Research Links
A Forum for Natural, Cultural and Social Studies
VOLUME 1 - Number 1 | Canadian Parks Service, Western Region | SPRING 1993

Vermilion Lakes Visitor Survey: Asking First Saves Regrets

by Paul Lauzon

The case of the Vermilion Lakes Survey is a prime example of how social science research can be indispensable for effective and proactive decision making. It demonstrates how this research can provide improved direction for allocation or reallocation of resources. It indicates that visitor needs are not always apparent to managers unless we ask the visitor. The Vermilion Lakes Study also shows that visitor surveys should not be regarded as another barrier to making decisions, but rather should be considered tools which are complimentary to the decision making process.

The Vermilion Lakes Wetland area in Banff National Park is located northwest and immediately adjacent to the town of Banff. Its north side is bordered by the TransCanada Highway, while the Canadian Pacific Railway mainline runs along its southern border. The area focuses around three small lakes with interconnecting drainages. The land base is mostly wetland in nature. In recognition of its biological and archaeological importance, the area was designated an Environmentally Sensitive Site in the Banff Park Management Plan.

The Banff Park Management Plan guided the preparation of an area plan for Vermilion Lakes, completed in April, 1990. One of the area plan's main components involves giving direction to development and redevelopment of the area's interpretive and recreational amenities. Three key plan objectives stem from this component: first, to promote awareness and education regarding wetland environments; second, to promote the area as an opportunity for a relaxation/getaway type of experience in a natural setting close to the town of Banff; and third, to encourage and increase pedestrian and bicycle use of the area as opposed to additional vehicle use.

The Vermilion Lakes survey of July and August, 1992, focused on five areas: development issues, management issues, accessibility, learning preferences, visitor trip information, transportation, and visitor demographics. Visitor reaction to the proposed resurfacing of Vermilion Lakes Drive, as measured by this study, allowed management to redirect funds from paving the road in this delicate wetland area to other priority projects. The level of support visitors gave short term closures

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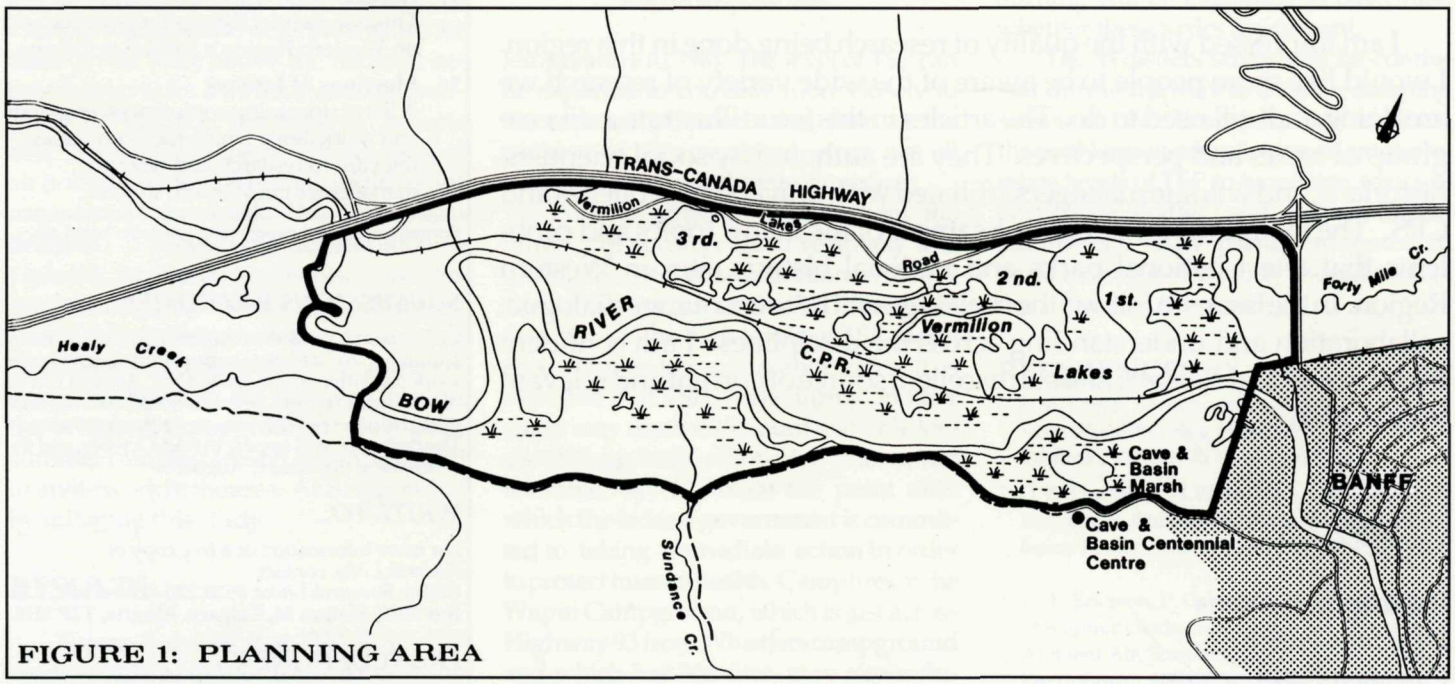

Figure 1: Vermilion Lakes planning area. Planners in Banff National Park used a visitor survey as one tool in deciding whether to pave the road running through this delicate wetland area.

SPECIAL EDITORIAL

It gives me great pleasure to introduce the first issue of *Research Links*, a publication of recent and ongoing research in Western Region's parks and sites with emphasis on its implications for planning and management. *Research Links* is primarily directed at parks managers and researchers, but I am optimistic that it will attract the interest of many others involved in exploring Western Region. So I see a second objective for this publication: to foster communication between people who work in Western Region and the external researchers who help make Western Region work.

Since joining this organization I have been convinced of the need for a publication to communicate both the results of our research activities, and the opportunities which exist for further research. The exchange of information is crucial for the effective management of park resources. Further, by spreading word of CPS initiatives and ongoing programs, we are helping to spark interest in the co-operative initiatives which are so critical to preserving this nation's heritage resources.

This region has a long history of research and special studies, beginning in 1886 with a catalogue of park resources for the planned Rocky Mountains Park. Research has grown to meet management's increasing need for objective, accurate and comprehensive data which reflects the wide variety of complex and difficult problems impacting protected areas. It is clear to us that parks must be managed on an ecosystem basis, and that knowledge gained must be shared among resource managers. *Research Links* is part of an ongoing effort to promote the rigorous research and widespread co-operation which are today's tools for effective park management.

I am impressed with the quality of research being done in this region. I would like more people to be aware of the wide variety of research we are doing and still need to do. The articles in this issue illustrate a diverse group of topics and perspectives. They are authored by social scientists, historians, and wildlife managers affiliated with universities, colleges and CPS. The inaugural issue offers a sample of the many topics and problems that affect national parks and national historic sites in Western Region. In the issues to follow, the challenge will be to encourage dialogue, collaboration and understanding across the disciplines. I am confident that you will find *Research Links* an excellent source of current and relevant information.

Sandra B.M. Davis
Director General
Canadian Parks Service
Western Region

Research Links

ARTICLES

DEPARTMENTS

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SUBMISSIONS WELCOME!

CPS aims to produce *Research Links* three times annually. We welcome submissions from people working within and outside CPS. Articles can be drawn from reports, presentations, material submitted to other publications, or written from scratch. The next issue will appear in mid-October, and the submission deadline is August 5.

WRITE TO...

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FRANCOPHONES!

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Should Campgrounds Have Campfires?

by Renata Bailey and Allan Stendie

Smoke produced by campfires contains particles which are small enough to enter the respiratory tract of humans (diameter smaller than 2.5 micrometres (99 %)) [1]. Campfire wood smoke may therefore lead to detrimental health effects such as reduced pulmonary function and aggravation of existing pulmonary and cardiovascular disease. Sensitive groups include the very young, whose respiratory and circulatory systems are still developing, the elderly, whose respiratory and circulatory systems may function poorly, and individuals suffering from asthma, emphysema or heart disease. Individuals who are sensitive to air pollution will experience symptoms of respiratory aggravation when levels are in the range of 120 to 150 µg/m3 (micrograms per metre cubed) [2]. At levels in excess of 400 µg/m3, most individuals will report discomfort [3]. Toxic pollutants, carcinogens, cilia toxics, and mucus coagulating agents also become attached to the inhalable particulate, then being absorbed into people's systems [4].

Canadian Parks Service (CPS) and Atmospheric Environment Service (AES) took part in a preliminary study on air quality in Whistlers Campground of Jasper National Park from September 09 to October 18, 1992. The study was designed to measure the levels of total suspended particulate (TSP) in the Whistlers Campground, and to determine whether these levels were above the national acceptable level for a 24 hour average sample of 120 µg/m3. The national "acceptable" level defines the maximum level of air pollution at which human health is not considered to be at risk. This level is also designed to prevent the deterioration of visibility, such as on highways. Concerns expressed by Jasper residents and visitors about the apparent effects of campfire wood smoke on their health, and the reduced visibility on the roadway around the Whistlers Campground during peak summer camping season, prompted CPS to invite work in the area. AES responded by initiating this study.

RESULTS

Figure 1 shows that TSP levels exceeding 120 µg/m3 occurred at the Whistlers Campground every day from October 1 to October 5. On September 30 the levels of TSP were very low (6.86 µg/m3), but as the number of sites occupied increased the levels of TSP also increased, building up to 169.6 µg/m3 on October 1 and continuing to exceed maximum acceptable levels until October 5. TSP levels only began to decrease on October 4, when the number of sites occupied decreased. Temperature seems to show a relationship with TSP levels in so far as colder temperatures deter individuals from camping. As temperatures drop to 0 °C the number of sites occupied decreases, as do levels of TSP.

In total, 47.4 % of the days sampled had levels of TSP greater than 120 µg/m3. The strongest correlation of TSP was with number of sites occupied (0.584) and with

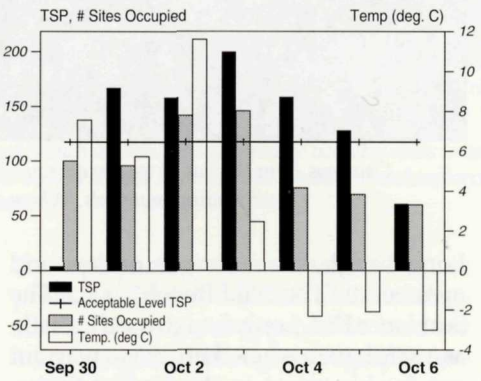

Figure 1: Although the campground was half full during the study, TSP levels frequently rose above national acceptable levels.

temperature (0.398). The level of TSP can be expected to correlate more closely to the amount of wood used than to the number of sites occupied, since not all occupied sites will contain campfires.

Poor weather conditions kept the number of sites occupied relatively low during the 1992 data collection, with 413 sites occupied out of the 781 sites available. Given the high levels of TSP measured despite low occupancy rates, it is expected that TSP levels during another study may reach maximum tolerable levels (400 µg/m3). Notably, "maximum tolerable" levels define the point after which the federal government is committed to taking immediate action in order to protect human health. Campfires at the Wapiti Campground, which is just across Highway 93 from Whistlers campground and which has 366 sites, may also influence the levels of total suspended particulate measured.

National Ambient Air Quality Standards for Total Suspended Particulate

NAAQS	TSP (µ g/m^3)
24-Hour Acceptable	120
24-Hour Tolerable	400
Annual Desirable	60
Annual Acceptable	70

FUTURE WORK

The 1992 preliminary study at Whistlers campground has established the need for a more extensive examination of TSP levels in the campground. Far from finding levels at the "desirable", target level of TSP air pollution, as might be expected in a wilderness area, researchers have consistently measured levels exceeding the maximum "acceptable" level.

In other studies, polycyclic aromatic hydrocarbons (PAHs) have also been identified in wood smoke [4-6]. One of the PAHs identified, benzo(a) pyrene, is a known carcinogen. A Whitehorse study on the effects of wood smoke on air quality found levels of benzo(a) pyrene which were 3 to 5 times higher than many urban centers in the United States [6]. In the 1993 study in Whisters Campground, levels of PAHs produced by recreational wood burning will be examined to determine whether these toxics are present.

The Whistlers study will be continued during the May to October camping season of 1993. Reaserches will evaluate the problems of campfire wood smoke by relate levels of TSP to wood use, toxics in particulate matter, and meteorological parameters. Any parties interested in participating in this study should contact the authors of this article.

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The Bar U Community during the 1890s

by Simon Evans

On December 31, 1991, the Bar U Ranch was acquired by the Canadian Parks Service, becoming the second national historic site in Alberta. Rocky Mountain House had been acquired in 1930. One challenge facing historians working on the story of the Bar U Ranch is to build up a full picture of the ranch as a working community during the era of the big ranches in the 1880s and 1890s, broadening our knowledge of the ranch to include cowboys and cooks as well as ranch owners.

Local histories and scholarly works on ranching describe the foundation of the ranch by the North West Cattle Company. They mention the manager, F.S. Stimson, and several of the investors, particularly the Allan family. (1) The files of the Department of the Interior provide data on the land base of the ranch: the huge leases of the early years, and the deeded land, amounting to some 15,000 acres, purchased between 1895 and 1899 at $1.50 per acre. (2) Periodic inventories of cattle on the range allow historians to chart the build up of the herds, while the Annual Reports of the North West Mounted Police and the Dominion Lands Commission provide commentary on the quality of the stock. (3) However, many questions remain. Who are the men depicted in the archival photographs? Where did they come from? What skills did they have and how did they acquire them? What did they get paid, and what were their living conditions like?

The nominal rolls of the 1891 Census of Canada provide a good starting point in the search for answers to questions such as these. In April 1891, W.E. Holmes, the enumerator for the High River District, set out to visit the scattered farms and ranches of the neighbourhood. He collected information on each inhabitant: name, age, country of birth, countries of father's and mother's birth, religious affiliation, and occupation. His forms show that there were 18 people living at the Bar U. The manager's household included Stimson's wife, his niece, his nephew and a maid. The bunkhouse was home to four cowboys, two horsebreakers, and some teamsters. The foreman and the bookeeper provided links between management and the labour force. (4)

One name stands out from the list: Henry Longabaugh, born Harry Alonzo Longabaugh, the notorious outlaw and member of "The Wild Bunch", a.k.a. The Sundance Kid. Longabaugh used Canada as a safe haven when there was a warrant out for his arrest in the United States. After completing an 18 month US sentence for horse stealing in 1889, he was soon in trouble again for threatening Deputy Sheriff James Swisher in Sundance, Wyoming. He fled north of the line and worked for the McHugh brothers on the H2 ranch on the Bow River north of Fort Macleod before he joined the Bar U. The Census records show that he was 25 years old and his occupation was horsebreaker. In August of 1891 he was charged with cruelty to animals, but the case was dismissed. When Harry was laid off in October, along with most of the other cowboys, he filled his time by robbing the Great Northern train at Malta, Montana. The take was $19.02 in cash and a cheque for $6.05! Yet not all his efforts were so poorly rewarded. He spent that winter in Calgary as a partner in the Grand Central Hotel. Then, between 1889 and 1901, the Hole-in-the-Wall gang robbed 5 trains, three banks, and one mine pay roll for a total haul of $200,000 (about $2.5 million today). (5)

Photo courtesy of the Glenbow Museum, NA-285-4

Cowboys from the Bar U wagon on round-up, 1901. Notice sheepskin chaps hat styles and reading materials. Where did these young men come from?

In a more serious vein, the census data is of considerable historiographical importance. Originally, the Canadian ranching frontier was interpreted as originating in the Great Plains of the United States and simply spreading northward into Canada. During the past twenty years historians have developed a vigorous revisionist thesis which emphasizes the legislative and social differences between the "wild and woolly" west of the United States and the more sedate Victorian character of the Canadian experience. (6) The census data allows the American presence on the ranches of the foothills to be quantified for the first time. (7)

At the Bar U, the manager and his family were from Quebec, but the foreman and three of the cowboys had been born in the United States. The only non-American cowboys were Bowen from Quebec and Cowell from Ireland. Much the same was true of another big corporate ranch, the Cochrane Ranch along the Belly River in the Macleod District. It was managed by Senator Cochrane's sons, William and Ernest, who were from Compton County, Quebec, although James Patterson the foreman and four of his cowboys were born in the United States. It is difficult to avoid the conclusion that

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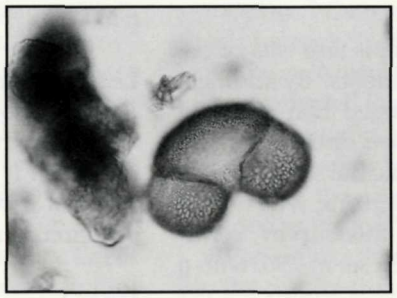
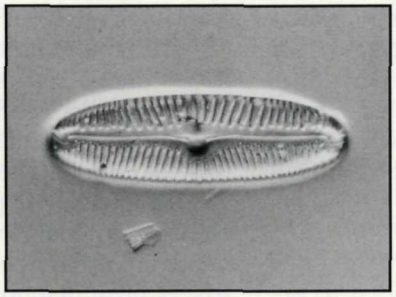
Gwaii Haanas: Archaeology and Palaeoecology

by Daryl Fedje

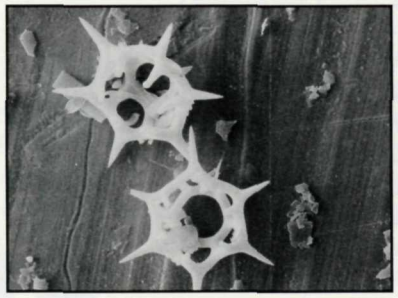
As a part of the Gwaii Haanas Archaeology project, the Archaeological Services branch of Heritage Resource Conservation has been conducting palaeoecological research in British Columbia's Gwaii Haanas National Park Reserve. The primary archaeological function of this work will be to establish precise physical parameters for the location of archaeological sites dating prior to about 2,000 years before present (BP). The research will be disseminated through an M.A. thesis (Fedje, n.d.) out of the University of Calgary. This note will provide a very brief summary of some of the results to date. A more comprehensive article will be forthcoming.



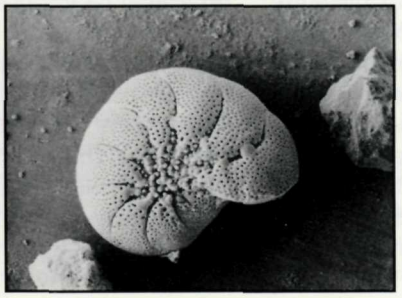
Spruce pollen (Picea sitchensis) - magnification 107X



Fresh water diatom Pinnularia alpina - 216X



Marine silicoflagellate Distephanus sp. - 256X



Marine foraminifera Cribroelphidium excavatum - 34X

Microscopic sediments such as plant pollens provide valuable clues to sea levels 9,000 years ago. This information is used to predict the location of archaeologcal sites such as Native fishing villages.

Haida Gwaii (the Queen Charlotte Islands) was subject to major rises and falls in sea-levels (marine transgressions and regressions) through the multiple freezing and thawing glacial periods of the Pleistocene epoch. In our current research, we are concerned with the rise in sea level which followed the end of the last ice-age some 16,000 years ago, when the lessening weight of partly-melted ice allowed sea levels to rise and waters to overcome dry land. The rise began more than 10 millennia ago, when relative sea-levels were more than 150 metres lower than they are today. It culminated with sea-levels 15 metres above modern limits about 9,000 years BP (Fedje n.d.; Josenhans et al 1993).

Analyzing sediments from ponds located 8 to 16 metres above contemporary sea-level, the current palaeoecological work integrates a number of micropaleontological approaches in order to define how much land the water covered (the transgression limits) thousands of years ago. Micropaleontology is the study of fossil pollen and spores, and other microsfossils, which are resistant to decay and whose fossils are often found in sedimentary sections (e.g. rocks, mud, ice). Techniques being used in this project include palynology and analysis of benthic protozoa species, diatoms and dinoflagellates. The various approaches used are being integrated through stratigraphy (examining the origin, composition, sequence and correlation of sedimentary layers) and radiocarbon dating.

General changes in vegetation have been traced and reconstructed after a detailed analysis of pollen found in three Gwaii Haanas sediment cores (figures 1). Key changes in water chemistry (primarily salinity and pH) are being defined by analyzing benthic protozoa such as foraminifera and thecamoebians, as well as diatoms and dinoflagellates (figures 2-4). As an example, we now know that maximum marine transgression occurred about 9,000 years ago, and that relative sea-levels remained 15 to 14 metres above present levels until about 5,000 years ago.

From an archaeological perspective these changes are highly significant. Native people have likely had a maritime focus (Hamm 1990) throughout their 9,000 years (Fladmark 1989) of living in Haida Gwaii. Survey for archaeological sites relating to the Native inhabitants of the area and dating between 9,500 and 5,000 years BP must focus on raised beach deposits now located in dense rain forest, often hundreds of metres more inland than the modern shore.

In keeping with this reasoning, archaeological sites older than 10,000 BP are now 100 or more metres below the surface of Hecate Strait. Although these sites are unlikely to be located using current technology, landforms with a high potential for site location are being identified through high-tech marine geology (Josenhans et. al. 1993). These landforms include former freshwater lakes and river channels on the strait's shallow banks (50 to 200 metre depth) which are immediately adjacent to Gwaii Haanas.

The current phase of palaeoecological research will be completed in 1993, and the results should have broad applications for interpreting the natural and cultural history of Gwaii Haanas. The next phase of the palaeoecology program, which will begin this summer, will be conducted as a cooperative venture between the Canadian Parks Service and the Pacific Geoscience Centre. This project will focus on marine evidence for the early post-glacial biophysical history of the Gwaii Haanas area.

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Vermilion Lakes

(continued from page 1)

of some areas for protection of wildlife and other natural resources increased management's willingness to periodically close these areas. Numerous other findings from the study also resulted in quality input for management decisions on other proposed projects in the Vermilion Lakes area.

METHODOLOGY

Study Objectives

The three main objectives of this study were to obtain information about visitors and visitor use of the Vermilion Lakes Area for planning purposes, to determine the level of visitor support and/or opposition to proposed upgrading and development concepts, and to identify visitors' learning preferences with respect to interpretive media at the Vermilion Lakes Area.

Survey Design

The survey took place from July 1 to August 31, 1992, which is the peak visitor season for Banff National Park. An exit survey using hand-held computers at one site was conducted, monitoring the only road leading to and exiting from the Vermilion Lakes Area.

The survey population consisted of all individuals (cyclists, pedestrians and motor vehicles) making their final exit from the area on a particular visit between July 1 and August 31, 1992, and who were aged 12 or over. Each survey day was made up of two time blocks from 08:00 to 14:00 and 14:00 to 20:00. In all, 21 survey days were conducted.

Respondents were selected in a floating random fashion since traffic flow in the area was not constant. In a floating random sample, a party is selected from the flow of traffic for the survey, and when the interview is completed, this party is redirected into the flow of traffic and the next party is selected. Meanwhile, other parties keep travelling by. The floating random selection process avoids long lineups during busy periods, and alleviates boredom when interviewers have nothing to do during slow periods.

Final results were weighted to avoid bias in the selection process, taking into account the respondent's mode of transportation. The three mode of transportation categories were motorized vehicles, cyclists and pedestrians. Results from surveying cyclists, for example, were weighted up to the population to get a more accurate representation of the opinions of visitors to the Vermilion Lakes Area.

The required sample size was calculated to be 377 respondents. By adding a 15% buffer for estimated non-response rate, the final calculated optimal sample was 444 visitors. The actual sample interviewed totalled 418 persons, well within required criteria. In this survey, confidence limits have been set at 95% with a +/- 5% error margin.

Interview Techniques

Data gathering was accomplished using a personal interview process. Interviewers asked respondents questions and the answers were entered in a handheld computer. This dramatically reduced the time needed to produce a final report as the data was directly uploaded to a statistical analysis software package on a PC.

Another innovation in the interview process was the use of digital photography. For example, in asking respondents to indicate their level of support for certain development proposals, they were presented with a digitized photograph of what the area might look like with the additional development or facility. We strongly believe that this mechanism greatly enhanced the respondent's ability to provide our interviewers with a clearer and more accurate answer.

RESULTS

Development Issues

A number of development issues were addressed during the interviews. Over 60% of respondents felt it was unnecessary to repave Vermilion Lakes Drive (figure 1). More than 72% of visitors felt it was "Very Important" to construct a connector bicycle path from the end of Vermilion Lakes to the Bow Valley Parkway. About half of those interviewed felt it was "Very Important" to have facilities such as designated trails, boardwalks, and viewing platforms constructed. Visitors also favoured the addition of interpretive decks.

Management Issues

Respondents were also questioned about several management issues. Roughly 85% to 90% of all visitors said they would support short term closures of the Vermilion Lakes area if it would help to protect wildlife. The majority of visitors perceived the current level of development as being "Just Right"(figure 2). Finally, about 64% of the visitors felt the area was "Not at all Crowded" and 24% felt it was "Not Crowded".

Learning Preferences, Motivations and Participation

More than half of the respondents (52%) felt it was "Very Important" and 19% felt it was "Important" to provide interpretive signs and information at the

Figure 1

Importance of Repaving

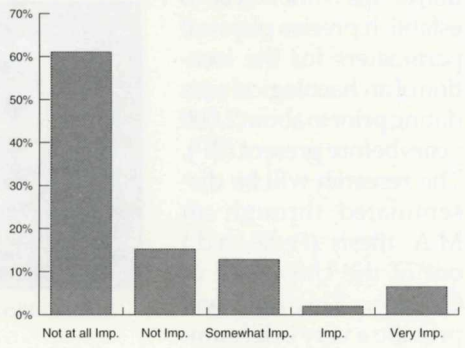


Figure 2

Perception of Level of Development

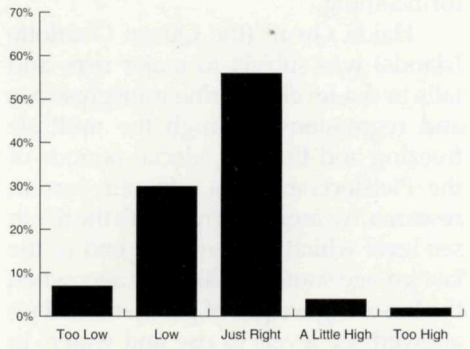
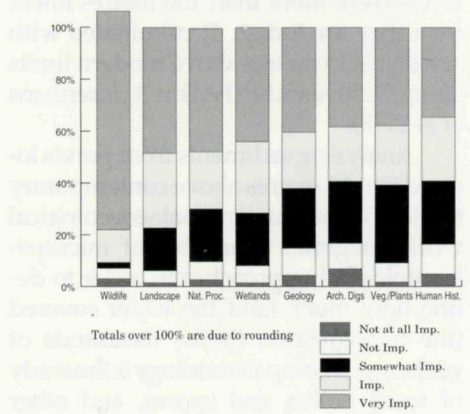


Figure 3

Importance of Interpretive Subjects



Visitor reaction to development issues contributed to the park's decision to re-allocate upwards of one million dollars to other priority projects.

site. As for the interpretive subjects visitors wished to learn about, "Wildlife" seemed to be the most popular category (figure 3).

Visitors' main reasons for coming to Vermilion Lakes were "Nature Viewing" (40%) and "Sightseeing" (35%). These two reasons were also listed by respondents as the two most poplar activities participated in during their visit with 94% of all visitors doing some "Nature Viewing" and 92% "Sightseeing". As an inherent factor of the length of Vermilion Lakes Drive (4.5 km) and the types of activities engaged in, more than 80% of visitors spent an hour or less in the area.

DISCUSSION

The results which indicated that most visitors were not in favour of resurfacing Vermilion Lakes Drive probably had the most immediate and direct impact upon monetary resources. A decision was made by park management not to resurface the road, thereby allowing the park to reallocate upwards of one million dollars to other priority projects. This decision reflects underlying viewscape management principles. When presented with a digitized photograph of what the road would look like once resurfaced, numerous visitors commented that the bright new strip of asphalt would be an "eyesore" and "would take away from the character and integrity of the area". Management responded to visitors' aesthetic concerns.

Pending further environmental studies, the results from the 'connector bike path' question were very useful in advancing the park's intention to construct the path. As far as the other proposed facilities are concerned, visitors are supportive of some development providing it is not intrusive upon the viewscape. As a result, park management will ensure that the construction of any interpretive facilities and boardwalks will incorporate the visitors' wishes.

The information acquired from the management issues questions were essential in providing the park with benchmarks of the level of development currently in the Vermilion Lakes Area. Combined with what visitors indicated as their main reasons for visiting the area, and the activities they took part in while visiting, the park is assured that its Management Plan objectives are well grounded. Furthermore, knowing that visitors do support short term closures to protect wildlife, management is now less hesitant about performing such actions especially in busy Bow Corridor areas. Finally, with respect to the type of subjects visitors wish to learn about and the type of facilities they would prefer to use, designers will have much clearer direction in supplying those products.

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Bar U Community

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American cowboys played a very significant role in the operations of large Canadian outfits at this time.

On the other hand, expert "help" from the United States does not seem to have been a major factor influencing the successful development of smaller ranches in the foothills. Walter Ings and his brother came from Prince Edward Island to establish the Rio Alto (O.H.). Frank Bedingfeld and his mother Agnes came from England, and joined Joseph H. Brown (7U Brown) from Ireland, in a partnership which built up the E.P. Ranch. John Thorp had just arrived from England and had settled on what was to become the nucleus of the Cartwright's D Ranch. Walter Skrine and "Billy" Cochrane had both come from England and established themselves along Mosquito Creek, while Ernest Cross, at the a7, was from Quebec. Among these successful cattlemen, only Cross employed a cowboy from the United States.

The nominal rolls of the 1901 Census have become available recently, and it will be interesting to see how ranch communities changed in the decade since the previous census. This kind of data provides a factual framework, while diaries and account books will help us flesh out a picture of range life in the late nineteenth century.

FOOTNOTES

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6. Simon Evans, "The Origin of Ranching in Western Canada: American Diffusion or Victorian Transplant," in L.A. Rosenvall and S.M. Evans (eds.) Essays on the Historical Geography of the Canadian West (University of Calgary: Geography Department, 1987).
7. There are, of course, a great many difficulties in interpreting the data. Many of those born in the US had Canadian parents, or parents who had recently arrived from Great Britain. Moreover, fully half the American born had nothing to do with ranching; they were farmers or small businessmen.

Dr. Simon Evans *is Green Plan Project Historian working on the history of the Bar U National Historic Site. He is on sabbatical from his position as a professor of Geography at Memorial University of Newfoundland. He is the author of a book on the E.P. Ranch which borders the Bar U.*

Campgrounds

(continued from page 3)

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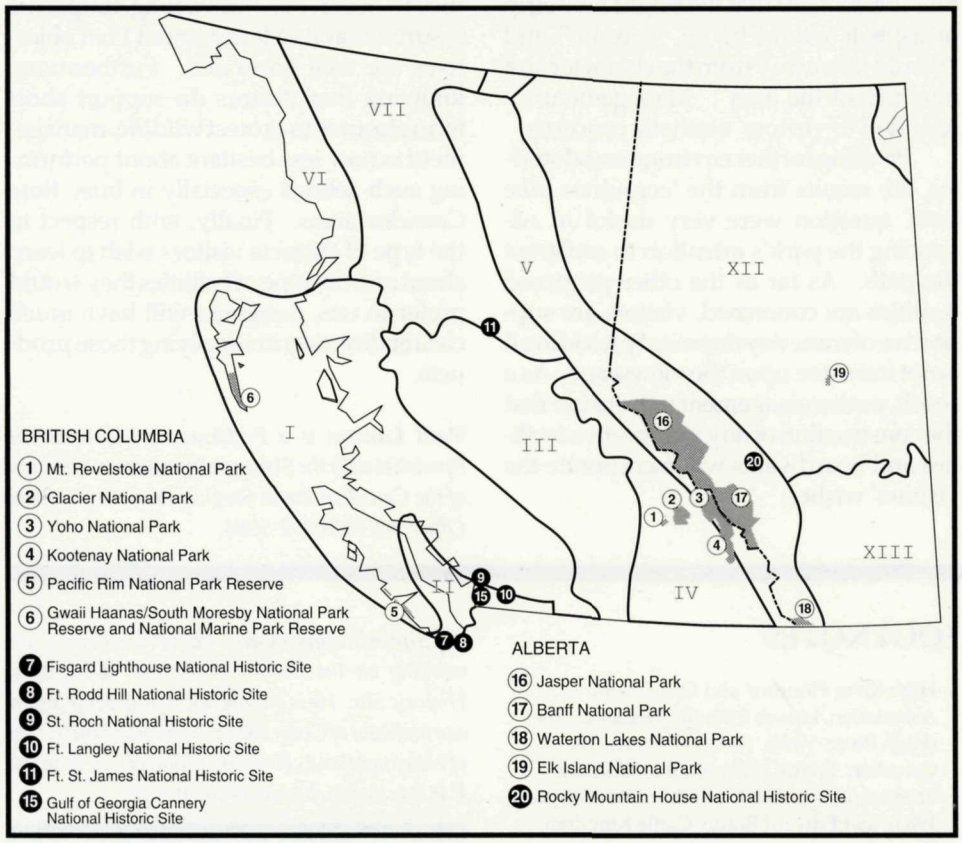
6. Senes Consultants Limited, Pollution from Wood Stoves in Riverdale, Yukon Territory, Nov. 1983, prepared for Environment Canada, Environmental Protection Service, Industrial Programs Branch, Ottawa.

Renata Bailey *is an Atmospheric Chemist with the Atmospheric Environment Service, Scientific Services, Twin Atria Building, Room 240, 499-98 Avenue, Edmonton, Alberta, T6B 2X3, tel: 403-495-3143, fax: 403-468-7950.*

Allan Stendie *is Senior Park Warden at Jasper National Park, Canadian Parks Service, Box 10, Jasper, Alberta, tel: 403-852-6157, fax: 403-852-4775.*

NATURAL REGION HIGHLIGHTS



PACIFIC COAST MOUNTAINS (I)

John Harper, contracted by the **Gwaii Haanas National Park Reserve**, is pioneering a system of classification for coastal morphology and biology. For more information on the project, contact Patricia Benson at (403) 292-4519.

STRAIT OF GEORGIA LOWLANDS (II)

Fort Rodd Hill and Fisgard Lighthouse National Historic Sites are active co-participants with Agriculture Canada and Forestry Canada in applied research activities related to detecting, tracking and eradicating Gypsy Moth and Jumping Wasp Gall Aphid in the Greater Victoria Area. These sites also offer significant base-line data for the unique Garry Oak-Douglas Fir-Arbutus ecosystem found only on southern Vancouver island. On-site research and public education programs will continue in 1993/94. For more information, contact site superintendent Dave Biederman at (604) 363-4664.

Fort Rodd Hill and Fisgard Lighthouse National Historic Sites are involved with specialized cultural resource research relating to the conservation of built heritage. In 1992, Innovative Structural Preservation Ltd. was contracted to conduct research and investigations into the original structural elements (e.g. materials, building techniques) of certain constructions on the sites. The company was asked to provide a definitive analysis of appropriate conservation treatments (e.g. materials to use in restoring a weak building). During 1993, the company's research findings will be applied to actual structural conservation efforts, particularly at the 133-year-old Fisgard Lighthouse.

* * *

The Gulf of Georgia Cannery is undergoing a Condition Assessment of its processing equipment. The equipment is being examined to determine how well treatments done in 1987/88 are holding up, to assess the equipment's current condition, and to recommend treatment for conserving the equipment. For more information contact the Cannery's superintendent at (604) 664-9007.

COLUMBIA MOUNTAINS (IV)

On February 3, 1993, 30 government and industry representatives involved in wildlife research and land management met in Revelstoke. The meeting was convened by the Canadian Parks Service, **Mount Revelstoke and Glacier National Parks**, and the Ministry of Forests, to discuss resource management issues and co-operative research opportunities in the North Columbia Mountains.

Delegates represented the Ministry of Forests (five forest districts), the University of British Columbia, CPS, BC Hydro, the BC Ministry of the Environment, the Canadian Wildlife Service, Crestbrook Forest Industries, and BC Parks. Researchers updated the group on the work they have been involved in, including caribou research, biodiversity, GIS systems, and wildlife/forestry management. Opportunities for coordination of projects were noted. A directory of researchers was assembled as a result of the meeting, detailing the research interests and responsibilities of each person and stating his or her specific interest in and suggestions for cooperation.

ROCKY MOUNTAINS (V)

Banff National Park has initiated a program to monitor the impact of helicopter flights on goats in the Bryant Creek district. Initial findings suggest that there are problems. 1993/94 is the final year of the study.

Banff National Park has been actively promoting sustainable development and the park's ecological integrity with managers of adjacent lands. Recent initiatives include the formation of the Central Rockies Ecosystem Interagency Liaison Group, the development of an Ecosystem Atlas using GIS technology as back-ground information for this group, the active participation on the East Slope Fisheries and Recreation Enhancement Task Force, presentations to Bow Corridor municipal councils on

the importance of protecting critical wildlife habitat and movement corridors through their General Municipal Plan updates, a highly successful intervention before the Alberta Natural Resources Conservation Board regarding the Three Sisters development, and cooperative interagency research pro-jects such as the canid research program.

* * *

Fire management in **Kootenay National Park** is about to enter a new era with the completion of the Park's Fire Management Plan. The plan is an attempt to integrate the "state of the art" in fire ecology with the practical concerns of managing resources in the real world. A key ingredient is the development, where feasible, of "random ignition" zones where natural fire ignitions can be allowed to run their course if considered to be burning within acceptable conditions. Ecosystem responses to fire management initiatives will be monitored and analyzed using both traditional and high-tech methods such as satellite imagery analyses and a predictive computer model. For more information contact Rob Walker, Assistant Fire Management Warden, Kootenay National Park, Box 220, Radium Hot Springs, BC, V0A 1M0, tel: (604) 347-9361, fax: (604) 347-9050.

Kootenay National Park has acquired SPOT satellite multispectral imagery for refining the Park's ecological land classification. The high resolution SPOT imagery will be used to help identify ecologically important features such as avalanche slopes, which were not directly mapped in the Park's 1984 biophysical inventory. Experiments with new algorithms for an image processing technique called "texture analysis" will attempt to improve classification accuracy. This research also forms the basis for an M.Sc. thesis in the Department of Computer Science at the University of Calgary. For more information contact Alan Dibb, Ecosystem Management Specialist, Kootenay National Park, Box 220, Radium Hot Springs, BC, V0A 1M0, tel: (604) 347-9361, fax: (604) 347-9050.

Landscape fragmentation caused by logging road development is a major concern to wildlife managers in southeastern British Columbia. To better understand the scope of the problem, Kootenay National Park has initiated two projects. The first is a forest road inventory, compiled in hard copy form using data provided by the Invermere and Golden district offices of the BC Forest Service. The inventory will be converted to digital form at a later date for input into the Park's GIS database. The second project is a review of the literature on the ecological effects of recreational activities such as the use of four wheel drive vehicles, all terrain vehicles, snowmobiles, and conventional two wheel drive vehicles. Suggestions for literature to be included in this review are invited. Questions and suggestions should be directed to Alan Dibb, Ecosystem Management Specialist, Kootenay National Park, Box 220, Radium Hot Springs, BC, V0A 1M0, tel: (604) 347-9361, fax: (604) 347-9050.

* * *

Jasper National Park is involved in the Foothills Model Forest program, which represents a huge opportunity to get involved in meaningful management of regional ecosystems. The purpose of the ten Model Forest programs across Canada is to create working models of "sustainable forestry." Through the Green Plan, CPS will be allocating 50 million dollars to Model Forest Programs over the next five years! Each area will be managed for wildlife populations, soil conservation, clean water, and recreation, as well as wood and fibre production. Proteced area are considered important to a model forest. Management of the Foothills Model Forest will be directed in partnership by key stakeholders in the area, and will involve experimentation with new practices of sustainable forest management. For example, Forestry Canada would like to see innovative techniques like shelterwood cutting in jack pine stands and mixed wood management as alternatives to block or strip clearcuts. The Model Forest Program recognises and acts upon the need to manage ecosystems from a broad regional perspective.

* * *

This summer a survey of approximately 80 hectares of **Rocky Mountain House National Historic Site** is planned. The $21,000 project will be jointly funded by the Canadian Parks Service and the non-profit Friends of the Park who have raised $9,700 from a grant from the Canadian Parks Partnership. Site superintendent, Dan Gaudet, is very excited by the project, and looks forward to how, "...this project will enable better management decisions."

The archaeological survey will incorporate traditional methods with modern ground conductivity measurements. According to Rod Heitzmann, CPS archaeologist, the ground conductivity equipment can be likened to a sonar that can see into the ground. The equipment plots changes in resistivity to electricity and magnetism which are caused by soil disturbance, metal items, and large objects such as building foundations or graves. While the equipment is too crude to positively identify what is in the soil, it enables archaeologists to flag potentially important archaeological areas for protection and further investigation in a fraction of the time required when using traditional methods. A major benefit of this method, as opposed to traditional surveys, is that it does not disturb the ground or any artifacts.

As part of this project a portable archaeological display will be constructed for use with school students. For further information contact Rod Heitzmann at (403) 292-6994 or Dan Gaudet at (403) 845-2412.

BOREAL PLAINS AND PLATEAUX (XII)

Elk Island National Park (EINP) has recently adopted a new management strategy based on an extensive review of historical records. The park will be managed as "aspen parkland", breaking away from the traditional focus on "boreal forest". Historical evidence suggests that much of the park was native grassland at the turn of the century. Efforts by park managers over the past 75 years have resulted in the absence of many natural factors, such as fire, and in the development of a "forested" ecosystem within the confines of the park. EINP has therefore developed an "Ecosystem Management Model" to assist park managers in analysing long-term management options for "aspen parkland". For example, park managers want to be able to undertake prescribed burns throughout 10 percent of the park on an annual basis. The model will allow park managers to examine the long-term implications of these burns on other resources, including vegetation and herbivores. Similarly, park managers will be able to analyze the impact which allowing herbivore populations to grow unchecked has on vegetation, and to find optimum carrying capacities for all species. For more information contact Chuck Blyth, Ecosystem Management Specialist, Elk Island National Park, tel: (403) 992-6389.

Revelstoke's Vision: Will It Help Achieve Sustainable Development?

by Jenny Feick and Dr. Albert Einsiedel, Jr.

A vision is a goal, a lofty statement of intent. The City of Revelstoke has declared its vision of sustainable development (see below). If intentions are a potent motivating force, then it should be possible to determine the extent to which Revelstoke's vision-setting exercise contributes to the achievement of the community's goal of sustainable development. If communities go through a visioning exercise, are they more likely to achieve sustainable development than if they had not? Many citizens and stakeholders believe that it is important to systematically assess the impact of these vision-setting activities.

Draft for Discussion, May 1992
Revelstoke Vision Statement

Revelstoke will be a leader in achieving sustainable growth by balancing environmental, social, and economic values within a local, regional, and global context.

Building on its rich heritage, this historic mountain community will pursue quality and excellence. Revelstoke will be seen as vibrant, healthy, clean, hospitable, resilient, and forward-thinking. It will be committed to exercising its right of control within the North Columbia Mountains (an area roughly bounded by Eagle Pass (W), Donald (E), Mica (N) and Trout Lake (S)).

Key shared priorities include: environmental citizenship; opportunities for youth; economic growth and stability; personal safety and security; a responsible and caring social support system; local access to lifelong learning, spiritual values, and cultural values; and diverse forms of recreation.

Empowered by this vision, residents and visitors shall have access to the opportunities afforded by this community.

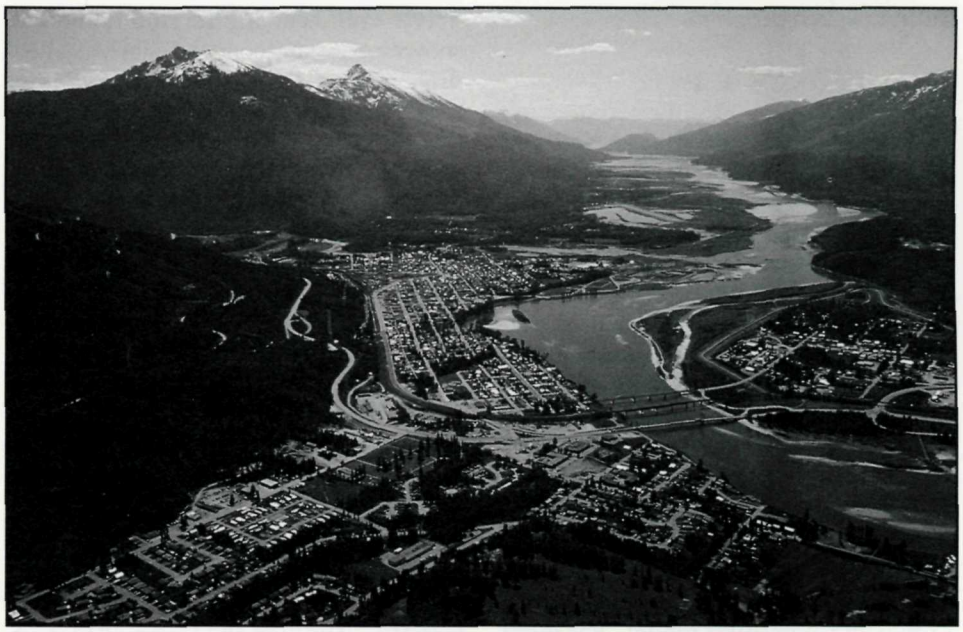


Photo courtesy of Mas Matsushita

Revelstoke's citizens have responded to their history of boom and bust economy and environmental intervention by developing a vision which lists environmental citizenship as a major priority.

REVELSTOKE

Revelstoke is a community in the Columbia Mountains of interior British Columbia. It is adjacent to Mount Revelstoke and Glacier national parks, and situated along the TransCanada Highway and Canadian Pacific Railway. The townspeople have a long-term relationship with national parks, starting in 1886 with the establishment of Glacier National Park. They successfully petitioned the Canadian federal government to establish Mt. Revelstoke National Park in 1914.

Revelstoke has experienced a boom and bust economy that is based on resource exploitation of the Columbia River, its neighboring forests and major transportation corridor. For several years, there have been rumours of a massive redevelopment and expansion of the local ski hill and other pending megaprojects. Meanwhile, the forest industry and other businesses have suffered and the population has decreased from 10,000 to 7,000.

Community residents want to shape their destiny rather than being subjected to the whims of transient developers and provincial governments. During the spring of 1992 an interdisciplinary team called the Revelstoke Community Vision Committee prepared a vision statement for their alpine valley community which seeks longterm economic, social, and environmental sustainability for the community and the Columbia Mountain ecosystem.

On February 20, 1993, citizens of Revelstoke voted in a referendum to purchase the tree farm license north of Revelstoke to gain local control of forest management, thus taking a first step toward making their vision a reality.

SCIENTIFIC ISSUES

Behavioral and social scientists who study goal-setting behavior have found much evidence to support the notion that goals have a motivating effect on behavior (Erez, et al., 1985; Latham & Yukl, 1975; Locke, 1968, 1990). For example, there is evidence to suggest that people are more likely to accept even a difficult goal when they participated in setting that goal than when it was arbitrarily assigned to them by their superior.

Researchers have also found that there are "visionary" or "transformational" leaders who are able to motivate others to

become more productive and achieve their goals (Bass & Aviolo, 1992; Burns, 1978). These leaders stimulate their followers to challenge established ways of thinking about old problems, raising their awareness of issues and moving them to action. Can the vision of community leaders in Revelstoke likewise motivate the community?

Planners and managers who deal with strategic planning and social change are interested in how vision and goal statements influence social transformation. Participatory action research (PAR) emphasizes the value of empowerment and self-directed learning in social transformation.

RESEARCH PLANS

Our research focuses on many of these concerns. It employs methodologies that have been used in the social sciences, such as those used to investigate affective learning behaviour and measure attitudes, values, behaviours. It also employs some techniques for measuring the effects of social marketing (Perry, 1976), and for assessing the social and economic impacts of community development projects using quality of life indicators (Zehner, 1977). We have also adapted some methodologies used in environmental assessment and the measurement of the effectiveness of ecosystem management.

The objective of this longitudinal study is to gather information on the perceptions of people in Revelstoke concerning the progress being made by the community in achieving its vision. The research methods will include survey techniques, personal interviews, and direct observations typically used in socioeconomic impact assessment studies.

This research project relies on the participation of local and international volunteers. Researchers will conduct an assessment of the community's progress towards achieving that vision. Volunteers will assist in refining indicators to test the community's vision statement, including the development of an appropriate index of sustainability. They will pretest instruments and help in collecting baseline information. They will collect data through personal interviews and telephone surveys with community residents, neighboring land management agencies and industries, and visitors to Revelstoke. Some will assist in presenting the information to the community and its neighboring land management agencies. This information will be used for making decisions related to industrial and recreational development, protected areas management, quality of life, and environmental sustainability.

Support for this research project comes from several agencies, including the City of Revelstoke, the Revelstoke Community Futures Society, the Canadian Parks Service, the University of Alberta, the Univeristy of Calgary, and the Earthwatch Center for Field Research.

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***Jenny Feick** is working on a Master's degree in Environmental Science at the University of Calgary, where she is on leave from her position as Chief of Interpretation for Western Region of the Canadian Parks Service. She is responsible for planning the project, orienting the volunteers, managing the logistics, day-to-day reconnaissance, field work supervision, and data analysis. For more information on the project, telephone Jenny at (403) 249-8226, or fax her at (403) 284-4399.*

***Dr. Albert (Bert) Einsiedel** is a professor at the University of Alberta and Director of Management Programs for the Faculty of Extension. He provides technical advice to the project and assists in the orienting and supervising volunteers.*

Earthwatch Expedition

by Jenny Feick and Albert Einsiedel

Earthwatch is an organization based in Watertown, Massachusetts, that sponsors scientists, artists, teachers, and students "to document a changing world." It publishes Earthwatch magazine, which catalogues the expeditions joined by volunteer members of their EarthCorps. Earthwatch has "supported 1,523 projects in 111 countries, providing scientists with 35,000 volunteers and $22 million in funds and equipment to problems on the frontiers of knowledge" (Cherrington, 1993).

Several teams of Earthwatch volunteers will be in Revelstoke between May and July in 1993 and 1994. They will be participating in Jenny Feick's examination of Revelstoke's "vision-setting exercise", surveying residents of Revelstoke, BC, to determine people's attitudes values and behavior related to sustainability. This project is described in the adjacent article. Earthcorps members will join some of the local volunteers who have been participating in the vision-setting exercise and assisting the researchers in preparing for this project. The Earthwatch teams will consist of 5 to 10 individuals from a wide range of backgrounds.

The Revelstoke research project represents the first time Canadian Parks Service staff have collaborated with Earthwatch. Depending on the outcome of this pilot study, Earthwatch may offer exciting opportunities to support future Canadian Parks Service research projects.

Laskeek Bay Conservation Society: Volunteers Carrying Out Scientific Research

by Doug Burles

During the 1980's the Canadian Wildlife Service (CWS) initiated a long-term research project on the biology and ecology of marine birds in the Laskeek Bay area of the Queen Charlotte Islands. As funding became more constrained in the late 1980's, the future of the project came into jeopardy. By 1989 the concept of a volunteer society to carry out scientific research under the guidance of a CWS biologist had evolved, and the Laskeek Bay Conservation Society was formed. The study was moved to a more accessible island (Limestone Island), and a methodology based on previous CWS research was established. Thus, the current Limestone Island Project began.

The Heritage Resource Conservation section of the newly established Gwaii Haanas National Park Reserve recognized this new society as an opportunity both to continue the monitoring program of an important resource in the Queen Charlottes (an estimated 1.5 million seabirds nest here), and to foster an appreciation and understanding of the wildlife resources of the Charlottes amongst island residents. Funds and operational support were subsequently committed over a three year period to ensure that the society got off to a good start.

The primary objective of the project was to establish a monitoring program for the Ancient Murrelets nesting on Limestone Island. Many parameters contribute to an evaluation of the colony's status, such as timing of adult birds' return to the colony, date of first egg-laying, percent occupancy of burrows, egg size and weight, incubation period, timing of young leaving the burrow, weight of young, percent of breeders and non-breeders returning to the colony, and predation rates. Both adults and young are banded, and recoveries are monitored each year as birds return to the colony. Over time the data collected will provide information on survival rates of Ancient Murrelets, and point towards factors influencing the colony's survival. The guiding principles of the society are to "conduct sensitive research that is not harmful to wildlife or its natural habitat" and to "provide interpretation and educational opportunities for residents of and visitors to the Queen Charlotte Islands".

The society now has completed three field seasons, and the results are starting to show. One of the early findings has been the ability to document the impact of an introduced species, the raccoon, on a seabird colony island. Studies conducted in 1989 established baseline data for an apparently stable, healthy colony. Then, in 1990, a family of raccoons took up residence on the island. The results of 1990's field work indicated that these 3 raccoons had had a devastating effect.

Over time the data collected will provide information on survival rates of Ancient Murrelets, and point towards factors influencing the colony's survival.

Productivity declined by 36% in 1990, and the number of occurrences of predation increased dramatically. Many nest burrows were found dug up, with the adults killed and/or the eggs taken. As a result of the findings, the B.C. Ministry of the Environment (the agency responsible for Limestone Island Ecological Reserve) took action, removing the raccoons prior to the 1992 nesting season.

The results of 1992 field studies have documented a reversal of the decline in productivity, with the numbers of chicks leaving for the sea increasing by 20% over the 1991 figures. The number of occurrences of predation also declined dramatically, with only 14 occurrences being recorded compared with 105 occurrences in 1991. The results of the project clearly demonstrate that an introduced species such as the raccoon can have a major impact on native fauna.

Aside from the long term studies on Ancient Murrelets, the Society has also initiated studies on monitoring the occurrence of forest birds breeding on the island, monitoring Glaucous-winged Gull colonies in Laskeek Bay, conducting boat surveys of seabirds, and monitoring the useage of a nearby Stellar Sea Lion haulout.

Satellite camps are also run each year out of the main camp to address specific problems or projects at other locations. In 1992, the satellite camp focused on conducting another inventory of the Ancient Murrelet colony at Dodge Point, Lyell Island, and on assessing the extent of rat predation (another introduced species) on this colony. The results of this study indicate that, since 1982, the colony's size has shrunk and the density of occupied burrows has declined. Approximately half of the burrows occupied in 1992 showed evidence of predation by rats.

A total of 26 volunteers helped the two paid employees carry out last year's field season, which lasted over three months. The camp also served as a base for two student researchers from the University of Ottawa. Two student groups on kayak excursions and four commercially-guided groups visited the project.

Doug Burles *is Assistant Chief Warden at Gwaii Haanas National Park Reserve. He can be reached by telephone at (604) 637-5362.*

Montane Ecoregion: Banff's Key Ecosystem Management Challenge

by Cliff White and Judy Otton

Like most protected areas, Banff National Park was not established according to ecological boundaries or ecological significance. As a result, the park contains vast expanses of rock, ice and subalpine forest, while the ecologically important Montane ecoregion makes up only about 5% of the park. Only a small fraction of Banff National Park is made up of the mildest, lowest, dryest lands in the area, while animals and people flock to these areas. The protection of long-term ecological integrity is therefore particularly challenging.

Within the park, the vast majority of human use and development has occurred within the Montane ecoregion. This has greatly stressed the park's ability to maintain its ecological integrity. A recent focus on ecological, as opposed to single-element, research in the park demonstrates that despite ambitious ecological restoration activities in the Bow Valley, conditions continue to deteriorate. Prescribed fire is failing to rejuvenate ageing aspen forests, possibly due to a high rate of ungulates (e.g. elk) eating the tender young sprouts. Ungulate populations may be rising due to the success of TransCanada Highway fencing in reducing ungulate mortality, and because wolves have limited access to their ungulate prey as they avoid human contact in a park with high levels of human use.

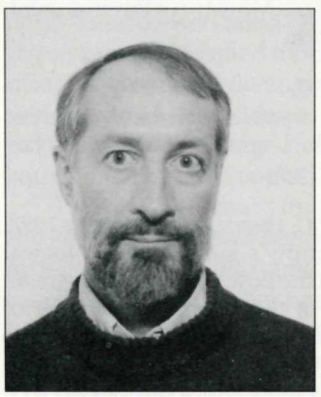
The park is surrounded by a number of other protected areas which also protect primarily alpine and subalpine environments. There are Jasper, Kootenay and Yoho national parks; Mount Assiniboine and Peter Lougheed provincial parks; White Goat, Ghost and Siffleur wilderness areas; and Height-of-the-Rockies Wilderness. The Montane ecoregion remains largely unprotected by provincial jurisdictions. Important ecological connections have been identified between the Banff National Park and adjacent montane lands, particularly in the lower Bow, North Saskatchewan and Red Deer river valleys. Development pressures in the Montane ecoregion outside the park are particularly threatening to regional wildlife populations.

The park is conducting numerous ecological studies such as the canid research program, the Vermillion Wetlands Ecological study, and an analysis of wolf and grizzly bear habitat use and displacement by human use. Preliminary results indicate the need for ecological restoration objectives and indicators for the Bow Valley in particular, in conjunction with adaptive management experimentation. Public education regarding ecosystem management objectives and actions is critical since many potential actions will be highly controversial.

Specific ecosystem management concerns that will retain a high profile include: elk becoming habituated to the town of Banff to the point that elk-human encounters have become an increasingly serious problem; maintaining the long-term viability of sensitive wildlife species such as wolf and grizzly bear given projected increases in human use levels; and continuing the prescribed fire program particularly in the face of trying to manage the urban-wildfire interface.

Cliff White *is Assistant Chief Warden at Banff National Park.*
Judy Otton *is the park's Chief of Planning.*

PERSONAL PROFILE



Dr. Peter L. Achuff, new Ecosystem Strategy Coordinator

On May 3rd, 1993, Dr. Peter L. Achuff will begin his new duties as Ecosystem Strategy Coordinator. He will work within Ecosystem Management Services of Western Regional Office. His responsibilities will include ecosystem-based planning, research, and monitoring initiatives, as well as ecosystem integrity, conservation biology, and transboundary issues. He will be the regional biophysical (ELC) specialist, and will represent Western Region in a number of national initiatives dealing with integrated monitoring, ecological integrity, biological diversity, and ecosystem management. Early priorities for this new position will include working with the ecosystem management specialists at the park level, developing procedures for assessing ecological integrity, and establishing working relationships with the scientific community in universities and other agencies.

Dr. Achuff is an Adjunct Professor in the department of Forest Science, University of Alberta. His work has taken him across western and northern Canada, the western and southern United States. and more recently to western China. He has more than 20 years experience with natural resource inventory, planning and management, with environmental impact and monitoring studies, and with protected areas policy and management.

Dr. Achuff was the first Natural Areas Coordinator for the Alberta Government, and established a provincial natural areas system. From 1977 to 1984 he was the Principal Vegetation Scientist and Project Co-Leader for the ecological (biophysical) land classifications of Banff, Jasper, Kootenay, Mt. Revelstok and Glacier national parks. As a consulting ecologist, he has been involved in CPS projects such as monitoring summer use at Sunshine Meadows, non-native plant management, forest insect and disease management, fire management, special features inventory, rare species evaluations, backcountry range conditions, grizzly bear habitat, and recreational impacts. He is currently completing a revision of the ecological land classification of Yoho National Park.

Harlequin Duck

by Peter Clarkson

Recent studies have found that the Maligne Valley supports the highest concentration of harlequin ducks within Jasper National Park. After wintering along the west coast, the ducks migrate inland to breed and nest along the clean, fast-flowing streams typical of the Maligne Valley.

Local Jasper naturalists identified a decline in the number of harlequins being observed along the Maligne River in recent years and expressed their concern to park managers. Both groups were worried that the steadily increasing popularity of the Maligne area for all types of use might be taking a toll on the local harlequin population. Consequently, a study to determine the status and distribution of harlequin ducks within JNP was conducted in 1991 and 1992. Initial findings lent support to the theory that recreational activities were having an impact on the species. It was recommended that the Maligne River be identified as critical harlequin duck breeding habitat within Jasper National Park.

This year, CPS has formally declared the Maligne River a "Special Preservation Area". All human activities in and along the Maligne River, between Medicine and Maligne Lakes, have been banned from May 1 to July 1. To monitor the effectiveness of these actions, harlequin duck research will continue in the area over the next few years. Park wardens have joined a group of US and Canadian researchers to develop a cohesive, multi-agency management strategy to ensure that the harlequin duck is protected throughout its summer and winter range.

***Peter Clarkson** is a Warden in Jasper National Park. For more information on the project or working group telephone Peter at (403) 852-5383.*

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For further listings contact the Editor, Research Links.

Reaching the Urban Constituency: Reasons for City-Based Park Interpretation

by Graham A. MacDonald

In 1981 some 400 farmers, naturalists, academics, and interested members of the public convened in the Winnipeg Convention Centre to consider the state of general land use policies in the Manitoba countryside, and to recommend necessary reforms.

Those present discussed agricultural economics, the implications of current land-use planning theory and research, and education. It would be interesting to know, in the wake of the subsequent erosion of much of the economic and social fabric of rural western Canada, just how many of the farmers who attended that conference are still on the land. One of the final recommendations was for the establishment of local soil conservation societies, somewhat on the American model. Participants also discussed the matter of declining wildlife habitat in farm areas, strongly linking this issue to a need for more refined local land classification and to the strong pressures being brought to bear on farmers to maximize the productive capacity of the land in the short run. For any urbanite with his ears open, it became quite clear that the average farmer was a strong advocate of wise land use and habitat conservation. What the farming community needed most was a range of incentives and marketing arrangements which would allow them to get away from the grinding pressure to put every square inch to the plough.

How can we protect the land? One of the keynote addresses seemed to put the farmer's concerns into context. Mr. Alan Scarth, Q.C., one of the main brains and bank-rollers behind the development of the Fort Whyte Nature Centre in South Winnipeg, made the argument that the most important frontier for expanding environmental awareness is in the city. In the city, Scarth argued, the connections between land and life are least understood. In the ten years since that conference, there has been a serious abandonment of the western prairie countryside as many former residents move into towns and cities. The last great reservoir of those who were raised with a traditional, rather than a romantic, attachment to rural land and life has been depleted even further. Today, Canada is in the 80%+ urban population range.

What are we in the Canadian Parks Service to make of all of this? Our current policy developments are apparently heading in the right direction. It would be hard to find a more naturally 'green' constituency than the labour force in the Canadian Parks Service. The agency has been bending over backwards to develop cooperative policies and to obtain valid public comment on our various plan documents. There is, however, a question I have not seen answered and it is the one posed by those farmers ten years ago: how do we really get at the urban constituency?

In the city, Scarth argued, the connections between land and life are least understood.

There are few urban centres in Canada where the Canadian Parks Service has any kind of presence. There are Halifax, Winnipeg, Quebec City, Cornwall, Vancouver, perhaps a few others. Some things seem to me to be still terribly lacking: extension in the schools; a continuing series of high quality audiovisual shows at appropriate outlets; publications provided at some visible centre of Canadian Parks Service identity. We are missing out on an opportunity to contact, in a regular way, a vast number of potential supporters.

I am not suggesting that the agency should ever back away from seeking to provide the benefits of park-based interpretation. The value of this approach is obvious, and indeed, there is a great need to try and find the budget or the alternative means for reviving some of our badly-scuttled personal service programs.

At the same time, if we take the view that parks are really some of our best and last reservoirs of natural and cultural history, which should remain largely unseen and untouched (as the price of conserving them), then it is in the city that we can send this message to many people who may never get to a park, people who may take vicarious pleasure in knowing that the parks are there and are being well looked after. It is often these people who express support for parks and voice their opinions on policy matters. Alan Scarth's concluding message to the Manitoba Land Use Conference warns us: 'we ignore the urban constituency at our peril.'

Graham MacDonald *is a National Parks Historian working in Western Regional Office.*

MEETINGS OF INTEREST

May 19-21, 1993 - Western State and Provinces Elk Workshop. Bozeman, Montana. Goals: to identify current and future management issues, to share and evaluate successful management actions, to seek ways to improve communication among managers, and to work towards management compatibility. Contact: John Cada, 1400 South 19th, Bozeman, MT 59715, tel: (406) 994-4042.

June 16-19, 1993 - Canadian Water Resources Association 46th Annual Conference. Banff, Alberta. Theme: Water and the Wilderness: Development, Stewardship, Management. Contact: Dr. David Manz, University of Calgary, Department of Civil Engineering, 2500 University Drive N.W., Calgary, Alberta, T2N 1N4, tel: (403) 220-5503, fax: (403) 282-7026.

June 20-26, 1993 - International Workshop on Sustainable Land Management for the 21st Century. Lethbridge, Alberta. Goals: to identify and develop indicators and criteria for evaluation of sustainable land management (SLM) systems, to develop procedures for integration of SLM indicators and criteria for the use at local, national and international levels, and to formulate recommendations for innovative procedures for research and technology transfer in SLM. Contact: Ms. Cindy LaValley, Coordinator, International Workshop Organizing Committee, University of Lethbridge, 4401 University Drive, Lethbridge, Alberta, T1K 3M4, tel: (403) 329-2244, fax: (403) 329-5166.

July 22-25, 1993 - Canadian Nature Federation 22nd Annual Conference: "From Desert Sands to Alpine Slopes". Hosted by the North Okanagan Naturalists' Club. Contact: Secretary, North Okanagan Naturalists' Club, P.O. Box 473, Vernon, B.C., V1T 6M4.

August 9-13, 1993 - Prairie Ecosystems: Wetland Ecology, Management and Restoration Symposium. Jamestown, North Dakota. Goals: to share urgent information, ideas and problems associated with wetlands in the Prairie Pothole Region. Contact: N.H. Euliss, USFWS, Northern Prairie Wildlife Research Center, R.R. 1, Box 96C, Jamestown, ND 58401, tel: (701) 252-5363.

September 19-21, 1993 - Second Biennial Conference on the Greater Yellowstone Ecosystem. Theme: fire. Multiple perspectives, ranging from climatology, plant ecology, hydrology, and wildlife and aquatic ecology to sociology, environmental history and economics. Contact: Mary Hagemeyer, Conference Services Coordinator, T.W. Services, P.O. Box 165, Yellowstone National Park, WY 82190-0165.

September 28 - October 1, 1993 - International Conference on the State of the Art in Ecological Modelling. Kiel, Germany. Topics: ecosystem theory, ecological engineering, integrated models, global model and practical applications of models to solve specific environmental problems. Contact: Sven Erik Jorgensen, DFH Institut A, MILJOKEMI (Environmental Chemistry), Unviersitetsparken 2, 2100 Copenhagen 0, Denmark, tel: 45-3757-44.

Fall, 1993 (tentative) **- Symposium on original built heritage preservation and historic concrete conservation.** Coordinated by Architecture & Engineering Services in Public Works Canada and the Canadian Parks Service. Contact: Dave Biederman, Superintendent at Fort Rodd Hill and Fisgard Lighthouse National Historic Sites, at (604) 363-4664.

Fall, 1993 - Conducting Ecological Inventories in a Marine Environment. The marine ecological inventory for the Gwaii Haanas Marine National Park will begin in 1995. In preparation for commencing this inventory, this workshop is scheduled to identify requirements and information needs of the park. Contact: Ron Hamilton, tel. (604) 559-8818.

November 2-5, 1993 - The Inner Shores: An International Workshop on Introduced Species in Island Ecosystems. Queen Charlotte, B.C. Goals: to document the impacts of introduced species on the Queen Charlotte Islands, flora and fauna, to review examples from other parts of Canada and the world, and to develop recommendations for solutions to the Queen Charlotte Islands' problems. Contact: Coordinator, Inner Shores, Box 867, Queen Charlotte City, B.C., V0T 1S0

November, 1993 (tentative) **- Banff National Park 1993 Elk Management Workshop.** Contact: Glen Peers, Banff Warden Office, at (403) 762-4506.

November, 1993 (tentative) **- Banff National Park Vegetation Management Workshop.** Location to be announced. For information call (403) 762-1500.

For more information on upcoming meetings, seminars and workshops, consult: Conferences, Seminars and Workshops: A Listing of National and International Events from January 1993. Prepared by the Technology Development Branch, Seminar Coordination Section, Unit 100, Asticou Centre, 241 Cite des Jeunes Blvd., Hull, Quebec, K1A 0H3, tel: (819) 953-5227, (819) 953-9368.