wolfville. The government plans to develop a water management facility there and also to build a large storage yard. The development is planned on the only site in Nova Scotia where orchid "X" grows and in an important frog-breeding zone. Careful reading of well-prepared previous field trip reports gives one an immediate idea of how critical the situation is. Supplementary trips and an extra report by a naturalist familiar with the area will complement a grievance letter to the government. Because of previous reporting, information is immediately available and survey time is saved)*

* I think it is a commitment of a field naturalist not only to ADMIRE and to LEARN ABOUT our natural heritage to also to ACT to protect it, however small the contribution might be. Writing a report (yes, it <u>is</u> a "job") is one of those things.

Filip Volchaert.

reports

REPORT ON THE TUSKET RIVER LAKES AREA (Part I) -

Paul and Cathy Keddy, long-time HFN members now working in Ottawa, have sent us a copy of their recent paper entitled "Sixty Years after Fernald: Observations on the Coastal Plain Flora of the Tusket River Lakes".

For some years past the Keddys have tried to generate interest in conservation of the coastal plain flora in Yarmouth County, and following preliminary field work in 1979 a 10-day canoe trip down the Tusket River last August confirmed their impressions gained from Fernald's published reports that this region "must hold some secrets of profound importance to a clear understanding of life in eastern North America"(Fernald 1921, p93.).

In this Newsletter we are using the section on prospective ecological reserves, but plan to include the main part of the Keddy manuscript in our next issue.

"...We also looked for some sites which could be candidate ecological reserves. We had three criteria for evaluating shorelines:
(1) whether the shoreline had typical vegetation representative of the Tusket River system;
(2) whether the shoreline supported rare or threatened coastal plain species; and
(3) whether the shoreline was relarively undisturbed by cottaging, boat ramps and off-road vehicle trails.

There are two areas which stood out according to these criteria - one because of the number of species occurring abundantly in a small area, the other because it represents the tremendous vegetation variation in the shoreline of this area.

The first site is in Wilsons Lake, in the northwestern bay. Here, gently-sloping sand and gravel shorelines support a rich coastal plain community. We estimated more than one thousand Plymouth Gentians in flower, several hundred flowering Pink Coreopsis, and the bay had as much Water Pennywort at Floating Heart. The abundance of these species was unparalleled elsewhere in the Tusket River system, and all occurred along just several hundred metres of shoreline. This area of Wilsons Lake as well typified the cobble and gravel shores of the Tusket River valley. There was a particle-size gradient from large cobbles at the top of the shore to sand in the shallow water areas. As well, organic content peaked in peat beds with Twig Rush (*Cladium mariscoides*) just at the water line. Species such as Meadow Beauty and Long-leaved Panic Grass occurred at the upper portions of this gradient, whereas Water Pennywort and Floating Heart composed the floating-leaved aquatic association. Since cottages are spreading along the north end of the lake, here is an ideal and important site for aquisition as an ecological reserve.

The other area was outstanding for its rare species and complex array of vegetation types. It includes the northern and eastern sides of Kegeshook Lake. A much larger area than the one on Wilsons Lake, the Gillfillan-Kegeshook complex includes a peat-clay meadow with well over five hundred flowering Plymouth Gentians, gravel shores with Pale Orchis, and sand and peat meadows with the largest Panic Grass-Meadow Beauty communities we saw anywhere. Along these shores one could find virtually every shoreline type seen in our 10-day trip. Only the Pink Coreopsis and Water Pennywort were absent from these shores. "

THE ODD COUPLE -
(Abstracted from N.B.Naturalist 1979 newsletter) by Ian Walker

The harsh, winter environment appears to be an uninviting prospect for any form of life whether it is plant or animal. Most trees empty their branches of leaves and retreat into a dormant winter condition until warm weather returns. Many animals greatly reduce their activity in winter, or in the case of many birds, abandon our climate to accept the sun's warm invitation nearer the equator. For those of us who cannot escape the reality of winter, we have learned to enjoy some of the unique conditions it provides.

Not all plants greet winter with such drastic transformations as our wildflowers and cowardly hardwoods. One such group is an obscure group of plants known as lichens. These include such unusual and varied members as Old Man's Beard, British Soldier, and Reindeer Lichen ("Reindeer Moss"). Although normally overlooked, this group contains numerous colourful species inhabiting the ground, dead stumps, rock and even tree bark. Lichens have been forced to accept some of the harshest conditions on earth in order to compete and survive on a planet dominated by faster-growing, more demanding plants. Lichens have accepted this challenge and form the dominant vegetation of polar regions and also enjoy a comfortable home on bare rock and exposed to the hot desert sun.

> "In one experiment, dry lichens were exposed to a temperature of 434°F. This, you will recall, is more than twice that of boiling water. The lichens were exposed to this heat for seven hours, at the end of which time they began growing again!"
>
> PLANTS WITHOUT LEAVES
> Ross E. Hutchins.

How do lichens withstand such unfavourable environments? Actually, lichens are two plants which have united their structures to form an extremely hardy combination. Many people describe this as a "partnership", but I prefer the term "marriage". Like most marriages, they are often mistaken for partnerships but are actually dominated by either the husband or the wife. This can be expanded into an amusing analogy.

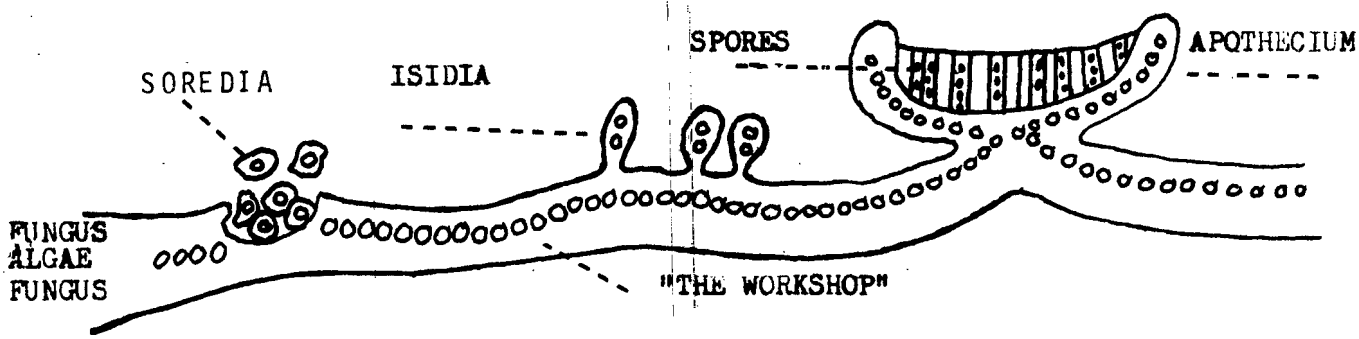
In the case of lichens the"husband" is the hardworking soul who operates a "factory" and converts his hard work into food to feed the entire household. In lichens the husband is an algae and works to convert the raw materials available in the air into sugar using sunlight as a source of fuel to power the factory. The sugar is the food which the algae provides for the household.

The "wife" is a fungus which maintains the household and keeps its algal partner confined to the "workshop", normally a thin layer near the surface of the lichen where it can obtain lots of light.

As in most marriages, the algae and fungus will normally have a few children, and in lichens there are several alternatives to choose from. Many lichens produce "children" called isidia which contain both an algae and a fungus component. The isidia eventually become separated from their parents and must set up housekeeping on their own. As they grow, this produces another lichen. Another possibility is to produce soredia. These are basically similar to isidia but are smaller, more untidy, and often kept confined to a structure known as a soralium. Often the fungus decides to have children without help from the algae. In this case the children are known as "spores" and kept in a fancy cup-shaped "crib" known as an apothecium. No algae are contained within the spores, so when these daughters are released, they must develop into a fungus and then capture an algal husband in order to survive. How successful the spores are is

difficult to determine. The algae are not very common outside of the lichen and it is undoubtedly a proud spore which does succeed.

Lichens spend much of their life in a dormant state, reviving whenever moisture swells the tissues of the plant, usually after a light rain. This prevents the lichens from growing rapidly, yet this conservative growth may continue indefinitely, perhaps for a thousand years or more if left undisturbed. Although they are extremely hardy when exposed to natural conditions, they are extremely sensitive to air pollution. Examining trees exposed to the exhaust of cars and industry close to town, you are likely to find few lichens. The next time you are snowshoeing or skiing through the forest, however, inspect any branch or trunk of a tree. There should be a broad array of these amazing plants awaiting you.



Cross-section of the Lichen Household.

FACTS ON LICHENS -

- Lichens have been used as indicators of time and climate; lichens provide evidence on the age of glacial moraines, of lava flows and of ancient human monuments.

- Lichens were once widely used as a source of natural dyes.

- Litmus, used as an indicator paper familiar to chemisty students, and other reagents are still obtained from lichens.

- The perfume industry continues to make use of lichens in various fragrances, the most widely employed species is *Evernia prunastoi* (Oak Moss).

- Lichens have an Achilles heel: they are strongly susceptible to the substances with which man now pollutes the atmosphere. They are therefore good indicators of air pollution.

- Certain lichen colonies have been estimated to be more than 2,000 years old.

British Soldier Lichen

book reviews

A GUIDE TO FIELD GUIDES -

"What flower is that?" Oft have I heard that question asked. And, equally oft, have I searched thru' a stack of field guides to provide an answer.

My first guide was by Schuyler Mathews, an old and much reprinted work. The line drawings and descriptive text are quite good,but based on a complicated system of flower colours.

Mrs. William S. Dana wrote a guide also based on colours. Although old, and old-fashioned, it has been reprinted by Dover Publications.

Finally I turned to the "Great Unraveller" of all things in the world of nature, Roger Tory Peterson. Again, everything is listed by colour, with his system of identification marks as guides.

I also purchased two really elegant books illustrated by colour photographs, which I enjoy to look at for the beauty of the pictures. The Audubon Field Guide to Wild Flowers I find awkward because the photographs are in the front section and the text at the back, necessitating constant page-turning. The other feature is that the photographers have tried to make an artistic picture of each flower and sacrificed the proper relative scale; tiny flowers look like big ones, and the structure of the whole plant is usually ignored.

The second book, at 8½" x 11½" is in no way a field guide (unless you drive a truck!). It is Roger Phillips Wild Flowers of Britain , over a thousand species by photographic identification.

Although dealing with Britain, many of the species are common in Nova Scotia. The text is good and many of the colour plates show a mixed group of flowers laid out on a background, then photographed, and taken on the day of the month on which they were picked; fine if you know what you are looking for and seeking confirmation. A lovely book to own but no field guide

Since most of these books concentrate on the colour of a flower for identification purposes, and flowers don't all follow the same particular colour, the system gets complicated. And, of course, as colour perception of the eyes differs in individuals, people fail to see colours the same.

After wading, sometimes fruitlessly, through this stack of books, I came to the conclusion that there must be an easier way.

Finally, when browsing in a bookstore, I found what I was looking for. Newcombe's Wild Flower Guide. Published in 1977 by Little, Brown and Co.(Inc.), and highly recommended by the National Audubon Society.

My first impression on glancing through the pages was that this one was even worse than the others! No attention was paid to colour; different coloured flowers appeared side by side on the same page. Even different families and species were jumbled together. Finally I did what I should have had the sense to do in the first place - I read the Introduction on page VII. This explains all.

This book has a new system based on the identification of the basic structure of the whole plant. In the Key System, five questions are asked - flower type, two; plant type, two; and leaf type, one. The answers to these questions are given in plant groups listed numerically, which taken together result in a

three-digit number, for instance III, which is the first classification in the locator key describing the plant.

One important point to remember, when turning to the indicated page in the book, the first sentence on the page of text applies only to the corresponding illustration on the opposite page.

To avoid any further explanation on my part, get hold of a copy of this book, read the Foreword and Introduction first, then study the Key System and How It Works and the Explanation of Basic Terms. Everything one needs to know is there, simply explained. Flower colours? They are mentioned in the Locator Key when necessary.

After using this book, with its simple three-digit number, all the others seem like hard work.

Tim Randall.

EARTHLY PLEASURES -

Browsing in the Public Library recently I happened upon a charming book I'm sure all naturalists would enjoy. Earthly Pleasures, Tales from a Biologist's Garden, is by Roger B. Swain. These essays were written originally for Horticulture Magazine in his capacity as Science Editor.

Each chapter is a delightful blend of art, humour, and solid information. The titles give a clue to the author's light, perceptive style, for example: Skototropism: A Shady Behaviour; The Education of a Woodchuck (about his effort to dissuade the groundhog from eating his parsley, in the course of which he learned a great deal, much of it surprising, about the animal); Dung Ho! considers what buffalo chip throwers, home gardeners, and African Dung Beetles have in common; Zeus and the Ash Tree ("Golfers and church steeples get lots of publicity when they are struck by lightning, but trees are the most common targets"); The Fungus Connection explains the mystery of that delicate, ghostly flower of the fall wood which I think should have a more suitable name than Indian Pipe.

Having renewed the library copy three times, I decided I had to have a copy so ordered it from my friendly bookstore, something a lot of people must have done, judging by the number of times it has been reprinted.

If anyone is interested in buying a copy as a Christmas gift, The Book Room will get it for you -
Swain, Roger B. Earthly Pleasures: Tales from a Biologist's Garden. New York, Charles Scribner's Sons, 1978, 79,80,81. Hardcover - $10.95 US; Paperback - $5.95 US.

Maud Godfrey

In contrast - another snippet from Charles W. Quin's garden advice book written in 1880 -

"Rabbits and Hares - In large plantations where hares and rabbits have to be dealt with by the thousands, one of the best remedies is to get from 50 to 100 saplings, stack them up in a corner, and you will find the Rabbits burrowing under the stack in a short time. Give them a month's grace and then by the help of a net put all around the saplings, proceed to throw the wood over the net; you will find the Rabbits at the bottom of the heap when you should be armed with a short stout stick, and give them the coup de grace." Ug-g-g-gh!

WE ARE PLEASED TO WELCOME THE FOLLOWING NEW MEMBERS -

J. Bushell
C. Anderson
L. Mitchell
J. Armstrong
E. Townsend
L. Looker
L. Mazany
J. Slater
R. A. Taylor
G. Ross and family
D. Bowes
D. Renfrew
Melville Family
G.P. Konok Family
M. J. Rice
H. Grundke
K. Hill
R. Brunt
H. Smith
J. Stone
J. Monahan
M. McPhail
T.W. Pierce.

COUGAR IN NOVA SCOTIA -

Is the Cougar 'the Sasquatch of the East'? Reports of tracks - but has anyone actually sighted a cougar in Nova Scotia? Does anyone know anything about Cougar? If so please write in and share your knowledge with us.

CHRISTMAS TIP -

A friend 'just drops by' - the fireplace looks dead and cold and there's no time to light a fire--friend of mine has a neat trick: a decorator piece of pine cones inside the fireplace amongst which are several fat,coloured candles (his wife watches for sales and specials). Lit, they make a cheery glow, are well out of the fairway and help to freshen the air in the room. And of course, no clean-up afterwards.