

Culture, Ecology and Restoration

A Report of a Workshop on Human Influence on the Montane Ecosystem in Jasper National Park

by Carol Murray

**Eric Higgs and Mike Wesbrook
Co-chairs**

**March 29-30, 1996
University of Alberta**



16 July 1996

To: Human Influence Workshop Participants (and others):

A few months have passed since our very productive workshop on the 29-30 of March at the University of Alberta. Much is happening!

- The human influence research project is well along in the planning stages; we have hired a 6-person field team for the summer and look forward to a successful season.
- Several people have been pursuing new research projects which would dovetail nicely with the human influence project.
- Sandy Campbell has developed a very helpful library pathfinder, available on the World Wide Web at the following address:

<http://www.ualberta.ca/~science5/jasper.htm>

- An electronic listserver has been put in place to facilitate conversation amongst those who attended the workshop and others who share our interests. This requires an active e-mail account. To subscribe, send an e-mail message to majordomo@ualberta.ca containing only the following text:

subscribe jasper_culture_ecology_restoration

Make sure to leave the "Subject" line blank and turn off any automatic signatures.

As a small token of appreciation for your good efforts in helping to make the workshop a resounding success, we attach a report on the workshop prepared by Carol Murray. I hope you find it useful in recapturing some of the fascinating conversation.

Mike Wesbrook and I would like to thank the Warden Science Program of Jasper National Park for funding the workshop. The Department of Anthropology at the University of Alberta made available the fine facilities for the meeting. Gail Mathew did an excellent job of making local arrangements and facilitating the travel plans for participants. Carol Murray has written a fine report. And a special thanks goes out to each participant for giving so generously of their time.

One of the primary recommendations of the workshop was to schedule a reunion next year. This advice is well taken. In the meantime, please keep in touch and drop by to see the action this summer at the Palisades Centre.

Best wishes,

Eric Higgs
Associate Professor



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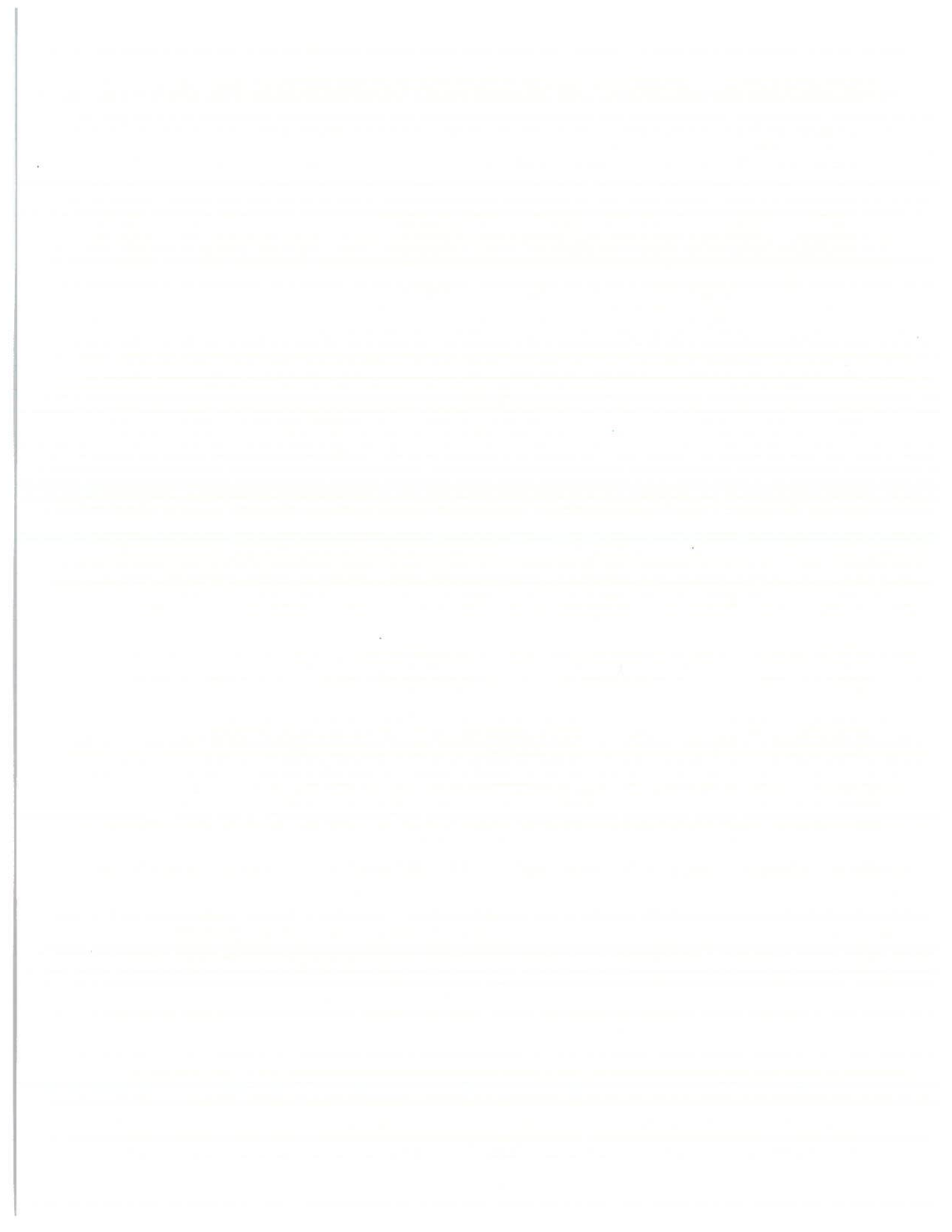
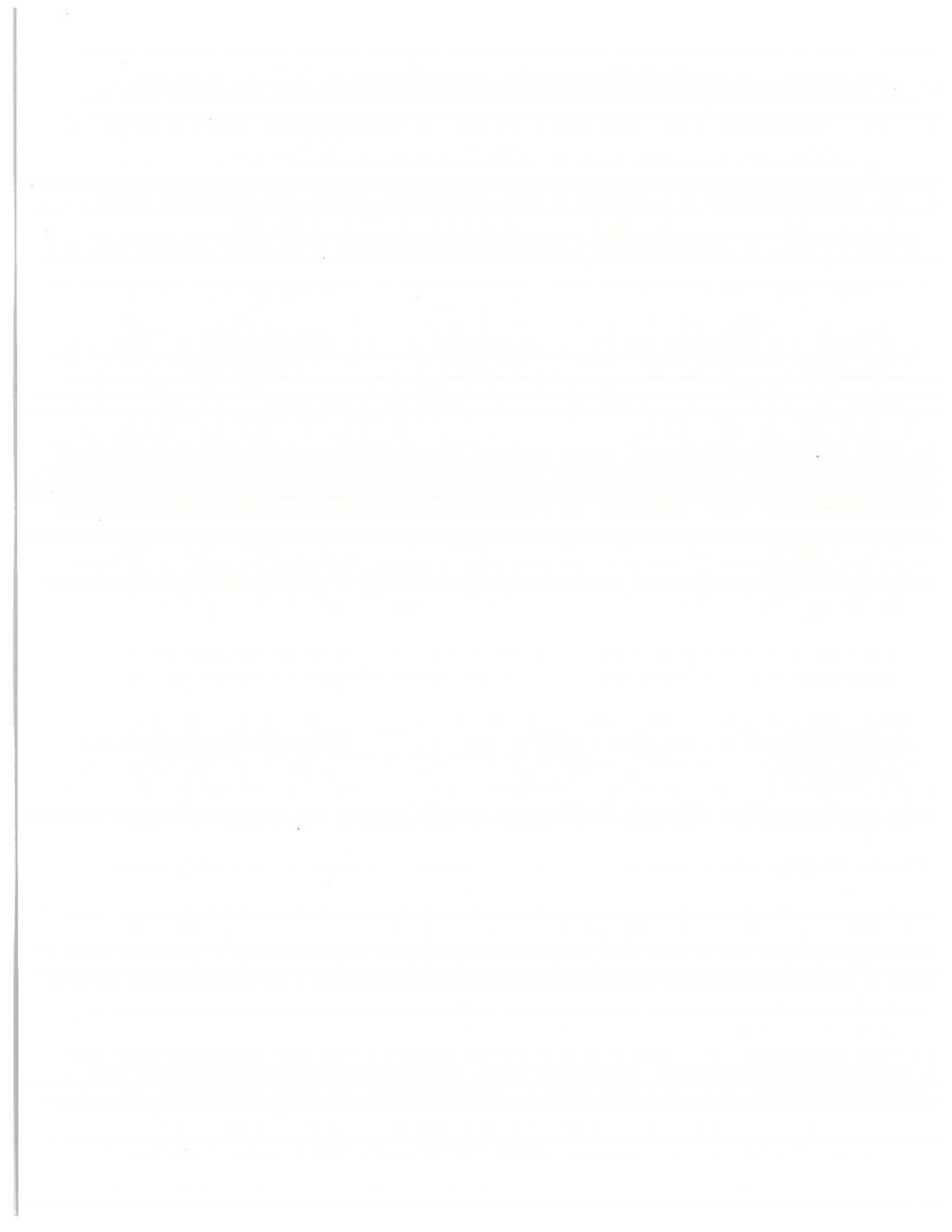


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Executive Summary

Jasper National Park (JNP) is at a crossroads. Its reputation for unspoiled wilderness and scenic vistas attracts an annual 3 million national and international visitors to the Park — a phenomenon that has resulted in escalating pressures on sensitive ecosystems. Increasing wildlife-human conflicts, non-native species and wildlife mortality and pressure to twin the major transportation artery in the Park are warning cries for increased attention to ecological management decisions. These decisions are frequently becoming issues of *ecological restoration* — a process for renewing and maintaining ecosystem health.

This workshop brought together 35 researchers from a wide variety of fields to discuss and provide a multidisciplinary context for goal setting for an ecological restoration project in Jasper National Park, Alberta. Researchers on the three-year project, jointly funded by SSHRC (Social Sciences and Humanities Research Council) and Parks Canada, will undertake to 'map' human influence on the montane ecoregion of JNP using GIS technology and will examine appropriate goals for complex ecological management and restoration decisions. Participants to the workshop were specifically concerned with three key issues of ecological restoration: the *scale* of decision making; the *cultural values* underlying decisions; and the issue of *human influence* on the ecosystem. The following questions provided a focus for discussion: Why should we be restoring ecosystems? Whose idea of nature is being represented? Should sustainable human practices be reintroduced? Is there some prior ecological-cultural state we should be promoting?

The workshop participants identified the following issues and goals as crucial to the development of appropriate ecological and restoration management decisions:

- a focus on the montane ecoregion of JNP
- the incorporation of the effect of human practices on the development of landscape
- the participation of a diversity of stakeholders and interest groups
- the development of an integrated information system.

On Day One of the workshop, participants were invited to give State of Knowledge Reports regarding human influence in JNP; Day Two focused on the development of a research

strategy and included large and small group discussion. The following themes helped structure the discussion: the development of a map of *human influence*; the maintenance and advancement of *information resources*; and the *philosophical context* of ecological decision-making in JNP. The State of Knowledge Reports revealed that although some historical, archaeological and fire regime research has been undertaken in JNP, much work remains to be done. There was general agreement among participants that the historical record should act as a strong guideline but not a template in ecological restoration decisions. Information resource development is critical to the success of the project and various methods for interconnectivity and resource sharing were discussed. A central issue in the development of goals for the project is inclusiveness; participants were in agreement that it is essential to encourage the involvement of aboriginal peoples and local Jasper residents in the project.

Goal setting for ecological restoration in JNP is a complex issue: should the ecosystem be restored to some arbitrary historical moment? Should aboriginal practices (although not aboriginal presence) be reintroduced? Is human interaction with the landscape a pathological part of the system? Discussants concluded that perhaps the term *regeneration* rather than 'restoration' would be more appropriate in that it implies a cultural and social engagement with the Park and a movement away from a site specific concept to one that envisions landscape as ecology *and* culture.

Small group discussion was more sharply focused: the **human influence group** concluded that a multimedia decision-making approach that linked JNP, the University of Alberta and the public would provide the widest input for Parks decision making. The group also identified a critical need for a monitoring program of environmental indicators. The **information resources group** identified the following criteria for a successful information management plan: common software, a collections policy, cataloguing and a professional level of staffing support. It recommended that a research board be established to handle issues such as sensitive information and access to information. A variety of approaches (email, listserv, newsletters, etc.) is necessary to handle the flow of information. The **philosophical context group** addressed the question of cultural values underlying ecological management decisions, specifically the issue of regulation and involvement of the public in these decisions. The group concluded that a widely dispersed market survey would be useful in determining the investment of various interest groups in decision making in JNP.

The workshop concluded with commentary from three rapporteurs: Julia Badenhope emphasized that management decisions must relate to the cultural values of stakeholder groups. Kristina Hill encouraged a continued focus on both scientific and cultural values and Christine Schonewald stressed that goal setting is an ongoing process that must take boundaries, flexibility and constraints into account.

Workshop participants enthusiastically embraced the plan to hold a "reunion" next year in JNP and are actively seeking ways to maintain open dialogue in the meantime. All agreed that the overwhelming success of the workshop rests on the cross-disciplinary interchange of ideas that allows researchers to assess issues through many different frameworks. The strong focus on social research which, as one participant expressed it, acted as a "catalyst for the utility of other data" places this workshop at the vanguard for research projects on environmental decision making.

Culture, Ecology and Restoration: A Report of a Workshop on Human Influence on the Montane Ecosystem in Jasper National Park

1.0 Introduction

This report is a summary of a workshop to develop a set of guidelines for mapping human influence in the montane ecosystems of Jasper National Park (JNP), held at the University of Alberta on March 29-March 30, 1996. The workshop was organized and co-chaired by Eric Higgs of the University of Alberta, and Mike Wesbrook, of the Warden Service in Jasper National Park. Thirty-five participants from a variety of disciplines and backgrounds met to discuss issues surrounding conventional approaches to ecological management decisions, specifically those of *ecological restoration*. How are judgements to be made for the promotion or suppression of an ecological condition or process? Should these decisions be historically based? Or should we use our "best guess" as to the long term ecological variability within the montane ecoregion of the Park? How should cultural practices be factored into the decision making process?

Participants to the workshop, for the most part, had been conducting research in isolation. One of the benefits of the meeting, therefore, was the interconnections with other researchers. All agreed that the dynamic exchange of points of view was productive in the creation of goals for individual research and for the development of a plan of action for the group project. Ongoing communication and interaction, as well as a "reunion" of the group in a year's time, were stressed as essential to the success of the human influence project in JNP.

1.1 Background

This workshop was a first attempt to bring together discussants from a wide variety of disciplines and backgrounds — anthropology, archaeology, ecology, history, literature and information management/GIS — regarding ecosystem management decisions in JNP. In 1994, a multidisciplinary team of 40 co-investigators collaborated on a Tri-Council proposal for a "Greater Jasper Ecosystem Study," although funding for the program was cut before any monies were awarded.

A pilot study conducted by Eric Higgs and Jo Urion in the summer of 1995 focussed on the ecological history of the Palisades Centre site and explored future restoration alternatives.¹ Through extensive historical research, a 'map' (i.e., a geographical information system) of alterations of the land over time is being developed. The pilot project made possible a close calibration of research methods with specific problems, assessed the conditions of the existing information resources, allowed the researchers to produce a solid estimate of how much labour and materials would be required to extend the program to the entire montane ecosystem, tested the application of geographic positioning system technology, and established a collaborative approach to research in JNP. In their findings, the investigators² concluded that

- there is a disarray of primary historical materials
- there is an inadequate mapping base of JNP

- there is a need for a multidisciplinary field team for further study of the ecological history of JNP.

The study also made apparent several key research gaps in the understanding of the state of ecosystem health in JNP. The list includes the following:

- there is no clear understanding of historical (and prehistorical) fire conditions
- there is a need for a comprehensive account of aboriginal activity in the region
- it is essential to have fine resolution mapping of the montane
- a comprehensive history of the region has yet to be produced.

In order to address some of these research gaps, in the fall of 1995 a team of researchers with Eric Higgs as principal investigator,³ proposed to the Social Sciences and Humanities Research Council (SSHRC) an interdisciplinary project entitled "Redesigning Nature? Human Influence, Ecological Restoration, and the Crisis of Jasper National Park." The purpose of the project is to determine the range of human influence in JNP and to include these human activities and their impact on ecological processes in management decisions for ecological restoration of the Park's montane ecoregion. The specific objectives of the proposed research program are as follows:

- to develop a spatial information model ('map') of the montane ecoregion of JNP using GIS technology;
- to examine the range of appropriate goals for ecological management of the montane region and how such goals might be developed; and
- to investigate how complex ecological management and restoration decisions can be made effectively.

The human influence workshop was held to provide a forum for a cross-disciplinary discussion for the development of specific goals that would fulfil these objectives. Notification of the success of the application was received during the workshop. The project will be jointly funded by SSHRC and Parks Canada and will begin during the summer of 1996.

1.2 Jasper National Park at a Crossroads

What is the montane? Montane is one of 20 natural subregions of the Alberta landscape — representing roughly 1% of the province — and is part of the Rocky Mountain Natural Region. It is characterized by a pattern of open forests and grasslands and is rich in species diversity. The JNP montane ecoregion — less than 7% of the Park — is the most northerly reach of the Alberta montane.

Why is the montane ecologically important? The montane subregion of the Rocky Mountain Natural Region is a rich area for floral and faunal biodiversity. Montane regions in Banff and Jasper National Parks provide browsing and grazing habitat for large and small faunal species, particularly ungulates, and create a critical wildlife migration corridor.

Why ecological restoration in JNP? As JNP is becoming recognized as a major international tourist destination and visitor numbers top the three million mark, it is undergoing escalating pressure on fragile ecosystems. There is an increasing number of wildlife-human conflicts, an increasing number of non-native plant and animal species, greater highway/railway wildlife mortality, more human impact on the Park and over a greater area, and pressure to twin the Yellowhead Highway, a major transportation route that intersects the Park.

There are some sites in Jasper that qualify as obvious candidates for restoration: decommissioning service stations, revegetating abandoned highway alignments, removing the traces of railway tie camps. In addition, a "hands-off" parks management policy has had a pronounced influence on the JNP ecosystem. For example, fire suppression has resulted in changes to the landscape, bison have been extirpated from the Park while the elk population has increased exponentially, and exotic fish species were introduced into most lakes in the Park and have flourished at the expense of native species.

1.3 Towards a Definition of Ecological Restoration

Ecological restoration is an emerging field that is becoming a key tool in ecological management decision making. The society for Ecological Restoration has offered the following definition: ecological restoration is "the process of renewing and maintaining ecosystem health." The definition raises many questions, however, which the workshop addressed:

- Why should we be restoring ecosystems?
- Whose idea of nature is being represented in the restoration?
- Is process more important than product?
- Should sustainable human ecological practices be reintroduced?
- Is there some prior ecological-cultural state we should be promoting?

1.4 Workshop Structure and Goals

The main focus of the workshop was to clarify what activities, elements and aspects of past and present human use are required for:

- setting ecosystem goals (types, amount and location of habitats and species)
- setting human use goals (location, amount, type, etc.)

- designing and implementing restoration plans
- developing techniques for organizing and representing data on human influence.

In addition, a key item for deliberation at the workshop was the determination of appropriate spatial and temporal scales for study and management of the montane.

There are two major problems associated with goal setting for ecological restoration: human initiated ecological activities have largely been ignored in management planning in national parks and human-induced changes set limits to the kind of restoration work to be undertaken. In setting goals for ecological restoration, workshop participants debated the following questions: are we

- restoring the montane to some best-guess historical condition?
- working from estimations of long-term ecological variation (e.g., a natural variation laissez-faire model?)
- incorporating best-guess historical human uses in contemporary ecological management?
- accepting contemporary human activities as coevolutionary factors?
- designing desirable ecological conditions notwithstanding historical conditions?

On Day One of the workshop, participants were invited to give State of Knowledge Reports regarding human influence in the JNP montane ecoregion. The agenda for Day Two provided for the development of a research strategy and included small group discussion. There were three overall themes for the workshop: the development of a map of *human influence*; the maintenance and advancement of *information resources*; and the *philosophical context* of ecological decision-making in JNP. Small group discussion, as well as the participants' reports, revolved around these themes. The workshop concluded with comments by three rapporteurs — Julia Badenhope, Kristina Hill and Christine Schonewald — who specialize in different aspects of environmental design, planning, restoration and management.

1.5 Organization of this Report

The report is organized into five sections. Section 2 provides a summary of participants' State of Knowledge Reports; Section 3 presents the results of large and small group discussions of the major themes of the workshop; human influence, information resources and philosophical context. The remaining sections attempt to summarize how participants perceive the challenges and opportunities for research on human influence in JNP and include remarks from the rapporteurs (§ 4.0) and suggestions for a reunion in 1997 (§ 5.0). An additional section (§ 6.0) provides a list of participants.

State of Knowledge Reports

Human Influence

Peter Achuff	Vegetation in the montane
Jackie Huvane	History of fire regimes in JNP
Julian Martin	Historical research
Graham MacDonald	Regional historical research
*Ian MacLaren	Contact era literary history
Peter Francis/Bill Perry	Archeology in JNP
Ray LeBlanc	Archeology summer field school
*Andie Palmer	Oral history and ethnographic methods
Helen Purves	GIS system development

Information Resources

Edith Gourley	Jasper-Yellowhead Historical Society
Jean Crozier	Northern River Basins Study
Sandy Campbell	Information resources – U of A library system

Philosophical Context

*Michael Asch	Land claims and First Nations issues
*John McConnell	Historical geography research

* identifies emerging issues and challenges

2.0 State of Knowledge Reports

State of Knowledge Reports were presented in two sessions: the first reflected current knowledge and the second discussed emerging issues and challenges. For the purpose of this report, summaries of these presentations will be presented thematically, as shown in the above chart.

2.1 Human Influence

Peter Achuff—Vegetation in the montane

- There are many natural disturbances on the landscape: wind and water erosion; mud flows; avalanche; blow downs and fire. Fire is a major influence on the landscape.
- Tree ring and other evidence allows us to state fire history to 1500 years with confidence.
- Fire return intervals are much shorter in the montane open forest landscape (15-60 years)

- than in the subalpine (50-300 years) or alpine (>300 years) regions.
- Historic fire regimes in JNP indicate that from 1510 to 1930, 59% of the forests were burned, whereas from 1940 to 1994 only 0.7% was burned.
 - Fire regimes differ depending on the season of burn and the size and intensity of the fire.
 - Fire and other disturbances create changes in the understorey, thereby affecting the grazing/browsing patterns and cause tree invasion of grasslands.
 - It is essential to understand the implications of interactions between humans and ecological processes.

Jackie Huvane — History of fire regimes in JNP

- Research is underway to reconstruct the historical forest fire disturbance regime during the last 1000 years.
- The method consists of taking 'freeze core' samples from lake sediments in JNP and analyzing fine sections in the lab.
- Comparisons will be made between these data and dendrochronological data from the last 200 years. Pollen, charcoal and algae (diatoms) will also be looked at.
- This research will provide information on how the JNP environment has changed over time.

Peter Francis — Archaeology in JNP

- Parks Canada archaeologists have identified a cultural history within JNP that extends for the last 10-10,000 years.
- Some 225, Level 2 prehistoric/precontract/Aboriginal archaeological sites have been recorded in JNP. Roughly 250 post-contact, historical sites have also been recorded (and occasionally excavated).
- The evidence to date indicates that JNP was formerly occupied by peoples from the Plateau, Plains and Boreal Forest at various times over the past 10,000 years. The area was used primarily as a trade, transportation and cultural diffusion corridor.
- Most of the archaeological work has been undertaken in the montane. For the most part, comparatively little can be said about the cultural and temporal association of many of the individual sites that are identified as precontract or prehistoric in nature.
- Baseline information is required for environmental reconstruction as it relates to human settlement, resource exploitation and land use strategies in the montane ecoregion. Ethnic boundary work is also necessary. Archival research is required to establish cultural-historical contexts.

Bill Perry — Archaeology in JNP

- GIS has been used in the Banff-Bow Valley Study to allow researchers to develop an archaeological potential model.
- The model considers factors such as favourable aspect, slope and landform and distance to potable water. These factors are then weighted by the GIS program.
- Archaeological potential minus disturbances produces an interim map. The interim map

and information regarding proximity to archaeological evidence allows researchers to determine the archaeological sensitivity of a given site.

- Given finer and finer data, the GIS archaeological potential model can be a useful predictive tool.

Ray LeBlanc — Archaeology summer field school

- This year the University of Alberta's archaeology summer field school will be conducted in JNP. The University will provide an instructor and two teaching assistants.
- There are 15 students enrolled in the program (with 5 on the waiting list).
- The students will map the chosen site and, if time allows, will do some preliminary excavation. Separate crews will survey other areas of the Park for sites.
- The Palisades Centre will be the base for these operations.
- The field school will provide an opportunity for students to acquire hands-on archaeological experience and will produce detailed data on land use history in JNP.

Julian Martin — Historical research

- Historical work in JNP has attempted to assess the "state of play" of secondary material.
- This work has entailed the identification of the range of issues that need to be tackled and a preliminary cataloguing of this material.
- Initial findings indicated that the locations of primary source materials are in a state of disarray although this problem can be ameliorated with good finding guides.
- The interpretive contexts and scales must be determined. For example, the period from 1875 to 1910 provides a rich and interesting historical interval for study due to highly significant interventions in the land use of the JNP area.

Graham MacDonald — Regional historical research

- Much land use historical work remains to be done on the regional level in order to expand the traditional archival base.
- Useful sources include photo records and oral history.

Andie Palmer — Oral history and ethnographic methods

- The linguistic evidence is spotty for this region and shows that there was a lot of travel through this area, particularly during the fur trade area. There are no real settlement data.
- The Kutenai, a linguistic isolate (although they communicated with the Cree), the Cree and the Shuswap were all active in this region.
- Two major issues arise in working with indigenous peoples: How do we ask the right questions? and What do we have to offer?
- It is essential to involve indigenous peoples in the project, as well as Jasper residents. A useful strategy is to inform the elders what the data will be used for and to involve them in goal setting for the research.

- Individual experiences as told in narrative often reveal traditional relationships of aboriginal peoples to the land.

Ian MacLaren — Contact era literary history

- Changes in landscape in the historical period can be inferred through an examination of paintings and journals.
- Paul Kane's paintings provide a record of landscape from Manitoulin Island to Fort Victoria. A shift in his palette indicates the changes in landscape.
- A pictorial record exists for JNP that can be correlated, for example, with fire regime data to determine the original landscape pattern in this region.

Helen Purves — GIS system development

- JNP has recently conducted an exhaustive GIS user needs analysis.
- This needs analysis revealed that montane ecosystem diversity is a priority in the Park.
- Other data bases need to be established first in order to produce a cumulative effects assessment of the montane ecoregion.

Summary of Human Influence Discussions

- It is essential to identify patterns and processes in the landscape.
- Biodiversity of species is critical.
- Attention must be paid to the cultural/human activity that created the patterns and processes (e.g., aboriginal fire regimes).
- The historical record should act as a strong guideline but not a template in ecological restoration decisions.
- Although some archaeological sites have been inventoried, much work remains to be done to provide a prehistoric and historic data base for the JNP region.
- The archaeology summer field school will focus on site mapping, excavation and surveying and will potentially provide useful detail on prehistoric and historic land use patterns.
- GIS could be a useful predictive tool for the assessment of potential archaeological sites.
- Historical research has identified a range of issues that must be explored and has undertaken a preliminary cataloguing of secondary material, although primary sources are in disarray. The archival base must be expanded at the regional level.
- Oral history methodologies can reveal traditional relationships of aboriginal peoples to the land. It is essential to involve indigenous subjects, particularly elders, in the project.
- A GIS user needs analysis conducted by JNP reveals that montane ecosystem diversity is a priority.

2.2 Information Resources

Edith Gourley — Jasper-Yellowhead Historical Society

- The Jasper-Yellowhead Historical Society was formed in 1963.
- Its primary mandate is the collection of materials that represent the history of JNP.
- Although it is important to have materials available in the Museum, the Society also is willing to photograph collections that remain in private hands.

- It would be useful for researchers from the University of Alberta to provide a speaking series at the Museum in order to keep Jasper residents informed of the significance of this research and to encourage residents to donate materials.

Jean Crozier — Northern River Basin Study

- The aspect of the Northern River Basin Study conducted by Crozier Info Resources Consulting provides a useful comparison for the human influence study.
- This study had two components: a traditional knowledge component and an archival component.
- The traditional knowledge component consisted of interviews with elders and non-elders that resulted in 8,000 pages of transcription. It was created to provide undocumented knowledge, and it revealed a different way of thinking from that of the hard science component. It also raised an issue of protocol: who owns the knowledge?
- The archival component utilized a multi-disciplinary team that recorded chosen archival documents in the data base. This allows for access of specific information such as the picture of a landscape at a designated moment in time. It also reveals the progression of change in that landscape. Data can also be cross-correlated so that, for example, data on loss of moose population can be compared with death of aboriginal peoples by starvation for that same time period.
- These two components provide different kinds of knowledge that can corroborate and support one another.

Sandy Campbell — Information resources - U of A library system

- The ideal for the development of information resources is to have knowledge of who the experts are and what connections exist and to have developed a listserv and a home page on the Internet.
- The reality of the situation with regards to JNP is that there is no bibliographic control over information resources and little direction in how to achieve this. This issue is complicated by the fact that the ultimate decision-making body for the Park resides in Ottawa.
- Issues to consider are interconnectivity and resource sharing amongst all interested parties, the development of a high-speed link between Jasper and the University of Alberta, and the accessibility of data without commodification of that data.
- The end goal is a highly integrated information system which would allow a user from any geographic location to have access to any format of information regarding JNP or at least to have access to a reference to that information.

Summary of Information Resources Discussions

- The Jasper-Yellowhead Historical Society provides an invaluable archival resource for regional historical study.
- A speaking series at the Jasper Museum by University of Alberta researchers could reinforce the significance of the donation of material objects to the Museum and the research undertaken by the Human Influence project.
- The Northern River Basin Study highlights the need for corroboration and complementarity between traditional knowledge and archival knowledge.
- Interconnectivity and resource sharing, a high-speed link between Jasper and the University of Alberta and the accessibility of data are critical issues for information resource development.

2.3 Philosophical Context

Michael Asch — Land claims and First Nations issues

- Research with aboriginal peoples raises ethical issues regarding who has jurisdiction in the area and who owns the data.
- The Canadian legal framework assumes that Canada, not indigenous peoples, own the artifacts from the land based on European occupation.
- What can researchers do if they want to proceed ethically? New joint research guidelines are currently being prepared for the three major funding bodies in Canada⁴ and call for the discussion of the research in partnership with aboriginal peoples, a recasting of the research to reflect a sensitivity to the goals of aboriginals and invitations, where possible, for research training. These guidelines speak to the inclusiveness of the research subjects in the research.
- The key question to ask is 'who has concerns in this area?' Park residents, for example will have stories and experiences and should be included in the research.

John McConnell — Historical geography research

- An Advisory Committee (such as that for Prince Albert Park in Saskatchewan) could be very useful in JNP and could provide suggestions for future research and act as an external "friend" to the Park.
- The University of Alberta could also offer a field course in environmental management in which hypothetical environmental impact assessment scenarios are analyzed.

- A study of how people from traditional cultures used the land could be instructive. Perhaps, for example, this kind of study may reveal that cultural use of fire played a more minor role than we think.

Summary of Philosophical Context Discussions

- Research with aboriginal peoples raises ethical issues regarding jurisdiction.
- New research guidelines call for the inclusiveness of research subjects in the research project.
- An Advisory Committee to JNP could be useful in suggesting future research directions.

3.0 Goal Setting

The ecosystem management questions that JNP faces are complex and require an interdisciplinary focus. In Jasper, much of this interconnection and integration, especially in the social sciences, is still at the formative stage. With the receipt of SSHRC funding for the proposed ecological restoration study, some of this work can be initiated, but decisions have to be made as to the most effective use of available funding. Should the spatial model be put on hold and a collaboration be developed with Parks' GIS specialists? Should the group work on a complementary project but with a partial 'stand-alone' status? Should the goal be to study the total montane region of JNP or a smaller chunk? Should the focus be on field work or data assembly?

The group voiced consensus that restoring the montane to an arbitrary historical moment (e.g., 1880) would be to indulge in an historical nostalgia that does not necessarily reflect current realities. On the other hand, it was acknowledged that it is important to gain knowledge of ecological processes over the past 1,000 years and to develop goals that reflect that envelope. In the case of the effects of aboriginal presence, however, this can be tricky. Should the goal be to restore, by simulation, the *effects* of aboriginal presence, without reintroducing that presence? Further, does the reenactment of indigenous practices (e.g., fire regimes) freeze aboriginal culture in time?

A simpler scenario for consideration is one that assesses the impact of, say, elk numbers on other aspects of the ecosystem and attempts to restore a more positive pattern of interaction between them. This type of intervention is much more difficult to adopt with human population impacts, however. The tourist trade is a given in park management and can be dealt with by either introducing strategies to reduce it or by managing the number of visitors that currently use the Park (estimated at 3 million in 1995 and growing at roughly 2% per annum). *Is human interaction with the landscape a pathological part of the system?* Certainly human activities play a very important role in the ecosystem, and habitat has been lost through development and other

human disturbance. The rates of change of human use of JNP are currently unsustainable. Even small changes can have a major impact. What will the future state be, given the current rate of growth? Canmore (22 kilometres from Banff National Park) has been able to develop strategies for reducing its growth from 10% to 8%. But in merely a century, an 8% growth rate translates into an additional 1 million people (the 1995 population was roughly 7,600).

One of the central challenges of ecological restoration is to identify and define what relationship to the landscape currently exists, and what relationship is desired. In this sense, the term 'restoration' is perhaps inappropriate. It implies that something has "gone amuck." The important question is 'what do we value?' This implies preservation/conservation or *regeneration* to something we think is worthy rather than restoring to some pure state. From this perspective of values, the Park is not an *object*, but an *engagement*, a movement away from a site specific concept to one that envisions landscape as ecology *and* culture. What is the relationship of the visitor to the site? What is an appropriate level of engagement? Scenic vistas? Storytellers? Self-guided walks?

3.1 Small Group Discussions

Three central questions were assigned for small group discussion:

Group 1: What issues are involved in developing a map of human influence?

Group 2: What connections and institutions are appropriate in maintaining and advancing information resources?

Group 3: The unfolding manifesto: JNP in context.

Group One: Mapping human influence

Data currently being collected include existing human use and archaeological sites in JNP. Detail of this data includes 1,300 human use features: the location, frequency and magnitude of use. This information is updated on a five-year cycle (with February/August 1995 as a baseline) and is mapped to a scale of 1:50,000. These maps show where visitors are distributed on the landscape as well as localized internal human use. There is a critical need for a monitoring program of environmental indicators such as air quality, water quality, soil fertility and biodiversity as well as the monitoring of biotic indicators for environmental change such as an "Index of Biotic Integrity" (IBI). Concern was expressed by the group regarding the effects of a "lag" in such an environmental monitoring program. How can we be sure that the indicators used reflect the effects of *current* human influence and are not the result of a cause/effect time lag?

Choices of formats for the data (GIS, World Wide Web, CD ROM, audio, video) should be motivated by the awareness of *internal* use needs (e.g., for management decision support) as well as *external* use needs (e.g., public education and instruction "labs" and academic research).

The JNP GIS is a decision-support tool that is used primarily for long-term development decisions.

The University of Alberta software applications would use data from the JNP GIS but in an exploratory, less consistent way than Parks use for management decision making. The objective of this application would be to gain insights into human influence in the Park. In particular, cross-disciplinary data about a single geographic location could be used as a means for generating spatial hypotheses and has relevance for anthropology, ecology, history, planning, etc. This information could be stored at a Web site or could form the basis of a multimedia pilot project. Ideas generated in this context could then be utilized by Parks in planning and policy making.

The group emphasized the importance of an interactive forum for public education; perhaps in the form of a Jasper "community lab." Low cost GIS that simulates the criteria for development or conservation could be provided that would allow the public to participate in the Parks decision making process. The use of videos, photos and audio, accessible through multimedia software, would also allow for public input to Parks administration as well as public education.

Group Two: Information resources

Group Two discussed the criteria for a successful information management plan: common software, a collections policy, cataloguing, and a professional level of staffing support. It is also important to encourage connectivity among groups (e.g., Parks administration, the Jasper-Yellowhead Museum, the Palisades Centre, etc.), to define the collections, to identify existing sources of information, to determine how materials will be preserved and to ascertain the delivery mechanisms amongst groups both in and outside of JNP.

Ownership of sensitive information and access to information are issues that need to be considered. The group suggested that a research board could be established to vet data collection and research proposals. It could establish what information can be collected and what can be done with the data. The board would consist of representative stakeholders (including aboriginal elders) and could address ethical questions such as 'who owns the data?' The group also stressed the importance of using local people as information resources.

Also addressed was the question of the flow of information. There are a multitude of approaches: email, an exchange of addresses (see § 6.0), a web page, listserv, *Research Links* (Parks Canada newsletter), more workshops, public relations activities, reports in *The Booster* (local Jasper newspaper), etc.

Group Three: Philosophical context

The central issue that informs human environmental behaviour in national parks is the tension between individual interests and the needs of the greater community. How can the commons be regulated? How can residents become involved in the regulation of their activities? If the Park is considered a 'special place,' why should residents and visitors have rights that contravene this? How can we make decisions that reflect different value sets? What happens to these values at the Park boundary?

Government decision making often does not take local or regional values into account; the focus of these policies is national park contingencies. But if the local community does not accept the restrictions of government policy, then these policies will be ineffective. Therefore community involvement in decision making is critical.

Visitor needs must also be considered in incorporating the community in Parks' decision making. Who is coming to the Park and why? The struggle in managing visitation is represented by the continuum of access vs. money. National park goals must deal simultaneously with the impact of visitation on the park ecosystem, the policy of accessibility to visitors of natural and cultural resources and the need to operate the Park on a cost recovery basis. Thus the constraints on visitation are often in the form of a quota or a pricing system. The group concluded that a market survey would be useful to determine the investment of various interest groups such as indigenous peoples, tourists, managers, city dwellers, legislators, lobby groups, etc.

4.0 Summary and Concluding Remarks

4.1 Commentary from Rapporteurs

The three rapporteurs for the workshop were selected from a variety of disciplines and thus brought to the proceedings a multiplicity of interests — epistemology, GIS, land planning, community development, ecological restoration and design. They were asked to summarize the discussion and to provide a sense of direction for the project's goals and strategies. Their remarks are presented here in summary form.

Julia Badenhope — Department of Landscape Architecture, Iowa State University

Landscape change scenarios must be considered in cultural context in management and design programs. The cultural legacy of national parks includes aspects of law, language, the visual, narrative, aboriginal presence, tourists, fur traders and ecological science. The central focus should be on how to frame a management plan based on this cultural legacy and to develop explicit management goals. In order to do this, it is essential to expand the definition of stakeholders to the process beyond "the usual suspects" to include, for example, managers, Japanese tourists, regional tourists, etc. It is important in a democratic planning process to identify and characterize stakeholder perspectives both in terms of the history of their relationship to JNP and with reference to the activities that inform and maintain cultural values of stakeholder groups. How do management goals relate to those activities?

The Iowa River Greenbelt Trust exemplifies the types of decision making that are predicated on a cultural engagement with the physical landscape. Although its primary goal is to improve water quality, the group realized that it would have to do this over time and by creating opportunities for continued engagement with the landscape. The groups does not have legislative authority to stimulate change and therefore must address values and perceptions and adopt a strategy that creates change from the ground up. Decisions were made through advocacy, not through legislative mandate. In order to cut through the "culture of agriculture" that predominates in Iowa, the group had to be strategic. By designing canoe and bike routes along the Iowa River, they created mechanisms for connecting people to the land in new ways. In this

way, they were able to identify opportunities in the landscape for educating and shifting attitudes towards that landscape.

Kristina Hill — Urban Studies and Planning, MIT

Most research is project driven in which the ultimate solution for problems is some form of "splitting the baby." The Human Influence project, however, offers an alternative to this in that it addresses both scientific and cultural values. For example, much of the GIS mapping decisions on other projects have been set by precedent, not by what we want to know. This project is attempting to determine how we understand landscape in terms of folk classifications; it provides an opportunity to understand the connection between words and maps. The cross-disciplinary aspect of the project allows for multiple interpretations of the issues involved in goal setting for ecological restoration of the montane — there is no one truth. The wave of settlement from Europe brought about grand change to the landscape. But this wave has reached a peak and has receded, allowing a new vision to emerge and a new relationship between how we see ourselves and how we view the landscape to be developed.

Christine Schonewald — National Biological Service, University of California, Davis

Goal setting is an ongoing process that continues until it is not needed anymore. At the same time, consideration must be given to issues of boundaries, flexibility and constraints. If goals are set without addressing the cultural context in which they are being made, then these priorities would be reversed by popular opinion. There are also constraints at the national level on the types of ecological goals that can be achieved. The project group is powerless in the face of these constraints. Is a spear an appropriate tackle for a tidal wave? Where is the flexibility in goal setting?

The group must address both short and long term goals simultaneously. It needs to develop a knowledge of processes such as real estate in order to develop creative strategies to contravene development proposals. It should also encourage the development of support networks amongst local people in order to foster goodwill for the group's objectives. On the other hand, an authority should be established to make decisions, not as a replacement for a focus on cultural values, but as an attempt to even out the 'fickleness' or trendy nature of human thinking and opinion. Finally, goal setting should take into account the "cathedral role" of parks, that is, their spiritual value, and should take into account the constant motion and interaction of elements in the Park as well as the periodicity of events. In this sense, alternatives are not necessarily mutually competitive, but may have application at different times in the Park's history. Above all, the group should avoid "senility" in its management methods.

5.0 Looking Ahead ...

Participants were unanimously agreed that the multidisciplinary cross-fertilization of ideas during the weekend discussions were the most beneficial aspect of the workshop. All expressed the need both to meet again in a year's time for a "reunion" and a revisiting of issues and strategies, and to stay in contact in the interim. With regards to the latter, a list of participants with regular and email addresses and fax and phone numbers is appended in § 6.0. In addition, a

tip sheet has been created by Sandy Campbell and added to the University of Alberta's SciTech Home Page. It can be found at:

<http://www.ualberta.ca/~science5/jasper.htm>

A listserv has also been put in place to facilitate conversation. This requires an active email account. To subscribe, send an email message to <majordomo@ualberta.ca> containing only the following text:

subscribe jasper_culture_ecology_restoration

Make sure to leave the "Subject" line blank and turn off any automatic signatures.

Several comments were made on the planning of the workshop session for 1997. Many participants agreed that having the workshop on-site (i.e., at JNP) would enhance the discussions. Arrangements are currently being made to book the Palisades Centre site. A focus on one specific issue or problem was also suggested in order to guide the discussion. In addition, a reading packet issued to participants in advance would also help to contextualize the discussions and provide a common knowledge base. Other suggestions included inviting an aboriginal person with an interest in the JNP ecoregion to participate, and to assign participants to the small discussion groups to foster divergent viewpoints.

6.0 · List of Participants

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Endnotes

1. The Palisades Centre is a high quality research facility located 10 kilometres from Jasper townsite in JNP. The area was settled by farmers around the turn of the century, then became a dude ranch in the 1920s. The Pilot study focused on the ecological history of the site.
2. The study was conducted by Jo Urion, a Masters student in the History department at the University of Alberta and Eric Higgs, Associate Professor of Anthropology at the University of Alberta.
3. Eric Higgs is Principal Investigator for the project. The co-investigators are as follows:

Jeff Anderson, Jasper National Park
Suzanne Bayley, Biological Science, U of A
Ian MacLaren, Canadian Studies and Political Science, U of A
Marty Magne, Parks Canada, Calgary
Julian Martin, History, U of A
Andie Palmer, Anthropology, U of A
Hans Schreier, Renewable Resources, UBC

The project will take place over three years, from 1996-1999, and will be based at the University of Alberta and in Jasper National Park.

4. SSHRC (Social Science and Humanities Research Council), NSERC (National Science and Engineering Research Council) and MRC (Medical Research Council).