



## New Lures Attract More Mountain Pine Beetles to Traps

Lures are important in the fight against the spread of the mountain pine beetle (MPB). They are used to attract beetles, allowing for monitoring of their activities (such as the timing of flight), detection of beetles at low densities, and comparison of beetle populations between sites. Lures can also be used to concentrate beetle attacks on baited trees when incorporated in “trap-tree” programs. These programs lower beetle populations in specific locations by removing those baited trees—a strategy that is particularly effective when beetle population numbers are low.

Dr. Nadir Erbilgin and his associates are currently conducting research at the University of Alberta to design better attractants for baited trap trees. Specifically, there is interest in improving currently used lures where MPB exist at low densities—on the eastern and northern edge of beetle expansion into Saskatchewan and the Northwest Territories.

The research consists of two phases. In phase one, two separate experiments were conducted in 2014, testing the aggregation pheromone of MPB alone and in combinations with various tree host chemicals, such as myrcene and terpinolene. The second experiment showed that traps baited with the standard lure plus myrcene attracted more beetles than any other treatment; the combination was about three times as effective as the standard lure alone.

The standard MPB lure that consisted of two component beetle pheromones and one host chemical caught more beetles than two component beetle pheromones alone. It also caught more beetles than lures with beetle pheromones combined with other host chemicals. A similar number of beetles were caught with two component beetle pheromones plus myrcene as were caught with two component beetle pheromones plus terpinolene. The results suggest that myrcene can replace terpinolene in future studies and beetle attraction should remain the same.

“I am hopeful we will develop an effective trap-tree program to monitor and detect mountain pine beetle populations in novel habitats,” says Erbilgin. “I think that we will be able to determine whether trap trees can be used to elevate annual trends of relative beetle abundance as part of the direct control strategy of beetle population reduction.” As the



Preparing a trap with pheromones for MPB

beetle threatens to expand its range eastward into the boreal forest and northward into the Northwest Territories, early detection is paramount in developing mitigative strategies to control range expansion.

Phase two of this research project, which will operationally test the new formulation of the lures, will start in the summer of 2015 and continue throughout the following summer.

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## Introducing FGrOW

The Forest Growth Organization of Western Canada (FGrOW) intends to be a leader in innovative growth and yield research and policy development for Western Canada. Operating as of April 2015, it will help to overcome the two main challenges for growth and yield in Alberta: shortages of competent field and analytical staff, and the availability of funding. FGrOW plans to achieve its goals by researching new technology, training, coordinating data collection, and collaborating with the University of Alberta for training, continuing education, and research. The organization will also seek out opportunities for partnerships with relevant organizations throughout Canada.

FGrOW is an amalgamation of four growth and yield associations: the Alberta Forest Growth Organization, the Foothills Growth and Yield Association, the Mixedwood Management Association, and the Western Boreal Growth and Yield Association. Its work will include collecting and recording quality data under agreed-upon standards for growth model development and validation, as well as transferring knowledge to members so work can be implemented for forest management plans. FGrOW will also be informing policy decision making founded upon science-based results.

## Caribou Program Gets into the Field

The Caribou Program will be busy this summer completing fieldwork for five projects. In the first, researchers are conducting science-based research to understand predator and prey responses to seismic lines. This work is being done to better understand habitat restoration from the perspective of caribou and predators. The second research project will produce tools that will be used to assist in sustainable harvesting of boreal forests with minimal impact to caribou habitat.

For the third project, additional data will be recorded about the deaths of adult female caribou. Researchers will strive to determine whether deaths were natural or caused by grizzly bears, in order to assess the role of grizzly bear predation

on caribou. Animal movements in response to revegetation will be analyzed for the fourth project so improvements to linear features on the landscape can be recommended in order to increase functional habitat in west-central and northwestern Alberta.

Finally, trade-offs between food supply for caribou and grizzly bears and mountain pine beetle (MPB) management strategies will be assessed to better understand whether forest management is warranted after MPB mortality.

There will be 12 members in the field crew, and work will begin mid-May and continue until the end of August. Depending on weather conditions, the field season may be extended.



### Caribou Program – Winter Surveys

Fecal surveys were done for the Caribou Program all winter. Samples were taken at eight different times for health assessments in west-central Alberta.



## Summer Fieldwork

This summer, the Grizzly Bear Program will focus on completing the final year of the caribou and grizzly bear predation study. In an effort to understand what grizzly bears are eating, researchers will track bears with GPS collars, track an individual for several hours or days, and go to the sites after the bear leaves to assess what the bear was doing and determine whether it was feeding on caribou.

Summer fieldwork will be conducted in Jasper and the Grande Cache area. Two summer students will be trained to visit these sites over the course of the summer. Field season will begin when the bears come out of hibernation, and the summer students will work until August. The research may continue until October.

## Scat App Success



The Grizzly Scat app helped researchers in the Grizzly Bear Program obtain information on the distribution and abundance of grizzly bears in Bear Management Area 3 (BMA 3) between Highway 16 and Highway 11. Hunters, wildlife enthusiasts, and other engaged citizens who spent time in BMA 3 in the fall of 2014 downloaded and used the custom app so their movements could be tracked as they attempted to collect bear scat. And many app users will be doing it again this year in Jasper National Park.

The project is being undertaken to engage local citizens, compare population distribution and abundance estimates using hair and scat datasets, and evaluate the costs and benefits of each approach.

Volunteers are first trained in proper collection and then asked to put samples of bear scat found on the trails in

vials and scan the QR code on the the vial. Scanning the QR code creates a record of the sample including the location it was collected from along with the date and time. This information is then sent electronically to fRI and, once the vial is submitted by citizen scientists, researchers will match physical samples to electronic records in the database.

In total, 22 kits for scat collection and six GPS loggers were signed out. The app was downloaded by 38 users, and 9 scat samples were submitted by citizens.

In addition, fRI staff went out and walked transects in search of scat in the fall. All the spatial information collected during the scat sampling work is being stored in a database for analysis. Lab work to identify individual bears has just been completed and results are currently being assessed.



fRI's Communications and Extension Program continues to focus on networking by attending workshops and conferences. Have an event that you think would be of value to fRI? Please contact us.

You can find fRI's latest news, events, and resources on the home page of our website, [foothillsri.ca](http://foothillsri.ca).

## A 25-Year History of fRI



Natural Resources Canada initiated Canada's Model Forest Program, through the Canadian Forest Service, in order to establish our country as a leader in sustainable forest management. Beginning in 1992, the Canadian Model Forest Network was developed by successfully building partnerships and investing in science-based research to develop new tools for sustainable forest management. The Foothills Model Forest in Hinton has evolved into fRI and has expanded from forestry into a more diverse range of research, including subjects such as grizzly bear, caribou, mountain pine beetle, and water. As fRI comes up on its 25th anniversary, the Forest History Program (FHP) will begin writing a book about the history of the organization.

Funding for writing this book was approved by fRI in March of 2015. It will be co-written by Robert Udell, program lead of the FHP, and Robert Bott, the primary author of *Learning from the Forest*. Udell expects this record of the organization's first 25 years to be of value to natural resource agencies across Canada and to the general public, since it will educate readers about the forests in the area as well as advances in research supporting sustainable land and resource management.

It will also serve to highlight the research and tools that have been developed at fRI, which have benefited many organizations in Alberta and beyond. For example, research conducted by the Healthy Landscapes Program on natural disturbances is now being used in most of the western provinces. The book will strive to explain all that has been accomplished, what has changed over the years, and the value of fRI to industry and key stakeholders. It is set to be released during the spring of 2017.

## Mountain Pine Beetle Information Exchange Forum

The fRI Mountain Pine Beetle Ecology Program (MPBEP) hosted its annual information exchange program April 22 and 23 in Edmonton, bringing scientists together with forest practitioners, land managers, and policy makers for two days of presentations and discussions. More than 90 attendees heard about recent scientific findings and new knowledge that they can now take into account when developing operational strategies and making decisions regarding management and control of mountain pine beetle (MPB).

The MPBEP is expanding its mandate to include research into the rehabilitation of damaged landscapes. The MPB leaves significant damage in its wake, and broad-scale stand mortality has implications, such as changes in hydrology and critical habitat, that make damaged areas more challenging to rehabilitate. "We have to rely on a lot of past experience, but that has to be influenced by ongoing research so that we make the best decisions possible based on the best information we have," says Keith McClain, lead of the MPBEP.

With research strongly indicating that the beetle does very well in other types of pine, provinces to the east are growing increasingly concerned. That point was driven home at the forum by Taylor Scarr, provincial forest entomologist at the Ontario Ministry of Natural Resources and Forestry. He shared Ontario's concerns over the threat MPB poses to white pine, Ontario's provincial tree.

Scientists presented summaries and findings of research in a range of areas, including population dynamics in novel pine habitats, the potential impacts of the beetle and management activities on grizzly bear and caribou populations, and the effectiveness of Alberta's forest management strategies against the MPB. Other speakers brought up interesting food for thought, such as the impact MPB devastation has had on individuals, like farmers who lose grain to animals that have lost their habitat.

The MPBEP is expanding its mandate to include research into the rehabilitation of damaged landscapes. The task will not be easy as traditional forest renewal strategies need to be rethought and new approaches taken to deal with drastically altered landscape conditions. As this work proceeds, we need to address an important question: What does success look like?

The event ended with an exercise in which foresters and scientists collaborated to develop silviculture prescriptions for various landscape scenarios and stand conditions. The MPBEP is compiling the prescriptions to provide foresters with a starting point for restoring damaged landscapes.



## Foothills Stream Crossing Partnership Signs New Directive



### Foothills Stream Crossing Partnership

The Foothills Stream Crossing Partnership (FSCP) recently signed a directive with Alberta Environment and Sustainable Resource Development, now Alberta Environment and Parks (AEP), and the Alberta Energy Regulator (AER) to complete stream inspections, data acquisition, and planning and crossing remediation in Alberta. Typical work completed by FSCP in the summers includes stream crossing inspections, electrofishing by request, and prioritizing stream crossing repair.

This summer, a two-person crew will be doing the work, and they expect to complete 300 crossings. FSCP is in the process of improving its online database system

and updating its manual to ensure that workers will be properly trained. With the directive signed, FSCP will be expanding its work to include inspecting member crossings, sequencing all watersheds for remediation planning, prioritizing candidate sites for remediation, creating watershed remediation plans, and reporting annually to AEP and AER.

This initiative began with Jerry Bauer, program lead for FSCP, approaching finance minister Robin Campbell, who spoke to Robert Stokes, executive director of resource integration planning at AEP. The driver for getting everyone on board was George Robertson, executive director for the Upper Athabasca Region at AEP. The directive has been in progress since the fall of 2014 and was signed and made public in March 2015. Phase one will begin this summer and will stretch geographically from Grande Prairie to Southern Alberta.

### New Staff

The Geographic Information Systems (GIS) Program welcomes GIS analyst Joshua Crough to its team. Hired in January 2015, Joshua has a wide range of professional experience in geographic information systems, including direct involvement in the collection, processing, and quality control of aerial imagery. He has also worked in the public sector providing GIS support to a school board's planning and transportation department. A strong interest in the environment led Joshua to focus his career on the environmental and non-profit sector, which in turn led him to fRI.

Julie Duval, GIS program lead at fRI, says that Joshua is a great addition to the team. "He had the knowledge, skills, and resourcefulness to hit the ground running and tackle challenging GIS projects from the start," she says.

Joshua says that working at fRI provides a diverse range of tasks, such as developing custom tools, creating maps, and assisting co-workers with analysis. He says that his co-workers are a great group of people to work with and that they have made his transition to a new position, and new town, very easy. "Exceptional organizations are built by exceptional people," says Joshua. "I definitely find this to be the case at fRI."





## Online Course to Help Municipalities

Regional plans involve a wide range of land-use activities, infrastructure, and development, so they can be quite complex. A new online course is being developed to help planners, town managers, and elected officials understand how their local decisions are impacted by approved regional plans, and what they need to do to be in compliance.

The Alberta Land-use Knowledge Network (LuKN) is partnering with the Land Use Secretariat to create and host the course. The initial focus will be on the Lower Athabasca and South Saskatchewan regional plans, although the content will apply to all regions. The LuKN and the Land Use Secretariat are working toward a launch date in the coming months.

## Ecotour App

The Ecotour iPhone app for the *TransCanada Ecotours® Northern Rockies Highway Guide* is now live and can be downloaded for free. The self-guided travel guide app includes over 130 “ecopoints” of information with ecological, geographical, cultural, and historical significance. It encompasses Hinton, Valemount, Grande Cache, Cadomin, Jasper, and Lake Louise.

Targeted to travellers, this app lets people enrich their travel experience by learning about the region through a historical and cultural lens. Each ecopoint includes a photo and short description of the location’s key features, and corresponds with the ecopoints in the book *TransCanada Ecotours® Northern Rockies Highway Guide*, originally published by



fRI in 2012, and written by Frederick C. Pollett, Robert W. Udell, Peter J. Murphy, and Thomas W. Peterson.

The app includes the option to read the full text from the original publication so the reader can gain more detailed information about each site. It presents the region’s history and ecosystem, highlights the adventures of the early fur traders and missionaries, and provides information about the important scientific contributions fRI has made to the region.

Travellers can share their travel experience with friends when using the app, by posting comments and photos to social media sites like Facebook and Twitter. Also included is a guidebook that allows users to locate local businesses and services, such as restaurants, hiking trails, and visitor centres. The next time you’re on the mountain-biking trails in Hinton, you can use the app to determine your location within the trail system!

Using the Ecotour app, tourists are physically connected to history and cultural knowledge, making for a more meaningful and informative travelling experience. It is available now for download at iTunes.

## Reading Material

Visit [foothillsri.ca](http://foothillsri.ca) to read this and other publications.

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## About fRI

The Foothills Research Institute (fRI) is a unique community of partners joined by a common concern for the welfare of the land, its resources, and the people who value and use them. fRI connects managers and researchers to collaborate effectively in achieving fRI’s vision, which is to support and contribute to sustainable land and resource management.

Over the years, fRI has grown, expanding in scope, broadening and increasing partnerships and funding, and expanding in activity and interest beyond forest lands. Our programs and partners determine where we do research. We now collaborate with colleagues regionally, provincially, nationally, and internationally through new agreements and understandings.