



Pacific Institute
for Climate Solutions
Knowledge. Insight. Action.

MEDIA RELEASE

12 September 2011

New climate change research fellowships across four BC universities

Could bacteria be the low-carbon and renewable energy biofuel we are searching for? Would more people use public transit if our transport hubs were better designed? And what action should we be taking now to safeguard our forests, marine life and rivers from the impacts of climate change?

These questions are among the projects being tackled by the 11 new graduate fellowships being announced today by the Pacific Institute for Climate Solutions (PICS). Award winners of 2011-2012 fellowships were chosen from one of the four collaborating universities that comprise PICS – the University of Victoria, the University of British Columbia, Simon Fraser University and the University of Northern British Columbia.

PICS Executive Director Tom Pedersen says this year's recipients will investigate a range of climate change-related issues from scientific, economic, environmental and social science perspectives. With recipients hailing from Canada, India, New Zealand, and the Soviet Union, Pedersen says the group brings an international perspective to British Columbia (BC) research.

"Finding solutions for mitigating or adapting to the impacts of climate changes is one of PICS key objectives, and these successful candidates will be instrumental in continuing that momentum."

This year's new PICS fellows – that comprise eight PhD and three Masters students - include:

- an international award-winning journalist and researcher working with First Nations to improve communities' resilience to climate change;
- a marine conservationist analyzing optimum oceans management systems ;
- an alternative bioenergy investigator;
- a computer engineer quantifying the environmental impact of the high tech sector;
- and an alpine ecosystem specialist studying climate changes' impact on pollination and agriculture.

Descriptions of each project are on the attached backgrounder. In addition, 16 PhD students, five Masters students and four post-doctoral fellows have received renewals of already existing fellowships. Details of all fellowships past and present are available at www.pics.uvic.ca/fellowships.php. Total funding for the 36 new or extended PICS fellowships for 2011/12 is \$645,000.

PICS fellowships are worth up to \$12,000 a year for master's students, \$18,000 a year for PhD students and \$50,000 a year for post-doctoral fellows. For further information, photos, or to be put in touch with new or existing recipients please contact PICS or the relevant university's communications office.

Media contact: Jessica Worsley (PICS Communications) at +1-250-217-9057 or jworsley@uvic.ca



Backgrounder: New PICS Fellowships for 2011-12

Simon Fraser University

Dionne Bunsha, PhD Candidate, School of Resource and Environmental Management

Project Title: Community-based environmental monitoring networks: grassroots climate change detectives

In partnership with the Central Coast First Nations, Dionne will develop a plan for an on-the-ground system of monitoring and adaptation for climate change with the aim of making communities more resilient to its impacts. Monitoring indicators of climate change (such as stream temperature and flow, ocean acidity levels or when the first buds appear), can help communities gain a local and regional perspective of the patterns and magnitude of changes underway, and help them decide how best to respond. Responses could include protecting plant or tree species that were earlier considered abundant, for example.

Sabine Jessen, PhD Candidate, Department of Geography/School of Resource and Environmental Management

Project Title: Planning for marine ecosystem resilience under climate change in BC

Federal and provincial marine conservation agencies in BC are currently developing a joint Marine Protected Area (MPA) network. This project will examine governance options under an MPA network for maximizing marine ecosystems' ability to adapt and be resilient to climate change. It is critical that these risks and uncertainties are incorporated into MPA design and management along with potential adaptation strategies. Sabine's research will incorporate knowledge from a wide range of sources including First Nations, natural and social sciences, MPA network design theory and existing adaptive governance examples.

Mary Ann Middleton, PhD Candidate, Department of Earth Sciences

Project Title: Evaluating the impacts of climate change and water use on groundwater sensitive streams

Late summer flow is sustained by groundwater in many streams in British Columbia. At this time of year streams may be particularly sensitive to changes in groundwater input resulting from pumping, land use change or climate change. This project will use a combination of field and modeling techniques to characterize stream sensitivity to changes in the groundwater system during these low flow periods. The results will be used to develop criteria for assessing sensitive streams for protection of fish and aquatic habitat.

University of British Columbia

Georgia Piggot, PhD Candidate, Department of Sociology

Project Title: Collaborative networks and climate change action: a British Columbia case study

Organisations attempting to reduce their carbon footprint have to navigate a wide array of possible greenhouse gas mitigation approaches, and a shifting policy and technology environment. One method for dealing with this complexity is to work collaboratively with others to share knowledge and develop solutions. Georgia's research will examine the role that collaborative networks play in fostering climate change action and innovation, using the organizations which fall under BC's Carbon Neutral Government initiative as a case study. This research aims to help organizations reach climate goals faster by identifying the types of personal or formal networks that offer the best information transfer.

Paul Teehan, PhD Candidate, School of Resource Management and Environmental Studies

Project Title: GHG implications of cloud computing: analyzing large data center construction in the Columbia Basin

This project will quantify the environmental impact of the high-tech sector: this includes consumer electronics, information technology (IT) infrastructure, office systems, and backend datacenters. Consistent growth in this sector is sometimes seen as beneficial to the environment due to dematerialization, however the validity of this viewpoint depends on how big an impact is attributable to the high tech products themselves, which is still largely an open question. Paul aims to find answers by measuring impacts due to electricity consumption and the embodied materials in IT products and systems, using a method called environmental life cycle assessment, paying particular attention to a recently constructed datacenter cluster in the Columbia Basin.

Lisa Westerhoff, PhD Candidate, School of Resource Management and Environmental Studies

Project Title: Governance for climate change: local decision-making for low-carbon, resilient communities

Lisa's project will explore how BC communities are embarking on the process of changing the ways decisions are made and translated into action in response to the legislated need for greenhouse gas reductions and the drive to adapt to climate change impacts. The project's aim is to determine what forms of governance are emerging in response to climate change, and how these may or may not contribute to a broader shift across the province towards a low-carbon, resilient society.

Lilia (Lily) Yumagulova, PhD Candidate, School of Resource Management and Environmental Studies

Project Title: Resilient by design: the role of institutional adaptation to environmental risk in cities

Lilia is developing a framework that measures the ability to deal with environmental change to assist municipalities and regions in planning for the future. Her research seeks to improve the understanding of how planning for and dealing with familiar natural hazards and risks (for example, flooding) can contribute to managing less familiar risks associated with climate change. This interdisciplinary project draws on disaster resilience studies, public policy and engineering and includes Lilia's previous work on the best practices in climate change adaptation in the UK, Germany and the Netherlands.

Kevin Zhang, MSc Candidate, School of Community and Regional Planning

Project Title: The effect of urban design on transit rider perceptions and ridership

Kevin's research aims to determine how urban design features around a transit station (bus or rail) affect peoples' perceptions and use of public transport. Riders' perceptions are important because pedestrian-friendly environments with real time information, for example, can increase a station's catchment area, but poorly designed, badly lit access may inhibit use altogether. Quantifying the relationship between urban design improvements and Lower Mainland public transit, both in terms of dollars and ridership, may help accelerate BC's transition to a more sustainable transportation system. This study's results can be used by transit operators and municipal governments to prioritize improvements and to achieve maximum environmental/social benefit with limited funds.

University of Northern British Columbia

Alana Clason, PhD Candidate, Natural Resources and Environmental Studies

Project Title: The resilience of high-elevation ecosystems to cumulative disturbances across a climatic gradient

Alana's research will examine how climate change may influence the persistence of the northern-most populations of whitebark pine in the coastal and Rocky Mountains. Whitebark pine is a critical and severely threatened tree of subalpine and tree-line forests in BC that supports a wide food web including grizzly bears, squirrels and its most important dispersal agent, Clark's Nutcracker birds. Understanding how this tree species is responding to climate at the northern edge will be critical in developing management and restoration strategies.

University of Victoria

Jason Straka, MSc Candidate, School of Environmental Studies

Project Title: Humming along or buzzing off? The resilience of pollination services to climate change in BC

This project will examine to what extent climate change is contributing to the current "pollination crisis" that has seen the loss of millions of dollars in agricultural production and untold change in natural plant communities. BC's alpine ecosystems have high seasonality and short but intense growing seasons for their beautiful wildflowers. They also have important pollinator communities composed of bees, flies, and butterflies. These fast-changing environments can serve as a "canary in a coal mine" for how well pollinator communities at lower elevations will respond to climate change, and what impact this will have on plant diversity and the agricultural economy.

Matthew Ooms, MSc Candidate, Institute for Integrated Energy Systems

Project Title: Sustainable solar fuel production: evanescent photo-bioreactor design and scale-up

Biofuels made from organic plant matter have the potential to help curb global climate change by reducing our reliance on fossil fuels. However, we have been challenged to find an adequate source of plant feedstock that does not place excessive demands on land and food crops, like corn, and is insensitive to seasonal temperature changes. The solution may lie in using photosynthetic bacteria, instead of crop plants, as a source of biomass. This research will seek to find new methods for growing these bacteria that deliver just the right amount of light and nutrients to each cell, with the goal of making bioenergy a feasible low-carbon and renewable alternative in British Columbia.