



# Time for Nature



## Modeling human behaviour

### The Human Use Simulation Project at Banff National Park of Canada

At Banff National Park of Canada, researchers are using a computer model to see how people, traffic and wildlife interact along the park's Bow Valley Parkway. This case study aims to give park managers an innovative tool to examine the impacts of visitor movements and make the best choices to protect the environment. This is especially important for the Bow Valley Parkway because of high traffic volumes, potential of disruptions during the planned twinning of the adjacent Trans-Canada Highway, and the relatively high mortality rate of wildlife along transportation corridors.

## Looking to the computer for answers

Industry and government have used human use simulation widely but rarely if ever to analyse human activity as it relates to ecological integrity. The Human Use Simulation Project: Bow Valley Parkway Case Study aims to bridge this knowledge gap.

## A two-part model

The computer model has two main components, a geographic information system (GIS) and artificial intelligence (AI). A GIS is a computer tool that can analyse natural resource data and prepare maps for land use planning. For the Bow Valley Parkway project, the model uses GIS to create a virtual landscape, with road networks, trails, facilities, and wildlife moving throughout.

AI is the technology of making intelligent computer programs. This includes programming computers to make decisions in real-life situations, in this case, to imitate the travel patterns of visitors.

## Here's how it works



The Bow Valley in Banff National Park is important for people and wildlife. © Parks Canada, Bicknell, J., 1995.



Parks Canada is examining visitor movements along the Bow Valley Parkway to manage human use of the park and protect the environment. © Parks Canada, McCloskey, P., 1982.



This computer model looks at where and when visitors travel through a certain landscape, on a highway for example, and links this with wildlife travel patterns. The idea is to look at areas where there may be conflicts between visitors and wildlife or among visitors themselves.

## Making forecasts

The model helps managers better understand what is currently happening in the landscape by producing visual computer images and other data. The model will assist in examining visitor and wildlife interactions, as well as the effects on the experiences that visitors have on the Parkway and the impact various traffic flows on the behaviour of wildlife. Managers can also test different options such as opening or closing facilities and re-routing roads or trails to see what these changes could mean for the park.



The human use simulation model helps managers better understand what is currently happening in the landscape by producing visual computer images and other data. © Banff National Park, Darrel Zell, 2006.

With this computer tool, the park hopes to answer questions such as: What is the optimal traffic flow or pattern to reduce vehicle-wildlife conflicts on the Bow Valley Parkway? What will be the demand on visitor facilities, such as interpretive displays, parking lots, lookouts and trails, in the next few years?

## How will the results be used?

The Bow Valley Parkway Project promises to provide a new tool for managers who must balance human use of the park with the need to maintain its ecological integrity.

For more information visit [www.pc.gc.ca/banff](http://www.pc.gc.ca/banff)