Michael A. Lindgren
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EDUCATION

M.A. (November 2009)
Department of International Development, Community, and Environment
Clark University, Worcester, Massachusetts
Dissertation title: *The Influence of Climate on Spatiotemporal Dynamics of an Extensive Mountain Pine Beetle Outbreak in the Western United States.*
Committee Members: Dominik Kulakowski (chair), John Rogan

M.A. Coursework: *Raster GIS, Vector GIS, Digital Image Processing, Quantitative Environmental Modeling, Advanced Remote Sensing, Advanced GIS, Java I, Advanced Spatial Statistics, Intermediate Quantitative Methods.*

B.A. (May 2004)
Department of Psychology
Keene State College, Keene, New Hampshire
Focus: Social / Personality Psychology
Minor field of study: Geography

B.A. Coursework: *Natural Resource Management, Environmental Science, Biology, Physical Geography, ArcView GIS, Cultural Geography, Research Methods, Psychological Statistics, Maps and Map-making.*

SPECIALTIES / INTERESTS

Earth systems science research using geographic information systems and remote sensing; developing tools and methodologies for environmental monitoring, modeling, and change detection; time series analysis of climate oscillations and their teleconnections to local environmental variability; and modeling species distributions through characterizations of niche and climate envelopes using their known distributions in space and time.

PROFESSIONAL EXPERIENCE

December 2009 – February 2011 (current)
GIS Analyst / programmer, Laboratory for Ecological Wildlife Habitat Data Analysis for the Land and Seascape (EWHALE), University of Alaska, Fairbanks, AK

Responsible for analysis of data using modeling algorithms to examine species distribution change through time across Alaska and the Arctic, GIS and computer technical assistance, software licensing for the lab, training and overseeing academic interns regarding their work in environmental modeling, and spatial analysis.

Key Projects:

- Murphy, K., Huettmann, F., Fresco, N., Morton, J. 2010. Connecting Alaska Landscapes Into the Future: Results from an interagency climate modeling, land management and conservation project. August 2010.
    - Performed modeling of potential biome and species distribution shifts based on predicted climate change from IPCC A1B scenario data downscaled to the State of Alaska by the Scenarios Network for Alaska and Arctic Planning (SNAP), using RandomForests and MARXAN. Created statistical graphics and maps of predicted results for use in publication.
- Booms, T., Lindgren, M., Huettmann, F. 2011. Linking Alaska's Predicted Climate, Gyrfalcon, and Ptarmigan Distributions in Space and Time: A Unique 200 Year Perspective. Conference Proceedings: Gyrfalcon and Ptarmigan in a Changing World. February 1-3, 2011, Boise, Idaho.
    - Analyzed Gyrfalcon and Ptarmigan presence locations, through funding from the Alaska Department of Fish and Game, and performed back- and forecasting of these species' distributions across the State of Alaska. Predicted spatial distributions were further examined between species to quantify and explain the potential change in their predator-prey relationship.
- U.S. Fish and Wildlife Service, Scenarios Network for Alaska Planning (SNAP), University of Alaska EWHALE Lab, Ducks Unlimited Canada, The Nature Conservancy, Government of the Northwest Territories and the Government of Canada. 2011(in progress). Alaska – Canada Biome Shift Analysis.
    - GIS Analyst and programmer for data manipulation, model development, spatial and statistical visualization of biome clustering solutions, and forthcoming predictions of biome shifts across the study region using SNAP downscaled IPCC-AR4 future climate change scenario data.
- Hardy, S., Lindgren, M. 2011. Crab Biomass Model – Bering Sea
    - Supervised student research technician performing crab presence/absence, abundance, and biomass modeling using an ensemble of the TreeNet, MARS, and RandomForests algorithms for machine learning. Creation of statistical graphics and modeled maps displaying results and accuracies for presentations and assisting in writing a manuscript for publication of findings.
- The Alaska GAP species mapping project. Alaska Natural Heritage Program, University of Alaska Fairbanks EWHALE Lab, and University of Alaska Southeast.
    - Data layer creation, preliminary algorithm automation code using Python and Maxent, technical assistance, and stakeholders meetings to steer spatial analysis in the desired direction.
- Hazlett, S., Lindgren, M. 2010. Python program for modeling the distribution of fish and crab in Glacier Bay, Alaska. 2010 (Forthcoming in S. Hazlett PhD Thesis).
    - Development of a model to examine the sensitivity of grouped crab and fish populations in Glacier Bay, Alaska using changes in management strategies to drive sensitivity analysis of the fishery. Model logic developed by Marine Biology PhD Candidate Susan Hazlett, University of Alaska Fairbanks.

February 2008 – April 2009

Software Tester, Clark Labs, Clark University, Worcester, MA

Responsible for testing and quality control / quality assurance of the IDRISI GIS and Image Processing software's graphical user interface, algorithms, applications programming interface and improvement of software help system.

August 2008 – January 2009
Research Assistant, Gordon and Betty Moore Foundation-funded research of hurricane damages in the Southern Yucatán Peninsula, Mexico using the MODIS vegetation products, Clark University, Worcester, MA

Responsible for compiling and analyzing a large image time-series database for the Southern Yucatán Peninsula Region, Mexico; and examined the impact of Hurricane Dean in 2007 on the response and distribution of vegetation in a tropical dry forest.

June 2008 – September 2008
Research Assistant, "Analysis and interpretation of hyperspectral imagery for mapping distributions of fraxinus species and emerald ash borer host trees". Cooperative agreement between Clark University and USDA-APHIS, Clark Labs, Clark University, Worcester, MA

Responsible for the creation of a database of spectral reflectance curves of various tree species derived from portable ASD spectrometers and hyperspectral imagery, along with data preprocessing, and spatial analysis of the study region.

March 2007- April 2009
Research Assistant I, Sleep Core, Department of General Sleep Medicine, Brigham and Women's Hospital / Harvard Medical School, Boston, MA

Responsible for collecting, scoring, analyzing, and performing quality control of polysomnograph (PSG) data collected for research, training new staff, maintaining equipment, troubleshooting technical problems, and interacting with research subjects.

TECHNICAL SKILLS

Image processing/ GIS software: IDRISI, ERDAS, ENVI, ARC/INFO, ArcGIS, GRASS, SAGA
Statistical software / languages: SPSS, SPlus, Statistica, R
Operating systems: Windows XP /Vista/7, Apple OS 10.x, *NIX familiarity, DOS
Programming language familiarity: Python, Java, SQL, VBA, HTML
Office software: Microsoft Office 2003 / 2007, Apple iWork

PROFESSIONAL AFFILIATIONS

American Society for Photogrammetry and Remote Sensing (member, 2008-present)
Association of American Geographers (member, 2007-present)
The Wildlife Society (member, 2010-present)

CONFERENCE PRESENTATIONS

Lindgren, M.A., Kulakowski, D., Eastman, J.R. Mountain Pine Beetle Range Expansion and Climate Teleconnections: Preliminary Results. *2009 American Society for Photogrammetry and Remote Sensing Meeting.* Baltimore, Maryland, 9-13 March 2009.

Lindgren, M.A., Kulakowski, D., Eastman, J.R. Mountain Pine Beetle Range Expansion and Climate Teleconnections: Preliminary Results II. *2009 Association of American Geographers Meeting.* Las Vegas, Nevada, 22-27 March 2009.