Research Links
A Forum for Natural, Cultural and Social Studies

Park Prisoners

Historical Account of internment camps is more than a documentary

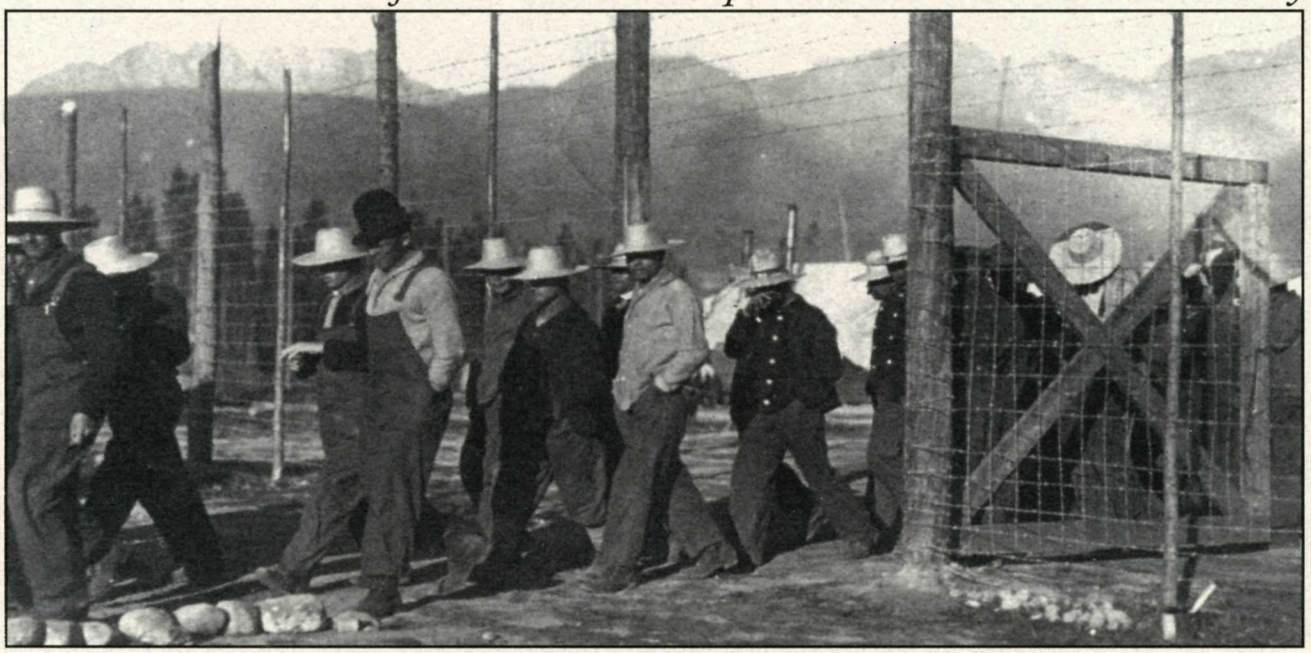

Photo: Glenbow Archives, Carothers Collection

Men leaving the stockade at the Castle Mountain camp, 1915

Park Prisoners: The Untold Story of Western Canada's National Parks, 1915-1946. by Bill Waiser

Graham MacDonald

The use of national parks as settings for internment and relief camps is a fact not well known by Canadians, even those with keen interest in park matters. Bill Waiser, Chair of the Department of History at the University of Saskatchewan, Saskatoon, is in a good position to write about the controversial topic, having worked as a public historian for Parks Canada, Winnipeg. Waiser, author of "Park Prisoners: The Untold Story of Western Canada's National Parks, 1915-1946," recalls that the idea for the book came about during a days trek around Prince Albert National Park with a group of friends in 1989. Looking for remains of the old internment camps, one of the party kept asking: "Who were these guys, Bill?" This book gives a good number of answers to that question by tracing the rise and fall of the types of camps which came under national park administration. While there were many other internment camps spread across the country, those in the national parks of Manitoba, Saskatchewan, Alberta and British Columbia are the focal points of Waiser's book.

Waiser describes four categories of camps. Camps which fall into the first category housed so-called enemy "aliens" and were established during the First World War. The second category consists of unemployment and relief camps set up in the mid-1930s as a response to the great depression. Camps of a third kind were put in place during World War II and were called "alternate service camps" oriented towards "conscientious objectors," and the fourth type of camp housed formal prisoners of war.

The outbreak of war in 1914 became the occasion for the passage of the Aliens Registration Act, designed to identify landed immigrants working in Canada, who retained their European citizenship. Of particular concern were citizens of countries engaged in battle against Canada and the British Empire. The act most notably affected central and east European "aliens" in Canada: people of Austrian, Hungarian, German, Polish and Ukrainian background. National parks became involved after General Sir William Otter approached the Commissioner of Dominion Parks, J.B. Harkin, requesting the use of parks as settings for detention camps. The two men met in 1915 in Rocky Mountain National Park (now, Banff) to make the necessary arrangements. Waiser takes us through the workings of Castle Mountain Camp and others in Yoho, Jasper and Revelstoke. The photos, many drawn from the Webster Collection of the Banff Engineering Service, indicate that much of the work on familiar sites, such as the Cave and Basin Hot Pools and the Banff-Lake Louise road, was completed by internees.

The author also addresses the depression years, when relief worker camps became familiar sites in national parks across the west, including Mount Revelstoke, Yoho, Elk Island, Prince Albert and Riding Mountain. These camps were quite different from "enemy alien" camps in origin and context. Nobody knew, in 1930, that the depression would be long and severe, but it indirectly provided the solution to Harkin's dilemma of decreasing park funds (in part, the result of the dissolving relationship between parks and the railways), *– continued on page 7 –*

Research Links
Volume 4 • Number 3 • Winter 1996

FEATURE ARTICLES

DEPARTMENTS

FRANCOPHONES

Le texte de cette publication est offert en français. Vous pouvez l'obtenir en écrivant a l'adresse dans la p. 16.

EDITORIAL

A park ecologist monitoring changes in vegetation dynamics, an anthrolopogist intrigued by pre-colonial land use and an avid outdoor enthusiast exploring mountain ridges might agree that conservation is important in our national parks, historic sites and protected areas. However, these people have different ideas about what should be conservation priorities. That many people have interests and investments in our parks makes the task of converting conservation ideals into management plans a complicated process which depends on interagency and interdisciplinary communication and partnerships.

One of the key objectives of *Research Links* is to promote communication between and among researchers and park managers, reporting information that may help to meet research needs and lead to solutions to management problems. In this issue we feature several interagency and interdisciplinary research projects which are the results of shared ideas and expertise, many of which have clear applications to park management. In addition to collaborating with researchers from other disciplines, the authors incorporate a variety of information sources, such as traditional knowledge and local history, to provide us with some background on their research questions and some insight as to the future implications of their research.

Articles provide the results of partnerships between historians and paleoecologists, anthropologists and biologists, local people and park authorities, as well as the results of academic and government agency cooperation. In the process of correlating information from a variety of sources and deriving comprehensive management plans to address the concerns of multiple stakeholders, the authors make it clear that every research problem and management issue affects many people with interests and investments in our national parks.

The articles in this issue of *Research Links* introduce us to several key concepts we hope to develop further in our focus on the upcoming SAMPA (Science and Management of Protected Areas) conference. Our Spring 1997 issue will provide you with a comprehensive look at topics which will be discussed at this conference, including linking protected areas and working landscapes, and the evolving definition of conservation in park science and management. We also hope to tackle the questions: "Are research activities influencing management practices?" and, "Are management needs directing research activities?"

The projects featured in this issue of *Research Links*, and the topics to be discussed in our "SAMPA Issue," illustrate the benefits of forming research partnerships. The ability of the authors and their collaborators to work toward the same objectives emphasizes the importance of interagency and interdisciplinary communication as means of coordinating park research and management efforts to conserve our natural heritage.

Dianne Willott
Production Editor

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THE ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

University of Montana, U.S.A.

Michele Banowetz

Wilderness management research has changed focus dramatically during the past three decades. While continuing to address social values of wilderness areas, such as how to provide opportunities for solitude and primitive recreation, the understanding and preservation of natural processes and biological values has emerged as one of the most significant aspects of wilderness research.

Expanded wilderness areas and expanding research needs require new and innovative approaches to conducting wilderness research. To meet these challenges, the Aldo Leopold Wilderness Research Institute was created, bringing together diverse disciplines, interests, and organizations to develop solutions based on a combination of managerial experience with research expertise.

The Aldo Leopold Wilderness Research Institute, located on the University of Montana Campus in Missoula, Montana, is an interagency, interdisciplinary organization that developed from a US Forest Service research work unit. Established as an interagency organization in 1993, its staff represents the US Forest Service, US Fish and Wildlife Service, National Park Service, Bureau of Land Management, and US Geological Survey.

The Institute's mission is to obtain and provide information necessary to sustain wilderness resources in an ecologically and socially sound manner. This mission is accomplished through research, technology transfer, education, cooperative studies, and partnerships with governmental agencies, non-governmental organizations, and universities, both nationally and internationally. Most of the research is applied within the National Wilderness Preservation System, which encompasses more than 103 million acres of wilderness in national parks, forests, wildlife refuges, and public-land districts in the United States. Findings are also relevant to the millions of acres outside the wilderness system managed largely to preserve natural values.

An organization such as the Aldo Leopold Institute offers many benefits: aggregating expertise across several disciplines and agencies to address the growing number of wilderness issues; providing a scientific basis for wilderness management; integrating and coordinating wilderness research information and efforts across a diverse array of organizations and organizational goals; providing a forum for diverse research topics, including research with national-level concerns such as global change and base-line monitoring; and facilitating the transfer and application of research findings to natural resource managers, researchers, and the general public.

The Institute addresses a broad range of wilderness management issues including recreational and non-recreational uses; physical, ecological, and social impacts on the wilderness resource; monitoring wilderness areas; developing information useful for wilderness management; and creating material suited to educational uses. For example, the Leave No Trace program is based on Institute research on minimum-impact camping. This program draws on recreationists' appreciation of wilderness areas and challenges them to use responsible techniques, such as "pack it in, pack it out," that will have minimum impact to the area. The program has produced pamphlets, videos, and training courses to educate wilderness user groups, federal land management agencies, and the public on the best minimum-impact techniques for a variety of environments.

The Limits of Acceptable Change (LAC) system, based on Institute research, reformulates the recreational carrying-capacity concept, with primary emphasis shifted to conditions desired in the area rather than on how much use an area can tolerate. The system is used by wilderness managers as a framework for defining acceptable and appropriate resource and social conditions in the wilderness setting.

Scientists from the Institute present at Canadian workshops, and interact with Canadian scientists, special interest groups and students. Research results are published in journals, conference proceedings and US Forest Service publications. Recent

– continued on page 6 –

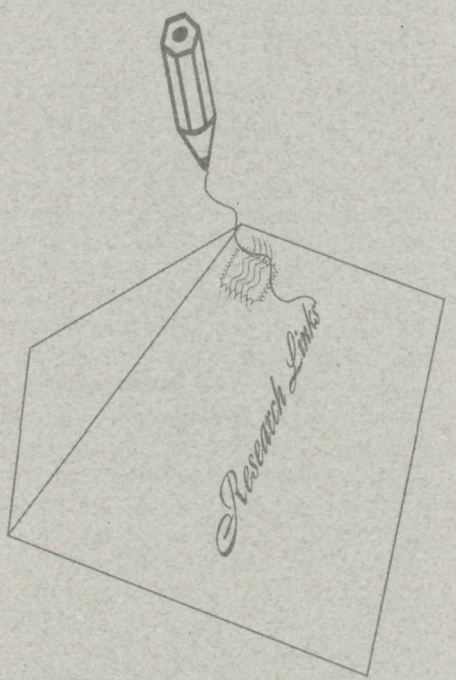
FEEDBACK...

"While talking to Cliff White, Park Warden in charge of game research in Banff National Park, I came across your excellent "magazine", *Research Links*. I was most impressed! Having been one of the first National Park Naturalists (Elk Island, 1965-67), I have followed closely the research and other programmes for over 30 years. I am now volunteering to search out animal numbers in western Canada."

-J. Cam Finlay

"Greetings from Kouchibouguac National Park. I have been reading your *Research Links* bulletin and find it fascinating. You're doing a great job and it's too bad that the bulletin does not have national coverage."

-Eric Tremblay



The Need for Amphibian Monitoring in Protected Areas

Photo: Andrew Dickinson

*A Wood Frog (**Rana sylvatica**) in Elk Island National Park*

Pat Dunn

VANISHING FROGS

At the First World Congress of Herpetology in Canterbury, England in 1989, researchers from all over the world heard from one another that many of the amphibian populations they were studying had disappeared or were showing accelerated declines. North American leopard frogs and boreal toads disappeared over parts of their range, while other species and regions seemed unaffected. Amphibian population declines were observed in preceding decades, but in 1989, the realization that species had almost simultaneously disappeared from large, well protected reserves around the world was of particular concern. Golden toads disappeared from the Monteverde Cloud Forest Reserve in Costa Rica, between 1987 and 1989. Gastric brooding frogs vanished from a remote national park in Australia. Both species may now be extinct, along with many other lesser known species. While most previously observed amphibian population declines and extirpations were directly attributable to habitat loss, this factor did not seem to apply to declines being reported from protected areas. The widespread yet geographically isolated incidents seemed to indicate a global agent.

The IUCN (World Conservation Union) Species Survival Commission convened an international symposium in 1990, and struck the Declining Amphibian Populations Task Force (DAPTF) in 1991. Regions around the world are represented by 80 working groups, including one group in Canada. The Task Force has two priority goals. The first goal is to gather information about amphibian population dynamics. This goal was identified in response to controversy over whether a decline is occurring. Amphibians naturally exhibit large population fluctuations, and to date, the population dynamics of most amphibian species have not been monitored over the long-term. As their second goal, the Task Force will provide an international forum for discussion and correlation of research results. By pinpointing the cause of verified population declines, analysts may be able to determine whether a decline is due to local or global factors. Large scale declines maybe attributable to increased UV radiation, acid precipitation, chemical pollutants, and disease (DAPTF, 1996). Amphibians' permeable skins, low mobility and complexlife cycles, involving both aquatic and terrestrial habitats, make them vulnerable to subtle habitat change. They are highly sensitive toa variety of stressors. Of all vertebrate classes, they may be the best indicators of ecological health (Bishop, *et al.,* 1994).

CANADIAN AMPHIBIAN MONITORING

The Canadian working group (DAPCAN) held its 6th annual meeting in Calgary, Alberta in October, 1996. Without data from long-term monitoring of Canadian amphibian populations, it is difficult to determine whether extirpations and population declines are following natural patterns or accelerating. A national monitoring method and protocol are being prepared for Canada to enable comparison among different biomes. Researchers need to compare results as directly as possible to assess whether global factors or local agents are implicated in declines (Heyer et al., 1994).

THE ROLE OF PROTECTED AREAS

The discovery that amphibians are declining rapidly in protected areas makes it urgent to establish reliable inventories and undertake long-term monitoring in national parks. Parks with populations of important indicator species (species found over a wide range, such as leopard frogs, or whose populations have declined elsewhere, as with spotted frogs in BC) can contribute to national databases by participating in monitoring programs. As good indicators of ecological problems, amphibian populations could be tracked as part of a comprehensive environmental monitoring program (Freedman and Shackell 1991).

Such research has good extension potential. Public interest in the issues surrounding declining amphibian populations is high. The need for volunteer involvement in extensive monitoring makes active public participation possible. This is an opportunity that is not available in most wildlife research.

That some amphibian species are experiencing decline, extirpation and even extinction is clear. The subtlety and complexity of the factors affecting amphibian population dynamics illuminate the complexity of ecological systems. Evidence is emerging that implicates human activities in some amphibian declines. Vanishing amphibians are not only a loss of biodiversity, tragic enough in itself, but may indicate profound environmental change affecting all life on earth.

The documented disappearance of amphibian species from national parks indicates that factors exist within parks that are destructive to biodiversity, whether these factors originate within parks or outside them. Mount Revelstoke and Glacier National Parks contain populations of two species of concern. Western toads *(Bufo boreas)* and spotted frogs *(Rana pretiosa)*

– continued on page 10 –

EXPLORING THE PAST:
Travelers' Journals and Bog Cores

Mary Alice Snetsinger

BACKGROUND

The Thousand Islands lie at the west end of the St. Lawrence River, near Lake Ontario. The region, on the border between Canada and the United States, has an eventful history, reflecting the settlement and political evolution of the two countries. The river was an important transportation corridor throughout the 18th and 19th centuries, and was traveled by many missionaries, soldiers, explorers, surveyors, government agents, and others. Many of these travelers recorded their observations and impressions.

The American War of Independence, in the late 1700s, was followed by a surge of settlement in the region. The United Empire Loyalists settled on the north side of the river, and the American government offered incentives to settlers to increase the American presence on the south side. The people involved in these activities recorded information about natural history in their journals, letters and other documents. Simultaneously, physical processes preserved fragments of biological history. By comparing these two sources of information, it may be possible to gain a clearer understanding of the changes that occurred in this region's ecosystems over time.

This project explores two segments of a historic land use study carried out by St. Lawrence Islands National Park (SLINP). Structure for the overall study was defined by Osborne (1994). Two of Osborne's themes were investigated in depth: Jonathan Marshall examined records written by travelers, settlers and surveyors (Marshall 1994), and Oliver Reichl completed a complementary search of scientific literature for evidence obtained from sediment cores (Reichl 1994). A final report, synthesizing the results of each of the individual components of the SLINP land use study will be completed in 1997.

INTRODUCTION

European settlement of North America led to the first written records of natural characteristics as colonialists recorded information about their new surroundings. As surveyors opened North American land to development, they mapped lots and concessions in what they viewed as a trackless wilderness. Their surveys and supporting notebooks have a wealth of information about the nature of the land and vegetation. Settlers' letters and diaries describe specific regions and their experiences forging homesteads. Travelers provided broad descriptions of areas they visited, and of their encounters with the land, vegetation, animals and people.

In spite of the wealth of information provided by journals, letters and surveyors notes, such records cannot be relied on unsupported as documentation of ecosystem characteristics. Surveyors were under enormous pressure to get settlers on the land, and they faced harsh outdoor conditions with little equipment. Tremendous errors occurred when compasses were thrown off by magnetic anomalies and the surveyors made mistakes in their haste. It is believed that, in some areas, surveying was never completed—that survey reports were falsified to speed up the process. In addition, settlers and travelers wrote for an audience back home, and colored their accounts out of personal and cultural biases as well as for effect.

Surveys and supporting notebooks have a wealth of information about the land and vegetation. Settlers' letters and diaries describe specific regions

Descriptive records of the past can be corroborated by physical records in sediment cores from areas where sediments accumulate over time with little disturbance. Cores from lake and bog sediments provide clear, contiguous records of accumulated sediments. These physical records have the potential to support written records, or to temper our reliance upon their veracity.

METHODS

Jonathan Marshall's analysis of written records focuses on crown land survey records, documents from the Loyalists' resettlement (1783 - 1784), 19th century traveler accounts and the Unwin Survey of 1874. In his report, he notes the circumstances of the observations, and quotes the author's comments, verbatim (Marshall 1994). For the biological component of this project, Oliver Reichl reviewed published material dealing with three sediment cores from the Thousand Islands region, and unpublished material, such as internal government reports. Correlating this information in another report, Reichl describes the ecological conditions which prevailed before farmers and loggers cleared the landscape, indicates any existing landscapes which have remained relatively undisturbed, assesses the ecological impact of successive disturbances to the landscape, and provides a 25-year projection of the ecological state of the region (Reichl 1994).Reichl's biological report was used to corroborate or refute the information provided by the written records Marshall analyzed, thus providing an objective check for the written accounts. Information from geographical locations where written and physical records of the past are consistent was compared to current information about these locations to determine general changes in species composition.

RESULTS

Written Records

Travelers' accounts suggest the nature of the ecosystem in the Thousand Islands region as it was during the late 18th and the 19th centuries. Buried within often romanticized descriptions of "dark forests" and other natural phenomena visible from passing boats, are observations of the natural environment. The recorded observations are often limited by factors such as the mode of transportation, the season, and the author's preconceptions. Nevertheless, they reveal temporally-specific information about the flora, fauna, geology and cultural landscapes of the region, including species names, vegetation associations, climate, water conditions and shoreline characteristics.

The most useful accounts describe human settlements along the St. Lawrence River. Many accounts describe the influence of the area's geology (particularly the Frontenac Axis) on other aspects of the ecosystem.

– continued on page 12 –

The Aldo Leopold Wilderness Research Institute

– continued from page 3 –

published studies include: *Ecological Manipulation in Wilderness - An Emerging Management Dilemma*, David Cole; *Opportunities for Solitude in the Boundary Waters Canoe Area Wilderness*, Alan Watson; *Wilderness Recreation Use Trends, 1965 Through 1994*, David Cole; *The Limits of Acceptable Change (LAC) System for Wilderness Planning*, George Stankey, et al.; *Threats to Wilderness Ecosystems: Impacts and Research Needs*, David Cole and Peter Landres; *Disturbance of Natural Vegetation by Camping: Experimental Applications of Low-LevelStress*, David Cole.

Future research of the Institute will include investigating the roles of fire and other natural distur-bances in wilderness ecosystems, investigating the role of exotic, or non-native, plant and animal species in the system,and developing knowledge about biodiversity in wilderness and how to protect it.

For more information on the Aldo Leopold Wilderness Research Institute or partnering opportunities, please contact: Virginia Beres or Marilyn Holgate. Tel: (406)542-4190, e-mail: /s=leopold/ou1=s22101a@mhs-fswa.attmail.com. For a list of more than 270 publications on Institute research, please call: (406) 542-4190.

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Toxaphene in Bow Lake

– continued from page 11 –

and their high energy potential and high numbers, make them the main prey source of larger lake trout. In addition, mountain whitefish had higher concentrations of organochlorines than the majority of their benthic prey sources (*Gammarus* excepted), suggesting that bioaccumulation is also a concern for this species.

Empirical results regarding the implications for toxaphene bioaccumulation in fish-eating grizzlies, osprey and people who fish are not available at this time. However, it is known that toxaphene can accumulate in terrestrial animals. Contaminant levels are not likely to pose a serious threat to most wildlife and humans because, apart from the fish in Bow Lake and a few other isolated lakes, mountain fish have very low levels of toxaphene. It is recommended that a monitoring program be established to ensure that organochlorine contaminants, including toxaphene, remain at low levels in mountainous environments. Studies are currently being planned to compare the levels of *Gammarus* between lakes, the distribution patterns of organochlorines in other mountain aquatic food webs, and the atmospheric transport of organochlorines in snow and precipitation. This study of Bow Lake provides an indication of what may be occurring in other lakes. An on-going survey of mountain lakes shows that the atmospheric contamination of Bow Lake is not a isolated event, and the effects of this type of contamination may be cause for concern in mountain parks over time.

This research was funded by Friends of Banff National Park, Canadian Circumpolar Institute, and an NSERC grant to Dr. David W. Schindler from the University of Alberta.

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Park Prisoners: The Untold Story

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and increasing demands for development to cater to automobile tourism. His problems were complicated by the need to service the large new prairie parks which had come on stream just prior to the 1930 Natural Resources Transfer Agreement. Part of Harkin's solution came from work accomplished through relief camp operations established for the unemployed and transient. The main achievements came after 1932 when government officials at all levels started to realize that the depression was not going to go away. After 1931, greater flexibility in the funding and scope of projects allowed National Park administrators to plan and coordinate in-park work more effectively.

Waiser's treatment of the 1930s is comprehensive. He successfully fuses aspects of Canadian social and economic history with details of camp life, and captures the mentality of destitute internees who viewed these camps as welcome alternatives to either deportation or life on the streets. The legacy of many of those projects are still with us in the forms of in-park construction and the Big Bend Highway along the Columbia River near Revelstoke.

Turning his attention to World War II, Waiser describes the institution of "alternate service camps." After 1939, pacifist and religious dissenters were particularly affected by shifting government views towards conscription and alternative work service. With the assistance of the diplomatic skills of T.C. Davis, the Associate Deputy Minister of National War Services and former Mayor of Prince Albert, a program satisfactory to both the military and dissenters was established. Work camps for "Conchies," or conscientious objectors, opened in several parks the summer of 1941. In southern Manitoba, many of those targeted for the camps were Mennonites living in the bloc settlements where their Russian ancestors once lived, ironically to escape military conscription under the Czar. The same mental and moral discipline which made them objectors served most of them well in the camps where they were highly productive as workers and well disciplined. Waiser also reviews the somewhat different experience of Jehova's Witnesses in Canada at this time, shedding some new light on an already troubling aspect of Canadian history.

The remaining chapters of the book continue the World War II story. They deal with the experience of British Columbia Japanese "evacuees" and formal German Prisoners of War. Although the fate of Japanese Canadians is better known than the fate of other ethnic groups subject to internment, Waiser again draws attention to little known aspects of that history: the camps at Geike and Decoigne 1 and 2 in Jasper National Park. Here a group of uprooted west coast Japanese Canadian citizens was organized to work on the proposed Yellowhead-Blue River Highway. Waiser deals with park engineer J.H. Mitchell's efforts to civilize an uncivilized process, the adaptability of the Japanese once they arrived in Jasper, and the fundamental irrationality of policy. R.C. Vaughn, President of the Canadian National Railway, asked somewhat pointedly why, if the Japanese were such a threat, were they positioned next to a fundamental communications link? Of course, there was no logical answer to that question and deep bitterness related to this policy is brought to the surface in the narrative.

Waiser concludes by considering the achievements of prisoners of war (POWs) who resided in park camps after 1943. Earlier in the war, the idea of POW camps in parks received a very cool reception from administrators, echoing the World War I experience with "aliens." However, by 1943, there were over 16 000 POWs in Canada, including many captured during Montgomery's important defeat of Rommel at el Alamein in North Africa. As labour and money were in short supply, park administrators saw advantages in the camps, as long as work was not seen to contribute to the war effort.

Riding Mountain was the setting for a large camp at which wood-cutting appears to have been the main task. The author introduces some much needed humour in a chapter about daily life in this Whitewater Camp. In places the narrative tends to read like a version of Hogan's Heroes in reverse. Life could have been worse on the outside for these prisoners, so there was no compulsion to escape. They came and went into the local countryside with alarming ease, and were often entertained with a certain sympathy by farm families of central and east European background.

The author chooses not to take a position on various aspects of the "national guilt" question, preferring to tell the stories of the men and their families who were affected by the camp experience. The book goes a long way in filling in these historical gaps and is an important reference for park employees and the interested public.

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***Park Prisoners* by Bill Waiser.** *Published by Fifth House Press, 1995. Illus. Maps. 294 pp. ISBN 1-895618-65-7. (Hardcover and Paperback)*

TELLING THE UNTOLD

Park Prisoners is the untold story of the national park labour camps. It explains why various groups were sent to work in Western Canada's national parks, when and where they were placed, and how they were housed and treated. It also documents how the park internees were employed and the conditions under which they toiled, as well as describing the various projects they tackled. Finally, it demonstrates how the men made a significant contribution to the development and maintenance of Canada's so-called special places during the troubled years of war and depression—what they created through their labour for future generations of Canadians to enjoy.

-Bill Waiser

In the early part of this century, the Polish Priest, Father Anthony Sylla, spent much time around Canmore administering to the religious needs of the local mining population. He was well aware of the existence of the Castle Mountain work camp established during World War I, for he administered to the needs of the internees. Later, Father Sylla recalled those days:

During World War I there was a detention camp below Castle Mountain, for the so-called "Austrians." These "Austrians" were Poles and Ukrainians who came from that part of Poland which was under Austrian Government. The camp authorities left a horse at my disposal for the purpose of visiting the inmates occasionally. I said Mass for them in a large building at the camp. Their work consisted of clearing the bush.

-Father A. Sylla

Across Canada, there are undoubtedly many local variations of this kind of memoir, some of them present only in the minds of those who participated in the events. Internment camps were widespreadacross the country during World War I, the depression and World War II. Recollections of such experiences have been gathered up in local settings on occasion, such as at Ontario's Neys Provincial Park on the north shore of Lake Superior. In gathering together the details of a large chunk of this history, Professor Waiser's book provides a real service to Canadian education. It exposes the structure of a skeleton long hidden in the Canadian historical closet.

Parks Canada and the University of Alberta form a Partnership

The Jasper Archaeology Field School

Peter D. Francis and Caroline Hudecek-Cuffe

After completing four years of archaeological field work at Fort Edmonton, the Department of Anthropology at the University of Alberta sought a new venue for their archaeological field training credit course for the summer of 1996. Senior archaeologist Martin Magne (Parks Canada Alberta Region) approached Jasper National Park (JNP) Superintendent Michel Audy with the concept of forming a partnership between Parks Canada and the U of A: JNP could host an archaeology field school, taught by the U of A's Department of Anthropology, in cooperation with Parks Canada's Archaeological Services in Calgary. Subsequent negotiations between Magne, and the U of A's Charles Schweger and Raymond LeBlanc, resulted in the development of an archaeological field school programme located at the Palisades Centre in JNP. Senior management within Parks Canada's Alberta Region and the University of Alberta endorsed this partnership.

Excavation in progress on the north bank of the Snake Indian River, Jasper National Park.

The goal of the field school is to provide a wide range of archaeological field training as well as classroom and laboratory instruction in the context of ecosystem and cultural resource management within a national park. In this context, field school students contribute directly to the management of archaeological resources by acquiring new archaeological information and applying it to management issues through problem solving exercises. Public and park staff involvement is encouraged so the students are introduced to multiple perspectives of public access and resource management issues.

The 1996 field school took place from July 15 to August 21. JNP and the U of A provided financial and logistic support for the programme, with some assistance from the Archaeological Survey, Provincial Museum of Alberta. Parks Canada's Archaeological Services provided professional expertise and general direction.

Caroline Hudecek-Cuffe taught the field school with two teaching assistants, Dennis Sandgathe and Darcy Mathews, both graduate students in the Department of Anthropology at the University of Alberta. Parks Canada regional archaeologist Peter Francis was responsible for the overall direction of the field work and identified the most suitable locations for archaeological survey and excavation. Twelve undergraduate students, most of whom were second-and third-year anthropology students, completed the course. Several archaeological projects, were planned in collaboration with warden Rod Wallace, JNP's Cultural Resource Officer. A variety of pre-historic and historic sites and areas throughout JNP were included to provide the students with practical training in reconnaissance, surveying, mapping, and general excavation techniques.

One of the field school projects was mapping Fitzhugh historic site, which is situated within the Jasper townsite and known locally as Snape's Hill. The site was the location of the Grand Trunk and Pacific Railroad, Mountain Section, Divisional Engineer's Headquarters that was in use during the construction of the rail line from approximately 1911 to 1914. Following its use as an engineers' camp, some of the buildings were occupied by several early Jasper families and park employees.

The site consists of at least 24 features that represent building foundations, tent platform mounds, cellar pits, garbage dumps, and pits. As the initial field school project, the students mapped the locations of individual features using transits and tape measures. Information obtained from this year's field school, and from any future archaeological work at the site, may be used for developing on-site interpretive displays explaining the site's significance and history.

The primary focus of the field school was the excavation of a prehistoric stratified campsite located on the north bank of the Snake Indian River. The site was first recorded in 1983 during an archaeological survey of the area, but the site was not extensively sampled until 1995, when Peter Francis examined it as part of the Snake Indian River Threatened Sites Project. Given the relatively productive results of these 1995 excavations, the threatened nature of the site, and the well-defined stratigraphy and deep cultural deposits, it seemed a good location for continued excavations.

Field Work for 1996 involved the excavation of 15 one by one metre units, with each student excavating their own unit. Materials recovered during the excavation included lithic flakes and shatter, several cores and core fragments, fire-broken rock, and a few tools including a quartzite biface and a side-notched point base that may

– continued on page 10 –

The Culture, Ecology and Restoration Project

Toward Understanding Historical Human Influence and Setting Ecological Goals

Eric Higgs

The widespread misconception that wilderness is pristine landscape has led to historic management practices which have done considerable damage to Jasper National Park (JNP). Many visitors assume Jasper is true to its reputation and billing as a pristine wilderness area. People in Western cultures often conceive that "wilderness" areas have been free of human influence. When park managers set goals to restore damaged ecosystems, or to facilitate natural processes (e.g., fire) in a region, relatively little attention is paid to past human activity. What is the extent and character of human influence in the montane ecosystems of JNP? What role should such knowledge play in setting appropriate goals for long term restoration and management of ecosystems and cultural practices? These are the central questions of the Culture, Ecology and Restoration project. The project has several objectives:

- To remember, acknowledge and represent patterns of human activity in the montane valleys of Jasper National Park.
- To examine the ecological influences of direct (e.g. agriculture, road building) and indirect human activities (e.g., fire suppression, animal grazing.
- In light of the above, to ascertain the significance and practicality of regeneration and restoration of particular ecosystems.
- To investigate innovative ways of setting goals and making decisions about restoration in the Park.

The project is a three-year joint research initiative between a consortium of researchers based at the University of Alberta and JNP. Funding is provided by the Social Sciences and Humanities Research Council of Canada, JNP, and Parks Canada.

During the 1996 summer field season, the first for the project, an interdisciplinary (anthropology, history, ecology, archaeology) team of graduate students based at the Palisades Centre developed six research projects that focused on a 16 km section of the Athabasca Valley running from just north of the townsite to the mouth of Jacques Creek:

- *Paleoecology, Cynthia Zutter*: examining existing palaeoecological studies and selecting, sampling and analyzing two montane wetlands in the proximity of historic farmsteads to ascertain low intensity fires.
- *Archaeological Reconnaissance and Description, Shelly Funston*: identifying all known and potential sites in the study area.
- *Historical Reconnaissance and Description, Jo Urion*: identifying primary historical materials deposited within and outside the Jasper townsite, and developing ways of representing historical information in spatial formats (e.g. using a geographic information system).
- *Vegetation Change, Jeanine Rhemtulla*: applying interpretive techniques, including repeat photography, to quantify vegetation change over time.
- *Historical Ecology, Mike Norton*: developing field techniques for identifying ecological "signals" of past human practices.
- *Oral History, Cindy Dunnigan*: gathering knowledge about the study area from long-term residents, and initial research on native peoples displaced from the Park.

These research projects are supported by a number of specialized research tools, including a 1:10,000 geographic information system (GIS) for the study area and a series of computer databases for archival and bibliographic information. Plans for the 1997 field season include completing detailed field work to better understand the specific relationships between human activities and ecological processes and structures, further developing the GIS system, producing a restoration potential map for the study area, and starting a pilot restoration project to test out methods, approaches and collaboration.

The project will have several direct benefits for Jasper National Park: the creation of a comprehensive research information database, augmentation of the Park's spatial database (for human influence), and the creation of an integrated, collaborative program at the Palisades Centre. At the time of writing, the former Warden's residence at the Palisades Centre is slated for continued use as a base for this and other research projects.

ACKNOWLEDGEMENTS

The project's coinvestigators and collaborators are: Peter Achuff (Parks Canada), Jeff Anderson (Jasper National Park), Suzanne Bayley (University of Alberta), Peter Francis (Parks Canada), Kristina Hill (MIT), Ian MacLaren (University of Alberta), Marty Magne (Parks Canada), Julian Martin (University of Alberta), Andie Palmer (University of Alberta), Hans Schreier (University of British Columbia), and Eric Higgs (University of Alberta).

For further information on the project, please contact ***Mike Norton****, who is managing the project at the University of Alberta, until May, 1997: Tel: (403)492-3303, e-mail: cerj@gpu.srv.ualberta.ca, or the principal investigator,* ***Eric Higgs,***

JNP Archaeology Field School

– *continued from page 8* –

date back to the Middle Prehistoric age. Lithic Material was dominated by a dark gray-black silicified siltstone, but also included some quartzite, quartz, a few flakes of white chalcedony, and numerous pieces of red ochre that had been deliberately flaked. Most of the lithic material appeared to be of local origin.

Students identified several features, including two concentrations of fire-broken rock and two possible hearths. These features were defined by charcoal staining, oxidized sediment, and pockets of ash. In addition, several units encountered high concentrations of lithic flakes. For example, in one unit, within a one-centimetre thickness of a 50 by 50 centimetre area, 200 lithic flakes and debitage were recovered.

Field school excavation results from 1996 confirm earlier hypotheses that the site is a well-stratified, multiple occupation locale with extensive horizontal and vertical deposits. Definitive, temporal ranges for the occupations could not be identified for the lack of diagnostic artifacts, but charcoal samples should be able to provide radiocarbon dates, making it possible to categorize the deposits according to a temporal scale. The results of this year's work have considerably expanded the knowledge obtained from excavations in 1995. The identification of hearth features and fire-broken rock concentrations in the assemblage indicate a much wider range of activities than previously assumed for the site.

One of the 1996 field school's smaller projects involved the preliminary recording and mapping of a previously unrecorded historic site located on the east shore of Lake Annette. Park Warden Rod Wallace organized a public archaeology day in conjunction with this preliminary recording, enabling interested members of the public to see archaeologists at work in the park. Archaeological work at this site included both mapping the location of the visible features and test excavations. Eleven features were identified, including numerous depressions and pits and several building foundations outlined by earth mounds. The site is believed to represent the foundation remains of a single men's relief or work camp.

The first year of this collaborative field school project was very successful. A university credit course, the primary goal of the field school was to teach the students the basic techniques involved in archaeological field work. This objective was accomplished by mapping, surveying, and excavating both prehistoric and historic sites. In the process, the students also learned a great deal about the history and prehistory of Jasper National Park. The field school was also able to contribute important new archaeological information through the excavation of a threatened prehistoric site, the mapping of the historic site of Fitzhugh, and the preliminary investigation of a previously unrecorded historic site at Lake Annette. Information recovered from the excavation of the prehistoric campsite will potentially form the basis for graduate thesis research. It is hoped that the collaborative effort between Parks Canada and the University of Alberta continues over several years, as the archaeology field school project has provided many benefits to those involved with this partnership.

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The Need for Amphibian Monitoring

– *continued from page 4* –

have exhibited precipitous population declines elsewhere. A monitoring program in the parks would ascertain the presence of threats affecting ecological integrity. In carrying out such a program, Parks Canada can contribute to the global body of knowledge on amphibian declines and the environmental threats contributing to them.

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Toxaphene bioaccumulation in Bow Lake

An aquatic food web reveals its secrets

Linda Campbell

INTRODUCTION

In 1991 and 1992, Donald *et al.* (1993), surveyed 14 lakes in the Canadian Rocky Mountains for organochlorine contamination by pesticides such as DDT, insecticides like toxaphene and industrial PCB compounds. Bow Lake in Banff National Park, appeared to be unusual because the lake trout exhibited high concentrations of organochlorines, particularly toxaphene, compared to other mountain lake trout populations. Toxaphene concentrations in lake trout were higher than the levels of those of mountain whitefish in the same lake, and 10 - 20 times higher than levels found in nearby fish populations.

Toxaphene is present in diverse aquatic ecosystems around the world including Lake Michigan, USA and Lake Baikal, Russia. This complex mix of chlorinated hydrocarbons was not only used as a insecticide to protect argricultural crops from nuisance pests, but was also used in fisheries programs to kill "unwanted" fish to prepare lakes for sport fishing. Toxaphene has been banned or severely restricted in much of the world for about two decades, but many countries in South America, Africa and Asia still use toxaphene as a part of their agricultural programs. Toxaphene is a persistent compound which is easily transported around the globe atmospherically.

This study examines the levels, sources and effects of toxaphene and other organochlorines in Bow Lake trout, and explores the possibility that unusually high levels are the result of contaminant bioacccumulation. "Bioaccumulation" is a general term describing processes by which chemicals accumulate in organisms by exposure or through consumption. Toxaphene easily enters aquatic food webs because of its highly "lipophilic" nature. (It accumulates in adipose tissue: fats and lipids.) As the main pathway of toxaphene bioaccumulation is through diet, biota and food web relationships in Bow Lake were studied to determine bioaccumulation patterns of toxaphene.

BOW LAKE FOOD WEB STRUCTURE AND ECOLOGY

Mountain whitefish feed primarily in the littoral zone of the lake,and their diet consists mainly of benthic invertebrates. Lake trout are more opportunitistic predators, and can feed throughout the lake, consuming large numbers of zooplankton as well as some benthic invertebrates.

A fish's size may directly affect its diet composition and its lipid content. On average, lake trout are larger than mountain whitefish, and are able to feed wherever food is richest without risk of being preyed upon by other fish. Bigger fish tend to have better reproductive and overwintering success. Hence, high energy, lipid-rich prey such as *Hesperodiaptomus arcticus* and *Gammarus* are highly sought. As toxaphene bioaccumulates in lipid tissue, it is likely that toxaphene will be highly concentrated in lipid-rich invertebrates and larger fish.

TOXAPHENE IN THE FOOD WEB

High levels of toxaphene were found in all lake trout, *H. arcticus* and mixed zooplankton. *Gammarus* had intermediate levels of taxaphene, comparable to mountain whitefish. Snails, fly larvae and other benthic invertebrates had lower concentrations of toxaphene.The zooplankter, *H. arcticus* had high toxaphene concentrations compared to other zooplankton and benthic invertebrates. This result is interesting because *H. arcticus* comprises approximately 60% of the zooplankton population, and is the main prey item for lake trout, suggesting that *H. arcticus* is an important factor in toxaphene bioaccumulation in Bow Lake, and may be the main source of contamination in lake trout. Mountain whitefish had lower toxaphene levels, although they are nearly equivalent to those of the species' main prey source, *Gammarus.*

HOW DID TOXAPHENE ENTER THE FOOD WEB?

A possible source of toxaphene in Bow Lake is airborne organochlorine compounds deposited on Bow Glacier. Contaminants can accumulate on the glacier over decades before a particularly warm spring melt flushes them into the lake. Organochlorines, including toxaphene, are "hydrophobic" meaning that they do not mix well in water. As it will not bind to the ice or the glacial melt-off water, toxaphene could be carried in to the lake on dirt and minute rock particles washed off the glacier. The "rock flour" is extremely fine, and will not immediately settle into the lake bottom sediments. Suspended in the water, it refracts sunlight, giving Bow Lake its intense blue colour.

Zooplankton depend on diatoms, rotifers, and nauplii (zooplankton offspring) for nutrients. Zooplankton including *H. arcticus* filter relatively large volumes of water to obtain enough food, and in the process, they take in large amounts of fine rock flour. In addition, *H. arcticus* is predatory and feeds on other zooplankton, including tiny rotifers which are prolific filter feeders. It is possible that toxaphene on rock flour particles is absorbed into the lipid reserves of the zooplankton, prior to the rock flour being discharged with fecal matter. During examination of *H. arcticus* gut contents, it was noted that guts of all individuals were packed with fine sediment particles. A previous Bow Lake study (Smith and Syvitski, 1982) found that *H. arcticus* strongly affect fine sediment distribution on the lake. Through microscopic analyses of lake sediments, the authors discovered that a large proportion of rock flour was in the form of *H. arcticus* fecal pellets, indicating that *H. arcticus* ingest suspended rock flour in search of food items.

It is not yet known how *Gammarus* accumulate toxaphene, but it is possible that *Gammarus* ingest sediment while searching for digestible nutrients and may absorb toxaphene in the process. *Gammarus* have also been documented to prey on zooplankton in some fishless mountain lakes, and may be doing so in Bow Lake, thereby ingesting contaminated zooplankton.

CONCLUSIONS

The pivotal role of *H. arcticus* in toxaphene bioaccumulation in lake trout has implications for understanding zooplankton ecology in the mountain aquatic ecosystems. The lack of this species in neighbouring Hector Lake may explain low toxaphene levels in those fish. In-depth studies of *H.arcticus* and other zooplankton species have just begun in mountain lakes, as we are coming to realize the importance of these organisms in mountain aquatic ecosystems (Parker and Schindler 1995).

A combination of food web dynamics and selective feeding contribute to toxaphene bioaccumulation in lake trout. Lipid-rich invertebrates such as *H.arcticus* readily accumulate organochlorines,

– continued on page 6 –

Travelers' Journals and Bog Cores

– *continued from page 5* –

Small barren islands, land covered with pine and cedar, the rocky terrain between Brockville and Gananoque, and the deep channels between river islands are frequently mentioned features. There are also many general references to tree species in the region, and descriptions of the effects of deforestation on the landscape and water systems, indicating the effects of previous land-use on terrestrial and aquatic ecosystems.

Biological Records

Little work has been done analyzing and dating lake or bog cores in the Thousand Islands area, particularly on the American side. References to three relevant bog cores, with complete pollen analyses, were identified and Reichl closely examined the results from these studies. The core samples were from Lamb's Pond, north of Brockville, ON (Anderson 1987), a bog on a pitch pine ridge on Hill Island, ON (Warner and Marsters 1993), and Boyd Pond, at the north end of the Adirondack Mountains, NY (Anderson 1989). Thus the three cores fortuitously provided data representing three different geographical features: the Ontario mainland, and island, and the New York mainland.

Although core derived date estimates for events such as warming and cooling phases vary, the samples showed a common general sequence for these events. Reichl reports on their post-glacial pollen histories in some detail, noting periods of significant change. Analysis of diatom species and species assemblages found in sediment cores can give specific information, such as the history of the environment's pH, heavy metal contamination, nutrient levels and climate changes. Approximately 500 years ago, populations of spruce, hemlock, birch, pines and alder were increasing. Maple, oak, ash, hickory and beech had declined from previous levels, but were still present. Core samples from the 18th and 19th centuries reveal a rise in ragweeds, grasses and dock, signaling the onset of intensive logging and farming in the 1800s. This rise coincides with reductions in most native species, particularly pine and hemlock, and the arrival of many introduced species.

DISCUSSION

Contemporary, written accounts of the Thousand Islands region are, overall, too vague to be relied upon alone. Surveyors' notebooks usually have more quantitative detail, but the quality varies greatly among individuals, and misidentification or generalization of species is common. In spite of their limited credibility, written accounts do reveal information about the ecosystems of the time. Significant potential exists, particularly with the more detailed and geographically referenced surveyors' records, to manipulate information gleaned from these sources with Geographic Information Systems and analytical software, creating explicit visual displays. This direction is being explored as another part of the overall historic land use study being carried out by SLINP.

The small number of lake or bog cores analyzed in this region limits the confidence we can place on the findings. It also limits the degree to which we can extrapolate from those findings to what has occurred in the ecosystem as a whole. However, the cores indicate the presence of much the same assemblage of tree species as presently exists. The most significant changes are in the relative proportions of the species, not the species themselves. This shift is reflected in the species observed today and in the few sites in the region that are relatively undisturbed. Significant declines in elm and chestnut populations (due to introduced diseases) have also been noted, as well as a tremendous increase in non-native species. Analysis of written and physical records provides complementary information for a more comprehensive look at ecosystems of the past. Although sediment cores reveal, with certainty, the species present hundreds of years ago, they contain pollen dispersed from a wide geographic area, and can only suggest general species trends in the region. Using surveyors' records, it is possible to provide specific geographic coordinates for the species and understand the past. Understanding how human activities have influenced the environment may give insight into future impacts on the ecosystem. Development of such an "ecosystem trajectory" is part of our goal in completing the historic land use study of the Thousand Islands region. The analysis of the individual sections in a final report is eagerly anticipated.

ACKNOWLEDGMENTS

This work is the product of the efforts of several people other than those cited specifically. Michael Sykes wrote an article on surveyors, then and now. Ellen Manchee, Parks Canada, provided support throughout the development of our historic land use study, the larger study of which these efforts have been a part. Thanks also to park wardens Bud Andress, Larry Harbridge and Jeff Leggo, who reviewed an earlier draft of this paper.

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Pukaskwa National Park's Ecosystem Conservation Plan

Charting a course to make ecosystem management a reality

Frank Burrows

INTRODUCTION

When the Pukaskwa National Park (PNP) management plan was established in the early 1990s, the park's stakeholders sought to prevent the park from becoming an "island of green in a sea of commercial development." As a new park, not overrun with resorts, roads or people, and as a park with many actively involved stakeholders, Pukaskwa had the opportunity to tackle the question of commercial development proactively. Concerns about how to manage park resources led to the development of a comprehensive Ecosystem Conservation Plan designed to coordinate future research and management activities.

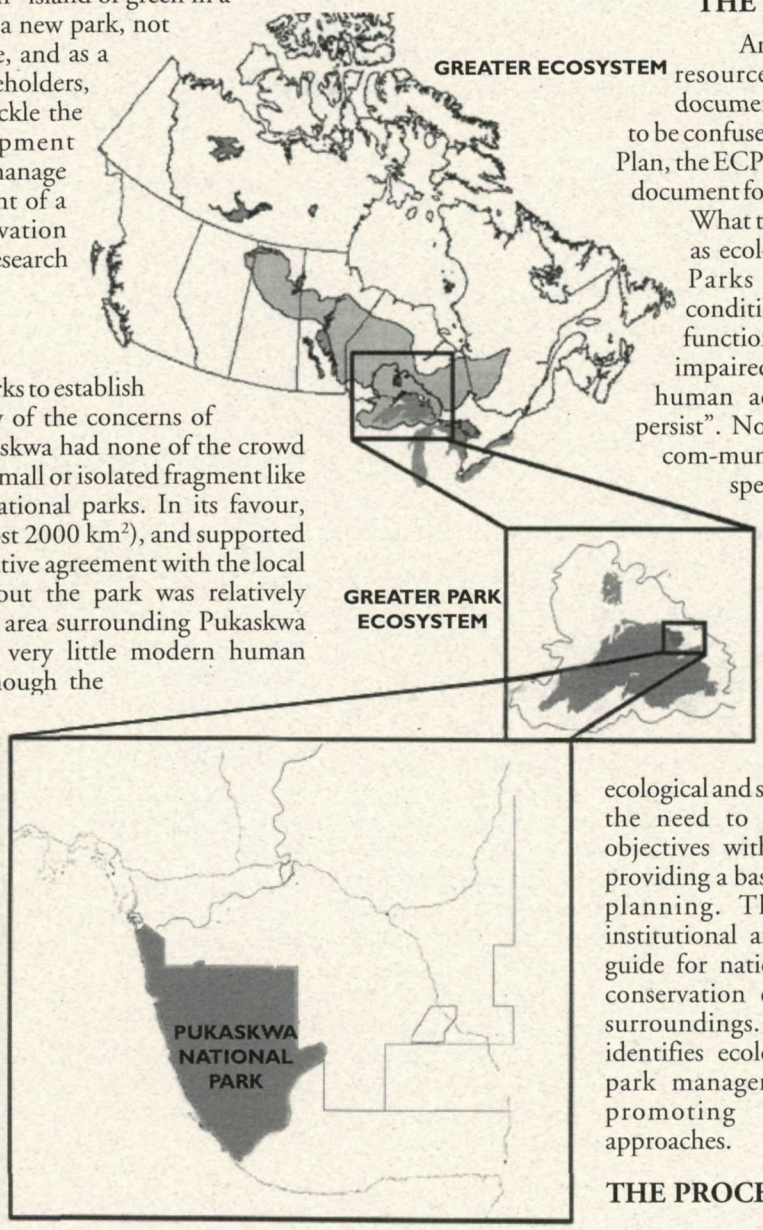
BACKGROUND

When arrangements were in the works to establish PNP in the 1970s, the area had few of the concerns of many other national park sites. Pukaskwa had none of the crowd concerns of Banff, nor was the area a small or isolated fragment like Point Pelee or Riding Mountain national parks. In its favour, Pukaskwa was a reasonable size (almost 2000 km^2), and supported both by local people and by a cooperative agreement with the local First Nations. Wilderness throughout the park was relatively undisturbed. Most of the 6000 km^2 area surrounding Pukaskwa was also relatively undisturbed, as very little modern human development had occurred, even though the Trans Canada Highway passed within 20 km of the park boundary.

At the time the park was established in 1978, timber adjoining the park was allocated to a new sawmill in White River. Several years later, one of the largest gold mines in North America appeared in the Hemlo Gold Field, just 20 km north. Corporate interest in the region's natural resources had suddenly intensified. By 1993, the park, the mill and the mine were operational, leaving questions about the future of PNP. Although most of the natural resources had been allocated, creating the potential for conflict between local park stakeholders and large corporations, there were also many opportunities for conservation in the light of concepts such as "sustainable development," "ecosystem management" and the "Greater Park Ecosystem" (GPE).

TAKING POSITIVE ACTION

Stakeholders found answers to the question of commercial development by catalyzing discussion, letting the park's goals be known, addressing what were perceived as threats and opportunities, establishing institutional arrangements, and most importantly, working with the surrounding community to make the entire region sustainable for all stakeholders. The Ecosystem Conservation Plan (ECP) was a major force guiding this vision forward. In 1995, Pukaskwa National Park retained a consultant to assist with the preparation of the ECP. The following is a summary of this effort.



THE ECP

An ECP is the major natural resource management planning document for a national park. Not to be confused with a Park Management Plan, the ECP is a more detailed planning document focusing on natural resources. What the ECP strives for is known as ecological integrity defined by Parks Canada (1994) as "A condition where the structure and function of an ecosystem are unimpaired by stresses induced by human activity and are likely to persist". Noss (1990) stated "When a com-munity is dominated by native species, is relatively stable and shows other attributes of 'health', it is often said to have integrity."

The ECP provides a frame of reference for coordinating natural resource management with various partners considering economics, ecological and social concerns. It recognizes the need to develop clear goals and objectives with all stakeholders thereby providing a base for consistent, long-term planning. The ECP also identifies institutional arrangements to serve as a guide for national park participation in conservation decisions related to park surroundings. Further-more, the ECP identifies ecological indicators to assess park management effectiveness while promoting adaptive management approaches.

THE PROCESS

Following Grumbine's (1994) definitions, the ECP focuses on three hierarchical scales: the Park; 1878 km^2, the Greater Park Ecosystem (GPE); 8,000-15,000 km^2 and the Greater Ecosystem (GE); 100,000+ km^2 (Figure 1). Problems, issues and concerns (PICs) that interfere with the goal of ecological integrity were identified for each scale. PICs were determined through:

- workshops with stakeholders such the regional forestry and mining industries, First Nations, researchers, and land

– continued on page 14 –

Pukaskwa National Park's Ecosystem Conservation Plan

– *continued from page 13* –

management agencies;
- cross-agency review of current documentation such as forest management plans, the park management plan, resource management studies, and policy documents; and
- review of the history of the park, principles of ecosystem management and conservation biology.

The PICs were grouped under seven topics: integrated ecosystem management, vegetation, wildlife, aquatic ecosystems, land use, data management and communication.

GOALS, OBJECTIVES AND TASKS

The PICs were synthesized to formulate goals and objectives (quantitative targets) for each scale based on the overall goal of sustaining ecological integrity of the Boreal forest and Lake Superior ecosystem. Priorities for addressing these objectives were established by stakeholder consensus. For example, for maintaining forest ecosystem sustainability, the priorities were fire reintroduction in the park, cooperative management of the GPE focusing on forestry and mining activities surrounding the Park, and developing a regional communications plan.

To make the ECP operational, tasks essential for the achievement of each objective were identified and prioritized over a 5 year period. Between 1996 and 2000, estimates suggest that 10.4 person years of labour and 1.4 million dollars will be required to implement high priority tasks. Thus, the ECP provides a plan for practical, short-term activity although it is written with a vision of ecosystem sustainability spanning a century or more.

ECOLOGICAL INDICATORS

A self-assessment and monitoring component was built into the ECP using ecological indicators to allow Pukaskwa to chart its progress toward the established goals. Criteria for assessing individual indicators and a suite of indicators of ecological integrity were derived based on indicator characteristics and related initiatives. In addition to indicator characteristics, important considerations for actual indicator selection were dependent on park integrity and threats to integrity, broad ecological base, time scale, ties to current initiatives and indicator species. For the three geographic scales, measures were selected to represent 10 themes of indicators. These themes are ecosystem protection, natural disturbance, human disturbance, species diversity, forests, wildlife, wetlands, aquatics, air, and climate.

A total of 108 indicators were suggested, covering the individual, population, community and landscape scales. The indicators ranged from relatively simple measures such as the number of park visitors and length of roads, to complex information requiring in-depth study such as species structural and functional diversity measured by number of genera represented. For most of these measures, target values and lower and upper limits were provided. The remaining measures provided a focus for future research and inter-agency collaboration. Analysis of trends in these indicators and their subsequent iterations will provide ongoing direction for adaptive management at all scales. Indicators are intended to become operational and implemented by park management. As a result the park has developed a specific project to implement the ecological indicator program over the next two years.

THE FUTURE

Many tasks identified in the ECP, such as cooperative research, improved database management and decision support, forest management plan input, and prescribed fire planning are already underway. Partnership arrangements to initiate other tasks, such as landscape change analysis and fire behaviour models, are being pursued. These projects will be developed more fully to highlight the practical application of the ECP, integrating ecological integrity with social and economic planning at different geographic scales and within varied organizational structures. The future is still uncertain but Pukaskwa's ECP will help turn potential conflict into opportunity and ensure the social, economic and ecological sustainability of the Greater Pukaskwa Ecosystem into the 21st century.

ACKNOWLEDGEMENTS

The ECP was envisioned and supported by Bill Stephenson, Regional Conservation Biologist, Cornwall, ON, written by Cathy Keddy of Geomatics International, Ottawa, ON and would not have been possible without the assistance of the stakeholders and various park staff. The figure was prepared by Lynn Parent and adapted by Luba Diduch.

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PODIUM

National Parks at a Turning Point

Harvey Locke

National Parks are at a turning point. The Canadian public views them as a key component of our national identity. The statutory and policy objectives for parks have never been clearer: first and foremost, to protect ecological integrity. Some of the world's most beautiful wild places are found in our national parks, yet Parks Canada staff are demoralized. How can that be?

It is easy to blame the massive budget cuts and recent announcements to outsource many services, but that misses the point. The real problem is Parks Canada does not have a culture that breeds pride in mission.

Park's mission is to protect nature and share it with others. It is not to create regional unemployment. It is not to stimulate the national economy. It is not about money. It is about nature and people enjoying nature.

Parks Canada staff have often been confused about their simple mission. I can remember a time when visitor services, who ran campgrounds and information centres, refused to give out interpretive service information. It was not uncommon to find a campground attendant who didn't know the first thing about trails leading from the campground or other points of interest for park visitors. It was not entirely rare to see wardens treating park visitors as an inconvenience, if not an annoyance. Some of this attitude was due to a view of a Park job as just a job, and some due to underestimating the importance of park visitors.

On the other side, some Parks staff have gone overboard in accommodating visitors at all costs. The nightmare is that Banff Avenue is the crowning example of this folly. Other examples abound. Parks has consistently engaged in research to boost park visitation. It actively promoted shoulder season tourism in our already over-stressed four mountain parks. This sort of thing caused the Auditor General to raise his eyebrows. Research which suggests a change to current management problems is often greeted with skepticism instead of acted upon.

I would like to suggest a way for Parks to reinvigorate itself in the coming millennium. My suggestion begins with every Parks employee taking an integrated approach to his or her job. By this I mean adopting the view that nature protection and human enjoyment are indivisible components of national parks as opposed to competing interests. Survey after survey shows that the vast majority of Canadians see parks as places to protect nature and they recognize that means restrictions on use. However, providing thoughtful information to people about the good environmental reasons for restrictions is also important. It is an issue of basic human respect as well as environmental protection. If every Parks employee began his or her day with the questions, "How will I protect the park better today?" and, "How can I help visitors and the Canadian public feel good about the park?" the job would be more fun and better done.

Parks Canada must also get proud. It should shout out its glorious mission and establish itself as the champion of environmental protection in Canada. Few jobs on earth are as worthwhile as the protection and celebration of nature. Parks should embrace and promote principles of conservation biology which identify parks as core reserves which are key to ecosystem health and a source of life for regional landscapes. The upcoming Science and Management of Protected Areas (SAMPA III) conference in Calgary is an opportunity to get a broad cross-section of Parks staff into conservation biology.

Parks Canada should be looking for opportunities to network with all communities, not just the business community which is the current preoccupation. In order to put a human face on the mission of parks, Parks Canada should set out to ensure that J.B. Harkin, the eloquent founder of our parks system who succeeded in getting a strong national parks act through Parliament during the depression, becomes as well known in Canada as John Muir is in the U.S. There should be a major renewal and reinvestment in interpretation, coupled with embracing conservation biology, throughout the organization. Completing the national parks system should become a major national goal. Parks Canada can create that energy.

We need to stir some passion into the presentation and preservation of our parks. Parks Canada is the organization that should do it, at every level, through everyone. Strengthening Canadians' emotional bond to national parks will serve both Parks Canada and nature well in the long run.

***Harvey Locke** is past president of the Canadian Parks and Wilderness Association (CPAWS).*

Research Links

Winter 1996

Volume 4 • Number 3

WRITE TO
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MEETINGS OF INTEREST

January-April, 1997 **Society for Ecological Restoration (SER) Workshops** (various locations). The SER is launching a new program of workshops for professionals whose work involves ecological restoration or related activities such as habitat or vegetation management, species reintroductions or control of pest species. Topics include: Building Stewardship: Jan. 8 (Seattle), Jan. 22 (Sacramento), Mar. 26 (Denver); Managing Seeds: Jan. 29 and Apr. 4 (Sacramento); Restoration Planning: Feb. 24-26 (Toronto), Apr. 16-18 and Apr. 21-22 (Denver); Wildlife Habitat Restoration: Mar. 20-21 (Denver); Soil Geomorphology: Mar. 27-28 (Denver); Plant Salvage: Feb. 27 (Toronto), Apr. 15 (Dayton). Contact Kathy Kressin Tel./fax: (608) 262-9547, e-mail: ser@macc.wisc.edu or http://nabalu.flas.ufl.edu/ser/SERhome.html

February 25-March 1, 1997 **International Symposium on Human Dimensions of Natural Resource Management in the Americas.** Belize City, Belize, Central America. The symposium will focus on the importance of a global perspective when considering the human element in natural resource management. Sponsors are Colorado State University, the University of Belize, and the Belize Ministry of Natural Resources. Contact Jennifer Pate, Office of Conference Services, Colorado State University. Tel: (970) 491-7729.

March 5-9, 1997 **Government, Science, and the Environment ASEH Biennial Meeting,** Baltimore, MD. Papers presented at this meeting will address the role of government and/or science in environmental affairs as well as aspects of human interaction with the physical environment over time. For more information, contact Jeffrey Stine (Program Chair), Smithsonian Institution, (202) 357-2058, or Jacqueline Corn (ex officio/Local Arrangements Chair), Johns Hopkins University, (410) 955-2609.

March 17-21, 1997 **Making Protection Work: Parks and Reserves in a Crowded, Changing World.** Albuquerque, New Mexico. The theme for this conference reflects the tension between the rapidity of change and the difficulty of protecting cultural and natural attributes in parks over the long term. For information contact the George Wright Society . Tel: (906) 487-9722, fax: (906) 487-9405, http://www.portup.com/~gws/gws97.html

March 18-21, 1997 **6th Symposium and Exhibition on Groundwater and Soil Remediation.** Montreal Quebec. An event showcasing applied research, development and demonstration of innovative remediation technologies. Researchers, regulators and remediation practitioners from Canada and the US will present findings of research, development and demonstration projects on site remediation. Sessions will be conducted in English, French and Spanish. The symposium will be linked to AMERICANA '97, the Pan-American Environmental Technology Trade Show (Montreal Convention Centre). Contact Lise Gendron: Tel: (819) 953-9368, fax: (819) 953-7253.

April 30 to May 3, 1997 **Global Change and the Biological Carbon Cycle.** Victoria, BC. The conference will focus on environmental degradation related to ozone depletion, increased UV radiation, climate change, water and air pollution, urbanization and desertification of the biological carbon cycle. Many federal, provincial and non-government organizations will be represented. For information, contact The Skies Above Foundation. Tel: (250) 477-0555, fax: (250) 472-0700, e-mail: skies@islandnet.com

June 6-12, 1997 **Symposium on Marine Conservation Biology.** University of Victoria, Victoria, BC. The Marine Conservation Biology Institute (MCBI), based in Redmond, Washington, is organizing the first Symposium on Marine Conservation Biology, an integral component of the Society for Conservation Biology (SCB) Annual Meeting, June 6-9, 1997 (field trips: June 10-12, 1997). The Symposium will be an historic meeting of marine and nonmarine, natural and social, pure and applied, young and established scientists from around the world. One crucial objective is comparing phenomena between nonmarine and marine realms, to find emergent principles and establish a conceptual foundation for conserving life in the world's estuaries, coastal waters, enclosed seas and oceans. For information, contact Elliott Norse (MCBI) Tel: (206) 883-8914, e-mail: enorse@u.washington.edu or Pat McGuire Tel: (250) 721-7344, e-mail: SCB97@uvcs.uvic.ca

September 12-14, 1997 **Biotic Recoveries from Mass Extinctions**, the final meeting of the UNESCO IGCP Project 335. Prague, Czech Republic. This project aims to be a platform for the study of survival and recovery of the biosphere and restructuring of global environments following mass extinctions. This meeting should bring together palaeobiologists, palaeontologists, biologists, systems theorists and other persons interested in the topic. This international project is headed by Douglas H. Erwin, Smithsonian Institution, Washington, DC, and Erle G. Kauffman, University of Colorado, Boulder. Over 60 countries are involved in this project. For conference details, contact Petra Hovorkova, Recoveries '97, Eurocongress Centre, Budejovicka 15, CZ 140 00 Praha 4. E-mail: recovery@gli.cas.cz, http://www.gli.cas.cz/conf/recovery/recovery.html

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