14:10 **Optimizing elk translocations in risky landscapes**

We related the success of translocated elk as a function of the resources and risks they encountered post-release. Remotely sensed data was used to map forage resources, predation risk (by wolves), and human-imposed risks across a ~15,000 sq km landscape. The movements and fate of released animals was recorded by monthly radio-telemetry flights. Ultimately, we made spatially explicit predictions for whether or not an elk might leave its release area and whether or not it might survive to identify locations suitable for future releases of elk into the central foothills.

Ms. Frair *worked for the remote sensing and GIS branch of Ducks Unlimited in Alaska from 1997-2000. She obtained her M.S. Natural Resources at the University of Wisconsin, Stephens Point, WI in 1999, and her B.S. Natural Resources at Cornell University, Ithaca, NY in 1994. She is currently completing her PhD on the Central East Slopes Elk and Wolf Project in the Department of Biological Sciences.*

14:30 **Data management for GIS** – project planning and data management issues

Ms. Rudyk *graduated with an undergraduate degree in Environmental Earth Sciences from the Department of Earth and Atmospheric Sciences. She is currently with the Department of Renewable Resources providing GIS support to the Boreal Ecosystems Analysis for Conservation Networks (BEACONs) Project that was initiated to develop a conservation plan for Canada's boreal region.*

Some techno tips – overview of some resources and a live demonstration

Mrs. Nielsen *attended the University of Calgary where she completed a BSc Geography with Distinction in 1999 and an MSc Geography with specialization in GIS and Remote Sensing in 2001. Since July 2001, Charlene's role as GIS Technologist in the Department of Biological Sciences, University of Alberta, is to provide GIS research assistance to faculty and graduate students, teaching support for courses, and software support in the GIS Lab.*

UofA's GIS Day 2004 – Organizing Committee

Charlene Nielsen	*Biological Sciences*
Leah Vanderjagt	*Data/Humanities & Social Sciences Libraries*
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David Jones	*Science & Technology Library*
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UofA's GIS Day
Wednesday, November 17, 2004

A Showcase of GIS Applications
at the
University of Alberta

10:00	**Welcome**	
10:10	Keynote Address	**Dr. Carl Amrhein** *Provost & VP Academic*
10:30	GIS: What it is and where it can take us	**Gido Langen** *Earth and Atmospheric Sciences*
10:50	Putting the cartographer before the historian	**Dr. Sean Gouglas** *Humanities Computing*
11:10	**Health Break**	
11:20	GIS applications in Emergency Medical Services	**Dan Haight & Dr. Erhan Erkut** *Business*
11:40	GIS tools for the masses	**Christopher Neuman** *Business*
12:00	**Free LUNCH in the foyer**	
13:00	The application of GIS technology in assessing rock fall hazards along railways in mountainous terrain	**Chang Ho Lim & Hengxing Lan** *Civil and Environmental Engineering*
13:20	GIS as a tool in landslide analyses	**Arash Eshraghian** *Civil and Environmental Engineering*
13:40	**Health Break**	
13:50	A spatial-temporal GIS analysis for grizzly bear conservation	**Scott Nielsen** *Biological Sciences*
14:10	Optimizing elk translocations in risky landscapes	**Jacqueline Frair** *Biological Sciences*
14:30	Data management for GIS Some techno tips	**Shasta Rudyk**, *Renewable Resources* **Charlene Nielsen**, *Biological Sciences*
15:00	**Closing Remarks**	

"Geography matters to all of us!"

10:10 Keynote Address

Dr. Amrhein *is the Provost and Vice-President (Academic) of the University of Alberta. Prior to coming to the University of Alberta, Dr. Amrhein spent 17 years at the University of Toronto, initially as Assistant Professor of Geography, then as Chair of the Department of Geography and Graduate Program in Planning from 1993 to 1997, and finally as Dean of the Faculty of Arts and Science from 1997 to 2003. Dr. Amrhein holds a Bachelor of Science Degree in Geography from Pennsylvania State University (1978) and a Ph.D. in Geography from State University of New York at Buffalo (1984) with research interests in economic geography, labour markets, decision theory, migration, and quantitative methods.*

10:30 GIS: What it is and where it can take us

This presentation provides a short background of what GIS technology is. In the second half, the presentation includes a few sample applications of GIS to illustrate its power and applicability for real world problem solving.

Mr. Langen *has 15 years experience in the field of GIS. He established the GIS department at the Power Authority of New York State. He went on to administrate the GIS activities of the Prince Albert Model Forest, where he completed simulation modeling and landscape fragmentation analysis. He then moved on to Washington, DC, where he transformed EarthData's GIS department from a CAD workshop to a full-fledged GIS service provider. He now works for Timberline here in Edmonton as GIS Coordinator, and is also a sessional lecturer for the Department of Earth and Atmospheric Sciences.*

10:50 Putting the cartographer before the historian

GIS allows historians to extend incorporate geophysical variables into statistical settlement models. These more complete models show the continuing importance of environmental and demographic variables in accounting for variations in economic stratification in the southern Ontario township of Saltfleet in the latter half of the nineteenth century. Results indicate that Saltfleet farmers' wealth depended a farm's location relative to important environmental variables, while religious-cultural variables, on the other hand, proved insignificant. Essentially, land quality was key in defining material success amongst Ontario's agricultural class.

Dr. Gouglas *is an assistant professor in the Department of History and Classics at the University of Alberta, and co-director of the MA in Humanities Computing. His current research project examines coroners' investigations of sudden and violent death on the colonial frontier of western Canada. Recently, he has also taken on the challenge of mapping Hellenistic occupations of Ancient Thessaly in Greece with one of his department*

11:20 GIS applications in Emergency Medical Services

GIS is integral to most emergency response operations: dispatchers use workstations equipped with powerful mapping and route finding software. In a project for the Calgary EMS, we use GIS data, GIS tools, and sophisticated analytic techniques to characterize call responses and to suggest deployment schedules that better respond to the underlying demand for service. We then demonstrate a prototype model for developing near-optimal deployment solutions.

Mr. Haight *is the manager of the Centre for Excellence in Operations. The Centre specializes in solving complex problems using quantitative techniques. Mr. Haight has managed a number of research projects - many of them involving GIS. Recently he has been working with the City of Calgary EMS department to improve ambulance deployment. He has a Bachelor of Commerce from the University of Alberta.* ***Dr. Erkut*** *has a Ph.D. in Industrial Engineering (U of Florida, 1986) and is Professor of Business, Vargo Teaching Chair, and Director of the Centre for Excellence in Operations. His research deals with transportation planning and facility location.*

11:40 GIS tools for the masses

MapPoint is Microsoft's latest foray into GIS. The software combines rudimentary mapping with Microsoft's Streets and Trips routing components. The result is a fairly powerful, user-friendly mapping tool for the masses. We demonstrate some of the functionality available in the product.

Mr. Neuman *is a sessional instructor in the School of Business and a researcher at the Center for Excellence in Operations. He received a BCom from the University of Alberta and a MS in industrial engineering from Northwestern University. His research interests include dynamic vehicle routing and location problems. His love for cartography has manifested itself in a collection of subway maps that cause all around him to question his*

12:00 Free LUNCH in the foyer

13:00 The application of GIS technology in assessing rock fall hazards along railways in mountainous terrain

Canadian railways are exposed to numerous types and magnitudes of natural hazards in the mountainous regions of Alberta and British Columbia. According to historic records rock falls represent one of the more common natural hazards encountered by the railways. Rock fall analyses are traditionally conducted using either 2 or 3 dimensional standalone software programs. Geographic Information Systems (GIS) are ideally suited for storing and displaying the spatial and temporal location of rock falls as well as documenting source location characteristics. The GIS software also contains all the information necessary to conduct a rock fall analysis, e.g., digital elevation model, line-of-sight, slope gradients, source attributes, vegetation cover, etc. With the recent improvements to the capabilities of ArcGIS, a new GIS rock fall module has been developed which takes advantage of the digital information stored within the GIS database. The major advantage of this approach is that the user can conduct the analyses and display the results within one common platform. The approaches to the GIS application for exposed to natural hazards in regional area will be discussed.

Mr. Lim *completed his BSc and MSc (1993~2002) in Civil Engineering at the University of Seoul, Korea. He is currently researching natural hazards and railways for his PhD in the Department of Civil and Environmental Engineering.*

13:20 GIS as a tool in landslide analyses

GIS are systems of hardware and software for data capture, input, manipulation, transformation, visualization, combination, query, analysis, modeling, and output. GIS systems provide strong functions in spatially distributed data processing and analysis. It is a relatively new software tool for geotechnical engineers. Its capabilities range from conventional data storage to complex spatial analysis and graphical presentation. The multi-tasking functionality of the GIS is well suited to projects in which large quantities of data are analyzed. GIS has been successfully applied to small-scale geotechnical projects and proved adaptable to the range of geotechnical projects requirements. In comparison with conventional techniques, the GIS can improve the analytical and technical range of the projects. The high quality graphical output of the GIS is readily comprehensible and popular with clients. A successful GIS project requires geotechnical and GIS knowledge combined with a good understanding of the project requirements. This can achieve by training geotechnical engineers to be highly proficient in GIS, with a GIS expert acting as technical advisor. The main benefits and problems of a GIS system for using in geotechnical engineering and specifically in landslide analyses will be discussed in this presentation. Also some of current applications of GIS in this area will be presented.

Mr. Eshraghian *received his Bachelor degree in Civil Engineering at Shiraz University, Iran, in 1994, and his Master of Science, Geotechnical Engineering, Tehran University, Iran, in 1996. He came to Canada in 2002 to work on his PhD on Geotechnical Engineering in the Department of Civil and Environmental Engineering. His research experience includes "Calculating soil settlements by using Boundary Element Method" and "Slow moving earth slides."*

13:50 A spatial-temporal GIS analysis for grizzly bear conservation

Grizzly bears (*Ursus arctos L.*) are currently being considered for threatened status within Alberta, as habitat loss and low survival have threatened the long-term viability of the species. To address emerging conservation and management needs, we examined, using various geo-spatial data sources and a GIS, the habitat ecology, conservation, and projected population viability of grizzly bears in west-central Alberta. Using statistical models and a GIS we predicted occupancy and relative risk of mortality for grizzly bears to help guide local land management and conservation planning. Such models have helped spatially identify 2 on-the-ground management actions needed for conservation: (1) the protection of high occupancy sites that are currently secure (low risk of mortality); and (2) the restoration of high occupancy sites that are at high risk of mortality. As industrial development of the foothills is projected to continue into the future, we used GIS-based simulation models to contrast traditional forest harvesting (two-pass forestry) with a natural disturbance-based forest harvesting (large clearcuts) to assess long-term trends in grizzly bear habitat and populations. Results indicated that regardless of forest harvest pattern, secure grizzly bear habitat will decline rapidly within the foothills, with very low likelihood of secure territories for breeding adult females within 30 years for the foothills. This would be most directly remedied by limiting or controlling human access through better road planning and road deactivation.

Mr. Nielsen *obtained his BS and MS degrees at the University of Wisconsin-Stevens Point (Biology and Natural Resources) and very recently completed his PhD in the Department of Biological Sciences. Currently, he is working as a Post-doctoral fellow at the University of Alberta, Department of Biological Sciences. His research interests include landscape ecology, wildlife biology, conservation biology, and the use of GIS to address ecological phenomena or solve ecological problems.*