BCEAG

Bow Corridor Ecosystem Advisory Group

WILDLIFE AND HUMAN USE MONITORING RECOMMENDATIONS

FOR THE BOW VALLEY (BANFF NATIONAL PARK TO SEEBE)*

SEPTEMBER 2001

Municipal District of Bighorn
Town of Canmore
Banff National Park
Government of Alberta
***Not yet approved by all municipal jurisdictions.**

1.0 Background

The Bow Corridor Ecosystem Advisory Group (BCEAG) is a partnership involving the Municipal District of Bighorn, Town of Canmore, Banff National Park and the Provincial Government. The goal is to facilitate the coordination of responses to environmental and resource issues in the Bow Valley.

Wildlife issues in the Bow Valley around Canmore have been a major focus of attention ever since the 1992 Natural Resources Conservation Board (NRCB) hearings into the Three Sister's Resorts (TSR) development proposal. Development approvals since then have only heightened the concern over wildlife preservation and, in particular, the provision for a viable network of movement corridors and habitat areas. In meeting the requirements of the NRCB Decision, Alberta Environment (AENV) was given the task of approving a series of movement corridors through the TSR property. In addition, the NRCB recognized the role of different governments and agencies in the development and effectiveness of existing plans and decision-making processes. Accordingly, the NRCB recommended that an advisory committee be established for enhanced coordination in the Bow Valley. BCEAG became this advisory committee.

In March 1998, BCEAG endorsed a report titled *Wildlife Corridor and Habitat Patch Guidelines For The Bow Valley*. Along with development guidelines, this report also provided a reference map delineating wildlife use areas as movement corridors and local and regional habitat patches. Following-up from this report, in February 1999, BCEAG released a draft report titled *Guidelines for Human Use Within Wildlife Corridor and Habitat Patches in the Bow Valley*. A final report, which included recommendations on seasonal and permanent closures of specific trails, was completed in August 1999. In June 1999, BCEAG endorsed the establishment of a working committee to make recommendations on education, monitoring and implementation (EMI) options. This monitoring report is a result of the latter committee.

2.0 Purpose of the Guidelines

The purpose of these guidelines is to provide BCEAG member jurisdictions with recommendations for a coordinated approach to wildlife and human use monitoring in the Bow Valley.

3.0 Applicability

These recommendations provide an advisory framework for decision making for all BCEAG agencies. However, the recommendations have no statutory authority in any jurisdiction unless adopted under specific legislation.

Please note that this report is considered a "living document" and as such, the report may be updated by BCEAG as new information becomes available.

4.0 Study Area

The recommended study area should cover the entire Bow Corridor from the boundaries of Banff National Park (BNP) through to Bow Valley Provincial Park. A greater emphasis should be placed on the more western portion of the study area from BNP through to Wind Valley.

5.0 Monitoring Needs

There is currently a system of corridors and habitat patches linking Banff National Park with the Kananaskis Valley primarily through Wind Valley. These corridors have largely been a paper exercise of drawing lines on a map based on a combination of the best available information on known wildlife movements in the valley, movement data collected from other studies especially in Banff National Park, topographical features, highway mortality statistics, and "what is left" after various development approvals have been given from the appropriate agencies with land management authority.

From a local and regional wildlife perspective, the ultimate goals of BCEAG are to maintain viable populations of existing species within the valley and to provide a network of effective wildlife corridors across and through the valley. These corridors are to maintain linkages between regionally significant habitat patches and reduce the fragmentation effects of rapid human development within the Bow valley. A comprehensive valley-wide wildlife monitoring program is required to determine the effectiveness of the existing corridors and habitat patches throughout the Bow Valley as well as to monitor the status of populations of individual species considered particularly vulnerable to human development such as carnivores.

6.0 Current Status

Monitoring of wildlife use within existing corridors is currently being done by some of the larger developers as a condition of their development approval (e.g., Three Sisters Resorts, SilverTip, Eagle Terrace). This monitoring, however, is only being done within corridors on each respective developer's land. Significant portions of the wildlife corridors fall within public lands and are now within the recently protected Bow Valley Wildland Park. There is currently no ongoing monitoring on the remainder of the identified corridors or habitat patches within the valley. Each developer is concentrating on the viability of their own corridors.

Within the Bow Valley and adjacent areas, population monitoring for bighorn sheep and elk have been conducted periodically by Alberta Environment using aerial surveys since the early 1980's. These surveys have provided trend information on the status of these populations, however, they have not been conducted on an annual basis and as much as 5 years can pass between consecutive surveys. Regular monitoring has not been conducted for any other species. Currently, research is being conducted on grizzly bear and wolf populations in the area which will provide information on current population status, however, these studies are focussed on a much larger area and have not been designed as an annual census program for the local Bow Valley area.

Currently there are three developers conducting monitoring programs in the Bow Valley. Each is employing slightly differing methodologies although all use similar techniques such as pellet transects, track transects, and backtracking of animal tracks in the snow. One concern is that variations in the implementation of these techniques between developers make comparisons between areas difficult if not impossible. There is also a concern with the low level of field sampling employed in some years and with a lack of consistent sampling effort which makes inter-annual comparisons difficult to interpret even on the same land base.

A consistent approach in methodology (i.e., standardized methodologies) employed by any group with a responsibility to conduct monitoring needs to be identified. Any future monitoring requirement placed upon private landowners or undertaken by government to address a similar

set of objectives should adhere to a standardized protocol.

7.0 Specific Monitoring Objectives and Proposed Projects

Specific objectives for monitoring have been identified by EMI to address wildlife monitoring needs in the Bow Valley. To achieve many of these objectives a multi-year commitment of three years minimum is required to collect meaningful information. These monitoring objectives are identified as:

- Monitor wildlife use of the Stewart Creek wildlife underpass as well as the effectiveness of the fencing, animal jump-outs, and wildlife impediments.
- Monitor wildlife use of wildlife corridors that fall within public lands and for which there is no monitoring ongoing by private developers.
- Develop a set of standardized methodologies specific to individual monitoring objectives to be employed in future monitoring programs by private or government agencies.
- Monitor the effectiveness of the currently designed network of corridors and habitat patches to provide a linkage between Kananaskis Country and Banff National Park for selected species (cougar, bears, wolves, and elk). This would have to entail a combination of radiocollaring, and ground surveys. It would focus on individual animals of those primary species of concern i.e., bears, cougars, elk, wolves.
- Develop a periodic species specific population census program to monitor the status of “species of concern”.
- Monitor changes in vegetation characteristics and wildlife usage of sites where wildfire protection was implemented.
- Monitor existing human use and future human use compliance with BCEAG trail recommendations.

As part of the TSR highway interchange project, a wildlife underpass and fencing component was identified as part of the mitigation for loss of an identified movement corridor. AENV has committed to undertake the monitoring of the mitigation program to determine its effectiveness. The interchange and underpass projects are currently underway and are scheduled for completion by September 1999.

Human use within wildlife corridors has long been identified as a major concern and an issue to be addressed if corridors were to have any chance of functioning. BCEAG has recently undergone a major public consultation process to deal with the issue and make recommendations (through the Human Use Group [HUG] subcommittee) that address public use of specific trails located within corridors. This process is now complete. BCEAG has now struck a subcommittee to deal with the implementation, education, and monitoring components of this trail initiative (EMI Committee). The establishment of a comprehensive wildlife monitoring program was identified as important during the public input process. Also identified was a requirement to monitor compliance of humans to changes in trails status as outlined in the HUG report. This monitoring would properly assess wildlife response to corridor usage and the information would allow BCEAG to implement an adaptive management approach to future trail recommendations. There is currently no funding in place for this monitoring.

Work is currently in the planning stages to implement a fire reduction program for the west end of the valley along the Banff National Park boundary. This would primarily involve selective forest thinning. This activity has the potential to also benefit wildlife through the provision of

additional foraging areas and possibly relieve some pressure on golf course impacts. The impact such a project would have on movement corridors, biodiversity, and on forage enhancement requires monitoring.

Wildlife monitoring requirements need to be addressed at the local, site specific level as well as from a larger regional perspective. Some of the more local monitoring requirements are already being dealt with by individual developer's monitoring programs, however, there are large gaps left with no information. Any monitoring program would include a close association with any existing work currently being conducted by developers in the area where applicable.

8.0 Current Wildlife Corridor Monitoring Programs within the Region

Banff National Park

Parks Canada has been monitoring wildlife corridors in the Bow Valley for several years. Monitoring projects are funded through Parks Canada, Public Works Canada, Employment and Immigration and sponsorships with local agencies/ utilities. Projects are staffed with a mix of paid contractors, students and volunteers.

Parks Canada funds wildlife corridor monitoring between the East Gate and Castle Junction. The Trans-Canada Highway Wildlife Mitigation Project, which monitors wildlife crossings from Kicking Horse Pass to the junction with Highway 40, is funded by Public Works Canada.

Principal contractors sometimes secure additional funding for staff through Employment and Immigration. The Trans-Canada Highway project also sub-contracts work and may accept unsolicited graduate student proposals to round out research. These students often come with their own funding. In these situations, Parks Canada may assist with technical and logistical support. Parks Canada also supplies housing for many of the researchers.

Corridor monitoring projects also benefit from sponsorships from outside agencies (e.g. TransAlta Utilities and the Town of Banff). The nature of corridors means they span many jurisdictions and responsibilities. Therefore, it is to everyone's benefit to have a coordinated approach to corridor monitoring. Sponsors consider the information produced, such as in annual progress reports, to be of immediate value. In fact, these projects have the highest rate of paid positions and sponsorships of park projects as partners see direct benefits (Tom Hurd, pers. comm.).

One in four corridor monitoring project staff are volunteers. Wildlife projects are by far the most popular projects applicants want to work on. Parks Canada does little to solicit volunteers as the park receives many more applications for volunteer positions than they can fill. Potential volunteers usually contact the principal researcher/ contractor directly. Some park staff get their start as volunteers as a way to gain experience with the organization.

Contractors look after recruitment and training of volunteers. Many are university graduates seeking experience. Some go onto post-graduate work in a related field. Park volunteers may receive housing as compensation. Local naturalists participate in Christmas Bird Counts, Spring Species Counts, bird and amphibian surveys. The Banff Townsite Urban Elk study has a volunteer observation form for residents.

Regional Projects

Several regional landscape level research projects examining habitat use, population dynamics and wildlife movement in the Central Rockies Ecosystem are currently underway. Most notable of these are the "East Slopes Grizzly Bear Project" and the "Central Rockies Wolf Ecology Project". Researchers with these projects are willing to share existing data and knowledge of wildlife activity in Bow Valley. In addition these researchers are willing to work with BCEAG or its member agencies to look at options for corridor and valley specific research related to habitat use and wildlife movement.

The practicality of this type of research at the micro (valley) scale is questionable because carnivores tend to be wide ranging species with large home ranges and relatively low population numbers. The estimated cost to monitor one Grizzly Bear (Mike Gibeau, pers. comm.) would be between $5000.00 and $10,000.00 per year. In addition, it would cost an average of $3000.00 to capture and collar a single bear. Furthermore, due to the small amount of time that these wide-ranging carnivores might spend in the Bow Valley, the time and effort spent capturing and monitoring carnivores may provide little valuable localized information. The best use of these research projects is likely to incorporate existing data and knowledge from these projects with additional research specifically designed to gather data related to habitat use and wildlife movement in the valley.

9.0 Monitoring Options

All projects are ranked from highest priority to lowest as provided by BCEAG. All projects are recommendations based on the availability of funding. Where applicable, it is assumed that the projects listed below will be valley-wide in scope and commence as soon as feasibly possible.

PROJECT AND RANK (#)	ADVANTAGES	DISADVANTAGES	ESTIMATED COST	RECOMMENDATIONS
1. Wildlife Underpass Monitoring Only	• addresses commitment for underpass monitoring	• no information would be collected to address other questions on corridor viability, human use of trails, and impacts of habitat modification	$15,000/year for 3 years.	AENV has committed to this project and the study is now underway. Recommendation: AENV should continue to provide necessary funding and/or resources.
2. Development of a Standardized Monitoring Methodology for the Bow Valley - May require some kind of legislative ability to require developers to potentially alter existing programs.	• standardized methodology would permit better comparison of results between areas. • requirements for monitoring could be clearly relayed to future developers; • bring together local wildlife experts to discuss monitoring methodologies.	• inability to adequately assess monitoring results between areas; • no data on effectiveness of corridors, highway mitigation strategy, wildlife program or human use of trail recommendations	$3000.	The TOC should take the lead role in this initiative and host a workshop in February 2000. Recommendation: TOC should provide necessary funding. The Biosphere Institute could be approached to provide logistical support.

PROJECT AND RANK (#)	ADVANTAGES	DISADVANTAGES	ESTIMATED COST	RECOMMENDATIONS
3. Monitor Status of Specific Wildlife Populations - Develop and implement an annual rotation system of aerial and ground surveys to establish population trends for species of concerns (e.g., elk and bighorn sheep). If any of the wildlife corridor monitoring programs are implemented, trend information on the status of other species could be collected at the same time through the use of a standardized methodology.	• would provide information on status and distribution of sheep and elk populations in the valley; • would provide a measure of how well various programs to maintain viable sheep and elk populations have worked; • would provide better information on which to manage hunting pressure on two important big game species.	• no information would be available on effectiveness of valley wide corridors, local corridors, wildfire modification program, human use compliance with trail recommendations, highway mortality mitigation project, or standardized methodology for monitoring corridors; • lack of current information on the status of two important big game species with which to make better management recommendations.	$5,000/year on an annual basis.	AENV should take the lead role in this annual initiative. Recommendation: AENV should provide necessary funding and/or resources.
***4A. Monitor Wildlife Usage of Portions of Wildlife Corridors** - This process would require heavy manpower input. This proposal could focus on portions of corridors where no information is currently being gathered by respective developers. (e.g., Canmore Nordic Centre, Harvie Heights, Alpine Club).	• some information would be collected on viability of some corridors; • reduced cost; • some information could be gathered on human use issues.	• no information on the effectiveness of the wildlife underpass; • no information on the viability of the corridors from a regional perspective; • based on poorer research techniques with results that may be open to interpretation; • no information on the impacts of wildfire modification.	$50,000 - $75,000/year for 3 years.	AENV should take the lead role in this initiative. Recommendation: AENV (with possibly support from AAFRD) should provide necessary funding and/or resources. BNP may be able to contribute by marginally extending the study area for some of its current research, in particular the elk study. Industrial users could be contacted for funding of wildlife studies for areas that they may impact.
***4B. Monitor Wildlife Movement Through the Canmore Valley** - This monitoring would entail capturing, radiocollaring, and monitoring of several individuals of each key species of concern and would to document valley wide movements on a larger scale. It would determine whether individual species were still able to move through and across the valley.	• would provide information on valley wide movements to document effectiveness of wildlife corridors.	• no detailed information on a corridor specific basis would be available; • no data collected on highway mitigation project, wildfire project, human use compliance with trail recommendations, or elk and sheep population monitoring • development within the valley is not complete and any evaluation of movements based on radiotelemetry would have to consider this.	$50,000 - $65,000/yr for 3 years.	AENV should take the lead role in this initiative. Recommendation: AENV should provide necessary funding and/or resources. BNP may be able to contribute by marginally extending the study area for some of its current research.

PROJECT AND RANK (#)	ADVANTAGES	DISADVANTAGES	ESTIMATED COST	RECOMMENDATIONS
***4C. Human Use Monitoring of Trail Recommendations** - Would require contracting out but could utilize volunteers is some capacity under the supervision of contractor. Trails for monitoring would require prioritizing to identify specific areas to focus monitoring.	• ability to provide feedback to the public; • ability to correlate wildlife usage with compliance/non-compliance of trail recommendations; • collect data to allow for adaptive management of future trail recommendations.	• no information on corridor usage, highway mortality mitigation strategy, wildfire modification program, or elk/sheep population status data.	$25,000 - $30,000/year for 3 years.	The TOC should take the lead role in this initiative (with negotiated financial support from the MD). Recommendation: The TOC should provide the bulk of necessary funding and/or resources with the MD providing nominal financial resources. The Biosphere Institute could be approached to provide volunteer coordination.
5. Monitor Wildfire Modification Project	• would collect good information on the impacts of modification to a variety of wildlife species.	• no information on the effectiveness of the wildlife underpass; • no information on the viability of the corridors from a regional perspective.	$30,000-$50,000/year for three years.	AENV should take the lead role in this initiative. Recommendation: AENV should provide necessary funding and/or resources. BNP may be able to contribute by marginally extending the study area for some of its current research.

* 4A, 4B and 4C are intended to be implemented concurrently.

10.0 Granting Organizations

Most funding organizations do not provide more than $50,000 to $60,000. Many of the grants are for $10,000 or less. The application and approval process for such grants is typically very onerous and time intensive. Most of these require a non-profit association to apply and administer the grants.

Alberta Sport, Recreation, Parks, and Wildlife Foundation
New Provincial Building
Suite B3, 5030 - 50 Street
Olds, AB
T4H 1S1

Friends of the Environment Foundation
Canada Trust
161 Bay Street, 33rd Floor
Toronto, Ontario
M5J 2T2

Shell Environmental Fund
4th Ave. S.W.
P.O. Box 100, Station M
Calgary, AB
T2P 2H

Kananaskis Country Park Venture Fund
200-800 Railway Ave.
Canmore, AB
T1W 1P1

Alberta Ecotrust Foundation
102, 725 Twelfth Ave. S.W.
Calgary, AB
T2R 0H9

Alberta Conservation Association
Box 40027
Baker Centre Postal Outlet
Edmonton, AB
T5J 4M9

Wildlife Habitat Canada
7 Hinton Ave. N.
Suite 200
Ottawa, Ontario
K1Y 4P1

Western Canada Wilderness Committee
Alberta Chapter
310, 10168 - 100A Street
Edmonton, AB
T5J 0R6
e-mail: wcwcab@apc.org

11.0 Potential Field Support, Temporary Staffing Options and/or General Assistance

University of Calgary
Environmental Science Program
Honor's Thesis or Group Projects
Faculty of Science

University of Calgary
Environmental Science Program
Master's Projects or Group Projects
Faculty of Environmental Design

University of Calgary
Kananaskis Field Station
Master and Doctorate Studies
Barrier Lake, Kananaskis Country

University of Alberta
Faculty of Science

Employment Canada
Temporary Work/Experience Programs

Quebec Work Exchange Program
Government of Quebec

User Groups and Interested Individuals
Local Volunteers

12.0 Related Reference Sources

For further reading, the following is a compilation of reference materials related to wildlife and human use within the Bow Valley.

Banff – Bow Valley Task Force. 1996. Banff- Bow Valley at the Crossroads. Technical Report of the Banff – Bow Valley Task Force. Robert Page, Banff – Bow Valley Task Force, Parks Canada, Banff, AB.

Banff National Park. 1992. The Preservation of Wildlife Populations in the Bow Valley, Alberta. A Banff National Park Proposal to Neighbouring Municipalities. 26pp.

Balagus, P. 1997. Monitoring of Wildlife Movement and Habitat Use in the Vicinity of Eagle Terrace Development. Axys Environmental Consulting Ltd.

Bow Corridor Ecosystem Advisory Group. 1999. Guidelines for Human Use Within Wildlife Corridors and Habitat Patches in the Bow Valley (Banff National Park to Seebe). Prepared jointly by Municipal District of Bighorn, Town of Canmore, Banff National Park, Government of Alberta, Canmore, AB. 21pp.

Bow Corridor Ecosystem Advisory Group. 1998. Wildlife Corridor and Habitat Patch Guidelines for the Bow Valley. Prepared jointly by Alberta Agriculture, Food and Rural Development, Alberta Environmental Protection, Banff National Park, Town of Canmore and Municipal District of Bighorn. 33pp.

Eastern Slopes Grizzly Bear Project. 1998. Grizzly Bear Population and Habitat Status in Kananaskis Country, Alberta: A Report to the Department of Environment Protection, Natural Resources Service, Alberta. Prepared by the Eastern Slopes Grizzly Bear Project, University of Calgary, Calgary, Alberta.

Ecology Base Research. 1994. Large Carnivore Movement Around the Town of Banff: Progress Report.

Gibeau, M.L. and Heuer, K. 1996. Effects of Transportation Corridors on Large Carnivores in the Bow River Valley, Alberta.

Green, Jeffrey. 1996. Ecological Outlooks Project: Cumulative Effects Assessment and Futures. Banff – Bow Valley Study, Parks Canada, Banff, AB.

Hebb, Andrea. 1999. Recreational Trail Modeling for the Bow Valley In and Around the Town of Canmore, Alberta. Senior Honors Thesis, Department of Geography, Faculty of Environmental Studies, University of Waterloo.

Heuer, K. 1995. Wildlife Corridors Around Developed Areas of Banff National Park. Parks Canada.

Heuer, K., Wierzchowski, J., and Duke, D. 1997. What Makes a Good Corridor? Four Winters of Wildlife Corridor Research in Banff National Park. Parks Canada.

Jorgenson, J. 1991. Partial Survey of Elk Winter Ranges Along the Eastern Slopes of Alberta; Bow River to Highwood River. Alberta Environment.

Paquet, P., Callaghan, C., and McTavish, C., 1996. The Effects of Human Influence on Wolves in the Bow River Valley of Banff National Park, Alberta.

Paquet, P., Gibeau, M.L., Herrero, S., Jorgenson, J. and J. Green. 1994 Wildlife Corridors in the Bow River Valley, Alberta. A Strategy for maintaining well-distributed, viable populations of wildlife. A report to the Wildlife Corridor Task Force. 37pp.

Appendices

Appendix 1 Definitions

Habitat Patch
Habitat patches are areas of land linked together by wildlife corridors. Habitat patches are generally large in area and meet a wider spectrum of habitat requirements (e.g. feeding, breeding, thermal regulation, security, resting) for species expected to live in the valley.

Wildlife Corridor
Wildlife corridors area areas of land designed to provide connectivity among habitat patches. Wildlife corridors are generally not designed to fulfil any of the requirements of habitat patches other than some elements of security without which animals would not use them.

Appendix 2 Acknowledgements

These guidelines were prepared with the help and assistance of many individuals from the Municipal District of Bighorn, Town of Canmore, Alberta Environment, Alberta Agriculture, Food and Rural Development and Banff National Park. Members of the Education, Monitoring and Implementation Working Group included Rob Wolfe (Project Management), Dales Judd, Jon Jorgenson, Greg McAndrews, Steve Donelon, Joel Christensen, Heather Dempsey and Ron Baker.