

NEW
LOGO



Did you know that ...

ALRF has 17 long-term growth and yield permanent sample plots that have been continuously measured for as long as 80 years.

Over 40 years of climate data has been collected from the ALRF.

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Aleza Lake Research Forest

Newsletter – Fall 2004

The Aleza Lake Research Forest Society (since 2001) is a not-for-profit organization, self-funded mainly by timber harvesting, and is co-managed by the University of British Columbia and the University of Northern British Columbia.

New Developments

From September 26-29, the Aleza Lake and the John Prince Research Forests co-hosted the 20th Annual Symposium on Research Forest Management. Symposium participants included research forest managers and staff from the Canadian Forest Service (New Brunswick), University of Washington, Oregon State University, University of Idaho, University of Montana, University of California at Berkeley, and the University of BC. The purpose of the symposium is to exchange information on research, operations, and education programs implemented on research forests. ALRF staff would like to thank Peter Forsythe, Wayne Martin, Staffan Lindgren, Art Fredeen, Paul Sanborn, and Claudette Bois for their participation in this event.

The ALRF Society logo contest, held last spring, produced 36 entries from UNBC, UBC, and Giscome, BC. The winning entry was selected by the ALRFS Board of Directors. The winner is Ada Cheung, a Commerce major at the University of Northern British Columbia. Ada was awarded \$300 for her conceptual design. The final logo can be seen on this newsletter, and depicts the coniferous forest, the Bowron River, and the soils, found on the research forest. Many thanks for all the excellent submissions!

The ALRF Society would like to welcome two new board members: Bruce Larson (professor and research chair, UBC Faculty of Forestry), and Herb Langin (Regional Director, Ministry of Sustainable Resource Management, Omenica-Peace Region. We thank outgoing members, John Innes (UBC Faculty of Forestry), and Phil Zacharatos (Ministry of Sustainable Resource Management) for their participation in the Society.



Forest Operations

The administration and programs at ALRF are funded through timber harvesting at the forest. Harvest blocks are designed to protect and enhance research and education opportunities.

Preparations for 2004/2005 winter harvesting were carried out through the summer and fall. Approximately most of this year's timber harvest will come from the West Bear Management Unit, south of Bear Forest Service Road. The remaining volume will come from a partial cut located on the West Branch Road

Block 6 contains a concentration of spruce beetle attack initiated by patches of windthrow. The harvest area is 37 ha, plus 14 ha of reserves. The stand is dominated by hybrid white spruce and sub-alpine fir ranging between 130-210 years old. The prescribed silvicultural system is clearcut with reserves.

Block 7 contains patches of spruce beetle, also initiated by a windthrow event. The total harvest area is 7.5 ha, divided into 7 patches ranging between .2 and 2 ha. The prescribed silvicultural system is small patch cuts to.

Block 3 contains a timber sale that was partially cut in 1946/47 where 60% of the volume was removed from the harvest area. This winter will be the first phase of harvest in block 3, where the timber will be removed using a combined group selection/single tree selection system. The second phase of harvest in the southern portion of the block is expected to occur in 2005/2006.

Some road improvements were completed on the ALRF this fall, including 6 kms of roadside brushing on the East and West Branch Roads in addition to some minor road repairs on the Aleza Lake Forest Road.



Slash burning in block 5 (Photo: M. LeRoy, Oct. 2004).

New Research and Monitoring

Eric Mellina (post-doctoral fellow, UBC Forest Sciences Department) collected data at ALRF to test a stream temperature predictor model (Mellina et al. 2002. Can. J. Fish. Aquat. Sci. 59: 1886-1900). This "cooling model" was developed to predict downstream temperature trends in small headwater and lake-headed streams using easily measured predictors (stream temperature and canopy cover). Because canopy cover is one of the predictors, and is a variable that is expected to change following logging, the model has the potential to allow forestry and fisheries managers to predict post-logging temperature responses in small streams. The primary objective of this research is to test the model's ability to predict stream temperature change in many locations over time.



A cottonwood tree, den, located near the Bowron River. The ALRF is building an inventory of black bear dens on the forest to enable management around these and other important habitat features. (Photo: M. Karjala, June, 2004)

A new wildlife monitoring project was initiated by Justin Hooper, a UNBC Wildlife and Fisheries major and ALRF's 2004 summer student. Justin installed and monitored 4 sand traps on wildlife trails located within a 7 hectare wildlife reserve adjacent to block 6. The trails appear to link wetlands, and cutblocks with a small pond. The purpose of this summer's monitoring was to determine what species are using the trails. Preliminary results reveal that moose, wolves, black bears and wolverine travel these routes. The ALRF purchased a digital, infrared wildlife camera to monitor wildlife use of the pond site.

ALRF Forest Carbon Project Updates (Principal Investigator - Dr. Art Fredeen, UNBC Ecosystem Science and Management Program)

- Project Coordinator Claudette Bois and her field staff have now sampled 104 plots over two field seasons

at ALRF. Sampling occurred mainly in early and old growth stands. Lab work through the winter will measure carbon stocks (how much sits in the forest) from soils, plant and coarse woody debris samples. A third field season next summer will include sampling from selected bogs.

- The carbon sequestration (carbon absorbed from the atmosphere) monitoring site at ALRF (established in 1994) was monitored by Jennifer Waughtal (UNBC MSc grad). Data collected this year confirms that the plantation changes from a carbon source (releases carbon) to a sink (absorbs carbon) at year 10, though in recent years there were indications of small sinks at the site. Data captured in October this year will provide a better idea of the size of the fall/winter source. Sink size and magnitude, appear to be dependent on weather conditions during the growing season.
- Master's candidate Darren Janzen is using the above field data to map carbon stocks and sequestration in relation to historical forest management activities. He is currently developing a model to apply this information to the ALRF using provincial vegetation resource inventory (VRI) data and satellite imagery. The research will help to understand the link between forest management and carbon cycling.
- Master's candidate Rachel Botting completed the 2nd and final field season for her study on the contribution of terrestrial lichen and bryophyte layers to carbon flux (exchange between the forest and atmosphere). Measurements were taken at two old growth sites at ALRF under different environmental conditions. These measurements will be modeled using local climate information to understand seasonal variations in carbon flux.



A new concrete foundation is prepared for the weather tower. ALRF staff refurbished and upgraded the weather station in October 2004 (Photo: M. Jull, Aug. 2004).

Douglas fir trees were damaged from the late August frost with 27% in very poor condition. Spruce had 1% and pine at 2% damage. Eight trees were lost completely, possibly from browsing. Root growth has been mapped, and roots were observed to be still growing in mid-October. Seedlings planted in decayed wood show relatively high rooting, as are trees growing on deactivated sandy road and in the slash burn sites. Rooting in upland sites is relatively sparse while negligible rooting is observed in the lowland clay. It is evident that root pruning has not been a detriment to seedling establishment for the three species tested on any of the sites.

- **Bear den site selection and forest management.** Dexter Hodder (John Prince Research Forest) & Roy Rea (UNBC). Preliminary field work included field reconnaissance and investigation of habitat characteristics affecting den site quality. Results to date show that bears tend to select den sites either in the Camp Creek gully systems, or in the Bowron River valley where bears select dens in large cottonwood trees. Five sites were investigated and recorded as potential excavated den sites and 1

proved to be a bear den. Several large cottonwood trees (~ 12) were assessed along the Bowron River. Five have visible cavities, and many had claw marks, both indicators of den trees. We will climb and assess these trees after bear emergence in spring 2005.

- **Arboreal macrolichen and species diversity at the Aleza Lake Research Forest: Effect of soil types and host-tree species** Jocelyn Campbell (Research Assistant) & Dr. Art Fredeen (UNBC). Cyanolichen distribution patterns at the ALRF are not explicable in terms of stand age, moisture or microclimate. There is evidence that hotspots of macrolichen diversity are governed by chemical site factors. We investigated the role of soil texture (sands versus clays) and tree species (subalpine fir versus hybrid spruce) on the diversity of epiphytic macrolichens – particularly cyanolichens. Six trees (3 of each species) were climbed at four sites (2 of each soil type) to assess the biomass and diversity of species within. Preliminary results indicate higher species richness than previously assumed for the Sub-boreal spruce biogeoclimatic zone. This is particularly so for subalpine fir trees growing over clay soils, where the biomass of cyanolichens was nearly double that of any other treatment. This knowledge

ALRF 2004 Seed Grant Project Updates

- **Does root pruning containerized stock alter growth rate and development of planted forest seedlings?** Dev Khurana, MSc candidate & Dr. Lito Arocena (UNBC). Twelve hundred spruce, pine and Douglas-fir seedlings were pruned and planted in lowland and upland sites at the ALRF in May. Plexiglass root windows were installed to observe root development. A survival survey in October showed that

enhances our understanding of cyanolichen ecology, and has implications for understanding the role of these nitrogen-fixing organisms in forest nutrition.

• **The diversity, densities and functional roles of soil-living nematodes in mature stands of White Spruce and Subalpine Fir at Aleza Lake Research Forest: A preliminary study,**

Dr. Dennis Proctor (UNBC Education Program). Fourteen 100cc soil samples were taken from an old growth stand of mixed white spruce (*Picea glauca*) and subalpine fir (*Abies lasiocarpa*). Seven of the samples were at 0-5 cm depth, and seven were immediately below the top samples at 5-10 cm depth. The samples were processed and 14 nematode distillates are ready for counting and identification. A \$1,500 grant was obtained from the Nature Discovery Fund of the Canadian Museum of Nature to send a pair of samples to a Victoria-based nematode taxonomist. At least 50,000 nematode specimens are expected in the samples taken so far, which will provide preliminary insights into the nematode fauna of this forest community.



A student from DP Todd Secondary collects plants samples from an old growth stand.

Education and Extension

ALRF is partnering with Roy Rea (UNBC Ecosystem Science and Management Senior Lab Instructor) to develop an online plant database designed as a teaching tool for students. The objective is to provide students with plant images from a variety of regional ecosystems, microhabitats and stages of development. This summer and fall, Roy and Justin Hooper (ALRF summer student) gathered plant images from ALRF. Images were also collected from Forests for the World and the Bednesti Lake area. Roy, Dennis Strausfogel (programmer), and Lucille Guiney (webmaster) are developing the website. A pilot database is currently online for evaluation by UNBC forestry students. The web design is expected to be finalized by December.

The annual DP Todd field trip was held on September 22nd. Mrs. Wadson's enriched grade 8 science class walked the East Loop Trail and completed fun activities designed to help the students learn about tree growth, biodiversity, wildlife and forest ecosystems. Many thanks to Roy Rea and Claudette Bois for their assistance with

the field trip.

ALRF staff participated at both UBC (Alex Fraser Research Forest) and UNBC (John Prince Research Forest) student field camps in August.

This Fall, ALRF hosted the Council of Forest Industries' (COFI) annual Prince George Project Resource Management workshop for grade 10 and 11 students. Workshop modules included forest health, silviculture, soils, and wildlife. Other participating organizations included, Ministry of Forests, Industrial Forest Service, UNBC, CNC, John Prince Research Forest, The Pas Lumber Company, DWB Forestry Services Ltd., Golder & Associates, Lakeland Sawmills, and Canadian Forest Products.

Work on the East Loop Trail was completed this summer including brushing, danger-tree falling, and installation of crossings and trailhead signs. Clearing and danger-tree assessments on the South Knolls and North Ridge trails are also complete.

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