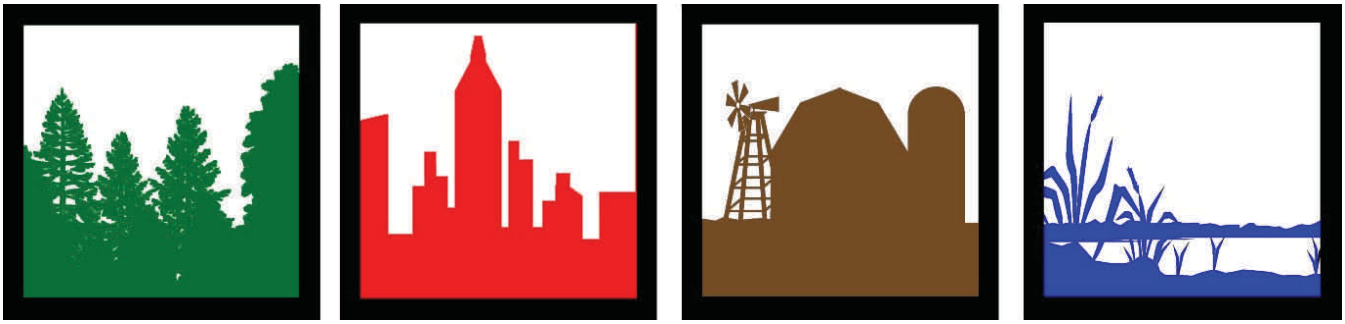

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Inside this issue:

Working with Local Practitioners: Historical Aerial Photographs and Cultural Ecosystem Services

Involving local communities in resource management is among the foremost challenges in ecosystem management throughout the world. A wide variety of landscape ecology tools and datasets can aid the management of natural resources by helping incorporate local and indigenous knowledge and values. For example, participatory mapping has been used to foster involvement of local people from rural Canada to Cameroon, as images and photography can provide ways for people from contrasting backgrounds, and even differing languages, to visualize and share common landscape information. Historical maps, in particular, can be linked with narratives and interviews with Elders, where maps of past landscape conditions are created related to memories of important cultural practices and important events, even for locations currently inaccessible or long-since altered by land cover changes.

At the University of British Columbia, researchers in the Landscape Ecology Lab (led by Sarah Gergel) have been

working with Haida Mapping (aboriginal cartographers), Haida Heritage and Forest Guardians, and other agencies to adapt high spatial resolution imagery to their needs. Collaborative remote sensing workshops have been held and are in development to address the

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US-IALE 2009 Annual Meeting: Snowbird, Utah 12-16 Apr 2009 *Registration Now Open*

The upcoming conference in Snowbird, Utah promises to be another outstanding event, thanks to the hard work of Tom Edwards (program chair), John Bissonette (local host), Cindy Delaney (meeting planner), Matt Gregory (webmaster), Rebecca Kennedy (web coordinator), and others. The conference theme ***"Coupling Humans and Complex Ecological Landscapes"*** reflects the real world well and is a rapidly developing frontier of interdisciplinary research. The symposia, workshops, presentations, student activities, and other events will be exciting and fun. Thomas

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Biodiversity Persistence in Human-Modified Landscapes

Landscape connectivity dependent on complex interactions among habitat fragmentation, amount of hospitable matrix and relative cost values.

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spite their pervasive use in conservation planning, there is considerable uncertainty associated with these cost values. Hence, this study examined the sensitivity of landscape connectivity assessments, based on least-cost paths and graph-theoretic methods, to the set of cost values employed. Artificial landscapes were generated comprising three landcover types ranked consistently from low to high quality: inhospitable matrix, hospitable matrix, and habitat. The area and degree of fragmentation of each landcover were manipulated in a factorial experiment for a total of 20 combinations replicated 100 times. In each landscape we compared 5 sets of relative landcover qualities (cost values ranged from 1 to 1000). The results showed that the sensitivity of least-cost links to relative cost values was modified by the composition of the matrix. Assessments of landscape connectivity were most sensitive to cost values in landscapes with less than 50% hospitable matrix landcover. Sensitivity decreased as habitat fragmentation decreased and the amount of hospitable matrix increased. The degree of fragmentation of the matrix landcover types did not affect the sensitivity. Overall, the sensitivity of landscape connectivity assessments was highly dependent on a complex interaction among habitat fragmentation, amount of hospitable matrix, and relative cost values. Clearly the uncertainty associated with cost values cannot be ignored. To cope with this uncertainty, we proposed that multiple paths should be identified between pairs of habitat patches that collectively delineate probable movement zones rather than single least-cost paths. These probable movement zones should be less sensitive to variation in landcover cost values.

For the remainder of my PhD, I am developing a framework to quantify landscape connectivity that uses this approach of identifying multiple paths between pairs of patches and combines it with a network-theoretic approach. A number of network connectivity statistics have been proposed to quantify the connectivity of these types of habitat networks. I employ a similar simulation approach to compare these connectivity statistics and test their predictability given controlled changes in landscape composition and spatial configuration. Thus far I have found that the sensitivity of network connectivity statistics to landscape structure depended on whether they were local or global, topological or topographical and reductionist or integrative. This year at the 2009 US-IALE Meeting in Snowbird, I will present results from this research. I look forward to seeing you there!

Bronwyn Rayfield,
2008 Student Awardee

Local Practitioners

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use of historic aerial photos for mapping ecosystem baselines and to develop linkages among mapping, monitoring and adaptive management. Remotely-sensed imagery has always been a common tool for managing broad landscapes, and spatial data can now be captured at sub-metre resolution. As a result, a wide variety of new and exciting landscape-level questions can be addressed, but answers will require creative and novel approaches to incorporate local viewpoints and perspectives.

Sarah Gergel and
Jessica Morgan