



FIA–FSP Forest Science Corner



Graduate students present research

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by Susan Leech, Contributing Writer

A group of young researchers has shown that they can make valuable contributions to forestry, thanks to their work on applied forestry research projects funded through BC's Forest Investment Account-Forest Science Program (FIA-FSP)

All who attended the September, 2008 Graduate Student Symposium at the University of British Columbia agreed that not only are the young British Columbia researchers well-versed in the issues facing forestry professionals in this province, they are also helping provide solutions.

The symposium summarized research funded under FIA-FSP's Graduate Student Pilot Project, a three year pilot project initiated in 2006, that matches graduate students from BC universities with academic advisors and forestry professionals from sponsor organizations. This three-way collaboration gives young researchers advice and support from both academia and the real world, a unique design that ensures research is focused on some of the most pressing problems facing the forestry sector.


Organized by **Dr. Peter Arcese** from the UBC Centre for Applied Conservation Research on behalf of the Forest Science Board, the symposium had two main goals: to explore how successful this arrangement has been in focusing graduate student research on real-world problems, and to explore other benefits derived from the program from the perspective of academic advisors and members of the Forest Science Board.

The day included presentations from academics and six of the 10 students funded under the program—all of whom met the rigorous standards (see sidebar) set by the team that assessed the proposals. The 10 successful projects are summarized at the end of this article.

Dr. Cindy Prescott, associate dean of graduate studies at UBC, said that her long-term research as part of SCHIRP (Salal Cedar Hemlock Integrated Research Program; <http://www.forestry.ubc.ca/schirp/homepage.html>) has supported the development of 25 graduate students, many of whom are now working in forestry in BC and around the world. The regular FIA–FSP call for proposals, which funded 131 graduate students in 2007/2008, also provides support for graduate students.

Dr. Suzanne Simard, professor in the faculty of forestry, reminded participants that research by graduate students contributes tremendously to our body of knowledge on key forest management issues. Over four years of FIA-FSP funding, Simard and six of her students—one of whom was funded by the Graduate Student Pilot Project—have more than 20 articles published or in press focused on the importance of mycorrhizal networks in forests. Together with her students, Simard has contributed critical information about which trees should be left in variable retention harvesting; for example, leaving groups of large trees with the most mycorrhizal network connections to other individuals helps natural regeneration establish and newly planted seedlings grow. This nugget of information represents years of hard work by Simard and the graduate students working with her. The importance of the mycorrhizal network also symbolizes the power of networking between researchers and practitioners, which all the students mentioned as one of the greatest benefits of being funded through this unique program.

After each presentation, questions focused on whether research results would contribute to policy and practice changes in BC. The answer was probably best summarized by Dr. Simard: "Yes — in an adaptive management framework." In other words, these research results could help inform policy and practice changes in BC, as long as there are people interested and motivated to change policy and practices. That's another reason for supporting graduate student research that focuses on key issues facing the BC's forest sector: to bring more science-based thinking into the forest workforce.

What does the future hold for this pilot project? **Dr. Gary Hunt**, Thompson Rivers University professor and member of the Forest Science Board, explained that the Board would like to continue the program in some form, but the future is unclear because of budgetary constraints. If the program continues, it seems likely that successful students will be required to leverage funding from other sources. Overall, Dr. Hunt considers the pilot project a great success: "We know we selected the top students, and those students have shown that they can get the work done." 

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FIA–FSP pilot project funds graduate

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Research Highlights

Six of the ten students funded through the FIA–FSP Graduate Student Pilot Project presented their research findings at the 2008 Symposium. The projects are summarized below:

Nancy-Anne Rose, University of Northern British Columbia

Project Title: The use of bioclimatic envelopes to identify temporal corridors for conservation planning in a changing climate

Key Findings: By focusing on which existing conservation areas best protect ecosystems with the projected shifts associated with climate change, Nancy-Anne Rose’s research will help ensure that our conservation areas continue to protect the range of representative ecosystems in BC. The research will also show us how we can best facilitate plant migration and use appropriate seed sources.

Biggest benefit from participating in the pilot project: “Participating in this program has strengthened my resolve to pursue a career in the research sector.”

Kelly Squires, Simon Fraser University (SFU) PhD candidate

Supervisor: Dr. Ken Lertzman

Sponsor: Canadian Forest Products

Project Title: Setting management targets using bird responses to stand composition in the mixed-wood boreal forests of northeastern BC

Graduate student Julia Chandler measures plant succession in a cutblock harvested and burned in 1989 at the Otter Creek study site near McBride, BC.



Key Findings: Squires’ research is looking at whether thresholds — levels of habitat at which species show a precipitous decline in abundance or reproductive success — can be used to help guide management practices. By studying the population levels and reproductive success of a mixedwood dependent species (the Yellow-bellied Sapsucker) in forests ranging from pure conifer to pure hardwood, the results show that the concept of thresholds might be more interesting theoretically than practically, but that management targets can be set.

Biggest benefit from participating in the pilot project: “Working directly with an industry partner toward biodiversity conservation has given me invaluable ‘hands-on’ experience in the challenges and intricacies of applying theory to real-world problems. This is exactly the kind of learning I wanted from my PhD experience.”

Ian Giesbrecht, SFU MRM (Masters of Resource Management) candidate

Supervisor: Dr. Ken Lertzman, Simon Fraser University

Sponsor: Andy MacKinnon, BC Ministry of Forests and Range

Project Title: Effects of fine-scale canopy heterogeneity on understorey plants in a coastal temperate forest

Key outcomes: The main goal of this research is to gain an understanding of how understorey plants react to different light levels and overstorey structures within stands. This information can be used to help create light and vegetation conditions like those found in old-growth stands in younger, managed forests. Early results from a floodplain forest suggest that light levels vary through the stand and correspond to a mosaic of changing understorey vegetation characteristics. Giesbrecht’s research also contributes to, and uses data from, a long-term study of old-growth dynamics led by researchers with the BC Ministry of Forests and Range.

Biggest benefit from participating in the pilot project: “The unique opportunity to work with both university and government researchers on a long-term forest ecology study has given me substantial mentorship from senior research ecologists focused on linking research with management.”



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students and research of tomorrow

Julia Chandler, UBC PhD candidate

Supervisor: Dr. Suzanne Simard

Sponsor: Evelyn Hamilton, BC Ministry of Forests and Range

Project Title: Ecosystem recovery after disturbance: Thresholds for biodiversity and resiliency indicators

Key outcomes: Using research plots established 20 years ago by Evelyn Hamilton, Chandler is tracking the succession patterns of plant species to see if ecosystems that are more productive or better adapted to fire are more resilient (i.e., are more likely to return to their original state, even after being stressed by logging and/or slash burning). The results will be incorporated into various existing decision-support systems.

Biggest benefit from participating in the pilot project:

“Becoming involved in the development of an environment of trust and partnership between academia and government via networking towards a common, practical goal.”

Megan Harrison, SFU MSc candidate

Supervisor: Dr. David Green, Simon Fraser University

Sponsor: Jared Hobbs, BC Ministry of Environment

Project Title: Defining breeding habitat selection mechanisms for the red-listed sagebrush brewer’s sparrow.

Key outcomes: The sagebrush brewer’s sparrow is a rare species, but habitat that is apparently suitable remains unoccupied. This research is looking at why this habitat is not being used and whether our understanding of the habitat for this

species is incorrect or whether there are social factors that are keeping this species from using apparently suitable habitat. The results will be used to improve habitat models to better predict what habitat will be useful.

Biggest benefit from participating in the pilot project:

“The opportunity to share my research with people who can use it to bring about actual change in policy and management.”

Robbie Hember, UBC

Supervisor: Dr. Nicholas Coops


Sponsor: Dr. Werner Kurtz, Pacific Forestry Centre

Project Title: Modelling effects of climate variability on forest growth rates in coastal British Columbia

Key outcomes: Climate can influence timber supply and greenhouse gas emissions from the forest sector, yet it is not explicitly considered in forest management strategies. Due to the vastness and diversity of British Columbia, quantitative evidence of the effects of climate change on forest growth rates is a major scientific challenge. This project has focused on developing and testing a physically based carbon cycle model that can be incorporated into the existing national framework for simulating forest growth rates.

Biggest benefit from participating in the pilot project:

“Among other things, access to historical forest inventory and climate data, and permanent sample plots throughout BC. Access to these data has played an integral role in model process development and validation.”

Other successful candidates who did not present at the Symposium are listed in the table below. 

Name	Project Title	Supervisor	Sponsor
Sean Haughian	The effects of mountain pine beetle infestation on lichen communities in north-central British Columbia	Phil Burton, UNBC	Jim Hesse, MOE
Andrea Norris	How does a mountain pine beetle outbreak influence mechanisms regulating mountain chickadee and red-breasted nuthatch populations?	Dr. Kathy Martin, UBC	Krista De Groot, Canadian Wildlife Service
Jeremy de Waard	Monitoring biodiversity responses to natural and anthropogenic disturbances in British Columbia’s forests: The application of DNA barcoding	Yousry El-Kassaby, UBC	Doug Steventon, MOFR
Francois Teste	Facilitative and competitive effects of residual Douglas-fir trees on seedling establishment, growth, and resource sharing via mycorrhizal networks	Suzanne Simard, UBC	Shannon Berch, MOFR