Halifax Field Naturalists Newsletter

DECEMBER 1987 - FEBRUARY 1988 No. 50

Sea Rocket

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

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OBJECTIVES: To encourage a greater appreciation and understanding of Nova Scotia's natural history, both within the membership of HFN and in the public at large. To represent the interests of naturalists by encouraging the conservation of Nova Scotia's natural resources.

MEETINGS: First THURSDAY of every month at 8.00 pm in the Auditorium of the Nova Scotia Museum, 1747 Summer Street, Halifax.

FIELD TRIPS are held at least once a month *****and it is appreciated if those travelling in someone else's car share the cost of the gas.

MEMBERSHIP: Open to anyone interested in the natural history of Nova Scotia. Memberships are available at any meeting of the Society, or by writing to: MEMBERSHIP CHAIRMAN, HALIFAX FIELD NATURALISTS, c/o N.S. MUSEUM. Individual memberships ... $7.00 per year
Family " ...$10.00 " "
Sustaining " ...$15.00 " "
This covers HFN fiscal year ... JANUARY 1 to DECEMBER 31.

Members receive HFN Newsletter and notices of all meetings, field trips and special programs.

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Secretary	Leigh Mazany	455-8592
Past President . . .	John van der Meer	455-1029
Membership	John van der Meer	455-1029

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hfn news

Welcome to New and Returning Members:

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Richard Ballard
Susan Thomas
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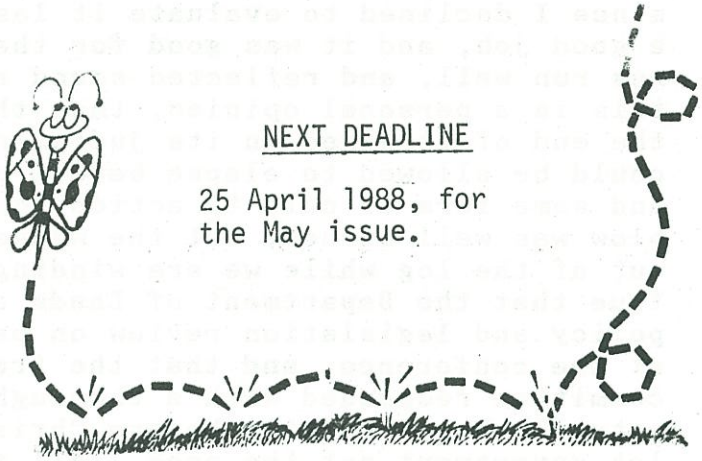
Doug Linzey
Angela Sykes
Donna & Azor Vienneau
Monte Johnson
Elaine Toms
Peter Wells

Renewal of 1988 Memberships:

The new financial year for payment of dues has rolled around again. If you are unsure whether you've paid for 1988, check the upper, right hand corner of the newsletter address label. If it says 1987, be sure to send your renewal to the HFN Treasurer, c/o N.S.Museum. Unfortunately, due to increasing mailing costs,etc. we will not send another newsletter unless you've paid your 1988 dues. So pay NOW before you forget!



NEXT DEADLINE

25 April 1988, for the May issue.

Increase in Membership Dues - 1989:

A motion to increase dues in 1989 will be put forward at the 1988 Annual General Meeting on March 3rd. The proposal is to increase individual dues to $10.00 and family dues to $15.00.

Year's End Notes

Those who followed the series of articles I wrote for the newsletter not last year, but the year before, will remember descriptions of a changing style of direction. We were trying to tighten up the organization of our executive meetings, and in particular to delegate more tasks to committees with members from outside the board, with the goal that the board itself would become a control centre coordinating a wide field of activities, rather than the body directly performing most of the activities. It was hoped that this would enable the club to take on more and larger projects. In the last of these articles I expressed cautious optimism. Organization had improved, but I was not sure whether we had enough active people to take advantage of the improvement and make things happen. We had just spearheaded the "Trails for Tomorrow" conference, but it was to early to judge how effective it had been. That article appeared this time last year. It is now time to review another year, and ask once again if we are succeeding, in the long run, in strengthening the club.

I should first make some comment on the trails conference, since I declined to evaluate it last year. In retrospect, it was a good job, and it was good for the club. The conference itself was run well, and reflected sound ecological values. I feel, and this is a personal opinion, that the steering committee set up at the end of it erred in its judgement that more than a few months could be allowed to elapse before publication of the proceedings and some form of call to action for the next step. The first blow was well struck, but the wedge is in some danger of rusting out of the log while we are winding up for the second. It is true that the Department of Lands and Forests announced a coming policy and legislation review on parks and recreational land use at the conference, and that the trails conference steering committee responded with a thorough paper when this review actually began shortly before Christmas. But we cannot afford to let government set the pace. All the same, I repeat, the organization of the conference was successful and the membership has reason to be pleased.

The club has been active over the past year. The program and newsletter have kept up their high standards, and Environment Week was successful. We have responded to conservation issues as they have arisen. There have been several new initiatives worthy of particular mention. A Special Places Liaison standing committee has been created to provide consultation and assistance for the special places curator at the Nova Scotia Museum. This group has been contributing, on behalf of the club, to the general pressure on the government to get some sites actually designated under the Special Places Act. Our undertaking to place signs in the Public Gardens identifying the trees represents a totally new sort of venture for the Halifax Field Naturalists. There has been a minor setback arising from

a technical problem involving finishes and material compatibility, but agreement has been reached with the sign manufacturer as to what must be done about it. I fully expect to see the project successfully completed as soon as spring brings weather suitable for the work. A good start has been made on preparing the Conrad's Beach area study for publication. Fund raising assistance has been rendered to the Maritime Breeding Bird Atlas.

One item would have been the subject of a special announcement, had I not been writing a note for the newsletter anyway. As previously mentioned, the Department of Lands and Forests has finally begun its long-awaited review of legislation and policy affecting parks and outdoor recreation in Nova Scotia. A steering committee was appointed in December, interested parties were invited to submit their views, and public hearing dates were set in December and January. The directors feel that this review may be critical to the interests of naturalists in Nova Scotia. Our ideas on the issues were discussed at great length by the entire board, and a committee was struck to work up written and verbal presentations. On January thirteenth the club president spoke before the review steering committee in Halifax, and turned over to it a twenty-four page paper. Major topics covered in the paper include the Trails Act, the Special Places Act, landowner liability, hunting, enforcement of conservation legislation, off-road recreational vehicles, access to crown and private land, and every aspect of the provincial parks issue we could think of. Members should be aware that in this paper the club has publicly stated many positions. Several copies of the paper will be available at meetings over the next few months, for the benefit of members who might wish to know just what is being said on their behalf.

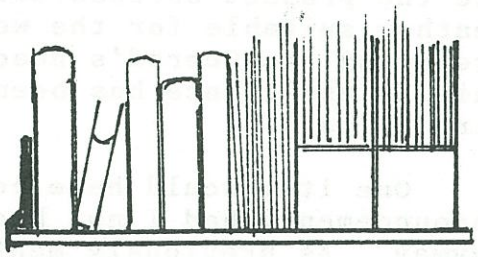
The club is getting more active, and our board meetings are managing the present level of activity fairly effectively. The committee system is working well. The changes we have been trying to make are working. When we bog down now, it is because all the active people are already over committed. We now need active members, both leaders and followers, to do everything from typing and making tea at meetings to leading committees and writing papers and area studies. We also need a few more directors to replace several who want to move on to other things. There is much which we, as a leading natural history society in the province, could be doing, and I believe we would be able to accomplish a great deal if, at this point, we were to see a real increase in membership involvement.

New directors will be elected (or acclaimed) at the coming annual general meeting. We will be conducting a volunteer drive in the near future. But initiatives and ideas don't have to wait for these events. Several director's phone numbers are in the newsletter, and some of us are always available at the meetings.

Michael J. Downing

Catherine Traill Naturalists' Club newsletters are always informative and often quite exciting. No 125 includes a letter from ex-Cat-Nat- Editor, Dr. George McKiel, at present in Australia; an item on Coral and Coral Reefs and a fascinating article on the Canadian-Chinese Dinosaur Project.

Blomidon Nature Society continues it's high standard of more local nature news including reports of their excellent field trips and a surprising feature on an encounter with - of all things - a shark in Minas Basin!! The incident, experienced by BNS boardsurfer Gary Boates, took place in September 1987, one kilometre off Kingsport, N.S.



on the shelf

nature notes

.....The birders were set agog during November by at least two interesting sightings. During the snowy spell a Painted Bunting was observed at the feeder in the Helpard's garden on Harbourview Drive in Southend Halifax. This was the first confirmed sighting of a Painted Bunting, which breeds in the southern region of the United States up to North Carolina and winters in Florida. .....The other sighting - again in the Southend of Halifax - was of a Townend's Warbler, a western bird whose usual range is from Washington State to Alaska

.....A tidbit from Australia extracted from Dr. George McKiel's letter to the Catherine Traill Naturalists' Club, re: the Bower Bird - forever in quest of anything blue. "..down by the river where, under the bank and behind a moss-covered log, we found his bower. It was an area where he'd flattened the vegetation for a 4 x 6ft arena and then built at the end of it an archway of coarse grass and reeds which was some 10 inches high. In the arena we counted 40 blues - razors (4), pens (3), drinking straw, feathers, flowers (mostly borage), bits of cord, bits of plastic, two marbles, some blue material, blue netting. All were well spaced in a random fashion, except the flowers and feathers which he'd stacked in front of the arch. Presumably he entices the female if the display is sexy enough and then lures her through the arch for the final ecstasy. We often see the blue-black male, about the size of a small crow, but have yet to glimpse the female

To celebrate the 1979 "Year of the Child" theme, one of the events promoted was a contest by the Montreal Star for a poem on "The Child". Elsie Hewitt, wife of Harry H., the new editor of Catherine Traill Naturalists' Club , submitted the following, which was printed in the Star of August 25, 1979. We think it is well worth repeating -

Ballad of the Child

Small wonder of the universe
To you I dedicate this verse.
Though memory may be dulled by time,
Your world, untarnished, once was mine.
I don your garb for this one day
And tread your footsteps as you play.
Step not on lines or sidewalk cracks,
Protecting sacroiliacs.
Sweet and sheltered man coccoon
Who can journey to the moon;
Death and taxes here to stay,
Ride a moonbeam while you may.
Hitch your wagon to a star --
May the journey take you far
From the trials and tribulation,
Monsters of our civilization.
Acid lakes and murky streams,
Unlovely haunts for children's dreams.
Untamed world of pristine clean
Your heritage that might have been.
You too must (all creatures do)
Come to the road called "Passing Through".
Today a child, tomorrow grown,
This earth, small sphere, will be your own.
Think well what kind of habitation
You'll endow the next generation --
That man and fin and fur and feather
May breathe a cleaner air together.

Elsie Hewitt

THE CONDOR -

According to an item in Catherine Traill Naturalists' newsletter for October 1987, the last condor in the wild has been captured and placed in 'protective custody' to be used, along with others, in Los Angeles and San Diego zoos, to promote breeding and hopefully save these condors from extinction.

Earlier this year a team of wildlife experts in California set out to trap the last two condors still in the wild. Scientist Peter Bloom spent days waiting patiently in a one-metre-deep hole on the southwestern edge of the San Joaquin Valley, hoping to catch the birds. . . He knelt from dawn to dusk in the straw-covered pit; a freshly killed calf carcass lay in front of a narrow slit letting in light. Should a condor light and feed close enough to the opening, Bloom would slide his hands through the slit and grab the bird by the legs, pull it into the pit and hold it until other team members scrambled in from nearby observation points.

Originally, plans called for trapping only some of the birds to be used in captive breeding programs, leaving others in nature as guide birds for the captive born condors. Six birds disappeared two years ago and only one carcass was found, so the officials decided to trap the three remaining birds (all males) and add them to the 25 at the two zoos to increase the gene pool for breeding.

The first captive breeding is hoped-for in 1988 and the first release expected between 1990 and 1991.

(Abstracted from 'CatNat' newsletter #122, Sept. 87, precis of an article from Los Angeles Times).

THE LAND OF MOSS

by

J. S. Erskine.

(from Journal of Education, June 1957 - pp.22-27 - and abstracted from the BLOMIDON NATURALIST'S SOCIETY Newsletter, Volume 13, No. 2., June 1986).

At high tide on a calm day the Tusket Islands look like a holiday sea, for the swell of the Atlantic and the Gulf of Maine is broken into a myriad of minor swells fanning out from the channels between the islands, a disconcerting unevenness but no-wise unpleasant. It is surprising how even the last remnants of the flow carry one's skiff out of its course, so that it is necessary to hug the shore of the islands. Then, here and there, the waves disappear, the sea becomes smooth and grey for acres together, and the drops from one's oar-blades scurry glistening across the surface like rain on a duck's back. Vortices spin and spiral down, and about the rim of the great eddy, where the rising water is edged by waves, a screaming cloud of graceful terns wheel on angled wings and hover and dive for fish brought up by the current, and then, transformed suddenly from arrowy sprites of the sea into purposeful house-wives, they flap heavily away towards the land, a sprat gleaming in each crimson beak.

The Bald Tuskets stretch out towards the ocean, a line of treeless small islands, the last survivors of hundreds of glacial drumlins which once filled the sea for twenty miles from the shore. Each is a smooth slope tilted upwards towards the sea and crowned with a lush knee-deep growth of goldenrod or sea-lovage or rasp-berries and is edged with a steep drab bluff of clay and rock-flour and embedded blocks of granite above a steep white beach of rolled pebbles. On these tops the terns nest, and a few belated young ones, full-grown but not yet air-worthy, grate threateningly before they take to heavy wing, only to crash into the grass at the first gust of wind. Here are the fork-tailed petrel-chicks, also full-grown, yet lingering in their musky burrows when their parents have already deserted them. Even on these barren tops now and then one meets unnatural conical holes in the smooth surface of the ground, the winter wells of hardy fishermen who long ago used these barren islands as bases for their winter fishing. But today only the gulls laugh mirthlessly overhead, and in the tide-rip beyond Outer Bald the tuna boats hang in long line at their sport, and the black ranks of the eider ducks ride the outer surf.

The tide turns. The great wave that six hours before spilled into Fundy and rose fifty feet in its upper estuaries, now rushes out again. The Tittle between Big Tusket Island and Harris Island rages like a river in flood, and powerful motorboats swing uneasily through the great riffles that tell of submerged boulders, and at times hang quivering before gathering force to creep out into the bay. Where there had been only water an hour before, a flat green saltmarsh emerges, and herons, grey as the fog, flap heavy-winged to the shallows to stalk in the retreating tide. Whitewinged willet come screaming down the Tittle, and a host of tiny sandpipers wheel in to scav-enge the changing shore.

Now, hour by hour, the mossmen set out to sea. There are many grades of them acc-ording to their equipment. The most prosperous have motorboats which can master even these channels where the tide may run at eight knots, amd such may spread and turn their moss until a few minutes before the falling water brings the boulders within reach of their rakes, and then they can choose their island and spread their dories among the emerging rocks. But those who work only with dories must make use of the tide, going out on the ebb, dodging the swiftest rips and channels, must find an unraked island, work through low water and return on the flow to spread their boatload of moss to drain and dry. Poorest of all, the tramps of the sea wander in home-made boats among the islands, ill-equipped, scratching the moss with their bare hands, depending upon others for food and rescue in case of fog or storm, wring-ing a bare living from a dangerous shore.

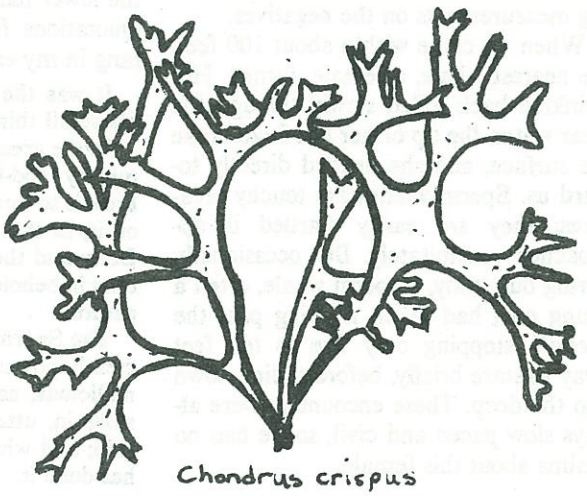
The tide runs out, and now the flat, green with eel-grass, is edged with brown boulders and the umber and bronze of float-ing rockweed. Here the least sandpipers gather, riding the bubble-floated fronds,

pecking the tiny snails that infest the weed, flipping into the air when the seventh wave, too high for the weed to master, curls to break over them. They talk eternally to each other in thin shuddering voices, and their backs now seem grey against the bronze weed as on shore they were brown against the sand. Long-billed dowitcher probe the wrack on the beach, and gay turnstones sweep up and drop into invisibility among the rounded pebbles.

The tide runs out. Among the Bald Tuskets one has the impression of standing in open sea, yet from one side the water is rushing grey between the islands, and the roar of a rapid is mingled with the scream of innumerable grinding stones. Terns shriek and grate overhead, still agitated about their empty nests. In the tide-rip a guillemot, fat and black with a white patch in each wing, is playing with the current, swimming at full speed upstream yet being swept backward faster than a man can walk, and when he reaches the bottom, he flies up to the top to do the same again. Now he tires of the game and dives to bring up a fish, or turns on his side, preens his feathers and bathes himself in a scurry of short wings. Along the shore the kelp begins to show, brown frills that lift for a moment like the backfins of sea-serpents, gristly stipes arching above the water, leisurely and yet convulsed like the arms of a sleeper stirring in an uneasy dream.

The rockweed is now far up the shore. One eases one's skiff down from the scoured white pebbles of the upper beach, over the first boulders where the green and brown weed is parted from the crown like the hair on the head of an emerging diver, over the tough slippery rockweed and pools gleaming with the waving green fronds of sea-lettuce, to where the moss is now emerging from the water in which brown strops of kelp roll and writhe and the serpentine whips of Chorda wind and untwine in the depths. The empty sea has come to life with the thrum of motors, and every shore seems suddenly to be edged with skiffs and dories, yellow and green and brown, and with mossmen in drab waders, tartan shirts and blue jeans, raking away diligently at this strange bounty of the sea.

The tide turns without a pause for a rest, and where a moment ago that rock was being bared, now it is sinking again. The mossmen scratch on. Soon they are in their boats, plunging their long-handled rakes. But the tide is on the run, rising at two feet an hour, roaring back through the rip to fill the yawning gap of Fundy. The rakes come in and the oars go out, and with the short chopping stroke of the deep sea the mossmen follow the rising tide towards their homes.



Chondrus crispus

Call Me Gentle

Contrary to their reputation for brutality, sperm whales observed in the Galápagos are timid and sociable creatures

by Hal Whitehead

The whales were enjoying a restful, social interlude. They lay at the sea surface, closely packed and parallel to one another, looking much like twelve floating tree trunks stripped of their branches. Once every day or two, sperm whales cease their usual commuting between the surface, where they breathe, and the 1,500-foot depths that are home to the large squid on which they feed. They then slow down, gradually glide toward one another, and form still, silent, and raftlike subgroups.

Ten of the twelve whales that we were approaching, adult females and immatures (whose sex cannot be determined), were roughly the size of our 33-foot-long sloop, the *Elendil,* but one, a mature male, was much larger, and the twelfth, another mature male, was vast. His gnarled and wrinkled back dwarfed the surrounding females much as an ancient oak overshadows saplings. We could hardly believe that the males and females were adults of the same species.

We were in the middle of a 2½-month-long study of the social organization of the sperm whales around the Galápagos Islands. The details of the interactions between large, adult, male sperm whales and the groups in which the females seem to travel were not known, and had become a source of controversy for scientists who try to examine sperm whale populations and "manage" their stocks. Several questions were unanswered: What size are the males that do the mating? Do they really form the "harems" of popular literature? Is there cooperation between males? And how long does their overlordship of a group last? Hours, months, years?

Tom Arnbom, our Swedish helmsman, carefully maneuvered the *Elendil* near the whales, to position it like a thirteenth member of their subgroup. We call the temporary assemblages of whales that form, separate, and re-form in different combinations at the surface "subgroups" to distinguish them from the longer-lasting groups of whales in constant association with each other over periods of at least several days and probably, in the case of females, many years. From my perch in a bosun's chair halfway up the mast, I watched as we slowly drifted closer and closer to the whales. Bracing my feet against the *Elendil*'s cross-trees, I raised my camera. My objective was to take photographs that would show the whales lying parallel to the horizon. If the pictures were properly taken, we would later be able to estimate the lengths of the whales by making measurements on the negatives.

When we came within about 100 feet, the nearest whale, a female, turned. Her wrinkled back rolled slowly through the clear water, the tip of her left fluke broke the surface, and she headed directly toward us. Sperm whales are touchy creatures; they are easily startled if approached precipitately. But occasionally during our study, a sperm whale, often a young one, had taken a swing past the *Elendil,* stopping only five to ten feet away to stare briefly, before sliding down into the deep. These encounters were always slow paced and civil, so we had no qualms about this female.

Then, following the lead of the plucky female, the remaining eleven whales turned toward the *Elendil,* and began a steady approach. Seeing a row of the shiny, dark, bulbous heads of the sperm whales converge on our boat from about thirty feet away was impressive but not particularly disturbing—we had seen it several times during our studies. I watched the lead female glide slowly, and with no apparent movement of her flukes, a few yards beneath the *Elendil*'s stern. I then looked back at the next whale in line—the largest male. His broad, flat forehead was aimed toward the *Elendil.* His oil-filled "case" (the forehead above and in front of the skull), which forms the front third of a large male sperm whale, filled my vision. It was deeply scarred, probably from battles with other males. A chord of dread struck me as I noticed that the lower half of his forehead was white. Quotations from Melville's *Moby Dick* rang in my ears:

> It was the whiteness of the whale that above all things appalled me . . . .
>
> In the great Sperm Whale, this high and mighty god-like dignity inherent in the brow is so immensely amplified that gazing on it, in that full front view, you feel the Deity and the dread powers more forcibly than in beholding any other object in living nature. . . .
>
> The Sperm Whale is in some cases sufficiently powerful, knowing, and judiciously malicious, as with direct aforethought to stove in, utterly destroy, and sink a large ship; and what is more, the Sperm Whale has done it.

Behind the whales converging on the *Elendil*, but within our sight, was the island of Isabela, the largest in the Galápagos group. Descending from its cloud-shrouded summit lay Punta Essex, a dark lava flow. An American whaleship also named *Essex* had been rammed not far from our position by a large male sperm whale in 1816 and subsequently sank. The Punta Essex was thus a grim reminder of the danger of male sperm whales. But the male approaching us submerged sufficiently to pass about three feet below the *Elendil*'s keel. For a few interminable seconds the enormous animal seemed to flow beneath us, and then was past with no harm done.

This incident and others have dispelled in us Melville's image of the sperm whale as a vicious and malicious beast. In creating the character of Moby Dick, Melville ignored the opinion of his major source of scientific information about whales, the English whaleship surgeon Thomas Beale. Writing in 1839, Beale considered the sperm whale to be a "most timid and inoffensive animal." Incidents like the sinking of the *Essex* were rare.

During the weeks that we spent with sperm whales, the subjects of our research showed themselves to be gentle animals. They are usually shy but occasionally curious in the presence of humans and their boats. They show no shyness, however, with each other, displaying very sociable behavior. Although adjacent sperm whales probably separate several hundred feet when feeding at depth, off the Galápagos they often appeared to form a line several miles long, with the whales swimming parallel to, and roughly abreast of, one another. These ranks swept through the deep ocean at a steady rate of two and one-half to three knots (about three to four miles) per hour, for twenty-four hours or more. Individuals surfaced about every forty minutes to breathe, but the formations advanced relentlessly.

When foraging about 1,500 feet beneath the surface, each individual made the characteristic, regular (about once per second) click of the sperm whale, which is almost certainly a form of echolocation. The jumble of clicks of a group of hunting sperm whales, which together sound like radio static, foretells approaching death for many squid, the whales' preferred food. But for us on board the *Elendil*, the clicks were an important key to the whales' position. We listened regularly to a directional hydrophone (an underwater microphone) and adjusted the *Elendil*'s course and speed depending on the direction and volume of the clicks. With our hydrophone we could tell the bearing of a clicking sperm whale from about five miles away, and thus were able to track groups of whales for days at a time.

Between forty-minute feeding bouts, the sperm whales remained at the surface breathing for about eight minutes. During these periods the whales seemed irresistibly drawn to one another; if two whales surfaced within a thousand feet, they usually sidled up to one another for companionship during their few minutes at the surface. The small calves, which did not dive deeply, were particularly active in joining the adults.

But it was during their social times, when subgroups of five to forty whales congregated at the surface for an hour or more, that the significance of their communal relationships was most apparent. Although from the deck of our boat the whales resembled a raft of inanimate logs, when seen beneath the surface they were revealed as extraordinarily flexible, tactile, and tender animals. Snorkeling behind the *Elendil*, we saw them turn gracefully to watch us, gently stroke one another with their small flippers, or nuzzle a smooth, bulbous brow against a vast wrinkled flank. Our underwater observations of whales were generally brief; we are not practiced divers, and there was always much to be done back on board the *Elendil*—data sheets to fill in, photographs to take, food to cook, and the myriad tasks of life at sea on a small boat to squeeze in between the research and the few hours of rest each of us was allotted every day.

Three of our crew of five (myself and two others), as well as the *Elendil* itself, had been involved in the World Wildlife Fund Indian Ocean Sperm Whale Study between 1981 and 1984. During that project we had developed methods of finding, tracking, and studying sperm whales. When it ended we wondered if there might not be a better location for the research than Sri Lanka, our major study area in the Indian Ocean. Sri Lanka has many advantages but it is extremely hot, is swept by monsoons that make research almost impossible for half the year, and is sadly becoming embroiled in escalating racial violence. But its most significant disadvantage is a lack of large male sperm whales—during our months there, we had seen only three large adult males, and then only briefly. At that rate it would take years to obtain any understanding of the crucial interactions between the large males and the groups of females.

We examined maps of where the nineteenth-century Yankee whalers had made their kills, and also looked at charts of ocean weather conditions. The ocean area that the whalers called the Galápagos Grounds immediately stood out in terms of the abundance of sperm whales there and its prevalent calm, relatively cool weather. The British had discovered the Galápagos Grounds during their late eighteenth century round-the-world explorations. Capt. James Colnett of the British Royal Navy, who visited the Galápagos in 1793 and 1794, wrote: "Every one was charmed with the place." The crew "saw spermaceti whales in great numbers," and Captain Colnett recommended the Galápagos Grounds to British whalers. His advice was followed, particularly by the stubby whaleships sailing from New Bedford, Nantucket, and other New England ports. During the first part of the nineteenth century, the Galápagos formed one of the Yankees' favorite whaling grounds. At that time, the whalers provided much of the Western world's oil, and the whales were remorselessly exploited. After 1850, presumably because sperm whale populations had been depleted, the whalers usually found the Galápagos "dry cruising."

Mercifully, the Galápagos seem to have escaped the attention of the ultraefficient, mechanized whalers of the twentieth century; consequently there is little recent information on the Galápagos Grounds. Some competent authorities warned us that we would be wasting our time cruising off the islands, that we would find few whales, and that even those would be far offshore. Other advisers were more optimistic. The only way to find out, of course, was to go there and see for ourselves. So in February 1985, we set sail from our temporary berth in France, bringing the *Elendil* across the Atlantic Ocean and the Caribbean Sea, and through the Panama Canal to reach the Galápagos. There, with excellent cooperation from the Charles Darwin Research Station in the Galápagos, we found conditions almost ideal for our research. The weather was placid, and considering that the equator runs right through our study area, the temperature was remarkably

cool. Female sperm whales were there in large groups that were easy to track acoustically. And most important, large male sperm whales were often present. In 1798 Captain Colnett had written: "The situation I recommend to all cruizers, is between the South end of Narborough Island [now generally called Fernandina] and the Rock Redondo [Redonda]."

This region, where the underwater Cromwell Current, running eastward directly below the equator, is forced to the surface by the islands of Fernandina and Isabela, became the core area of our research. Groups of sperm whales would sometimes stray about a hundred miles to the south or west, but they were most numerous between Fernandina and Redonda. These waters provided a steady stream of surprises. Thick fogs, reminiscent of the Grand Banks of Newfoundland, alternated with a burning equatorial sun. We saw such polar animals as penguins and fur seals a few hours sail from clear, warm waters that were the home of flying fish and tropic birds.

For thirty nights we listened to the clicks of the sperm whales through our directional hydrophone, and for thirty days we watched their slanted exhalations. Much of what we now know about the social interactions of sperm whales comes from the analysis and identification of photographs, tapes, and other data we collected. But one incident that took place while we were still at sea led to immediate insights.

Near the end of our study, the group of whales we were following strayed more than ninety miles out to sea west of the islands. It was midmorning, and the whales, arranged in an east–west rank several miles long, were clicking noisily and moving steadily southward. But they suddenly became silent, and our crew member Amelia Brooks, whose turn it was to go up the mast in the bosun's chair, spotted them clumped together in two large subgroups a few thousand feet away. This was an unexpected and dramatic change in behavior. Sperm whales usually shift gradually from the hunting/spread-out/clicking phase of their behavior to the social/congregated/silent phase during an hour or two, with fewer and fewer clicks being heard and the subgroups becoming steadily larger. The sudden silence and the coalescing of subgroups was most unusual, but its cause was soon apparent. "Orcas," Amelia shouted from her perch up the mast.

Some powerful twenty-foot-long orcas, often called killer whales and probably the only serious predator that sperm whales face, were circling the huddled sperms. For three hours we watched the orcas pursue the sperms. The twenty-five or so sperm whales remained packed closely together and tried to keep themselves facing directly toward the nearest orcas. They began clicking rapidly and with great intensity as the orcas got closer. The sperm whale's head, with its powerful jaws and sophisticated acoustic system, is probably the animal's least vulnerable part. Perhaps realizing this, the orcas, in subgroups of two to five, darted around the flank of the massed sperm whales to attack them from behind. The larger sperm whales turned, trying to keep the orcas in front of them. We watched the two species maneuvering like chess pieces. There was one small sperm whale calf. Like a chess player's king, it was kept in the protected center of their group, presumably the safest place. By contrast, the only large male sperm whale with the group usually hung behind. Was he guarding their vulnerable rear or just tagging along? The two large male orcas also hung back, taking little part in the action. Most of the interaction at close quarters between the two species took place underwater. After the skirmishing ended, we saw some fresh open wounds on several sperm whales, but since none were particularly deep, it seemed unlikely that any of the sperms were badly injured. The whole fray appeared to constitute a kind of test in which the orcas threatened the sperms to see if there were any particularly vulnerable ones that could then be assaulted in force.

The end of the incident was most interesting. The sperm whales began turning in tight circles, the whole mass revolving every two to three minutes. Perhaps the orcas now realized the futility of their attack, for they began to move off to the west. When the orcas were about 1,500 feet away, the sperm whales made their move. They fell totally silent and started traveling fast to the east, remaining in their compact subgroup. For six hours they maintained a speed of five and a half knots (about six to seven miles) per hour, and we followed after them. With the exception of the one large male, which fell behind for a while, the sperm whales remained in a tightly packed group throughout the entire flight. That was an unparalleled event in our experience with sperm whales. They were also uncharacteristically silent, again with the exception of the big male, which broke the silence briefly with his slow, distinctive click.

The attack and subsequent flight were not only instructive in showing how the top oceanic predator (the orca) attacks what is probably its most formidable prey, but also contained some important hints about the relationship between the large male sperm whale and the group to which he was attached. The male made a considerable effort to stay with the group, although he did not seem to be a fully integrated member or, in any sense, to be leading it. The large sperm whale also broke the silence of the other sperm whales, thereby perhaps disclosing their presence to the predatory orcas.

When night came, the silent sperm whales continued eastward, but without any clicks for us to hear, our directional hydrophone was useless, and we could only continue to sail eastward, hoping that the whales would maintain their course. In the morning, eighty-five miles east of the site of the orca attack, and close to the shore of Isabela Island, we found sperm whales—a large male and some females. But were they the same whales?

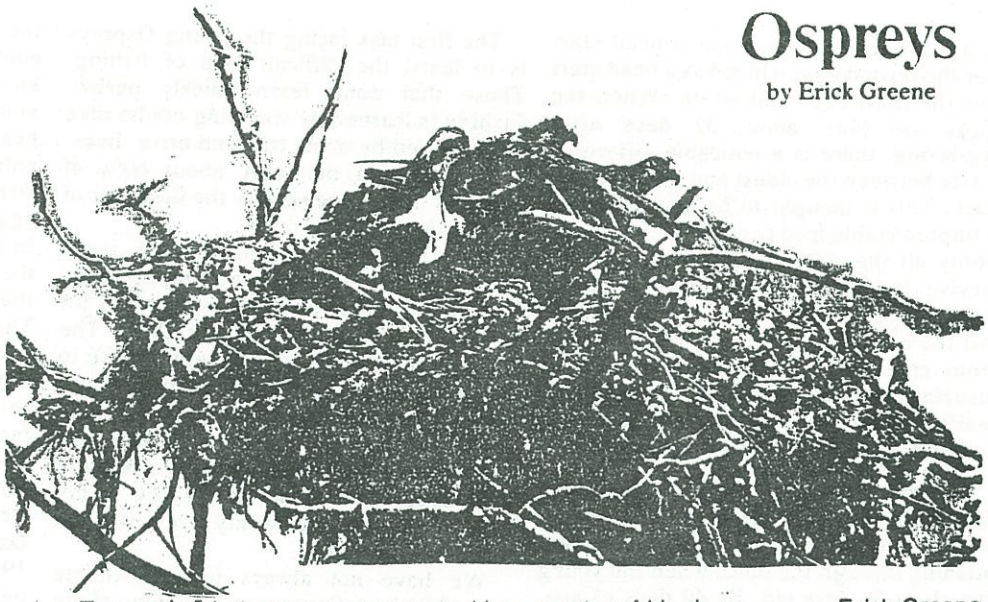
Since returning from the Galápagos, crew member Tom Arnbom has been poring over the many hundreds of photographs we took in an effort to identify individual whales. Using these pictures he has identified 214 females and immatures. We clustered these whales into thirteen "schools," which the *Elendil* had followed for a few days and then lost, to be picked up perhaps a week or a month later. Tom has also identified seven adult males that stayed with a particular school of females for a few hours but, exhibiting only transient fidelity, were found a few days later attending other females. And the fugitives from the orca attack? The male that we encountered the morning after the attack was indeed the same one that had taken the rear guard against the orcas, but during the night he had parted from the females in the subgroup and had taken up with a different school.

Buried in our photographs, tapes, and data sheets are more insights into the social system of sperm whales. Analysis of the material is slow, but fascinating, work. At the end lies our personal reward. We plan to return to the Galápagos Grounds in December of this year, to sail and swim again with the gentle sperm whale.

Hal Whitehead is a sailor with a Ph.D. in zoology from Cambridge University in England. He is now in the Biology Department at Dalhousie University in Nova Scotia, Canada.

Ospreys

by Erick Greene



Two adult ospreys crowd the nest with two 45 day old chicks. Erick Greene

It was a strange place to be bird watching. From my observation point on the end of a pier I had a good view of busy Halifax harbour. Boats of all sizes, from Cape Islanders to container ships, went about their work. A large tanker laden with Hondas towered over me, and was nudged to its dock by tugs. Its cargo was destined for the vast parking lot which stretched out of sight behind me. The oil refinery to my right belched out its bitter-sweet fumes. A continuous stream of helicopters and jets roared overhead from the Canadian Forces Base Shearwater behind me.

Yet, if you carefully search high above the commotion, you are sure to see a large bird oblivious to the hustle and bustle of the harbour. The bird hovers high overhead, gazing intently into the waters below. Suddenly the wings are folded and the bird plummets out of the sky. An instant before it plunges into the water, the bird shoots its feet downwards. The bird disappears in a plume of spray, but a few seconds later, more often than not, it lifts off the water grasping a wiggling fish in its powerful claws.

This spectaculr bird is an Osprey, or Fish Hawk. We in Nova Scotia are fortunate that these magnificent birds are a common sight, especially along the Eastern, Southern, and Northumberland shores. In fact, many Nova Scotians take Ospreys for granted, without realizing that in many other places in the world Ospreys are very scarce. It helps to put this into perspective by considering that there are more Ospreys nesting on McNab's and Lawlor's Islands at the mouth of Halifax harbour than there are in the entire British Isles! In Scotland, Osprey nests are surrounded with barbed wire to deter unscrupulous people from taking the eggs Wardens are stationed by the nests throughout the breeding season. One Osprey nest even has a tourist shop associated with it, where one can buy Osprey T-shirts, teacups, and other assorted Osprey knick-knack!

Although Ospreys are related to eagles and hawks, they do not have any close cousins. For this reason biologists place them in a separate taxonomic family by themselves. Ospreys are choclately-brown above on the wings, back, and tail, creamy-white below. A distinctive brown stripe runs across the head through the fierce yellow eye. A spotted "necklace" adorns the breast. In females this necklace tends to be wider and more conspicuous than in the males. Womens libbers will be happy to know that the female Osprey is a third larger in size than the male (this phenomenon is true in general for almost all birds of prey). In flight Ospreys hold their wings with a bend at the "elbow". This is a good field mark for distinguishing Bald Eagles from Ospreys at a distance: Bald Eagles hold their wings flat while Ospreys have a noticable crook in their wings.

Ospreys are well equiped for their fishing livelihood. Their keen eyes are far more sensitive than ours, allowing them to detect fish in the water from great heights. They have long powerful legs, and feet armed with inch-long talons. The pads of their feet are covered with hundreds of sharp spines. Perfect for grasping slippery fish!

Ospreys eat a wide variety of fish. Gaspereau and smelt are heavily preyed upon during their spawning runs in April and May. Pollock, cod, tomcod, and winter flounder are fished later in the summer in the coastal estuaries. On inland lakes and rivers yellow perch and suckers are favorites.

Ospreys return to Nova Scotia from their wintering grounds in South America and the Carribean by mid-April. They usually mate for life, and return to the same nesting area year after year. Early in the breeding season the reunited Osprey pair performs an exciting aerial courtship display. The male flies high over the nest with a fish in his talons, emitting high-pitched slurred whistles. He then performs a series of spectacular dives over the female on the nest. Eventually he flies down to the nest and presents the fish to the female. These displays culminate in mating on the nest.

There are chores to attend to before the Ospreys lay their eggs. The large stick nest, which has usually taken a beating during the winter gales, is in need of renovating. Branches, sticks and seaweed are brought in to refurbish the nest. A patriotic pair of Ospreys near Halifax lined their nest with a Canadian flag. A more practical pair I know of lined their nest with a pair of diapers! Osprey nests are usually built in tree tops near fishing areas. Not being fussy, however, Ospreys will readily build nests on artificial structures such as the cross bars of power poles (see N.S. Conservation, Volume 4 (#3) 1980, for an account of relocating Osprey nests from power poles). In areas where Ospreys are common, they can be attracted to breed on old wagon wheels mounted on the top of a tall upright post.

In early May, the female Osprey lays up to four buffy brown eggs, covered with cinnamon splotches. Unlike chickens and ducks which don't start incubating their eggs until all are laid, Ospreys begin incubating as soon as the first egg is laid.

As a result, the first egg has a head start over the second egg, which has a head start over the third egg, and so on. When the chicks are born about 32 days after egg-laying, there is a noticable difference in size between the oldest and the youngest chick. This is thought to be an adaptation to unpredictable food resources. In years of plenty all the chicks get enough fish to survive. In lean years, however, the oldest and strongest chick gets most of the food, and the others will likely starve. This may seem cruel, but it is nature's way of ensuring that at least one strong and healthy chick has a good chance of fledging, even in difficult years.

Osprey chicks grow quickly on a steady diet of fish. At birth the chicks are covered with a fine grey down. Feathers begin pushing through the down when the young are about 28 days old. By 40 days of age, the Osprey chicks are fully feathered, and closely resemble their parents. At this stage, the chicks spend much time flapping their wings and developing their flight muscles. By early August the young Ospreys have made their first flights, although they often return to the nest.

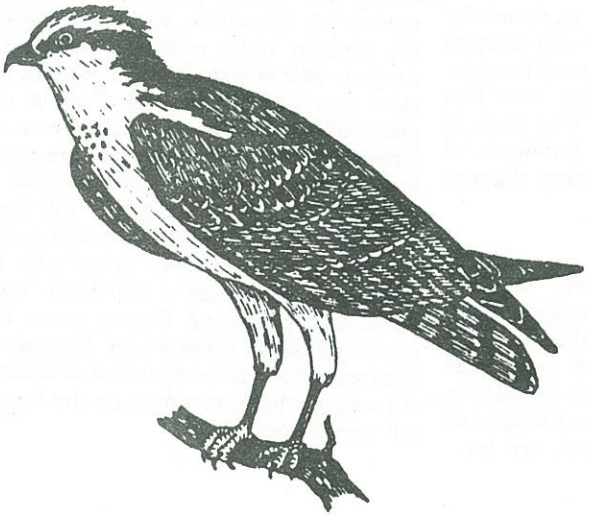
The first task facing the young Ospreys is to learn the difficult skill of fishing. Those that don't learn quickly perish. Fishing is learned by watching adults dive for fish, and by many trial and error dives. It is estimated that only about 60% of Ospreys that fledge survive the first year of life on their own.

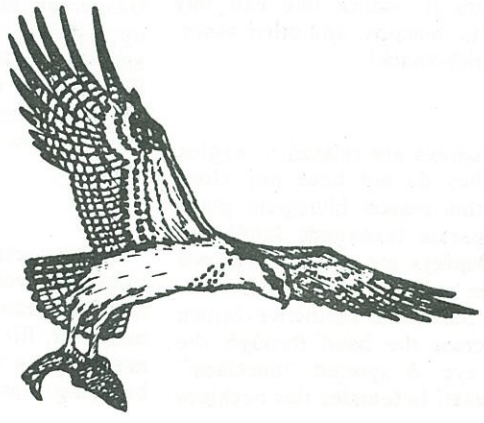
With the onset of fall, Ospreys make their way south to their wintering grounds. The young birds tend to remain south for two years honing their fishing skills. The three-year old birds tend to return close to the areas where they were hatched, and a suitable nesting site is chosen and a mate sought. Breeding starts between the ages of three and five years. Ospreys are quite long lived: a ten-year old Osprey is not unusual, and a bird twenty five years old has been recorded.

We have not always been fortunate enough to have Ospreys so common along our coast. Twenty years ago, an Osprey in Nova Scotia was a rare sight indeed! Ospreys, like many other predatory and fish-eating birds in North America (such as Bald Eagles, Peregrine Falcons, and Pelicans) experienced drastic population declines starting in the late 1940's. A common symptom among these birds was that the eggshells were getting so thin that they could not support the weight of an incubating adult. It was discovered that the cause of this eggshell-thinning was contamination by a group of pesticides known as organochlorines (DDT is the most notorious of this group of pesticides). In healthy birds, an enzyme called carbonic anhydrase takes calcium from the blood stream and deposits it on the developing egg, resulting in a normal, sturdy eggshell. In pesticide-contaminated birds, however, the DDT interferes with this enzyme, so that little calcium is deposited on the egg. The result is an easily breakable egg.

Many biologists in the 1960's feared that Ospreys in North America were on the road to extinction. The severity of the plight facing the Osprey is well illustrated by the decline of the Gardiner's Islands Osprey colony. Gardiner's Island, off Long Island, New York, was among the most famous Osprey breeding areas in the world. In 1945, Gardiner's Island supported over 300 pairs of Ospreys. Over 600 chicks were raised in the course of that summer. A mere 20 years later there were only 55 active Osprey nests, and only 4 chicks were fledged from those nests.

Fortunately we do not have to write an epitaph to the Osprey. When it was realized that DDT was implicated in eggshell thinning, its use was severly restricted in North America. Over the last decade, DDT has dissapated from aquatic and estuarine ecosystems. As DDT levels in Ospreys diminished, they once again laid eggs with thicker shells. Reproductive success has improved, and slowly Ospreys are returning to their old haunts in former numbers. Nova Scotia is a lucky province since it can boast of such a healthy Osprey population.





by ERICK GREENE
Abstracted from CONSERVATION, Vol.6., No. 2., June, 1982. from Erick's research on Osprey in Nova Scotia.

At Home With The Harrier

By Matthew B. Saunders

The Northern Harrier or Marsh Hawk is a familiar sight on many of Nova Scotia's wetlands. During the summer of 1985 I had the very rewarding opportunity to carry out research on a population of these remarkable birds. Much of my work involved close-range daily observation of nests from a blind, which allowed me to discover a more intimate world than can be seen through binoculars. Despite aggressive attempts by certain birds to redirect my interest in their nests, it was easy to become attached to my aggressors and their families.

Harriers spend much of their time on the wing, soaring low over fields, ditches, and cattail-filled impoundments in search of food. The best time for spotting harriers is from early May to mid-August when nest construction, breeding, and rearing of the young occurs.

A prominent white rump patch makes the Northern Harrier readily distinguishable from most other native hawks—with the possible exception of the stockier Rough-Legged Hawk. This patch is visible even to the naked eye from a considerable distance. The female and immature harriers are very similar in appearance. Both have dark brown backs, barred underwings and white rump patches - but the juveniles sport a rusty breast rather than the streaked breast of the adult female. Adult male harriers are strikingly different in appearance from either the juveniles or females of the species. Males are pale grey, have blackened wingtips, and lack the heavy streaks and bars characteristic of the female's breast and underwings. Close observation reveals fine, reddish streaks on the thighs of the male. Besides these obvious color differences, the males are somewhat smaller than the females.

Harriers are one of only a few ground-nesting species of raptors and are therefore vulnerable to nest losses due to predation as well as through agricultural and recreational activities. Nests are uncomplicated in structure, made simply of loosely piled grasses or reeds and are generally located in wet, densely vegetated sites. By building in such areas the birds take advantage of natural protection, as the vegetation provides camouflage and the water serves to deter all but the most dedicated predators.

Occasionally nests are constructed in pastures or fields where they may be trampled or accidentally destroyed by farming activity such as the draining of land, mowing, or spraying. These risks, added to the danger of terrestrial predators chancing upon the nest, gives Northern Harriers what is reputedly one of the highest rates of nesting mortality among many species of hawks.

Of five active nests which I studied, two were ransacked before the chicks had fledged. One of these nests suffered the loss of the mother as well as six eggs that were very close to hatching. The prime suspect was a coyote.

Clutches generally consist of three to five pale blue or chalky white eggs. Occasionally clutches may have as few as one or as many as eight eggs. Egg-laying and hatching are asynchronous, resulting in an age difference between the hatchlings. The youngest chicks often have a higher mortality rate than older siblings. This is primarily due to competition for food and is most common when food is limited.

Northern Harriers feed on a wide variety of prey. Although meadow voles are their staple food, the diet also includes small birds such as sparrows, bobolinks and red-winged blackbirds, as well as frogs and snakes.

While hunting, Harriers typically soar very low above the terrain, often doubling back over promising areas. This low flight pattern makes good use of the element of surprise in capturing prey. A keen sense of hearing as well as sharp vision makes this method of hunting profitable.

The male provides most of the food while the female incubates her eggs or broods newly hatched chicks. Food items are transferred to the female in a spectacular, mid-flight event known as food pass. When the male returns from a successful hunt he glides low over the nest and issues a quiet chortle to inform his mate of his success. The female then flies from the nest and follows slightly below and behind the circling male. In this position she is able to receive the item as the male tosses it - by flipping upside-down and catching it in her talons. Then the female usually returns to the nest to feed the chicks. With adequate provisioning the offspring are able to fly 30 days after hatching.

The various activities of the breeding pair often allow a patient observer to locate the nest. Once the chicks hatch, food relays are quite frequent and are useful indicators. Occasional excursions by the female to collect nesting material or to remove debris (i.e., eggshells) from the nest may also give away the site. In each of these cases she generally returns to the nest.

When a nest is approached too closely the birds may respond with a range of behaviours, ranging from diving threateningly at the intruder to simply retreating until the disruption passes. Once a nest has been pinpointed it is best to hold subsequent watches from a distance, to increase the chances of nesting success. If the nest happens to be in a potentially hazardous area such as a hay field or pasture, placing several fence posts or a simple fence around it will prevent it from being destroyed, and protect this unique member of the marsh community.

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Matt Saunders, an Honors Biology graduate of Mount Allison University, studied Northern Harriers on the Tantramar Marsh from May through August 1985 under the supervision of Gay Hansen. Her research is part of a long-term study of the Tantramar population, said to be the second largest breeding population in North America.

Abstract from
"CONSERVATION"

Summer issue 1986

CONSERVATION REPORT CARD ON THE PROVINCES

In 1987 The Canadian Nature Federation issued its second biennial CONSERVATION REPORT CARD on environmental protection in the provinces. Five categories are rated from "A" (high) to "F" (low). Data was supplied by the provinces, Environment Canada, the Canadian Forestry Service and Statistics Canada. Ontario again came in first while Nova Scotia made a modest improvement.

CNF Executive Director, Paul Griss, cautions that the report card is a comparative evaluation and does not attempt to set an ideal of performance. A high grade does not necessarily mean that a province is doing well, it is just doing better than the others. "We are particularly concerned, though that no province seems to be a leader in the area of timber management" he said. Several provinces are considering legislation and programs that could enhance their scores on future report cards.

Province	Wildlife Conservation	Timber Management	Protected Areas	Environmental Assessment	Pollution Control	Grade Average	Percentage	Rank 1987	Rank in Previous Report Car 1985
Alberta	D	C	D-	C	D	D+	58.4	Third	Second
British Columbia	B	D	F	C	D	D+	58.0	Fourth	Fourth (tied)
Manitoba	B	F	D	F	F	D-	50.0	Tenth	Tenth
New Brunswick	C	F	C-	F	B	D	56.4	Fifth	Fourth (tied)
Newfoundland	F	F	D	A	F	D	53.0	Sixth (tied)	Sixth
Nova Scotia	F	C	F	C	D	D	53.0	Sixth (tied)	Seventh
Ontario	C	C	B	A	C-	B-	71.4	First	First
Prince Edward Island	F	C	F	F	B-	D-	51.4	Ninth	Eighth
Quebec	F	F	F	A	D	D	53.0	Sixth (tied)	Ninth
Saskatchewan	F	D	C	A	D	C-	61.0	Second	Third