



## What's New...

The Aleza Lake Research Forest Society has now established a **Research Endowment Fund** at UNBC to complement the current ALRF Seed Grant Program. The fund will grow over the next several years and will eventually support multi-year research grants at ALRF. A preliminary committee has been established (Staffan Lindgren, Bruce Larson and Melanie Karjala) and will make recommendations to the ALRF Board on fund management. Fund contributions can be made through the UNBC Development Office.

Two ALRF seed grants were awarded this spring. One went to **Jocelyn Campbell** (UBC PhD candidate; co supervisor Dr. Cindy Prescott, UBC) and **Dr. Art Fredeen** (UNBC) to study the nutrient contributions of epiphytic cyanolichens within sub-boreal forests. The other seed grant went to **Mark Thompson** (UNBC Genetics Lab), **Roy Rea** (UNBC Lab Instructor) and **Dexter Hodder** (John Prince Research Forest) to examine breeding sites of amphibians in a managed forest landscape, particularly those of the long-toed salamander.

ALRF initiated the first year of measurements for the cedar trial planted in 2005. Approximately 1200 trees were tagged and measured by ALRF summer students **Michelle White** (UNBC Forestry) and **Marley Chewter** (UBC Forest Sciences).

ALRF was successful in acquiring **\$19,000** from the BC Forest Science Program, **Long-Term Research Installation** fund to maintain



*Graduate students and field assistants pose for this photo at ALRF's Introduction to BEC course taught by Bruce Rogers (Photo: M. Karjala, May, 2006)*

permanent monitoring sites, the Research Forests' project database, and to compile historical projects from the former Aleza Experiment Station. Additional funding from the Natural Resources Canada Internship program will also support this historical work.

Two training courses for graduate students and field crews were delivered through ALRF this spring. Introduction to Field Skills covered map reading and compassing and an overview of basic field hazards. Introduction to Biogeoclimatic Ecological Classification was taught by **Bruce Rogers** (UNBC master's candidate) at two sites: one at ALRF and the other near Blackwater River.

ALRF Society Director **Herb Langin** (Integrated Land Management Bureau) has retired and consequently stepped down from the Board. Thanks to Herb for his service with the Society – and many wishes for a happy retirement!

## ALRF Research and Teaching Opportunities: The Central Plateau Unit

The ALRF Management Plan outlines strategic guidance for creating research and education opportunities at the Research Forest. Seven ALRF units are managed according to one of three emphases: Intensive forest management; intermediate forest management; legacy research plot management; and research natural areas. This issue of the ALRF Newsletter will focus on research and teaching opportunities in the Central Plateau Unit, which is managed under the intermediate forest management strategy.

Located at the geographical centre of the Research Forest, the Central Plateau Unit is approximately 900 hectares in size. The Central Plateau is ecologically variable, ranging from the deeply dissected ravines in the north to flatter, poorly drained sites to the south. The position of this Unit makes it an important connective zone between the Bowron floodplain (managed for wildlife habitat) and the upland Ecological Reserve (BC Parks research and education old growth reserve). The forest cover is primarily a mix of spruce and sub-alpine fir, with numerous pine and black spruce bogs scattered throughout. The Unit includes creeks that drain northward into the Aleza Lake watershed and south into the Bowron River watershed.

Past forest practices in this zone include single-tree selection and group selection harvesting in the 1960s, and more recent clearcut harvesting in the early to mid 1990s. A significant legacy in this unit is a large 136 ha block, harvested and burned in 1990, which is located in the centre of the Unit. The Aleza and Bear Forest Service Roads, two major access roads, intersect within the Central Plateau.

The primary management objective in this Unit is landscape connectivity with a high emphasis on biodiversity through structural diversity and coarse woody debris retention. Harvest rotations are extended (140 years), average targeted minimum patch retention across the unit is 14%, and

average targeted minimum coarse woody debris retention across the unit is 40m<sup>3</sup>/hectare.



*A spruce/pine plantation regenerates within the Central Plateau Unit. Effective green up height in this unit is 5m (provincial standard is 3m) to ensure adequate cover and connectivity within the Research Forest.  
(Photo: M. Karjala, May 2004)*

Current ALRF activity in the Central Plateau Unit focuses on wildlife and habitat monitoring and effective harvest block greenup. Preparation of a 2<sup>nd</sup> pass group selection partial cut in block 8 is in progress. Possible research or teaching opportunities in this unit include habitat suitability mapping with comparisons between managed and natural stands; implementing and evaluating innovative forest harvesting practices that emphasize biodiversity; and developing predictive ecosystem mapping techniques to improve classification of lower productivity stands through remote sensing.

All visitors are welcome to observe and participate in forest management and monitoring activities at ALRF. Maps showing future harvesting are outlined in the Research Forest Stewardship Plan found on the ALRF website. Research and teaching sites can be incorporated into planning these and other activities. For information contact Melanie Karjala, [karjal0@unbc.ca](mailto:karjal0@unbc.ca), (250)960-6338.

## Research Feature

### Reproductive Ecology of Willows in Riparian Habitats

*Cecelia Alstrom-Rapaport, PhD, University of Northern BC*

Willows are an important component of many plant communities in the northern hemisphere and provide food and shelter to wildlife. Many are pioneering species, establishing at primary succession following forest fires and on river floodplains. Genetic analysis based on molecular markers of pioneering plant populations, revealing their spatial and temporal structure, is important for understanding primary succession within regenerating forests. Only a few studies have explored the genetic population structure of willow species (Thorsen et al. 1997, Rottenberg et al. 1999, Lian et al. 2003) and few studies have applied a molecular ecology approach, combining life-history and reproductive characteristics with genetic molecular markers from the same natural populations.



**A tagged sample willow at the ALRF Camp Creek site. Recent beaver activity reveals the potential for new areas of study in willow distribution (Photo: M. Karjala, July 2006).**

The goal of this research was to examine willow reproductive ecology in British Columbia lowlands, focusing on the pollination mode (insect and/or wind pollination), asexual reproduction and sex ratio. Six riparian study sites were established, two of these at Aleza Lake Research Forest (ALRF) in the summer of 2005. Initially an ALRF Seed Grant project, this study is now part of a larger 5-year NSERC Discovery Grant project (2005-2010), which will allow continued monitoring and research at these sites.

At the first ALRF Camp Creek site, all willow individuals were included in the study. At the Bowron River site, ten 5 m x 5 m plots were

established along a river bank.

All individuals within each plot were labeled with numbered tags. Species identity, sex ratio and pollination mode were determined. In all populations, three leaves were collected from each individual for future population genetic structure analysis.

Six willow species (*Salix sitchensis*, *S. scouleriana*, *S. lucida*, *S. discolor*, *S. prolixa* and *S. maccaliana*) were found at both sites. At Camp Creek, species of 202 individuals could be determined while heavy browsing from beavers and ungulates made identification of the remaining 31 individuals impossible. Population density was estimated to be approximately 0.02 individuals per m<sup>2</sup>. Along the Bowron River, 152 individuals of the six species were labeled for 10 plots. Thirty-eight of these individuals were so heavily browsed by beavers that either their tags could not be found or no remaining branches could be used for species identification. Estimates of population density at this site range from 0.16-1.04 individuals per m<sup>2</sup>.

Data from at least two additional field seasons must be gathered to draw definite conclusions on species, sex ratio and pollination. Willow species identification is challenging and needs to be confirmed as the species did not completely correspond to those previously reported in the area. The lack of viable seeds within these populations must also be examined further.

The beaver-willow interactions were revealed to be an important factor in reproduction. In several of the study locations a portion of the branches cut by beavers were dragged along the shore but then abandoned. Many of these branches established as new individuals. Hence beavers appear to have an influence on the genetic structure by spreading clones within a population. In addition, along larger rivers, branches cut by beavers could potentially travel tens to hundreds of kilometers establishing new individuals with identical genotypes to those upstream. Therefore, beaver cutting may not only influence the genetic structure at the intra-population level but may also be important for downstream willow migration. Based on this initial work, the influence of beaver activity on willow clonal expansion will now be incorporated into the study.

## Other news...

**Research:** Dr. Staffan Lindgren (UNBC) and Dr. Brian Aukema (CFS) are collaborating on research in conjunction with the University of Wisconsin to examine spruce beetles. ALRF coordinated falling of four mature spruce trees to attract the beetles to be collected for the project.



*UNBC Forestry Undergrad, Amanda Davey prepares her camera as she assesses a potential sample site. Amanda's report on MPB and pine bogs can be found on the ALRF website (Photo: M. Karjala, February, 2006).*

ALRF donated 200 pine trees to Dr. Annie Booth's (UNBC) Prince George Sustainable Landscaping Initiative. The donation was coordinated by Matt LeRoy and the trees were planted by ALRF summer student Michelle White at the UNBC campus gravel site.

**Visitors:** Nathan Basiliko (UBC post-doctoral research fellow) toured ALRF in April while on a trip to sample study sites in the Prince George area.

**Board of Directors Retreat:** The ALRF Society Board held an AGM/retreat at Moose Springs Resort on April 27. Ideas from the retreat's visioning session will initiate the formulation of a 5 year development/business plan for the Research Forest.

**Education and Training:** UNBC Forestry Student, Amanda Davey, completed an undergraduate project at ALRF over the winter semester. Amanda studied the impact of Mountain Pine Beetle on a pine bog and projected stand development over the next 30 years.

### Aleza Lake Research Forest

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### Aleza Lake Research Forest Society

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