

BLOMIDON NATURALISTS SOCIETY NEWSLETTER



VOLUME 16
NUMBER 1
MARCH 1989

SOCIETY NEWS

BNS Spring Programme

MONDAY EVENING MEETINGS: All meetings will start at 7:30 p.m. and, unless otherwise indicated, will be held in Room 241 of the Beverage 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.

1. March 20 -- "Show and Tell Night" in Room 308, Patterson Hall (Acadia University Biology Building). Share your natural history interests and experiences with other enthusiasts. Bring interesting finds, slides (10-15), display collections, books, etc.

2. April 17 -- "The Natural History of Weeds and Animal Pests". David Patriquin, Dalhousie University will discuss this fascinating topic as related to agriculture.

3. May 15 -- "Turtle Lives and Legends" with Tom Herman and Terry Power, both of Acadia University.

4. June 19 -- "Seaweeds, Sea Urchins and Lobsters: a Chicken-and-Egg Type of Situation" with Ken Mann of the Bedford Institute of Oceanography.



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The BNS Newsletter is published on equinoxes and solstices.

Editors: George and Margaret Alliston
Art: Mary Pratt
Production: Larry Bogan
Distribution: Lana Churchill and Brenda Thexton

"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 an Affiliated Member of the Canadian Nature Federation.

Address correspondence to:
Blomidon Naturalists Society
P.O. Box 127
Wolfville, Nova Scotia
BOP 1X0

Field Trips

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

1. Tuesday, April 4, 7:00 p.m. -- Canada Geese Flypast at Wellington Dyke. Leader: Jim Wolford (542-7650).

2. Thursday, April 6, 8:00 p.m. -- Celestial Observing to see a 20 hour young Moon, Jupiter, Mars, and objects of the Spring Skies. Meet at the Stiles Park on the Ridge in Wolfville at 8:15 p.m. This will be cancelled if the sky is cloudy. Please overdress for warmth and bring your binoculars. Leaders: Larry Bogan (678-0446) and Sherman Williams (542-5104).

3. Tuesday, April 25, 7:00 p.m. -- Bernard Forsythe (542-2427) will lead a field trip to look for Owls and Woodcock. If windy, this trip will take place the next night. Bring a flashlight.

4. Monday, May 1, 9:00 p.m. -- Amphibians in Gaspereau Ponds and Ditches. Leader: Jim Wolford (542-7650). Wear waterproof footwear. A flashlight is handy.

5. Sunday, May 14, 9:00 a.m. or 9:45 a.m. at the entrance to Blomidon Park -- Blomidon Park Walk with Sherman Williams (542-5104). Bring a lunch.

6. Saturday, May 27, 1:00 p.m. -- Gaspereau River Valley Walk, to see spring flowers, starting at White Rock. Leaders: Bernard Forsythe (542-2427) and Ruth Newell (542-2095).

7. Sunday, June 4, 1:00 p.m. -- a trip led by Jim Wolford (542-7650) to see Lady's Slippers in Coldbrook Pine Woods and then visit oxbow ponds with Tom Herman (678-0383).

8. Sunday, June 18, 8:00 a.m. -- Kingston Sandbarrens, Bog Complex led by Jim Wolford (542-7650). Bring a lunch.

Speakers

BNS Spring Programme

David Patriquin

Dr. David G. Patriquin is Associate Professor, Biology Department, Dalhousie University. Although he did his doctoral studies at McGill University in Marine Biology (in the West Indies), about twelve years ago he developed a special interest in the ecology of farm systems, particularly in Eastern Canada. He has also worked overseas in a number of developing countries.

Thomas Herman

Dr. Thomas Herman is Associate Professor of Biology at Acadia University. He did his undergraduate work at Antioch College and his graduate work at the University of Alberta. His special interests are in the area of animal population ecology particularly movement patterns and spacing systems.

Terry Power

Terry Power, a P.E.I. native and graduate of the University of Prince Edward Island, is currently an M.Sc. student in biology at Acadia University. As part of his graduate work, he is studying Blandings Turtles in Kejimikujik Park.

Kenneth H. Mann

Dr. Kenneth H. Mann is a research scientist at the Bedford Institute of Oceanography and an Adjunct Professor of Biology at Dalhousie University. Formerly Director of the Marine Ecology Laboratory, BIO, and Chairman of Biology at Dalhousie University, Dr. Mann is the author of two books and is currently working on a third, "Dynamics of Marine Ecosystems", which looks at the relationship between physics and biology in the ocean.

Acknowledgements

Many thanks to:

Barry Sabean for providing some data about and insights into coyotes, a subject of ongoing interest in Nova Scotia, and Hal Whitehead for a fascinating description of the social organization of sperm whales;

Jim Wolford and Lana Churchill for the special workshop on "Winter Birds" and Jim Wolford for the special workshop on "Identification of Nova Scotia Birds of Prey";

our field trip leaders: Dr. Sherman Bleakney, Dr. Merritt Gibson and Bernard Forsythe;

all of our Newsletter contributors.

SOCIETY BUSINESS



Errata

The last Newsletter was Volume 15, Number 4, December 1988 (not Number 3 as printed on the cover).

BNS Newsletter Submissions Deadline - June 1, 1989

Please send or give all contributions to the Newsletter to:

George Alliston (542-3651)

R.R 3

Wolfville, N.S. BOP 1X0

or to other members of the BNS executive.

For "Trivial Tidbits" only, send your written observations (in chronological order) to Jim Wolford at:

Biology Department

Acadia University

Wolfville, N.S. BOP 1X0

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

The editors would greatly appreciate all submissions, even those typed or word-processed, being at least double-spaced to facilitate both editing and word processing. Sketches or diagrams should be submitted in final form, preferably on a separate page.

NATURE NEWS

A Century of Change - The Island Way

18th Annual Conference

The Canadian Nature Federation

June 11 - 14, 1989

Charlottetown, Prince Edward Island

The Island Nature Trust and The Natural History Society of Prince Edward Island are hosting this conference at the University of Prince Edward Island for the Canadian Nature Federation of which the Blomidon Naturalists Society is an Affiliated Member. The program features the plants and wildlife of P.E.I.

One-day field trips, arranged by Headland Nature Tours Ltd., include:

- seals, seabirds and saltmarshes
- butterflies and bobolinks
- eco-tour of natural areas
- forestry alternatives
- aquaculture seeing and tasting
- children's nature outing.

Special tours will also be available to the Magdalen Islands and to Nova Scotia for fossil hunting.

For further information, write:

CNF Conference

P.O. Box 265

Charlottetown, P.E.I.

C1A 7K4

or call:

(902) 566-9150 from 8:30 am - 5:00 pm

(902) 892-7513 Atlantic time

and specify in which field trips and/or tours you might be interested.

Birds of Prey

A very fine bird exhibit will be at the Nova Scotia Museum from September 30, 1989 to January 1, 1990. Birds of Prey, produced by the Royal British Columbia Museum, contains mounted specimens in natural poses of all the 35 birds of prey species (Hawks, Vultures, Falcons, Owls, Eagles and Ospreys) native to Canada. Interpretation of adaptation, feeding, distribution, voice, breeding and legal protection will be done with graphics, labels, photographs and sounds. Later, the Nova Scotia Museum will also announce local programs to supplement the exhibit. Watch for announcements in further Newsletters.

The Owls portion of the exhibit can also be seen at the Hector Centre in Pictou starting May 20, 1989 and Vultures, Hawks and Falcons will be at the DesBrisay Museum in Bridgewater from May 20 to June 30, 1989.

Improving Wild Apple Trees for Wildlife

Did you know that wild apple trees attract deer, ruffed grouse, snowshoe hare, squirrels, foxes and porcupines?

They do! But they need work. Most wild apple trees found throughout Nova Scotia are overgrown with competing shrubs and trees and laden with dead or diseased branches. This reduces their vigor, making them less valuable for wildlife.

Lands and Forests has published a new pamphlet, Improving Wild Apple Trees for Wildlife, which provides information on how to vitalize these valuable trees simply and inexpensively, using the techniques of foresters and orchardists.

Copies are available from Lands and Forests, Extension Services - Support, P.O. Box 68, Truro, N.S. B2N 5B8 (Phone 895-1591).

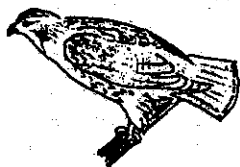
The above is reprinted from FOREST TIMES, Volume 11, Number 1, January, 1989. A reminder again that FOREST TIMES itself, published six times a year "to provide information on forest improvement to private landowners and others interested in the forests of Nova Scotia", can be obtained, free of charge, by writing:

Mr. Jim Guild, Editor
FOREST TIMES
P.O. Box 68, Truro, N.S.
B2N 5B8

people (mostly from the HFN plus a few from the Annapolis Field Naturalists) and one very well-behaved dog.

Frosted windows were a problem at first. A few far-sighted people got scrapers out of their vehicles; the rest of us used MasterCards and whatever else would help! Eventually, when most of us were able to open our windows, things got better; then we all froze! Seriously, though, this trip went very well and we thank everyone for their donations to help defray the cost of the bus.

The official bald eagle tally kept by Lana Churchill was 87: 45 adults (including subadults) and 42 immatures. Notable concentrations were: at least 22 at the Archibald farm at Sheffield Mills, including nine in one tree, about 12 at a farm northeast of Port Williams and 13 at Gordon Young's farm above White Rock.



Red-tailed Hawk

Only four red-tailed hawks were seen all day although Lana Churchill had seen a "kettle" of eight just the week before. Merritt Gibson said their numbers had dropped a lot since the New Year (165 were seen on December 17, 1988 in the Wolfville Christmas Bird Count).

The group ate a late lunch at the Acadia University Biology Building Museum where interested birders could examine the many bald eagle skins displayed by Cyril Coldwell to show how plumage varies with age. A few people then went to Cyril Coldwell's farm at Gaspereau to observe his recuperating caged birds: a red-tailed hawk, a snowy owl and seven bald eagles.

Winter Beaches and Seabirds

February 26, 1989

by Bernard Forsythe
Wolfville, N.S.

In two cars, a small party of four plus a dog, Sophie, made the rounds of the beaches from Voglers Cove to the Lahave Islands of Lunenburg County. The small turnout was probably due to the heavy snowstorm of the previous day. Those who went enjoyed a beautiful sunny day with a few fluffy clouds and well-plowed roads. There were only a few inches of snow cover along the coast. Most of the "expected" seabird species were spotted and our list totaled 31 species of birds for the day.

An adult Iceland gull at Voglers Cove made a nice start for our outing. The common loon lived up to its name; they were everywhere in large numbers. Some of the other species seen at most stops included eiders, oldsquaws, scoters and red-breasted mergansers. Others were spotted at only one stop: a lone greater scaup, two buffleheads and a large raft of goldeneyes on the sheltered side of the Crescent Beach road. We agreed that the black scoters, which we saw at close range, were impressive. The jet black plumage of the males contrasted beautifully with the bright orange knob on their bills. Several distant red-necked grebes and a few close-up, tiny horned grebes rounded out the seabird list

very nicely. There were a few land birds around. Dark-eyed juncos foraging in some seaweed and a handful of song and white-throated sparrows stood out.



The spruce woods extend down to the shore near Broad Cove where we looked at lots of small mammal tracks in the snow and white-tailed deer trails leading into the seaweed on the beach. All the wildlife proved interesting; however, the scenery was outstanding. The changing light patterns over the incoming tide and the light snow and ice cover over the rocks and trees caused us all to stop often and reflect on the beauty of this winter coastline. The return trip had its highlights too: a pileated woodpecker, a bright red male pine grosbeak and a glimpse of a mink on a frozen roadside brook. Truly a winter outing to be remembered for some time.

NATURE REPORTS

Little Brown Boxes Revisited

by J. Sherman Boates
Wolfville, N.S.

Before long the tree swallows will return and hopefully again take up residence in some of the "little brown boxes" in the orchards around Wolfville. In an earlier issue of the Newsletter, Christine Garron and Pam Matthews wrote about what we were doing during the summer of 1988. You might like to know some of our preliminary results and our plans for the upcoming season.

Last spring, we set up 136 tree swallow nest boxes in orchards that are sprayed with a variety of pesticides, and 87 nest boxes in orchards where sprays have not been used in recent years. Tree swallows occupied 31 (14%) of these boxes last summer. We were pleased to have this many boxes occupied in the first year of the study and expect that a lot more boxes will be used this year.

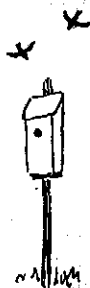
I see no harm in sharing our preliminary results, even though it is too early in the study to answer a complex question like "Do pesticides affect the breeding biology of the tree swallow?". Please remember these results are very tentative and that we need a much larger sample of nests before we can say anything conclusive.

The number of eggs laid by each female swallow and the growth rate of their chicks was the same in sprayed and unsprayed orchards. However, the swallows may prefer to nest in unsprayed orchards. Our data indicate that a smaller proportion of boxes in sprayed orchards were colonized by swallows, and older female swallows, which often have first choice of nest sites, were more common in unsprayed orchards. As well, only 8 of 116 swallow chicks died before they left the nest. All of these were in sprayed orchards, but

this may or may not have something to do with pesticides. These chicks did have abnormally slow rates of growth, suggesting that for some reason their parents were not providing them with enough food.

Our work is part of a large cooperative project to study the geographic variation in food abundance and clutch size of tree swallows. David Hussell, of the Ministry of Natural Resources in Ontario, will compare our information on insect abundance and clutch size with information collected, in the same way and at the same time, by researchers all over North America. The results of this work should be very interesting. It will be a few years before this study is complete, but I will pass on the results when they are available.

This year we hope to get funding to continue our work on tree swallows. I also have a new graduate student, Denise Packard, who will compare tree and bank swallow colonies in the Valley area. At the moment she is looking for good bank swallow colonies to study. If you know of any, please let us know. (Sherman Boates can be contacted at the Biology Department, Acadia University, Wolfville, N.S. BOP 1X0 or telephone 542-2201, ext. 594.



"As deforestation progresses, it reduces the quality of life of millions of people in developing countries; their survival is threatened by the loss of the vegetation upon which they depend for their sources of household energy and many other goods. If tropical forests continue to be cleared at the current rate, at least 556 million acres (225 million hectares) will be cleared by the year 2000; if destruction of the tropical rain forest continues unabated, an estimated 10 to 20 per cent of the Earth's plant and animal life will be gone by the year 2000.

Reversing deforestation depends on political leadership and appropriate policy changes by developing-country governments to support community-level initiatives. The key ingredient is active participation by the millions of small farmers and landless people who daily use forests and trees to meet their needs."

from the submission by J. Gustave Speth, President, World Resources Institute, World Commission on Environment and Development Hearing, Sao Paulo, October 28-29, 1985.

Christmas Bird Counts (continued)

The last Blomidon Naturalists Society Newsletter (Volume 15, Number 4, December 1988) was published late to allow the inclusion of the Wolfville, Brier Island and West Hants Christmas Bird Counts. Since then Jim Wolford has selected highlights from three more Christmas Bird Counts. The full counts, along with many others, will be published in Nova Scotia Birds this spring. To receive this publication of the Nova Scotia Bird Society, contact them:

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

Halifax West Christmas Bird Count
 December 18, 1988

from Dave Currie and the Nova
 Scotia Bird Society

Double-cr. Cormorant..	6	Hermit Thrush.....	1
Lesser scaup.....	2	Gray Catbird.....	1
Merlin.....	3	Northern Mockingbird..	6
American Coot.....	2	Orange-crowned Warbler	1
Sanderling.....	2	Yellow-rumped Warbler	40
Purple Sandpiper.....	17	Pine Warbler.....	9
Common snipe.....	1	Palm Warbler.....	7
Common Bl.-headed Gull	40	Common Yellowthroat...	1
Iceland Gull.....	131	Yellow-breasted Chat..	2
Glaucous Gull.....	4	Dickcissel.....	1
Lesser Bl.-backed Gull	1	Chipping Sparrow.....	1
Bl.-legged Kittiwake..	10	Northern Oriole.....	6
Dovekie.....	5	Common Chaffinch.....	1
Snowy Owl.....	1	House Finch.....	1
Belted Kingfisher.....	1	White-winged Crossbill	11
Jackdaw.....	1	Pine Siskin.....	1
Golden-crowned Kinglet	156	Evening Grosbeak.....	19

Also seen in "count week": Wilson's warbler, indigo bunting
 and rufous-sided towhee.

Halifax East Christmas Bird Count
 Lawrencetown, Cole Harbour Area
 December 26, 1988

from Fulton Lavender and the
 Nova Scotia Bird Society

Red-throated Loon.....	1	Red-breasted Nuthatch.	30
Great Blue Heron.....	1	Golden-crowned Kinglet	403
Canada Goose.....	5584	Ruby-crowned Kinglet..	1
Greater Scaup.....	13	Northern Mockingbird..	3
Bufflehead.....	64	Water Pipit.....	1
Northern Harrier.....	1	Yellow-rumped Warbler.	13
Dunlin.....	4	Common Yellowthroat...	1
Red Knot.....	2	Chipping Sparrow.....	1
Dovekie.....	1	Savannah Sparrow.....	9
Belted Kingfisher.....	1	Fox Sparrow.....	1
Northern Flicker.....	1	Red Crossbill.....	26
Boreal Chickadee.....	87	White-winged Crossbill	74



Greater Scaup

Broad Cove Christmas Bird Count
Lunenburg County
 December 31, 1988

from Sylvia Fullerton and the
 Nova Scotia Bird Society

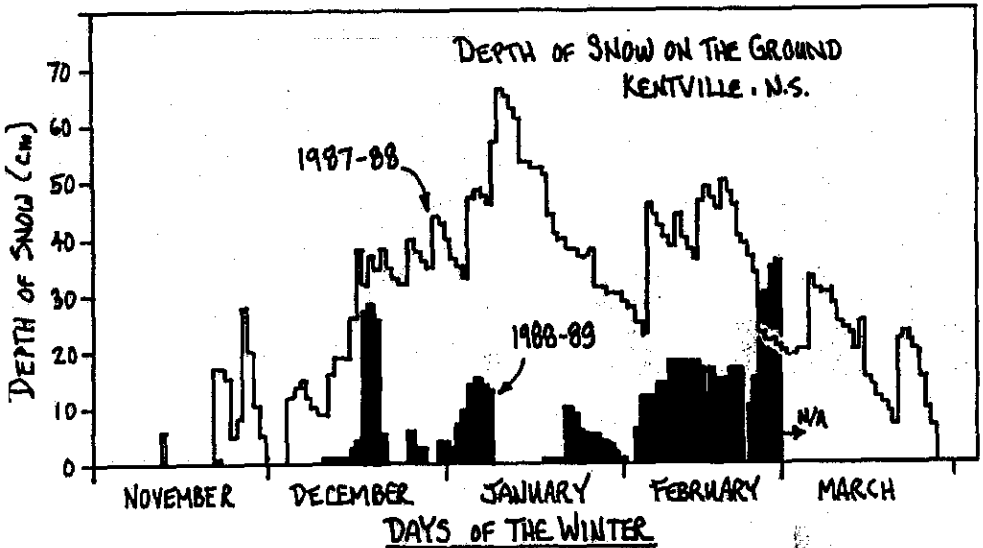
Northern Harrier.....	3	Golden-crowned Kinglet	143
American Kestrel.....	1	Northern Shrike.....	1
Killdeer.....	6	Yellow-rumped Warbler	5
Ruddy Turnstone.....	1	Rufous-sided Towhee...	1
Sanderling.....	17		

Also seen in "count week": a peregrine falcon.

Winter Snow 1988-89

by Larry Bogan
 Cambridge Station, N.S.

The lack of snow cover has been the most obvious characteristic of our winter weather this year. The graph below compares the depth of snow during the winters of 1987-88 and 1988-89. As usual, I have obtained statistics from the Agriculture Research Station at Kentville, N.S. The graph shows the dramatic difference between the two winters. Although the we had 80% of the snowfall of last year for the January, February and March, the snowcover was much less than that because most of our snowfall this year was delayed until February. We kept the snow last year until April and this year we lost it all by March 17.



In the June 1988 BNS Newsletter I compared the winters of 1987-88 and 1986-87. Both of those winters had relatively heavy snow cover but only slightly higher than average snowfalls. This year we have had a very dry winter (total precipitation for the three months was only 65% of the normal). December and January were very dry with each having only 57 mm of precipitation compared to a 30-year average of 130 mm. Actually, December had an average snowfall but the rain was far below average. This year, February's above average precipitation help compensate for those dry months.

Another cause for an "open" winter is warmer than average temperatures; however this has not been the case in the winter of 1988-89. December was cold, with the average temperature being 1.4 C below the long-term average while January was slightly warmer at 0.9 C above the average. The average temperature for January, February, and March was actually cooler than normal (-4.55 compared with the normal of -4.2 C).

However, we have had large fluctuations in temperature. An example of these fluctuations is shown in the extremes of maximum and minimum temperatures in January. On January 7th we had the extreme minimum for the month of -20 C while the extreme maximum occurred the very next day at +10 C. On the 12th of January the maximum for the day was +8 C while the minimum was -18 C.

Below are the average monthly weather statistics for the winter to date. I'll let you judge from the numbers as to how this winter stacks up to a "normal" winter in other categories. The 30-year averages are in parentheses.

1988/ 1989	Snow- fall cm	Rain mm	Total Prec. mm *	Average Temp. deg. C	Bright Sunshine hours
Dec.	54 (57)	18 (73)	57 (130)	-3.8 (-2.4)	83 (56)
Jan.	33 (72)	34 (65)	57 (136)	-4.1 (-5.0)	71 (73)
Feb.	84 (65)	49 (42)	127 (107)	-5.9 (-5.2)	80 (98)
Totals	171(194)	101(180)	241 (373)	-4.6 (-4.2)	234 (227)

* Snow is collected in a Nipher gauge - a cylindrical apparatus, about 10 cm in diameter and 50 cm long, attached to a funnel to minimize wind effects. The gauge, which can also be used for rain, is mounted about 1.5 m above ground, then the collected snow is measured, melted and re-measured. This adjusts the "rain equivalent" for the density of the snow and explains why there is not a consistent relationship between snowfall and equivalent rain. Ed.

TRIVIAL TIDBITS

TRIVIAL TIDBITS
of Local Natural History
December 6, 1988 to March 1, 1989

selected and compiled
by Jim Wolford
Wolfville, N.S.

So far we've had another of those weird and memorable years. "Where are all of our birds?", ask most of the feeder-watchers! A combination of mild autumn weather plus lots of wild food (cones, seeds, berries, etc.) may be part of the answer. Check out our Christmas Bird Count numbers again and note the "bumper crops" of bald eagles, red-tailed hawks, golden-crowned kinglets, red-breasted nuthatches and, especially, American robins! Also, there have been lots of sightings of pileated woodpeckers in several regions. Let's get more people (besides Bernard Forsythe!) into the woods immediately to look for evidence of nesting by white-winged crossbills.

Date (1988)		Obs
Dec 6	-a <u>jackdaw</u> and a yellow-breasted chat in Hfx.	JGT
Dec 17	-Wolfville Christmas Bird Count (see <u>BNS News- letter</u> , Vol. 15, No. 4, December 1988)	BNS et al
	-a wood duck, 3 green-winged teal at Greenwich	JGT
	-a sandy-coloured starling	JW,HD
Dec 18	-Halifax West Christmas Bird Count (see this issue of the Newsletter)	
Dec 20	-Brier Island Christmas Bird Count (for highlights see <u>BNS Newsletter</u> , Vol. 15.,No.4, December 1988)	
	-a warbler (possibly pine?) at a Wolfville feeder	GN
Dec 25	-60 evening grosbeaks on Wolfville Ridge	JGT
	(approx)-a few Bohemian waxwings near Middleton	JDK
Dec 26	-Halifax East Christmas Bird Count (see this issue of the Newsletter)	
	-1 male purple finch at Middleton	JDK
Dec 28	-a <u>Say's phoebe</u> at Lawrencetown, near Middleton	PM,LWN
	-a <u>blue grosbeak</u> at Bridgetown (first reported Dec 16), also seen Dec 29 by JGT	GF,HF
Dec 28,	Jan 2 -a barred owl near Walton	KLC
Dec 30	-a <u>mew gull</u> in Halifax-Dartmouth	JGT
Dec 31	-Broad Cove Christmas Bird Count (see this issue of the Newsletter)	
Dec ?	-Christmas Bird Count at Hopewell, Pictou Co; lots of white-winged crossbills, some singing	CB
Jan 2	-West Hants Christmas Bird Count (see <u>BNS News- letter</u> , Vol. 15., No. 4, December 1988)	
	- <u>juvenile</u> white-winged crossbills seen during W. Hants Christmas Bird Count	JTa
	-a female <u>yellow-headed blackbird</u> near Kingston	FH

- Jan 2 - field sparrow at Greenwich feeder (still
(cont) present Feb 27 - HF) (seen by many others) BLF
-5 gray partridges at Windsor BBT
- Jan 6 -9 Savannah sparrows with a white-throated
sparrow near Evangeline Beach JSB
-a mink seen in Wolfville JS, DGT
- Jan 7 -a northern mockingbird at Nants Border AF, HS
-2 red-winged blackbirds at Greenwich MT, JW
-72 cedar waxwings in Wolfville FS
- Jan 8 -an ivory gull at Canso Fish Plant RBA
- Jan 10 -the common chaffinch is back at a feeder
in Halifax FL
- Jan 12 -5 Bohemian waxwings near Gaspereau MG
- Jan 13 -30 mourning doves at Greenwich LC, MT
- Jan 14 -a black-capped chickadee "singing" in Wolfville JT
-a pileated woodpecker seen near Middleton BBT
-an adult Iceland gull at Canard Poultry JW



- Jan 15 -at Greenfield, white-winged crossbills in pairs,
singing; one male attempted to copulate with a
female BLF
-a Bohemian waxwing and 61 cedar waxwings JSB
in Wolfville
-"Sewer Stroll" in Dartmouth/Halifax area: 1 north-
ern pintail, 2 lesser scaups, 1 female Barrow's
goldeneye (CS), 2 buffleheads, 1 American coot,
1 lesser black-backed gull (3rd year) (CS), 1 mew
gull (CS), 20 common black-headed gulls, 1 Bona-
parte's gull, 17 black-legged kittiwakes,
3 dovekies NSBS
- Jan 16 -a male American kestrel north of Kentville BBT
- Jan 17 -37 Canada geese and 6 common mergansers in
mouth of Cornwallis River, Wolfville BBT, JT
-2 pairs of hooded mergansers in Cornwallis
River at Cambridge FS1
- Jan 19 to 23 - a snowy owl at Cheverie VCB, KLC
- Jan 19, 20 -2 yellow-rumped warblers on Wolfville Ridge BLF
- Jan 20 -a white-breasted nuthatch at a feeder in a
spruce tree in Port Williams MT
- Jan 21 -blizzard produced 4 evening grosbeaks at my
feeder in Wolfville JW
-a brown creeper in Kentville Ravine JP
- Jan 22 -a warbler (probably a common yellowthroat)
east of Gaspereau EM
- Jan 24 -a great blue heron near Sheffield Mills BBT
- Jan 25 -common ravens in 2 separate groups of 3 birds
doing aerobatics and interacting as if in
courtship, at Sheffield Mills JW
-at Canard Poultry, a juvenile Iceland gull, a
northern pintail, 4 mallards, 25 American black
ducks and 1 mallard/black hybrid JW
-45 mourning doves at Sheffield Mills JW

- Jan 26 -16 Bohemian waxwings, 40 cedar waxwings, 40 American robins, 5 white-throated sparrows in Wolfville PCS
- Jan 27 -at least 100 American robins in an orchard near Middleton DGT
- Jan 27 to 29 -an immature bald eagle sitting in an oak tree along Wolfville's Main Street CA
- Jan 28 -a singing pine grosbeak near White Rock; white-winged crossbills singing and red-breasted nuthatches "everywhere" in Blomidon Park; a few pine siskins on Wolfville Ridge BLF
- Jan 29 -3 Iceland gulls, 2 glaucous gulls at Canard Poultry; 3 more Iceland gulls at Wolfville sewage ponds; 75 American robins near Starr's Pt. MT, JW
- Jan 30 -a shrike in the Sunken Lake area JG
- a northern harrier and 16 American tree sparrows in Grand Pre area BBT
- 2 pileated woodpeckers at Gaspereau BBT
- 50 cedar waxwings in Wolfville DGT
- Jan 31 -a belted kingfisher at Chester MD, KM
- Jan ? -a rusty blackbird at a feeder in Bridgetown BBT
- a rusty blackbird at Ellis' farm at Sheffield Mills BBT
- Jan ?, Feb ? -a Harris's sparrow in Wilnot (Kingston) and a northern mockingbird in Middleton (both seen frequently in Jan and Feb) JDK
- Feb ? -4 gray partridges near Starr's Point BBT
- a black-capped chickadee with a very white face, a white line through the very narrow black cap, and white splotches on the back, at Medford MP



- Feb 1 -a great blue heron at Woodville VE
- Feb 2 -a great blue heron still near Sheffield Mills; it was hunting and looked healthy BBT
- Feb 3 -2 white-winged crossbills on Wolfville Ridge JGT
- Feb 5 -a merlin near Woodville BBT
- a northern harrier north of Port Williams BBT
- 30 cedar waxwings with 30 American robins in Wolfville EC
- Feb 7 -a probable peregrine falcon at Windsor BBT
- 5 gray partridges at Windsor BBT
- Feb 8 -14 mallards in a field at Port Williams BBT
- Feb 9 -3 red-winged blackbirds at Wolfville feeder BBT
- Feb 10 -an Iceland gull & a glaucous gull at Canard Poultry JGT
- a rock dove (pigeon) on a nest at Acadia U. JW
- Feb 11 -a brambling and a northern oriole at Tusket Falls JGT
- a northern harrier near Canning MG
- a dark-phase gyrfalcon at Grand Pre (then seen by many others; also see Mar 1) BLF
- 8 red-winged blackbirds with 35 American robins in a Gaspereau orchard BBT
- 5 mallards in a field at Gaspereau BBT

- Feb 11 -a very freshly killed white-tailed deer carcass
(cont) at North Alton - deer was an old buck, probably
killed by coyotes SR
- Feb 12 -news report of fox found dead near Sydney, Cape
Breton, had rabies ("bat" type. Ed.) CBC
-big flock of European starlings roosting inside
a barn at Hortonville MT,JW
-a huge flock of at least 1000 snow buntings
at Grand Pre BBT,RS
- Feb 13 -a black-capped chickadee "singing" repeatedly
in Wolfville JT
-a dark-phase rough-legged hawk at Port Williams MT
-at Grand Pre, snow shows tunnels and tracks of
muskrats, weasel (ermine), possibly mink BBT,GT,JW
- Feb 13 -a northern saw-whet owl tooting on South
(cont) Mountain, came to BLF's imitation BLF
-a big circle of light surrounding the moon JW
- Feb 15 -a pileated woodpecker in Wolfville CC
-2 yellow-rumped warblers on Wolfville Ridge BLF
- mid-Feb -a red-tailed hawk made an unsuccessful attempt
to pounce on a flock of mourning doves at
a Wolfville feeder BBT
-a lesser black-backed gull and a Barrow's
goldeneye in Halifax MG
- Feb 15 to 22 -4 pine siskins on Wolfville Ridge JGT
- Feb 16 to 19 -1 dark-eyed junco at Wolfville feeder BBT
- Feb 16 to 23 -gyrfalcon seen 3 times near Bridgetown JDK
- Feb 16 -crocus stems/leaves emerging in Wolfville HT
- Feb 17 -a sharp-shinned hawk at feeders on Wolfville
Ridge JGT
-a Carolina wren in Yarmouth area RBA
-a dark-phase rough-legged hawk hovering over
crows at Port Williams DJ
- Feb 18 -2 Canada geese, 8 green-winged teal, Greenwich JGT
-1 rough-legged hawk, 8 Savannah sparrows & 5
Lapland longspurs at Grand Pre BBT,JT
- Feb 19 -2 great horned owls hooting and answering each
other at Cheverie KLC
-1 rough-legged hawk at Port Williams BBT
-172 American robins at Canning MG
-mink tracks, 6 swamp sparrows, 14 song sparrows,
3 brown-headed cowbirds, 21 American robins, 1
sharp-shinned hawk, 4 red-tailed hawks, and at
least 20 Lapland longspurs in Wolfville - JW
Grand Pre areas
-brambling and Carolina wren still in
Yarmouth area DC,BMO,CS



-1 Bohemian waxwing, 50 cedar waxwings,
300 American robins & 1 European starling
all together in Wolfville!

JSB

- Feb 20 -10 common loons, 4 horned grebes, 20 oldsquaws,
60 white-winged scoters, 10 surf scoters, 7
red-breasted mergansers, & 90 purple sandpipers
along the Fundy shore at Hampton JGT
-3 Barrow's goldeneyes, 7 common goldeneyes, &
2 greater scaup at Annapolis Causeway JGT
-13 mourning doves near Kingston JGT
-a song sparrow singing weakly in Wolfville JT
- Feb 21 -intriguing report of one Wolfville feeder that had
lots of birds through fall to early winter, then
numbers gradually dwindled to almost none over
past month - why? MS
- Feb 22 -5 snowdrops in bloom in Wolfville HT
-3 parties of Wildlife Technicians et al.
did a roadside survey of bald eagles
in all directions from Wolfville
- day warm & rainy & fields flooded
- 17 eagles seen (13 adult, 1 subadult,
3 immature) + 14 red-tailed hawks &
1 northern harrier PMa
- Feb 24 -a male yellow-headed blackbird at Middleton JDK
Feb 27 -field sparrow still at Greenwich feeder HF
Feb 28 -a pair of purple finches and 2 pine siskins
in Wolfville JSB
- late Feb-red-winged blackbirds still in Greenwich area GF
Mar 1 -dark-phased gyrfalcon still at Grand Pre; it was
diving at a rough-legged hawk BBT



Contributors

CA	Carol Armstrong	BMa	Blake Maybank
RBA	Rare Bird Alert	BMo	Bernice Moores
CB	Calvin Brennan	PMa	Peter MacDonald
JSB	Nancy & Sherman Bleakney	GN	Gary Ness
VCB	Verna & Clifford Brison	HFN	Halifax Field Naturalists
CC	Curtis Chipman	LWN	Larry & Wayne Neily
DC	Dave Currie	JP	John Pickwell
EC	E.F. Carey	MP	Mary Pratt
LC	Lana Churchill	SR	Shawn Russell
CBC	CBC Radio	CS	Clarence Stevens
KLC	Karen Casselman	FS	Francis Schwab
BD	Brian Dalzell	FS1	Frank Sloan
HD	Heather Davidson	HS	Hilary Sircom
MD	Mike Dadswell	JS	Jack Scott
VE	Virginia Ellis	MS	MaeAnn Stevens
AF	Alice Fuller	RS	Richard Stern
GF	George Forsyth	BNS	Blomidon Naturalists Soc.
HF	Harold Forsyth	PCS	Peter Smith
SF	Sylvia Fullerton	NSBS	Nova Scotia Bird Society
BLF	Bernard Forsythe	GT	Gerry Trueman
JG	Jamie Gibson	HT	Hilda Taylor
MG	Merritt Gibson	JT	Jean Timpa
FH	Frank Hawkins	MT	Miriam Tams
DJ	Dave Jones	JTa	Jim Taylor
JDK	Joan & Don Keddie	BBT	Brenda & Bill Thexton
FL	Fulton Lavender	DGT	Dianne & Gordon Thorpe
EM	Erich Muntz	JGT	Judy & Gordon Tufts
KM	Kevin MacIsaac	JW	Jim Wolford
PM	Peter MacLeod		

"How can the world of nature and the community of peoples with their national economies be harmonized? Posing the question this way suggests that the two are separate. But not so. Humanity, the human species, exists and is supported within the world of nature. And I mean that not figuratively but literally.

We are deep-air animals living inside an ecological system. We draw boundaries, of course, on the ecosphere for national and regional purposes. But it is all of one piece.



When, therefore, we optimistically declare that economic development and environmental maintenance can go along hand in hand, this qualifier must immediately be added: only if the maintenance of the ecosphere is made the first priority. Economic development must be secondary, guided by strict ecological standards. These fundamental ideas are far from being universally accepted."

from the submission by Stanley Rowe, Saskatchewan Environmental Society, World Commission on the Environment and Development Hearing, Ottawa, May 26-27, 1986.

Flowering Dates

Help us collect flowering dates for Nova Scotia plants. To start you off, the following dates from 1988 are listed. Flowering dates marked "(SAC)" were provided by Sheila Connell, the rest by Jim Welford.

Send your information to Jim Welford, Biology Department, Acadia University, Wolfville, N.S. B0P 1X0. Since local common names and microclimates are so variable, please be as specific as possible. Include date, common name (if applicable, specify field guide used), scientific name (if known), location and type of habitat.

- | | | |
|--------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Mar 26 | -coltsfoot, hazelnut |  <p>COLTSFOOT</p> |
| Apr 4 | -aspen poplar | |
| Apr 17 | -Daphne bush | |
| Apr 29 | -red maple | |
| May 1 | -broom crowberry, sweet gale, mayflower, skunk cabbage | |
| May 7 | -spring beauty, Dutchman's breeches (few), golden saxifrage |  <p>DUTCHMAN'S BREECHES</p> |
| May 10 | -Norway maple | |
| May 13 | -sugar maple | |
| May 14 | -trout lily ("dogtooth violet"), strawberry, blue violet, purple trillium | |
| May 15 | -white violet, Dutchman's breeches (lots) | |
| May 18 | -shadbush | |
| May 20 | -ground ivy and corn speedwell (on lawns) | |
| May 21 | -cuckooflower, goldthread, rhodora, dewberry, hobblebush, starflower, blueberry, | |
| May 21 | -pincherry, painted trillium, apple, creeping buttercup, mouse-ear chickweed | |
| May 22 | -bloodroot (1) | |
| May 23 | -yellow violet, fly-honeysuckle, red elderberry | |

- May 26 -bunchberry, bluet
 May 28 -chokeberry, yellow pond lily, nodding trillium,
 blue cohosh, yellow rocket, yellow lady's-slipper,
 ram's head lady's-slipper
 May 30 -horse-chestnut
 Jun 1 -mountain ash, lilac
 Jun 5 -wild calla, moccasin-flowers, clintonia, wild lily-
 of-the-valley, Labrador tea, chokeberry, shepherd's
 purse, garden lupines
 Jun 8 -cinquefoil, stellaria chickweed, hawthorn, barberry
 Jun 12 -false Solomon's-seal, herb-Robert,
 bird's-eye speedwell, blue-eyed grass,
 one-flowered wintergreen, blue flag,
 hawkweed (2 kinds), a spurrey
 Jun 14 -bird's-foot trefoil, water avens
 Jun 15 -devil's paintbrush (orange
 hawkweed), dame's rocket, wild
 asparagus, buckthorn (2 kinds),
 multiflora rose
 Jun 16 -blackberry, highbush cranberry
 Jun 17 -oxeye daisy
 Jun 18 -sea milkwort, bur-reed
 Jun 19 -yellow lady's-slippers, bedstraw, goatsbeard,
 common speedwell, gypsum ragwort
 Jun 22 -wild rose, green-flowered pyrola, bush-honeysuckle,
 tall meadow-rue, pipsissewa or Prince's pine
 (almost in bloom), witherod (wild raisin)
 Jun 23 -sand-spurrey (SAC)
 Jun 29 -ragged-robin (SAC)
 Jul 5 -caraway, yellow rattle, cuckooflower (still),
 bittersweet nightshade
 Jul 7 -showy lady's-slippers
 Jul 8 -butter and eggs (toadflax), common mallow, black
 medick, white campion, St. Johnswort
 Jul 11 -fleabane, chicory, coarse
 cord-grass (salt-marsh), lamb's
 quarters, stinkweed, sundrops,
 partridgeberry (almost)
 Jul 12 -swamp milkweed, scented water lily,
 yellow water lily, water shield,
 water parsnip, pickerelweed, pipewort,
 swamp candler, meadowsweet, silverweed,
 Scotch lovage, sea rocket, dusty miller,
 twinflower
 Jul 13 -dogbane, bog huckleberry, clubspur
 orchid, pitcher-plant, sundew,
 common elderberry, hoary alyssum,
 mossy stonecrop
 Jul 14 -bladder campion (SAC)
 Jul 17 -white fringed orchid, rose pogonia, calopogon
 orchid
 Jul 18 -poison hemlock, ragweed, wormseed mustard
 Jul 19 -eyebright, musk mallow, black locust
 Jul 20 -cow-wheat, spotted comb-root orchid, tessellated
 rattlesnake-plantain orchid, dalibarda or dewdrop,
 holly, bladderwort, ragged fringed orchid
 Jul 21 -fall dandelion, enchanter's nightshade, white wood
 sorrel
 Jul 23 -ragged fringed orchid (SAC), Indian pipe, purple
 fringed orchid, wild rice, dewberry



- Jul 25 -Deptford pink, sheep laurel, tall meadow rue,
three-toothed cinquefoil, sandwort, mouse-ear
chickweed
- Jul 26 -blue vervain (SAC), beggar-tick, calla, willow-
herb, skullcap, hemp nettle, water plantain
- Jul 27 -swamp milkweed, agrimony, pearly everlasting,
virgin's-bower, many-flowered aster, wild mint,
black-eyed Susan, water parsnip
- Jul 28 -common hop vine, hedge mustard, water horehound,
water cress
- Aug 1 -sea lavender (SAC)
- Aug 2 -sand-spurrey, sow thistle,
pepperweed, common tansy
- Aug 3 -wild leek, tall white lettuce
(almost), sharp-leaved or wood aster
- Aug 4 -pink Joe-Pye-weed, white
Joe-Pye-weed (almost),
tall coneflower, tear-thumb,
common milkweed (almost all finished)
- Aug 8 -wild cucumber, a blue aster, silverrod
(a goldenrod), alfalfa
- Aug 9 -burdock, bouncing bet, small-flowered aster,
highwater shrub, salt-marsh spike-grass, salt hay
(fine cord-grass), seaside plantain
- Aug 31 -Lyon's turtlehead (in wild garden - SAC)
- Sep 17 -nodding-tresses orchids (2 kinds),
asters, goldenrods, bonaset
(white Joe-Pye-weed)
- Oct 2 -beechdrops stalks up but not yet in bloom
- Oct 16 -witch-hazel trees showing only a few
flowers, still with petals;
virgin's-bower vines now conspicuous
(and widespread) because of their
whitish fluffy fruiting structures



ARROW-LEAVED
TEAR-THUMB



BONASET

NATURAL HISTORY BOOK

The Natural History of Kings County, Nova Scotia

The work of the Blomidon Naturalists Society Committee (Peter Austin-Smith, Sherman Bleakney, Larry Bogan and Merritt Gibson) editing the book, The Natural History of Kings County, Nova Scotia, is nearing completion and the book will probably be published later this year. Following are the "Introduction", "Table of Contents" and parts of "History" and "Flora and Fauna" excerpted from the current draft.

The actual publication information will be announced in the Newsletter later.

INTRODUCTION

It would be appropriate to dedicate this volume (tome) to Kings County itself. A geographic area often becomes famous historically because of the endeavours of its peoples. We often overlook the obvious lesson that it is the terrain that manipulates man (not the other way around) and

elicits specific capabilities. The Assyrians became brick layers, the Greeks were stone masons, in the forested areas Europeans became wood wrights, and the Inuit mastered ice and snow. Can we imagine on a much smaller scale that it was the natural alchemy of Kings County which directed an inordinate number of young persons to become amateur or professional naturalists of provincial, national and even international stature? The appended name list would testify to that and that list would probably double if included were active and/or retired naturalists who have been attracted to this area, though not raised here. (list not included. Ed.)

An early awareness of nature and natural phenomena is requisite to becoming a naturalist. There are few regions the size of Nova Scotia that demonstrate a comparable diversity of flora, fauna, geology, rivers, lakes and coastlines. If one considers just Kings and a small portion of adjacent Hants Counties, we have:

1. five estuaries
2. world's highest tides
3. ancient submerged forests
4. shorelines of shale, slate, gypsum, basalt, sandstone and limestone
5. significant plant and animal fossil beds
6. tidal marshes
7. tidal and non-tidal rivers
8. seasonal invasions of significant numbers of fish and bird migrants
9. lakes of all kinds
10. bogs, streams and marshes in abundance
11. gypsum karst topography and caves
12. varied forest communities
13. varied agricultural lands
14. sand barrens
15. significant archeological sites
16. excellent conditions for astronomical observation.

The special uniqueness of Kings County was, understandably, not fully realized by the generations raised there - it was their norm. However, "outsiders" such as John Kearney (an amateur ornithologist from Boston and a student at Acadia in the late 1960's) and Robert Lamberton (an ornithologist and lecturer at Acadia in the early 1970's) kept emphasizing that Kings County was unusual. Prof. Lamberton was so impressed that he felt compelled to celebrate his discovery by organizing a formal natural history society whose primary objective would be "... to encourage and develop in its members an understanding and appreciation of nature" (quoted from the Constitution of the Blomidon Naturalists Society, March 26, 1974). There are now over 200 active members who receive the Blomidon Naturalists Society Newsletter, attend regular meeting and participate in various field trips.

In 1980, when Federal Summer Youth Employment Programs were being promoted, three members of the Blomidon Naturalists Society (Peter Austin-Smith, Roy Bishop and A. Gerritse) submitted a proposal for student employment. It was felt that the unique qualities of Kings County should be described and documented, and that such information should serve as an historic data base for action and recommendations to preserve specific areas should they become threat-

ened by cutting, filling or development.

A grant of \$9552 was received, and four students (Lynn Dixon, Dale Frail, Ann Odell and Debby Williams) were employed from May to early September, 1980. The project continued with a second grant of \$9400 (Summer Canada - 1981, Student Employment Program, Community Projects) from January to late April during which three students (Lynn Dixon, Twilla Robar and Elizabeth Gibson) wrote the final draft. These young people must be commended for compiling, in a readable and nicely illustrated format, information from archives, scientific journals, newspapers, private and public libraries and interviews. It was an horrendous task to attempt to complete in only eight months, but the draft manuscript was of such high calibre that the Blomidon Naturalists Society decided to expand the material somewhat, aiming for a more comprehensive and more detailed description of Kings County's natural history.

Unfortunately, it has taken several years of sporadic endeavour through meetings, discussions, rewritings, proof readings, indexing and so on to prepare this book. In a sense, it was the least we could do as a token of our appreciation of the pleasures, surprises and intellectual excitement that Kings County has and will bestow upon us, and hopefully upon future generations as well.

THE NATURAL HISTORY OF KINGS COUNTY, NOVA SCOTIA

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NATIVE PEOPLES

The people who were living in Nova Scotia at the time of the arrival of Europeans moved into the region almost 14 000 years ago. Evidence of their existence comes to us

from archeological digs in Nova Scotia and New Brunswick, a few of which are in Kings County. Many of the artifacts from these cultures are stone tools, and remains of food items (shells and bones). Many sites have been disturbed, by cultivation and development. As a result of a paucity of direct evidence many of their cultural characteristics have had to be inferred from a knowledge of the natural history of the areas at the time.

PALEO - INDIAN PERIOD 10 000-7 000 B.C.

The first evidence of the arrival of man in Nova Scotia dates back to 12 000 to 8 000 B.C., several thousand years after the melting of the great ice sheet covering much of North America. It appears that the original people migrated across North America from the ice-free land bridge that had connected it to Siberia. These inhabitants lived a nomadic existence, and depended upon the migratory movements of mastodons and barren-ground caribou for their food. Tools recovered from this period are made of a poor quality quartzite known as "blue whin", and this name has also been applied to the first native culture in the province. These artifacts suggest a life style similar to the Neanderthal culture.

One area in Kings County which may have been visited by Blue Whin people is Melanson. Although no conclusive evidence of occupation has been found, the site's advantages suggest they were probably here. In addition to runs of smelt, salmon, and gaspereau in the river, there was an annual caribou migration through this area. Campsites of later cultures have been found in this area.

The people of the Clovis culture of the prairies were skillful hunters and made characteristic tools of high quality. This culture arrived in Nova Scotia as early as 10 800 B.C. and may have used the rich deposits of quartzite, rhyolite and chalcedony along the North Mountain for their tools. Any wood, bone, and antler used in tools are not found today because the ubiquitous acid soils in the county quickly cause these materials to decay. Medford, near Canning, has the distinction of being a known Clovis campsite. This site may have been a temporary camp where native people from larger centers such as Debert, in Colchester County, stayed while gathering materials from the North Mountain for tools. The Clovis were big game hunters and relied heavily on the caribou. When the barren ground caribou disappeared from this region so did the Clovis culture.

GREAT HIATUS PERIOD 8 000-3 000 B.C.

Little is known of the inhabitants of Nova Scotia from 8000 to 3000 B.C. During this period, the climate was warmed, the vegetation changed from tundra to boreal and Acadian forest, and the present-day fauna extended their range into the province. It was also a period of lowering sea levels, which allowed many native settlements situated near river deltas. These sites have since been flooded during the last 5 000 years.

LATE PRE-CERAMIC PERIOD 3 000-500 B.C.

Evidence of a new culture, Laurentian, appears in this period that tells of peoples well adapted to this area,

living as hunters, gatherers and fishermen. A distinguishing feature of these people is their use of gouges and knives ground from slate. Although, their spear points were unusually large and crude, they were skillful woodworkers, carving small figure of animals then hunted and worshipped.

Fifty metres upstream from the fish ladder at Gaspereau Lake lies a campsite used by many cultures, including Laurentian (the site is only visible when the lake is low in the late summer). Remains of wigwams, once covered by skins and birch bark, run in a north-south direction. Fire circles were located on both east and west sides of the wigwams. It is thought that the positions of these fire circles are related to the wind directions, predominantly westerly, but easterly in rainy weather. Hence, use of the appropriate fire circle would provide protection from the wind. Another site is located further up the lake and was most likely a winter site because plummets used for ice fishing were found there.

WOODLAND PERIOD 500 B.C. - 1 000 A.D.

The cultures of this period often used shellfish as food and made pottery. Evidence of this "Shellfish Culture" comes from sites that contain piles of shells and discarded tools. Quahogs, oysters, and soft-shelled clams were the species most commonly utilized. The relative abundance of these species indicates their distribution patterns in the province at that time, as well as the eating preferences of the people. Lime from shells preserves bone so that the remains of birds, fish, mammals and even humans have been found. No important shellfish sites have been found in Kings County, probably because of the sinking of the shoreline and erosion from strong tides.

Later in this Woodland period evidence of Tusket Culture appears in Nova Scotia. Smoking hearths used by Tusket peoples were uncovered beside the present graveyard in Melanson, as well as at the lower Gaspereau Lake site. These peoples are known for their use of bow and arrows and their ability to make small finely finished arrowheads.

The burial custom of this culture was to wrap the body in skins or birch bark and suspend it in a tree for a year to dry. The body was then put in a deep grave, covered with red ochre, and supplied with the possessions necessary for life in the next world. A grave of this type has been excavated at the site of the Indian Chapel near Avonport. (end of excerpt - continues on Micmac Indians)

STREAMS, RIVERS, AND LAKES

The variety of streams, rivers, and lakes within Kings County is probably unique for such a small geographic area. Most of the County's waterways empty into the Minas Basin, but some headwaters lead to the South Shore (Atlantic Coast), the Annapolis Basin, and the Bay of Fundy Shore. There are streams running to the sea that have cut deep ravines across the North Mountain and notched the Fundy coastline with narrow tidal harbours, nearly every one of which was once a picturesque and thriving fishing village. There is a major tidal river, the Cornwallis, bisecting the

Annapolis Valley floor, and there is a minor tidal river, the Gaspereau, that serves as a major drainage for a South Mountain watershed of nearly 80 lakes. The County's lakes include glacial kettle ponds in the valley, spring-fed lakes, acidic rocky lakes, and a hydropower system of 12 impounded and canal-linked lakes.

The varied habitats generated by this diversity of aquatic systems support a fascinating and varied flora and fauna.

Streams and Rivers

Because the downhill run is short and steep, tumbling streams predominate on forested North Mountain. Their cool, moist ravines with pools and waterfalls, are excellent areas to look for flowering plants, fungi, and mosses.

In contrast to the steep rocky terrain of the North Mountain, the valley floor of sands, gravels, and clays has slowly flowing, meandering streams and rivers. These streams and rivers meet the world's highest tides and thus are bordered by extensive saltmarshes. The Cornwallis River has its beginnings in the Aylesford Bog, flows easterly 35 km and becomes tidal at Kentville. Above Kentville the river meanders through extensive cattail marshes and grassy intervals that contain many oxbow ponds. The final 11 km below Kentville are tidal and have been known to contain porpoise. The Annapolis River also has its beginnings in the Aylesford Bog and flows westerly to the Annapolis Basin. The non-tidal portion of these rivers have the interesting flora and fauna typically associated with flowing water, whereas the still waters of the oxbow ponds have quite different plants, animals, and insects. In these isolated ponds are found concentrations of organisms such as Red Spotted Newts (*Notophthalmus viridescens*), 30 cm Green Frogs (*Rana clamitans*), 36 cm-long Bull Frogs (*Rana catesbeiana*), painted turtles (*Chrysemys*), 50 cm Snapping Turtles (*Chelydra serpentina*), sticklebacks, minnows and Muskrats.

The other major river system, the Gaspereau, is also tidal but only for 6.5 km from Horton Landing to Melanson. For 16 km above that tidal stretch, it runs swiftly over 16 km of gravel beds, boulders, and the bedrock of the Gaspereau Valley. The most interesting sites are probably the low flood plains at the bends in the river where unusual spring flowers and fiddle-head ferns (Ostrich Fern, *Pteretis pennsylvanica*) may be found.

In contrast to the sandy Cornwallis River, the gravel beds and extensive lake system of the Gaspereau watershed have attracted many species of migratory fish such as the Atlantic Salmon (*Salmo salar*), Alewife or Gaspereau (*Alosa pseudoharengus*), and Rainbow Smelt (*Omerus mordax*) to these sites to spawn. Other fish such as American Shad (*Alosa sapidissima*), Atlantic Tomcod (*Microgadus tomcod*), and Striped Bass (*Morone saxatilis*) spawn in the tidal portion of the river. Not unexpectedly there is evidence of major prehistoric Indian fishing camps on the river terraces just above the tidal reach.

The largest drainage basin in the County is that of the Gaspereau River. The accompanying map depicts the 12 lakes,

8 dams and 5 hydroelectric stations associated with the Gaspereau River. In the early 1900's, plans were underway to generate hydro power from the Gaspereau system. At the time, nine operating sawmills were situated along the Gaspereau system from Salmontail Brook to White Rock, plus mills at South Alton and Black River. Between 1907 and 1909 a company led by T.W. Kneeland of New York City attempted to develop part of the hydroelectric system. This attempt failed and rusting machinery, 5 km upstream from White Rock, is all that remains of this venture.

Later, the Black River Lake watershed was included in the Gaspereau power generating system. A canal from Little River lake to Methal's Dam was part of that modification and is now part of a popular canoe route. Dams were constructed near the south end of Black River Lake and at the north end near the old site of Davidson's sawmill, another on the west branch of the Avon River. In this way all water was to be retained within the Gaspereau system.

Below Hollow Bridge power house another dam forms a reservoir known as Lumsden Pond, a favourite swimming area with picnic grounds. Downstream, a fifth dam at Hell's Gate directs water to the power house at White Rock. The last steep stretch of old stream bed includes Three Pools, a popular and cooling summertime swimming hole which can be reached via a path from the power house (see field trips in the Appendix). The power house can be reached via a short walk from the "swinging bridge" which spans Black River just where it joins the Gaspereau River. Parking for this walk is 1 km south of White Rock. This is a popular site for fishing, canoeing, and birdwatching. From here it is possible to canoe 2 km downstream to the White Rock dam, the sixth and lowest dam on the system.

Further exploration of the Gaspereau River system, may involve canoeing the canals and lakes, and hiking upstream from White Rock along the Gaspereau River Gorge.

River capture or piracy, has occurred in a number of places in Kings County. The best example is at White Rock where the Gaspereau River has captured the Black River. Thousands of years ago the Black River flowed northward across beds of slate, quartzite, and siltstone, to empty into the Cornwallis River. Its valley passed through White Rock and along what is now the twisting Deep Hollow Road. At the same time the Gaspereau River was steadily eroding and extending its valley westward from the Minas Basin along the base of the South Mountain. Eventually it cut into the bed of the Black River, and the waters of the latter river were added to the Gaspereau flow.

Every year literally millions of anadromous fish travel up the rivers of Kings County to spawn. Anadromous fish are those marine fish that enter fresh water to reproduce. As long as water conditions remain favourable, a species of fish can depended upon to return to the same river at the same time each year. Fish travelling up the shallow, narrow Gaspereau are extremely vulnerable to over-fishing. In the original land draw of 1760, every Planter was ensured property fronting on either the Gaspereau River, Avon River, or the Minas Basin. At an early date regulations were established to control local fishing. In 1791, some of the regulations pertaining to the Gaspereau River read as follows:

"No Gaspereau seines shall be drawn in Gaspereau River at any time on any pretense whatsoever... that Salmon sein shall be drawn only two days in the week, and no such sein shall be drawn up higher up the River than 5 rods above the Upper and Bishop's Bridge, commonly so called, which shall be staked off by the Overseer of the River Fishery to prevent anyone from pleading ignorance. That no Gaspereau fish shall be taken out of the River with other nets, other than with square or scoop nets and that no eddies, sein, or obstruction for taking said fish shall be erected opposite each other, or across more than 1/3 of where the fish swim."

At Melanson, fishermen jig smelts (Rainbow Smelt), which usually move into the river in April two to three weeks before the Gaspereau arrive. Often gill nets are operated from small boats on the lower tidal portion of the river, near the #101 highway bridge, to catch Gaspereau.

Gaspereau, or as it is more commonly called, "the Alewife" or "Klack", is an anadromous fish of the herring family. It is distinguished by a greyish-green back, silver sides and belly, and a black spot on the sides behind the gill covers. A full-grown fish is 30 cm long with a mass of about 350 gm. Between the first of May and the 15th of June, Gaspereau, along with another closely related fish, the Blueback Herring (*Alosaestivalis*), ascend the rivers to spawn in the headwater lakes. It is fascinating to watch the fish swim upstream against the rushing waters of the fish ladder at White Rock Dam, or to stand in the water and feel hundreds of fish brushing past as they make their way upriver.

The methods used for fishing Gaspereau are unique to this area and have undergone relatively little change over the years. A "square net" is fastened to two 6-m bows which cross in the shape of an "X". Hornbeam (Ironwood, *Ostrya virginiana*) is said to be the best for this as it is the most flexible. Fishing regulations dictate that the net fastened to the bottom of the bows cannot be more than 3.7 m square and cannot extend more than one third the width of the river. A lever pole is spiked to the joining point of the bows and wrapped with chain. A log framework acts as a fulcrum. A dam is constructed just above the net to create an eddy in which the Gaspereau collect and a chicken-wire fence on the outside prevents them from escaping. "Jumping the net" from a platform above the lever arm is a popular job. When the fish are above the net someone jumps on the lever, pushing it to the ground and lifting the net out of the water. As soon as the fish are dipped out of the net, the majority are salted and shipped to offshore markets in the West Indies. Those who do not mind the innumerable bones enjoy a meal of fresh Gaspereau or, at other times of the year, smoked Gaspereau.

Some Gaspereau evade the square nets and reach their spawning grounds. The eggs are shed on the sandy or muddy lake bottom and hatch in about 6 days. The adults leave for the sea in late June or early July, while the young remain in the lakes until early Autumn. Very little is known about the sea travels of the Gaspereau. Young Gaspereau (two and three years old) have been seen near the river mouths,

feeding on small insects and crustaceans. Gaspereau are in turn fed upon by larger fish. After four years at sea, the Gaspereau return to fresh water each year to spawn.

The first arrival in the early spring is the Sea Lamprey (Petromyzon marinus). This eel-shaped fish preys on other species of marine and freshwater fish. Its mouth lacks jaws, but is in the shape of a disc with which the lamprey becomes attached to its prey. Fish that have been attacked may show deep scars, and may be killed by repeated attacks. Lampreys migrate from salt water into lakes and streams in which they spawn. They are known to spawn in the headwaters of the LaHave, Annapolis, and Gaspereau Rivers. The adults die soon after spawning, and the young remain buried in the sand for three or four years before moving downstream to the sea.

The American Shad and Atlantic Sturgeon (Acipenser oxyrhynchus) also migrate from salt water into fresh water to spawn. The shad was discussed in the chapter on the Minas Basin. The sturgeon is a long cylindrical fish which is covered with bony plates. Specimens measuring two or three metres in length are caught in the Bay of Fundy. Sturgeons enter the Gaspereau, Cornwallis and Annapolis Rivers in the spring and remain in fresh water for most of the summer. The young stay in fresh water for two or three years before moving to the sea.

The Atlantic Salmon is another anadromous fish, and the adults return to the river of their birth to spawn. They enter fresh water during the spring (early run), summer, and early autumn (late run). Salmon spawn in the autumn and require clean, shallow water over beds of gravel. The upper reaches of the Gaspereau, LaHave, Gold, Cornwallis, and Annapolis Rivers are known spawning areas. After spawning the adults move downstream to the sea. The young fish, called "parr", have red spots and wide, dark, vertical stripes. They remain in fresh water for two or three years and then, as "smolts" of about 12 to 15 cm length, move down to the estuaries. Salmon that have been to sea for one year and weigh about 2 kg may return to fresh water. These fish are called "grilse" and the salmon runs in some rivers are formed predominately of grilse. Their tails are deeply forked, unlike the tails of older salmon.

Rainbow Smelt move into the river mouths during late fall and spend the winter in brackish water. In spring, about two or three weeks before the Gaspereau run, they swim upstream to spawn. It is at this time that the popular "jigging" and "dip-netting" of smelt occurs along the Gaspereau River. The run lasts for two or three weeks after which the adults return to the sea. Smelt form large schools along the coast and move in and out of the bays and harbours with the tide.

During most of the year, the Atlantic Tomcod or Tommycod is common in the estuaries along the Minas Basin shores. It feeds on crabs, shrimp, and the young of such fish as smelt. During December and January, Tomcod enter the tidal rivers of Kings County to spawn. At this time it is an important food item for Bald Eagles and Common Mergansers. In the Cornwallis River at Wolfville, in December 1984, a Harbour Seal was seen actively pursuing and feeding upon what were likely schools of Tomcod.

Fish hatcheries are operated in Nova Scotia by both the Provincial and Federal governments. The lakes and rivers in

Kings County are regularly stocked with Brook Trout (Salvelinus fontinalis), and the Gaspereau River is stocked with salmon. If you catch a salmon or trout that lacks an adipose fin (a small fin on the back near the tail) it is likely a hatchery-raised fish, for this fin is often clipped at the hatchery. In 1967, Smallmouth Bass (Micropterus dolomieu) were introduced into the Black River Lake system from Lumsden Lake to Methal's Lake. Bass prefer warm, shallow waters. The introduction was successful, and it has since been privately introduced into Lake George.

Brown Trout (Salmo truttus) were first introduced into Nova Scotia from Europe in 1923. Although introductions were discontinued many years ago, Brown Trout populations were established in the Cornwallis and Habitant Rivers. This species prefers warmer waters but is able to adapt to a variety of environmental conditions. It will devour almost anything from insects to frogs, and large Brown Trout are predators on other trout species. Mayflies, caddisflies, and stone flies are preferred foods, a fact exploited by enterprising fishermen.

The Striped Bass (Morone saxatilis) is another anadromous species. It travels in schools along the coast and enters rivers usually with the tide to feed, often following schools of Gaspereau. Striped Bass move into fresh water in June to spawn, and large numbers of "fry", 2 to 3 cm long, are present in the rivers and estuaries in July and August. The Gaspereau and Annapolis Rivers support major bass runs.

The only catadromous fish in Kings County (and in Nova Scotia) is the American Eel (Anquill rostrata). Catadromous fish are the opposite of anadromous fish. That is, they are freshwater fish that migrate to salt water to spawn. In Autumn the adults leave our lakes and rivers and begin a migration to an area in the Atlantic Ocean southeast of Bermuda to spawn. The larval eels take about one year to swim back to Nova Scotia. They grow to a length of about 9 cm during this swim and enter our rivers in May and June. The young eels, or "elvers", move upstream in such large numbers that they may cause the surface of the water to ripple.

Acid rain: magnitude and costs

Acid rain is now a global phenomenon. Canada ranks as both contributor and unwilling victim.

-North American industries and automobiles annually discharge 50 million tonnes of acidic sulphur and nitrogen into the atmosphere.

-The INCO Ltd. smelter at Copper Cliff, Ontario is the largest point source of sulphur dioxide in Canada, emitting 866 000 tonnes per year. It would cost INCO about 3 to 23 cents per pound of nickel to reduce these emissions by 58 per cent (1980 values).

-Some parts of Eastern Canada receive as much as 45 kilograms of acid per hectare annually.

-Approximately 14 000 lakes in Canada are biologically dead and, unless acid depositions are reduced, another 10 000 to 40 000 will die.

-Twenty-four species of birds are endangered in eastern