

16:30 A beetle landscape

In the boreal forest, the diversity of habitat used by wildlife is created by ecosystem processes such as disturbances (i.e. wildfires, insect outbreak, floods, harvesting), soil properties, climate and physiography. In order to include species conservation in forested land management, it is important to identify habitat characteristics to which forest communities react and that are simultaneously perceivable by human. In this talk I correlate the ground-beetle (Carabidae: Coleoptera) community to the spatial components of the landscape and identify the fraction of the landscape with highest anthropogenic pressure.

***Colin Bergeron** completed his undergraduate degree in biology at the Université du Québec à Rimouski where he had the occasion to develop an undergraduate thesis looking at the long-term effect of fire behaviour on carabid beetles. What really stimulates Colin is studying the millions of interactions between insects, plants and their environment. Now, he is doing a Ph.D. at the University of Alberta in Edmonton looking at the effect of natural disturbances on forest insects.*

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UofA’s GIS Day
Monday, November 14, 2005



A Showcase of GIS Applications
at the
University of Alberta

14:00	Welcome	
14:05	Keynote Address	Dr. M. John Hodgson <i>Professor Emeritus</i>
14:40	Charting the foodscape and supermarket competition in Edmonton	Dr. Nairne Cameron <i>Earth & Atmospheric Sciences</i>
15:00	Rockfall Analyst: A GIS extension for three-dimensional and spatially distributed rockfall hazard modeling	Dr. Hengxing Lan <i>Civil & Environmental Engineering</i>
15:20	Projects in the SASElab	Rick Pelletier <i>Renewable Resources</i>
15:40	Stretch Break	
15:50	Remote collaboration and online, real-time mapping on a shoe-string budget: Powerful tools to get the data in, out, and mapped for a pair of Pucci pumps	David Shorthouse <i>Biological Sciences</i>
16:10	Taking it to the streets: The application of GIS to search, rescue, and disaster management	Dr. Donald Heth <i>Psychology</i>
16:30	A beetle landscape	Colin Bergeron <i>Renewable Resources</i>
16:50	Closing Remarks	
17:00	Late Afternoon Social	<i>Mingle with your GIS peers and have some food and beverage in the Solarium (2nd Floor of ETLC)</i>

14:05 Keynote Address

Geographical Information Systems (GIS) technology is a major growth area in government, business, and academia. The University of Alberta is no exception; we show tremendous involvement in teaching and research throughout several faculties and service units. Yet, most GIS use is spearheaded by the technology – in large measure, the major software manufacturer ordains what analysis is done, how it is done, and how it is interpreted. Are we, at the University of Alberta, in danger of handing over the validity of the science and humanities in our research and teaching to these tools of convenience? Our campus has a broad and deep expertise in the science and humanities that underlie the practice of GIS. I suggest that a GIScience initiative, ideally an interdisciplinary institute, could serve as a rallying point for the knowledge upon which strong GIS must be founded.

Dr. M. John Hodgson, Professor Emeritus, Earth and Atmospheric Science arrived at the UofA in 1972, in the Department of Geography, with a PhD in Transportation and Quantitative Geography from the University of Toronto. Since then, he has been teaching and doing research in spatial analysis in one form or other. Since the early 1990s, he taught introductory and senior courses in GIS.

14:40 Charting the foodscape and supermarket competition in Edmonton

This presentation provides an overview of a project that is examining access to healthy food in Edmonton, with an emphasis on the GIS aspects of the project. Currently in its second year of three year funding, the multi-disciplinary project involves a team of researchers at the University of Alberta from the Department of Earth and Atmospheric Sciences, the Centre for Health Promotion Studies, and the Faculty of Physical Education and Recreation. A time-series analysis of supermarket competition in Edmonton will also be presented.

Dr. Nairne Cameron is currently a postdoctoral researcher at the University of Alberta, where she is coordinating the Foodscape research project, an interdisciplinary investigation of neighborhood access to retail food sources in Edmonton. Nairne's research interests include: urban and regional development, transportation geography, spatial analysis and Geographic Information Systems (GIS) and environmental and health geography. She holds a Bachelor of Science from Queen's University (Kingston, Ontario) and M.A. and Ph.D. degrees from the University of Ottawa (Ottawa, Ontario). In her doctoral thesis, Nairne conducted a comparative international study of individual travel behaviour in three cities.

15:00 Rockfall Analyst: A GIS extension for three-dimensional and spatially distributed rockfall hazard modeling

GIS-based distributed modeling combined with 3D physical rockfall process is becoming a useful tool to assess the rockfall hazard and its related risks in large area, such as sparsely populated mountainous areas along railway tracks. A GIS Extension, Rockfall Analyst (RA), which is capable of effectively handling large amount of geospatial information relative to rockfall behaviors, has been developed in ArcGIS using ArcObjects and C#. 3-D rockfall process modeling operates on a cell plane basis and accepts inputs of distributed parameters in terms of raster and polygons features created in GIS. Simulation results, 3-D rockfall trajectories and their velocity features are stored in 3-D shape files. Distributed raster modeling based on 3-D rockfall trajectories and spatial geostatistical technique is performed to represent the spatial distribution of spatial frequency, flying or bouncing height and kinetic energy. A high quality prediction surface of rockfall hazard distribution can be created by taking these rockfall characteristics into account. Barrier analysis tool is also provided in Rockfall Analyst in order to examine the effectiveness of barriers and help barrier design. An application in Cascade subdivision of Canadian Pacific Railway is included. The reliability and accuracy of simulation result has been verified by field trip and case history database, which offers fundamental information for rockfall related risks analysis and management. Rockfall Analyst has been tested in the ArcGIS 8.2, 8.3, 9.0 and 9.1.

Dr. Hengxing Lan is a post-doctoral research fellow working with Dr. C. Derek Martin, and C. H. Lim in Civil and Environmental Engineering.

15:20 Projects in the SASElab

A highlight some of the projects in the Spatial Applications of Social Ecology Laboratory – new research facility, housed at the University of Alberta, in the Faculty of Agriculture, Forestry and Home Economics, designed to support interdisciplinary research on the social dimensions of environmental management.

Rick Pelletier been working with computers mostly since 81 with a philosophical interlude - thesis: the work-being of the work of art in the happening of truth. Rick began contract work in GIS in the early 90's. He is currently a Faculty Service Officer in the Faculty of Faculty of Agriculture, Forestry and Home Economics and a GIS consultant.

15:40 Stretch Break

15:50 Remote collaboration and online, real-time mapping on a shoe-string budget: Powerful tools to get the data in, out, and mapped for a pair of Pucci pumps

Thanks to the influx of open-source software and its community of highly skilled and spirited software engineers, whole operating systems, server-strength databases, web servers, and dynamic mapping applications are free for the taking, are easily installed and configured and provide amazing opportunities to share and distribute geospatial data. The Canadian Arachnologist Nearctic spider database and associated website (<http://canadianarachnology.webhop.net>, recently acknowledged in Science) takes advantage of these cost-effective breakthroughs to merge all spider collections throughout North America via remote synchronization of museum and amateur biodiversity data. Clients contribute their records via a software installation package consisting of secure, form-based Microsoft Access templates, bundled with a number of value-added functions. Data are sent via the Internet and in return are made publicly available as downloadable species lists, maps capable of pan, zoom, and selectable layering, and integration with Google Earth. These data enrich the research conducted by spider taxonomists, biogeographers, and students with a fondness for spiders. The applications for these systems are far-reaching and may be scaled to suit the needs of any collaborative effort such as regional, national, or global epidemiology, bird migration surveys, or city planning and zoning.

David Shorthouse is a Ph.D. student in the Department of Biological Sciences under the supervision of John R. Spence (Faculty of Agriculture, Forestry, and Home Economics; Chair of the Department of Renewable Resources) and Jan Volney (Northern Forestry Centre, Canadian Forest Service). The focus of his dissertation is an assessment of natural and harvest disturbance on assemblages of forest-dwelling spiders in a large-scale, multidisciplinary experiment entitled, Ecosystem Management Emulating Natural Disturbance near Peace River, AB. He completed undergraduate and M.Sc. degrees at Laurentian University in Sudbury, ON. He is the editor of The Canadian Arachnologist and the database architect for The Canadian Arachnologist Nearctic Spider Database, a Global Biodiversity Information Facility provider.

16:10 Taking it to the streets: The application of GIS to search, rescue, and disaster management

The search for a lost person or the evacuation of a neighborhood threatened by a chemical spill involves the deployment of human resources over urban or other geographies. We describe a decision support tool that manages spatial information to provide real-time situation maps for police service agencies. The GIS requirements of this specialized user community will be discussed along with the specific user interface we have developed.

Dr. Donald Heth received his Ph.D. at Yale University in Biopsychology and has been a member of the Faculty of Science at the University of Alberta since 1975. His research interests are in the development of spatial cognition and wayfinding and in Pavlovian conditioning mechanisms of weight regulation.