Foothills Model Forest Tour Package

Introduction

This tour package is intended to *guide* the planning and delivery of guided tours through the Foothills Model Forest. It provides **3 options** for standard tours - a half day tour south of Hinton, a half day tour near the town of Jasper and a full day tour which combines the two half day tours. Stops can be added or deleted or the tour routes altered for different circumstances. **These packages should be updated as information changes and as stops are added or deleted based on changing circumstances (e.g. new prescribed burn sites, new research projects etc.)**

Whether delivered in Jasper National Park or within Weldwood's FMA area, the package is designed to facilitate a Foothills Model Forest tour, therefore every effort should be made to place the messages/stops within the context of the larger model forest.

Included in this package are recommendations for props, activities and alternative stops or tours that could be incorporated into future model forest tours. The more this tour can be modified to make it as participatory as possible, the greater success you will have in engaging participants and providing a high quality, memorable experience.

The tour package is aimed at a general audience in order to facilitate its use as a baseline tour for as wide a range of audiences as possible.

Contents of the Tour Package

Key message package - *a general guide to help plan tours or other Foothills Model Forest communication efforts. Regardless of the nature of a group or tour route chosen, as many of these key messages as possible should be delivered.*

Tour handouts - *These are general handouts that provide additional information for participants; they do not necessarily relate to specific stops participants will be seeing along the route. They are intended to provide the basic information or to reinforce key messages.*

Overview of the 3 standard tours - *a summary of the routes and stops for the three basic tours, including:*
Tour 1- Hinton area ½ day tour
Tour 2 - Jasper National Park ½ day tour
Tour 3 - Full day Jasper/Hinton tour

Detailed stop packages - *these include the following information for guides for each of the standard stops listed in the tours:*

> **Time** - *time allotted for each stop is suggested. A range is given to account for flexibility needed depending on timing, total tour length, weather etc.*
> **Location** - *in some cases options are given if more than 1 suitable stop exists along the route*
> **Special Considerations** - *anything noteworthy about a particular site*
> **Purpose** - *a few key points about what each stop should be trying to achieve*
> **Key messages** - *some of the key messages that should be delivered at each stop*
> **Sample text** - *this is designed only to serve as a* ***general guideline*** *to help the guides, the success of any tour will depend largely on a guide's ability to customize the tour, add more in-depth material, field questions and personalize the tour through their own delivery style*

Recommended list of props - *these could be acquired over time and placed in a ready-to-go Rubbermaid container for convenient and easy access at all times. One kit should be prepared for Hinton-based tours, one for Jasper-based tours.*

Alternative themes, stops and tours - *some suggestions on some other approaches or tours that could be incorporated as time/resources permit for groups requiring more customized tours.*

Foothills Model Forest

Tour Package #1

- Hinton Area Tour -

Hinton Area Tour - Message Package

1. Model forests represent important initiatives aimed at improving our understanding and management of forest ecosystems:

- The Model Forest Program was initiated as part of the Federal Government's Green Plan commitment to improving our understanding of sustainable development practices
- The purpose of the Model Forest Network is to provide an exchange of ideas and research into issues facing the long-term management of our forest landscapes
- Model forests are places where local, community voices will be used to identify issues facing our forests and to offer possible solutions
- The model forest does not have any legislated land management authority and therefore relies on its sponsors to implement results achieved within the model forest research program
- There are 11 model forests in Canada, representing the major forest regions
- The Model Forest network also includes model forests in the United States, Russia, Mexico and Chile

2. The Foothills Model Forest represents Alberta's contribution to the Model Forest Network:

- The Foothills Model Forest is the largest model forest in the world; it is over 27 500 square km, covering a vast tract of boreal, subalpine and montane forests in the central Canadian Rocky mountains and foothills.
- The Foothills Model Forest includes Weldwood of Canada's Forest Management Agreement area, Jasper National Park, William A. Switzer Provincial Park, the Willmore Wilderness Area and surrounding provincial crown land
- The Foothills Model Forest is represented by a non-profit organization which includes sponsorship from a number of sources. The main sponsors include Weldwood of Canada Ltd., Jasper National Park, Canadian Forest Service, and Alberta Environmental Protection.
- The Foothills Model Forest has over 40 partners who represent varied interests in the forest landscape. A key goal of the model forest is to bring together different partners to exchange ideas, information, concerns and solutions.
- The mission of the Foothills Model Forest is formally defined as follows: *We are a unique community of partners dedicated to providing practical solutions for stewardship and sustainability of our forest lands.*

3. **Weldwood of Canada Ltd. is one of the main sponsors of the Foothills Model Forest:**

- Nearly half of the Foothills Model Forest is made up of Weldwood's Forest Management Agreement Area to the north and south of Hinton
- Weldwood contributes resource information, research data, and resources towards the Foothills Model Forest program; they also provide an on-going opportunity to learn from and study an actively managed forest
- Weldwood is applying the research results and solutions proposed by the model forest to improve their management of forest resources

4. **The forest lands within Weldwood's Forest Management Agreement Area are managed primarily for sustainable timber resource extraction. An important goal of the Foothills Model Forest is learning how to sustain resource extractive industries without impairing other forest values. Some of the specific issues include:**

- Sustaining biodiversity in the landscape
- Maintaining a mosaic of different ages and types of forest habitat
- Protecting aquatic ecosystems
- Providing opportunities for outdoor recreation
- Protecting cultural and historical values
- Learning how disturbance processes like fire effect the landscape and how logging activities might better approximate the natural role of fire
- Understanding the importance of socio-economic values

Hinton Area Half-Day Tour Summary

This tour travels through Weldwood's Forest Management Agreement Area south of Hinton. The tour provides an overview of the Foothills Model Forest within the context of an actively managed forest. Wherever possible issues should be compared or contrasted to issues facing Jasper National Park.

Time: ½ day (2-4 hours)

Route Options

1) Head south along Highway 40, turn left along the Gregg River road, loops back through T road to Highway 40 and back to the school in Hinton. *This option avoids the logging traffic and dust associated with the Robb Road. This is the option that the package is modeled after.*

2) A loop trip - south along the Robb Road logging road, turning right onto the Gregg River road, doubling back along the Gregg River road and down the T road, finishing the trip along Highway 40 heading back to Hinton.

Overview of Stops

Number	Time	Themes
1	10-30 min.	Introduction to the Model Forest and tour
2	15-30 min.	Wildlife issues - research, corridors, habitat needs
3	15 min.	Fire - natural role, controlled burns, fire and logging
4	30-60 min.	Gregg Cabin - history, recreation values, fire stand history
5	30-60 min.	Aquatic issues, riparian habitats
6	15-30 min.	Late succession forests
7	15-30 min.	Clearcutting issues
8	15-30 min.	The future of forestry

Stop #1: Introduction to the Foothills Model Forest

Time: 10-30 minutes

Purpose: Provide an introduction/overview of the Foothills Model Forest
Place the tour in the context of the model forest
Provide an introduction to the tour itself

Location Options:

1) *Indoors* - use the introductory slide show to provide an overview of the model forest network and the Foothills Model Forest. *(A good option in inclement weather for groups that have more time available).*

2) *Outside locations* - this would vary depending on the route of the tour and the origin of the group. Possible locations include:

A) *Seabolt Estates Road Pull Out* (7.7 km from the school; 2.3 km south of the Yellowhead Highway along Highway 40) - for groups leaving from the school or arriving from Jasper.

B) Outside the Forestry School - for any groups originating from the school, this is an easy option which allows you to set the stage before embarking on the tour.

Messages/Topics:

- What is a model forest?
- The model forest network
- Size, location, land base of the Foothills Model Forest
- The main sponsors and role of their involvement in the model forest
- The role of partners in the model forest
- Overview of the broad themes/issues of concern for the model forest
- Introduction to the forests surrounding the tour
- Overview of the tour

Props/Materials:

Slide tray & projector (for indoor option)
Map showing the extent/scale of Foothills Model Forest
Introduction to the Foothills Model Forest handouts (could be distributed at the end of the day)

Sample Text: Stop # 1- *Introduction to the Foothills Model Forest*

Welcome to the Foothills Model Forest tour. Before we head out on the tour I want to take a few minutes to introduce the Model Forest and today's tour.

The Foothills Model Forest is one of 11 model forests found across Canada, representing the major forest regions found within Canada. The model forest program was initiated as part of the Federal Government's Green Plan Commitment to promoting a greater understanding of sustainable development issues. The program now extends beyond Canada and includes model forests in the United States, Mexico, Russia and Chile.

Model forests are essentially giant laboratories where research and consultation with various partners is being used to improve how we manage our forests. Here in the Foothills Model Forest dozens of research projects may be going on at a given time. The ultimate goal is to help us gain a better understanding of what sustainable development actually means and develop strategies for achieving sustainable development in our forests, both economical and ecological sustainability.

The Foothills Model Forest is the largest model forest in the world. It is over 27 500 square kilometres - making the model forest about half the size of Nova Scotia, or roughly the same size as the state of Vermont or the country of Belgium. The model forest includes all of Weldwood of Canada Ltd.'s Forest Management Agreement Area, Jasper National Park, William A. Switzer Provincial Park, the Willmore Wilderness Area and surrounding provincial crown land.

The Foothills Model Forest is managed by a non-profit organization. The major sponsors include Weldwood of Canada Ltd., Jasper National Park, the Canadian Forest Service and Alberta Environmental Protection.

A major component of the model forest is working with various partners that have a vested interest in how we manage our forests. Over 40 different partners are involved, representing a range of different issues, interests and expertise. They include local communities, environmental organizations, outdoor recreation groups, fish and wildlife associations, the academic community, educators, socio-economic and tourism interests, the forestry, mining, oil and gas community.

The Foothills Model Forest includes boreal forest, subalpine forests on the slopes of the Rockies and open montane forests in the valley bottoms. We will be driving through boreal forest today, part of the largest forest region in Canada. The boreal forest accounts for roughly half the size of the Foothills Model Forest, and is where most of the resource extraction industries take place. The main trees you'll be seeing include lodgepole pine, white spruce and trembling aspen.

This particular leg of the tour will take us through Weldwood's Forest Management Agreement Area, an area where logging has been taking place for more than 40 years. Today's tour is designed to give you a snapshot of the range of issues facing our forests, not only here, but across Canada - issues that the model forest is working towards finding new solutions to. Because of the vast size of the Foothills Model Forest, we are of course, only going to see a very small part of the model forest. The stops are designed, however, to give you a sense of the broader landscape and issues being studied across the entire model forest.

Logistics (will vary depending on tour option)

We'll be making about 8 stops today. The times at each stop will vary anywhere from 10 minutes right up to half an hour or more. We will be going for a few short walks during some of the stops to give you a chance to stretch your legs and experience the forest first hand.

Today is the perfect opportunity to ask questions and dive into discussions about some of the issues we are facing, so please be prepared to get involved as much as possible.

Encourage Participation

Set up the first leg of the tour by giving participants things to look for as they drive so they are more actively involved. For example, have them look for different types of disturbance they see in the forest, or notice different stand ages/forest types, different human-induced impacts or different values/uses of the forest they can see along the route. Along this loop of the tour south of Hinton, people will notice a decline in the amount of trembling aspen as you climb to higher elevations - another possible feature to highlight. The ridge where the historic Bighorn Trail is another feature worth highlighting. Another means of encouraging participation and observations would be to produce easily read tour maps highlighting the stand age or time since clearcut of different forests.

Stop #2: Living With Wildlife

Time: 15-30 minutes

Location: Junction of Highway 40 with the Gregg River road, 29 km south of Highway 16
The stop is intended to make use of the open views to the west, to give people a sense of scale and the interconnectedness of the landscape between Jasper National Park and the FMA area.

Purpose: To provide a general overview of the wildlife species found within the model forest
To introduce the idea that forest management is more than just managing trees
To introduce some of the key wildlife related issues and research projects within the Foothills Model Forest

Messages:

- The Foothills Model Forest provides habitat for 284 terrestrial vertebrate species and 25 species of fish; including 59 mammal species, notable large mammals include: white-tailed and mule deer, elk, moose, woodland caribou, bighorn sheep, mountain goat, cougar, lynx, wolves, coyotes, wolverines, black and grizzly bears
- The close proximity of different habitats (montane, boreal, subalpine, wetlands etc.) creates high species diversity; 96% of Alberta's forest-dwelling species are found within the model forest
- One of the key issues facing both forest and park managers is understanding the needs of wildlife and managing human activities to conserve biodiversity
- Within active logging areas like Weldwood's Forest Management Agreement Area, we are learning how harvesting, road building and reforestation practices effect wildlife habitat and movement
- Within Jasper National Park, managers are struggling with how to maintain viable wildlife habitat and access to habitat via wildlife corridors within the Athabasca Valley and across park boundaries into provincial lands
- Within Jasper, managers are also struggling with the need to maintain a "natural" landscape based on historic biodiversity levels, while still protecting tourism values and properties from natural influences such as fire
- Because wildlife, particularly species like woodland caribou or carnivores such as grizzlies or wolves, travel enormous distances and do not recognize arbitrary land boundaries (like national park borders), they illustrate the need to manage the landscape on a large ecosystem-based scale.
- A key research project in the model forest is a study which will look at grizzly bear movements, to determine how various land uses such as forestry operations, mines, tourism or recreational facilities effect their movements and habitat needs

Props: GIS aerials showing passes and patches of key habitat or the need for maintaining corridors in the Athabasca Valley
GIS map showing home ranges/migratory routes of key species like woodland caribou
Grizzly bear, woodland caribou, long-toed salamander and pileated woodpecker photos
Woodpecker radio-transmitter

Sample Text: Stop #2 - *Living With Wildlife*

Of course we all know there's more than just trees to a forest. Forests provide a myriad of different habitats for wildlife species - in fact, the majority of Canada's wildlife species make their homes in some kind of forest habitat.

With its large size and combination of boreal, montane, and subalpine forests, wetlands, open grasslands and alpine meadows all in relatively close proximity to one another, it's no wonder that the Foothills Model Forest is home to large diversity of species. 284 terrestrial vertebrate species have been recorded here, including 59 mammal species. In fact, 96% of Alberta's forest-dwelling species have been recorded here in the model forest.

Some of the larger mammals include ungulates like elk, moose, woodland caribou, mule and white-tailed deer, mountain goats and bighorn sheep. We have a chance of seeing elk, moose or deer today so keep your eyes peeled. Large carnivores within the model forest include wolves, coyotes, cougars, lynx, wolverines, grizzly and black bears.

Our ultimate goal in the model forest is to learn more about the wildlife species living here and to find solutions to conserving the biodiversity of the area while sustaining other economically and socially important activities in the forest.

One research project in the model forest will be looking into the requirements and use patterns of some of these large carnivores, particularly grizzly bears. Carnivores are of special interest to us because they tend to be more wary of human activity and travel extremely large distances. Some grizzlies, for example, may have home ranges over 1,000 square kilometres. As well, wildlife seem to have a poor time reading maps or recognizing park boundaries. If you look to the mountain passes to the west here, it's pretty hard to see where Jasper National Park might begin and where the Forest Management Agreement Area ends. It's also easy to that see that, because of the steep terrain in the Rockies, the wildlife are highly dependent on certain passes and valleys for travel. Part of this grizzly study will be trying to identify where some of these travel corridors might be located and how activities like mining, recreation and forestry affect the movements and habitat needs of grizzly bears.

Incidentally, one of the interesting things that working together with different land agencies provides is a new perspective on issues, sometimes a surprising one. In the past, most people thought protected areas like Jasper National Park provided a safe sanctuary for animals like grizzlies, and that when they left the safe confines of the park, only *then* would their lives be threatened. We've discovered in recent years however, that Jasper is not necessarily the safe sanctuary we thought. Highway and railway mortality, and increasing pressure from tourism activities and development within Jasper all take a toll on grizzly populations. Conversely, there are more grizzlies living outside the park boundaries than we may have at one time suspected.

The grizzly is a perfect example as to why we need to look at larger landscapes and work cooperatively together with other land agencies when making land management decisions. The grizzly is also a key study animal because it is an "umbrella species" - if conditions allow for a healthy population of grizzlies, then we also maintain viable habitat for a number of other wildlife species with lesser habitat requirements than grizzlies.

In the model forest we've looked at how resource activities affect the habitat needs and movement of ungulates like moose and elk. Of particular interest is the woodland caribou. Woodland caribou, the larger southern counterpart of the barren ground caribou, are found in Jasper and the northern part of the Forest Management Agreement Area. They migrate out of Jasper in the winter, so they represent a good chance to look at larger landscape issues. Moreover, the caribou are associated with mature forests which are home to abundant lichen, their main winter food. Studying caribou movements, their habitat needs and the relationship between lichen, mature forests and logging will help us gain a better understanding of how resource activities might impact caribou and what we can do to conserve caribou habitat. Weldwood already places certain limits on logging to safeguard caribou habitat.

It's not just the big, charismatic animals like grizzlies or caribou that garner our attention here. One species of interest to us is the long-toed salamander. These small amphibians were formerly "red listed" in Alberta, an indication that their Alberta population was in serious trouble. After a graduate student discovered thousands of them within a 30 km range of Hinton, the species status was upgraded to a yellow status, indicating a sensitive species *not* a risk.

Understanding more about the habitat needs and impacts of logging on birds attracts our attention here as well. One species of particular interest has been the pileated woodpecker, the largest North American woodpecker. These birds excavate nest cavities in large trees and forage mainly in dead wood in search of forest insects, particularly carpenter ants. The cavities they excavate provide homes for other birds and mammals such as martens.

Since pileated woodpeckers depend on dead wood so much, and since actively managed forests tend to be younger and have less dead wood, we are interested in learning more about just what their habitat requirements are and what impact forestry practices have on them.

These are just a few of the model forest research programs looking at wildlife. In addition to protecting wildlife for their own intrinsic value, we also have to consider other wildlife related interests like hunting and wildlife watching activities, which bring their own particular pressures, value judgements and socio-economic impacts to the table. What, for example, is the value generated in the local economy by wildlife watchers traveling to the area? We know that activities like wildlife watching, nature appreciation and ecotourism are growing activities, and with Jasper National Park only minutes away, neighbouring communities like Hinton are certainly going to be increasingly affected in one way or another. So even when we try to isolate just one component of the forest, like wildlife, we need to remember the inter-connectedness of

everything and the balancing act required to meet different interests while sustaining healthy and diverse wildlife populations.

As we travel the rest of the tour today, keep in mind some of the wildlife we talked about and the different needs each particular animals has. No two animals have the same needs when it comes to shelter, food and cover. Caribou prefer old, more mature forests, grizzlies and deer prefer younger aged forests. Moreover, any given species may have different habitat needs during different times of the day or year. Elk may graze in open areas, but still need the protective cover of closed forests for shelter from weather and protection from predators.

So as you look at the terrain, the different ages of forest stands, and types of habitat we'll be driving by, imagine which habitat would support which wildlife. What animals might actually benefit from a clearcut, which might be negatively impacted? Which animals would seek out closed, mature forests? Which would be more at home in open meadows or wetland areas? What needs can be met for a deer in a young forest and what would deer seek out in an older, more closed forest?

We'll carry on now with the tour and have a look at one of the biggest factors that effect both our forests and our wildlife, something directly related to the questions just posed.

Stop #3: 1997 Gregg River Burn - Fire in the Landscape

Time: 15 minutes

Location: 3.0 km (from the junction with Hwy 40) along the Gregg River road

Purpose: To introduce the issue of fire in the landscape
To provide an opportunity to view the most recent burn visible on the tour
To encourage people to observe characteristics of fire behaviour

Messages:

- Fire is a natural and important part of the forest ecosystem
- Fire creates a mosaic of different aged stands within the forest; this mosaic is essential for providing a diversity of habitats for wildlife and maintaining biodiversity
- Humans play a role in the landscape both by starting wildfires and through suppression of natural fires; both have an impact on the forest ecosystem
- One of the key roles of the model forest will be to learn more about the role of fire in the landscape; in Jasper National Park small prescribed burns are reintroducing fire to recreate the beneficial role fires play; in the Forest Management Agreement Area research is looking at the similarities and differences between fire and logging to learn how we can better approximate the beneficial role of fires

Props:

Map showing extent of the 1997 Gregg River burn
GIS map showing distribution of lightning caused fires in the model forest
GIS map showing change in forest ages, shift from older to younger forests in the FMF
Historic photos of Athabasca Valley vs. present day photos to show changes in landscape

Sample Text: Stop #3 - *1997 Gregg River Burn - Fire in the Landscape*

Looking at the slopes here you can see where the last large fire occurred in the area. The fire took place in December, 1997, burning over 1,000 hectares of forest. The fire was the result of an escaped brush fire. Interestingly, a large portion of the area burned was previously burned back in 1956.

This fire reminds us of the constant role fire has played in these forests for thousands of years. Many fires are, of course, caused naturally by lightning. In fact, anywhere from 30-50% of all forest fires in Canada are a result of lightning. These forests evolved hand in hand with fire in the ecosystem. Most trees within the Foothills Model Forest are dependent on fire for their reproduction. Trees like the lodgepole pine surrounding us are highly dependent on fires - their cones open up from the heat of a fire, requiring temperatures as high as 50 degrees Celsius to release their seeds. Lodgepole pines are also a sun-loving pioneer tree, so they thrive in the open spaces left behind after a fire has gone through. Likewise, trembling aspen, more common at lower elevations, produce new trees from their root system after a fire has passed by.

At a larger scale, fires bring diversity to the landscape by opening up areas and creating stands of different ages. Fires also affect the size, shape and species content of forest stands. As you can see looking at this past burn, even large fires rarely burn continuously over the landscape. This fire burned 1000 hectares, but *within* a 4,000 hectare perimeter area, meaning a lot of the forest was left untouched. This is pretty typical - fires tend to burn in patches, producing a mosaic effect of different aged stands.

This takes us back to our wildlife habitat discussion. Since wildlife have different habitat requirements, it makes sense that fire plays a major role in supporting a diverse range of wildlife by creating a diverse mix of forest habitats.

We know that here in the Foothills Model Forest fire has been a frequent visitor through fire stand history studies. In fact, the Weldwood Forest Management Agreement Area was one of the first places in Canada to complete a comprehensive stand history analysis. By examining tree rings and dating fire scars on tree sections, we've determined the age of different forest stands, when the last time a fire passed through and how frequently fire likely passed through the entire landscape. In this area, for example, we know fire burned an average of 2% of the area every year before active fire suppression. In other words, every 10 years, one-fifth of the area would have been burned. Every 50 years, on average, a given forest stand would have been burned. Remember, this is an average, some forests would have been skipped by fire, others may have been burned more frequently, such as recently happened in this valley. The important point to keep in mind is that fire was a natural and integral part of this forest. In fact, at this level of historic burning, each hectare of this forest may have burned 240 times since the last ice retreated 12,000 years ago. *(Refer to map showing distribution of lightning ignited fires)*

Humans also factor into this fire equation in two ways. We start fires and we put them out. Both have potentially serious impacts on the landscape.

Humans have been starting fires for a long time in these forests. Even before Europeans arrived aboriginal peoples started fires by accident and used fire as a management tool - burning areas to promote grasslands valued by some of the wildlife they hunted, to promote the growth of berries and edible plants and to clear travel routes.

When Europeans arrived, they too set many fires - some on purpose to clear the land, but most by accident. Large tracts of forested land here and in Jasper were burned over by some of these fires, changing the landscape and making it harder for us to determine just where the line is between what is natural and what has been altered in some way by human activity. Although lightning caused fires account for the majority of burned lands, we still need to consider the impact of these human started fires.

For most of this century, however, we were taught the mantra of Smokey the Bear and have done an increasingly good job at suppressing all fires, whether they were natural or not. Improvements in technology increased our response time and our ability to put out fires, so fires have had less an impact on the landscape over time.

Only in recent years have we shifted our view of fire. We now know that fire has been a part of the natural ecosystem for thousands of years, and so that by suppressing all fires we are changing the structure of our forests. Suppressing fires results in forests becoming less diverse. In Jasper, grassland areas in the montane zone have declined by 33% over the last century as trees slowly invade them. Likewise, aspen forests and open forests have also declined, while closed forests have increased by as much as 30%.

(Refer to map showing shift in ages of forest) If you look at this map you get a sense of the changes that are taking place. The amount of young forests in the model forest has greatly diminished. Likewise, if you compare these historic photos shot in 1915* of the Athabasca Valley in Jasper with photos taken in 1996*, you can see the impact of years of fire suppression on the forests and grasslands.

We still have to suppress the vast majority of forest fires. In Jasper, there is the threat to tourism facilities, including the town of Jasper itself. Here, a large fire like the Gregg River burn destroys valuable timber resources and plays havoc with long term forest logging plans. Moreover, fire suppression has caused more fuel to build up in the forests, as a result, fires that start today are likely to be more intense than would naturally have occurred if fires had been allowed to burn on a more regular basis.

**If using the Bridgeland photos*

So what can be done then, if we need to maintain the role of fire in this ecosystem? In Jasper National Park, wardens are using prescribed burns to reintroduce fire into the landscape on a very small scale. What they learn in Jasper about fire behaviour and the impacts of fire will be shared with the rest of the model forest to further our understanding about fire in the forest ecosystem.

In the actively managed part of the Foothills Model Forest we can't conduct prescribed burns, but we do have logging. Logging has some similarities to fire - logging increases the diversity of habitats, opening up areas for new forests helping to create the patchwork effect previously created by fires. And since the predominant tree is lodgepole pine, clearcutting is largely used to create conditions suitable for regenerating more lodgepole pine. Cones after logging will open up in the hot sun; the open areas provides the sunlight needed by young pine seedlings and scarification of the soil exposes the mineral soil needed for regeneration by lodgepole pine.

Fire and logging are not the same, however. A major component of the model forest's research is studying the impacts of disturbances like fire, and learning more about how land managers can mimic the role of fire through logging and reforestation as closely as possible. In fact, we'll head to our next stop right now to have a closer look at this hot issue.

Stop #4: Gregg River Cabin - History in the Making

Time: 30 - 60 min.

Location: Gregg River Cabin parking lot, 8.3 km from Hwy 40 junction. Begin at the cabin itself, to deliver the historic and recreation messages. Proceed along the trail to discuss the fire stand history research project.

Purpose: To provide an opportunity for participants to stretch their legs and get a closer look at the forest
To introduce the history of the area
To introduce recreational use issues in the model forest
To learn more about the fire history stand research underway in the model forest

Messages:

- People have depended on these forests for a long time
- Cultural and historical resources are part of the mix of values and issues that must be considered when making forest management decisions
- Recreational use in the forest is another important component that must be managed and balanced with other uses
- By comparing stand structures, we are learning more about how we can mimic the role of fire through forestry practices

Props:*

Historic photos of the Gregg River cabin
Tree sections relevant to the study plots
Increment borer to demonstrate coring procedure (for non-forestry groups)

*This site is also a potential location for a permanent soil pit along the trail built behind the Gregg River cabin, to serve as a demonstration plot to introduce the topic of soils and their influence on land management decisions.

Sample Text: Stop #4 - *History in the Making?*

At the Gregg River Cabin

There's a historic and cultural component to these forests that we cannot overlook.

This cabin is the Gregg River Cabin - a cabin built in 1927 to serve the Dominion Forestry Service. Hinton was the headquarters for the Athabasca Reserve, part of the larger Rocky Mountain Forest Reserve that had been established in 1911 by the Dominion Forestry Service. This was a series of cabins built about one day's horse ride apart along a trail system that stretched throughout the foothills all the way to the U.S. border. The cabins served as shelters for Dominion Forest Rangers while on horseback patrol.

In 1930, this Rocky Mountain Forest reserve was transferred to the government of Alberta and the Alberta Forest Service was born. This site today is maintained in cooperation between Weldwood of Canada Ltd. and the Alberta Land and Forest Service.

Cultural or historic sites like this cabin are an important and often overlooked part of our forest landscapes. We have to consider important sites like this when making any decisions about how we manage our forests and ensure they are properly identified and protected. In Jasper National Park, several historic plaques and sites remind us of the rich history found in the Athabasca Valley.

Another historical feature nearby, which today provides recreational use for local hikers - is the Bighorn Trail, which stretches from here to Hinton along the ridge which seen to the north. This trail is part of a historic native Indian travel route that stretched 120 km south to the North Saskatchewan River and 120 km north to Grande Cache. The trail was restored in the early 1970's by Weldwood and the Hinton Junior Forest Rangers, and today is maintained by Weldwood for recreational use.

Obviously in places like Jasper National Park, Willmore Wilderness Area, or in William Switzer Provincial Park, which is about 20 minutes north of Hinton, recreation is an important forest use. But even here, in an actively managed forest, recreational use will always be part of the mix and must be planned for and managed to maximize its potential without impacting on the landscape. In fact, even though all these forests around us have been logged or burned within recent history, this valley is the busiest valley for camping. Several campgrounds are found within the forest management area and recreational uses like horse back riding, mountain biking, cross country skiing, hunting, fishing and wildlife watching all fit into the equation as well.

The Foothills Model Forest has a major socio-economic research program which examines the economic contribution of a wide range of resource uses, as well as values placed on other resource based activities, for example recreational activities.

Another very specific study looked at impacts horse grazing might be having on forest regeneration. The negative impacts of grazing include trampling of tree seedlings, while the positive impacts includes browsing on competing vegetation. Studies like this highlight the need for coordinated decision making and the need to consider all users when managing our forests.

Speaking of recreational use and history, let's take a little walk through the forest now and have a different look at history in the making.

While walking to the site:

Point out any prominent features along the route. If you are with a non-forestry group, now would be an ideal time to do some species identification of the trees.

At the site along the trail as shown on map:

Here we can see an example of a different kind of history in the making. To the left of the trail, the 1956 Gregg River burn passed through. To the right of the trail stands a forest that originated from fires in the 1880's. By studying the history of forest stands like these, we can learn more about the influence fire has on forest structure. These tree sections will give you an idea of how we determine the age of stands and when a fire might have passed through. *(If you have time and an increment borer, now would be an ideal location to demonstrate this technique for non-forestry audiences).*

30 study plots have been established throughout the Gregg River burn, while another 30 plots have been established in forests that were logged about 25 years ago. Comparing the sites gives us a better sense as to how logging and fire compare at the site level.

So far we have discovered that there is up to 4 times the amount of deadwood on the ground in burned over areas as compared to logged sites, even 40 years after the fire. This serves as an important reminder that although there are similarities between fire and logging, there are still some important differences on the ground that we need to better understand. Further research is required to evaluate the significance of these differences.

And speaking of history in the making, just east of the Gregg River Cabin marks the site of Weldwood's 50 millionth tree - planted on June 8, 1991. The 100 millionth tree will be planted by Weldwood in 1999 - a century after the establishment of the Dominion Forest Service. This area will be used to mark future benchmarks in forest management.

Stop #5 Aquatics Stop - There's Something Fishy Going on Here

Time: 30-60 minutes

Location Options:

1) Along the Tri-Creek Road, off the Gregg River Road, where Antler Creek Crosses the road. *This stop is ideal for stressing the importance of smaller streams, the role of riparian habitats, and for demonstrating electrofishing with a fisheries crew. This stop would only be recommended if an electorfishing demo can be arranged before hand. Buses would have to drop the group off, then travel down the road for several kilometres to turn around.*

2) 2.3 km past the Gregg River cabin, where the Gregg River crosses the road, parking is located on the west side of the bridge, north of the road. *This stop allows more room for parking and for people to spread out more. It's a good option if time is at a premium, being located on the main tour route.*

3) 6.8 km past the Gregg River cabin, at the trail along river next to a section of forest that has been partially logged. *Good stop for a pleasant walk, can talk about riparian issues, alternative logging systems and aquatic and wildlife habitat issues.*

4) Gregg River/Teepee Creek junction just east of the Gregg River Cabin.

Purpose: To stress the value of aquatic ecosystems
To stress the importance of riparian habitats
To introduce aquatic issues facing forest managers
To show or explain some of the potential impacts of forestry activities on aquatic ecosystems and ways to minimize these impacts

Messages:

- Lakes, rivers and wetlands are a major and valued component of forest ecosystems
- Aquatic ecosystems provide important tourism and recreational resources, provide valuable wildlife habitat and provide clean drinking water
- The Foothills Model Forest is trying to understand more about aquatic resources and to offer ideas on how to mitigate any negative impacts on them due to forestry, tourism activities or developments, and road building

Props:

Electrofishing equipment *(even if no demo can be arranged it could be interesting to show the equipment if it is available)*
Photos or pictures of fish species, particularly Bull trout and Athabasca rainbow

Sample Text: Stop #5 - *There's Something Fishy Going on Here*

Aquatic resources, including lakes, rivers and streams, ponds, marshes or even muskeg forests are another important component of our forests and another area of concern within the Foothills Model Forest. Aquatic resources provide our drinking water, recreational opportunities and habitat for numerous wildlife species. Muskeg forests of black spruce and tamarack are generally too damp to log, but they do provide valuable habitat for animals like moose. Wetlands also provide resting areas for migratory waterfowl and nesting areas for summer residents.

But there's lots going on beneath the surface too. One of the first tasks within the model forest was to take stock of what's swimming in our waters. A fish inventory was conducted - confirming the presence and relative abundance of 25 species of fish, including four sport fish species - Bull trout, Athabasca rainbow, mountain whitefish and arctic grayling.

Note: If there is an electrofishing demonstration, this may the best time to do it

Bull trout, Alberta's official fish, is a species of particular management concern because it's population numbers are very low throughout most of Alberta. Bull trout numbers have declined because of many factors, primarily over-fishing, but also habitat disruption, and competition from introduced non-native fish species. There is also concern about interbreeding between the native bull trout and introduced species like brook trout. Bull trout are slow growers, taking 6-8 years before they reach a suitable size for spawning. To help the population recover, catch and release fishing is only permitted for bull trout.

The Athabasca rainbow is the only rainbow trout species indigenous to this side of the Rocky Mountains. It is found only in the Athabasca River watershed and is the only rainbow trout native to the Arctic watershed. It thrives in cold, clear water making it a good indicator of any changes taking place in our streams, and like the bull trout, grows very slowly. It takes 3-4 years for an Athabasca rainbow to reach maturity. For this reason, size limits offer protection from anglers until the females can reach spawning size.

In addition to knowing what fish are here, we've also learned a little about what their habitat needs are, particularly for spawning, and how far these fish can travel. One tagged mountain whitefish, for example, traveled nearly 300 km, a reminder again of the need to think in terms of large landscapes. One thing that surprises many people is to find out just how small some of the streams are that support fish populations - even small side streams like these can support a substantial population of fish.

A major component of the Foothills Model Forest is looking at the impact of resource activities on wetlands. Harvesting, oil and gas extraction, mining, road building, fire, recreational use and tourism developments can all have an impact on flow regimes, disrupting natural cycles of flooding, disrupting fish movements or impacting the amount of sediment entering a stream.

Also, logging cannot duplicate the chemical and physical changes that come about as a result of high temperatures generated by fires, or the nutrient rich ash layers produced by fires. In Jasper National Park, historic stocking practices of non-native fish, over fishing in some areas, and disruption of natural flood plains and flow regimes have also altered aquatic ecosystems.

A major study garnering national attention in the model forest was the Tri-Creek Watershed project, which compared three separate watersheds to compare the impacts of forestry practices on various aquatic factors. The study ran from 1965-1985, before the model forest was in place, however the model forest is continuing to collect data on the fish populations in these streams.

Another component of aquatics research looks at culverts to make sure they are designed and located in such a way so as not to block any important migratory routes for fish. And remote temperature probes have been placed in creeks to help determine the impact of last year's fire on the streams.

An additional part of studying the aquatic systems is learning more about the riparian zones- the habitat that lines the banks of streams or lakes. Riparian zones tend to have deeper soils and are very rich in nutrients - so they support a diverse range of plants and animals. Beavers, minks and river otters make their homes here. Birds like white crowned sparrows and spotted sandpipers thrive along the river's edge.

Riparian habitat also help protect fish habitat - providing shade during the hot summer months. Downed trees and logs provide shade, cover from predators and moderate the stream current - setting up conditions just right for spawning beds. Stream side vegetation plays an enormous role in influencing the natural water cycle - a single, large leafy tree consumes as much as 1000 litres of water during a hot summer day. Riparian vegetation also reduces sedimentation by intercepting run off water.

Stop #6 - Late Succession Forests

Time: 15-30 minutes

Location Options: To be determined; possibly within the vicinity of the aquatics stop near the partially logged forest.

Purpose: To introduce "old-growth"/late succession forest issues
To stress the importance of older aged forests as wildlife habitat
To provide a contrast to the younger aged stands and recently cut stands participants will be viewing shortly on the tour

Messages:

- "Old growth"/late succession forests here are typified by forests dominated with large trees, large standing snags, canopy gaps, some younger trees and a variety of woody debris - creating a lot of structure within the stands
- Because of the climate and type of species grown here, "old growth" forests in Alberta are substantially younger and smaller than "old growth" forests found in coastal areas
- "Old growth" forests/late succession forests provide important habitat for wildlife such as marten and winter wren

Sample Text: Stop # 6 - *Late Succession Forests*

Often when the general public thinks about older growth forests they imagine towering Red cedars, enormous Douglas-fir trees or even gigantic redwoods large enough to drive a car through.

In Alberta, and specifically here in the boreal forests, however, "old growth" forests don't quite have the same mystique. The shorter growing season and nature of the trees that grow here results in old growth forests that are much smaller than their coastal counterparts. Some trees, for example, the balsam poplar, have a very short life span - reaching maturity at about 80-100 years of age.

This forest is an example of a typical boreal "old growth" forest. The trees around us were skipped by the last major fire in the late 1800's - most trees are at least 200 years old. Some of the black spruce in the model forest have been dated over 360 years, while one white spruce is between 600-700 years old - meaning it first began to grow 200 years before Columbus arrived on the continent.

"Old growth" forests are vulnerable to other types of disturbances, besides fire. High wind storms can lead to large areas of blow down. And various forest pests like tree diseases or bark beetles are also more common in older forests. In actively managed forests, these pests are of concern because of the potential impact they have on valuable timber resources. Fire and logging can reduce infestations by pests by increasing the diversity of forest ages.

"Old growth" forest stands are protected in areas like Jasper National Park or Willmore Wilderness Area. Here, within the Forest Management Agreement Area, location, ecological and economic factors will determine whether or not they are logged to any degree. What will ultimately be important is to maintain the mosaic of different aged stands to meet the needs of as many wildlife species as possible. Research underway in the model forest, like the one examining impacts of forestry on caribou habitat and lichen communities, will help give us a better understanding of the role of these older aged forest stands.

The challenge both in Jasper National Park and Weldwood is to ensure that the *entire range* of age classes, both young and old, is maintained. Elimination of younger age classes due to fire suppression is just as important an issue as the removal of older growth forests. For biodiversity to be maximized we must maintain a natural mosaic of different aged forest stands.

Now that we've seen an example of some of our older forests, let's have a look at the other end of the cycle where forests like this begin.

Stop #7 - Forestry Stop - A Clear Cut Issue?

Time: 15-30 minutes

Location: Along the "T" road, 2.3 km from the junction with the Gregg River road.

Purpose: To introduce some of the larger issues facing the forest industry in pursuit of sustainable development goals
To show people an example of a two pass logging system
To connect forest management decisions back to earlier issues introduced along the tour, such as wildlife habitat, aquatic resources, the role of fire and tourism issues

Messages:

- Many logging operations use a two pass system of harvesting
- There are many alternative types of logging systems, clearcutting is used here for both economic and ecological reasons
- One of the goals of the Foothills Model Forest will be to learn more about how to minimize the impacts of clearcutting on wildlife and aquatic resources, and how clearcutting can approximate the natural disturbance role of fire as much as possible

Props:

Tree cookie sections showing the difference between fire regenerated growth and logging regenerated growth

Sample Text: Stop # 7 - *A Clear Cut Issue?*

Along this portion of the tour we will pass by different aged forest stands, including several areas that have been recently harvested.

Here we are looking at a stand that was harvested in 1983, while behind us is a stand that was logged in 1973. This as a sample of a two pass logging system. The first pass occurred here in 1973, then when the trees reached 2-3 metres in height, high enough to provide moose, deer and elk with some hiding cover, the second pass was done and another block logged. This approach helps maintain an economically viable logging operation while still maintaining diversity in the landscape by creating a patch quilt effect, much like fire does. In the far distance on the slopes to the west you can see where last year's burn took place, reminding us again of the comparisons and contrasts we've been making between the natural role of fire and the impacts of harvesting practices.

Each site harvested in an actively managed forest like this is done using a site by site prescription. Factors such as terrain, tree species, stand structure, wildlife needs, recreational values, soil conditions and proximity to aquatic resources will determine the appropriate size, shape, time of year and methods of harvesting and reforestation. Clearcutting is just one regeneration option available to foresters - others methods include group selection, shelterwood or natural shelterwood. Here in the model forest, the flat terrain, tree species and stand structure dictate that clearcutting is the best method of regeneration available.

Even if the choice is made to use a clear cutting system, there may still be important difference between different cutblocks. In some even-aged harvesting systems you may see large seed trees that have been left standing to help regenerate the cutblock naturally. In others there may be snags or other important wildlife trees left behind for bats, squirrels or nesting cavitity birds.

Here, clearcutting was obviously the logging method of choice. Because lodgepole pine is the species being regrown here and the terrain is relatively level, clearcutting makes both economic and ecological sense for this particular site. Another advantage of cutting a large area like this is that it minimizes road building and reduces the amount of time that logging operators have to be in the area. Planning logging operations like this requires an assessment of all of these trade-offs, including any impacts on the other forest values we've been discussing on the tour.

We are going to head down the road to one more stop to look at a more recent harvested area where we'll conclude the tour.

Stop #8 - The Future of Forestry

Time: 15-30 minutes

Location: Along the "T" road, 3.8 km from the Gregg River road junction, in front of the recent clearcut.

Purpose: To show participants a more recent example of a clearcut
To introduce the chipper residue study as one example of balancing socio-economic goals with ecological values
To demonstrate tree planting techniques (time/resources permitting)
Provide a conclusion and overview for the field trip

Messages:

- A chipper residue study is being done to examine the impacts of remote chipping on regeneration growth and site productivity in cut blocks
- The future of forestry lies in finding answers surrounding sustainable development - how can we maintain an economically viable forestry industry and other resource extractive industries like mining, without impacting our ability to maintain other forest values and resources over the long term

Props:

Samples of tree seedlings and planting equipment to demonstrate planting techniques

Sample Text: Stop #8 - *The Future of Forestry*

This clearcut is more recent than the last one we saw, having been logged in 1995. This site used a remote chipper, a practice that is increasingly common in forestry today. Remote chipping allows better utilization of small diameter wood, wood that may not have previously been economical to harvest and haul to the mill.

With remote chipping, the chipper residue is returned to the site, much like a gardener might return mulch to the soil. Returning this residue to the site reduces or even eliminates the need for burning debris on the site, increases the amount of organic matter in the soil and possibly improves the water storage capacity of the soil. There are possible down sides, however. Woody debris in the short term can act like a nitrogen sink, removing some nitrogen that may be needed by lodgepole pine seedlings. Woody debris can also have an insulating effect, delaying the spring thaw and thereby shortening the summer growing season. Weldwood has a study underway, in conjunction with the Foothills Model Forest, in order to better assess the pros and cons of remote chipping. The study will help us understand the short and long term implications of remote chipping on pine regeneration and site productivity.

This site is also a perfect site to talk about where we've been and have a look down the road towards the future.

If you look to the west you can see trees standing towering above the rest. Those are trees that were missed by the 1956 Gregg River Burn. All the rest of the forest in the background was consumed by that same fire. You can see how quickly these forests have grown back into place, just like other forests have grown back after they were logged. And down at the bottom of slope, just beyond the edges of the clearcut is a wet black spruce forest - a forest that is too small, wet and uneconomical to harvest, but which has great value as wildlife habitat. Again, a reminder of the need to ensure that a diversity of habitats is maintained.

And immediately in front of us is one of the most obvious, dramatic and symbolic impacts humans have on this landscape. Clearcutting is probably one of the most contentious issues facing forestry in Canada. Looking at clearcuts I am reminded of the typical child's response as to where milk comes from - not cows or even a farm, but of course the supermarket. Likewise, wood products do not come from supermarkets, or even the saw mill or pulp mill. *This* is where the wood comes from that we use and depend on every day in our lives. The paper we write on, the pencils we write with, the chair we sit on and the houses we live in all start here. And it is here, in the forest, on the ground, where we will need to learn to manage forests in a sustainable fashion.

Many of the issues revolving around clearcutting involve simple aesthetics - these sites do not look attractive. Like fire, a recent clearcut may not be aesthetically pleasing to humans, but this disturbance is necessary to maintain the biodiversity and regenerate lodgepole pine adequately.

Landscape design principles in visually sensitive areas help to make the clearcuts look more natural and blend into the surrounding landscape. As recreational and tourism influences increase, however, this will be an on-going issue and one that will not be easily resolved.

Another concern people have is over the ecological viability of sites like this - will *anything ever* grow back here? Well, we know from the forest stands all around us on today's tour that sites like this will return back to a productive forest. In fact, in this part of Alberta in the boreal forest regenerating forests is not terribly difficult. These tree sections show the growth of a tree from a stand logged about 20 years ago, compared to a stand regenerated by fire. You can see by the spacing between the growth rings how much faster the regenerated trees in the logged area are growing.

So we know that we can grow the trees back - what the model forest is looking at is much more complicated. *Can* we sustain economically viable forestry practices, mining, oil, gas, and tourism industries without impairing the collective forest values we have talked about on today's tour?

The Foothills Model Forest exists to learn more about all the issues and interests we have in our forests and to encourage our sponsors to put what we learn about the forest into practice on the ground. Balancing different perspectives and different values is what the model forest program is all about.

Tree planting demonstration: If resources, time and conditions permit, this would be the ideal time to have the group, or at least a sample of participants, plant a seedling. This would help make a strong connection to the land, demonstrate some of the factors involved in regenerating a forest and help to end the tour on a positive and symbolic note.

Foothills Model Forest

Tour Package #2

- Jasper National Park -

Jasper National Park Half-Day Tour Summary

This tour is intended to provide an overview of Jasper National Park management issues within the context of the Foothills Model Forest. Although the tour will focus on Jasper National Park issues, every effort possible should be made to contrast or compare these issues with issues being faced in the Forest Management Agreement Area of the Foothills Model Forest.

Time: ½ day (2-4 hours)
Route Options:

1) The preferred route would start out of the Jasper townsite area. The stops would proceed from Old Fort Point or Whistlers Gondola Road, head east along the Yellowhead highway to the Henry House burn site along the Snaring River road, then loop back to town and proceed up to Pyramid Lake. *This is the most convenient tour route for groups wanting to start and end in Jasper town site. For groups heading east to Hinton after the tour, the Aspen forest and Henry House burn site stops should be left for the end.*

2) Starting at the east gate of Jasper National Park, for groups coming from Hinton. The route would proceed along the Yellowhead Highway to the Henry House Burn, head to Pyramid Lake then finish the day at Old Fort Point. *Although it is possible to meet the group at a location en route to the Henry House site, it would be ideal to meet the group at the east gate (particularly if they are traveling in one vehicle) to help set the stage and introduce the model forest and park while traveling in the bus. In this case, Old Fort Point hike would still provide a good option - an ideal way to end the day and provide an overview/summary of all the issues discussed.*

Overview of Stops

Number	Time	Theme
1	10-30 min.	Introduction to the model forest
2	20-90 min.	Introduction to Jasper National Park, overview of main issues
3	45-60 min.	Montane issues, fire ecology, controlled burns, aquatic issues
4	15 min.	Aspen forests, biodiversity, herbivory, fire
5	5-10 min.	Natural fires, fire suppression
6	30-45 min.	Fire guards, facility protection
7	20-45 min.	Aquatic issues, blow down, recreation issues, tour summary

Jasper National Park Tour - Message Package

1. Model forests represent important initiatives aimed at improving our understanding and management of forest ecosystems:

- The Model Forest Program was initiated as part of the Federal Government's Green Plan commitment to improving our understanding of sustainable development practices
- The purpose of the Model Forest Network is to provide an exchange of ideas and research into issues facing the long-term management of our forest landscapes
- Model forests are places where local, community voices will be used to identify issues facing our forests and to offer possible solutions
- Model Forests do not have any legislated authority to implement management practices, they must rely on their sponsoring agencies to implement any changes based on the research results within the model forest
- There are 11 model forests in Canada, representing the major forest regions
- The Model Forest network includes model forests in the United States, Russia, Mexico and Chile

2. The Foothills Model Forest represents Alberta's contribution to the Model Forest Network:

- The Foothills Model Forest is the largest model forest in the world; it is over 27 500 square km, covering a vast tract of boreal, subalpine and montane forests in the central Canadian Rocky mountains and foothills.
- The Foothills Model Forest includes Weldwood of Canada's Forest Management Agreement Area, Jasper National Park, William A. Switzer Provincial Park, the Willmore Wilderness Area and surrounding provincial crown land
- The Foothills Model Forest is represented by a non-profit organization which includes sponsorship from a number of sources. The main sponsors include Weldwood of Canada Ltd., Jasper National Park, Canadian Forest Service, and Alberta Environmental Protection.
- The Foothills Model Forest has over 40 partners who represent varied interests in the forest landscape. A key goal of the model forest is to bring together different partners to exchange ideas, information, concerns and solutions.
- The mission statement of the Foothills Model Forest is formally defined as follows: *We are a unique community of partners dedicated to providing practical solutions for stewardship and sustainability of our forest lands.*

3. **Jasper National Park is an important sponsor and contributor to the Foothills Model Forest:**

    - Jasper National Park accounts for nearly half of the Foothills Model Forest
    - Jasper National Park contributes resource information, research data and expertise to the model forest program
    - Jasper National Park benefits from the model forest by gaining a better understanding of the larger ecosystem and shared issues over the larger landscape

4. **Jasper National Park has a different mandate that neighbouring land agencies who share the Foothills Model Forest:**

    - Jasper National Park is an internationally renowned national park; the largest in the Canadian Rockies; one of 38 national parks in Canada
    - The primary purpose of Jasper National Park is to protect the cultural and natural heritage for future generations; maintaining the natural biodiversity within the park boundaries is major part of this overall goal
    - Jasper National Park is also part of the Rocky Mountains World Heritage Site - a designation granted by the United Nations for its outstanding natural and cultural heritage values

5. **Jasper National Park is not a pristine wilderness; to manage the park effectively we need to understand that humans have been part of this landscape for a long time:**

    - Early aboriginals camped and hunted in these valleys for thousands of years; they used fire as a management tool for numerous reasons
    - Jasper has served as an important travel corridor for a long time - first by explorers via the Athabasca Valley, later as the route for the CN railway and Yellowhead highway; Jasper's role as a transportation corridor has heavily impacted the landscape
    - Jasper National Park was created at a time when values were very different and an understanding of ecosystem principles was minimal; predator control, fire suppression, introductions of non-native species, fish stocking of lakes and development of facilities in key wildlife habitat all reflect earlier management practices based on different values and a minimal understanding of their impacts; these practices have altered the historic "natural" landscape within Jasper
    - The location of a town, the highway, railway and outlying developments within the Athabasca valley has impacted the vitally important montane ecoregion
    - Carnivore conservation is a key issues within Jasper and requires a regional strategy addressing issues of wildlife corridors and habitat fragmentation

6. **In addition to human-induced changes in the landscape, we must recognize that natural change is a constant part of natural forest ecosystems:**

   - Natural disturbances of varying types and magnitudes are part of the ecosystem
   - Natural disturbances caused by fire, wind, forest insects and diseases create changes in the landscape; they ensure a mosaic of different habitats and forest ages is present which in turn contributes to an increase in biodiversity
   - Fire is one of the most important disturbance processes in the forest; fire is a natural part of the ecosystem; these forest have evolved to coexist with fire
   - Fire helps recycle nutrients, maintains a diversity of different aged forests, and maintains open grasslands areas - a critical habitat for many wildlife species

7. **To manage the landscape effectively we need to understand and minimize human-induced impacts on the landscape and to understand and protect natural ecosystem processes. This means:**

   - Replicating historic flow regimes and maintaining native aquatic species
   - Identifying and reducing the impact of non-native, introduced plant species
   - Reintroducing fire into the landscape to recreate its vital natural and historic role
   - Managing modern human impacts and developments to maintain wildlife corridors to allow wildlife to move between different habitat types

Stop #1: Introduction to the Foothills Model Forest

Time: 10-30 minutes

Purpose: Provide an introduction to the Foothills Model Forest
Place the tour in the context of the model forest
Provide an introduction to the tour itself

Location Options:

1) *Indoors* - use the introductory slide show to provide an overview of the model forest network and the Foothills Model Forest. This would be an ideal option in inclement weather and/or for groups that have more time available.

2) *Outside locations* - this would vary depending on the route of the tour and the origin of the group. Possible locations include:

A) Parking lot at Old Fort Point (before embarking on hike to the top)
B) Whistlers Gondola road viewpoint (old ski hill parking lot, 2.7 km up from Hwy. 93)

Messages/Topics:

- What is a model forest?
- The model forest network
- Size, location, land base of the Foothills Model Forest
- The main sponsors and role of their involvement in the model forest
- The role of partners in the model forest
- Overview of the broad themes/issues of concern for the model forest
- Overview of the tour

Props/Materials:

Slide show & equipment (for indoor option)
Map showing the extent/scale of Foothills Model Forest
Introduction to the Foothills Model Forest handouts (could be distributed at the end of the day)

Sample Text: Stop # 1- *Introduction to the Foothills Model Forest*

Welcome to the Foothills Model Forest tour. Before we head out on the tour I want to take a few minutes to introduce the model forest and today's tour.

The Foothills Model Forest is one of 11 model forests found across Canada, representing the major forest regions found within Canada. The Model Forest program was initiated as part of the Federal Government's Green Plan Commitment to promoting a greater understanding of sustainable development issues. The program now extends beyond Canada and includes model forests in the United States, Mexico, Russia and Chile.

The model forests are essentially giant laboratories where research and consultation with various partners are being used to improve how we manage our forests in the future. Dozens of different research projects may be taking place in the model forest at any given time. The ultimate goal is to help us gain a better understanding of what sustainable development actually means and develop strategies for achieving sustainable development.

The Foothills Model Forest is the largest model forest in the world. It is 27 500 square kilometres - making the model forest about half the size of Nova Scotia, or roughly the same size as the state of Vermont or the country Belgium. The model forest includes all of Weldwood of Canada Ltd.'s Forest Management Agreement Area, Jasper National Park, William A. Switzer Provincial Park, the Willmore Wilderness Area and surrounding provincial crown land.

The Foothills Model Forest is managed by a non-profit organization. The major sponsors include Weldwood of Canada Ltd., Jasper National Park, the Canadian Forest Service and Alberta Environmental Protection.

A major component of the model forest is working with various partners that have a vested interest in how we manage our forests. Over 40 different partners are involved, representing a range of different issues and interests. They include local communities, environmental organizations, outdoor recreation groups, fish and wildlife associations, the academic community, educators, socio-economic and tourism interests, the forestry, mining, oil and gas community. On the tour you'll get a better sense of some of the challenging issues facing us as we try to balance the needs of some of these groups.

The Foothills Model Forest includes boreal forest, which accounts for roughly half the size of the Foothills Model Forest, and is where most of the resource extraction industries take place outside of Jasper National Park. Here within Jasper National Park, the main forests include subalpine forests at higher elevations, and the lower valley-bottom open montane forests.

Today's tour is designed to give you a snapshot of the some of the issues facing land managers here in Jasper National Park that relate to our work with the Foothills Model Forest.

Logistics: (will vary depending on tour option)

We'll be making about 7 stops today. The times at each stop will vary anywhere from 10 minutes right up to half an hour or more. We will be going for a few short walks during some of the stops to give us a chance to stretch our legs and experience the forest first hand.

Today is the perfect opportunity to ask questions and dive into discussions about some of the issues we are facing, so please be prepared to get involved as much as possible!

Encourage Participation: Set up the first leg of the tour by giving participants things to look for as they drive (or walk), so they are more actively involved. For example, have them look for different types of disturbance they see in the forest, or notice different stand ages/forest types, different human-induced impacts or different values/uses of the forest they can see along the route.

Stop #2 - Introduction to Jasper and the Athabasca Valley

Time: 20-90 min.

Location Options:

A) Old Fort Point trail - top of knoll (30-45 min)
B) Old Fort Point trail - entire loop trip along trail #1 back to parking lot (60-90 min.)
C) Whistlers Gondola road viewpoint, 2.7 km up Whistlers road from Hwy 93. (15-30 min.)

Special Considerations:

Old Fort Point Hike (locations A, B)

The ability to take either walk option will depend on the fitness level of the group, time available, weather and trail conditions. Participants should be advised about proper footwear, length, steepness and suitable clothing required for the walk. If more time is available, there is also the option of doing the full loop hike on trail #1, which takes people through several different forest habitats.

Whistlers Gondola road viewpoint (C)

An ideal choice for groups short on time or unable to hike the Old Fort Point trail. The side road to the parking lot may be closed during some winter months, necessitating a short walk up to the lot. From this viewpoint you get similar views as at Old Fort Point, though not quite as expansive. The town, Douglas-fir infestations, different forest types, the fire guard on the Pyramid bench and the Old Man burn from 1985 are all visible. Make sure you walk to the far side of the lot and stand right near the old ski tow line for the best views.

Purpose: To set the stage for the rest of the tour by introducing the landscape and major issues
To provide a large scale view of the valley to put the broader issues in context
To place the issues facing Jasper National Park into the context of the model forest

Messages:

- Jasper National Park is one of Canada's oldest and most famous national parks
- Jasper is part of a World Heritage Site
- There are many challenges to managing Jasper National Park, challenges that require looking beyond traditional park boundaries
- The main ecoregions in Jasper include the alpine, subalpine and montane zones

- The montane is only 7% of the park area, yet is one of the most important areas for both wildlife and people
- The Athabasca Valley supports most of the montane forest and much of the development found in Jasper; it is also where two other valleys converge
- Development pressures within the Athabasca Valley result in restrictions for wildlife movement through the valley; wildlife corridors must be protected at a larger, landscape level
- Park managers must consider cumulative impacts in the valley when planning
- Fire has played a long and important role in this ecosystem, managers must reconcile the natural role fire has played with the need to protect facilities

Props:

Historic photos of the Athabasca Valley to compare with the current state of the valley

Sample Text: Stop #2 - *Introduction to Jasper and the Athabasca Valley*

A) Old Fort Point Hike to knoll

Before the walk: Tell participants you will be taking a short but steep hike to get a great view of the Athabasca Valley. People should have proper footwear and clothing (stress the possibility of windy conditions up top).

Let people know what the plan is going to be and that you need to stay in lead of the group. If you do not intend to stop until the top, let them know ahead, but stress that you will go at a leisurely pace to allow everyone to keep up. Encourage participation - tell people to make general observations about the nature of the forest they will be walking through, ask them how and why it might be any different than other forests they have walked through. If you plan on having a few stops, tell people that you will be making a few stops along the way to point out some of the feature and allow people to catch their breath.

A few features to watch for along the trail:

-White spruce along the first set of wooden stairs
- Stress point of walking through the montane ecoregion, characterized by the trees they'll be seeing along the way (white spruce, lodgepole pine, Douglas fir)
-Canadian Heritage River commemorative plaque at the top of 1st set of wooden stairs
-Great example of spruce cones on spruce to the right of the last wooden stairs
-Just past first rock steps, good example of flag spruce tree on the left
-Along steep stretch past rock steps, there is a Douglas-fir, aspen, juniper and lodgepole pine all in a row, may be good option for identifying species as people walk
-Just below final knoll at top, there is a tree island containing a "mini-forest" of pine, spruce, aspen and common juniper, this is a great stop for identifying the main species

Possible Stops along the Trail:

1) First level ground, overlooking Athabasca River *(Since people will have passed by the CHR plaque, people may be wondering about it. There is no room for a large group to stop at the plaque so this is the best option, it also gives people a chance to catch their breath)*

The Canadian Rockies are an important source of water - every major river in Canada, with the exception of the St. Lawrence, begins in the Rocky Mountains. The Rockies high elevation acts to trap moisture from the prevailing winds as snow and *ice.*

The Athabasca River is one of the more famous rivers in the Rockies. You passed by the plaque commemorating the Athabasca River as a Canadian Heritage River. Canadian Heritage Rivers are designated for their outstanding cultural, natural, recreational or scenic values - and the Athabasca has certainly earned it's nomination.

The Athabasca begins at the world famous Columbia Icefield. The Columbia Icefield is a hydrological apex - its meltwaters flow into three different oceans - the Pacific, Atlantic and the Arctic Ocean via the Athabasca.

The Athabasca was a major travel route for the fur trade route after explorer David Thompson followed this river across Athabasca Pass in 1811, thereby establishing this route for the Northwest Fur Trade Company. Today it is still the most important and central valley in Jasper National Park, winding its way through some of the most valuable wildlife habitat in the entire park. The river carries on east past the town of Hinton, bisecting the Foothills Model Forest. Since this river connects Jasper National Park with a much larger ecosystem beyond the park boundaries, it is a great reminder of the need to think about larger landscapes and the need for Jasper to be involved in programs like the Foothills Model Forest.

2) Level ground overlooking Athabasca valley to the east

This is a good option if time is limited, or the group's ability or weather is questionable. The views are not as spectacular as at the top, but it still provides a good vista to introduce the main topics. If you do stop here, then use the text provided for the top of the knoll.

3) Tree island at top, just before looping back to the final leg to the knoll.

This is a good stop to catch our breath and introduce some of the characters we'll be talking about today. The trail we're on has taken us through a typical montane forest, which I'll be talking more about at the top in a few moments. Right here we have a nice smorgasbord sample of some of the main species found in these open montane forests, with the exception of the Douglas fir trees, which I can point out on the return trip.

The lodgepole pine is Alberta's official tree. It's widespread throughout the montane and higher up in the subalpine forests. It has long needles that come in bundles of two. It can grow quite wide, as we've seen a few examples coming up the trail, but is most well known for growing tall and tightly packed in extremely closed in forests. It has a close relationship with fire, which we'll be talking more about later on.

The other conifer with the short, spiky needles is white spruce, another typical montane tree. Spruce don't thrive in the open sun the way lodgepole pines do, so you may see a lot of shorter, younger, spruce trees growing up in the shade of a pine forest.

The shrub here is a common juniper, very typical of dry open slopes found in the montane.

Finally, the last tree here is the trembling aspen, by far our most common deciduous tree in the park. It's called trembling aspen because the angle of the flat stems with the leaves results in the leaves shaking in even a very slight wind. The aspen is one of our most important trees, so we'll be talking a lot about the importance and role of aspen forests in Jasper and the Model Forest.

Stop 3) Top of the knoll, overlooking the town and valley *(It can be very windy so be sensitive both to group comfort and to noise levels when speaking)*

This is the perfect view for introducing Jasper National Park and talking about some of the broader issues facing the park and model forest. Getting up to views like this is important because it begins to give us a sense of the enormous scale we're dealing with. As I mentioned, the Foothills Model Forest covers a huge tract of land - half the size of Nova Scotia, or larger than the state of Vermont. Jasper National Park is about half of the total size of the model forest - covering over 10,000 square kilometres, nearly twice the size of Prince Edward Island. It is the largest national park in the Canadian Rockies.

Jasper was set aside in 1907, so it is also one of our older national parks. Today, it is part of a national park system that includes 38 national parks and growing. It is also part of the Canadian Rockies World Heritage Site, which includes the 4 mountain national parks plus surrounding provincial parks. This designation by the United Nations recognizes this area for its outstanding natural and cultural features on an international scale. As a World Heritage Site, Jasper is on the same par as places like the Grand Canyon, Taj Mahal or the Egyptian Pyramids.

As a World Heritage Site and national park, Jasper park managers have the challenge of protecting its natural and cultural heritage for future generations. Jasper's purpose seems to be the complete opposite of the goals facing the forest management area outside the park boundaries, yet we'll see throughout this tour that, in fact, we share many common concerns and issues. And, perhaps more importantly, we share the same large ecosystem.

We've learned in recent years that even Jasper's immense size is not big enough to protect entire populations of some animal species. Animals like the woodland caribou or grizzly travel huge distances and do not recognize park boundaries. Other parts of the ecosystem, like fire, tree diseases or rivers, certainly don't yield for park boundaries. We have learned then, that Jasper protects only a *part* of a much larger ecosystem, and for us to manage and protect the natural and cultural features, we must look beyond our boundaries and work with neighbouring land agencies, like Weldwood of Canada Ltd, the company that manages the Forest Management Agreement Area beyond the park.

The research going on in Jasper also provides other land managers within the model forest with valuable insights into land management practices. This broader ecosystem-based management approach is the only way park managers will be able to protect the resources Jasper has been

entrusted with. Programs like the Foothills Model Forest recognize this need manage the entire ecosystem.

As you look out over the valley here, you can begin to get a sense of the daunting task Jasper faces in trying to achieve its goal. Over 2 million visitors come to Jasper National Park each year, and the vast majority of them end up here in the Athabasca valley below us.

Before getting into some of the issues, though, lets take a few minutes to put the valley in context of the bigger park. There are 3 main ecoregions or zones found in the park - you can see all three of them from here.

The alpine is anything above treeline - snow, ice, glaciers and alpine meadows. Being in the heart of the Rockies, it shouldn't surprise us that 1/3 of Jasper National Park is alpine. As you look at the tops of the peaks around you, you can well imagine that its beautiful to look at, but not exactly great wildlife habitat.

Below the alpine lies the subalpine forests - dense, dark forests that line the upper slopes of the Rockies. The trees there are mainly Engelmann spruce and subalpine fir. The subalpine makes up about 58% of the park.

Below the subalpine, are the grasslands and open forests of the montane zone, found in the low elevation valley bottom areas. The montane makes up only 7% of the entire park, yet it is the most important region for wildlife. The montane contains trembling aspen forests which you see from here and numerous wetland areas, again very evident from our vantage point. And as you can see, it is also the most important region for us. Jasper town site, the railway, the Yellowhead highway, our campgrounds, and the golf course are located in this important area - which means competition for space is at a premium.

It also means that our biggest management challenges lay here. I'll point out a few of the bigger issues we are facing, issues that we'll delve into more during some of the tour stops later on.

One issue is protecting important travel corridors for some of our wildlife species, especially carnivores which travel great distances and tend to be very wary of humans or human development. The Athabasca is an important route for wildlife, partly because of its low elevation which makes it relatively free of deep snow in the winter but also because it is where two other valleys, the Miette, and Maligne, converge.

Imagine, for example, being a grizzly bear and wandering in from the west, perhaps from British Columbia beyond the park boundaries. Your home range is over 1,000 square kilometres, so you move around a lot in search of food, a mate during spring and a den during the fall. As you enter the Athabasca valley your options for moving around become increasingly limited. You want to bypass the town and you are also wary of the highway and railway. If you stay high on the benches north of town, you might be able to skirt by, but you still face some impassible cliffs and

housing developments at Pyramid Lake. If you go to the south, you face a fence around the golf course and steep terrain pinching in further south, meaning again you have only a very narrow corridor to bypass the town.

The protection of these wildlife corridors is of extreme importance. Studies have shown that wary carnivores may need as much as a 1 kilometre wide band of cover to feel completely secure before they will pass. If our developments or activities are blocking their movements, we jeopardize not only their lives, but also the flow of genes between the larger population. If animals like cougars or grizzlies, which are relatively low in number to begin with, cannot move back and forth beyond the town or even park boundary, the entire population over a larger area faces a risk.

One study in the model forest will be looking at the movements of carnivores, in particular, grizzlies, to determine their movement patterns and how developments inside and outside the park might disrupt their movements. So protecting wildlife corridors is an issue that extends well beyond park boundaries.

Another issue facing the valley is cumulative impacts. Look just beyond the town of Jasper and imagine for a moment that you want to build a nice, quaint new lodge on the slopes just above the railway. Now, taken just by itself, your small development may not have a huge impact on the landscape or the wildlife. But when we start to look at other impacts in the valley - the highway, the town, the golf course etc. we get a clearer picture of what the real impact might be. That's what cumulative impacts assessment is all about - looking at the more realistic impact of developments or management decisions on the *entire* ecosystem and in *context* of other developments within the ecosystem.

If you think of it numerically, it's like looking at the entire equation instead of just focusing on part of the equation. One, by itself, may be no big deal. But one plus one plus one plus . . . adding up to 12, is a much bigger concern. So today, on the tour, when we highlight individual issues, remember to put it back into the context of all the issues taken together.

The final issue I want to introduce is fire. Fire has played a constant and important role in the landscape for thousands of years. Many fires, are of course, caused naturally by lightning. In fact, anywhere from 30-50% of all forest fires in Canada are a result of lightning. Moreover, aboriginal tribes living in these mountains burned these forest, sometimes by accident, often on purpose for a variety of purposes.

So these forests evolved hand in hand with fire in the ecosystem - fires help to recycle nutrients and help certain trees to reproduce. Trees like the lodgepole pine we saw along the trail are highly dependent on forests. Their cones open up after the heat of fire, and they are a sun-loving pioneer tree, thriving in the open spaces left after a fire has passed. Likewise, trembling aspens produce new trees from their root system after a fire has passed by. Douglas-fir trees, more common in the drier open slopes, have very thick bark and high branches to escape any harm

from low intensity ground fires.

At a larger scale, fires create diversity in the landscape by opening up areas and changing the mix of forests. Fires effect the size, shape and age of forest stands. Fires tend to burn in patches, producing a mosaic effect of different stands at different ages. Instead of having just one continuous even aged forest stand of the same species or two, fires help create different ages of forest with different types of trees. Looking out across the valley, you can see different shades of green in the forests, indicating where one stand of an older aged forest abuts another younger stand where a past fire stopped.

This takes us back to wildlife. Different wildlife have different habitat needs. Moose need open marshy areas, grizzlies like younger aged forests while woodland caribou prefer older more mature forests. Moreover, any one species may have different habitat needs throughout the year or even a given day. Deer and elk that may graze in open areas but need protective cover of the closed forest nearby for resting, shelter from weather and hiding cover from predators. Fire plays a major role in providing a mix or diversity of habitats in the forest, and therefore plays a major role in supporting a diverse population of wildlife.

As well, fires reduce the amount of fuel build up on the forest floor - without regular fires then, we run the risk of having more intense, catastrophic fires with more severe social and economic consequences.

We know here in Jasper and throughout the model forest that fire has been a frequent visitor by fire stand history studies that have been done. By examining tree rings and locating fire scars on these tree sections we can begin to get a picture of the age of different forest stands, when the last time a fire passed through and how frequently fire passed through. Here, for example, we know the fire may have burned as much as 2% of the this area every year. In other words every 10 years, one-fifth of this area would have been burned, or every 50 years, on average, a given forest stand would have been burned. Remember though, this is an average, some forests would have been missed by fires, others may have been burned more frequently. What's important to keep in mind is simply that fire was an important and natural part of this landscape.

Humans also factor into this fire equation in two ways. We start fires and we put them out. Both have serious potential impacts on the landscape.

Before Europeans arrived in Jasper, native aboriginals used fire as a management tool in some parts of the model forest, particularly here within the montane. They burned areas to promote edible plants and berries, to attract wildlife and maintain easy travel routes. When Europeans arrived in the west, they too set many fires, some on purpose to clear the land, others by accident.

For most of this century, however, we have learned the mantra of Smokey the Bear and done an increasingly good job at suppressing all fires, whether they were natural or not. As technology improved, we decreased our response time and improved our ability to put out fires, so fires have

had less impact over time.

In recent years we have shifted our view of fire. We know that fire has been a part of the natural ecosystem for thousands of years and so that by suppressing all fires we are having a big impact on the landscape. Suppressing fires results in the landscape becoming less diverse. Grasslands here in Jasper have decreased. Open forests have been slowly replaced by more closed forests, and trembling aspen forests are in decline. *(Refer to map showing shift in distribution of forest stands from older to younger aged forests)*

If you compare these historic photos of the Athabasca Valley in Jasper with what you see today, you can see the impact of years of fire suppression on the forest landscape. Removing fire from the land has clearly changed the forests in Jasper. If we are supposed to manage Jasper National Park in a natural state and we know fire is a natural process, but still need to protect tourism facilities and the town, what options do we have?

We'll head to our next stop on the tour to see what park managers are trying to do to solve this issue. Keep in mind, too, that fire is not the only cause of disturbance in our forests. As we return down the trail and travel to the next stop watch for other types of forest disturbances, both natural and human induced, and think about what impact they might have on the landscape.

Option B) - Hiking the complete #1 loop back to the Old Fort parking lot.

A nice option for groups with more time is to walk the entire loop. Not only does this allow the chance for great views at the top of the knoll, it then allows participants to walk through several examples of different forest habitats found within the park. A few hundred metres down past the knoll there is an excellent example of blowdown with lots of standing snags. Further down there are Douglas-fir trees, then an aspen forest including many fresh signs of elk browsing and rubbings, with woodpecker holes in some of the aspens. Further along there is a very open mixed lodgepole pine-aspen forest. Finally, on the return trip there is a good example of a more mature, closed lodgepole pine forest and squirrel middle adjacent to the trail.

Stop #3: The Henry House and Colin Range Burns

Time: 45-60 min.

Location: Travel east along the Yellowhead Highway to the Pallisades/Snaring River campground road. Follow the road 3.7 km and park near the first set of ponds. Follow the faint trail that heads south through the forest. Walk until you reach an open grassy meadow; continue on until you are overlooking the railway and have a view of the Colin Range prescribed burn.

Alternative stop - if time is very tight, another option is the airport road, 2.3 km east of the Pallisades road junction. Not as much to talk about as with the Henry House site above, but does have great views of the Colin Burn, Douglas-fir beetle infestation and open montane grasslands.

Another supplement stop could be at the Pallisades burn site where there is more obvious fire evidence.

Special Considerations: Being in the open, this spot can be very exposed and windy. As you approach the railway, passing trains may disrupt the talk. The light tends to be better here in the afternoon, when the Douglas-fir beetle infestations and Colin burn can be more easily seen.

Purpose: To provide an opportunity for participants to experience a typical montane forest
To show two recent examples of controlled burns to explore the topic of reintroducing fire into the landscape
To introduce other types of disturbance in the forest including blow down, trampling and overgrazing by ungulates, introduction of exotic species, and tree pests
To introduce aquatic issues facing the park

Messages:

- The montane is the most important wildlife habitat found within Jasper
- Fire plays an important natural role in the montane
- Suppression of fire over the years has changed the nature of the montane zone
- Park wardens are reintroducing fire into the landscape to recreate the natural role of fire using small scale controlled burns
- Forest pests, such as Douglas-fir beetles also impact the forest structure
- Ungulates like elk and bighorn sheep play a role through grazing and trampling
- The introduction of non-native exotic plant species is another issue facing the montane

- Developments like roads and the railway have a large impact on aquatic ecosystems

Props:

GIS map showing location of lightning ignited fires
Tree sections from fire stand history research
Map showing change in distribution/amount of younger-aged forests
Historic Bridgeland photos showing changes in vegetation

Sample Text: Stop #3 - *The Henry House and Colin Range Burns*

Stop #1) *Anywhere in the open grassy meadow*

We are walking through a very typical open grassland-forest mix you find throughout the montane. There's lodgepole pine trees and younger white spruce growing up in the shade of the pines. There are some great old Douglas fir trees too, very typical of open montane forests.

You can well imagine that if you were a deer, elk or coyote that this type of habitat would hold much appeal for you - the walking is easy, there is very little snow to contend with in the winter, there's water nearby, and if you're an elk or sheep there's lots to munch on. (In fact, watch for signs of sheep, deer or elk throughout the meadow). And if you're a predator, there's elk and deer to munch on. If you look to the north and south too, you can see how the cliffs and steep terrain restrict wildlife movements, forcing them to rely heavily on these valley bottom areas.

With wetlands close by and the close mix of forest with grasslands, this spot is also ideal for a number of birds, so keep your eyes and ears sharp. In fact, you can probably see signs of woodpeckers on some of the trees along the left here.

But, as we saw in the historic photos, the montane is changing. These grassland areas are being slowly overtaken by invading trees. This lodgepole pine forest is very typical of a forest growing up from the grassland - there are no snags, not much forest debris on the ground and not a lot of diversity in the under story. Historically, with low intensity fires sweeping through here on a regular basis, the trees would have been kept back and the grasslands maintained.

To reintroduce the natural role of fire in the landscape, park wardens are starting small scale controlled burns to mimic this natural role. This site was all part of a burn that took place in the spring of 1988. You can still see evidence of the burn if you look closely at some of the trees.

These prescribed burns are controlled very closely. Numerous factors including the weather, moisture content in the ground and vegetation, location of facilities and terrain all enter into the equation before a fire is lit. Only after much planning and when conditions are just right will we conduct a prescribed burn.

We'll carry on and have a look at a much larger burn across the valley.

Stop #2) *Near railway, with view across valley to the Colin burn.*

Across the valley you are looking at the Colin Range burn, a controlled burn conducted in the spring of 1989. Naturally occurring fires in the subalpine forests have some different characteristics that fires down here in the open montane. The subalpine fires would have occurred less frequently, been more likely to have started from lightning and been much more intense than the grassland fires of the montane.

What do you notice as you look at the burned area on the slopes? You can see how the fire did not burn continuously over the landscape. Some areas were burned more intensely than others. Some spots were missed altogether. It's this patchiness so typical of burns that helps create the mosaic or mix of forests in the landscape. It's that same mosaic that adds diversity and ensures there's a range of habitats for wildlife to use. You'll also notice that although it has been 10 years since the controlled burn, there are still lots of standing snags which are important for cavity nesting birds and small mammals.

Not only do these burns help us recreate fire's natural role, they also provide us with a wealth of information about the behaviour and ecology of fire. Part of the benefit of belonging to the model forest program, is that by pooling funding from other sponsors within the model forest, we can afford to conduct some research we may not otherwise be able to do. Other research includes fire stand history analysis which provides us with a clearer picture of the frequency of fires over the larger landscape. Part of this research is a cooperative study with the Canadian Forest Service looking into the effects of fire and responses of various species of plants and wildlife to fires of different intensities and to fires occurring at different times of the year. *(Pass around any tree cookies to show the group how the studies are done).*

We often get asked why we don't log the forests instead of burning them, because it seems like a waste of trees and money going up in smoke (literally). It's a good question that ties in to the model forest program.

The answer is that we can't log here because we are inside a national park, where extractive resource industries are not permitted. But in addition to concerns about appearances or philosophical differences there are ecological reasons as well. Our task here in Jasper is to recreate the natural role of fire, so prescribed burns are obviously the closest we can come to doing just that. Although fire and logging have some similarities, there are important differences. For example, there are still lots of standing snags and woody debris left behind after a fire. Model forest research within Weldwood's Forest Management Agreement Area has shown that the amount of woody debris left after a fire is, in fact, considerably higher when compared to logged over areas. Nor can harvesting duplicate the chemical or physical changes that come about as a result of the high temperatures generated by fires, or the nutrient rich ash layers produced by them.

Outside park boundaries, fires still need to be suppressed so that valuable timber resources aren't lost and so that long range sustainable logging plans don't have to be altered. There, researchers in the Foothills Model Forest are looking at how logging and fire compare, in the hopes that through logging, they can mimic the beneficial role of fire. We know that at the landscape level, logging helps create a mosaic of different aged forests, much like fire. But at the site level, more work is needed to see exactly what some of the other difference might be between logging and fire.

Stop #3) - *Walk down along the meadow above the railway towards the west. Stop when you can see a good view of the Douglas-fir beetle infestation across the valley. You could tie in this stop with the previous one, but breaking up the information into more stops will give people more of chance to move around and shorten the stops.*

I asked you earlier to watch for other types of disturbances on the forest? What have people come up with?

There are numerous other factors influencing the dynamics of forests beside fire. In the upper subalpine forests of Jasper, avalanches play a disturbance role by opening up forests for new growth. There are also windblown areas where trees are toppled during major wind storms. As you walk back through the forest watch for some examples of where lodgepole pine, with its very shallow root system, have toppled over in heavy winds. We'll also see some excellent examples later on in the tour.

Another factor is forest pests in the form of tree diseases and insects. In actively managed portions of the model forest, pests are considered just that - pests which eat up valuable timber resources. There, forestry practices try to minimize the chances of large scale infestations. Here in the national park, pests are considered another natural process and part of the ecosystem, like fire.

Across the valley, just above the open meadows on the lower slopes you can see signs of Douglas-fir beetle. The newer infestations show up in the red trees, the older ones now appear grey. Although the Douglas-fir beetle seems to be petering out now, its presence would suggest some that trees were feeling some stresses, possibly due to competition from other trees that would not be taking place if fires had continued to play their natural role. Compare the infestations to the burn. What similarities or differences do you notice?

Another issue facing us in Jasper, that again reminds us of the need to look beyond our borders, involves the introduction of exotic, non-native plant species. It's not just people and wildlife that move across our borders, but plants as well. Some are carried in along the highway or railway, where they thrive in the open, disturbed areas you find along the transportation routes. The trampling and soil disturbance caused by ungulates like elk or sheep also foster ideal conditions where these feisty invaders can flourish. If you look down along these slopes next to the railway tracks, you can see the impacts that large numbers of ungulates can have on the soil. As well, by grazing native species, ungulates inadvertently help give these competitors yet another advantage.

Two of the most common exotics include Dalmation toadflax and Knapweed. If these species get a strong enough foothold, we risk them out-competing local native species and again changing the nature of the forest, moving things away from a more natural state.

Stop #4) *At the grazing enclosure, located back north in the forest, nearly directly across from the Jasper airport windsock.*

The impact of grazing and browsing pressures from wildlife is yet another interaction in the forest we have to consider. And like cumulative effects, taken alone these pressures may not amount to much, but when you consider them in context of other changes due to fire suppression, development pressures and climatic changes, the impacts on the vegetation can be significant.

To help us gain a better understanding of these potential impacts, 10 grazing or browsing enclosure have been set up in the park. This is one that was built in 1956. There are 4 study plots within it, 4 on the outside. The purpose of these enclosures is to compare differences when grazing or browsing pressures are removed. Remember, grazing pressure is yet another type of disturbance - many plants and grasses require *some* grazing pressure and are actually adapted to grazing pressures from wildlife.

**Note: There are other more recent grazing enclosures that could be used in lieu of this stop. One will be established near Jackladder burn site, close by to stop number 4.*

Stop #5) *Back along roadside next to pond*

Another reason the montane is important wildlife habitat is the amount of wetlands it contains. Lakes, ponds, marshes and rivers provide habitat for animals like beaver, mink, muskrat and moose. They also provide staging areas for migratory waterfowl and nesting areas for waterfowl breeding in Jasper. They are also home to numerous native and introduced fish species.

Development in the montane have played a major role in altering natural flow regimes, disrupting natural flood plains and blocking migratory routes for fish. The railway and roads like this or the Yellowhead highway can have huge impacts on wetlands. Hanging culverts that may have been installed decades ago may help with the flow of water, but do little for fish movements.

We also have to consider the importance of riparian habitats found adjacent to wetlands. These habitats are extremely valuable to numerous species and also play a role in regulating the water cycle, sedimentation and stream temperatures.

Research here, and in the rest of the model forest, is providing us with a clearer picture of our aquatic resources to help us make decisions on the ground that will enable us to protect these invaluable resources.

Before we head out for our next stop, I'd like everyone to look up in this direction towards the Snaring Valley. If you travel up this valley you enter an entirely different part of Jasper. Here, and further beyond in the Willmore Wilderness area, you can find true wilderness. Very few people travel there and it is still in a relatively primitive state. It's also great woodland caribou habitat. These caribou are a larger subspecies of their northern counterparts, the barren ground caribou. In contrast to animals like grizzlies or elk, caribou seem to prefer much older, more mature closed forests. Here, in these older forests they find plenty of protective cover and lichen, one of their main winter foods.

Many of the caribou also migrate out of Jasper National Park in the winter, overwintering in Weldwood's Forest Management Agreement Area, which makes them of particular interest to the model forest program. Their movements, habitat needs and the relationships between logging and lichen growth are all being studied so that logging practices can be altered to minimize any negative impacts on the caribou. Weldwood already places certain limitations on logging to help protect valuable caribou habitat.

I mention the caribou for a few reasons. First, they're yet another example of the need to look beyond the park boundaries and manage the entire ecosystem. Secondly, they provide an interesting contrast to some of the other animals we've mentioned. Many of the animals here in the Athabasca like elk or grizzlies, prefer younger forests while the caribou thrive in older, more mature forests. While fire or logging benefits certain habitats and wildlife, it can also impact negatively on others. This serves as an important reminder that we have to manage and protect all the pieces of the puzzle, all the different types and ages of habitats, if we are going to maintain the biodiversity of the area.

And speaking of biodiversity, we'll head off for our next stop for a quick look at another important forest habitat.

Stop #4 - Aspen Forests

Time: 15 minutes

Location: Junction of Snaring River road with the road to the Pallisades. Walk into the aspen forest on the north side of the road.

Purpose: To provide an opportunity to experience an aspen forest
To stress the importance of aspens forests as wildlife habitat
To introduce issues facing aspen forests and the relationships between aspen and fire and other wildlife species

Messages:

- Trembling aspen forests are the main deciduous tree in the model forest; they are one of the more critical wildlife habitats found in the montane
- Aspen forests provide important nesting habitats for numerous birds; they provide shelter and food for animals like beaver and elk
- Aspens are facing pressure from the effects of both elk and fire suppression, which in turn are linked closely to the presence of humans and the distribution of predators such as wolves
- The protection of aspen forests represents another challenge of maintaining the natural biodiversity at both the species and landscape level

Sample Text: Stop #4 - *Aspen Forests*

Trembling aspen trees are an important part of the montane zone. From Old Fort Point we could see their scattered distribution throughout the Athabasca Valley. They are the primary deciduous tree in the Foothills Model Forest. Protecting aspens forests helps to protect the biodiveristy of the park at the species level, but also at the landscape level by protecting a critical type of habitat.

Aspen provide yet another habitat type that adds to the overall diversity of the montane and Jasper National Park. Aspen stands within a coniferous forest are, in fact, a biodiversity "hot spot" - providing key habitat for dozens of birds including warbling vireos, least flycatchers and woodpeckers. The woodpeckers prefer to nest in aspens infected with heart rot fungus, which in turn attracts many secondary cavity-nesting species like boreal owls and Barrow's golden-eyes. If you look closely around this forest you can see signs of woodpecker activity in some of the trees.

Beavers also feed on young aspen seedlings, while deer and elk browse on young aspens. Elk also browse on the bark of the older aspens. The browsing does not directly kill the trees, but the removal of this tender bark results in a black scar growing over the tree trunk, which can eventually lead to death through secondary sources such as insects and disease. If you look at the height of the black scars you can see the maximum reach of the elk. It is hard to find many aspens in the Rockies without these black scars, indicating the significance of the pressures on these trees by the elk. In some places in the Rockies, browsing of young aspen seedlings is so intense it is hard for the aspen to regenerate. An enclosure near here is one of several that will give us a sense of the browsing pressures on the aspens, a major concern here in the montane of Jasper National Park.

As I mentioned, aspen, like lodgepole pine, are highly dependent on fires - aspens shoot up from suckers along the root system after a fire. They are extremely fast growing, thriving in disturbed areas with lots of sunlight. With years of fire suppression coupled with intensive browsing of saplings, these forests are unable to reproduce, being taken over by spruce and pine forests.

There's yet another chapter needed to complete this aspen story - predators. If we know elk browsing is compounding the problem of declining aspen and if we know elk numbers are higher than they were historically (which historic evidence suggests they are) then we also have to look at what's going on with elk numbers and what might be responsible for their large numbers. This leads us to predators like wolves or cougars, which takes us back to some of the effects of human uses, wildlife movement corridors and other impacts like highway mortality that may be keeping predator numbers down. The story of the aspen reminds us, yet again, of the need to look at the entire ecosystem and put together all the pieces of the puzzle.

Here and at the last stop we saw examples of how a history of fire suppression and predator control has started to catch up with us. We'll head back towards Jasper town site and have a look at how we are managing in light of some of today's realities.

Stop #5 - Jasper Orientation Sign

Time: 5-10 minutes

Location: Along the Yellowhead highway, just before the east end Jasper orientation pull-off. Walk to the far side off the parking lot, opposite the orientation sign to view the burn across the valley.

Purpose: To show people another example of localized impacts by Douglas-fir beetle and to show an example one of the few visible natural burn sites in the valley.

Messages:

- Although fire plays an important role in the ecosystem, fires still have to be suppressed in the park to protect facilities
- The aesthetics of fires, whether they be natural or controlled burns, is another issue park managers must deal with in light of the tourism industry and local perspectives

Sample Text: Stop #5 - *Jasper Orientation Sign*

This is a very quick stop to point out a few more examples of forest disturbances.

Across the valley up on the slopes we can see part of the Old Man fire, a lightning ignited fire from 1985. It is one of the few visible reminders of the natural role fires play in the ecosystem here.

Fires like this one still have to be suppressed in the park because of the need to protect park facilities and the town of Jasper itself. Another issue we have to contend with is the negative perceptions people have about fire. Similar to the issue surrounding clearcuts outside the park, some visitors and tourism operators are concerned about the aesthetics of controlled or natural burns. We need to continue to educate people about the positive benefits of fire, that they are a natural part of the ecosystem and the burned over sites in view of the highway do green up successfully and relatively quickly. Parks Canada is taking a strong role in this effort to communicate fire messages to people by creating a number of educational products, including posters, brochures and CD-Rom about fire in national parks.

Up on the slopes behind us you can see some more examples of Douglas-fir beetle. As well, the disturbed sites along the slopes of the railway here are perfect sites for invasions by exotic species.

We'll head to our next stop now to have a look at the challenge of managing the role of fire when a major tourist town lies in the heart of the valley.

Stop #6 - Pyramid Bench Stop

Time: 30-45 min

Location: Along the Pyramid Lake road - turn up the fire road on the left side at km 1.9 from the Pyramid Lake Road & Avenue junction.

Special Considerations:

You will need a key to access the fire road. The road is passable in trucks or vans, but may be impassible in winter depending on snow and ice conditions. If the road is impassible, a 10 minute walk will get people up into the fire guard. It is too far to walk to see the controlled burns, but this will at least get people up into the fire guard.

Purpose: To show participants an example of a fire guard and a controlled burn carried out for different purposes than ecological reasons
To talk about the balance required between facility protection and allowing natural processes to occur

Messages:

- Fire suppression over the years has resulted in high accumulations of forest debris that might not otherwise be present; this accumulation results in fires of a greater intensity than historic fires
- Fire guards and controlled burns are used to help protect facilities like the town of Jasper
- Because of tourism developments and the town, we will never be able to completely mimic the historic fire regime; we can only approximate it

Sample Text: Stop #6 - *Pyramid Bench Stop*

As much as we would like to totally match the historic fire regime in Jasper National Park, present day realities preclude us from doing so. Having tourism developments and a town in the middle of the Athabasca Valley obviously puts certain limits on what we can and cannot do.

Another by-product of decades of fire suppression is the build-up of forest fuel on the forest floor. Historically, frequent low intensity fires would have kept this fuel load to a minimum. Today, with higher fuel loads, fires would likely be more intense that what would have been historically natural. And with the town of Jasper, outlying accommodations at Pyramid Lake and tourism developments encroaching closer onto the edge of the forest, there is the danger of property destruction associated with fires.

So right here is an example of what we're doing to help protect facilities in the park, in the event of a large fire. A 100 metre-wide fire guard has been logged here and another strip of forest adjacent to the guard has been thinned. As well, two small prescribed burns have been conducted to help reduce the fuel load in the forest.

If you look at the forest behind us, you can compare the differences with the much more open forests that have been burned or thinned. We would like to be able to maintain this fire break with frequent, low intensity fires to help keep the fuel load down and reduce the risks of fire reaching the townsite.

Again we can see how past decisions combined with the realities of today have an impact on how we manage the park and how we balance competing values and interests.

Stop #7 - Pyramid Lake

Time: 20-45 min

Location: Go to the far end parking lot on the Pyramid Lake Road; walk back along the lakeshore.

Purpose: To show an example of blow down to compare blow down disturbance with fire disturbance
To explore more examples of balancing tourism and recreational needs with a mandate for protection
To provide a final conclusion to the tour and overview of issues discussed during the tour

Messages:

- Blow down is another important type of forest disturbance with certain similarities and differences to fire disturbance
- The Pyramid Lake area represents a good example of an area where there is a careful balancing act between protecting the park resources and providing opportunities for enjoyment of the park
- Programs like the Foothills Model Forest will help provide us with the information needed to make the best choices about how to protect and manage our forest resources, both in and outside park boundaries

Sample Text: Stop #7 - *Pyramid Lake*

Looking across the lake on the slopes we can see a great example of blow down on a larger scale. *(Note: during summer the patches are not as obvious as in winter)* Similar to the fire patterns we've seen, the effects of the blow down are not continuous across the forest - it looks much like a giant rock has skipped across the landscape, touching down only here and there in large patches. Some areas are more susceptible to blowdown due to shallow soils, shallow rooting systems, saturated soils, the age of trees and the randomness of winds.

Again, this helps to create a mosaic pattern of different aged forest stands so important for protecting diverse wildlife species.

The Pyramid Lake area, besides being a scenic spot to end the tour, also provides the perfect context for wrapping up our discussion on the tour.

This area is a popular local escape from town and an important recreational area for tourists and locals. There are hiking and cross-country ski trails on the other side of the lake, fishing, wildlife and bird watching opportunities in the area. There are also several issues here that remind us of the need to balance use and enjoyment with the protection of the park's heritage.

Here in Pyramid Lake for example, we have issues revolving around historic stocking practices of non-native fish species. These fish have, in some cases, out-competed local species and disrupted the natural state we once had. Parks Canada no longer stocks the lakes, but we still need to contend with historic practices that we live with today.

Along the road, there are isolated cases of Douglas-fir beetle infestations in some of the trees. Although we've already said this is a natural process and should be allowed to carry on unimpeded, here, because of the danger of falling trees in a heavy use area, some of the trees must be removed. Another balancing act between competing values.

And across the lake where the recreational trails are found, you also find some good wildlife travel routes. Wolves and bears can both be found in that area, yet may be displaced by human activities along the trail. If displacement is happening, it raises questions like how much use will wildlife tolerate? How big an impact is it - is it merely temporary or does it cause longer term shifts in animals movements? Would quota systems on the trails help solve the problem? Would we have to ever consider temporary seasonal closures or even permanent closures? Again, it's a balancing act that will only be answered after considerable research and by deciding what values are most important to us.

We also have potential in the area for wildlife-human conflicts - whether with elk defending calving grounds or bears that have become habituated to garbage inadvertently left out. Through education and proper management we have to do our best to protect the wildlife and keep these potential conflicts from occurring.

Finally, the Pyramid Lake bungalows located are here. Surrounded by forest, these homes remind us that it is not only the wildlife that have made homes in the forest, it is us as well. We depend on the forest for numerous wood products, for jobs, for economic values. But we also chose to live or visit the forest as often as we can. They represent places where we can relax and find balance in our lives. Forests are where we go to hike and camp, fish and hunt, bike and canoe. They are places we come when we want to escape from it all, places that symbolize wilderness to us or have spiritual value to us. And they are places that exist for their own right, places that have evolved for thousands of years before we arrived on the scene.

How we ultimately manage, use, value and protect our forests is what the Foothills Model Forest is all about. We saw today how Jasper National Park is facing many issues - balancing many different values, balancing the past with today's realities, and trying to sustain a viable tourism industry while still protecting the cultural and natural heritage.

In other parts of the model forest, like in Weldwood's Forest Management Area, they face similar challenges - sustaining a healthy, economically viable forest industry without impairing other values we place on the forest. They may have different management objectives than Jasper National Park, but it will take the same balancing act and the same understanding of the forest ecosystem to achieve their goals. That is ultimately the task of the Foothills Model Forest.

Tour #3 - Hinton - Jasper Full Day Tour

1. From Hinton to Jasper

Complete the Hinton portion of the tour as laid out in the Tour #1 package, then head to Jasper. Potential stops between Hinton and the Henry House/Colin Range burn stop in Jasper include:

- Side road 500 metres to the east of the Jasper Park East Gate; south side of the Yellowhead highway. A small access road here borders the park boundary; signs for both JNP and Weldwood's FMA are visible making it a very symbolic spot to talk about the model forest and contrasting land values.

- Pocohontos - a 1 kilometre self guiding interpretive loop trail would give people a chance to stretch their legs; good spot for history, changing values discussion - would help to set the context for the rest of the tour. Possible lunch stop.

- Mineral lick pullout km from east gate. Steep terrain, highway and mineral lick could tie into discussion of issues facing park wildlife.

- Disaster Point - good for wildlife issues; excellent view across flood plain to discuss aquatic issues, view to old mine entrance to talk about history.

- Jasper House Historic Site plaque - potential history stop.

- Talbot/Jasper Lake - potential aquatics stop.

Proceed to the Snaring River/Henry House Burn site, stop #3 in the tour #2 package. Then complete the Tour #2 package stops in the following orders:

Stop # 4 - Pallisades/aspen forests
Stop # 5 - Jasper orientation sign/fire suppression
Stop # 6 - Pyramid bench/fire guards, facility protection
Stop # 7 - Pyramid Lake/aquatics/blowdown/recreation
Stop # 2 - Old Fort Point Hike/ Summary of tour

-OR-

Stop # 4 - Pallisades/aspen forests
Stop # 5 - Jasper orientation sign/fire suppression
Stop # 2 - Old Fort Point Hike
Stop # 6 - Pyramid bench/fire guards/facility protection
Stop # 7 - Pyramid Lake/ aquatics/blowdown/recreation

2. From Jasper to Hinton

Complete the Tour #2 Package stops in the following order:

Stop #1 - Introduction to Model Forest

Stop #2 - Old Fort Point or Gondola Road viewpoint

Stop #6 - Pyramid bench/fire guards/facility protection

Stop #7 - Pyramid Lake/ aquatics/blowdown/recreation

Stop #5 - Jasper orientation sign/fire suppression

Stop #4 - Pallisades/aspen forests

Stop#3 - Pallisades prescribed burn site/montane issues/fire/disturbance

Proceed to Hinton and complete the Hinton Half-Day Tour Package #1 as listed.

Alternative Tours and Activities

- Potential Tours/Stops to Complement the Foothills Model Forest Tour -

1. *Tour Weldwood's greenhouse/nursery* - this may be of interest to some groups interested in a more complete overview of forestry practices

2. *Weldwood's sawmill or pulp mill tour* - plugging into one of these tours would complement a complete tour of all aspects of an actively managed forest

3. *Weldwood tour* - combine a model forest tour with a Weldwood tour more focused on Weldwood messages (assuming the Weldwood tour covers different sites within the model forest)

4. *Mine tour* - plugging into a half day tour of a local mine (e.g. Gregg River Resources mine tours) would work well for groups studying multiple resource use issues

5. *Tour stop at a site where active logging is underway* - if feasible and safe this could be a highlight for many non-forestry groups and provide a better sense of all aspects of an actively managed forest

6. *Logging equipment* - the next best thing to seeing logging equipment in action would be to at least see some equipment and relate it back to the context of a working forest

7. *Linking into any on-going research activities* - if arrangements can be made well in advance, linking into an actual field research project would be an excellent means of fostering interest and participation, whether it's someone taking tree cores, wildlife radio tracking or tagging fish. Especially valuable to plug any media groups into an activity like this.

8. *Radio telemetry demonstrations* - provide a demonstration using the radio telemetry equipment and actually track a collared wildlife

9. *Scavenger hunts* - set up quizzes or scavenger hunts dependent on groups locating certain natural features that ties into the model messages. A great way to encourage participation, especially from school groups.

10. R*ole playing committees* - assign different roles/perspectives for participants to assume related to the forest e.g. foresters, wildlife managers, hunters, anglers, local mayor, tourism promoters etc. to force them to change perspectives and view the forest from different points of views. Provide handouts with hypothetical questions to generate group debate and discussion.

Recommended Props/Equipment for Model Forest Tours

Map of Model Forest - one laminated for outdoor use; one dry mounted on foam board for indoor use
- map should be relatively simple, using bright colours to delineate boundaries and show major land bases: Jasper, FMA, Willmore, Switzer Provincial Park; to give people a sense of scale and introduce the different land use areas; maps could also show distribution of the main forest types

Large laminated photos/pictures of wildlife - grizzly, woodland caribou, pileated woodpecker, long-toed salamander, Athabasca rainbow trout, bull trout

Historic Photo - Gregg River cabin

Tree sections - have an assortment available to pass around, include some that represent messages e.g. one with a fire scar to show how fire stand histories are determined, a pair contrasting fire regenerated vs. natural regenerated growth etc.

Increment borer - to demonstrate coring technique to non-forestry groups

G.I.S. maps/images - to demonstrate how G.I.S. is helping land managers and the model forest make management decisions; also to illustrate potential key messages:

- maps showing the forest age and distribution over time to show changes to forest age structure (1900, 1950 and 1996)
- satellite images showing clearcuts to give people a sense of the size of the cutblocks in relation to the enormous scale of the model forest
- map showing extent of Gregg River '97 burn
- Bridgeland photos showing changes in Athabasca Valley
- aerial photos of Athabasca Valley that illustrate the importance of wildlife corridors
- map showing locations of lightning ignited fires

Radio telemetry collar/ Woodpecker transmitter - to show some of the technology used to track wildlife movements

Electrofishing equipment

Tree seedlings & planting equipment - to use in planting demonstration for non-forestry groups

Recommended Format for Future Model Forest Fact Sheets

In addition to the general 2-page overview type fact sheets, more in-depth, issue-specific fact sheets should be produced to reach specific audiences with more detailed information. These would likely be in the 4-6 page range.

1. Produce fact sheets on a thematic basis to keep them organized, the messages clear, allow for easy updating and separate distribution. This approach would also the overall workload of writing, reviewing or updating to be shared amongst the different expertise within the program. The themes should be easily recognizable themes from the audience's perspective, possible themes include: Wildlife, Aquatics, Recreation, Fire and Vegetation Issues, etc.

2. Keep the design simple to allow for quick and timely updating of new information and ease of distribution via fax, e-mail or downloading onto the web site.

3. Keep a standard look and content format to give them a consistent look and feel so as to suggest a series.

4. Suggested content format:

Overview of topic - why is this topic an important concern of the model forest?
Historic picture - where we've been in the past, how were values different?
Current status - what's there/happening right now?
Issues - what issues are facing the model forest in relation to the topic
Research - what's being studied in light of the issues?
The Future - what is or may be done differently in light of the research?
For More Information - contacts, names, short reading list for more in-depth info

Human Use in the Model Forest

foothills model forest
a growing understanding

We're Part of the Forest Too

Humans have been a part of the model forest landscape for a very long time. Native aboriginals camped and hunted along the shores of the Athabasca River. Early explorers traveled through these mountains in search of routes to the west coast - some of them stayed and depended on the land for survival.

The Athabasca Valley has long served as an important transportation corridor - first via the river itself, later with the railway and highway. Jasper National Park was created in 1907, bringing people from around the world to the area.

Outside the national park boundaries, logging and coal mining fueled the growth of towns such as Edson and Hinton. These communities, like hundreds across Canada, still depend on the forest surrounding them for their economic livelihood.

Changing Times, Changing Values

At one time forests were feared, even loathed. Forests were home to evil spirits, they blocked our progress and needed to be "tamed". Early settlers cleared forests to make room for homes and to support agriculture. Eventually, people began to depend on them for the resources they provided.

Today, forests serve numerous purposes. They provide jobs and economic prosperity. They provide important timber resources. We build our homes within forests. We travel to the forest to hike, fish, hunt and watch wildlife. We value forests for their scenic beauty and their cultural, historical and spiritual values. When we manage our forests we have to take all of these uses into consideration. We need to learn how to manage for *all* of these values in a sustainable fashion and bring together different perspectives on our forests - exactly what the Foothills Model Forest is all about.

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MODEL FOREST NETWORK
RÉSEAU DE FORÊTS MODÈLES

Foothills Model Forest . . .
Fast Facts

foothills model forest
a growing understanding

What is a Model Forest ?

A model forest is part of a network of forests where state of the art research and involvement of local partners is improving our understanding of how we manage our forests. The 11 model forests in Canada were initiated as part of the Federal Government's Green Plan commitment to finding practical ways to sustain our forest resources.

The Foothills Model Forest covers a large area of the Central Canadian Rockies and foothills in Alberta. The Foothills Model Forest has numerous research projects underway looking at different forestry, wildlife, aquatic, socio-economic, cultural and recreational issues.

The Largest Model Forest in the World!

At 27 500 square kilometres, the Foothills Model Forest is the largest model forest in the world. It covers an area roughly half the size of Nova Scotia or an area nearly the size of Belgium. The Foothills Model Forest includes Weldwood of Canada's Ltd. Forest Management Agreement Area, Jasper National Park, Willmore Wilderness Area, William A. Switzer Provincial Park and surrounding crown land.

Who Manages the Model Forest?

The Foothills Model Forest is managed by a non-profit corporation. A board of directors made up of the sponsoring agencies and partners provide input into the long term direction of the model forest. The main sponsoring agencies include Weldwood of Canada Ltd., Jasper National Park, Alberta Environmental Protection and the Canadian Forestry Service. The model forest itself has no legislative authority to manage the land, but instead relies on these sponsoring agencies to implement management practices based on research findings within the model forest.

Who Has a Say in the Foothills Model Forest?

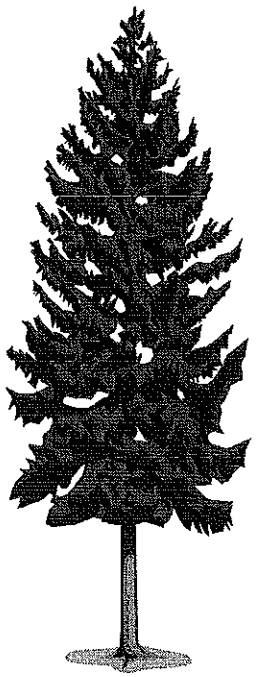
One of the main objectives of the model forest is to involve local groups in identifying issues and discussing possible management options at a grassroots level. The Foothills Model Forest partners represent a diverse spectrum of interests, including: local communities, environmental organizations, oil, gas and mining industries, wildlife organizations, academics, teachers, recreational users and tourism agencies.

Seeing the Trees Through the Model Forest

The Foothills Model Forest includes expansive areas of boreal forests, as well as subalpine and montane forests.

The **boreal forest** is the large tract of rolling forested land to the east of the Rockies. The boreal is the largest forest region in Canada, sweeping across a wide path from the Yukon to Newfoundland. This is where the resource extractive industries such as logging and mining take place, sustaining the economies of communities like Hinton, Edson, Grande Cache and Grande Prairie.

Boreal trees: Lodgepole pine, white spruce, black spruce, tamarack, trembling aspen, balsam poplar



The **Subalpine forest** blankets the steep slopes of the Rockies at elevations of about 1350 metres or higher. These forests provide important watershed protection for the streams and rivers flowing east out of the Rockies.

Subalpine trees: Engelmann spruce, subalpine fir, lodgepole pine

The **montane forest** is the open forest - grassland area found in valley bottoms. It makes up only 7% of the land base in Jasper National Park, yet it is the most important ecoregion for wildlife within Jasper. The aspen forests, open grasslands, wetlands and a low winter snowfall combine to create ideal habitat for many wildlife species.

Montane trees: trembling aspens, lodgepole pine, Douglas-fir, white spruce

For More Information

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A Burning Issue . . .
Fire in the Model Forest

foothills model *forest*
a growing understanding

Fire has Always Been Here . . .

The forests in the Foothills Model Forest evolved with fire. Fires are a natural and important part of the forest ecosystem. 30-50% of forest fires across Canada are started by lightning. Many trees depend on fire to reproduce. Lodgepole pine cones release their seeds after the heat of a fire and the sun-loving seedlings thrive in the newly opened spaces left behind from a fire. Trembling aspens shoot up new stems from their root systems after a fire.

Fire has a huge impact on the landscape. By opening up new forests and starting a cycle of new forest growth, they help to create a mosaic of different aged forest stands with different tree species. This creates a diversity of habitats necessary to support a wide range of wildlife.

Humans Fan the Flames

Humans have been another source of fires for a long time. Native aboriginals used fire to promote the growth of berries and food plants, maintain grassland areas for wildlife and to maintain easy travel routes. When early Europeans arrived in this area, they set forests ablaze by accident and to clear the land.

Humans also *prevent* fires. For the last century, fire suppression efforts have greatly improved - meaning fire has burned less and less area over time. This suppression has changed the landscape as dramatically as starting fires may have. By suppressing fires, grassland areas in Jasper National Park have decreased and trembling aspen forests have declined. The result is less habitat diversity for wildlife that depend on a range of forest types and ages.

Fire Stand History

Throughout the model forest fire stand histories have been taken by sampling tree cores to determine the age of different stands and how frequently fires passed through these forests. We know that, on average, a fire passed through these forests every 50 years. Some forests would have been missed, others burned more frequently, resulting in a constantly changing patch work of different aged forest stands.

Reigniting the Flame

In Jasper National Park, wardens are lighting small scale prescribed burns to help reintroduce fire into the landscape. The prescribed burns are carefully planned and lit only after weather, moisture and fuel conditions are just right. Jasper National Park will also be lighting small burns along the eastern edge of the park in cooperation with Alberta Environmental Protection. What they learn will be shared with the rest of the land agencies in the model forest to improve our overall understanding of fire behaviour and ecology.

We're Still Putting Fires Out

With the absence of fires, forest fuel (branches, logs, etc.) has increased, meaning that if a fire was to start today in certain places, it is likely to be more intense than historically it would have been. To protect the town of Jasper and tourism facilities, fires will still be suppressed. A fire guard has been cleared above the town by logging a strip of forest and conducting a few small controlled burns to reduce the forest fuel load.

On Weldwood's Forest Management Area, large fires tore through an area south of Hinton in 1956. This Gregg River burn was one of the last large fires to pass through - until December of 1997 when a large portion of this area burned again, the result of an escaped brush fire. Fires in actively logged areas like this are still suppressed because they destroy valuable timber resources and play havoc with long term sustainable logging plans.

In managed forests logging plays a role somewhat similar to that of fire. By opening up the forest, logging helps recreate the mosaic of different aged stands once created by fire. There are important differences between fire and logging, however, that the Foothills Model Forest is closely studying.

There's Other Changes in the Wind . . .

Fire is not the only force for change in the forest. Wind storms, tree diseases and insects, avalanches and natural floods all play a role in bringing change and diversity to the forest. Learning more about all the processes that affect our forest ecosystems is an important part of the Foothills Model Forest program.

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MODEL FOREST NETWORK
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Getting *Wild* in the Foothills Model Forest

foothills model *forest*
a growing understanding

There's More Than Just Trees in the Foothills Model Forest

284 wildlife species, including 59 species of mammals, live within the Foothills Model Forest. A range of different habitat types within close proximity to each other support a diverse range of species. In fact, 96% of Alberta's forest-dwelling species are found here in the model forest.

Some of the large mammals include: white-tailed and mule deer, elk, moose, woodland caribou, mountain goat, Rocky Mountain bighorn sheep, black and grizzly bear, coyote, wolf, wolverine, cougar and lynx.

Numerous bird species also make their home here. Ravens, pileated woodpeckers, barred owls, northern goshawks, chickadees and harlequin ducks are just a few of the many birds within the model forest.

Wildlife travel enormous distances and do not recognize political boundaries. Woodland caribou from Jasper overwinter in Weldwood's Forest Management Agreement Area. Grizzlies move back and forth between Jasper National Park and the rest of the model forest. These long distance movements remind us of the need to manage the landscape cooperatively with an ecosystem-based perspective in mind, the very approach being used by the Foothills Model Forest.

Wildlife Research in the Model Forest

Although the various partners within the model forest appear to have opposing mandates, they all share the same long term goal - the need to maintain environmental and economic sustainability over the long run. A key component of this overall goal is to protect the biodiversity of the model forest. Some of the issues being looked at in the model forest include . . .

Maintaining Diverse Habitats - To protect wildlife you need to protect their habitat. We know different wildlife species have different habitat needs and that any particular animal has different needs throughout the year or even the day. Grizzlies prefer younger forests; caribou prefer more mature forests. Elk like open forests to graze in, but rely on closed cover for security. One of the key goals of the model forest is to learn more about the habitat needs of the wildlife, to learn how to maintain a diverse mix of habitats and to minimize impacts on habitat due to forestry practices or tourism activities.

Some of the specific model forest projects include . . .

How forestry activities impact wildlife that may be more dependent on late succession forests, like woodland caribou or barred owls.

How fire benefits wildlife by creating a mosaic of different habitats.

The importance of riparian (streamside) vegetation to certain wildlife.

How logging affects pileated woodpeckers, a bird highly dependent on the insects that thrive in dead wood.

A grizzly study will look at the regional supply of grizzly bear habitat and impacts of human use on grizzly bear populations, movements and habitat.

Wildlife corridors - Wildlife, especially large carnivores, travel huge distances. Developments such as towns, roads or tourism facilities or activities like recreational use, logging or mining restrict the movements of some animals. Studies have suggested that some carnivores need as much as a one kilometer wide strip of protective cover before they will bypass development. We need to protect diverse habitats *and* these wildlife corridors to ensure wildlife can move freely between different habitats.

A Balancing Act . . .

In addition to protecting wildlife biodiversity for its intrinsic value, the Foothills Model Forest has to consider other values like hunting and wildlife watching. Socio-economic studies in the model forest are looking at the economic impacts of some of these other forest uses and the perspectives and attitudes the different user groups have in regards to forest management decisions affecting wildlife.

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MODEL FOREST NETWORK
RÉSEAU DE FORÊTS MODÈLES

There's Something *Fishy* Going on Here

foothills model *forest*
a growing understanding

Aquatic resources are an important part of our forests. They provide drinking water, numerous recreational opportunities and sport fishing. Wetlands help to moderate floods during the spring. Riparian zones provide valuable wildlife habitat. Beaver, and muskrat make their homes in wetlands. Moose forage for succulent aquatic vegetation. Migratory waterfowl rest in open waters; summer residents make their home there. Aquatic resources are important culturally as well - the Athabasca River within Jasper National Park is a Canadian Heritage River - a designation granted due to its outstanding scenic, historical and natural values.

A major component of the Foothills Model Forest is learning more about our aquatic resources and how to manage and protect them for their different values.

What's Beneath the Surface?

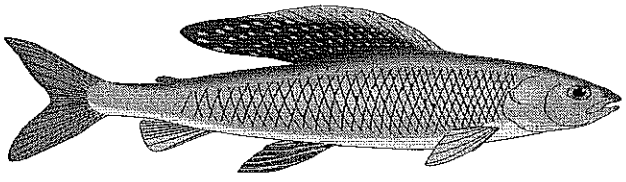
Fish inventories were carried out to find out what fish live in model forest waters. 25 species of fish reside within the model forest, including four sport species:

Bull trout - Alberta's official fish is threatened in most of Alberta. It is a very slow grower and slow to reproduce, and in recent years has been out-competed by introduced fish species. To help populations recover catch and release fishing regulations are in place.

Athabasca rainbow - the only rainbow trout indigenous to the east side of the Rockies, and the only rainbow found in the Arctic watershed.

Mountain whitefish - one tagged mountain whitefish in Jasper traveled 300 km, another reminder of the need to manage and think in terms of large areas.

Arctic grayling - these fish are very sensitive to pollution, thriving best in cold, clean waters.



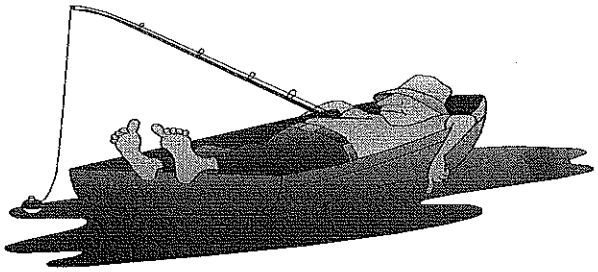
Aquatic Research in the Foothills Model Forest

Research projects in the Foothills Model Forest include. . .

Building bridges - a major issue is the disruption of natural flow regimes and fish movements from roads, railways or other developments. Ensuring culverts and bridges are designed and located so as not to block the movements of fish is an on-going program within the model forest.

Fire and water - The impacts of fire on aquatic ecosystems need further understanding. Remote temperature probes placed throughout streams will help assess any changes due to a large 1997 fire south of Hinton.

Sport fishing - assessing the potential impact from angling pressures on the fishery resources is a high priority. In Jasper National Park, historic fish stocking practices have led to a decline in some native species. In some cases, changes in fishing regulations may be used to help restore a more natural balance.



Life on the Edge

Riparian, stream side habitats support deep, nutrient rich soils and provide homes for numerous plants and animals. Riparian trees provide shade, nutrients and protective cover for fish. They help regulate water flow and prevent sediments from damaging important spawning beds.

Learning more about how forestry activities impact riparian zones is another goal of the model forest. One study site was selectively logged during the winter of 1997 using mechanical and horse logging to see if this approach could be done with minimal impact on the aquatic ecosystem.

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RÉSEAU DE FORÊTS MODÈLES

-Introduction to the Foothills Model Forest -

-Slide Show Script-

SLIDE **TEXT**

1. Welcome to one of the largest field laboratories in the world - the Foothills Model Forest - one of 11 model forests found across Canada.

2. The model forests were established as part of the Government of Canada's Green Plan commitment to finding solutions to sustainable development issues. They are places where research and the involvement of diverse partners at a grassroots level is improving our understanding of how we manage our forests in an ecologically and economically sustainable manner.

3. The Foothills Model Forest is a non-profit organization. A board of directors made up of representatives of the sponsoring land agencies and partners provide direction into long term planning. The partners reflect the diverse interests within the Foothills Model Forest, and include representatives from the forestry, oil, mining and gas industries, environmental organizations, academics, teachers, outdoor recreation groups and all levels of government.

- protected areas

4. The model forest has no legislative authority for land management decisions, so it has to rely on sponsoring agencies to implement any changes based on research from the model forest. The main sponsors include Weldwood of Canada Ltd., Jasper National Park, the Canadian Forest Service and Alberta Environmental Protection.

more slides who - why a partner

5. The Foothills Model Forest is the *largest* model forest in the world - covering 27, 500 square kilometres in the central Canadian Rockies and foothills. It's an area roughly half the size of Nova Scotia, or nearly the size of the state of Vermont or the country of Belgium.

6. In addition to Weldwood's Forest Management Area and Jasper National Park, the Foothills Model Forest also includes Willmore Wilderness Area, William A. Switzer Provincial Park and surrounding crown land. Over 250 townships are located within the boundaries of Foothills Model Forest.

+ new map of FMA

7. About half of the model forest is made up of Weldwood's Forest Management Area, extending to the north and south of Hinton. It covers 1 million hectares - an area larger than Prince Edward Island. This was the *first* Forest Management Area granted in Alberta, back in 1954 to North West Pulp and Paper Power.

8. Forestry and other resource industries helped towns like Hinton, Grande Cache, Edson and Grande Prairie to flourish. Hinton, home base for the model forest, has depended on resource industries since it's founding in 1911.

9. But, like many resource based communities, Hinton's long term economic health depends on more than just how many trees can be logged and regrown in a given year. Changing values and changing economies have meant that towns like Hinton can no longer survive on wood alone.

10. Land managers need to look beyond the trees and manage the entire forest ecosystem for a diverse range of social, economic and cultural values. We need to sustain a thriving forestry industry *without* impairing our ability to protect other forest values for future generations.

11. Sustaining a healthy forest means protecting the biodiversity of the region, maintaining healthy wildlife populations, protecting aquatic ecosystems, conserving cultural resources and managing for a diverse range of recreational and tourism opportunities.

12. An hour to the west of Hinton along the Yellowhead Highway lies the town of Jasper, in the heart of Jasper National Park. Jasper National Park, unlike Weldwood's Forest Management Area, has a mandate to protect the cultural and natural heritage for future generations. The question some might ask is what are two land agencies with seemingly opposing mandates doing in the same model forest? A closer look at Jasper National Park provides the answer.

13. Jasper National Park is over 10, 000 square kilometres, making it close in size to Weldwood's Forest Management Area. Jasper is one of Canada's largest and most famous national parks. It's also part of a World Heritage Site - a designation granted by the United Nations in recognition of its outstanding cultural and natural heritage.

14. Nearly 2 million visitors come to Jasper each year from around the world. They come for the outstanding scenery . . .

15. For the chance to ski, climb, canoe or hike . . .

16. And for the chance to see wildlife in its natural setting.

17. Park managers in Jasper have a daunting challenge - protecting the cultural and natural heritage of such an extremely busy park. As well, much of Jasper has been influenced by decisions made in the past which reflected different values and a minimal understanding of large ecosystems.

18. Protecting Jasper is also a challenge because even a park the size of Jasper is *not* large enough to protect entire populations of some wildlife. Animals like grizzlies and woodland caribou travel enormous distances and do not recognize park boundaries.

19. Rivers that flow out Jasper certainly don't slow down for park boundaries . . .

20. And other influences on the forest ecosystem, like fire, do not stop for borders.

21. Parks Canada knows it has to look beyond its borders if it is going to protect the ecosystem for which it is *only a part of*. Programs like the Foothills Model Forest offer the perfect opportunity to do just that by sharing expertise and research data with neighbouring land agencies.

22. Like Jasper National Park, Weldwood also has much to contribute and gain from the model forest. They provide the model forest an active forestry operation to study, expertise and research information. In turn, Weldwood benefits from a greater understanding of sustainable development issues and can implement new forestry management practices based on things we learn in the model forest.

23. So although Jasper National Park and Weldwood seem to have opposing mandates - they both share the same forest ecosystem and depend on a greater understanding of the issues effecting the forest. Now let's take a closer look at the model forest and some of the issues being faced - issues that forests and communities across Canada are wrestling with.

24. The Foothills Model Forest includes a large portion of boreal forest - Canada's largest forest region. Here, in the rolling terrain east of Jasper National Park, you find vast forests of lodgepole pine and white spruce, the main commercial species, as well as trembling aspen, the main deciduous tree. Tamarack and black spruce also thrive in the wet muskeg forests of the boreal.

25. Subalpine forests of Engelmann spruce and subalpine fir blanket the steep slopes at higher elevations in the model forest. These forest provide important watershed protection for the many rivers and streams flowing east out of the Rockies.

26. The montane is the grassland and open forests found in the valley bottoms of the model forest. Here you find trembling aspen, white spruce, lodgepole pine and Douglas-fir. The montane makes up only 7% of Jasper National Park, yet it is Jasper's most important ecoregion.

27. The combination of aspen forests, wetlands, and grasslands at low elevations create the ideal wildlife habitat for a number of species including elk, bighorn sheep, wolves, coyotes and grizzlies.

28. The montane is also the location of the town of Jasper, Yellowhead highway, CN railway and tourism developments like campgrounds and the golf course. A lot of the research in the Jasper portion of the model forest is focused on understanding and minimizing the impacts of development in the montane.

29. Because of these different forest types and diverse habitats, the Foothills Model Forest is rich in wildlife. 284 terrestrial vertebrates live here, representing 96% of Alberta's forest-dwelling species.

30. Some species of special interest to the model forest include the long-toed salamander. At one time their populations were considered in trouble in Alberta. Their status was upgraded, though, after thousands of the salamanders were found thriving within the model forest.

31. Woodland caribou are found in the northern part of the model forest. These are a larger subspecies of the barren ground caribou found in Canada's north. In winter, woodland caribou migrate out of Jasper National Park into Weldwood's Forest Management Area. Caribou are highly dependent on the lichen found in older, late succession forests.

32. Finding out more about the caribou's habitat needs, movement patterns and the impacts of forestry practices on caribou habitat is an important on-going research project within the model forest.

33. Large carnivores such as grizzlies, wolverines, wolves and cougars also inhabit the model forest. Learning how to protect the habitat and movement corridors for these large carnivores is important to the model forest. If we manage for these species that require vast areas of land, then we will also protect the habitat for numerous other species that have lesser habitat requirements.

34. In the next few years, a grizzly bear research project will study the movements of these wide ranging animals to learn more about how to manage our forests without impacting grizzly bear populations or their habitat. Since grizzlies travel over large areas, are slow to reproduce and extremely wary of human activity, our ability to co-exist with them will be a measure of how well we can live with other wildlife species within the model forest.

35. The mix of wetlands, trembling aspen and coniferous forests also provide varied habitat for numerous bird species within the model forest.

36. Barred owls were studied in the model forest to determine how dependent they are on older aged forests.

37. Another bird of interest is the pileated woodpecker. The largest woodpecker in North America, the pileated woodpecker thrives on insects found in dead wood. The woodpeckers carve out holes in search of carpenter ants - a major forest pest. These excavated cavities later serve as homes for countless other birds and mammals such as the marten or fisher.

38. The pileated woodpecker has been chosen as an indicator species in the model forest - studying this bird provides an indication of the overall health of the forest. The theory is if we protect the habitat necessary to maintain pileated woodpecker populations, we will also protect as many as 45 other wildlife species dependent on the same habitat.

39. It's not just trees and wildlife that capture our interest in the model forest. We also have to look beneath the surface, literally, to study the impacts forestry and other activities have on our rivers, wetlands and watersheds.

40. Research into how road building activities, fire and forestry practices effect our water resources is an important on-going program in the Foothills Model Forest. To further our understanding of aquatic resources, an inventory of fish species found in local waters has been completed.

41. There are 25 fish species found within the model forest including four sport species - Bull trout, Athabasca rainbow trout, Mountain whitefish and Arctic grayling. Studying their habitat needs, movement requirements and how pressure from sport fishing effect their populations is also of great interest to us.

42. These are just a few of the fish and wildlife issues of concern to the model forest. We need to remember though, that forests are more than just trees and the wildlife that they sustain. They are dynamic, complex landscapes. To protect these forest we also have to understand some of the ecosystem processes taking place.

43. Disturbances like fire, wind storms, diseases and insects result in a forest that is always changing. Fire in particular, has played a major role in this landscape for thousands of years.

44. Naturally occurring wildfires create a patchwork of forests made up of different aged stands. Fires recycle nutrients and open up the forest, maintaining a diversity of habitat types needed to maintain a diversity of wildlife species.

45. Most of the trees in the model forest have evolved to co-exist with fire. Trembling aspens shoot up from roots, even after parent trees have been killed by a fire. Aspens are fast growing, sun-loving trees that thrive in disturbed areas.

46. And lodgepole pine cones release their seeds after the heat of a fire. Like aspen, they are sun-loving pioneer trees highly dependent on burned over areas to survive.

47. Fire history studies completed in the model forest indicate fire was a frequent visitor - on average, every year 2% of the model forest was burned by fire. This results in an average fire cycle of 50 years - meaning every fifty years, on average, this forest was burned by wildfires. Fires tend to be hit and miss though, so some stands would have been burned less frequently, others more frequently - adding to the mosaic effect of different aged stands.

48. After years of fire suppression, however, trembling aspen forests and grassland areas in Jasper National Park are declining - resulting in less habitat diversity. Parks Canada is attempting to reverse the situation by reintroducing small, prescribed burns in the park to help maintain the natural diversity of habitats and to learn more about the ecological role of fire. A cooperative study between Alberta Environmental Protection and Parks Canada will also be carrying out prescribed burns along the eastern edge of the park.

49. Because of the need to protect valuable timber resources prescribed burns aren't an option in the Forest Management Area of the model forest. Fortunately, some of the positive effects of fire are mimicked by logging. Logging, like fire, creates a patchwork of forest stands at various stages of development. There are important differences, though, between logging and fire, and understanding more about these differences is an important priority for the model forest.

50. Beside the trees, wildlife, aquatic resources and disturbances like fire, there is still one component of this landscape we haven't yet touched on. Namely us. People are part of this landscape and have been for a very long time.

51. Aboriginal tribes hunted, trapped and made their homes in these forests for thousands of years.

52. Explorers depended on theses resources for fur trading, guiding and outfitting. Later, the rise of early communities depended on the surrounding forests for timber resources.

53. Today we depend on the forest in the model forest for many things. A healthy forestry industry sustains a strong economy and provides many of the local jobs.

54. Recreation and tourism are also growing. More and more people come to these forests each year to camp, hike, hunt, canoe, and fish in these forests.

55. The forests are also important for their spiritual, cultural and historical values.

56. And these forests help us maintain clean air and water. These forests belong to all of us. The forests are, quite literally, where *we* too have made our homes.

57. These many different values must be reflected in the management of our forests. That's why the Foothills Model Forest is also studying the socio-economic impacts of our forest management decisions. What are the economic benefits, for example, of a strong tourism industry based on these forests? What are the expectations of visitors traveling to William A. Switzer Provincial Park or to Willmore Wilderness Area?

58. How can the visual impacts of cut blocks be minimized so as not to negatively impact the growing tourism in the area?

59. How will mining and forest industries work together to minimize impacts on wildlife populations and their habitats?

60. How can we support a healthy tourism industry and forestry industry while still protecting the biodiveristy of the region?

61. When you look at the different issues in our forests, not just here, but across Canada as well, the challenges seem daunting. How do we balance these different values? How do maintain a vibrant economy without killing the goose that laid the proverbial golden egg?

62. When we look down the road towards the next century, how can we ensure people living in communities like Hinton will continue to make a healthy living from these forests and still be able to fish, camp and hike here?

63. How do we ensure people will be able to visit Jasper National Park 100 years from now and still catch a glimpse of a wild grizzly or woodland caribou?

64. These are questions at the heart of the Foothills Model Forests. Questions that by working with our partners at a grassroots level, the Foothills Model Forest program is beginning to find answers to.