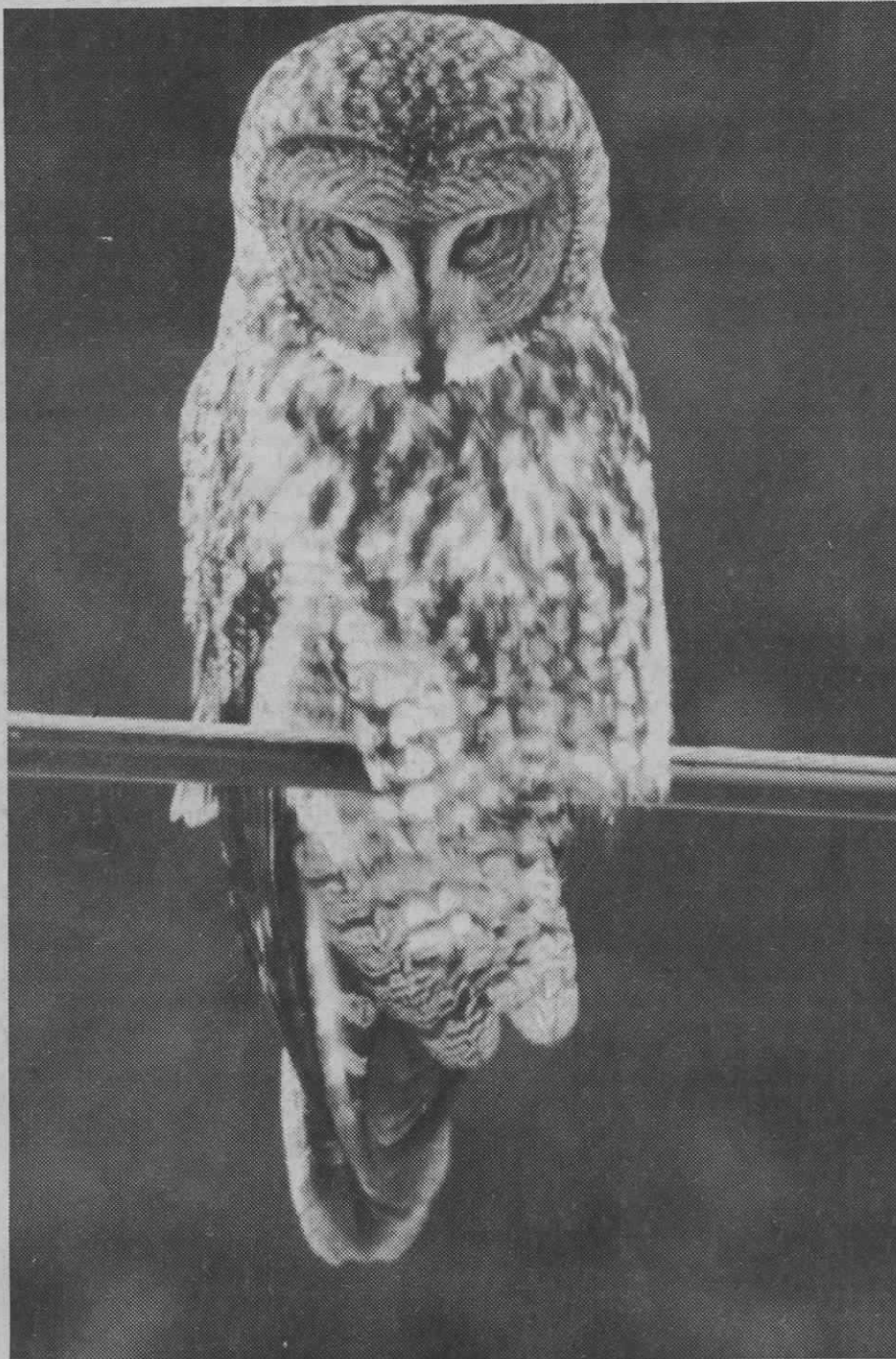




B.C. Naturalist

FALL, 1982

VOL. 20 No. 3



Bats

New Wildlife Act

Wildlife atlases

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Over the editor's desk

During the past year the Editorial Committee of the B.C. NATURALIST has been striving to bring you a good balance of news, special features, happenings and natural history. With the expansion to twenty-four pages (at least with every second edition) we now need your help urgently.

We feel that more natural history features, club happenings and projects, as well as a Kids Corner will make our — that is YOUR magazine more interesting and hopefully more educational. Some ideas may include local areas to visit, special projects (how about a write-up on all the various blue-bird projects we heard about at the A.G.M.), or natural history articles. These can be short write-ups or a feature length story. Photos or drawings can be included or we will attempt to find suitable ones to illustrate your piece. Remember, even casual observations should be shared.

Think about it and write. Everyone has something to contribute. I look forward to hearing from you soon!

Jude Grass, Editor

Regarding Joan Heriot's article on Mariposa Lilies (B.C. Naturalist, Summer 1982), I would like to add the following observations:

The 'Three Spot Tulip', *Calochortus apiculatus*, is a common to abundant species in large areas of suitable habitat in the southern Rocky Mountain Trench region around Cranbrook. I have found Lewis Clark's habitat description of "well drained sandy soil in full sun or open coniferous woods" to be accurate and have never found this species growing in full shade. I believe that Ms. Heriot's observations at Creston (marginal habitat for this species) represent an extreme case of shade tolerance for this plant (and suspect that these specimens probably received direct sunlight for at least part of the day?) and create a false impression of the 'rareness' of this species.

In the Cranbrook area, *C. apiculatus* is found in open ponderosa pine and/or douglas fir forests in the valley bottoms and in open lodgepole pine and/or western larch and/or douglas fir forests in the moister foothills and is almost always part of a lush growth of grasses and low lying shrubs. These forest types are naturally fire maintained habitats and

continued on page 3

President's Message



The Acid Rain Problem in British Columbia

The economic downturn is having considerable impact on British Columbia - in the main negative but, on some environmental questions, positive. One positive example is the decline in the province's estimated electricity requirements has prompted B.C. Hydro to defer the proposed Hat Creek thermal plant until 1992, two years later than previously planned. Further, the magnitude of the project has been scaled down. The original plan was for a 2,000 megawatt plant; Hydro is now considering two 400 megawatt units.

Many environmentalists in the province are concerned about the possible adverse effects of the Hat Creek project and the reduction in the size of the plant will not allay these concerns. Hydro engineers maintain that there is minimal threat to the environment; others feel there will be considerable environmental degradation. Like most environmental issues, the data base is inadequate and conclusions based on studies done elsewhere are not necessarily valid. I would like to quote from a few recent publications and let you draw your own conclusions.

In the Fall of 1981, Environment Canada prepared a 4-page brochure entitled "Acid Rain - the Forecast for Western Canada". The brochure described what acid rain is, why the situation is different in Western Canada, and what is being done in the West. The forecast was one of cautious optimism - if scientists continue their close watch and keep legislators and the public informed, and if citizens let their governments know that they consider environmental quality a priority, then we have reason to be hopeful in Western Canada. I wonder, are citizens letting their government know that they consider environmental quality a priority? If so, are their MLA's and MP's listening? I doubt it.

In October, 1981 the House of Commons subcommittee

continued from page 2

only where over zealous fire suppression has disturbed this process (creating stagnant closed canopy stands) is this species absent. Recent trends in resource management, including prescribed burning and stand thinning to increase range and forest productivity and range pasture rotations to reduce over-grazing, portend good news for the future of this species.

For those naturalists who would like to see this species, it is common in Moyie Lake Provincial Park near Cranbrook where it blooms in late June to mid-July. Here it grows in association with pinegrass, kinnikinnik, and soopolallie in an open 50 year

old forest or western larch and douglas fir and is particularly abundant on the ridge and shoulders of a large esker that runs along the western edge of the park.

Is *Calochortus apiculatus* truly 'endangered'? My observations suggest that it is definitely not. On the other hand, I believe that the more attractive (and thus more prone to 'picking') Green-banded Mariposa, *C. Macrocarpus*, is much more deserving of this status and the increased public awareness and protection that accompanies it.

Doug Leighton
Nelson, B.C.

on acid rain issued a 150 page report. In the section devoted to British Columbia, the report states "Recent studies have shown that acid rain is falling in parts of British Columbia. Precipitation monitoring stations in the Vancouver area have measured rainfall pH at 4.9, about four to five times as acidic as normal rainfall . . . Lower Mainland and southern coastal regions of British Columbia are sensitive to acid rain because the geological structure of the area lacks buffering capacity. There is concern that accumulation of acid in snow over the winter period could produce episodes of "acid shock" during spring runoff in some areas".

There is no consensus about the source of British Columbia's acid rain. It is possible that local industry and motor vehicles are responsible, but there is a theory that, some at least, is due to large polluted air masses drifting across the Pacific Ocean from Japan.

Regarding Hat Creek, the subcommittee noted that a 2,000 megawatt plant at Hat Creek would consume approximately 36,000 tonnes per day of low-grade thermal coal, with a sulphur content of about 0.5 per cent. The plant will have a flue-gas desulphurization process that will reduce the SO₂ emissions to about 150 tonnes per day maximum load. Potential NO_x emissions are estimated at 136 tonnes per day. If Hydro builds an 800 megawatt instead of a 2,000 megawatt plant, the estimated SO₂ emission would be 60 tonnes per day and the NO_x emissions 54 tonnes per day, which is still a considerable quantity of acid rain inducing products. I see no way that this quantity of emissions can be dismissed as being inconsequential.

I am particularly concerned about the forest habitat in British Columbia. Evidence elsewhere suggests that acid rain increases the acidity of forest soils and causes an accelerated drainage loss of useful nutrients. At the same time, potentially toxic elements are brought into solution at an increased rate. We must remember that if our forests are damaged, the myriad lakes and river systems will also suffer damage and the safety of our multitudinous and diverse wildlife populations will be compromised.

Another stimulating article entitled "Acid Rain. How Great a Menace", appeared in the November 1981 issue of National Geographic. It examines acid rain as a world problem and notes that if acid deposition continues unabated, vast tracts of sensitive soil may slowly decline in fertility until their productivity fails. When, or if, this might occur, no one can calculate, but its effects could be difficult to reverse.

R. Stace-Smith

PHOTOS WANTED

We are looking for cover shots and other captioned photo's for the B.C. Naturalist.

Cover shots should have a seasonal theme and be black and white prints no smaller than 8 X 10. Other submissions should also be black and white prints and no smaller than 5 X 7 with good contrast. Portfolios also accepted.

Please label with subject matter or title, name, address, phone number. Use PENCIL Only and DO NOT write on picture, press or use labels. All photos will be returned.

B.C. Naturalist Fall 1982 - Page 3

Bats in British Columbia

By Robert M. Herd, Department of Biology, Carleton University, Ottawa, Ont., K1S 5B6

For the past three summers graduate students from Carleton University in Ottawa, under the supervision of Professor M.B. Fenton, have been coming to the Okanagan Valley of British Columbia to study bats. Fourteen of the sixteen species of bats found in Canada occur in the South Okanagan Valley. Two of these, the spotted bat (*Euderma maculatum*) and the pallid bat (*Antrozous pallidus*), usually considered to be dwellers of more arid regions in the south-western United States, are found in the semi-arid region of the southern Okanagan Valley and are not found elsewhere in Canada. The occurrence of the spotted bat in the Okanagan Valley was only confirmed two years ago and it is likely that other species found to the south in the United States are present in the Okanagan but are yet to be captured.

Feeding Habits

But why do we study these creatures at all. All bats in Canada feed exclusively on insects. The little brown bat, *Myotis lucifugus*, probably the most common bat in the area, may eat a quantity of insects equivalent of one third to one half of its body weight per night. A conservative estimate of the number of bats in the Okanagan Valley would be 100,000, each weighing about 6g and each eating 2g of insects per night for 200 nights (April to September) and thus consuming at least 40 tonnes of insects, including mosquitoes and agricultural pests, per year. Bats are unique among mammals in their ability to fly. Some species, such as the spotted bat, forage alone and appear to maintain feeding territories, whereas many of the smaller species are highly social, roosting and foraging in groups numbering into the hundreds.

Bats find their way using echolocation in darkness, that is, they produce pulses of high frequency sound and listen for the echoes of these pulses from obstacles in their path. Their ability to echolocate allows them to navigate in total darkness and facilitates the exploitation of the rich nocturnal insect fauna not available to the visually orienting birds. To know bats is to be impressed by their intelligence and flexibility in behaviour as experiments at Carleton are revealing.

Bats and Myths

Folklore portrays a darker picture of bats. Undoubtedly the close association of bats and the darkness of night has reinforced the generally negative fictional image of bats in novels and movies. The bats of Canada are small creatures and the chance passing of a bat over your head in a cave or mine, along a hiking trail or around a campfire does not constitute an attack by the bat but rather an attempt to escape or to forage on insects in your vicinity. Vampire bats are small, interesting creatures found only in Central America.

The Rabies Myth

Not all bats are rabid but like any mammal bats may have rabies. Rabies is fatal to most mammals, but the incubation period varies from several days to several months and during most of this period there are no outward signs of the disease. The rule is: do not pet wild mammals and be wary of domestic pets which have not been vaccinated. *The incidence of rabies in bats is very low. Bats are protected by law and their destruction, or destruction of their roosts, cannot be justified in British Columbia on the grounds of rabies control.* Bats which accidentally fly into a house will usually leave if the windows are opened and the lights turned off. Alternatively a pillowcase or similar sheeting can be thrown over the bat and the whole bundle taken outside and the bat released.

Kinds of Bats and Their Habitats

To date we have studied five bat species in detail. In the Okanagan Valley the two smallest bats in British Columbia, the small-footed bat (*Myotis Leibii*) and the California myotis (*Myotis californicus*), can be distinguished by slight differences in their facial appearance, presenting a unique opportunity for their study as they cannot be easily distinguished elsewhere in North America. During the summer of 1980 Greg Woodsworth found both species are relatively common and despite their similar appearance forage quite differently, the small-foot bats preferring to forage on rocky hillsides whereas the California myotis prefers to forage over water.

The spotted bat is rather rare over much of its range in the United States and the discovery of a breeding population in Canada was a significant northward extension of its known range. In 1981 Marty Leonard found

the range of this bat is limited by the distribution of large rocky bluffs, such as McIntyre Bluff near Oliver, in which this bat roosts during the day, and that the bat prefers to forage in clearings near ponderosa pines. This summer, radio-tracking of a spotted bat by Ken Wong has shown that the bat will fly six kilometers from its dayroost in a bluff above the valley floor to its preferred feeding areas on benches above the valley floor.

In the Okanagan Valley the little brown bat (*Myotis lucifugus*) and the yuma bat (*Myotis yumanensis*) are sympatric and some bats are intermediate between the typical morphology of either species. Previous studies in the United States have suggested that these bats of intermediate appearance may be hybrids. In a survey of the electrophoretic variation at selected protein loci I did not detect hybrids confirming the species do not share a common gene pool and are distinct biological species.

This summer I am attempting to understand the nature of the morphological variation within the two species and to observe differences in their ecology. From May to August 1982 I trapped over 1,000 bats, visually assessed their reproductive condition, and banded them with both an individually numbered bat band and a reflective coloured and. The latter band facilitated subsequent identification of foraging bats.

Bat Reproduction

Major reproductive events in female yuma bats occurred more than two weeks ahead of similar events in the little brown bats. At the start of June 79% of the yuma females examined had palpable pregnancies compared to 33% of little brown females, and by July virtually all female yuma bats were either pregnant (66%) or lactating (31%) compared to only 55% of female little browns (50% pregnant, 5% lactating). From July onwards virtually all yuma bats examined had borne young whereas about a quarter of little brown bats appeared non-parous. The fur of non-parous little brown bats was noticeably darker and duller than that of parous little browns. I suggest the earlier parturition observed in the yuma bat allows the female young to reach sexual maturity during their first fall whereas female young of the little brown bat do not reach sexual maturity until their second fall, and that the duller, non-parous females observed in this study are the progeny of the previous year. This suggestion is supported by the observation that all female little brown bats (n = 9) banded two years ago in a previous study and

recaptured after June 10, this year, were parous and had typical pelage.

Yuma bats were only captured or observed along the floor of the Okanagan River Valley, whereas little brown bats were trapped both on the floor and in the hills above the river. Preliminary analysis of observations on foraging bats suggests Yuma bats forage mainly over water (still and flowing) whilst little browns tend not to forage over flowing water and to prefer forage over still water and on rocky hillsides.

And what happens to all these bats during winter. Some species, such as the red bat (*Lasiurus borealis*) and the hoary bat (*Lasiurus cinereus*), probably migrate south but most of the bats stay here and hibernate. Hibernating bats survive on energy stored during the fall as fat and are very vulnerable to disturbance by visitors to their hibernating sites in caves and mines. In January 1982 I inspected several old mines in the Okanagan Valley but did not find any hibernating bats until I left the valley and searched at higher elevations. Presumably bats migrate out of the valley in search of suitable hibernacula and hopefully recovery of bands from bats I have banded in the valley will clarify these movements.

In many ways we are only beginning to understand the habits of some of the bats in the Okanagan Valley. We have much to learn about all the species in the valley and of their impact on the ecology of the whole valley. Reporting by naturalists would be helpful to us.

Certainly the Okanagan is a better place for all its bats and we hope to be back in the summer of '83.

Flora of Waterton Lakes National Park

By Dr. Job Kuijt, Professor of Botany, the University of Lethbridge, published by the University of Alberta Press, Athabasca Hall, Edmonton, Alberta, T6G 2E8.

Members who attended the Waterton Park FBCN camps have waited in anticipation for this publication by one of our former members. The Flora is an up-to-date, well illustrated manual of 683 pages; all vascular plants reported for the Rocky Mountains proper and adjacent foothills from Crowsnest Pass south, well into Glacier Park in Montana are included in this carefully prepared publication; \$25.00 hard cover, \$15.00 waterproof paperback.

New Wildlife Act

The long-awaited Wildlife Act became law last week (at the time of this writing, the first week of August).

All clubs should look at it carefully. Copies are available from the Federation office at 1200 Hornby Street in Vancouver.

The Hon. Stephen Rogers, Minister of the Environment, whose Ministry will administer the Act states:

"The new Wildlife Act is a response to dramatic changes in the circumstances surrounding wildlife and wildlife habitat over the last decade. While the factors affecting wildlife and the attitudes of the public toward their use and protection were changing, our legislation was not. This new Act accomplishes necessary changes, and at the same time ties wildlife management to the powers and provisions of our Environment Management Act."

Provisions of the new Act cover the entire spectrum of wildlife management, habitat management and the regulation of activities associated

with the wildlife resource such as hunting, guiding and trapping. Major developments include: (a) changes and improvements to definitions under the Act; (b) a series of new initiatives for improving wildlife and habitat management, including those required for the acquisition, improvement and protection of wildlife management areas, and (c) a number of adjustments to existing provisions, including increases in penalties for offenses under the Act.

"Wildlife management is not only important in itself, but has also become a key component of overall land and resource use planning," said Rogers. "This new Act will provide both better protection and management for our fish and wildlife resource and a more effective means of integrating this management with overall environmental and resource development in British Columbia." Comments on, or a critique of the Act, should appear in the next issue of the B.C. Naturalist.

Report of the Canadian Nature Federation

A.G.M. - Calgary, July 1 - 3/82

Joe Lotzkar

Representative Director FBCN

The detachment of CNF affiliates from the Directorate of the CNF occurred at this year's A.G.M. The drive to centralize the organization in the east started with the removal of Dr. Ted Mosquin a Executive Director of the CNF at the Victoria meeting in 1975. The administration of the national organization was left in the hands of an Administrative Assistant and a Conservation Officer.

Over the ensuing years the slow erosion of any "grass-roots" direction coupled with the alienation of much Western influence culminated this year with the severance of all direct links with its "affiliates". By reducing

the size of the Board of Directors through the elimination of Representative Directors from the provinces or its Provincial affiliates (including our F.B.C.N.) results in a centrally-run organization with no direct link to any of its affiliates.

The stipulation that the new Provincial Directors will be appointed in consultation with Provincial groups is a method to entrench "like-minds" in the national Directorate. We may well see in the future a director appointed for a province with no allegiance to any Provincial affiliated group.

The theme of the symposium centered on the impact of the many proposed mega-hydro electric projects proposed for Alberta utilizing the concept of inter-basin transfer of its many river waters.

BED & BREAKFAST

H. MOORE

BALSAMROOT

Stay in the Similkameen Valley overnight in the beautiful
Box 64 HEDLEY VOX 1K0



Wild life atlases Progress report

SPRING 1982

Our network of regional co-ordinators is slowly getting established and should be fully operational by the fall. If you are interested in becoming involved in the various atlases, either by assisting with data compilation and transfer, or by submitting observations, please contact the regional co-ordinators in your area. These are listed below. Observations can, of course, still be sent directly to us at the museum. Please note that Marilyn Rack and Dave King have agreed to be co-ordinators for the Prince George area.

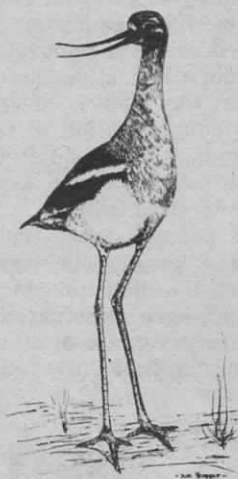
List of Regional Co-ordinators:

VICTORIA TO DUNCAN (J.E.V. Goodwill, 517 Witty's Beach Road, R.R. No. 1 Victoria, V8V 3W9 -478-9715); **NANAIMO AREA** (Bill Merilees, 1655 Sherwood Drive, Nanaimo, V9T 1H2 - 754-4297); **PARKSVILLE AND NORTH** (Neil Dawe, Canadian Wildlife Services, R.R. No. 1, Qualicum Beach, V0R 2T0 - 752-9611); **WEST COAST VANCOUVER ISLAND** (Bill McIntyre, Pacific Rim National Park, P.O. Box 280, Ucluelet, V0R 3A0 -726-4254); **QUEEN CHARLOTTE ISLANDS** (Brian Petrar, Fish and Wildlife Branch, P.O. Box 370, Queen Charlotte City, V0T 1S0 -559-8431); **GREATER VANCOUVER** (Dick Cannings, Cowan Vertebrate Museum, Univ. B.C., Vancouver, V6T 2A9 - 228 - 4665); **LANGLEY TO HOPE** (Jude Grass, 202-6444 Silver Avenue, Burnaby, V5H 2Y4 - 437-7194); **MANNING PARK** (Gail Ross Parks and Outdoor Recreation Division, Manning Park, V0X 1R0); **WEST KOOTENAY** (Gary Davidson, Box 294, Nakusp, V0G 1R0 and Maurice Ellison, 1188 Columbia Ave., Trail, V1R 1J2); **EAST KOOTENAY** (John Woods, Parks Canada, Box 350, Revelstoke, and Larry Halverson, Parks Canada, Box 220, Radium Hot Springs, V0A 1M0); **KAMLOOPS/SHUSWAP** (Rick Howie, No. 101 - 1050 West Col-

umbia, Kamloops, V2C 1L4 -374-3986); **CHILCOTIN** (Anna Roberts, 2002 Lakeside Drive, Williams Lake, V2G 2P1 -392-5000); **PEACE RIVER** (Chris Siddle, 8927 - 116th Avenue, Fort St. John); **PRINCE RUPERT** (Doug Innes, 508 Green St., Prince Rupert, V8J 3E2); **PRINCE GEORGE**, (Marilyn Rack, R.R. #7, Prince George, V2N 2J5 -963-7347 and David King, Fish and Wildlife Branch, 1011 - 4th Avenue, Prince George, V2L 3H9 - 563 -1181) and **SUNSHINE COAST** (Tony Greenfield, Box 319, Sechelt, V0N 3A0 -885-5539).

I want to thank Jim Weston, Ministry of Lands, Parks and Housing, for his efforts to produce the BCWA logo which accompanies our quarterly reports.

We recently received a nice surprise in the mail. Dr. James Slater, Curator of Herpetology, University of Puget Sound in Tacoma, sent us a personal cheque for \$1,000 towards atlas expenses. The herpetology bibliography recently produced by the BCPM was dedicated to Dr. Slater (and the late Dr. Clifford Carl) for their work in herpetology in the Pacific Northwest. The money will be used for artwork for the herpetology atlas.



Work Completed

We are fortunate this summer to have six students provided by federal and provincial governments to work on the various atlases. Five students, provided by ENVIRONMENT CANADA, are busy transferring material from the second (and final) ornithology bibliography which includes another 2,000 or so references. The

students, all from the University of Victoria, include Tracey Hooper, Alistair Bell, Geoff Reeves, Jennifer Hocking and Julie Beynon. Stan Orchard, has been provided by the MINISTRY OF FORESTS, to assist with the herpetology atlas. He has completed annual cycle charts for all reptiles and amphibians. This includes information on terrestrial activity, breeding, hibernation and courtship periods. Presently, he is compiling information from the herpetology bibliography and organizing the literature into subjects (ie. behaviour, conservation, parasites, longevity, etc.) for each species. He has also completed a locality index which will be a quick reference to the number of species in each map grip with the appropriate literature citations.

Significant numbers of cards, mostly birds, were received from Robin Weber and Richard Cannings (1500 -Lower Mainland), Audrey Vikens (550 - Shuswap Lake), Kay Goodall (400 -Kootenay National Park), Mike McNall (300 - Vancouver Island, H.M. Laing notes), Richard Gibbs (50 -Creston) and Ken Summers (50 - Cortes Island).

Vic and Peggy Goodwill again supplied cards from birders on southern Vancouver Island, Chris Siddle supplied very detailed notes for birds in the Peace River area (notably Fort St. John).

The BCPM has recently acquired the ornithology field journals of the late Hamilton Laing. Mr. Laing worked for the National Museum of Canada early in his career and later concentrated his activities on recording birds on Vancouver Island. So, we have 50+ years of records from the Island for our atlases. Mike McNall has already started to transfer significant records.

Use of Data Files

Over fifty people made use of the information in the various files during the spring period. Rick Marshall (B.C. FISH AND WILDLIFE BRANCH -SMITHERS) requested information on Merlins breeding in the province; Vivian Banci (SIMON FRASER UNIVERSITY) searched literature and records for her honours thesis on wolverines; David Hutchinson (SEATTLE CITY RECREATION DEPT.) gathered information for a paper on the recent spread of Anna's Hummingbirds in the Pacific Northwest; Ken Fraser (UNIVERSITY OF PORTLAND) needed figures for populations of Rhinoceros Auklets breeding in B.C. for environmental impact assessment work; Myke Chutter (FISH AND WILDLIFE BRANCH

-NANAIMO), wanted records of Black-throated Gray Warbler for status on Vancouver Island; Bill McIntyre (PACIFIC RIM NATIONAL PARK), records of Emperor Goose on the west coast of Vancouver Island; Brian Turner (MINISTRY OF ENVIRONMENT - B.C.) needed data on vertebrates for planning studies in the Williston Lake area; Ken McLoughlin (McMILLAN BLOEDEL), needed current information and status for select endangered species in the province, Gary Davidson and Terry Bennett (NAKUSP) entered records of birds into a computer for their in-depth project of "Birds of the West Kootenays" and Dennis Horwood (Kitimat) wanted counts of Bald Eagles in Active Pass for a magazine article. It is encouraging to see the variety of use the various files are getting.



Publications of Interest

Publications identified below by an asterisk (*) referred to our data files for information. Others listed may be of interest to naturalists.

- *Banci, Vivian A. 1982. THE WOLVERINE IN BRITISH COLUMBIA: DISTRIBUTION, METHODS OF DETERMINING AGE AND STATUS OF *Gulo gulo vancouverensis*. B.Sc. Thesis, Simon Fraser University, Department of Biological Sciences, Burnaby. 125 pages.
- *Butler, Robert W. 1981. NESTING OF BREWER'S BLACKBIRDS ON MAN-MADE STRUCTURES AND NATURAL SITES IN BRITISH COLUMBIA. *Canadian Field-Naturalist* 95(4):476-477.
- *Butler, Robert W. 1981. THE HISTORICAL AND PRESENT DISTRIBUTION OF THE BUSHTIT IN BRITISH COLUMBIA. *Murrelet* 62(3): 87-90.
- *Cannings, S.R. and L.A. Gibbard. 1982. CHECKLIST OF OKANAGAN BIRDS. *South Okanagan Naturalists' Club*, Box 375, Penticton. Leaflet.
- Groves, Sarah. 1982. ASPECTS OF FORAGING IN BLACK OYSTER-CATCHERS (AVES:

HAEMATOPODIDAE). Ph.D. Thesis, University of British Columbia, Department of Zoology, Vancouver, 123 pages.

- *Martin, Kathy, Susan Hannon and Richard Moses. 1981. NESTING OF SMITH'S LONGSPURS IN BRITISH COLUMBIA. (*Canadian Field-Naturalist* 95(4): 469-470.
- Maser, Chris, Bruce R. Mate, Jerry F. Franklin, and C.T. Dyrness. 1981. NATURAL HISTORY OF OREGON COAST MAMMALS. *United States Department of Agriculture Forest Service General Technical Report PNW-133*, 496 pages.
- *Matheson, Sidney A. 1982. *Dicamp-tonodon ensatus* OF BRITISH COLUMBIA. Unpublished Student Report, Simon Fraser University Department of Biological Sciences, Burnaby. 46 pages.
- *Parks Canada. 1981. CHECKLIST OF BIRDS OF PACIFIC RIM NATIONAL PARK. Environment Canada, Ottawa. Leaflet.
- *Routledge, J. David. 1982. THE VANCOUVER ISLAND MARMOT SURVEY -1981. *Vancouver Island Marmot Preservation Committee Report No. 3*, Courtenay, B.C. 13 pages.
- *Silieff, E. and G.H. Finney. 1981. THE CO-OPERATIVE BREEDING BIRD SURVEY IN CANADA, 1980. Canadian Wildlife Service Progress Notes No. 122, Ottawa, 16 pages.
- *Woods, S.M. and D.P. Shaw. 1981. BIOLOGICAL OCEANOGRAPHY -HATCH POINT MARINE ENVIRONMENTAL ASSESSMENT. Report prepared for Chevron Canada Limited by *Debrocky Seatech Limited*, Sidney. 126 pages.

Noteworthy Records

Only significant records are listed below. Regional co-ordinators have helped tremendously by scrutinizing records before sending them to us.

Mammals

For a change small mammals highlight the report. Provincial museum staff discovered that JUMPING MICE (*Zapus* species) were common, and NAVIGATOR (WATER) SHREWS were present, but seldom seen, during their two months field work in the spruce bogs east of Fort Nelson. Surprisingly, not a single bat was seen although we suspected that LITTLE BROWN MYOTIS were hunting insects over ponds and lakes created by beavers. Perhaps the area is near the northern limit of their preferred food. WOODCHUCKS were found in brush piles throughout the area which extends their known range in the province several hundred kilometers northward from the Fort

St. John area.

The biggest surprise was a BISON which was seen by Mike McNall and photographed by Wayne Campbell (BCPM Photo No. 786) at the edge of a spruce bog on 4 July near the Mobil Oil Camp west of Kotcho Lake. Wally McGregor, Fish and Wildlife Branch in Victoria, feels confident that this animal probably wandered eastward from Wood Buffalo Park in northern Alberta.

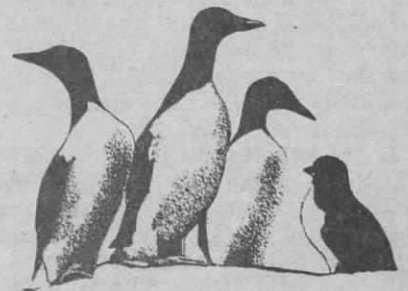
Neil Dawe picked up a NAVIGATOR (WATER) SHREW at Errington on Vancouver Island on 12 April. This larger bicoloured shrew has been given to the Provincial Museum for their scientific collections.

Finally, Alistair Bell and Michael Rodway watched a SEA OTTER with her small baby, off Penfold Island in Queen Charlotte Strait on 23 June. This is the first breeding record for eastern side of Vancouver Island since their introductions near the Bunsby Islands off the central west coast of the Island.

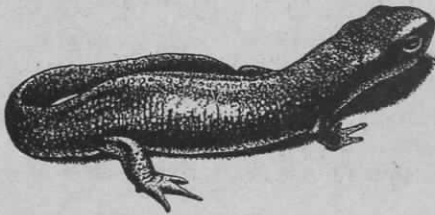
Birds

An adult RED-THROATED LOON seen by Chris Siddle on 23 May on Charlie Lake is the first record for the Peace River area. An adult WHITE PELICAN, probably from the colony in the N.W.T., was seen on Kotcho Lake on 25 June by Wayne Campbell. A sighting of a DOUBLE-CRESTED CORMORANT one of our very few inland records, was provided by David Low, of an adult flying down the Thompson River between Dallas and Kamloops on 7 June.

Keith Taylor located our most exciting bird, a WHITE-FACED IBIS on 24 May, in Saanich. Six BRANT seen by Alistair Bell and Michael Rodway on 29 June on the Buckle Island off northern Vancouver Island is a late departure date while the BLACK DUCK reported by Chris Siddle on Cecil Lake east of Fort St. John on 4 May is another Peace River area first. Ten EUROPEAN WIGEON were seen at Porpoise Bay (near Sechelt) by Jack Satterly on 10 April and he watched 100 plus SURFBIRDS on 13 April feeding along the rocky shores near Sechelt.



The fall shorebird migration commenced on 26 June and built up through mid-July. Wayne Campbell and Michael McNall recorded Western Sandpipers, in ones and two's passing through the Kotcho Lake area with SEMIPALMATED AND LEAST SANDPIPERS from 28 June to 7 July. On 14 July, Chris Siddle estimated 800 shorebirds of 13 species at a sewage lagoon near Fort St. John, which included 250 LONG-BILLED DOWITCHERS, 90 STILT SANDPIPERS and 18 HUDSONIAN GODWITS! On the coast a flock of 3000+ NORTHERN PHALAROPES were watched by Alistair Bell and Michael Rodway feeding along a tide line off northern Vancouver Island.



Large flocks of FRANKLIN'S GULLS were found in the northeast. Campbell and McNall counted 117 non-breeding birds in a tight flock on the water, in Kotcho Lake on 26 June and Chris Siddle estimated 400+ on Charlie Lake on 14 July. Earlier in the spring, on 27 May, Chris saw six SABINE'S GULLS on Charlie Lake.

CASPIAN TERNS are regular, in summer, in southwestern B.C., but a bird seen at Nakusp by Gary Davidson on 19 June and one photographed (BCPM Photo No. 787) by ERvio Sian between Oliver and Osoyoos on 6 July are noteworthy. Maurice Ellison reports that Jack and Joan Sigswarth had a BARN OWL in their backyard in East Trail on 3 June. The recent flush of interior records is probably due to dispersing birds from the successful nest-box project being organized by Carl Marti in Idaho. This is the first report for the Kootenays. A SHORT-EARED OWL was found frozen in the snow in Fort St. John on 11 January (BCPM photo No. 782) and graduate student Ann Vallet saw a LONG-EARED OWL on Mandarte Island, off Sidney, on 4 April. Doug Innes recorded the first ANNA'S HUMMINGBIRD (a male) for Prince Rupert on 28 June and I. Rockwell saw the first spring RUFOUS HUMMINGBIRD at Horse Lake east of 100 Mile House on 1 May.

In the late 1940's LEWIS WOODPECKERS nested near Burnaby Lake and slowly they have disappeared so the record of an adult in Victoria seen by Eileen and Wayne Campbell on 5 June is noteworthy. STARLINGS

continue their spread northward. Gary Anweiler photographed an adult (BCPM Photo No. 784) at Liard Hot Springs on 21 May.

The BLACK-THROATED GRAY WARBLER is slowly extending its breeding range northward along the east coast of Vancouver Island. Although it has reached Campbell River, it is well established near Errington where Neil Dawe had up to four territorial males from 21 April to 11 May. Detailed field notes of an AMERICAN REDSTART seen at Sproat Lake on 11 June by Michael Price is the first record for Vancouver Island.

Although now a common breeding species in northeastern B.C. the COMMON GRACKLE is very rare on the coast. Howard Telosky documented the occurrence of one bird by photograph (BCPM No. 777) on Quadra Island from 26 March to 3 April. And finally, two male SHARP-TAILED SPARROWS were seen by Chris Siddle at Boundary Lake on 11 July.



Reptiles and Amphibians

Another record for the SHARP-TAIL SNAKE was provided by George Evans who discovered this rare animal on Sidney Island on 20 June (fide Dr. Patrick Gregory). A COMMON GARTER SNAKE was seen by Wayne Campbell near the Fort St. John airport on 11 June, near the northern limit for this species.

Grant Hazelwood discovered a LONG-TOED SALAMANDER in Prince George on 9 June. Neil Dawe reports that on 17 June he caught 394 ROUGHSKIN NEWTS in eight fish traps in marshes near Errington on Vancouver Island. Alan Edie and Keith Moore mention that the PACIFIC TREE FROG, intentionally introduced in the Queen Charlotte Islands, is now well established in the Yakoun River area.

The NORTHERN CHORUS FROG appeared to be elusive in spruce bogs east of Fort Nelson in June and July as only five were seen by museum staff. None were heard singing. Developing larvae, however, were common in shallow roadside sloughs by early July.

Please send noteworthy records of vertebrates, especially mammals, reptiles and amphibians, to me in December, March, June and September.

Wayne Campbell
Vertebrate Zoology Division
B.C. Provincial Museum
Victoria, B.C. V8V 1X4

BADGES and DECALS



The Federation has recently purchased a supply of badges and decals. A sample will be sent to each club.

Price \$4.00 for badge \$1.00 for decal.

To order, see your club secretary or
Natalie Minunzie
23292 - 34A Avenue
Langley, B.C. V3A 7B9 (524-2116)

Goldstream Park Open

At GOLDSTREAM PROVINCIAL PARK (north of Victoria), the Nature House will be Open daily between 9 am and 5 pm during November and December.

ARTICLES WANTED

Short articles as well as features on all natural history subjects are needed. Length up to 1200 words. Longer articles accepted with Editorial Committee approval. Photos or drawings may be included.

NEW HABITAT ENHANCEMENT

An allotment of \$749,864 from the Habitat Conservation Fund for the enhancement of fish and wildlife habitat was announced today by the Honourable Stephen Rogers, Minister of Environment.

Rogers said \$461,264 will be used to advance fifteen habitat improvement projects begun last year, the first year of operation of the Fund, and \$272,100 will be invested in nine new projects recommended by the Fund's Public Advisory Board. Administration costs and public information signs will require \$16,500.

The new projects, chosen from fifty-one submissions to the Advisory Board, are:

- Cleanup of spawning streams associated with fourteen fishing lakes in the Cariboo and Chilcotin. Accumulated debris and beaver dams blocking fish passage will be cleared from tributaries and outlet streams serving Antoine, Rose, Bosk, Horsefly, Ben, Horse, Canim, Kloacut, Puntzi, Bluff, Horn, Sapeye, Nimpo, and Anahim Lakes.

- A similar program of stream improvement will be carried out in connection with five lakes in the Burns Lake and Houston areas. The Skeena Region lakes are Takysie, Uncha, Binta, Kager and Johnson (Vallee). In addition to clearing barriers, fisheries managers will place fresh gravel, or construct gravel spawning platforms, in some of the streams.

The two programs together are expected to add 25,500 catchable trout annually to the lake fisheries.

- Improvement of brown trout habitat in several streams tributary to the Cowichan River, plus the opening up of dry side

channels to increase fish rearing habitat. The street work will include removing log jams and debris, by-passing a natural falls that impedes fish, renovating an old fishway, modifying culverts to permit fish passage, and placing boulders and logs to provide in-stream cover for small fish. The aim is to produce at least 7,000 additional brown trout each year.

- Removal of coarse fish from Hart Lake (64 km north of Prince George) to restore a recreational trout fishery. The lake will be treated with rotenone to eradicate heavy populations of mountain whitefish and coarse fish of several species, then will be restocked with trout. The project is expected to make 6,000 fish of 0.5 kg (1 lb) size available to anglers each year.

- Placing gravel in the outlet stream from Hicks Lake in Sasquatch Provincial Park, near Harrison Hot Springs, to increase available spawning habitat. At present the outlet stream, Trout Lake Creek, offers excellent trout rearing habitat, but has very little spawning habitat. Increased spawning, combined with a new fishway constructed by the Parks Branch, will add 3,000 angler-days annually to the Hicks Lake cut-throat trout fishery.

- Prescribed burning to increase high quality forage for California bighorn sheep and mule deer on rangelands near Kamloops Lake. The controlled fires will help maintain an open forest habitat that is used by a variety of birds and small mammals in addition to the deer and sheep.

Improvement of moose wintering habitat through prescribed burning in the lake district south of Houston. It is anticipated that by improving the quality and quantity of browse available, the moose population in the area can be augmented substantially.

- Cooperative development of a wildlife management plan for the Forslund/Watson property, 58 acres in Langley given to the people of British Columbia by Messrs. Forslund and Mrs. and Mrs. Watson in 1975, to be maintained in perpetuity as a wildlife refuge. Langley Field Naturalists, contracted as guardians of the property, have inventoried a wide variety of plants, mosses and birds in the refuge, which is also used by a small herd of deer.

- Construction of artificial reefs in Osoyoos Lake to enhance production of largemouth bass. Discarded rubber tires will be used to create spawning and rearing habitat and add a thousand angler-days of fishing each year in one of British Columbia's very few bass fisheries.

In announcing the new projects Environment Minister Rogers noted that the enhancement program was made possible by the \$3 surcharge added to basic hunting, fishing, guiding and trapping licences last fall. He emphasized that proceeds from the surcharge are earmarked exclusively for habitat enhancement work.

For further information on the Habitat Conservation Fund contact Rod Silver, Fish and Wildlife Branch, Ministry of Environment, 780 Blanshard Street, Victoria, B.C. 387-5921.

North American Bluebird Society

In the last few years, many FBCN clubs have organized nest-box projects for Mountain and Western Bluebirds. Members of these clubs may be interested in joining the North American Bluebird Society, a continent-wide organization founded in 1978, and devoted to the conservation and fostering of the 3 bluebird species. NABS publishes *Sialia*, a quarterly journal which includes many helpful "how-to" articles on operating a nest-box program, including how to deal with bluebird

predators, parasites, competitors, etc. They also publish many articles on the history and results of local nest-box projects, and would be glad to receive such articles from any B.C. clubs. Other NABS activities include a major annual meeting and regional meetings in various places (one was held last year in Brandon, Manitoba). For more information, write NORTH AMERICAN BLUEBIRD SOCIETY, BOX 6295, SILVER SPRING, MARYLAND 20906, U.S.A.; annual membership is \$10.00 U.S.

I joined NABS in 1979, and have found *Sialia* to be a very worthwhile and informative publication.

Wayne Weber

B.C. NEST RECORD SCHEME CARDS must be sent to Mrs. Violet Gibbard, 465 Ellis Street, Penticton, V2A 4M1, by October 15th.

Endangered Wild Flowers of B.C.

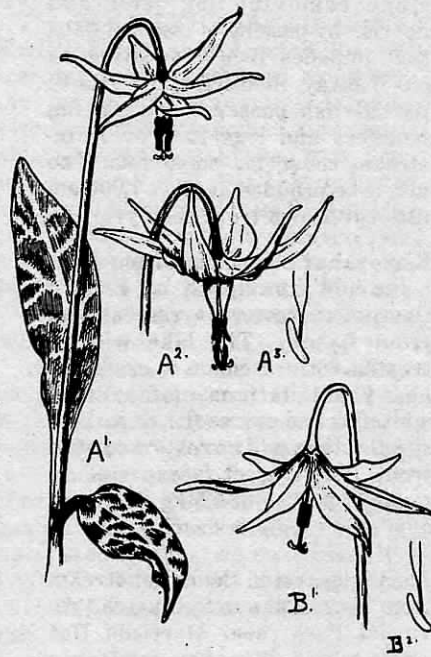
Lilies

Erythroniums are typical lilies in that they have their flower parts in threes and leaves with parallel veins - though these veins are not easy to see in their rather succulent leaves. "Erythros" means red, referring to the pink flowers of the Eurasian species. A common name is "Dog Tooth Violet" or "Adder's Tongue". Why Dog Tooth Violet is anyone's guess, but "Dog Tooth" is variously explained as referring to (a) the rows of large white seeds, (b) the shape of the tepals (sepals + petals), or (c) to the corm which, when peeled of its sheath, is white and slender, resembling a dog's canine tooth. The origin of "Adder's Tongue" is equally obscure!

Erythroniums have a deep, elongated corm from which arises a single stem with just one pair of leaves at ground level. Typically the slender stem carries a single nodding flower but if conditions are very favourable two to several flowers may be present. The six tepals, generally alike in shape and colour and separate from one another, at first spread widely open and then curl upwards to reveal the six bright anthers surrounding the long style with its distinctly three-lobed stigma. The seed capsule is large, erect, tapering to the base, with many seeds.

We have four species of *Erythroniums* in B.C. two of which are now seriously endangered through loss of habitat. These, *E. oregonum* and *E. revolutum*, are the Fawn or Trout Lilies, so called from the mottling of their leaves.

E. oregonum, the Oregon Lily, White Fawn or White Trout Lily or Easter Lily, is the less endangered of the two since it favours a variety of habitats. Lewis Clark includes it in his Field Guide 2 - Wild Flowers of Field and Slope - since "it is found from woodland and high open shade, to crevices of good soil among rocks, even to open grassland." (Wild Flowers of British Columbia). Hitchcock and Cronquist (Flora of the Pacific Northwest) say "most woods and open gravelly prairies." Nevertheless its range in B.C. is very restricted - to "Southeastern Vancouver Island, Gulf Islands and adjacent mainland, and the lower Fraser Valley west of the Cascade Mountains". (T.M.C. Taylor, The Lily Family, B.C. Prov. Mus. Handbook 25) Since these are the most populous areas of B.C. it is obvious where the Danger lies!



E. revolutum, the Pink Fawn or Pink Trout Lily, is the more endangered species. It prefers the moist sandy loam of river banks and of open deciduous woodlands. Lewis Clark describes one area carpeted with these flowers - on the old flood plain of Sutton Creek (which runs into Cowichan Lake). It is probably too much to hope that the logging company which holds, or held, the forest management licence has made "a magnanimous gesture" and "established this forty acres as a park"! It is to be hoped, though, that the local Naturalists Club is working towards an Ecoreserve to protect such an unusual wealth of these beautiful flowers - should they still be there! Ordinarily the Pink Fawn Lily occurs only sparsely and, in B.C., only on Vancouver Island, and at Kingcome Inlet on the mainland. On ever more populous V.I. its habitat is severely threatened. When a student at Victoria College in the late twenties, I walked through fields and woods to Mount Tolmie from somewhere near my "digs" off Oak Bay Avenue and, if my memory serves, these fields and woods were spangled with Pink Fawn Lilies, and White Fawn Lilies, too!

I do not agree with Lewis Clark that these two species do not overlap. In a slide taken by me near Comox in April, 1969, I have them growing side by side, barely two inches apart, in fairly shady deciduous forest. Their leaves are very similar - those of *E. oregonum* mottled dark green on

paler green, of *E. revolutum* with more chocolate brown mottling. But the flowers are, of course, very distinctive. The tepals of *oregonum* are pure white, with greenish to maroon shading at their base on the outside and, on the inside, orange-yellow at the base with a purple border. (These markings vary in colour and intensity). The flowers are large, the tepals measuring up to 4.7 cm. - nearly two inches. The stamen filaments are wide and flattened, almost hiding the ovary, and the golden yellow anthers, before dehiscence, may extend a little beyond the slender style with its three curved stigma lobes. The tepals of *revolutum* are clear rose pink and become more strongly recurved, hence "revolutum". They may be marked with white or yellow at the base. The flowers are only a little smaller than in *oregonum*, the tepals measuring up to 4.5 cm. in length. The filaments are very broad and completely envelop the ovary. The golden yellow anthers reach at least as far as the three-lobed stigma before dehiscence. Henry (Flora of Southern B.C.) states that "the stigmas recurve to touch the anthers" - are these flowers, then, self-pollinating? The three anthers of the outer whorl dehisce before the inner ones and after dehiscence they all shrink considerably in size.

According to Nancy Turner (Food Plants of B.C., Part 1, B.C. Prov. Mus. Handbook 34) only the Kwakiutl and possibly the Nootka ate the corms of *revolutum* while those of *oregonum* were apparently ignored by the Coast Salish.

Of our two other species *E. grandiflorum* has the widest distribution in B.C. south of latitude 52°, occurring on "sagebrush slopes to montane forest upward to near timber line" (Hitchcock and Cronquist), while the pure white *E. montanum* is known only from Mt. Waddington and, recently, from the Port Renfrew area on V.I. where it occurs below 3000 feet (Lewis Clark).

E. grandiflorum, Glacier Lily, Avalanche Lily or Snow Lily, is found at a very low altitude in the Shuswap where, particularly at Chase, it turns the grasslands to sheets of gold in early spring. And in many areas the sub-alpine meadows likewise turn to gold as the snow melts. Destruction by grazing is the chief danger here. Deer eat the leaves and green capsules with avidity, bears and rodents eat the corms. The corms were dried and stored for winter food by the In-

dians of the Interior.

Picking an Erythronium with its leaves will kill the corm. Transplanting is very seldom successful and it takes from five to seven years for a bulb to bloom from seed. So it is best to "take nothing but photographs" and to work to protect these beautiful species by preserving their chosen habitat.

Joan E. Heriot

Illustrations

- A¹, A², A³. — *Erythronium revolutum*.
A². — Flower showing stamen filaments enveloping ovary.
A³. — Detail of mature stamen.
B¹, B². — *Erythronium oregonum*.
B¹. — Flower.
B². — Detail of mature stamen.

Illustrations by Joan E. Herriott
scale 1/2 size

Christmas Bird Count Notice

A reminder to clubs planning to conduct an official Christmas Bird Count (i.e., for publication in **American Birds**) for the first time this year: write before November 1, 1982 to CHRISTMAS BIRD COUNT, AMERICAN BIRDS, 950 THIRD AVENUE, NEW YORK, N.Y. 10022, U.S.A. and include (1) a map of your proposed count circle; (2) names of the closest nearby counts (if known); and (3) an indication of the size and experience of your count group. You should receive instructions and a reporting form by November 30. For established counts, forms should reach the compiler by November 10 or 15.

Compilers of unofficial counts only should send complete results to me at 303 -9153 Sarna Drive, Burnaby, B.C. V3J 7K1 as soon as possible after the count. Official counts are forwarded to me anyway after initial checking in New York.

Dates for next winter's count are Dec. 18, 1982 through Jan. 2, 1983. Good luck to everyone on your Christmas Bird Counts this winter!

Wayne Weber
Regional Christmas Bird Count
Editor
Western and Northern Canada

**DEADLINE: WINTER
1982 B.C. NATURALIST
OCTOBER 15th**

Rarebird alert

The Idea of having a taped "Rare Bird Alert", which birders may call for details of the latest rare bird sightings, originated in Massachusetts more than 25 years ago. Today, there are at least 30 of these RBAs all across North America, with 4 of them in the Pacific Northwest. This summary is presented as a service to bird-watchers travelling in southwestern B.C., western Washington, and western Oregon, who would like to know of unusual bird sightings in these areas.

A hint when phoning RBAs — if calling long-distance, rates are cheapest between midnight and 8 A.M. (or 11 P.M. and 8 A.M. when calling within B.C.). The cost of a night call is negligible (less than \$1.00 from most of southern B.C.), and it may be well worth while in notifying you of a bird or birds new to your "life list".

Victoria, B.C. — (604) 478-8534

This RBA is operated by Vic and Peggy Goodwill for the Victoria Natural History Society. It covers mainly the immediate Victoria area, west to Sooke and north to Duncan. The tape is updated on an almost daily basis all year, and it is always quite current. Up to 20 or more sightings may be listed, and thus locality descriptions are often brief (except for birds of extreme rarity). One minor disadvantage is that a very rare bird last seen more than 4 or 5 days ago may not even be mentioned, so that the visiting birder may not know to look for it. The tape usually ends with details of the next Victoria Natural History Society bird outing.

Unusual sightings should be reported to the Goodwills by phoning them at (604) 478-9715, before 9:00 P.M.

Vancouver, B.C. — (604) 734-4554

Doug Kragh maintains this tape for the Vancouver Natural History Society. The Vancouver area and Lower Fraser Valley are covered, although outstanding sightings from Victoria or from Washington State are sometimes mentioned as well. The tape is usually limited to 10 or fewer sightings, with careful locality descriptions for most of these. It is usually updated 2 or 3 times a week, or immediately in the case of a "hot tip". Field trip announcements are not included, but details of upcoming meetings on conservation issues, etc., are sometimes mentioned. The tape ends by giving phone numbers of 2 or

3 local birders who may be contacted for general birding information on the area.

The tape ends by giving telephone numbers of several local birders (currently Gerry and Wendy Ansell at 327-3667, Doug Kragh at 731-3831, and Dick Cannings at 228-4665 (days). Unusual bird sightings should be reported to one of these persons; they may also be contacted for general birding information in the Vancouver area.

This RBA is operated by Phil Mattocks for the Seattle Audubon Society. Although concentrating on the Seattle area, it includes reports from all of western Washington, and occasionally from eastern Washington as well. For extremely rare birds, excellent locality instructions are given, often including the phone number of a local contact. The main disadvantage of this tape is that it is updated rather infrequently — usually about once a week, but occasionally not for 10 days or even 2 weeks. However, it is usually updated at once on the report of a "super-rarity". The tape ends with details of upcoming bird trips of the Seattle Audubon Society.

Seattle, Wash. (206) 624-2854

The Seattle, Victoria, and Vancouver RBAs all occasionally include outstanding rarity reports from each other's tapes.

Callers to the Seattle RBA may leave details of their own sightings to be taped at the conclusion of the pre-recorded message. Extreme rarities should be reported at once, if possible, to the Seattle Audubon office at 622-6695 (9:30 A.M. to 4:00 P.M., Monday through Friday) or to Phil Mattocks (463-3370) or Gene Hunn (524-8112).

Portland, Oregon — (503) 292-0661

Harry Nehls looks after this tape for the Portland Audubon Society. The coverage is statewide, although concentrating on the Willamette Valley and northern Oregon coast. The tape is updated once a week, on Thursdays. This tape is much longer than the other three, and often includes a fascinating list of up to 40 bird sightings from all parts of Oregon. (Nimble fingers are needed to transcribe all this information!) Locality details for extremely rare birds are generally quite good. No field trip details or other supplementary information are included.

Reports should be phoned to Harry Nehls at (503) 233-3976.

Wayne C. Weber

B.C. Naturalist Fall 1982 - Page 11

Parks News

Updated Provincial Parks Guide Now Available

An updated edition of the guide to Provincial Parks of British Columbia is now available, announced Lands, Parks and Housing Minister Jim Chabot.

Chabot said "Copies of Provincial Parks of British Columbia" can be obtained from government agents, Tourism British Columbia outlets and most local tourist bureaus. The Parks and Outdoor Recreation regional and district offices also have copies available. Anyone wanting a copy can also write to the Parks and Outdoor Recreation Division, 1019 Wharf Street, Victoria, B.C. V8W 2Y9. I expect this publication will be very useful to anyone planning their holiday in our provincial parks."

Terry Fox Provincial Park Dedication

The people of British Columbia are honouring the memory of Terry Fox with the creation of a provincial park, Premier Bill Bennett and Lands, Parks and Housing Minister Jim Chabot announced.

"Mount Terry Fox Provincial Park will be an ever-present testimony to the courage of the man for whom it is

named and the love that British Columbians bear him."

The new park consists of 1930 ha (4,767 acres) surrounding the recently-dedicated mountain in the Selwyn Range of the Rocky Mountains. Directly southwest of the famous Mount Robson and sharing a common boundary with Mount Robson Provincial Park, it is easily visible from both Highways 16 and 5. Although there is no road access to the park itself, a viewpoint was recently constructed on Highway 16 about 17 km west of the west entrance to Mount Robson.

The 2650-metre mountain appears rounded from the highway but is actually quite spectacular at the summit. Just south of the peak is a cirque - a dish-shaped basin created by glacial action. Within the cirque is a beautiful alpine lake and on the south side is a steep, sharp ridge running parallel to the ridge that forms the summit. It's a difficult climb but well worth the effort.

Mount Terry Fox Provincial Park is home to marmot, pika and the occasional caribou. The vegetation is typical of the Columbia and southern alpine forest with spruce and fir trees, small alpine plants and lichen.

"The plans for the park are still being drawn up," Chabot noted, "but it's likely that it will remain largely

undeveloped, offering a wilderness experience.

West Coast Trail Land Transferred to Federal Government for Pacific Rim National Park

Eighteen properties located along the famous West Coast Trail are now being transferred to the Federal Government to become part of the Pacific Rim National Park, announced Jim Chabot, Lands, Parks and Housing Minister.

These properties totalling 77 hectares (185 acres) have recently been acquired by the Province, which has agreed to acquire the lands under a cost-sharing agreement with the Federal Government.

Within Phase III of the West Coast Trail section, approximately 70% of the privately owned land has now been either acquired or the Crown has agreements to purchase. Purchase of the remainder of the land is being actively pursued by the Province.

Chabot said "This is the third transfer of land which we have made this year to the Federal Government for inclusion in the Pacific Rim National Park, and I hope will serve to assure the public of the Provincial Government's commitment to this national park. The extinguishment of timber tenures within the park is still being negotiated."

Both individuals and organizations contributed towards the acquisition of this land. Naturalists wishing to help preserve key wildlife areas should be aware that the fund welcomes donations and money donated will be used to purchase and preserve critical wildlife areas. Receipts for tax purposes are issued.

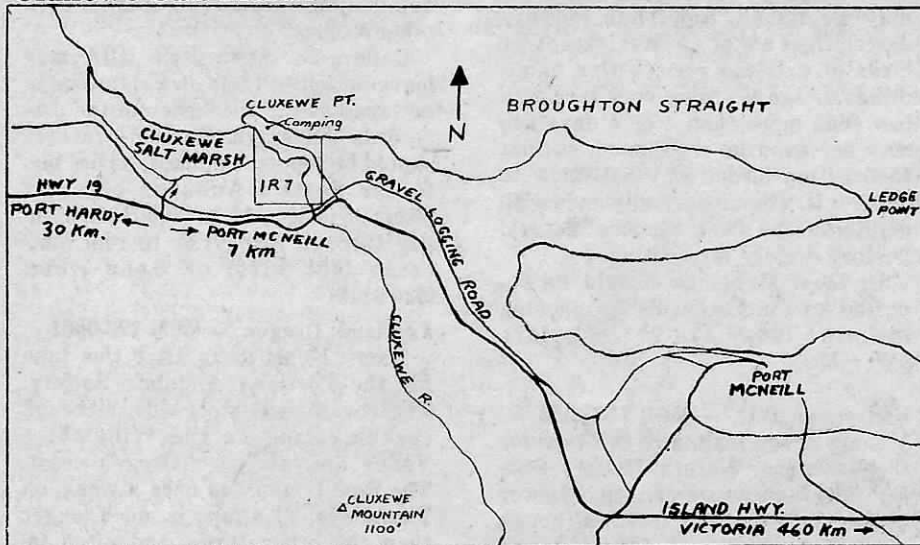
The offices of the Fund are at Suite 909, 100 Park Royal South, West Vancouver, V7T 1A2, telephone 925-1128.

The sketch which follows indicates the location of Cluxewe Salt Marsh. Visitors to North Vancouver Island will enjoy visiting the Marsh but will require suitable footwear for the wet terrain. N. Purssell

To All Clubs: Your Opportunity

The Public Conservation Assistance Fund is designed to aid clubs in conservation projects throughout British Columbia. The next meeting of the Advisory Committee is in **mid September, 1982**. For consideration of a grant, please complete an application form and forward it to the Fish and Wildlife Branch, Ministry of Environment, Parliament Buildings, Victoria, British Columbia, V8W 1X5.

Cluxewe Salt Marsh



A dedication ceremony was held on 23 July 1982 at Cluxewe Salt Marsh to enable the public to see the land purchased by the National Second Century Fund turned over to the Ministry of the Environment for management purposes on a 99 year lease.

The marsh is located on the north coast of Vancouver Island and is on the north side of Highway 19, about 7 km west of Port McNeil. The Cluxewe Point. The land purchased by the

Fund is a key parcel within a wildlife reserve of about 100 hectares and is rich in natural history interest. Shore birds are plentiful and at times large numbers of ducks feed in the bay. There are two bald eagle nests within the area. About two years ago this productive wildlife habitat was being considered for a subdivision and its preservation indicates the valuable work of the National Second Century Fund.

F.B.C.N. Summer Camp

Oliver - Osoyoos, B.C.
June 12 - 20, 1982

This year's camp made use of the U.B.C. Geology Department's Field School, 3 miles west of Oliver as base. The range of habitats and geological features within easy distance of camp is impressive: sand dunes, natural grasslands, marsh and alkali slough, open and closed forests, orchard and farm, river and lake and alpine tundra, volcanic rocks and sedimentaries and so on in rich diversity.

Birding: Exciting. The educated ears and eyes of expert ornithologists such as Bill Sendall of the Victoria club were of great assistance to the rest of us in relating song and species. Of 305 species recorded for the area, the camp recorded at least 135 as positive. Just a few of many, many highlights: winnowing of male snipe in tireless courtship, night and day over camp, bobolinks in numbers in the field at the upper end of Osoyoos Lake, Lewis' and white-headed woodpeckers, calliope and black-chinned hummingbirds virtually in camp, poor wills at nightfall, Lazuli bunting in full glory in the sunshine, prairie rail and chick regularly seen at twenty feet or less along a nearby road, long-billed curlews, a magnificent Great Horned Owl and fledgling on the ecoreserve at Osoyoos and easily visible active sites near camp of pigmy nuthatch, flicker, chukar, northern oriole, rock wrens and canyon wrens, golden eagles and turkey vultures, western kingbirds, yellow-bellied sapsucker, cedar waxwing, magpie, pied billed grebe and chicks, Say's phoebe and western kingbird — literally a never ending diorama. However, it was often a diorama with drama; one act described by Bill, a red tailed hawk harrassed by a kestrel, which was being dive bombed by a western kingbird, which in turn was being chased by a barn swallow!

Non-avian vertebrates: In camp with us were Carleton University graduate students on a *bat* project. We were astonished to find that our area hosted far more species of bats than any other part of Canada. Informal talks and slide shows and night hikes with the students delineating the fascinating natural history of bats, put in the shades badgers, Pacific rattlesnakes, turtles, deer, bear and the *Cy* species of rodents.

Invertebrates: We badly needed expert guidance to initiate us into the teeming life of the ponds, sloughs and

fields; needles to say we saw "lots" — from black widow spiders to ant-lions, but most will have to go into memory without "names".

Geology, archaeology and stars: of course there is a reason for locating a geological field school in the area, but we did not do justice to the variety the area offered. We did do a little fossil hunting, we examined ash (in soil profiles) derived from the Mazama volcanic explosion (Crater Lake, Oregon) 6700 years ago, looked at a few mines, and some Indian pictographs and we toured the great White Lake radio telescope facility.

Plants: It is almost impossible to make significant comments about the plants and plant ecology of an area, embracing so much diversity, in so many habitats from 900' above the sea to over 7000'. Needless to say, there was lots of colour and some fine plant photography. The orchard industry and some of its problems were reviewed at the Canada Agriculture research station at Summerland — our host Dr. Jurgen Hansen (also of the Okanagan Similkameen Parks Association) and Dr. David

Thanks are extended to Okanagan naturalists from Penticton, Oliver and Osoyoos for joining our trips and contributing their knowledge of the localities by slides and lectures, field trips and casual discussion — particularly Jean and Steve Cannings, Dorothy and Doug Fraser. They are also extended to our absolutely first line camp cooks, Angie Berger and Bernice Otto. Everyone worked well together in camp and from our members there were a number of excellent impromptu discussions, such as on place names of the area from Helen and Phil Akrigg, on "feathers" by Ruth Brink. Needless to say it was a fine experience to roam, to observe, discuss and swim and generally come to know naturalists from around our province.

The directors of the FBCN, I am sure were happy to learn, that the camp paid its way and added about \$550 to the FBCN coffers for general operation of the FBCN.

**Jim Lunam (Courtenay-Comox)
and Bert Brink (Vancouver NHS)**

Goat Licks

Mountain goats visit certain sites to lick soil and bedrock. The motivation for their behavior is not really known.

Theories suggest the goats visit licks to gather socially or to supplement their diets or simply to satisfy an acquired taste.

In his recent report "Goats of Mount Revelstoke and Glacier National Parks", author Wayne McCrory reports nine lick sites in these two parks. The main attractions seem to be limestone outcrops, silt areas near glaciers and shale cliffs with white encrustations.

McCrory also identifies an artificial lick. At the snowsheds on the Trans-Canada Highway in Glacier National Park, salt accumulates from winter road maintenance. Some 50 goats visit these deposits from spring through autumn.

The goats wander not only onto the highway but into the snowsheds. Traffic has killed seven goats at this site during the summer months of the last two years.

McCrory estimates that 300 mountain goats populate Glacier National Park and 50 live in Mount Revelstoke National Park.

**Lynn Hardstaff
Park Naturalist
Mount Revelstoke and
Glacier National Park**

Heritage Status for Haig-Brown House

In a move, recommended by Provincial Secretary Evan Wolfe last summer, officials of the B.C. Heritage Conservation Branch have been instructed to proceed with the establishment of heritage status for the Roderick Haig-Brown House. Included is 1.9 acres transferred from the Green Belt for this purpose by Minister of Lands, Parks and Housing James Chabot.

The late Roderick Haig-Brown was an outstanding author and speaker on wildlife and other ecological subjects. He was also Honorary President of the Federation of B.C. Naturalists. The establishment of an Heritage Site is fitting as a memorial to his work in Canada and in particular British Columbia.

OOPS — SORRY

The following errors occurred in the Summer 1982 edition. Our Sincere apologies to all concerned.

Pg. 8 col. 2 Rick Howie's phone number should read 374-5986.

Pg. 9 col. 2 *10 should read CORVUS.

Pg. 21 col. 1 the correct spelling should read Joan E. Heriot.

Pg. 23 col. 2 should read Duanne van den Berg.

Omitted: A.G.M. photos — credit Al Grass.

Prescribed burning of grassland and forest in B.C.

Fire often can be a positive factor in the productivity of forests and grasslands. Natural wildfire has played a role in renewing the fertility of ranges and in transforming climax forest from an area holding few mammals and birds into a vibrant habitat filled with new and varied life that thrives on recycled minerals and fibre.

For years after European settlement began, wildfire, whether resulting from human activities or from lightning strikes, frequently swept unchecked through the forests of the interior. It was a time when lack of stewardship over much of the province's forest lands inadvertently worked to benefit any wildlife species that did not depend on climax vegetation. Timber seemed a limitless resource and little thought was given to fire losses. In modern times, however, B.C.'s timber resources have become the mainstay of the province's economy, and attitudes have changed dramatically. The province has half of Canada's softwood resource, and produced over 70% of Canada's revenue from export of primary wood products and almost half the country's revenue from total wood and paper exports. Billions of dollars are involved. Trees are big business.

Although the first sawmill went into operation in British Columbia in 1846, the need to protect this forest wealth was not generally recognized until the first decade of the present century.

In 1910 a Royal Commission on Timber and Forestry echoed a growing conviction, declaring that "Protection from fire is the supreme need of our forest." In the ensuing years the notion that fire in the forests was invariably damaging, a catastrophe to be avoided at all cost, became as firmly entrenched in the mind of the general public as it was among forest managers and the forest industry. Eventually the ubiquitous admonition to "Prevent Forest Fires" became so well ingrained that it was interpreted to mean that every tree must be protected from flame, no matter what its commercial value. As for wildlife, the picture of forest creatures fleeing before flames or perishing in a holocaust tended to obscure any thought of long-term benefits to wildlife populations from fire.

The early cavalier loggers, who took only prime timber and left the rest, had bequeathed a legacy of forest debris that posed an extreme fire hazard. All too often wildfires coursed through the old slash and into standing timber. In 1938 a slash fire at Campbell River on the east coast of Vancouver Island burned over 30 000 ha. The big fire sparked legislation that gave the Forest Service authority to order the burning of slash on any coast logging operation. It was thought better to set fire to the debris under controlled conditions than to leave it as a serious fire hazard. In 1967, by which time the forest industry had expanded into the interior, the mandatory slash burning legislation was extended to apply over the entire province.

"Prescribed burning" had come to the province. But this first official sanction of the controlled use of fire in the woods on a large scale was to serve one purpose only; to reduce the hazard to commercial timber stands. Even so the practice was regarded skeptically and with some apprehension by both the forest industry and the public, by now thoroughly convinced that fire on a large scale could only be devastating to forests and to wildlife. A prescribed fire that escaped to burn over 6600 ha in the Kamloops Forest Region in 1973, destroying property and homes, bore out their fears, but it also brought about a thorough examination of the existing controlled burning program and resulted in more scientific methods being applied. By this time the usefulness of prescribed burning for silvicultural and reforestation purposes had also begun to be appreciated. That fire should be used to benefit wildlife was not yet generally accepted by the Forest Service, however.

Forest protection had become highly efficient by the 1950s. With better fire-reporting systems, aircraft and helicopters, better land access, new machinery, fire retardants, and trained crews using sophisticated techniques, forest fire detection and suppression have reached a state of fine art today. Comparatively few wildfires escape control if it is economically feasible to reach them. In accessible areas protection can and has been extended to timber of no commercial value. **The consequence of the overprotective attitude has been loss of useable habitat for wildlife**

species dependent on successional growth and on grasslands. An all-embracing policy of fire suppression has broken the cycle of natural fires that formerly cleansed and renewed forests and grasslands, and has stood in the way of controlled use of fire to restore wildlife ranges.

Lack of control over the land base is the abiding despair of wildlife managers. Forest managers, on the other hand, have primary control over vast areas of crown land in B.C. that have been officially designated as 'forest land.' Some of the implications of this situation were outlined briefly by Chief of Wildlife Management D. Ray Halladay in a recent address:

On average approximately 153 000 ha of wildlife habitat is logged each year—most of it is clear cut. This alters the food, water and shelter available for wildlife. Species which are adapted to early seral stages may benefit (e.g. Blue Grouse); many species may decline initially and increase beyond original numbers at later successional stages (e.g. moose) and those that are adapted to climax (decadent stands may decline or disappear permanently (e.g. caribow). The impact depends on the species, the site, when and how it is logged, rotation, silvicultural practices, and other use activities associated with logging or the access it creates. Obviously wildlife and forest managers must consult early and work closely to develop the best integrated logging/wildlife plans.

Before that kind of co-operation was to receive official sanction, conflicts arose. Logging might perform some of the same functions as natural fire, but in the eyes of the wildlife manager it was not a perfect substitute; nor was it being planned or carried out to serve the manager's purposes. Wildlife biologists saw situations in which they were virtually certain applying controlled fire to clear away unwanted brush or scrub forest of little commercial use would increase the value of a range for wildlife (and sometimes for domestic cattle as well). The Forest Service embrace of fire suppression as a firm, immutable principle stood in their way. Moreover, the forest interests were hardening their stance against any alienation of so-called forest land. Their attitude grew out of broader problems. In the same address refer-

red to above, Halladay noted that many resource conflicts had begun to crystallize in B.C. in the 50s and 60s.

The cause was clear and remains the basis of conflicts today—more people, extracting more resources, developing more access and realizing space was limiting the expansion—or indeed the maintenance—of previous uses and benefits. We discovered there was, with few exceptions, no more Grass Beyond the Mountains, no unexplored and untapped resource wealth. As Mike Halleran put it . . . "The sum of the demands being placed on our natural resources pool is far greater than the land's capacity to meet them."

Among the conflicts that developed were those between forestry and wildlife. Forestry had grown to become the mainstay of our economy—the value of wildlife had grown too, but largely for recreational use and not as a "marketed commodity." But they were not alone. Mining, power development, agricultural, and urban interests were also creating limits for resource and other land use interests . . . concurrent to the increase in competition for land use was the tremendous increase in public awareness of the values and consequences of the various use options. People became environmentally concerned—managers were forced to consider optimization rather than maximization.

In time the intensity of the conflict and the fruitlessness of frequent confrontations persuaded some resource managers to begin to think in terms of cooperation and co-ordination of effort. Clearly the optimum yield from land that offered opportunity to develop a mix of values could only be achieved by planning and working together. Let us admit that there were, and are, hardnosed individuals in both the forestry and wildlife camps who would not yield a little to their opposite numbers. However, it is also fair to record that the Fish and Wildlife Branch was undoubtedly the first government resource agency in B.C. consistently advocating a co-operative approach and integrated planning for resource use. Cynics might point out, with some truth, that the wildlife managers had nothing to lose and little to concede; nevertheless the resource management philosophy they espoused proved to be the wave of the near future. Here and there in the Forest Service they began to find allies. By February 1981, Ray Halladay was able to report,

There is no doubt that wildlife and forest managers are proponents and practitioners of integrated/co-ordinated resource management. We have each actively helped to develop and to use a variety of administrative approaches to that end.

The new (1979) forest legislation was tangible evidence of the adoption of a broader approach to the management of British Columbia's forest lands. Anyone at all aware of the genesis of legislation will recognize that the broadened outlook must have had advocates within the government forest agency itself. If there were any doubts on that point, the response to the Fish and Wildlife Branch's first attempt at "formalization of the process to meet the intent of the legislation" soon dispelled them.

Early in 1980 the branch began negotiations to set up a mutually agreed process for the use of fire as a wildlife management tool in provincial forests. Chief Forester Bill Young and then-chief of Forest Protection Don Owen, and his second, Henry Doerksen, provided full co-operation. The Ministry of Forests had already moved beyond the use of fire as a clean-up agent after logging, and had begun to employ it as a tool in silviculture, particularly in the preparation of sites for reforestation. So an agreement was worked out and formally signed by both ministries on 21 April 1981.

Each agency's role and responsibilities "in planning, administering and conducting the placement of prescribed, controlled fire to enhance wildlife management" is described in the agreement, and the particular expertise of each is recognized; the staff of the Ministry of Forests as experts in the management of the fire, the staff of the Ministry of Environment as experts in the manipulation of wildlife habitat through the use of fire. Their respective responsibilities are spelled out in general terms in the following clauses:

Regional Managers: Foresters will complete five-year fire management plans for their respective regions to facilitate the use of prescribed fire. These plans will include the use of fire to enhance forest and range habitats for wildlife and they will be prepared through consultation with the Regional Director, Environment. The Regional Director, Environment, will identify requirements for the use of prescribed fire for wildlife habitat enhancement and will make recommendations for their inclusion in the Ministry of

Forests' five year plans. As part of those Five-Year Fire Management Plans, the Ministry of Forests, where possible, will identify ranges, watersheds, or areas of the province where timber production may be of secondary importance to other resource interests. Fire Management plans will be developed for utmost enhancement of wildlife habitat in these areas. The financial responsibilities for completing all aspects of the burns identified within each Fire-Year Plan will be that of the Ministry of Forests, where it is agreed at the time of approving the plan that the preponderance of benefits are forest and range related, and the Ministry of Environment, where it is agreed at the time of approving the plan, that the preponderance of benefits are to wildlife or as otherwise agreed to. In the spirit of cooperation, staff of the Ministry of Environment and Ministry of Forests will participate in the implementation and monitoring of all burns designed to enhance habitats for wildlife, except as otherwise agreed to. . . .

Under the agreement the regional director of the Ministry of the Environment is responsible for drawing up written plans for a burn in his district, in consultation with the regional manager for forests. The plan must include a statement of the overall purpose, location, and extent of the proposed burn, status of the land, any conflicts with other agencies, a description of the vegetation, animals, and public use of the area before treatment, and the objectives of the burn in relation to the same three elements: plus the timing of the proposed operation, provision for monitoring and evaluation, and what supplementary support may be expected from groups outside the government agencies.

When the moose spread southward in B.C., it was the combination of European settlement and fire that created the conditions for their expansion of territory. With the modern day understanding of the beneficial effects of controlled fire in the forests, the continuing presence of moose in many areas may well depend on a conscious use of fire to maintain their habitat. In some circumstances it will depend even more upon the growing co-operation of foresters and wildlife managers and the development of integrated plans in which prescribed fire will be only one of several options for management.

Geoff Warden,
B.C. Ministry of Environment
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Hot Spots for Naturalists

Western Mexico Birding

October 30 - November 10, 1982

Visit the Sierra Madre Occidental, Mazatlan and the San Blas area. In the mountains see Military Macaws and Tufted Jays. On the coast look for Red-billed Tropicbirds, Boat-billed Herons and Rufous-necked Wood-Rails. Leader: Mike Shepard.

Adventure in Mexico

November 10 - 25, 1982

An archaeology and natural history tour featuring the Yucatan, Oaxaca weaving and pottery region, and Mexico City. See the Mayan ruins of Uxmal, Chichen-Itza, Tulum and Palenque. Birdwatch, swim and snorkel in the warm Caribbean, bargain at Indian markets and see the Ballet Folklorico.

Hawaii

November 27 - December 11, 1982

Explore the islands of Oahu, Hawaii, Maui and Kauai with your naturalist guide. Visit Volcanoes National Park, Kanaha Pond, Hosmer Grove, Waimea Canyon and more. View Hawaiian wildlife such as Silver-sword plants, Apapanes and Great Frigatebirds.

Upcoming Tours for 1983:

Whale Watching April 1-4	Southern Alberta June 3-9
South Texas Birding April	Peace River & Alaska Highway June 10-20
Arizona Birding April	Yukon Adventure June 21-27
Long Beach Adventure May 20-23	Queen Charlottes & Nass Valley July 3-13
Okanagan & Kootenays May 28-June 2	Cathedral Mountains July 22-25

Send for Itineraries and a 1983 General Program

Swiftsure Tours Ltd., 119 - 645 Fort Street, Victoria, B.C. V8W 1G2 (604) 388-4227

Registration for Federation Fall Meeting

Place: Timberline Ranch Date: Nov. 6th - 7th, 1982
224th Street, Haney

Friday - Sunday: \$40.00 includes Saturday — breakfast Sunday — breakfast
— lunch — lunch
— dinner
Sat. - Sunday: \$35.00 includes Saturday — lunch Sunday — breakfast
— dinner — lunch

Program:

Saturday: The role of the Naturalist on Advisory Committees.
Sunday: Raptor in the Pitt Polder in the morning.
Mushroom identification in the afternoon.

Bring your rain gear!

NAME _____ Tel. _____

ADDRESS _____

AFFILIATION _____

Official Capacity _____

Mail Registration Form to: F.B.C.N.
1200 Hornby Street
Vancouver, B.C.
V6Z 2E2

Turn at 224 St. Haney, and Lougheed Highway (at ZELLERS Shopping Mall). Travel north, crossing South and North Alouette Rivers, then Blainey Creek and gravel road to Timberline Ranch.

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Up and coming

September 13: Directors' Meeting -Outdoor Rec. Council Boardroom, 1200 Hornby Street, Vancouver, B.C. 5:00 p.m.

September 26: B.C. Rivers Day - Get involved.

September 26: Minnekahda Advisory Committee, 9:30 a.m. at the Lodge.

October 4: Directors' Meeting, 1200 Hornby Street, Vancouver, B.C. 6:15 p.m.

October 15: Deadline for the Winter 1982 B.C. Naturalist.

November 6 - 7: Fall Directors' Meeting, Timberline Lodge, Haney, B.C. Details on page 16.

December 16: Directors' Meeting, 1200 Hornby Street, Vancouver, B.C. 6:15 p.m.

Article on Boundary Field Naturalists will be reviewed in next issue because of lack of space.