

# frontier

A Journal of Research and Discovery → Issue 06 → Spring/Summer 2009

## THE GREEN GUIDE

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### SPECIES AT RISK

*Why biodiversity loss could jeopardize stable ecosystems*

### INTO THE DEEP

*Sustaining healthy fisheries and oceans*

### URBAN UTOPIAS

*The practical implementation of sustainable communities*

### IDENTITY UNDER SIEGE

*Is climate change putting cultural identity at risk?*





Cover photo > Andrew Trites, UBC Above > Rashid Sumaila, UBC

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The demand for cleaner-burning biofuel is on the rise. Tony Bi and the Clean Energy Research Centre believe wood pellets may meet that demand

### 06 A convenient truth

From high-carbon to carbon-friendly: The Local Climate Change Visioning Project is giving the public tangible options to curb the effects of climate change at home

### 07 The politics of progress

Will Canada reach its Kyoto emissions targets by the 2008 to 2012 commitment period? According to Kathryn Harrison, the answer isn't as straightforward as it may seem

### 08 Undermining emissions

Greg Dipple and his team are uncovering how accelerating a carbon mineralization process could help mines offset their own emissions

### 10 A fine balance

Does biodiversity matter? Find out why UBC's Biodiversity Research Centre is convinced that it does

### 12 Sea change

How UBC's Fisheries Centre is working to ensure the long-term stability of both fisheries and the ecosystems that they depend upon

### 17 Return of the native

The sea otter is re-settling into the waters off the West Coast of Vancouver Island. Kai Chan is examining the full implications of its return to the long-term health of that ecosystem

### 18 Sustaining the swell

As population numbers boom, the Sustainability by Design Project is striving to realize a sustainable vision for Vancouver livability

### 19 For want of water

Significant water shortages are expected in the Okanagan by 2050 as a result of climate change. John Wagner is strategizing the fair distribution of this precious resource

### 20 Spare the air

Air pollution in the Fraser Valley is improving as a result of air quality management measures. Douw Steyn and Mike Brauer are furthering inquiry to develop solutions that ensure the best air quality for all

### 21 On the brink

Climate change's impact on local communities is more than just environmental. Ralph Matthews reveals the societal and cultural implications of this 21st century reality



## A MESSAGE FROM THE VICE PRESIDENT RESEARCH

Sustainability is an increasingly important avenue of research, despite its somewhat ambiguous definition. The term "sustainable" is often confusingly applied to environmental solutions, economic growth, community planning – even management structures. In the absence of a universal definition, it is easy to wonder whether sustainability is just a buzzword.

It is precisely this ambiguity that makes sustainability such an appealing research theme. It offers a broad, inclusive platform for collaborative discussions that transcend traditional boundaries between disciplines. How else can we address global climate change, for example, than by considering the roles of poverty, politics and culture?

While UBC Vancouver is widely recognized as a model for a "green campus," UBC is also a hive of sustainability-themed research. This issue of *frontier* offers a sampling of research into climate change, global fisheries, livable communities, and species biodiversity. Despite the variety of disciplines, these research themes maintain a common thread: to promote forward-thinking decisions that consider the environmental, economic and social implications of our actions through time.

Sustainability may not offer a panacea, but it does encourage us to take an optimistic glimpse beyond the short term. As the human population grows, our collective challenge is to discover concrete ways to live and work in a world of finite resources, while remaining mindful of the consequences of our actions for our planet, its species and our future.

Dr. John Hepburn,  
Vice President Research



# CLIMATE IN CRISIS

When I arrived at UBC in 1992, climate change research looked quite different than it does today. In fact, what used to be a primarily scientific exercise on proving the validity of human-induced climate change has progressively matured into a cross-disciplinary, multinational approach to finding sustainable local and global solutions to this crisis.

Indeed, climate change is undoubtedly the most significant environmental crisis that the planet currently faces. The Intergovernmental Panel on Climate Change (IPCC), an organization that assesses the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change, has indicated that global emissions need to be reduced by 50 to 80 per cent by 2050 from 2000 levels in order to keep global average temperature increases below 2.5 degrees. The magnitude of this lofty target has not been lost on many researchers in sustainability, particularly those at UBC.

In the pages ahead, you'll discover a few of the myriad examples of UBC's contribution to climate change research. For example, Stephen Sheppard is using 3D modeling to bring local climate change action to life for communities while Tony Bi and colleagues are engineering new emissions-friendly alternatives to fuel with wood pellets. On a socio-political scale, Kathryn Harrison is looking at some potential reasons behind governments' seemingly lethargic response to emissions reduction and Greg Dipple is unearthing ways to use mine tailings to offset a mine's carbon emissions.

There has never been a more exciting time to pursue sustainable solutions to climate change. UBC is quickly proving its innovation and practicality in this endeavour; precisely the approach needed to work towards accomplishing the goals outlined by the IPCC. After all, the planet doesn't have another 50 years to wait.

*John Robinson  
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Director, Centre for Interactive Research on Sustainability*

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