



Renew

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Growth & TRANSITIONS

A message from the Chair

Fall is upon us and as we experience the changing seasons, we are seeing growth and transitions in our staff and in our undergraduate enrollment in the Department of Renewable Resources.

I would like to first take a moment to celebrate recent growth and transitions in our academic staff. Brad Pinno was recently promoted to Associate Professor of Silviculture. Barb Thomas, NSERC/Forest Industry Research Chair in Tree Improvement was also recently promoted to Associate Dean (Research) where she will assist our faculty in delivering on strategic research priorities and partnerships. I would also like to celebrate the upcoming retirement of Robert Grant, Professor of Ecosystem Modelling. Robert's contributions to global ecosystem modelling have laid a strong foundation for future generations to build off.



With respect to our undergraduate programs, over time we have seen transitions in enrollment from our land reclamation programs to our conservation biology program and have seen consistent enrollment numbers in programs like forestry. From a research perspective, we are thankful to the various organizations that contribute funding to our programs and serve as partners in discovery and innovative research. These department statistics are summarized on page 10 of this issue of Renew.

We appreciate you taking the time to stay up to date on our activities and contributions. Please don't hesitate to reach out for discussions on our department's existing work or future collaborative opportunities.

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New tool models insect outbreaks to aid the design of conservation areas



A new tool is helping inform conservation area planning in regions where insect disturbances can have a big impact on forest health. The outcomes could help inform conservation area planning within Canada and beyond by analyzing ways in which more robust conservation areas can be established, particularly in areas that experience natural disturbances like in Canada's boreal forest.

The tool is an output from the BEACONS (Boreal Ecosystems Analysis for Conservation Networks) project and was inspired by the need to consider insect disturbances in land use planning and protected area design.

To inform their work, the authors leveraged an analysis known as minimum dynamic reserves. In the context of this study, a *minimum dynamic reserve* is a forested area large enough to absorb a natural disturbance—like an insect outbreak—while still having sufficient residual representation of forest diversity.

"Minimum dynamic reserves can be a useful tool to evaluate the risk to proposed or existing reserves in regions with active disturbance regimes," said Marc Edwards, lead author of the recent study.

The study authors modeled insect outbreaks on the island of Newfoundland and determined the area of a minimum dynamic reserve. They then illustrated how the results could be used to evaluate the size of existing protected areas with regard to absorbing a large-scale insect outbreak.

"When we think about national protected area targets, the minimum dynamic reserve concept could identify opportunities to increase the size of protected areas. This approach could give us a more robust conservation area network in Canada," stated Kim Lisgo, co-author and project manager for the BEACONS project.



Bridging the gap with source-to-tap training

Students, researchers and industry professionals involved in the *forWater* Strategic Network recently dove into the complexities of resource management and watershed management during a week-long source-to-tap training program. This five-day immersive experience, hosted on Vancouver Island, guided participants through a variety of watershed and water treatment facility tours around Nanaimo and Mount Washington. Participants learned first-hand how forestry and watershed management relate to providing safe drinking water for communities.

The *forWater* Strategic Network is a multi-partner research initiative involving several Canadian Universities. Uldis Silins, a professor and associate chair at the Department of Renewable Resources, and co-principal investigator of the network, says the source-to-tap program was borne out of the goal of bridging gaps between the diverse fields involved with managing forested watersheds.

“At one end of the spectrum, we have foresters and natural resource professionals,” he said. “And at the other end, we have drinking water treatment professionals. These are very different domains of practice, and the science that underpins each of these areas is very different.”

The source-to-tap training program helps create a common language between these different fields. It brings researchers and practitioners from various parts of the spectrum together in a focused environment where they can learn from one another.

Over their five days in the program, participants were exposed to the breadth of stakeholders involved in managing forested watersheds. They visited several sites, ranging from the old growth forests of Cathedral Grove to the Comox Valley Water Treatment Facility.

This was the fifth year the source-to-tap training program was offered, and it has been extended to include a sixth year in 2023. Previous training weeks were held in southwest Alberta and Nova Scotia.



Forestry graduate earns prestigious honorary degree

On June 9, 2022, Garry Merkel—a forestry alumnus, professional forester and member of the Tahltan Nation—received an honorary degree from the University of Alberta. This rare achievement celebrates his exceptional work in land stewardship, community empowerment, culturally relevant Indigenous education, governance and economic advancement. Merkel graduated with distinction in 1985 and was the third Indigenous graduate in the University of Alberta’s forestry program. He also delivered the 87th annual Forest Industry Lecture Series in March of 2022.

Throughout his remarkable career, Merkel’s accomplishments and contributions to forestry, education and Indigenous communities have been many. In addition to founding his own consulting company, he was a negotiator for the Ktunaxa Nation Council and served as past chair of the Tahltan Nation Development Corporation, Manager of Resource Development at Indian and Northern Affairs, and Director of Land and Resources at the Ktunaxa/Kinbasket Tribal Council.

In 2019, Merkel was appointed by the Government of BC as co-chair for the old growth strategic review, to help the province better meet the ecological, conservation and cultural values of its citizens. He was also appointed as co-chair to BC’s Forest and Range Practices Advisory Council, where he makes recommendations to improve forest and range practices. He was instrumental in initiating the Nicola Valley Institute of Technology and an Aboriginal Forestry Initiative at the University of British Columbia’s (UBC) faculty of forestry.

Merkel’s extensive contributions have enriched countless lives in Canada and abroad. In his June 9 address he encouraged students to follow their passions as a pathway to creating positive change.

“We need you to help us change and fix the world,” he said, “... If you have the mindset to take it on, and it’s part of your passion, whatever that is, then you can really, really make a difference.”



Modeling the way for the next generation of scientists

After thirty-two years at the Department of Renewable Resources, Robert Grant, a professor in ecosystem modeling, is just months away from full retirement and preparing to hand his research program over to the next generation of scientists.

Over the course of his career, Grant saw modeling evolve from an emerging field to an integral component of ecological research. As the field of modelling grew, so did Grant's opportunities to contribute to numerous national and international collaborations, including the North American Carbon Project, the Fluxnet Canada Research Network, and NitroEurope. Today, his model—*ecosys*—is being used by over thirty research

groups administered through the Lawrence Berkeley National Laboratory and the University of Illinois, at which Grant will take up a Distinguished Visiting Professorship next year.

Reflecting on his time in the department, Grant fondly recalls the years of support and collaboration he received from his colleagues.

"I really appreciate the collegiality of the department. And that the university provided me with the opportunity to pursue a career path that suited my interests and talents. I am not sure I could have accomplished what I did anywhere else."



Unlikely indicators could shape future reclamation monitoring

Reclamation practitioners may soon have a new and valuable indicator of reclamation outcomes, with soil invertebrates being the unlikely indicator. The sensitivity of these tiny organisms to changes in soil conditions means they can signal issues sooner than traditional reclamation indicators such as vegetation.

The potential of soil invertebrates to double as reclamation indicators is being researched by PhD candidate Stephanie Chute-Ibsen under the supervision of Anne Naeth, a professor in the Department of Renewable Resources. They started their work by testing the sensitivity of a wide range of soil invertebrates—spiders, beetles, ants, mites etc.—to reclamation treatments. Finding the right level of sensitivity was key to finding the right indicator.

"A good reclamation indicator needs to be sensitive enough to reflect the difference between a reclamation site and the reference site, but not so sensitive that a few rainy or hot days will cause major community changes," stated Chute-Ibsen.

Chute-Ibsen determined that two invertebrate taxa—the oribatid mite and spring-tailed collembolan—are promising candidates for reclamation indicators. Their presence, or lack of presence in soil, are a good indicator of whether a reclaimed ecosystem is functioning as desired.



Chute-Ibsen says organisms like these can potentially tell you sooner than other indicators if a site is on a trajectory to achieving reclamation outcomes. This early indication allows managers to address problems before they become more obvious through changes in vegetation on the site.

The next step for Chute-Ibsen is to assess how to incorporate these soil invertebrates efficiently and cost-effectively into reclamation monitoring programs.



Banting Postdoctoral Fellowship opens doors of opportunity

Xinli Chen, a postdoctoral student exploring global change, plant-soil interaction and carbon cycles, is spreading his roots in the Alberta research community. Working under the supervision of Scott Chang, a professor of forest soils and nutrient dynamics in the Department of Renewable Resources, Chen is a 2022 recipient of the Banting Postdoctoral Fellowship. This most prestigious award is allocated to the top national and international postdoctoral applicants for their potential to positively contribute to Canada's economic, social and research-based growth.

Chen's research focuses on understanding the consequences of biodiversity loss and climate change on ecosystem productivity, soil carbon sequestration and nutrient dynamics. It also seeks to identify strategies to mitigate the negative effects of these. His recent work demonstrates

the important role of plant biodiversity in boosting soil phosphorus, a nutrient essential to plant productivity. Research findings have helped managers identify more sustainable management practices to increase phosphorus in soil and reduce their dependence on fertilizers.

In addition to funding, the fellowship positions researchers for future success by exposing them to valuable opportunities.

"I've been invited to collaborate with one of the most renowned forest ecologists, Peter Reich, the Director of the Institute for Global Change Biology at the University of Michigan," said Chen. "And I'm hopeful for future professorship opportunities."

Chen said he is extremely grateful for the fellowship and for other support he's received from his supervisor and the Department of Renewable Resources.

Indigenous undergraduate students receive valuable hands-on learning

After a successful summer learning field and lab techniques, Shelby Findlay, a fourth-year science student, is feeling more connected to future research opportunities and to her Indigenous peers. Findlay participated in the I-STEAM Pathways Environmental Education Program for Indigenous Students, a fully paid summer program targeted at giving Indigenous students hands-on research opportunities in a variety of environmental fields.

During her internship, Findlay reported to Nadir Erbilgin, department chair and a professor in forest entomology. Her experience took her to the rolling hills of Drayton Valley and into Jasper National Park to collect beetle samples she later learned to identify in the lab. A key motivation of the study was understanding the impact of elevated carbon dioxide on symbiotic fungi, which are carried by mountain pine beetles and weaken the tree's natural defense mechanisms.

"We need to learn more about how mountain pine beetles are successfully attacking trees and the role symbiotic fungi play in this process," said Findlay, "It's important to the decisions made to manage expanding mountain pine beetle populations."

Beyond the hands-on lab and field component of the program, Findlay credits I-STEAM for connecting her with her Indigenous peers.



"The program created great networking and learning opportunities and it really reconnected me with my Indigenous community," recalls Findlay.

Findlay encourages anyone who is sitting on the fence about doing an I-STEAM internship to take the leap.

"Getting that hands-on lab experience is so unique and goes far beyond what you do in your lab coursework. If you're thinking about doing it, just do it!"

For more information about the I-STEAM program and to learn how you can support future internships access their website: isteam-pathways.ualberta.ca/



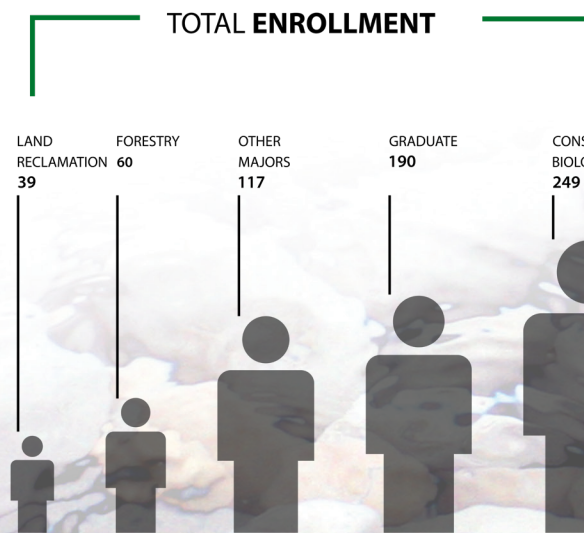
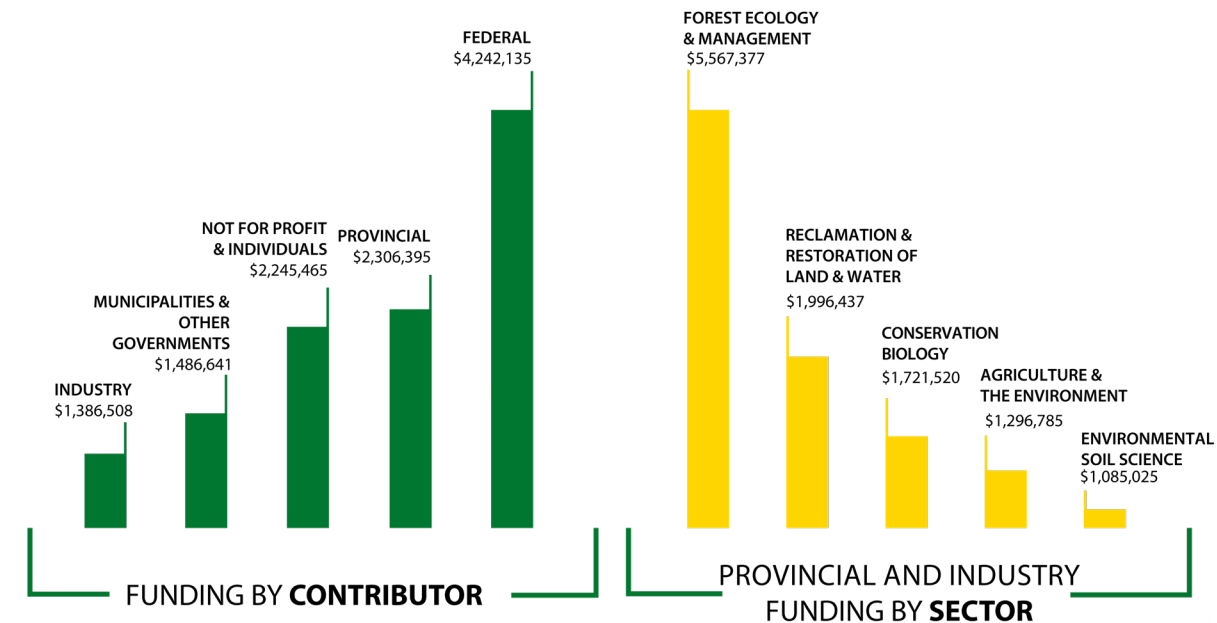
Three-time **alumnus** Wendy Crosina wins **national** Women in Forestry **award**

Wendy Crosina, a three-time alumnus from the University of Alberta has been awarded the 2022 Women in Forestry award from the Forest Products Association of Canada. Crosina has worked for Weyerhaeuser Canada for the past 15 years and tackles complex files related to forest management and species at risk across Canada.

"I always feel uncomfortable winning individual awards. Any success that I achieve is due in no small part to the collaboration and support that I receive from the forestry community across Canada," said Crosina.

Crosina is a Registered Professional Forester, and received both undergraduate and graduate degrees from the Department of Renewable Resources.

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Our **Department** by the **Numbers**

Fiscal Year 2021-2022



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