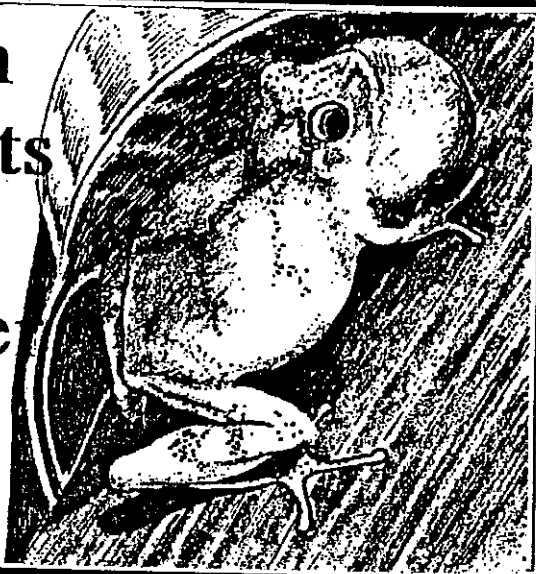


Blomidon Naturalists Society Newsletter

Vol. 19 No. 1
Spring 1992



BNS Spring Programme

MONDAY EVENING MEETINGS: All meetings will start at 7:30 p.m. and, unless otherwise indicated, will be held in Room 244 of the Beveridge Arts Centre at Acadia University. All lectures and field trips are open to the public and BNS members are encouraged to bring friends and neighbours. Any changes in the date, time or subject of meetings are announced on posters, the Kings Kable notice board and in *The Kentville Advertiser* and *The Hants Journal*.

NOTE THAT THE FRONT DOOR OF THE BEVERIDGE ARTS CENTRE MAY BE LOCKED IN MAY AND JUNE. THE BACK DOOR, UP THE HILL AND TO THE WEST, WILL BE UNLOCKED.

April 27 (Note date) -- Wildlife Stewardship in Nova Scotia
Peter MacDonald, Nova Scotia Department of Natural Resources, will outline the wildlife stewardship program now being developed by the Department. Stewardship is an exciting opportunity for the public, industry, and government to take an active role in wildlife conservation.

NOTE THE DATE FOR THE MAY MEETING. THE INFORMATION IN THE WINTER 1991 ISSUE OF THE NEWSLETTER WAS INCORRECT.

May 11 -- Birding the Australasian Region

Peter Payzant, who has been in many parts of the world during his twelve years of birding, will present the bird sights and sounds of Australasia, including Australia and Papua New Guinea.

June 15 -- Twenty Years of Wildlife Management

Tony Nette will tell us about the highlights of his twenty year career in wildlife management. Tony was born and raised in the Valley but spent the last twenty years studying wildlife in Alberta and the Yukon. He recently moved back to the Valley to work with the Nova Scotia Department of Natural Resources.

Spring - Summer Field Trips

Unless otherwise noted, all times given are for meeting at the Robie Tufts Nature Centre parking lot. Leaders' telephone numbers are included to allow those without access to local news to confirm trips.

Everyone, BNS member or not, is welcome on all field trips.

Wednesday, April 8, 7:30 p.m.

Owls! Owls! Owls! A repeat of Bernard Forsythe's (542-2427) very popular owl prowl. Wear waterproof footwear, dress warmly, and bring a flashlight. Trip will not be held if it is windy.

Sunday, April 26, 10:00 a.m.

Spring Birds, a Pond Hop with Jim Wolford (542-7650). An all day trip to various ponds in Kings County to observe migrating aquatic birds. Bring your lunch, waterproof footwear, and binoculars. A joint trip with the NSBS.

Monday, May 4, 9:45 p.m.

Stars, Planets and Meteors
Larry Bogan (678-0446). A late evening session under the stars to look at celestial objects with telescopes.

Dress very warmly and bring binoculars if you have them. At the Ridge-Stile Park, Wolfville, 10 p.m. (If it is cloudy on the 4th then we will try Tuesday the 5th -same time)

Friday, May 22, to

Sunday, May 24
Federation of Nova Scotia Naturalists

Annual General Meeting. Join naturalists from all over Nova Scotia in Annapolis Royal for an informative and entertaining weekend. Hosted by the Annapolis Field Naturalists. For further details, see the article and registration form in this *Newsletter*.

Saturday, May 30, 9:00 a.m.

Seven Falls. Spend the day walking the former road on the North Mountain from Melvern Square to Margaretsville, Annapolis County, with Dave and Cindy Johnson (538-7776). Bring a lunch and hiking shoes.

Saturday, June 6, 9:00 a.m.

Ferns and Mosses of New Minas and White Rock. John Pickwell again explores the New Minas Ridge - this time looking for interesting hybrids of native ferns. Wear rubber



boots. A hand lens would be useful.
To be finished by lunch.

Saturday, June 13, 9:00 a.m.

President's Field Trip. Since last year's trip was cancelled by the hazardous fire conditions in the woods, Tom Herman (678-0383) will try again to lead us through the Meander River Intervale, Brooklyn, Hants County. This unique habitat has many examples of plants, insects and birds characteristic of an Alleghenian intervale further south than Nova Scotia. Bring lunch.

Saturday, June 20, 9:00 a.m.

Folds and Fossils. The geology of the Lower and Upper Carboniferous Period (the Horton/Windsor rock formations). David Hope-Simpson (542-3906) will lead us through Avondale, Cheverie, and Rainy Cove, Hants County, to explore folds in the earth's crust and look for fossils. Bring rubber boots, for the shore section of the trip, and lunch.

July Trips - to be announced in the June *Newsletter*.

Saturday - Monday, August 1 - August 3

Bon Portage Island. P.C. Smith invites members to spend the long weekend with him at the Acadia Field Station. (For a description of what you might expect on Bon Portage, see Winter 1991 *Newsletter*.) Reservations for this trip should be made well in advance. Contact George Forsyth (542-7116).

TABLE OF CONTENTS

	page
SPRING AND SUMMER PROGRAM	
Evening Program	Cover
Field Trips.....	2
BNS NEWS AND BUSINESS	
Acknowledgements.....	4
BNS Newsletter News	5
Newsletter Submission Deadline.....	5
Errata -Winter 1991	6
BNS Conservation Committee.....	6
Special Areas of Kings County	7
Federation of Nova Scotia Nat.	7
Wildlife Strategy for NS Worship	9
FNSN Annual General Meeting	10
Dr.E.Chalmer Smith (1912-1992)	11
Volunteers Needed - Piping Plover	13
New Video on "Extinction".....	13
FIELD TRIP	
Eagles and Raptors - Jan 26, 1991	14 NATURAL HISTORY ARTICLES
The Woodside Bluebirds.....	15
Nova Scotia Bald Eagles in Mass.	17
From the South, Caracus Corresp.	18
POEM "The Light Comes Bright"	21
Mastodon Find	22
A Case for Encouraging Hardwoods.....	23
Winter Weather 1992.....	25
Beautiful Killer	26
Pesticides and Wildlife: Bird Kill	28
..Common Eider..Eastern Shore	30
"Froncosa" in the Cinnamon Fern	35
Lichen & Man: Use and Abuse	36
Malacologist	39
Bats in YOUR Belfry	41
Bluebird Nest Boxes.....	42
ADVERTISEMENTS	
Trivial Tidbits	49
Source of Natural History Info	49
Membership Application Blank.....	51

*Blomidon
Naturalists Society
Newsletter*

Volume 19 Number 1
Spring 1992

Editors: George Alliston
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Production: Larry Bogan
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The *Blomidon Naturalists Society Newsletter* is published quarterly, in January, March, June, and October, by the Blomidon Naturalists Society, P.O. Box 127, Wolfville, N.S. B0P 1X0. Printed in Canada. For subscription information, see "1991-1992 Membership Fees" on inside back cover. Send change of address notification to the above address. Membership expiry date is shown on address label. Second class postage pending. Return postage guaranteed.

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"The primary objective of the Society shall be to encourage and develop in its members an understanding and appreciation of nature. For the purpose of the Society, the word 'nature' will be interpreted broadly and shall include the rocks, plants, animals, water, air, and stars."

from the BNS constitution

The Blomidon Naturalists Society is a member of the Federation of Nova Scotia Naturalists, an Affiliated Member of the Canadian Nature Federation and a member of the Nova Scotia Trails Federation.

The Blomidon Naturalists Society is a registered charity. Receipts for income tax purposes will be issued for all donations.

BNS News and Business

Acknowledgements

Many thanks to:

Sherman Bleakney for presenting the incredible diversity of Kings County to us in both slides and words. It was a really informative and enjoyable evening;

Jim Wolford for leading our traditional wintering raptor field trip; all of the contributors to the *Newsletter*,

and all of the *Newsletter* production team.

We wish to extend special thanks to Jim Wolford for all the time and effort he has expended on "Trivial Tidbits" over the last few years and to Carol Bradley who has looked after the *Newsletter* advertising for the past year. In the future, Jim will still be keeping track of non-bird trivia and Carol will not be available to do the advertising after this issue. We'll miss their help.

The *BNS Newsletter* is printed

on 100
percent
recycled
paper.



BNS Newsletter News

As we indicated in our last issue, Larry Bogan, who does the layout of the *Newsletter*, and his wife, Alison, will be leaving for a sabbatical year in Victoria, B.C., in the summer of 1992. We are still looking for someone to fill in for Larry during his absence. You must have access to and experience with an IBM-compatible computer equipped with a mouse and an optical scanner. You also need access to a laser printer. The *Newsletter* text is first created in *WordStar 5.5*, then the page images are created using the desktop publishing software, *Publish It!* The scanned illustrations are added during the page creation step. Finally, the camera-ready copy is printed on a laser printer.

If you have the necessary expertise but not the necessary equipment, access to it may be able to be arranged. It is important that Larry's substitute be available by early June of this year so that he or she can lay out the next issue with Larry.

We also need someone to assume responsibility for the *Newsletter* advertising since Carol Bradley is no longer available. Carol has done a good job of establishing rapport with our regular advertisers and developing new contacts. The new person must follow up the regular contacts, lay out the ads, and contact more potential advertisers.

Jim Wolford will no longer be keeping track of bird "trivia" although he will continue to compile other trivia. If we are to continue publishing unusual or interesting bird occurrences and behaviour,

someone new must do the compilation.

If you are willing to help with any of these jobs, please contact the editors, George and Margaret Alliston, at 542-3651, as soon as possible.

Because of the editors' schedule, your June 1992 *Newsletter* may not arrive until July. If so, other arrangements will be made to notify you of July field trips

BNS Newsletter

Submissions

Deadline - June 1, 1992

Please send or give all contributions to the *Newsletter* to:

George Alliston
174 West Brooklyn Road
R.R 3
Wolfville, N.S. B0P 1X0
542-3651

Send submissions for "Trivial Tidbits" (non-bird items only) to

Jim Wolford
Biology Department
Acadia University
Wolfville, N.S. B0P 1X0

Last-minute observations can be phoned in to 542-2201, ext. 334 (leave a message) or 542-7650 (late evening to midnight).

The editors would greatly appreciate submissions being at least double-spaced to facilitate both editing and word processing. If you are able to submit articles in word-processed form, please contact the editors for technical details. Sketches or diagrams should be submitted in final form, preferably on a separate page.

Errata -- Winter 1991

The gremlins worked overtime on our last issue.

In the March meeting announcement, **Kim Gilliland's** name is spelled incorrectly. We hope she'll forgive us.

The May meeting will be held on Monday, **May 11**, to avoid conflict with the Victoria Day weekend and the speaker will be **Peter Payzant**. Our apologies to Peter, too, for misspelling his surname.

And, as all you good birders know, the bird on page 28 is a **Semipalmated Plover** and the one on page 39 is a **Golden-crowned Kinglet**.

BNS Conservation Committee

February 26, 1992

by Peter J. Austin-Smith
Chair, Conservation Committee

A meeting of the Conservation Committee was held Wednesday evening, February 26 to discuss several issues raised at the previous meeting. The committee was advised that the BNS Executive did not agree entirely with the committee's recommendations regarding the position the BNS should take on the proposed wild turkey introduction.

Peter Austin-Smith noted that replies to letters written to the Municipality of Kings and the Town of Kentville concerning the future of the Kentville Bird Sanctuary had

been received and these indicated that a project is now under way to study the potential development and management of a park and sanctuary emphasizing tourism and recreation. The area, which is being studied by a student from the College of Geographic Sciences, extends along the entire Cornwallis River corridor from Bishop Road in Coldbrook eastward to the Minas Basin. The north and south boundaries are Belcher and Brooklyn Streets, and No.1 Highway respectively. A letter will be sent to the appropriate authorities thanking them for the information and again offering the services of the BNS as a resource group for the project.

Peter Austin-Smith reported that he had been asked to sit on a "Rails to Trails" ad hoc subcommittee of the Town of Wolfville Recreation Committee which is investigating the potential for conversion of abandoned railways to trails for hikers, recreationists, naturalists etc. The proposed trail along the present railbed could be incorporated into the Cornwallis River corridor project.

The Wolfville dykelands industrial development project was discussed and it was noted that information on this project would be obtained within the next few weeks from the town engineer. It was also noted that a tentative plan for creation of a freshwater wetlands impoundment to be incorporated with a dykeland nature trail had been discussed with Ducks Unlimited. The suggestion was made that perhaps a tertiary sewage treatment pond could

also serve as a productive wetland for wildlife viewing.

Peter Austin-Smith was asked by the BNS President Tom Herman to represent the BNS on the Advisory Committee on the Environment for Kings County. The formative meeting of this group was held on February 18 at the Municipal Complex in Kentville. Those attending were Andrea Lynn, Kings Environmental Group; Greg Ross, Town of Wolfville; Charles Fraser, Municipality of Kings County; Brian VanRooyen, Municipality of Kings County (Secretary); and Jim Bauld, Clean Nova Scotia Foundation. Other organizations to be represented on this committee include Kentville Town Council, Berwick Town Council and the Kings County Federation of Agriculture. This standing committee which will have formal terms of reference, was formed to advise on environmental issues referred to it by one or more of the municipal councils. A list of potential resource persons to whom the committee may turn for information on specific topics is to be compiled.

The current project of compiling a list of favourite local "special places" was discussed and it was noted that 13 responses proposing candidate sites have been received. It was agreed that the committee should continue to accept suggestions, sort, list and mark the proposed sites on a county map. It also was suggested that reconnaissance trips to document each site might be accomplished through including the sites in the BNS field trip roster.

The Wild Animal and Plant Pro-

tection Act was then discussed and Peter MacDonald offered to bring information concerning this act to the next meeting.

Special Areas in Kings County

By the end of the first week of March, only **thirteen** nominations for "Special Area" protection had been received by the BNS Conservation Committee. Please take the time to consider which of your favourite sites, of natural (or historical) significance, should become candidates for protection and submit the form included with the last issue of the *Newsletter*. For details, see page 16 in the last issue of the *Newsletter*.

Federation of Nova Scotia Naturalists

by Peter MacDonald
Greenwich, N.S.

The Federation of Nova Scotia Naturalists (FNSN) Board of Directors met on February 15, 1992 and our next meeting is scheduled for May 2. The Annapolis Field Naturalists have been busy preparing to host the Federation's 1992 Annual General Meeting in Annapolis Royal on May 22 to 24, and we hope to see a good turnout of BNS members at the meeting!

In December of 1991 the FNSN welcomed as a new member organization the Chignecto Naturalists Club. The CNC, represented on the

FNSN Board of Directors by Tony Erskine, is the ninth organization to join the Federation.

In recent months most of our attention has been focused on the current abundance of public forums, policy development, round tables, and strategies that seek response and input from the general public and specific interest groups. The FNSN is providing representation and written input, on behalf of Nova Scotia naturalists, toward a new Parks Canada policy, a specific policy for Kejimikujik National Park and a sustainable development strategy for Nova Scotia (Round Table on the Environment and Economy). We are also providing naturalist representation, as an invited participant, at a series of workshops and open public forums on the proposed development of a wildlife strategy for Nova Scotia. In addition, the FNSN has been asked by Environment Canada to provide input on the new Wild Animal and Plant Protection Act, dealing with the import and export of wildlife, and on the proposed revision of regulations under the Migratory Bird Act. The FNSN is also advocating future naturalist representation on the Wildlife Advisory Council, a nine member committee that considers wildlife issues and makes recommendations to the Minister of Natural Resources.

In May of 1991, Alice White



(Annapolis Field Naturalists) represented the FNSN at the ENVIROFOR conference. This meeting brought together various groups concerned with the future of Nova Scotia forests, including government, forest industry and organizations with environmental interests.

A Scientific Advisory Committee has been established to deal with issues where an FNSN position has been requested. The committee has selected a Scientific Advisory Panel to be contacted for their input on specific questions when the Board of Directors feels that expert commentary is required. The first matters to be addressed will be the controversial issues of wild turkey introduction and game farming.

The Federation is also involved in a number of ongoing projects. Through direct funding from the World Wildlife Fund, the FNSN continues to sponsor an Endangered Spaces Coordinator, working specifically toward protecting natural areas in Nova Scotia as part of the Endangered Spaces Campaign. Resulting from a specific request, we are compiling an information package on conservation organizations, natural areas and natural history; while providing some material directly, this package will function primarily in directing interested parties toward the best information sources. Other possible projects in which we are considering involvement include the development of a booklet on Atlantic coastal plain flora and the revision of the *Natural History of Nova Scotia*.

Our quarterly newsletter, *FNSN*

News is now in full swing and editor Jeff Pike (Nova Scotia Wildflower Society) deserves credit for his hard work on this project. Any comments or suggestions on the newsletter's format and content would be much appreciated. BNS members are reminded that in order to receive the *FNSN Newsletter* you must pay an additional \$5.00 with your BNS membership (see membership form) to cover production and mailing costs or take out an individual FNSN membership at a cost of \$12.00 per year. Individual memberships are needed to help support FNSN activities. Fees are presently not tax deductible but the FNSN has applied for charitable status.

For further information on the FNSN, please contact BNS Directors Jim Wolford or Peter MacDonald, or write to:

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

Wildlife Strategy for Nova Scotia Workshop

The last of a series of three workshops designed to obtain public input into the development of a wildlife strategy for Nova Scotia will be held in Sydney on Saturday, April 25, 1992, at the Northstar Inn. Anyone wishing to present their

ideas at this workshop should contact:

Donald G. Dobbs
Chairman
Wildlife Advisory Council
R.R. #1, Site 2, Box 149
Coldbrook, N.S.
BOP 1K0

Anyone wishing to submit a position paper, letter, etc., is encouraged to do so. The deadline for written submissions is June 1, 1992.

Michael Downing, President of the Federation of Nova Scotia Naturalists, has prepared a thoughtful "preliminary response" to the discussion document, *Today's Challenge - Tomorrow's Legacy: A Wildlife Strategy for Nova Scotia*. Anyone contemplating participation in the final phase of this process (and perhaps those who have already participated) might wish to obtain a copy of Michael's "preliminary response". A copy can be obtained by writing:

Tom Herman
President
Blomidon Naturalists Society
P.O. Box 127
Wolfville, N.S.
BOP 1X0



Federation of Nova Scotia Naturalists Annual General Meeting

The annual general meeting of the Federation of Nova Scotia Naturalists, hosted this year by the Annapolis Field Naturalists, will be held from May 22 through May 24 at the Annapolis Royal Legion Social Centre. The Annapolis Field Naturalists have put together an excellent program (see below) and, for those who wish, are offering to billet guests in their homes. You will find a separate enclosure in this *Newsletter* that includes a registration form as well as information on motel and B & B accommodations in the area. So send in your registration form now and join fellow naturalists from around the province for an entertaining and informative weekend in beautiful, historic Annapolis Royal!

Friday, May 22

- 7:00 Registration
- 7:30 Naturalists' Get-Together (walk and members' slides)

Saturday, May 23

- 7:00 Morning Walks
- 8:30 Registration and Wake-Up Coffee/Snack
- 9:00 **Annapolis River Estuary** Graham Daborn
- 10:15 Sip-'n-Chat (break)
- 10:30 **Wetlands** Peter MacDonald
- 11:15 **Argument Against Game Ranching** Tony Rodgers
- Noon Lunch
- 1:30 **Rare Plants of Nova Scotia** Alex Wilson
- 2:30 Sip-'n-Chat
- 2:45 **Annual General Meeting**
- 6:00 Dinner Speaker Harold Horwood

Sunday, May 24

- 7:00 Morning Walks
- 8:30 Wake Up Coffee/Snack
- 9:00 **A Second Home for Coastal Plain Plants** Nick Hill
- 9:45 **If You Love Nature** Scot Leslie
- 10:30 Sip-'n Chat
- 10:45 **Keji** Cliff Drysdale
- 11:45 Lunch Pick-up for Trips
- 1:00 **Keji or Lamb's Lake Walk** (concludes AGM)

**Dr. E. Chalmers Smith
(1912-1992)
Naturalist and Mentor**

by J. Sherman Bleakney
Wolfville, N.S.

Acadia University and the community recently shared a memorial service at Manning Memorial Chapel, in respect of E. Chalmers Smith who died February 15, 1992. Although many members of the Blomidon Naturalists Society may not have known Dr. Smith personally, they have all benefited from his life's work directly and indirectly via his publications, his botanical collections and his student proteges.

Dr. Smith received his initial training in biology at Acadia University under the tutelage of Professor H. G. Perry, a naturalist of the old school, equally competent in the field as in the laboratory. Dr. Smith completed his Ph.D. at Harvard in 1943, and arrived at Acadia in 1947. He originally taught introductory biology and all the botany courses, which included fungi, algae, mosses, ferns, flowering plants, botanical techniques, and forestry. In the late 1940's, long before the word "ecology" became part of our daily vocabulary, he established the first Plant Ecology course given at Acadia. Today, the breadth of the course material that he taught would be divided among several specialists. He was a botanist's botanist and supervised student theses projects ranging over a broad spectrum from pollen grains in bog deposits, through aqua-

tic and terrestrial plants, to forest ecology.

Dr. Smith's legacy to the botanical natural history of Nova Scotia is extensive and in several guises. Foremost is the certified, international, scientific herbarium that he and his students established at Acadia. In 1947, the herbarium was composed primarily of donated private collections and contained nearly 14,000 specimens. By 1970, when he relinquished his teaching position for the administrative challenges of Dean of Science and Vice-President, Academic, there were over 68,000 sheets of vascular plants and hundreds of specimens of algae, mosses and fungi. It was, and still is, the largest herbarium east of Quebec's Laval University, and those collections helped make possible the two editions of the definitive work he wrote with Albert E. Roland (see last *Newsletter*), *Flora of Nova Scotia*, an essential reference for all Atlantic Canada naturalists.

In summer, Dr. Smith conducted research projects with student assistants, eventually exploring most of the province, and not just from the roadside. Remote ravines, unscalable cliff faces, floating bogs and impenetrable forests were examined by his intrepid team. They even walked from Ingonish across the Cape Breton Plateau to Cheticamp, through dwarf spruce that shreds clothing. (One student wore insubstantial trousers and arrived at Cheticamp with only shreds and tatters hanging from his pant's belt.) Many theses were written and many reports and papers published, but the greatest dividends from the time he invested

in those summers was the considerable number of students who went on to obtain Ph.D. degrees and who have advanced botanical awareness nationally and internationally. His proteges now work in agriculture, forestry, national parks, schools and universities. The first university level textbook devoted exclusively to mosses was written by one of his cliff-climbing students.

As a professor of botany, Dr. Smith was a wonderful teacher, actively engaged in all lab sessions. He was a firm believer in field trips, wanting his students to learn where and when to search for specific plants, to gain a sense of habitat and ecological relationships. To that end he would arrange all-day field trips and long weekend forays. Students fortunate enough to take all his botany courses, including Plant Ecology, would eventually have explored the old-growth pine and hemlock forests of the Tobetic-Kejimikujik area, the Port Mouton coastal sand dunes, the Fundy shore cliffs and beaches, the sand barrens near Berwick and Kingston, the Kentville Ravine, river flood plains, floating bogs, tidal marshes, the Cape Breton Plateau, and other minor habitats. There were picnics, camp stove cooking and genuine camaraderie. In summer, his student crew often tented with him and cooked their meals under Dr. Smith's watchful eye. He was a marvelous mentor, always kind, helpful, instructive, with a mischievous sense of humour, and always, always a gentleman.

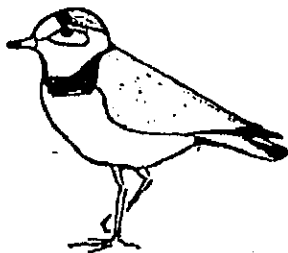
Even after his appointment as Department Head, his office door

remained opened as usual, and there was always time for a chat, be it regarding academic matters or personal problems. And what a sage. He advised me, as a zoology major, to take as many botany courses as an undergraduate as I could, because once I graduated it would be nothing but zoology and I would have to struggle through the botanical literature unprepared and on my own. Even back in 1950, he realized that much of animal ecology studies would necessarily involve analysis of habitat, diet and nutrition (as many a "zoologist" has learned, too late, in graduate school). I have never regretted taking all those botany courses and have, whenever possible, advised undergraduate "zoologists" to expand their in-depth awareness of the real world of animals.

Departmental secretaries were an unheard of luxury during at least his first decade at Acadia, yet he somehow found time to type reports, letters, exams, purchase orders, and even student theses drafts - with two fingers. It was a momentous occasion when the administration allocated a phone to Biology, the first for Patterson Hall. The Maintenance Department (now Physical Plant) ran wires and door buzzers to the other offices in the building (including mine) and Dr. Smith would answer the phone then buzz the appropriate office and patiently wait for one of us to answer our call in his office.

Dr. Smith and his wife Ada functioned as a team and established a very special atmosphere and attitude, almost an aura within the Biology Department. Teaching,

research and family were interconnected commitments. On many a Sunday afternoon or weekday evening, their home was host to an entire class, or the student demonstrators, or the honours and graduate students, or the staff, with or without a special guest. You soon began to feel like one of the family - the extended Biology Department family. That degree of commitment, throughout Dr. Chalmers Smith's tenure, towards encouraging a love of learning is what fostered Acadia's reputation for graduating well-trained biology specialists with the holistic perspective of naturalists.



Piping Plover

Volunteers Needed for Piping Plover Conservation in Nova Scotia and P.E.I.

The Piping Plover is listed as an endangered species in Canada. Only 5500 individuals remain, 525 of those in Atlantic Canada. Human disturbance is a major cause of poor reproductive success in the region. Active protection of the birds is urgently needed. This year, with the help of volunteers, we hope to protect the Piping Plover in N.S. and P.E.I. by initiating a Piping Plover Guardianship Program. Volunteer Guardians will help erect information signs around plover nesting areas, and reinforce the "Do Not Disturb" request on the signs by making the same request in person on days in which human disturbance is high. Volunteers will be asked to attend an evening workshop and to

donate 20 hours of time to the project during May-July. To help identify Plover Guardians to the general public, we hope to provide a jacket, T-shirt, and ball cap with an identifying insignia. If you can donate 20 hours of your time to help conserve this endangered bird, please forward your name and address, and more information will be provided. This project is co-sponsored by the Halifax Field Naturalists, Island Nature Trust, and the Canadian Wildlife Service. Thanks for the help!

Write to:

Stephen Flemming
c/o Canadian Wildlife Service
P.O. Box 1590
Sackville, N.B.
E0A 3C0

New Video on "Extinc- tions" *

Scientists from the Geological Survey of Canada's Institute of Sedimentary and Petroleum Geology (ISPG) in Calgary, in cooperation with Rogers Cable TV, Calgary, have produced a video entitled "Life in the Balance: the Study of Extinction" (29 min.). It highlights the research

of two ISPG geologists concerned with mass extinctions in the geological record, and draws parallels between ancient extinctions and modern environmental crises. It originated because of concern about global change and the importance of bringing local scientific work to the public. It was completed over two years with a budget of only \$1500, and is suitable fro Junior High through undergraduate education levels.

Rogers will provide a copy, at cost, for non-profit educational purposes to anyone interested. In particular, it is hoped that "The Study of Extinction" can be aired as a public service by Cable TV stations across Canada. Earth scientists and other researchers concerned with the global environment are encouraged to consider this approach in furthering the message of environmental protection and promoting the public awareness of science.

For more information contact Rogers Community 10 Cable TV, 3003 Macleod Trail, S.S., Calgary, Alberta T2G 2P8; (403) 261-4250, fax (403) 263-6076.

* Reprinted from *Delta, Newsletter of the Canadian Global Change Program*, Vol. 2, No. 2, Winter 1991, page 10

Field Trip Report

Eagles and Wintering Raptors of Kings County January 26, 1992

by Jim Wolford
Wolfville, N.S.

On a cold but windless morning, 20 people in ten cars set off from the Robie Tufts Nature Centre for a day of raptor watching. Our first observation was a rough-legged hawk (light phase) sitting on top of a utility pole next to the road on the Cornwallis dykeland. During the day we saw three more rough-legged hawks (all light phase).

As we proceeded west from Port Williams we encountered our first bald eagles and red-tailed hawks, and there were lots of both everywhere we went. On Saxon Street, just west of Blueberry Acres, we saw the semi-albino red-tailed hawk that has wintered in this area for at least the last two years.

We circled back to Sheffield Mills and checked out several of the farms that regularly attract eagles. We were not disappointed! At one farm we could see 40 eagles at one time! The majority of eagles seen were immatures, suggesting a healthy and probably growing population.

As we passed the Eagle Tree in Sheffield Mills, only six eagles were present; earlier in the day someone had reported 37 eagles in that lone tree! As we were returning to Wolf-

ville for lunch we saw 30 eagles at another farm. Here we watched a flying eagle carrying a chicken carcass and being harassed by several other eagles. The carcass was dropped by the harassed eagle and caught in mid-air by one of the aggressors. In a similar manner this chicken carcass changed talons three times before it was carried off by the victor.

After our lunch break at the

Acadia Biology Museum, we proceeded to Grand Pre where we encountered a group of at least seven red-tailed hawks, soaring, chasing and diving at each other. Just before the trip ended a single horned lark appeared and posed for all to see.

My raptor tally for the day was about 120 bald eagles, 35 red-tailed hawks and four rough-legged hawks.



Natural History Articles

The Woodside Bluebirds

by John Harwood
Woodside, N.S.

It all started late in the afternoon of 8 November 1991. I was doing the end-of-season tidying in our vegetable garden when I noticed some unusual bird activity in the trees

surrounding our pond. The sky was heavily overcast. It was a particularly dull day, not the best for identifying plumage colours. Nonetheless, I investigated the group of about a dozen birds. I could not tell if they were all of the same species but some were blue, had rusty breasts and were round-shouldered. The drawing of the eastern bluebird in Tufts' book came to mind.

When I returned to the house, I looked up the drawing and the associated text. The notation under status of "rare transient" forced me to conclude that I must have misidentified the birds. Unfortunately, my wife Avril was away for the afternoon so there was no one about to give a second opinion. A couple of weeks later Avril got a glimpse of some blue birds near the pond. This time I was away so again no second opinion was available. We gave no further thought to these sightings until Christmas time.

Our daughter, Janet Methot, her husband and children were visiting us for the holidays from Mississauga. On 19 December Janet was looking out the window of her room whilst feeding her baby. She called Avril to look at some unusual birds in trees near the house. They were eastern bluebirds. To make sure, Avril phoned Merritt Gibson. He came and confirmed the sighting. I understand that Merritt made the appropriate rare bird sighting report. We counted six bluebirds for the Wolfville Christmas Bird Count. Later we confirmed the presence of eight, five males and three females.

Throughout the holiday season, the bluebirds put on a daily show. They certainly do bring happiness! They are brave little birds who don't seem bothered by people or vehicles. We had excellent opportunities to see them at close range. When there was a bit less snow, grass was showing near our living room windows. The birds visited the area often and gave us a chance to examine them from about one metre. They are

beautiful. The males are a little more handsome than the females. The blue is like no other and is particularly brilliant when seen from above when the bird is in flight.

The birds are feeding on the small hips from the fragrant white roses that grow wild around our pond and along our stream. They take water from the pond when it isn't completely ice-covered. They also enjoy basking in the sun on our barn roof and drinking the water from melting snow. They seem to enjoy company. When we first saw the bluebirds in December they were accompanied by yellow-rumped (myrtle) warblers. On another of their visits to the pond, they were joined by about a hundred American robins who also enjoyed the rose hips. A couple of weeks ago [approximately mid-February. Ed.] about a dozen cedar waxwings joined them feeding on hips. Now we usually see some dark-eyed juncos with them.

There are few rose hips left near the pond. The juncos, hundreds of them, purple finches and robins all enjoy them. To avoid losing the bluebirds to more bountiful feeding areas, Avril snowshoed down the lane opposite our house and collected rose canes. She stuck them in snowbanks near the house. While sitting in the den this morning writing this, I am watching the bluebirds feeding on those hips and can see a northern flicker sunning himself on the barn roof.

I have put up two nesting boxes near the pond and have made three more that I will put up round our upper field in the hope of establish-

ing a mini bluebird trail. We hope the birds will nest here or nearby. It would appear that our present birds resulted from at least one pair nesting near here, probably in a tree-swallow box. Wouldn't it be nice if the bluebirds chose this area in which to establish a year-round population!

Nova Scotia Bald Eagles Nesting in Massachusetts An Update

by Peter J. Austin-Smith
Wolfville, N.S.

In the September 1988 issue of the *Newsletter* we described the program undertaken by the Commonwealth of Massachusetts to reestablish the bald eagle as a nesting bird in that state. Between 1982 and 1988, 42 eaglets were hand reared and released in the Quabbin Reservoir area near Boston; 36 of these eaglets had been obtained from wild eagle nests in Nova Scotia. In the June 1989 issue of the *Newsletter* we printed part of a press release by the Massachusetts Division of Fisheries and Wildlife that announced the hatching (on Mother's Day 1989) of the first bald eagle in that state since 1910. The eaglet's mother was a Nova Scotian bird released in 1985.

Since our last update in 1989, the numbers of occupied territories have increases from four to six and the number of active nests have doubled from two to four (see table). Of the six territorial pairs, all but one bird are believed to be from Nova Scotia.

Despite the record number of occupied nest sites in 1991, the program did have some disappointments; only two of the four active nests were successful in producing fledged young (two young from each nest). Of the two unsuccessful nests, raccoon predation was believed to have been responsible for the loss of the single four-week-old chick at one nest and at the second nest the single week-old chick was believed to have died of exposure.

All eagle chicks hatched in Massachusetts are examined by veterinarians from Tufts University School of Veterinary Medicine and then banded with both state and federal leg bands. Several of the 11 young eagles produced in Massachusetts have been identified after fledging. Several have been sighted in the Quabbin Reservoir and two were observed in New York State.

Bald Eagle Nesting Activities in Massachusetts: 1987-1991

Year	Occ. terr.	Act. nest	Succ. nest	Young fledg.
1987	2	0	0	0
1988	3	0	0	0
1989	4	2	2	3
1990	5	3	3	4
1991	6	4	2	4



News from the South The Caracas Correspondent

by Tom Herman
Kentville, N.S.

I have just spent two weeks immersed in global parks politics at the IVth World Congress on National Parks and Protected Areas, held in Caracas, Venezuela, 10-21 February 1992. I provide below an introduction to the rationale for the Congress (extracted from another publication), a summary of its objectives and its proposed products. I end by providing my own thoughts on highlights and low points of the event. The Congress was sponsored by the World Conservation Union (IUCN), and organized around the theme "Parks for Life: Enhancing the Role of Conservation in Sustaining Society".

Rationale

When Columbus sailed from the Old World to the New World, our planet supported less than 1,000 million people. Biological diversity was possibly at an all-time high, and species and habitats were freely available for people to exploit.

We have flourished over the past 500 years. The human population is now over 5,000 million, and still growing. This is a time of extraordinary change in the relationship between people and biological resources, because growing numbers of people are making ever greater demands on the planet's resources. As the World Commission on

Environment and Development pointed out in their report in April 1987, the combined destructive impacts of a poor majority struggling to stay alive and an affluent resource-consuming minority are rapidly eroding the buffer that has always existed, at least on a global scale, between human resource consumption and the planet's productive capacity.

Maintaining maximum biological and cultural diversity assumes far greater urgency as rates of environmental change increase. Diversity in genes, species, ecosystems, and resource management systems provides the raw materials for adapting to changing conditions. But the erosion of the planet's life-support systems is likely to continue until human aspirations come more into line with the Earth's resource capacities, thereby becoming sustainable over the long term. The problems of conservation therefore cannot be separated from the larger issues of social and economic development.

Growing public concern about the environment is convincing politicians that the issue is no longer whether conservation is a good idea, but rather how it can be implemented under the social, economic, and political constraints within which conservation organizations must operate. We are at a crossroads in the history of human civilization. Our actions in the next few years will determine whether we take a road towards a chaotic future characterized by over-exploitation and abuse of our biological resources, or take the opposite road

toward maintaining diversity and using renewable resources sustainably. The future well-being of human society hangs in the balance.

As a contribution to a more productive future for the planet, the IV World Congress on National Parks and Protected Areas was intended to help ensure that representative samples of the world's natural habitats are effectively managed for the sustainable benefit of both people and nature. This specific contribution from the Congress is to be integrated with wider programs designed to achieve global harmony between humanity and the natural world. These include programs like *Caring for the Earth*, the *Global Biodiversity Strategy*, and *Agenda 21* (the result of the United Nations Conference on Environment and Development).

Objectives

The goal of the Congress was to promote the effective management of the world's natural habitats so that they can make their optimal contribution to sustaining human society. Building on the III Congress in Indonesia in 1982, the specific objectives of this Congress were to:

- demonstrate that protected areas can be a focal point of much more broadly-based **rural development initiatives** which can bring genuine benefits on a long-term basis to rural communities;
- **demonstrate the value** of protected areas within wider strategies for the conservation and sustainable use of the Earth's natural resources;

- **expand the rationale** for the various categories of protected areas and demonstrate the contribution each can make to conserving biodiversity and sustaining society;

- promote the concept of **regional planning** as a means of conserving biological diversity inside and outside protected areas;

- greatly **expand the constituency** for protected areas by identifying productive partnerships with a broad range of other sectors;

- expand the **global system of protected areas**, identify gaps in coverage, note the vulnerability of the system to climate changes and social pressures, and develop a system for assigning priorities for action;

- further develop a **system for monitoring** the status of protected areas, both nationally and internationally;

- strengthen the **application of science** to protected area management issues;

- develop improved concepts of **protected areas in coastal and marine habitats**, taking full account of the distinctive ecological features of the marine environment and encouraging creation of additional such areas;

- greatly increase **international support** for protected areas as an integral part of national development efforts, and enhance the financial means available to manage protected areas;

- develop and transmit a message to the United Nations Conference on Environment and Development regarding the value of protected areas in the wider strategy for global sustainable development; and

- agree on a **Global Plan of Action** for achieving significant progress in protected area management over the next decade.

Products

Outputs from the Congress, expected and/or realized, include:

- A succinct message from the Congress -- *The Caracas Declaration* to be transmitted to the June 1992 United Nations Conference in Environment and Development in the form of a recommendation to be considered for adoption by UNCED.

- **Recommendations** on key protected area issues addressed principally to conservation organizations, intergovernmental bodies, and governments.

- **The Caracas Action Plan** to set the course for protected areas into the next century.

- An **investment portfolio**, including a set of proposals to enable the major development agencies to invest in improving the contributions of protected areas in sustaining society.

- **Messages to policy makers**, succinct and to the point, drawing from the workshops.

- **Books** for both general and specialist audiences. These will be produced from papers presented at Plen-

ary Sessions, Symposia, and Workshops. They will be issued regularly over the coming two years, often requiring significant additional work. They will provide information of lasting value to those concerned with protected areas.

- **Shorter publications for conservation planners**, dealing with specific topics of a highly practical and applied nature.

More than 1500 people (scientists, managers, planners and policy makers) from close to 100 countries attended the Congress. The North and South, developed and developing, were well represented. I met delegates from as far afield as Burkina Faso, Estonia and Mauritius. Despite the geographical and cultural diversity of the group, there was much common ground, and a certain unity of deep concern about the plight of our planet's protected areas and natural landscapes. This unity was reassuring to an extent, but as the meetings progressed, several problems became apparent.

The sessions were divided into symposia based on politico-economic, scientific, planning and management issues. Each symposium was organized around a series of highly focused workshops, dealing with specific issues. As an example, the workshop in which I presented a paper dealt with the impacts of climate change on protected areas. Other science-oriented workshops focused on environmental monitoring, restoration ecology, species introductions and reintroductions, management of small populations

and a number of other issues.

Any large meeting naturally splits people into smaller groups, and since there were numerous concurrent sessions, it was impossible to attend more than a fraction of them. Unfortunately, it quickly became apparent that the science-oriented workshops were being attended primarily by scientists, the management-oriented

ones by managers and so on. The result was lots of preaching to the converted. In my workshop on climate change, I think we failed to communicate the potential severity of the problem to parks planners and managers. They were off somewhere else worrying about more immediate management problems.

Rifts also began to develop between the North and South, most notably over the issue of human population growth and management, and its impact on protected areas. In one workshop, a European and North American, while arguing over the finer points of classifying protected areas, were interrupted by an exasperated manager from southern Africa. "The human population living on the edge of my park is growing at more than 3% per year, over half of them are HIV-positive - how am I supposed to manage that?" It was a telling comment. Despite this, there was pressure from some sectors in the South to remove all mention of the population problem from any Congress declarations or action plans. Economics and politics clearly dominated the meetings, and generated most of the debate.

The eventual products from the congress will be

The Light Comes Brighter

*The light comes brighter from the east; the caw
Of restive crows is sharper on the ear.
A walker at the river's edge may hear
A cannon crack announce an early thaw.*

*The sun cuts deep into the heavy drift,
Though still the guarded snow is winter-sealed,
At bridgeheads buckled ice begins to shift,
The river overflows the level field.*

*Once more the trees assume familiar shapes,
As branches loose last vestiges of snow.
The water stored in narrow pools escapes
In rivulets; the cold roots stir below.*

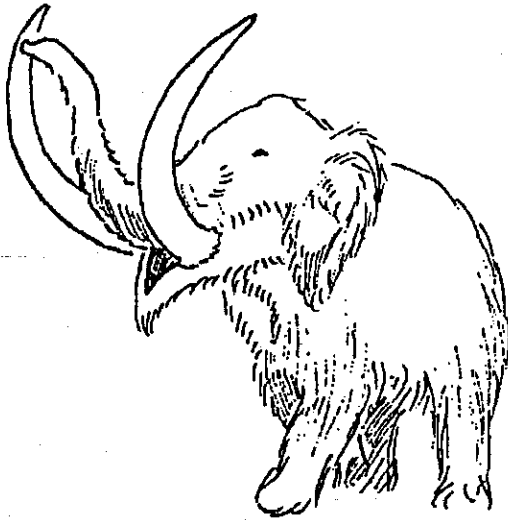
*Soon field and wood will wear an April look,
The frost be gone, for green is breaking now;
The ovenbled will match the vocal brook,
The young fruit swell upon the pear-tree bough.*

*And soon a branch, part of a hidden scene,
The leafy mind, that long was tightly furled,
Will turn its private substance into green,
And young shoots spread upon our inner world.*

* from The Collected Poems of Theodore Roethke Doubleday, 1966.
Submitted by Tom Herman.

many and varied. Some will be communicated immediately to policy makers and conservation organizations. The "Caracas Declaration" will be delivered to the upcoming U.N. Earth Summit in Rio in June. Technical documents based on conference activities will appear over the next

several years. It was perhaps appropriate that the meetings were held in Venezuela, only a week after an attempted coup nearly toppled the present government. It set the tone for the whole congress, and reminded us of how unstable and fragile our planet and systems are.



Mastodon Find *

The most exciting addition to the provincial collection is without doubt the mastodon skeletal remains which were discovered at the Milford-Carrol's Corner National Gypsum mine at the end of October. Initially the remains were to be covered over and removed next spring. However, the heavy rains in the past month or so made the specimens vulnerable to the freeze thaw cycle and a salvage operation had to go into effect. Bob Grantham and his assistant, Kelly Koser, will tell you that winter paleontological work is quite dif-

ferent from summer field work. A shelter had to be built over the site and this has to be heated so that the air remains above freezing and the mud in the sinkhole stays thawed. In spite of difficult conditions, the excavation work is underway now.

An exciting program associated with the mastodon find is the student Mastodon Mud project. Sections of mud removed from the sinkhole also may contain smaller ice age specimens.

Insects, seeds, invertebrates, small mammal or reptile bones and who knows what else could be found. Students grade 6 and up from all over Nova Scotia are being offered boxes of the mud so that they can help the museum explore this ice age material. Interested schools are asked to contact the Education Section at the Museum at 424-7391.

* Reprinted, with permission, from *Museum News*, January-April 1992. For a free subscription, write Joan Waldron, Nova Scotia Museum, 1747 Summer Street, Halifax, Nova Scotia, B3H 3A6. *Museum News*

provides updates on museum collections and exhibits and notices of museum-sponsored events throughout the province. *Museum News* is published four times per year January through April, May and June, July and August, and September through December.

A Case for Encouraging Hardwood in our Forest*

by R.G.S. Bidwell
Wallace, N.S.

The forest that covered Nova Scotia several hundred years ago, before it was almost totally cut, contained a considerable mixture of hardwoods. Forests that are allowed to regenerate naturally, although they may take a very long time to reach their climax, will contain hardwood. Careful consideration of the overall "value" of a forest suggests that hardwood may indeed be very valuable because of the great value of hardwood lumber. But more importantly, encouraging hardwoods

throughout a softwood forest may greatly increase the value of the forest as a whole.

First, there are ecological considerations. It is a very well established principle that the stability of an ecosystem is proportional to its diversity. That is, monocultures are very unstable and can be damaged by small climatic or other environmental aberrations, while diverse ecosystems are much more able to withstand such impacts. Climatologists tell us that the world is entering a period of more unstable weather, so forest ecosystems, just like agriculture, must be diversified to withstand climatic instability.

A diverse forest with even a small mixture of hardwoods scattered through it will have a much larger and more varied population of wildlife because there will be a greater variety of food, and it will be available all year round. As a result, the population of insect and other pests that destroy forests will be much more balanced and stable and will not go through the wild boom/bust

cycles of, for example, spruce budworm in an essentially pure fir/spruce stand.

Second, hardwoods may also improve the condition of surrounding softwoods. It is true that hardwoods take up space where softwoods might grow but it is possible - in fact, very probable - that the addition of hardwoods may make a softwood



forest grow sufficiently better to overcome this loss. Much of the forest soil in large areas of Nova Scotia contains iron-calcareous hardpan, like a layer of cement, from one to three feet below the surface. The roots of softwood trees don't penetrate this layer but are confined to a shallow layer of soil that rapidly becomes depleted of nutrients. The nutrients in deeper layers are out of reach for these trees.

Mechanical disruption of the hardpan is impossibly expensive. But the roots of certain hardwoods, like oaks, penetrate the hardpan and are able to "mine" the nutrient-rich soil below. Nutrients are transported upwards in these hardwoods and then deposited on the forest floor as leaf and tree litter, and so become available to the softwoods.

Furthermore, softwood trees growing on such soils are prone to blowdown because of their shallow roots. Deeply rooted hardwoods among them form natural windbreaks and protect the softwoods from wind damage. Thus hardwoods, quite apart from their value as lumber, enhance the value of a softwood forest.

Third, a mixed forest will be much more aesthetically pleasing. This will increase its value in a number of ways that can contribute greatly to the economy of a forest region. Mixed forests are more attractive to tourists. Anyone who has seen the huge monoculture softwood forests planted in Scotland will appreciate this. They are gloomy, dull, and without life or character. Mixed forests contain more birds and

animals, which people like to watch. They contain more deer and game birds for those who like to hunt. People don't want to picnic in a monoculture forest any more than they want to picnic in a cornfield. They prefer a diversified landscape.

Finally, hardwoods are intrinsically very valuable as lumber. Furniture manufacturers and house builders in Nova Scotia must import their hardwood at great cost. Lumber dealers who specialize in hardwoods have gone out of business for lack of supplies. Veneer logs are fantastically valuable and bring a great deal of cash to the lucky (or intelligent) woodlot owner who has protected and nurtured them. It is often stated that only poor-quality hardwood in short lengths can be grown locally. But when you think of it, very few pieces of wood in a sofa or chair or table are longer than four or five feet. Clearly there is a good market for hardwood.

Taken together, these points suggest that the encouragement and planting of hardwoods would greatly increase the ecological, aesthetic, and cash value of Nova Scotian forests. It takes many years to grow hardwoods, so we had better get started!

* Reprinted, with permission, from *FOREST TIMES*, Volume 14, Number 1, January - February 1992. Subscriptions to *FOREST TIMES* are available, free of charge, by writing *FOREST TIMES*, Circulation, P.O. Box 68, Truro, N.S. B2N 5B8.

Winter Weather 1992

by Larry Bogan
Cambridge Station, N.S.

As an occupant of a solar-heated home, I especially noticed that there has been a lack of sunshine in January and February and, indeed, we got only 75 percent of the expected hours of bright sunshine. In January total precipitation was slightly less than "normal" but we had more rain and less snow than usual. As you probably remember, we had no snow cover for most of January. In February we had near normal rainfall but accumulated about 70 percent more snow than expected. The depth of snow on the ground in that month varied from

18 cm on the 1st, when the first snows came down, to 43 cm on the 10th. Snow depth remained greater than 24 cm for the rest of the month.

My feeling was that we have had a cold winter. The records show that in January, the average minimum, maximum and mean were all about 1 C below the norm. February records show an interesting relationship; the mean minimum was 0.9 C below average and the maximum was 0.2 C below average. This shows that although we had nearly the "normal" number of warmer days, we had more severely cold days with low minima. In February there were 14 days with minima below -10 C and on nine of those days minima were below -15 C.

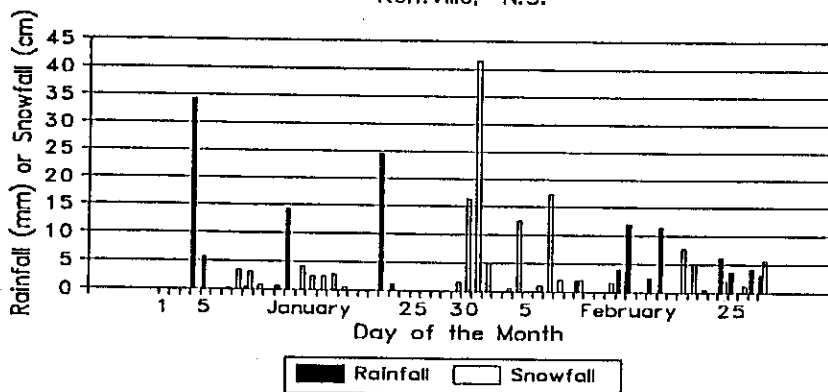
Weather Statistics

January - February 1992

Kentville Agricultural Centre

	-Mean Temperature-			-Precipitation-			Sun- shine Hours
	Max C	Mean C	Min C	Rain mm	Snow cm	Total mm	
January 92	-1.8	-6.0	-10.1	81	38	115	60
30-year averages	-0.9	-5.0	-9.0	65	72	136	89
February 92	-1.1	-5.7	-10.3	49	109	152	89
30-year averages	-0.9	-5.2	-9.4	42	65	107	110
=====							
1992 Sum or average	-1.5	-5.9	-10.2	130	147	267	149
30-year averages	-0.9	-5.1	-9.2	107	137	243	199

Precipitation - Winter 1992
Kentville, N.S.



Beautiful Killer

by Margaret Alliston
West Brookly, N.S.

Since it was accidentally introduced to North America from Europe in the 1800's, purple loosestrife (*Lythrum salicaria*) has slowly but relentlessly invaded wetlands and waterways. In Canada, the most severe infestation is in Central Canada; however, purple loosestrife is now found from coast to coast. The solid stands of beautiful purple spiked flowers blanketing many of Canada's finest wetlands are funeral wreaths; the infested wetlands are dead.

Purple loosestrife was first observed in the Atlantic provinces in the 1950's. Some marshes along the Saint John River south of Fredericton, New Brunswick, have been completely taken over by purple loosestrife and an infestation has occurred within a small area of the Tantramar Marshes near Sackville, New Brunswick.

In Nova Scotia, by the mid-

1960's, purple loosestrife had become common in marshes around Truro and in scattered locations in the southwestern extremity of the province. Significant quantities are now known to occur in forty locations on the mainland and Cape Breton Island. The plant is spreading rapidly along roadside ditches and wet meadows, and there are undoubtedly numerous undocumented infestations. Purple loosestrife is now most common in the floodplains around Truro and along the Annapolis River; it is expected to continue to spread most rapidly in those areas.

Purple loosestrife is able to out-compete our native vegetation, taking over wetlands where it becomes established. Since none of our native fauna feed on any part of the plant, its competitive advantage is enhanced.

A wetland that has become a purple loosestrife monoculture is a beautiful but ecologically barren place. Waterfowl will not nest among its dense stiff stems and few of our wetland-nesting songbird spe-

cies will utilize these areas. Muskrats are excluded from these areas by a lack of food. Shallow waterbodies taken over by purple loosestrife cannot be used by natural populations of invertebrates, amphibians or fish.

In some parts of Canada, purple loosestrife was introduced by seeds from landscape specimens finding their way into adjacent waterbodies, sometimes via ditches or wet pastures. Until very recently it was believed that cultivated varieties of purple loosestrife were sterile and thus posed no threat to nearby wetlands. Nurseries and gardeners in some American midwestern states vigorously opposed bans on the propagation and sale of purple loosestrife. However, recent research by Neil Anderson and Peter Ascher of the University of Minnesota Department of Horticulture has proved that these bans were justified. In studies on 17 cultivars of purple loosestrife (including *Lythrum salicaria* "The Beacon", "Gypsy Blood", "Happy", "Flashfire", "Firecandle", "Robert", "Rosy Gem", and var. *roseum superbum*, plus *Lythrum virgatum* "Dropmore Purple", "Morden Gleam", "Morden Pink", "Morden Rose", "Pink Spires", "Purple Dwarf", "Purple Spires", and "Rose Queen"), Anderson and Ascher found that the cultivars are indeed self-incompatible. This means that when isolated they rarely set seed. But each of the cultivars was found to be highly fertile when crossed with wild *L. salicaria* plants. At least as much, and sometimes more, seed was set on such crosses as on wild plants. The resulting seed germinated and pro-

duced fertile offspring. Since each wild plant is known to produce two to three million seeds in a season, the seeds are easily distributed by wind and water, and the seeds remain viable for years, it is easy to imagine how much damage could be caused by introducing just a few plants.

On a very small scale, plants can be destroyed by pulling them out by the roots and burning them, but no effective control measures have been developed for large scale infestations. Burning, mowing and flooding have met with little success. No biological controls have been approved, nor are there any chemicals registered in Canada for purple loosestrife eradication. Research is currently underway in both Canada (conducted by the Canadian Wildlife Service in Sackville, N.B., among others) and the United States to find an environmentally acceptable control but an immediate solution does not appear likely.

As a naturalist, there are several things you can do to help protect our wetlands from this beautiful killer:

1. pull out and **burn** purple loosestrife plants in your garden;
2. encourage your neighbours to do the same;
3. encourage nurseries not to propagate or sell purple loosestrife. Pay particular attention to wild flower seed mixes; some of them include purple loosestrife seed;
4. participate in the survey of the incidence of wild purple loosestrife being conducted by the Canadian Wildlife Federation. Even a few plants that cannot be removed

should be reported. Survey forms will be available at the May and June BNS meetings and will be included with the June *Newsletter*.

BNS member, Rosaleen McDonald, Nova Scotia's Gardener of the Year in 1990, suggested the following plants as possible substitutions for purple loosestrife in your garden:

1. obedient plant (*Physotegia virginianum*) - this perennial plant blooms a little later than purple loosestrife and is available in pink and white.

2. rose pink flower (*Chelone lyonii*) - pink perennial.

3. foxglove (*Digitalis* spp.) - although very attractive, this plant should be used with caution because the leaves of the plant contain digitalis, the chemical used as a potent heart stimulant. It should never be used where there is any possibility of any part of the plant being eaten by children or animals. It is a biennial but will reseed itself.

4. pink larkspur (*Delphinium* spp.) - this plant is an annual and must be replanted every year.

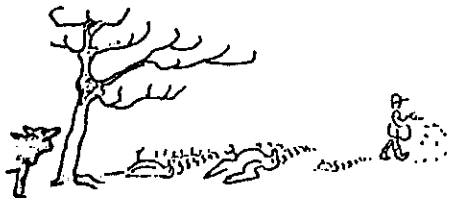
Destroying purple loosestrife may be one of the most important things you ever do for our local environment.

Pesticides and Wildlife: Canard Birds Killed with Pesticide

by J. Sherman Boates *
Nova Scotia
Department of Natural Resources

The recent death of hundreds of birds in the Canard area from pesticide poisoning has illustrated how the improper use of pesticides can have very serious impacts on wildlife populations.

On 3 January 1992, the Nova Scotia Department of Natural Resources was advised that numbers of dead birds had been observed near Canard. After several searches of the area, Natural Resources personnel found the following dead birds: 700-800 European Starlings, 12 Red-tailed Hawks, 12 Blue Jays, two Northern Harriers, two American Crows, and numbers of House Sparrows. Autopsies and chemical analyses on samples from the hawks, Starlings and Sparrows confirmed that the birds died from the ingestion of Carbofuran, a carbamate pesticide commonly used to reduce insect and nematode (small worms) damage on a wide variety of crops. It appears that Carbofuran-treated food was put out by a farmer to kill Starlings that were "pests" at his beef feedlot operation. The stomachs of hawks contained the remains of Starlings and Carbofuran residues, indicating that they had died from eating Starlings that had consumed the poisoned food.



This is a very serious incident. The Red-tailed Hawks, Northern Harriers, and Blue Jays are all protected birds. Although the European Starlings, House Sparrows, and American Crows are not protected, it is, under the Nova Scotia Wildlife Act (1987), illegal to poison any wildlife without the permission of the Minister of Natural Resources. As well, this constitutes an illegal use of a restricted chemical under pesticide control legislation. Unfortunately, not enough evidence was collected for charges to be laid. This was largely because Natural Resources personnel were most concerned with getting the poisoned food and the dead birds cleaned up so that more birds would not be killed.

Birds, especially European Starlings, can be a real problem for some agricultural operations. These birds are readily attracted to any available supply of food, especially during winter when snow and cold weather may reduce the availability of conventional foods. I have personally seen as many as 6000 Starlings feeding at a single farm. Anyone who has maintained a bird feeder knows that even a few Starlings can consume a large amount of food during the winter months. A flock of several thousand Starlings can eat a significant proportion of the food intended for farm animals. However, this does not justify the illegal use of a pesticide. Unfortunately, there are no easy solutions to these problems.

Many pesticides, Carbofuran being a good example, do not selectively kill the intended "pest" organ-

isms; they also kill non-target species. Carbofuran is exceptionally toxic to vertebrates, especially birds. A recent review of birds killed by Carbofuran reported 80 separate bird kills involving 40 different species of birds. In two cases in the United States, where birds consumed crops treated with this pesticide, 2500 ducks and 500 Canada Geese were killed. At present the use of Carbofuran is being reviewed in Canada.

A report on the bird kill at Canard has been forwarded to Ottawa. Hopefully, this information may help to emphasize the potential impact of legal and illegal use of Carbofuran on wildlife populations.

* Sherman is interested in any problems that farmers are having with birds and other wildlife, and in suspected cases of poisoning of wild animals.

Long Term Monitoring of Common Eider Populations in the Eastern Shore Islands

Wildlife Management Area

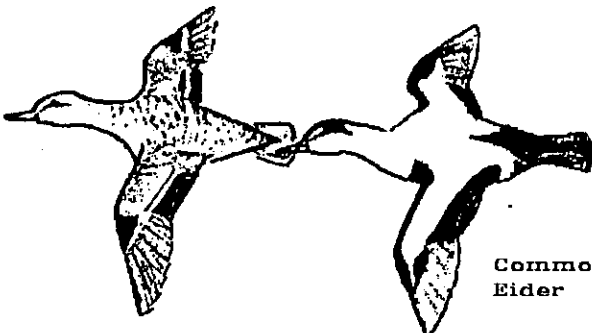
by Peter J. Austin-Smith
Wolfville, N.S.

Historically marine birds and their eggs have provided food for humans and, in some regions of the world, clothing was made from their skins and feathers. In more recent times marine birds are the focus of recreational or leisure activities such as the regulated sport hunting of seaducks and the viewing of seabird colonies. Marine birds continue to be of commercial, subsistence, recreational, scientific, and educational importance to people of many societies; consequently, they are prone to over-exploitation. Responsible management and protection of potentially sensitive marine bird populations should involve long-term population monitoring to evaluate both consumptive and non-consumptive pressures on these resources. This

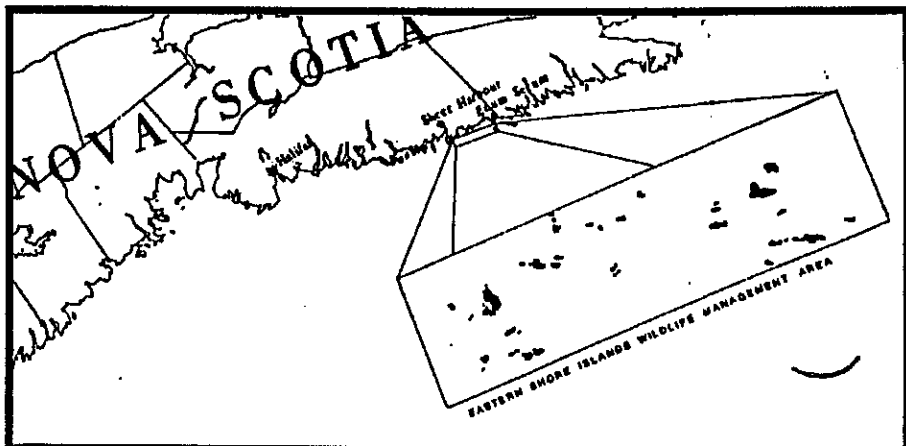
article reports on management efforts and population trends for Common Eider (*Somateria mollissima*) breeding populations along the Eastern Shore of Nova Scotia.

The Common Eider, one of four species of eider found in North America, is a coastal, colonially-breeding seaduck with a circumpolar distribution. There are five recognized subspecies of the Common Eider; only one, (*S. m. dresseri*, the American Eider), breeds in Nova Scotia. During the breeding period, male Common Eiders are striking black and white birds with a tinge of green on the neck and cheeks. The females are brown. Adult eiders feed predominately upon molluscs, mainly blue mussels (*Mytilus edulis*) and therefore are most likely to be found in areas where extensive mussel beds occur. Beginning in late April, eiders move from their wintering grounds along the coasts of Massachusetts, Maine, and southwestern Nova Scotia to their nesting islands in Nova Scotia.

Female eiders, some nesting first at two years of age, but most at three years, lay their clutches, usually three to five eggs but sometimes up to seven, in a depression in the ground lined with down. Normally the female stays on the nest for the entire incubation period of 26 days, relying for her sustenance upon nutrient reserves accumula-



Common
Eider



ted during the prenesting period. The female loses about 1/3 of her pre-laying body weight during the nesting period. Nest losses are normally low because of the constant attendance by the females although both clutch and female may be lost if mammalian predators, such as mink or fox, gain access to an eider colony.

Within 24 hours of hatching, the eider hen leads her brood from the nest to the coastal waters where the young are reared. The young from several broods may mix together forming creches attended by several females. The females attending the creches include non-breeding and perhaps failed-breeding birds. After their young join a creche, some adult hens abandon their young to the care of these brood-rearing "aunties" and move to areas where they can feed, rest and recuperate from the stresses of nesting. The creches move to sheltered waters close to the mainland coast where the young forage on insects and molluscs, primarily periwinkles (*Littorina* spp.).

Young eiders are vulnerable to avian predators, particularly gulls.

They are particularly vulnerable to gull depredations when leaving their natal islands, especially when they encounter heavy wave action when they enter the water. Young eiders are similarly vulnerable when disturbances (e.g. powerboats) break up creches and scatter the attendant females.

The most important step for conserving seabirds is public ownership and protection of their breeding grounds. In the late 1960's and early 1970's, several provincially-owned islands were proposed as candidates for a protected wildlife management area and, in 1976, legislation was enacted to create the Eastern Shore Islands Wildlife Management Area (see Figure 1). This action set aside a marine area of 11,766 ha extending along 27 km of coastal waters from Sheet Harbour to Ecum Secum. The Eastern Shore Islands Wildlife Management Area contains over 20 major islands or island groups totaling 327 ha. Vegetation on the wooded islands is dominated by spruce-fir cover whereas, on the barren or open islands, the vegetation is a

mixture of low shrubs, herbaceous plants and/or grass. The islands of the Management Area not only provide nesting habitat for eiders but also for a number of other colonial and solitary breeding bird species including Leach's Storm Petrels, Double-crested and Great Cormorants, Great Blue Herons, Black-backed and Herring Gulls, terns, Black Guillemots, Osprey, American Crows, Common Ravens and several passerine species including Fox Sparrows. Small mammals, including Meadow Voles, have been recorded from the inner islands, and White-tailed Deer occasionally visit the islands as do Otter and Mink. Mink predation may be a significant factor in depressing eider breeding activity on some islands.

The Management Area boundaries enclose coastal waters traditionally fished for lobster from mid-April through mid-June. Presently 30 boats are known to be engaged in this fishery and provision has been made in the management regulations to allow fishermen to land on an island at any time to retrieve fishing gear that has washed ashore. Otherwise, landing on the islands without obtaining permission is restricted to the period when birds are not nesting (16 August through 31 March). Recreational boating is allowed in the management area providing such activity does not unduly disturb the birds. At least one operator of a marine touring company periodically travels through the area. Hunting for both big game and waterfowl is permitted during the regular hunting season.

Management goals are to protect and, if necessary, increase colonially-nesting bird populations in the area, with the emphasis on the eider, and to permit public uses that do not interfere with these birds.

Since 1977, regular visits have been made to the islands by government scientists (weather and sea conditions permitting) to census eider nests, record clutch sizes and to capture and band incubating females. These trips are restricted to the interval from just after onset of incubation by most females in the colony (usually around 18 May) to the beginning of the hatch: normally a two to two and one-half week interval. Ground parties sweep the islands finding, counting and marking eider nests and recording clutch sizes. Incubating female eiders are caught by hand or by using trained retrieving dogs, banded and then released. After the clutches have hatched and the eiders have left the islands, a count of cast egg membranes in the marked nests is conducted to determine hatching success.

Minimum estimates of nesting eiders (obtained from the above surveys) for the major colonies in the Management Area indicate that the population has fluctuated between 2,500 and 3,200 during the period from 1977 to 1990. Average clutch size on wooded islands (4.22) is significantly larger than on open islands (3.89), where there is greater exposure to predators. On open islands, where gulls and crows may plunder nests whenever the opportunity presents itself, the percentage

of destroyed nests is generally greater than for nests on wooded islands. Within the past six years, however, perhaps due to increased mammalian predation (mink?) on the wooded islands, nest success was similar on both island types.

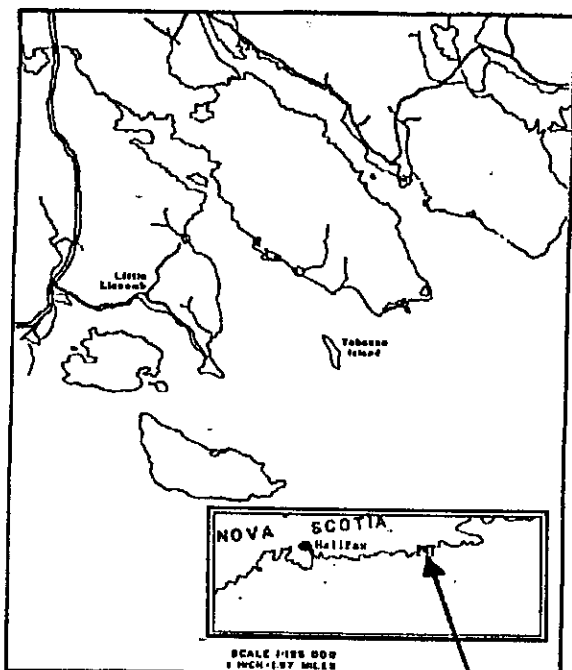
In March 1979, oil from the marine tanker *Kurdistan*, that had sunk off Cape Breton, was swept westward by inshore currents through the Management Area (Figure 2). Ground and aerial surveys revealed oil contamination on scattered sections of mainland and island coastlines and, in these areas, dead and dying seabirds. On Tobacco Island, a provincially-owned island 20 km east of the Management Area, where an eider colony has been monitored since the early 1970's, the number of nests in 1979 dropped to 299 from 698 the pre-

vious year. Also the average clutch size (3.82) was significantly lower in 1979 than in preceding and following years (4.28 and 4.17 respectively). In the Management Area the estimates of numbers of nesting females were also lower in 1979. Two to three years after the oil spill, eider populations had almost fully recovered in both the Management Area and on Tobacco Island.

Tree cover on Tobacco Island has been declining for more than 20 years due to the nesting activities of Double-crested Cormorants. Guano from the colonial tree-nesting cormorants eventually kills the trees which ultimately fall or are blown down thus creating openings for pioneering plants such as raspberries. This dense cover of raspberry canes among many deadfalls is the preferred nesting habitat for eiders on

many of the islands. The number of eider nests on Tobacco Island has more than doubled during the past 20 years. In contrast, on another wooded island, Big White Island, where no cormorants nest, the nesting eider population has remained quite stable (about 700 nests) over the past 16 years.

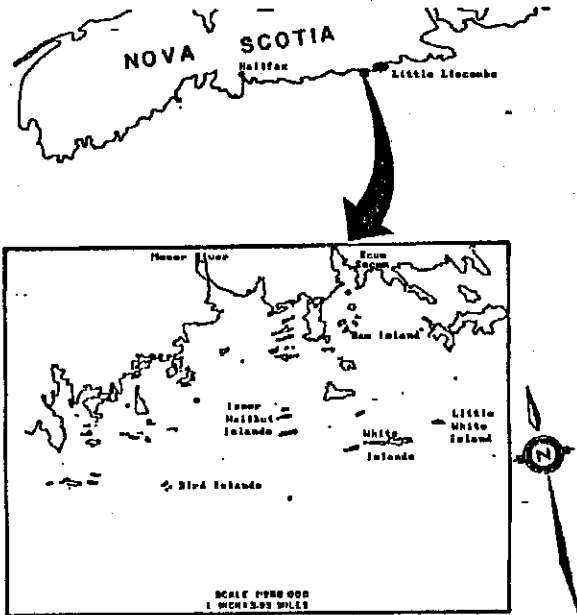
Beginning in 1986, an experimental eiderdown collecting project was initiated to assess the economic viability of this renewable resource industry which has been traditional in northern



Canada and in some Icelandic and Scandinavian communities. During recent years, in the St. Lawrence River estuary, eiderdown has been collected and the money obtained from its sale invested in island habitat protection. On Tobacco Island and islands within the Management Area, eiderdown was collected during the nest census. Approximately 1/3 of the down was collected from each nest and the remainder was used to cover

the eggs. From 1986 to 1990 a total of 43.4 kg of clean down was collected from 11,000 nests. The effects of eiderdown collection on nesting eiders was measured by comparing hatching success between 50 nests from which down was harvested and 50 unharvested nests. No differences in hatching success were observed. Because of high labour costs, difficulty in obtaining clean down, and the vagaries of weather, the economics of establishing a cottage industry based on eiderdown do not appear favourable.

Nest shelters were placed on two open islands to test their effectiveness in reducing nest depredations and increasing nest success. Clutch size and nest success in shelters (4.21 eggs; 2.9 percent nests destroyed) was higher than in natural sites (3.92 eggs; 4.5 percent nests destroyed).

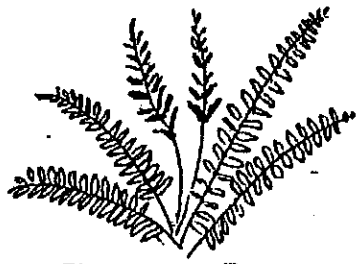


Providing some islands with nest shelters may not only increase the numbers of secure nesting sites, which may be limiting nesting populations, but could also increase the amount of clean down that could be collected.

Numbers of eiders killed by hunters vary greatly from year to year with some peak kills recorded in 1972, 1977, 1981, 1983, and 1989. Recoveries of 87 bands from 2000 eiders banded on the eastern shore islands indicates that 70 percent were killed along the Atlantic coasts of Nova Scotia. Most of the remainder (29 percent) were shot along the coastline of the northeastern United States.

It has been emphasized by many biologists that protected marine areas need to incorporate adjacent land areas within their boundaries and/or management plans due to the

strong physical links between marine and terrestrial environments. Allied with this concept is the notion of buffer zones which, had they been in place between the Eastern Shore Islands Wildlife Management Area and the mainland coast, might have prevented conflicts from developing between aquaculturalists, specifically mussel growers, and eiders. Such zoning could have set aside traditional inshore waters that both adult and young eiders prefer as feeding sites. Excluding birds from these areas is a potential problem in eider management. The location of mussel farms in these waters offers an additional attraction for eiders and an additional problem. Other potential problems close to the Management Area are proposed industrial developments, power generation and oil storage facilities associated with future off-shore oil development.



Cinnamon Fern

name. The Cinnamon Fern is completely "dimorphic" (i.e. the sterile and fertile fronds are separate and not alike). The sterile frond is an ordinary fern frond (leaf) shape, whereas the fertile frond consists of a main stem (stipe and rachis), with fertile pinnae of sporangia (spore cases) on either side. When these sporangia are ripe, the fertile frond takes on its familiar cinnamon stick appearance.

Although normally the sterile and fertile fronds of the Cinnamon Fern are completely separate and different, on rare occasions fronds have been found with some degree of integration between the two. Sometimes the top of the frond is sterile and the bottom fertile, sometimes the reverse, and sometimes the top and bottom sterile and the middle fertile, making the frond look similar to the Interrupted Fern. Although the Cinnamon and Interrupted Ferns often grow close together, as far as I know, no hybrids have been found.

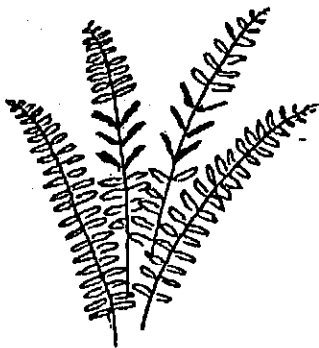
This puzzling condition, known as "frondosa", is also known to occur in other normally dimorphic ferns, such as the Sensitive Fern (*Onoclea sensibilis*). In the *American Fern Journal*, Vol. 75, No. 4, Oct-Dec 1985, Werth, Haskins and Hulburt

"Frondosa" in the Cinnamon Fern

by John Pickwell
New Minas, N.S.

The Cinnamon Fern (*Osmunda cinnamomea*), a large and showy fern that grows in wet places, is very common in our area. In Kentville, I even see it, like its cousin, the Interrupted Fern (*Osmunda claytoniana*), used as a garden plant. Among the most noticeable features of the Cinnamon Fern are the fertile fronds that appear in the spring; they look like large cinnamon sticks and are, of course, responsible for its

speculated that frondosa may be linked to environmental trauma such as road tar, storm damage, fire and frost, although they were unable to identify a particular environmental stimulus. In the spring of 1991, after the very heavy frost (-4 C) on May 17th when the Cinnamon Ferns were in the fiddlehead stage, I found two Cinnamon Ferns with frondosa. Both were out in the open, unprotected by the foliage of other plants. I also noticed that the cold had killed a lot of Sensitive Ferns. I was able to photograph the frond with the greatest degree of frondosa but was unable to collect it since, when I went back to get it, it had been run over by an ATV. I was able to collect the second, less obvious, example of frondosa.



Interrupted Fern

Lichens & Man: Use & Abuse

by Karen Leigh Casselman
Nova Scotia Museum

What do mummies, the colour purple, White-tailed Deer and the Northern Parula Warbler have in common? The answer is lichens!

Egyptians stuffed cadavers with a mixture of lichens. A fourteenth-century Italian family made a purple dye from several species of *Roccella*, capitalizing on a recipe previously devised by the Phoenicians. White-tailed Deer will browse on lichen when other food is scarce. The preferred nesting site of the Northern Parula Warbler is in hanging bunches of "beard lichens" (*Alectoria*, *Bryoria*, *Usnea* spp.). When expertly interwoven, the hair-like strands of these greenish-grey and brown lichens give the nest structural support and provide camouflage.

Although no less an authority than Linnaeus considered these fungal-algal partnerships "plant monstrosities", he nevertheless described in great detail how the Lapps used *Cladina rangiferina* and *C. stellaris* ("reindeer moss") for fodder, fuel and insulation. The Swedes dyed their stockings yellow with *Cetraria tilesii* and made paint from *Umbilicaria deusta*. Aboriginal peoples used these absorbent plants for diapers, capes and even in their shoes. Desperate Arctic explorers preferred soup made from *Actinogyra* and *Lasallia* species to shoe leather broth!

What makes lichens special? Classified as cryptogams, lichens are unique combinations of fungi and alga that coexist in a relationship called "symbiosis". The body of a lichen (the thallus) is the fungal partner. Algae, growing on and between layers of the thallus, provide photosynthesis and nutrients. Scientific opinion varies on the degree to which this association is balanced.

While some lichenologists believe this symbiosis is a mutually beneficial arrangement, others lean toward the concept of parasitism.

Lichens have unique chemical properties. Acids called "lichen substances" are colourless, odourless chemical compounds contained within the thallus. The purple dye made more than three thousand years ago in Tyre was, in fact, a blend of pulverized mollusks, salt, urine and shredded lichen. The three-week fermentation of the lichen substances, in combination with the decomposing mollusks, resulted in a vibrant ooze that became the "royal purple" synonymous with rank and wealth. West coast tribes of North American Indians used lichens as wound dressings, thereby taking advantage of the antibiotic properties of these lichen substances. An American entrepreneur once developed a canned meat featuring his patented lichen preservative!

Increasingly, man's use of lichens has more important implications. Contemporary lichenology has focused on the use of lichens as bioindicators. Atmospheric pollution in Canada, Britain, Europe, Scandinavia and the United States has been monitored by the presence or absence of lichen species and by measuring lichen growth rates. Strict industrial cleanup campaigns in some European countries have resulted in the return of several macrolichen species to areas where these had long been absent. For example, *Evernia prunastri*, a lichen highly susceptible to pollution and disturbance by man, has recently been found again in

inner London city parks.

Lichens are primitive plants that are also very tough and adaptable. They thrive in areas as diverse as tundra, dry desert, equatorial jungles, snow-covered mountain ranges and peat bogs. Lichens can survive periods of total dryness or darkness; they can cope with coverings of ice, snow or flood water. Lichens manage to regrow successfully following forest fires and large-scale browsing by herds of caribou and reindeer.

But what these plants cannot withstand is disturbance by man. Next to pollution, the major threat to lichen flora of the world today is human interference. This takes several forms, including the expansion of rural and urban development, recreational land use, off-road vehicular traffic, and, in Europe, commercial gathering of lichens for the cosmetics industry.

In the Atlantic provinces, macrolichens once flourished within the city limits of Halifax, Fredericton, Saint John, N.B., and St. John's, Nfld. Near each of these cities, one may still find lichen species considered urban rarities by American, European and Scandinavian standards. Many of these large, foliose lichens (such as *Cetrelia*, *Evernia*, *Flavopunctelia* and *Lasallia*) are highly "substrate specific". When land is cleared for homes, malls and factories, developers destroy habitat. The removal of trees and rocks that lichens require for substrata affects their survival. Take away the rocks and trees and lichen communities are assured a certain death.

Some recreational land use is



beneficial to lichens. Marked hiking trails in lichen-rich parts of the Atlantic provinces allow the outdoor enthusiast to enjoy nature and avoid trampling lichens. When special aspects of the flora are noted or posted, our pleasure as participants is heightened. Terricolous (occurring on soil) and saxicolous (on rock) lichen communities are thereby spared from potential damage. However, ATV's impact heavily on lichen flora in bogs and on tundra. From the air, this off-highway traffic is not only an eyesore; it represents permanent damage. Just as shore-birds cannot tolerate vehicular traffic on beaches and dunes, so, too, lichens and bog flora suffer from this so-called "recreational" use of wilderness land.

Cottage development and road construction in granitic regions of Nova Scotia, New Brunswick, Newfoundland and Maine do irreparable damage to lichen populations. The sight of a shed-sized glacial erratic, blasted into pieces, awaiting the crusher, is sickening indeed. These massive boulders support rich lichen

communities. The leathery *Umbilicaria*, that clings by a central holdfast to the rough quartzite crystals, will not colonize limestone or basalt. Once the granite has been destroyed, these macrolichens cannot - will not - regenerate.

Many parts of Nova Scotia are rich in lichen growth. A rainy day's drive in late winter is made brighter by road banks pink with fruiting *Bacomyces fungoides*. A walk to Cape Split or a canoe trip at Keji bring the naturalist into contact with an amazing diversity of lichen size, shape and colour. The species list for the province of Nova Scotia has doubled in the past decade. More than two dozen lichen species found in Nova Scotia, and documented at the Nova Scotia Museum, are rare or absent east of Ontario. Yet lichens receive little mention when environmentalists speak out to protect special flora and unique habitats.

West coast tribes of North American Indians used *Usnea longissima* for shoes. This lichen is now one of the most endangered in boreal Canada, yet *U. longissima* is common in the moisture-rich environs of national parks such as Kejimikujik and Cape Breton Highlands. There is a great need to recognize the value of this unique botanical resource if future generations of nature lovers are to watch Northern Parula Warblers flit among the branches of an aging conifer.

Malacologist

by Sherman Bleakney
Wolfville, N.S.

Ed. Note: A few years ago, a grade 8 teacher in Victoria, Texas, wanting her students to become aware of the many diverse fields of science, had the children look through *American Men and Women of Science* to select the names of scientists with "peculiar" specializations that they had never heard of. They then wrote to the "peculiar" scientists and asked what the specialty was all about and why it was enjoyable to study. Danny Garcia wrote to Sherman Bleakney, Malacologist (one who studies molluscs). Sherman's reply follows.

Dear Danny,

Thank you for writing and asking me why I am a malacologist. I have enclosed some information for you to keep, to read and to use in your Science Fair project. In this file are examples of why I find molluscs very interesting animals.

The word *Mollusca* (or mollusc) means soft body, but it refers to all molluscs, not just the shell-less octopus. You see, all molluscs have soft

bodies, only the outer covering shell (if they have one at all) is the hard part and for that reason they make very convenient food. In fact, molluscs all over the world are a major source of food for people, and have been for thousands of years. You can even eat them raw and fresh off the half-shell like many people do with oysters (yuk!). Of course you could get lucky and break a tooth on a big oyster pearl! Visit your local grocery store and specialty food shop and see just how many clams, mussels, oysters, snails, squids, octopi are canned, smoked, dried and salted.

Those are the good molluscs. There are others that are terribly bad. They can't help it really, but they carry parasites that infect humans, and in all the hot countries of the world where dams and irrigation ditches are built, the snails move in and the people get very sick with schistosomiasis. Other snails like the Giant African Snail are terribly destructive to crops of everything from tea to sugarcane. That snail is a major scare to all farmers in southern United States.

Another problem group of molluscs are the fresh water clams that live in streams. They just love the streams created in city water supply systems. There are conferences of people from all over the world, who get together to exchange ideas and think up new ways of poisoning the clams in the pipes and filter/pumping stations without killing every person in the cities!

What an engineering problem! But there is a clam, the scallop, who has taught the engineers something



new about mirrors. The scallop has such complicated physics in its optical system that our scientists could not understand it until very recently.

We learn many biologically important things from molluscs. By using sea slugs as their research animal, scientists are just beginning to learn how chemicals in our bodies are turned into behavior, and how we turn experience into chemicals that become memory. You may remember this letter for a long time, but not until scientists recently began studying certain sea slugs were they actually able to finally isolate a "memory" in a test tube. So, by studying molluscs, we are learning much about one of man's most unusual abilities, his incredible capacity to store and remember hundreds of thousands of bits of information.

Knowing more about the biology of common, everyday, ordinary clams and snails is important in pollution studies. If they are sick and dying and stinking why of course there is pollution. But some chemicals are in the water and are dangerous but don't kill the snails. When you, Danny, read the article about yacht basins (marinas) you will learn that the pollution turned all the female snails into half male/half female. Who would have ever expected such an effect!

There is a special group of shell-less snails that are my favorites. They are the sea slugs, but ugly garden slugs they are not. In fact, they are the most beautiful creatures in the sea (I enclosed a few pictures for you) and are often referred to as the orchids of the sea and as the butter-

flies of the sea. Their beauty is fit for a queen - the Queen of England, in fact, as you can read in the *Time*



Sea Slug

Magazine article.

The sea slugs I work with are really weird. They contain green chlorophyll that they rob from the sea weeds they eat now and again. Most of the time these snails just lie in the sun, under the water, and photosynthesize like a plant. Some are happy for an entire year without a meal. There are very few animals that can be plants at the same time. If I could just discover how they do it, then I could become green and not have to eat any more junk food (except at birthday parties) and the rest of you might become "green" with envy.

Well, this is a long answer to your question, but I hope it explains in part why thousands of men and women are malacologists - they enjoy the challenge of studying a group of critters that are good, bad, unbelievable and beautiful.

Yours sincerely,

J.S. Bleakney
Professor

Bats in YOUR Belfry

by Bob Painter
Kentville, N.S.

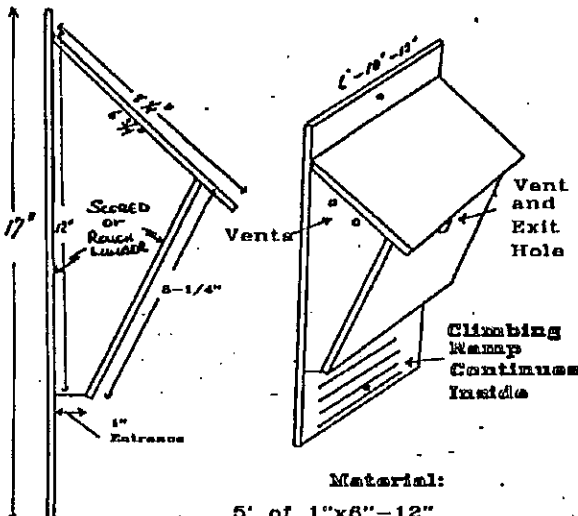
Soon the migratory birds will return and, about the same time, the little brown bats will reappear too (from hibernation). If they were resident in your attic last year, now is the time to clean up the mess and block off their entrance points. In my house, the bats entered the gable end through an impossibly small (so I thought) opening. They didn't physically damage the house, unlike rodents, but their droppings are anything but desirable and can, under appropriate conditions, be hazardous to your health. The bats themselves, though, are nice to have around both

for the aesthetics of their evening acrobatics and the fact that they consume large numbers of insects (whose main goal in life is to consume portions of you or your garden). Before they arrive, provide them with a place to live other than in your house.

A bat house should have a landing ramp, climbing and hanging surface (scored or roughened wood), ventilation holes and be open at the bottom to discourage rodents or birds. The house should be located three to seven metres off the ground, away from your home, in a lightly shaded area, not in direct sunlight. The best location is near water where insects are abundant. If no bats use the box after two years, change the location. Two designs I have used for bat boxes appear below.

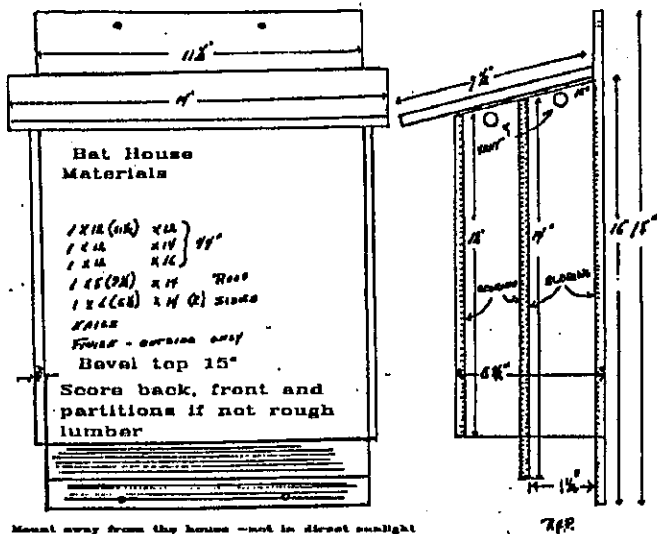
Early evening is a good time to watch the aerial acrobatics as the bats go after their night's ration of about 7,000 insects! Contrary to popular myths, Nova Scotia bats are not vampire bats, they are not rabid, and they won't get in your hair

Design 1



Material:

5' of 1"x6"-12"
Rough Cut Lumber
Use Galvanized Nails



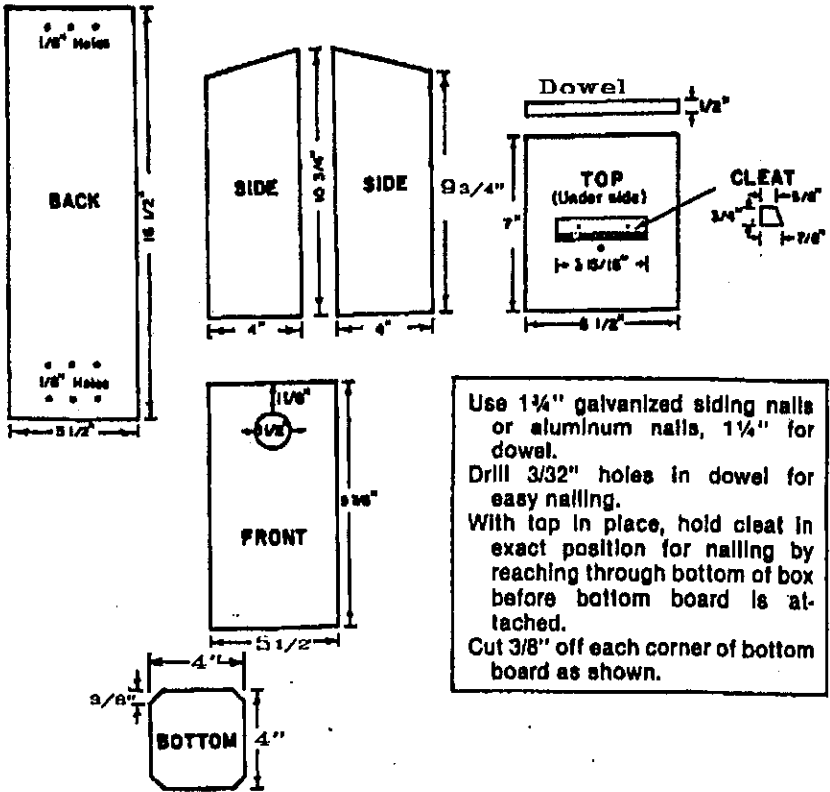
Bluebird Nest Boxes

The following plans and instructions for the construction, placement and maintenance of eastern bluebird nest boxes are condensed from those produced by the North American Bluebird Society, Inc., P.O. Box 6295, Silver Spring, Maryland 20916-6295, U.S.A. (Telephone: (301) 384-2798). Contact them for information on joining the Society and to obtain their catalogue of supplies. Canadian membership in the Society is US \$17.00. Among other benefits, Society members receive a quarterly journal and the opportunity to take an active part in field research.

For BNS members who would like to have nest boxes for bluebirds or similar boxes for other birds but don't have the equipment to build them, John Harwood (see "The Woodside Blue-

birds" in this issue of the *Newsletter*) has offered to make the side-opening boxes from 1/2" exterior grade plywood for \$10 each. Contact John at R.R. # 5, Canning, N.S. BOP 1H0 (Telephone: 582-3320).

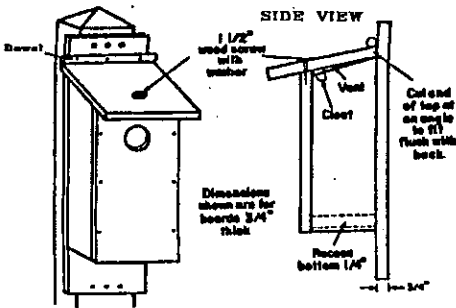
The plans below are for a 4" x 4" top-opening nest box and a 5" x 5" side-opening nest box. Either size is adequate for bluebird broods but the 5" x 5" box is better for tree swallows which often use the boxes. Unfortunately, the larger box is also more attractive to house sparrows, the eastern bluebird's worst enemy. The side-opening nest box is easier to clean and monitor but, if opened when young are in the nest, more likely to cause premature fledging of the nestlings. To make a 5" x 5" top-opening box or a 4" x 4" side-opening box, simply adjust the plans accordingly.



Use 1 1/4" galvanized siding nails or aluminum nails, 1 1/4" for dowel.
 Drill 3/32" holes in dowel for easy nailing.
 With top in place, hold cleat in exact position for nailing by reaching through bottom of box before bottom board is attached.
 Cut 3/8" off each corner of bottom board as shown.

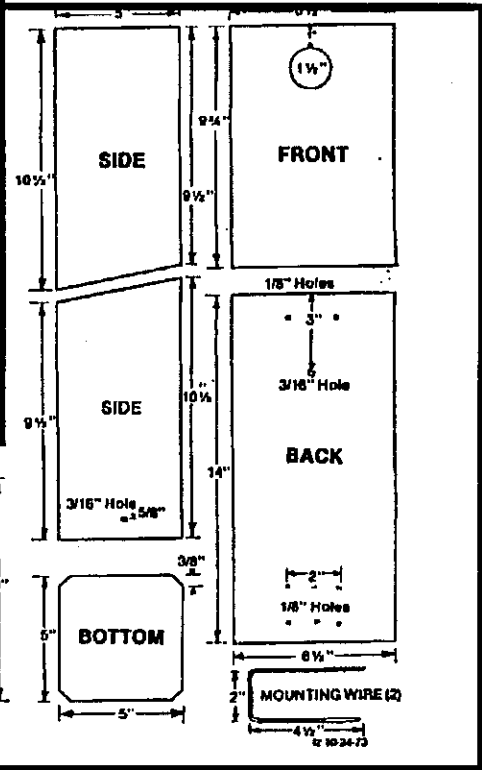
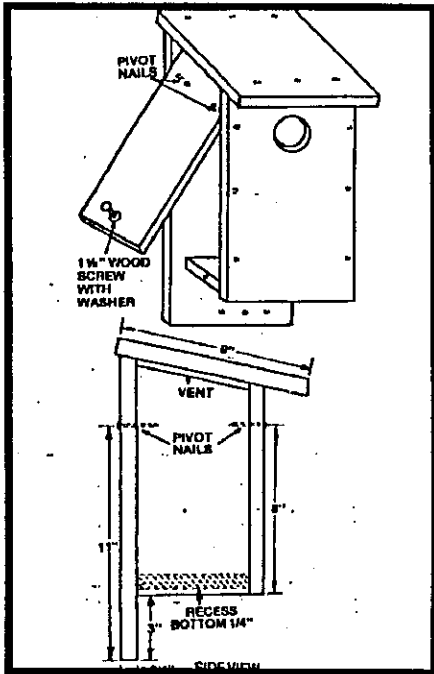
Top-Opening Nest Box Plans

-Construction Instructions



1. All dimensions are for 3/4" stock.
2. Use exterior grade plywood (won't warp) for the box top.
3. Use 1 3/4" galvanized siding nails or aluminium nails.
4. Use 1 1/4" galvanized siding nails or aluminium nails for pivots.
5. Cut 3/8" off corners of bottom of box. This is essential for drainage.
6. Insert bottom of box so that grain runs from front to back of box.
7. The entrance hole must be exactly 1 1/2" in diameter and 1 1/8" from the top. An even

Side-opening Nesting Box Plans



slightly larger hole will admit European starlings. (Use a 1 1/8" hole if the box is intended for chickadees or nuthatches.)

8. If raccoons are a potential problem, make a guard of a small board 3/4" thick with a 1 1/2" hole drilled in it. Attach it firmly to the front of the box so that the hole coincides exactly with the entrance hole in the box.

9. No painting is necessary if the box made of cedar, cypress, redwood, or exterior grade plywood. Boxes made of other woods will last longer if painted **on the outside only** with exterior grade latex paint. Use light colours only to prevent overheating. **Never** use paints that contain lead or toxic wood preservatives such as pentachlorophenol.

Selecting a Location

1. Choose an open area, with scattered trees, where the ground is not covered with underbrush, tall grass or tall weeds. Pastures, fields, large lawns, cemeteries, and golf courses are usually good locations. Avoid areas where house sparrows or European starlings are abundant and areas of extensive pesticide use. Placing a nest box in unsuitable habitat usually results in more starlings or house sparrows, not bluebirds.

2. Bluebirds will not nest in the woods and rarely in deep shade or closer together than approximately 100 m. However, two boxes can be put close together, one for bluebirds and one for tree swallows or other small birds, since there is little interspecific aggression between the bluebirds and other small songbirds.

3. Ideally, the bluebird nest box should face an open area with a tree, large shrub or fence about 10-30 m in front of the box. The young birds will usually reach this on their first flight and have a better chance of surviving the first critical hours out of the nest.

Mounting the Box

1. Mount the box by late winter, about 1-2 m from the ground.

2. Using the holes indicated on the plans, screw the box to the top or side of a wooden post or bolt or

wire it to the top or side of a metal post. If the box is placed on top of the post, ensure that the drainage holes are not blocked. Use galvanized washers and coated screws or wires to avoid rust.

3. If climbing predators are a potential problem, a metal post is preferred. A 1/2" or 3/4" threaded galvanized pipe can be attached to the bottom of the box with a pipe flange. Coat the pipe with soft grease while the bluebirds are nesting. On a wooden post, attach a sheet metal guard 18" or more in diameter just below the box.

Maintaining the Box

1. Monitor the box at least weekly during the nesting season. If house sparrows or European starlings are attempting to use the box, remove their nests repeatedly, daily if necessary.

2. To avoid causing premature fledging of nestlings, do not open side-opening boxes containing nestlings older than 12 days.

3. Remove the bluebird nest as soon as the young have left since this will increase the chances of a second or third brood being raised in the same box. Clean the box (but don't use cleaning agents) and ensure the drainage holes are open.

4. Inspect, clean and repair the boxes in late winter ensuring that the drainage holes are open.

Nurtseries

HIGHWAY 1, AT EXIT 11 of HIGHWAY 101
GREENWICH

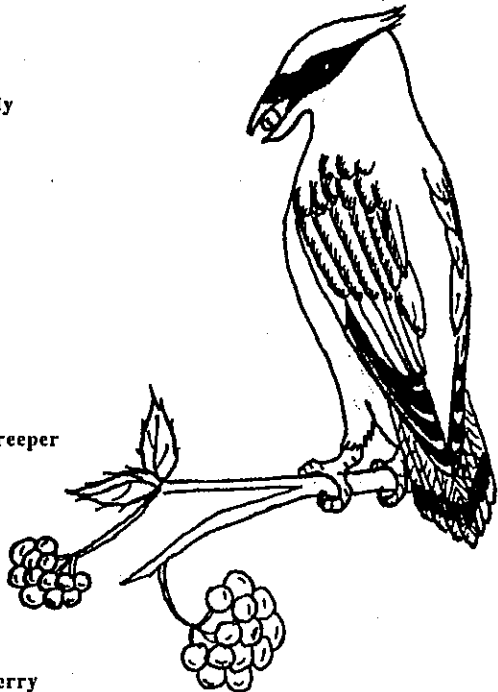
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WOLFVILLE BUSINESS NOTES

Recent co-operative efforts to develop the Front Street area in Wolfville -- the relocation of the liquor store, the construction of the Robie Tufts Nature Centre, the conversion of the railway station to a library, and the development of carefully - designed parking and landscaping -- provided valuable local experience in how to organize coalitions and joint ventures among groups with very different interests.

All across North America, co-operation of this kind is beginning to be seen as a means of co-ordinating efforts *across* environmental and economic boundaries, of reducing or avoiding costly mistakes, and of increasing the return on investment.

In order to further develop our good relations with the Blomidon Naturalists, the W.B.D.C. has asked to purchase space for a regular column in the Society newspaper. We would use this column to provide information about the Wolfville business community -- to comment on issues of the day, to discuss development projects underway, to outline concerns or opportunities we see. We look forward to your feedback, and will address comments and issues in future columns, as well as bringing you our news.

Wolfville Business Development Corporation Ltd.

7 Gaspereau Ave., Box 234
Wolfville, Nova Scotia
B0P 1X0
Telephone 542-5767
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Trivial Tidbits of Local Natural History

Unavailable this issue.

Sources for Local Natural History Information (compiled by Blomidon Naturalists Society)

<i>Information</i>	<i>Source</i>	<i>Office</i>	<i>Home</i>
Rocks & Fossils	Geol. Dept., Acadia Univ.	542-2201	
Fish	N.S. Dept. of Natural Resources	679-6091	
Flora - General	Ruth Newell	542-2201	542-2095
Flora - Trees	Merritt Gibson	542-2201	582-7569
Flora - Fungi	Darryl Grund Nancy Nickerson	542-2201 679-5333	542-9214 542-9332
Flora - Lichens	Karen Casselman	424-7370	633-2837
Flora - Seaweeds	Darryl Grund	542-2201	542-9214
Flora - Mosses & Ferns	John Pickwell		681-8281
Birds - General	Bernard Forsythe Richard Stern Gordon & Judy Tufts Jim Wolford Jean Timpa	 678-4742 542-2201	542-2427 678-1975 542-7800 542-7650 542-5678
Birds - Hawks & Owls	Bernard Forsythe Cyril Coldwell	 542-2201	542-2427 542-2854
Birds - Falcons & Eagles	Peter Austin-Smith		542-2109
Mammals	Tom Herman	542-2201	678-0383
Amphibians & Reptiles	Sherman Bleakney Jim Wolford	542-2201 542-2201	542-3604 542-7650
Seashore & Marine Life	Sherman Bleakney Jim Wolford Graham Daborn Michael Brylinsky	542-2201 542-2201 542-2201 542-2201	542-3604 542-7650 542-5373 582-7954
Indian Prehistory & Archaeological Sites	Ellis Gertridge James Legge		542-2816 542-3530
Astronomy	Roy Bishop Larry Bogan Sherman Williams	542-2201 542-2201 542-3598	542-3992 678-0446 542-5104

BLOMIDON NATURALISTS SOCIETY

1991 - 1992 Membership Fees

Each member receives four issues yearly of the *BNS Newsletter*. The Blomidon Naturalists Society is a registered charity. Receipts for income tax purposes will be issued for all donations. The membership fee itself is not tax-deductible.

Members may also subscribe to *FNSN News*, the newsletter of the Federation of Nova Scotia Naturalists; the subscription fee is not tax-deductible.

Please enclose a cheque or money order payable to "Blomidon Naturalists Society" and forward to:

Harold Forsyth
R.R. 2
Wolfville, N.S. B0P 1X0

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