

Jennifer J. Swenson

EDUCATION

- Ph.D. Forest Science.** December 2003. College of Forestry, Oregon State University, Corvallis, OR.
Major: Forest Ecology. Advisor: Dr. Richard H. Waring
Dissertation: *Analyzing Spatial Patterns of Woody Plant Richness at Multiple Scales with Modeled Photosynthesis.*
- M.A. Geography,** December 1995; Department of Geography, San Diego State University, CA. Emphasis in GIS, biogeography, remote sensing. Advisor: Dr. Janet Franklin
Thesis: *Examining and Predicting Habitat Fragmentation Using a GIS in the Santa Monica Mountains National Recreation Area.*
- B.A. Geography and Political Science,** December 1990; University of California, Santa Barbara, CA.
Emphasis: International Relations.

PROFESSIONAL EXPERIENCE

- Assistant Professor of the Practice of Geospatial Analysis & Landscape Ecology** 2006 -
Nicholas School of Environment, Duke University
- Conservation Science Project Manager** 2005 –2006
Project: Andes-Amazon Endemic Species Modeling and Mapping, NatureServe, Arlington VA
- Researcher (Post-doctoral) Multivariate Analysis of Forest Inventory Data** 2003 –2005
Department of Forest Science, Oregon State University/US Forest Service
- Geographer; US Forest Service, Forestry Sciences Laboratory, Corvallis, Oregon** 2000 –2003
- Project and GIS Laboratory Manger, EcoCiencia, Quito, Ecuador** 1995 –1998

PEER-REVIEWED PUBLICATIONS

- Swenson, J.J.,** et al. *Submitted.* Plant and animal endemism in the eastern Andean slope; Challenges to conservation.
- Swenson, J.,** Carter, C., Domec, J.C., Delgado, C.I. *Submitted.* Gold Mining in the Amazon: Global Prices, Deforestation, and Mercury Imports.
- Sexton, J.O., Bax, T., Siqueira, P. **Swenson, J.J.,** and S. Hensley. 2009. A comparison of lidar, radar, and field measurements of canopy height in pine and hardwood forests of southeastern North America. *Forest Ecology and Management* 257:1136-1147.
- Olander, L., Gibbs, H., Steinger, M., **Swenson, J.J.,** Murray, B. 2008. Measuring Reference Emissions from Deforestation and Degradation for Determining Baseline. *Environmental Research Letters* 3(2).
- Hernandez, P. A., Franke, I., Herzog, S. K., Pacheco, V., Paniagua, L., Quintana, H. L., Soto H., A., **Swenson, J. J.,** Tovar, C., Valqui, T. H., Vargas M., J. and Young, B. E. 2008. Predicting species distributions in poorly-studied landscapes. *Biodiversity and Conservation* 17:1353–1366
- Chiriboga, D.S., **Swenson, J.J.,** Rodriguez, F. 2008. A experiência de uma organização de conservação com o manejo de sistemas de informações geográficas no Equador. Moran E. & Batistella (eds.) *Geo-information and Environmental Monitoring in Latin America*. Editora Senac: São Paulo, Brazil. pp 197-214.
- Swenson, J.J.** and R.H. Waring. 2006. Modeled photosynthesis predicts woody plant richness at three geographic scales across northwestern USA. *Global Ecology and Biogeography* 15(5): 470-485.
- Alig, R., Lewis, D.J., and **Swenson, J.J.** 2005. Is forest fragmentation driven by the spatial configuration of land quality? The case of western Oregon. *Forest Ecology and Management* 217: 266-274.
- Swenson, J.J.,** R.H. Waring, N. Coops and W. Fan. 2005. Estimation of forest productivity across the Pacific and Inland Northwest with a physiologically based process model, 3-PG. *Canadian Journal of Forest Research*, 35:1697-1707.

- Butler, B.J., **J.J. Swenson**, and R. Alig. 2004. Forest Fragmentation in the Pacific Northwest: Quantification and Correlations. *Forest Ecology and Management* 189:363-373.
- Swenson, J.J.** and J.F Franklin. 2000. The effects of future urban development on habitat fragmentation in the Santa Monica Mountains. *Landscape Ecology* 15(8):713-730.

MANUSCRIPTS IN PREPARATION

- Delgado, C., D.A. Conde, J.O. Sexton, F. Colchero, J Swenson, A. Pfaff. Development and deforestation in response to the Inter-Oceanic Highway through western Amazonia
- Vetter, J., **Swenson, J.J.**, Bird, J. Impacts of Deforestation on the conservation status of endemic birds in north Maluku, Indonesia from 1990-2003.
- Smart, L., Swenson, J.J. Vertical and spatial canopy structure analysis for habitat mapping.
- Swenson, J.J., Smith, L.E., Alig, R.A. Forest cover changes in Georgia; spatial analysis over 30 years.
- Swenson, J.J. Gray, A., Domec, J.C. Species traits for northwestern trees: trade-offs within the species pool.
- Swenson, J. J. and A.J. Baush. Environmental drivers of deciduous green up, southeastern, USA

PROFESSIONAL EXPERIENCE

- Assistant Professor of the Practice of Geospatial Analysis & Landscape Ecology** **2007 - present**
 Chair of Ecosystem Science and Conservation MEM Program area
 Co-Director DukeEngage Ecuador program
 Nicholas School of the Environment & Earth Sciences, Duke University, Durham, NC
Teaching: Conservation GIS, Remote Sensing, Ecology & Management of Protected Areas (graduate level); Student Mentoring: PhD and Master's of Environmental Management program.
- Conservation Science Project Manager** **2/2005 – 10/2006**
 Project: Andes-Amazon Endemic Species Modeling and Mapping, NatureServe, Arlington VA
 Supervisor: Dr. Denny Grossman
Description: Managed and directed an international scientific project composed of multiple technical, scientific and administrative personnel as well as contractors. Coordinated GIS and modeling work, communications, travel, \$2.4m budget, and relationships with external partners and was scientific advisor in all aspects of spatial analysis and remote sensing (MODIS and TM imagery).
- Researcher (Post-doctoral)** **12/2003 – 3/2005**
 Department of Forest Science, Oregon State University
 Supervisor: Dr. Andrew Gray, Forest Inventory and Analysis Program, USFS
Description: Designed and implemented a multivariate data analysis project to examine regional spatial patterns of woody plants in relation to species attributes and climate.
- Doctoral Graduate Research Assistant** **3/2001 – 6/2003**
 Department of Forest Science, Oregon State University
 Supervisors: Dr. Richard Waring and Andrew Hanson (Montana State University)
- Geographer; Co-op Student Research Assistant** **3/2000 – 3/2001**
 US Forest Service, Forestry Sciences Laboratory, Corvallis, Oregon
 Supervisor: Dr. Ralph Alig, USFS, Land Use Land Cover Change Group
Description: Conducted spatial analyses of forested fragmentation and spatial modeling of land use and land cover change on a regional scale using GIS and remote sensing technologies. Provided GIS, remote sensing, and webpage support to existing projects.
- Project Coordinator and GIS Laboratory Manger** **11/1995 – 2/1998**
 EcoCiencia, Ecuadorian Foundation for Ecological Studies. Quito, Ecuador
 Director of EcoCiencia: Danilo Silva
Description: Coordinated and directed a multi-disciplinary team of 6 professionals, 3 full-time technicians and 5 volunteers to conduct a GIS- and community-based land-use planning study in NW Ecuador to evaluate the potential effects of a highway along lowland rainforest (Ecuadorian Ministry of Public Works, funded by the UNDP). Also coordinated multiple mapping projects of deforestation, land

tenure for indigenous communities, ecological surveys, vegetation and land use mapping funded by government institutions (e.g. Ecuadorian National Park Service), and international organizations (e.g. USAID-CARE-SUBIR, GTZ, TNC, etc.).

Graduate Remote Sensing Research Assistant **6/1994 – 11/1995**

Department of Geography, San Diego State University, California

Supervisor: Dr. Janet Franklin

Description: Vegetation mapping for US Forest Service contract in California using remote sensing and GIS for Santa Monica Mountains National Recreation Area Vegetation Map.

National Park Service Student Co-op, GIS assistant **5/1993 – 11/1995**

Intermountain Region GIS Support Office. (1/1993 – 5/1993 as a volunteer) Lakewood, Colorado

Supervisor: Dr. Sarah Wynn

Description: Built GIS databases by digitizing, editing and scanning; processed and manipulated data layers (dlg, dem, dma). Assisted in technical support for park offices and wrote reports of activities.

TEACHING

Instructor. GeoSpatial Analysis for Conservation & Management. (ENVIRON 261) Graduate level (4-credit, semester) course including lecture and hands-on laboratory activities. Nicholas School of Environment, Duke University. Spring 2007, 2008, 2009

Instructor. Advanced Satellite Remote Sensing. (ENVIRON 357) Graduate level (4-credit, semester) course including lecture and hands-on laboratory activities. Nicholas School of Environment, Duke University. Fall 2007, 2008, 2009

Instructor. Ecology and Protected Area Management (ENVIRON 298). Graduate level (2-credit, semester) course including lecture and discussion sections. Nicholas School of Environment, Duke University. 2007

Instructor. Short Course: "Remote Sensing Applications in Natural Resource Management." Panamerican Center for Geographic Studies and Investigation (CEPEIGE), Instituto Geográfico Militar, 3er Piso, E9B Seniergues E4-67, Quito, Ecuador. 10 hours lecture, 30 hours laboratory, 20 student professionals. Developed, prepared and taught all labs and course lectures. CEPEIGE Director: Dr. Juan Hidalgo, 1997.

Instructor. Course: "Introduction to Remote Sensing." Department of Geographic Sciences and Environmental Studies, Catholic University, Quito, Ecuador. 5 hours lecture, 15 hours laboratory, 15 undergraduate students. Developed, prepared and taught all labs and course lectures. June 13 - 17, 1997.

STUDENT MENTORING

Duke's Masters of Environmental Management Master's Projects

2010 Jennifer Hushaw, December

Brooke Massa, December

Ginevra Ryman, "More than Bucks and Acres: Assessing the Value of Conserved Lands"

Brian Tarpinian, "Prioritizing Proposed Wilderness Areas for Wilderness Designation"

Mathew Poti, "Identifying Priority Conservation Areas in Georgetown County, South Carolina"

Michelle Stogner, "An Analysis of Erosion and Sedimentation Programs in North Carolina"

2009 Julia Gruber, "Targeting Potential Conservation Sites for Swallow-tailed Kites (*Elanoides forficatus*) in Levy County, Florida".

Lisa Poser, "Setting Standards for Sustainable Tourism: An analysis of US tourism certification programs"

Lindsey Smart, "Characterizing Spatial Pattern and Heterogeneity of Pine Forests in North Carolina's Coastal Plain using LiDAR"

Lincoln Smith, "Modeling Land-Use in Georgia: Threats to Biodiversity and Opportunities for Conservation"

John Vetter, "Impacts of Deforestation on the Conservation Status of Endemic Birds in the North Maluku Endemic Bird Area from 1990-2003"

- Kala Wolfe. "Monitoring Key Biodiversity Indicator Species in Southwestern El Salvador: Changes in Bird Populations during Five Years in the Apaneca Biological Corridor"
- Anne Rosenbarger "Community-based forestry in Kalimantan: An assessment of authority, policy, and capacity"
- 2008 Adam Bausch, "A Characterization of Spring Vegetation Phenology Using MODIS Imagery for the Piedmont of North Carolina from 2000 to 2007"
- Cesar Ignacio Delgado. "Is the Interoceanic Highway Exporting Deforestation? A comparison of the intensity of regional Amazonian deforestation drivers within Brazil, Bolivia and Peru."
- John Kerkering. "Mapping Past and Future Permafrost Extent on the North slope Borough, Alaska."
- Chris McPhee. (w/ Coleman Doggett). "Managing an Urban Preserve"
- 2007 Seth Kirby. "Identifying Sites for Protected Areas Based on Endemic Species Richness and Threat in Madre de Dios, Peru."
- Seth Factor. "Effects of Per-Vehicle Entrance Fees on U.S. National Park Visitation Rates"
- Audra Valaitis. "Population Viability of Bull Trout in Idaho"

PhD Advising

Chair

Mariano Gonzalez-Roglich (2009-

Committee Member

Nicolette Cagle (2007), Florencia Sangermano, Clark University (2008), Scott Loarie (2008), Lucas Joppa (2009), German Forero (2009-)

OTHER PUBLICATIONS AND REPORTS

- Olander, L., Gibbs, H., Steining, M., Swenson, J.J., Murray, B. 2008. *Working Paper*. Data and Methods to Estimate National Historical Deforestation Baselines in Support of UNFCCC REDD. Nicholas Institute for Environmental Policy Solutions. Duke University. <http://nicholas.duke.edu/institute/wp-deforestation.pdf>
- Hansen, A., R. Waring, L. Phillips, **J. Swenson**, and C. Loehle. 2003. *Using Biophysical Factors to Predict Regional Biodiversity Potential in the Pacific and Inland Northwest*. Revised 7/03. National Council for Air and Stream Improvement (NCASI) report. 27pp. www.homepage.montana.edu/~hansen/documents/downloadables/
- Swenson, J.J.** and R.H Waring. 2002. *Biophysical Predictors of Woody Plant Diversity across the Pacific and Inland Northwest*. Oregon State University portion of final NCASI report. 26pp.
- Medina, G., Farley, K., **Swenson, J.** 1998. *Descripción Ecológica del Área de Estudio del Proyecto Carchipop que Comprende la Cuenca Hidrográfica del Río el Ángel*. EcoCiencia, FLACSO. Quito, Ecuador.
- Swenson, J.**, K. Farley, M.F. Lopez-Sandoval, W. Palacios, et al. 1997. *Estudio Sobre Clasificación y Uso de Suelo en el Chocó Ecuatoriano* [Land use study of the Ecuadorian Chocó]. A spatial analysis of actual and potential land use, conservation potential, and socio-economic conditions in rural Esmeraldas province, taking into account the potential effects of an intra-national highway construction project bisecting the region. EcoCiencia, Ecuadorian Foundation of Ecological Studies. Report submitted to the Ecuadorian Ministry of Public Works and the United Nations Development Programme. Quito. 201pp.
- Swenson, J.** 1997. *Report on the Practicality of Implementing a Geographic Information System in the City of Cuenca, Ecuador*. Ecuadorian Ministry of the Environment. 12pp.
- Franklin, J., **Swenson, J.**, Shaari, D. 1997. *Map of existing vegetation and land cover for the Santa Monica Mountains National Recreation Area; summary of map accuracy*. Unpublished Technical report to the SMMNRA, Department of Geography, Sand Diego State University, San Diego, CA.

PRESENTATIONS

- Invited** speaker, April 2010. "Forest Cover Changes from the Southeast U.S. to South America"
Department of Forest Resources and Environmental Conservation Spring Seminar. Virginia Tech, Blacksburg, VA.
- Swenson, J.**, Smith, L., Alig, R., Stein, S. April 2010. "Thirty years of forest change in Georgia. US International Association of Landscape Ecology Meeting. Athens, GA".
- Invited** lecture. September 2006. Conservation in the Andes-Amazon region: mapping and modeling technologies. Graduate Conservation Biology class. American University, Washington DC.
- Hernandez, Pilar, Lily Paniagua, Aldo Soto, **Jennifer Swenson**, Carolina Tovar, and Bruce Young. 2006. Novel spatial methods for predicting centers of endemism of Andean birds. Society for Conservation Biology, Annual Meeting, June 2006, San Jose, CA.
- Hernandez, P., **Swenson, J.J.**, and Young, B. 2006. The utility of MODIS Land data products for predicting species occurrences in the Andes of Peru and Bolivia. US International Association of Landscape Ecology Annual Meeting. San Diego. CA.
- Swenson, J.J.** and A. Gray. March 2006. Relationship between tree species traits and biophysical factors across the northwestern USA; gradient and spatial analysis. US International Association of Landscape Ecology Annual Meeting. San Diego. CA.
- Invited** Speaker. **Swenson, J.** Josse, C, Barker, K. January 2006. World Database of Protected Areas Seminar. Organization of American States, Washington DC.
- Swenson, J.J.** and A. Gray. March 2005. Distribution of tree species traits across the Pacific Northwest; gradient and spatial analysis. Northwest Scientific Association Annual Meeting. Corvallis, OR.
- Alig, R., Lewis, D., **Swenson, J.** 2005. Changes in Land Use, Forest Fragmentation, and Policy Responses. Emerging Issues along Urban/Rural Interfaces: Linking Science & Society, March 13-17. Atlanta GA.
- Swenson, J.J.**, and R.H. Waring. August 2004. Testing the relationship between species richness and modeled photosynthesis across the northwestern US. International Society for Ecological Modelling. Annual Meeting. Quebec City, PQ, Canada.
- Swenson, J.J.**, and R.H. Waring [poster]. August 2004. Testing the theorized humped-back relation between species richness and productivity across the northwestern US. Ecological Society of America Annual Meeting. Portland OR.
- Waring, R.H and **J. Swenson**. May 2003. What's really driving biodiversity. Society of American Foresters meeting. Salem, OR.
- Swenson, J.** and M. Lefsky. June 2000. Laser Remote Sensing of the Canopy Structure of Northern Spotted Owl Nest Sites, Cascade Range, Oregon. Society for Conservation Biology; Annual Meeting. Missoula MT.
- Invited** Speaker. 1997. A GIS Application of a General Plan for the province of Northern Esmeraldas: An Experience in Progress. National Meeting on General Planning. Ecuadorian General Secretary of Planning and the International Development Bank; Quito, Ecuador.
- Invited** Speaker. 1997. Land Use Change Detection in the Upper Amazonian Region of Gran Sumaco National Park with Remote Sensing. The Central American Meeting of the Use of GIS/GPS in Land Use Studies. Sponsored by the GTZ. BOSAWAS MARENA/GTZ, Managua, Nicaragua.
- Invited** Speaker. 1997. The use of GIS in Natural Resource Management. Alternatives in Natural Areas Management Seminar. Superior Polytechnic College of Chimborazo, Ecuador.

CONFERENCE PROCEEDINGS

- Alig, R., Lewis, D., **Swenson, J.** 2005. Changes in Land Use, Forest Fragmentation, and Policy Responses. Emerging Issues along Urban/Rural Interfaces: Linking Science and Society, Atlanta GA. March 2005.
- Kline, J.D., F.A. Benford, and **J.J. Swenson**. 2000. Historic and projected trends in private forest land in the western U.S. Fragmentation 2000. Fragmentation2000 Conference Proceedings, September 17-20, 2000, Anapolis, Maryland. A conference on sustaining private forests in the 21st century, Annapolis, Maryland.
- Alig, R., B.J. Butler, and **J.J. Swenson**. 2000. Fragmentation and National Trends in Private Forest Lands:

Preliminary Findings From The 2000 Renewable Resource Planning Act Assessment. Fragmentation2000 Conference Proceedings, September 17-20, 2000, Annapolis, Maryland. A conference on sustaining private forests in the 21st century, Annapolis, Maryland.

Kline, J.D., F.A. Benford, and **J.J. Swenson**. 2000. Historic and projected trends in private forest land in the western U.S. Fragmentation 2000. Fragmentation2000 Conference Proceedings, September 17-20, 2000, Annapolis, Maryland.

Silva, D. and **J. Swenson**. 1997. The experiences of working with GIS in an Ecuadorian NGO. International conference "Environmental Monitoring and Policy Making: Bringing Space Science Down to Earth". Sponsored by the Tinker Foundation. April 24-27, Miami Beach, FL.

RECENT WORKSHOPS

Invited Panel Member: 2006. Public Workshop on Future Land Imaging for the United States. Department of the Interior. July 26, 2006, Washington DC.

NatureServe Core Heritage Training. October 24-28, 2005. Arlington VA

NASA Biodiversity and Ecological Forecasting Annual Meeting. August 2005. Washington DC.

Shuttle Radar Topography Mission: Data Validation and Applications. June 14-16, 2005. United States Geological Survey, Reston, Virginia.

FUNDING AQUISITION

NASA, US Forest Service. Recent Trends in Large-Parcel Forest Ownership and Land Use Change in the Southern US. 2007. PI: **J. Swenson**.

North Carolina Space Grant, New Investigations Program. 2007. *Relating Vegetation Phenology to Climate Variability in the Carolinas*. PI: **J. Swenson**.

Forest Inventory and Analysis, US Forest Service. 2003. Multivariate analysis of western woody plants, species attributes, and climate data. P.I.s: Drs. **J. Swenson** and A. Gray.

NCASI, National Council for Air and Stream Improvement. 2000. Using Biophysical Factors to Predict Regional Biodiversity Potential in the Pacific and Inland Northwest 2003. PI's: Drs. A. Hanson and R. Waring. Dissertation research..

Travel grant. 2000. Awarded by Oregon State University Department of Forest Science. Travel to Society for Conservation Biology's Annual Meeting, 2000, Missoula MT.

United Nations Development Programme. 1997. General Land Use Plan for Northeastern Ecuador's Chocó Region. Ecociencia. P.I.s: **J. Swenson** and K. Farley. US

International Potato Center (CIP) and Latin American Faculty of Social Sciences (FLACSO), Quito, Ecuador. 1996. Digital topographic map creation for northern Ecuadorian *páramo* region. Coordinators: C. Crissman, **J. Swenson**, and S. Poats.

GTZ. 1996. Landuse mapping for Gran Sumaco National Park, Ecuador. . Land use mapping and cartographic products produced in EcoCiencia GIS laboratory. H. Knoblauch and **J. Swenson**.

PROFESSIONAL SERVICE

Reviewer: *Biodiversity & Conservation*, 2008; *Environmental Monitoring & Assessment* 2008; *Landscape & Urban Planning*, 2008-2010; *AGU Water Resources Research*, 2009; *Ecological Applications* 2006; *Landscape Ecology* 2001, 2005, *Remote Sensing* 2009-2010, *AGU Earth Interactions* 2010.

Ad hoc reviews for: USFS-PNW Forest Research Laboratory, Southwest Consortium for Environmental Research and Policy (San Diego State University).

Other activities: Faculty representative for: Working Group for the Environment in Latin America (WGELA-Triangle Region), NickNats, Society for Conservation Biology, Triangle chapter. Nicholas School Nich-tech (IT) committee member, student grievance committee panel member (OSU Graduate

School, 2002); faculty and IT search committee member (OSU Forest Science), 1999-2002; Forest Science Graduate Student Representative, OSU, 1999-2000; International Society of Tropical Foresters Officer, Oregon State University, 1999-2000.

TECHNICAL SKILLS

GIS/Image processing (most recent experience listed first): Arc-GIS 9.5 Workstation and Desktop, Erdas Imagine 9.3, Arc-View 3.x, TNT-MIPS (Map and Image Processing System), Image Processing Workbench, some GRASS GIS.

Remote sensing data: Landsat ETM+, TM, MODIS, MSS, SPOT, LIDAR, ADAR, aerial photos.

Statistical & Database: PC-ORD, SAS, S-PLUS, MS Access, Excel.

Other: differential correction of GPS points, lidar waveform processing in IDL (pre-written programs), familiarity with Unix and Windows systems.

FIELD SKILLS

Excellent field navigation & map reading, aerial photo interpretation, vegetation identification, ground-truthing, Trimble Pathfinder Pro GPS and base station setup with differential correction, measurement of water potential with pressure bomb, leaf area measurement with LAI 2000 and destructive sampling, respiration and photosynthesis with Licor 6400, increment borer, dbh measurement, tree height measurement (clinometer and laser ranging scope). Field experience in mountainous, tropical, and arid ecosystems.

LANGUAGES

- English (native)
- Spanish (advanced written and spoken)
- French (intermediate written and spoken)