

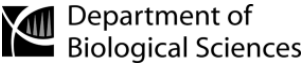
**16:30 To see and be seen: An application of viewshed analysis to the defensibility of archaeological rock feature sites**

Archaeologists have long been interested in studying spatial relationships between ancient sites. Recently, archaeologists have begun to apply various GIS measures to explore how ancient peoples may have used and experienced certain locations on the landscape. From an archaeological perspective, viewshed can be used to determine whether two sites are connected by a line-of-sight, or whether a certain prominent landscape feature, either natural or cultural, can be seen from various points on the landscape. In my research, I apply viewshed analysis to a series of archaeological rock feature sites that line a steep-sided portion of the Fraser River drainage near Yale, BC, to test whether these sites created a defensive network, whereby signals from downriver could be seen by sites upriver. The rock features are a unique form of construction, whereby the physical landscape was modified in durable and meaningful ways that include defensibility. I conclude that while archaeological sites in the Lower Fraser River Canyon could have formed a defensive network, the rock features themselves are not key to the functioning of the network, suggesting that the reasons they were constructed are more complex than just defense.

***Dr. Supernant** is an Assistant Professor and Aboriginal Scholar in the Department of Anthropology. Her interests include indigenous archaeology, community-based research, archaeological ethics, landscape archaeology, Geographic Information Systems and archaeological mapping, and the archaeology of warfare and defense. For the past 6 years, she has worked with First Nations communities throughout British Columbia, mapping archaeological sites, collaborating with community members, and studying ancient landscapes. She is interested in applying GIS methods to the archaeological record in critical and innovative ways that can help illuminate the relationship between ancient peoples and the landscapes they inhabit and create. She has only recently arrived in Edmonton and is anticipating passing her first winter here by learning how to cross-country ski.*

Thank you to this year's sponsors:

**Office of the Provost & Vice-President (Academic)**



**ACADEMIC INFORMATION &  
COMMUNICATION TECHNOLOGIES**

UofA Learning Services

ICCB 2010 Committee

ESRI Canada

GITA Alberta



**UofA GIS Day**  
**Monday, November 15, 2010**

*A Showcase of GIS Applications  
at the  
University of Alberta*



**AGENDA**

14:30	Free REFRESHMENTS in BioSciences first floor microbiology foyer	
15:00	Welcome	<i>Presentations in BS M145</i>
15:05	Assessing use of space by caribou requires a tool for spatial analyses: GIS	<b>John Nagy</b> <i>Biological Sciences</i>
15:20	Location based mass collaboration systems: The next evolution of GIS	<b>Matthew Dance</b> <i>Earth and Atmospheric Sciences</i>
15:35	Palaeontology and GIS: Utilizing geospatial data in the field and the lab	<b>Matthew Vavrek</b> <i>Biological Sciences</i>
15:50	Using math and maps to save lives	<b>Dan Haight</b> <i>Business</i>
16:10	Early Child Development Mapping Project - A social perspective	<b>Cindy Post</b> <i>Faculty of Extension</i>
16:30	To see and be seen: An application of viewshed analysis to the defensibility of archaeological rock feature sites	<b>Kisha Supernant</b> <i>Anthropology</i>
16:50	Closing Remarks and Door Prizes	

### 15:05 Assessing use of space by caribou requires a tool for spatial analyses: GIS

Understanding how populations are structured in space is important for conservation and management of species, subspecies, and ecotypes. We examined how populations of boreal, migratory and tundra-wintering, and island caribou were structured in the Northwest Territories and Nunavut, Canada. Using GIS technology we examined how use was distributed spatially and temporally within the range of each subpopulation and the area and site fidelity of individuals in each. We also produced an animation of the movements of some of these ecotypes.

*Mr. Nagy is in the final year of his PhD at the U of A working in Andy Derocher's lab. He has a BSc from the University of Lethbridge. His research interests are population biology and landscape ecology of Arctic ungulates and carnivores. He is originally from Alberta but spent the last 18 years working as a biologist in the Northwest Territories. He is an avid wildlife photographer and likes to travel & hunt.*

### 15:20 Location based mass collaboration systems: The next evolution of GIS

Public Participation Geographic Information Systems (PPGIS) can be described as a central authority that narrowly defines a problem and selects those who are best able to contribute to the problem. In contrast, the evolution of a Social Internet and web-based mapping applications is enabling a grass-roots platform for location-based mass collaboration between multiple, self-defined, users. Such location-based mass collaborative systems facilitate broad public access to cooperative processes where citizens are empowered to (1) define a geospatial attribute within a mapping environment, (2) contribute data and information to this attribute, and (3) collectively make sense of the contributed data and information. The recent evolution of Internet based GIS applications is challenging traditional PPGIS conceptualizations. Namely, novel web-based collaborative mapping applications offer new ways of defining 'public' and 'participation' and how these concepts interact with a GIS. Thus, existing PPGIS conceptualizations are not adequate for understanding location-based mass collaboration. Our survey of the domain reveals the broad range of approaches utilized by existing location-based mass collaboration applications, and provides insight into how 'public' and 'participation' are being redefined in light of mass-collaboration.

*Mr. Dance is currently completing a Masters of Arts at the University of Alberta. His thesis is focused on how people understand location and express that understanding with emerging web-based tools. As part of his research, he is building an application that combines mapping, social networks and collaboration elements that will enable the citizens of Edmonton to discuss on-line their use of Edmonton's River Valley trail network. Matthew was also intimately involved with the development of Emitter.ca, a location based Industrial Emissions visualization application. Prior to starting graduate school he worked as an independent consultant primarily with Alberta Environment helping to develop environmental policy. He filled project management, facilitation, research and strategic advice roles on several policy projects. He has also worked as a Senior Project Manager developing air quality policy for Edmonton's Clean Air Strategic Alliance.*

### 15:35 Palaeontology and GIS: Utilizing geospatial data in the field and the lab

Palaeontology, like many disciplines, is implicitly geographic in nature, as all fossils can be traced back to their original site of discovery. Though there are a number of commercial systems for GIS data acquisition and processing, they are often carry high financial costs, a burden to many research budgets that have seen cutbacks in recent years. However, over the last several years there has been a surge in the availability of user friendly and Open Source GIS software as an alternative to these commercial systems. As well, because many of these programs are cross platform and license free, they can easily be accessed by new members to the lab regardless of their computer's operating system. In this presentation, I will outline my workflow using several different tools that allow me to gather, collate and process geospatial data.

*Mr. Vavrek received his B.Sc. in Palaeontology from the University of Alberta. He is currently enrolled in a Ph.D. at McGill University and is also a sessional lecturer in the Department of Biological Sciences at the University of Alberta. His research focus is on large scale ecology in the fossil record (palaeomacroecology), specifically within the flora and dinosaur faunas of North America. He spends much of his summers in the field, digging up fossils across Canada, and spends most of his winters thinking about his summers.*

### 15:50 Using math and maps to save lives

Using GIS and mathematical modeling, we demonstrate the importance of input decisions in emergency services planning.

*Mr. Haight is the managing director of the Centre for Excellence in Operations (an operations research centre), a sessional lecturer at the School of Business, and the founding partner of Darkhorse Analytics. He started his career at Mercer Management Consulting in Toronto advising senior executives and jet-setting around the continent. Subsequently, he nearly made millions of dollars in a small Internet startup. Instead, he enjoyed the magnificent failure of the Internet bust. Along the way, he has started a used car dealership, purchased a second-hand trampoline for fifteen dollars, recorded a rock video, and fathered three children. His current work focuses on emergency services modeling, forecasting, and data visualization. Daniel graduated with a Bachelor of Commerce in Business Studies after six years of intensive study at the University of Alberta.*

### 16:10 Early Child Development Mapping Project - A social perspective

Every child is born brimming with potential. How this potential unfolds depends on the brain cell connections that are made, especially during the first three years of life. Children's experiences during this critical period shape the brain in ways that impact lifelong learning, behaviour, health and quality of life. Getting a positive start is key to a successful future. Alberta Education has launched the Early Child Development (ECD) Mapping Initiative, a five-year province wide research activity to look at factors that may influence healthy child development. The initiative will use the results to provide families, communities and school authorities with a picture of early childhood development in Alberta. This project will be utilizing the concept of Social Mapping with the help of GIS to analyze, visualize, and understand how well Alberta's children are doing. Using GIS technology will allow complex information to be presented in an easy-to-understand visual format. Maps, along with community reports, can help to reveal such things as differences across communities in child development, and where strengths and gaps exist in programming, facilities and services. This presentation will provide an overview of our project, and highlight the important role that GIS will play during the planning, analysis, communication, and mobilization phases of this project. As the concept of "social" mapping gathers steam, it is an integral part of our project to showcase how GIS concepts can be used within sectors that are outside the realm of natural resources and physical geography, possibly opening the door to other applications of GIS.

*Ms. Post is the Mapping Manager for the Early Childhood Development Mapping Project (ECMAP) within Community-University Partnership (CUP), Faculty of Extension at the University of Alberta. She brings more than 14 years of GIS experience, in both public (municipal, provincial, and federal government) and private sectors with management projects concentrated on mapping, data compilation, data analysis, business analysis, system design and integration projects. Ms Post, graduated from the University of Alberta, and also teaches various GIS courses to private and academic audiences. She has a wealth of knowledge in spatial datasets and custom mapping. Prior to this position, she ran a very successful GIS consulting company. Ms. Post is active in the local and international GIS communities and is the current president for URISA Alberta (2nd term), Past Conference Chair on the GeoAlberta Steering Committee, and serves on several other conference steering committees and participates on various GIS-related sounding boards and panels.*

discovering the world through gis