

# CHRISTINA MARIE KENNEDY

DEPARTMENT OF PLANT SCIENCES & LANDSCAPE ARCHITECTURE

UNIVERSITY OF MARYLAND, COLLEGE PARK, MD 20742

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## AREAS OF INTEREST

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Conservation biology, community and landscape ecology, ornithology, and environmental policy.

## EDUCATION

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**Doctor of Philosophy**, December 2009

University of Maryland (UMD), College Park, MD

Graduate Program in Behavior, Ecology, Evolution and Systematics (BEES)

Cumulative Grade Point Average: 4.0/4.0

Dissertation: *Matrix Effects on Individual and Community-level Responses of Birds to Forest Fragmentation in Jamaica*

**Master of Environmental Management**, May 2000

Duke University, Durham, NC

Nicholas School of the Environment

Concentration: Conservation Biology

Cumulative Grade Point Average: 3.9/4.0

Master's Project: *A Framework for Evaluating Ecosystem-Based Partnerships: A Case Study of the Gulf Coastal Plain Ecosystem Partnership*

**Bachelor of Science**, May 1997

Cornell University, Ithaca, NY

College of Agriculture & Life Sciences

Major: Natural Resources Management

Cumulative Grade Point Average: 3.5/4.0; Major Grade Point Average: 3.7/4.0

Study Abroad: El Zamarano School of Agriculture, Honduras, January–May 1996

Honors Thesis: *The Effects of Demographic, Genetic, and Environmental Stochasticity on the Populations of Christmas Shearwater (*Puffinus nativitatis*), Wedge-tailed Shearwater (*Puffinus pacificus cuneatus*), and Bonin Petrel (*Pterodroma leucoptera hypoleuca*) on Midway Atoll*

## UNIVERSITY AFFILIATION

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**Adjunct Assistant Professor**, July 2010–June 2011

Department of Plant Sciences & Landscape Architecture, University of Maryland

## HONORS & AWARDS

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2010 Outstanding Research Award, Department of Biology, University of Maryland

2006 American Ornithologists' Union Student Membership Award

2001 Finalist, U.S. Presidential Management Fellowship (PMF) Program (formerly PMI Program),

1995–97 Ho-Nun-De-Kah Honor Society of Agriculture, Cornell University

1995–97 Dean's List, Cornell University

## SCHOLARSHIPS, FELLOWSHIPS, & GRANTS

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2009 U.S. Fulbright "Creating Regional Partnerships in the America's" Grant (\$2,000)

2009 Visiting Student Award at the National Zoological Park (NZP), Washington, DC (\$2,000)

2009 Graduate School Goldhaber Travel Grant, University of Maryland (\$800)

2009 Ann G. Wylie Dissertation Fellowship, University of Maryland (\$11,000)

2008 College of Life Sciences Travel Award, University of Maryland (\$600)

2007 U.S. Fulbright Student Fellows Program (\$17,400)

2004–07 NASA Earth System Science Graduate Fellowship (\$72,000)

2006 Cosmos Club Foundation Grants-in-Aid to Young Scholars Program (\$2000)

2004 Smithsonian James Bond Trust Fund (\$35,000; Co-PI: Dr. Peter Marra)

2004 Explorers Club Washington Exploration & Field Grant (\$2000)  
2004 Nagel Travel Award, University of Maryland (\$300)  
2003–04; 2007–08 Darwin Scholarship, University of Maryland (\$24,000)  
1999 Edna Bailey Sussman Fellowship, Duke University (\$12,400)  
1993–97 Cornell Tradition Fellowship for Community Service & Academic Achievement, Cornell University (\$52,000)

## PROFESSIONAL EXPERIENCE

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### **Lincoln Park Zoo, Urban Wildlife Institute, Chicago, IL**

Post-doctoral Associate (Statistical Ecology), December 2010–current

Collaborate with scientists across >15 countries to model bee community and land cover data to determine spatially-explicit predictions of pollinator abundances for diverse agricultural regions and to test the roles of landscape composition versus configuration on pollination services.

### **University of Maryland, Department of Biology, College Park, MD**

Graduate Research Assistant, September 2003–September 2004

Conducted spatial analyses and published findings on the linkages of spatial rarity and extinction risk for fishes of the Sonoran Desert (Dr. William Fagan Lab).

### **Environmental Law Institute (ELI), Washington, DC**

Science & Policy Analyst, May 2000–July 2003

Supported Biodiversity, Wetlands, and Sustainable Land Use Programs by designing, conducting, and coordinating science and policy research, conferences, outreach activities and fundraising.

### **Smithsonian Environmental Research Center, Edgewater, MD**

Spatial Analyst, January 2001–June 2003 (part-time)

Developed geospatial database and conducted spatial analyses for Neighborhood Nestwatch, a citizen-based program, measuring the effects of urbanization on bird populations in DC, MD, and VA (Dr. Peter Marra Lab).

### **Duke University Marine Laboratory, Beaufort, NC**

Research Assistant, May 1999–May 2000

Assisted in development of a spatially-explicit, individual-based model of the red-cockaded woodpecker (*Picoides borealis*) (Dr. Larry Crowder Lab).

### **University of Hawaii, Zoology Department, Honolulu, HI**

Ecological Research Assistant, May–July 1998

Assisted with establishment of field protocol for research on the role of alien tree plantations on native Hawaiian plant and bird populations. Designed mist-netting procedures, conducted vegetation sampling, implemented seed/fruit collection, and supervised field technicians.

### **Division of Forestry and Wildlife, Department of Land & Natural Resources, Honolulu, HI**

Wildlife Technician, February–April 1998

Implemented census methods for game birds and surveyed threatened species in game management areas. Assisted research on rat predation of the endangered *Elepaio*, involving mist-netting, bleeding, banding, re-sighting, and nest searching of birds, and rodent control.

### **Biological Resources Division, U.S. Geological Survey, Hakalau Forest Refuge, HI**

Field Intern, September 1997–January 1998

Investigated limiting factors affecting native passerine populations. Conducted high-volume mist-netting; banding and re-sighting of birds; censusing rodent populations, plant host species, and mosquito larvae; and data entry.

### **U.S. Fish and Wildlife Service, Midway Atoll National Wildlife Refuge, Midway Atoll**

Wildlife Biology Intern, May–August 1996

Conducted habitat assessments and monitored nesting and breeding success of 15 seabird species.

**Missouri Wildlife Rescue Center, Ballwin, MO**Animal Care Intern, May–August 1995

Collaborated with veterinarians on native wildlife captures, treatments, and releases.

**RESEARCH EXPERIENCE**

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Effects of Habitat Composition & Configuration on Pollinator Abundances, December 2009–present

Conduct collaborative research, associated with National Science Foundation funded project, to determine the effects of land cover on pollinator communities across multiple agricultural regions to help ensure continued delivery of pollination services to crops. Work with >25 scientific researchers across >15 countries to gather and synthesize pollinator and land cover data to parameterize and implement a spatial model to predict pollinator abundances. Run spatial model in MATLAB and help to implement in user-friendly tool in ArcGIS; conduct statistical hierarchical models to assess model performance and to test the importance of habitat composition versus configuration on pollination services; disseminate results at scientific/professional conferences and peer-reviewed literature.

Position: Post-doctoral Associate, Lincoln Park Zoo (LPZ)

Collaborators: E. Lonsdorf (LPZ), C. Kremen (University of California, Berkeley) M. Neel (University of Maryland), N. Williams (University of California, Davis), T. Ricketts (World Wildlife Fund), R. Winfree (Rutgers University)

Bird Responses to Forest Fragmentation & Landscape Matrix in Jamaica, August 2003–Dec. 2009

Designed, funded, and implemented field research in central Jamaica on the response of resident and migratory birds to forest fragmentation across different landscape mosaics. Supervised and trained field assistants in avian and vegetation surveys and mist-netting/banding/translocations of birds; developed and managed bird census, life history, and vegetation databases; performed object-based land-cover classification using remote sensing and ArcGIS software; conducted univariate, multivariate, multi-model statistical analyses and multi-season patch occupancy modeling. Directly responsible for managing a \$130,000 budget.

Position: Doctoral Student and Principal Investigator, University of Maryland

Collaborators: P. Marra (Smithsonian Migratory Bird Center), W. Fagan, M. Neel, R. DeFries (UMD), T. Ricketts (World Wildlife Fund), A. Sutton (The Nature Conservancy "TNC" of Jamaica), O. Evelyn (Jamaica Forestry Dept.), S. Koenig (Windsor Research Center)

State Biodiversity Initiatives, May 2000–July 2003

Helped run Environmental Law Institute's (ELI) State Biodiversity Program through 1) fundraising, grant writing, and budgeting; 2) designing, managing, and conducting science and policy research to advance sustainable land use, wetlands protection and biodiversity conservation; 3) supervising research associates to provide administrative and research support; 4) collaborating with federal and state agencies and private organizations that provided financial, technical, and political support; 5) publishing and presenting research findings and recommendations to various audiences and forums. Managed and/or collaborated in over eight research and outreach projects, with budgets ranging from \$25,000 to \$250,000.

Position: Science and Policy Analyst, Environmental Law Institute

State Tools for Addressing Invasives, May 2001–August 2002

Conducted research on existing state laws, regulations, and policies to address invasive species. Contributed to the resulting report, *Halting the Invasion: State Tools for Invasive Species Management*, which analyzed invasive species prevention, regulatory, eradication, enforcement, and coordination tools across all 50 states.

Position: Science and Policy Analyst, Environmental Law Institute

Wetland Mitigation, May 2000–December 2002

Helped to survey federal, state, and local laws, regulations, and guidance related to U.S. wetland mitigation banking and in-lieu fee programs; to document existing wetland mitigation banks and in-lieu fee programs in operation and pending approval; and to develop a database on wetland mitigation banks made accessible to the public through the Internet.

Position: Science and Policy Analyst, Environmental Law Institute

Case Study of the Gulf Coastal Plain Ecosystem Partnership, September 1998–May 2000

Evaluated the Gulf Coastal Plain Ecosystem Partnership (GCPEP) as an ecosystem management model; designed and conducted stakeholder interviews and field observations of inter-partner relations; performed outcomes, process, and institutional evaluations.

Position: Master's Student & Graduate Research Associate

Collaborators: L. Maguire (Duke University), V. Compton (TNC), GCPEP Steering Committee

Land Cover Change Analysis, January 2000–May 2000

Using ArcGIS and ErdasImagine, conducted change detection analyses of lands surrounding the Gulf Coastal Plain Ecosystem Partnership in Alabama and Florida from 1970–1990.

Position: Graduate Research Associate

Collaborators: P. Halpin (Duke University), V. Compton (TNC)

Diagnostic Field Study on Resource Use in Honduras, February–May 1996

Conceived, designed, and conducted a diagnostic field study on the role of women and the use of medicinal herbs in Galeras, Honduras. Conducted personal and group interviews, field observations, and community outreach.

Position: Undergraduate Research Associate

**PEER-REVIEWED PUBLICATIONS**

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M. Neel and **C. Kennedy**. Do we know what we are protecting? Taxonomic uncertainty for plants listed under the United States Endangered Species Act. *Conservation Biology*. *In prep.* [Expected submission date: September 1, 2010]

**Kennedy, C.**, E. Grant, M. Neel, W. Fagan, and P. Marra. Landscape matrix mediates occupancy dynamics of Neotropical avian insectivores. *Ecological Applications*. *In press.* [Submission #10-1044]

**Kennedy, C.**, P. Marra, W. Fagan, and M. Neel. Landscape matrix and species traits mediate responses of Neotropical resident birds to forest fragmentation in Jamaica. *Ecological Monographs*. *In press.* [DOI: 10.1890/09-0904]

**Kennedy, C.**, and P. Marra. 2010. Matrix mediates avian movements in tropical forested landscapes: Inference from experimental translocations. *Biological Conservation* 143: 2136–2145.

Fagan, W., **C. Kennedy**, and P. Unmack. 2005. Quantifying rarity, losses, and risks for lower Colorado River Basin fishes: Implications for conservation listing. *Conservation Biology* 19: 1872–1882.

Fagan, W., C. Aumann, **C. Kennedy**, and P. Unmack. 2005. Rarity, fragmentation, and the scale-dependence of extinction risk in desert fishes. *Ecology* 86: 34–41.

**REPORTS, ARTICLES, BOOK CONTRIBUTIONS**

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Tallis, H.T., T. Ricketts, E. Nelson, D. Ennaanay, S. Wolny, N. Olwero, K. Vigerstol, D. Pennington, G. Mendoza, J. Aukema, J. Foster, J. Forrest, D. Cameron, K. Arkema, E. Lonsdorf, and **C. Kennedy**. 2010. InVEST 1.004 beta User's Guide: Integrated Valuation of Ecosystem Services and Tradeoffs. Natural Capital Project, Stanford University, Palo Alto, CA. 155pp.

**Kennedy, C.**, J. Wilkinson, and J. Balch. 2003. Conservation Thresholds for Land Use Planners. Environmental Law Institute, Washington, DC. 55pp.

Wilkinson, J., and **C. Kennedy**. 2003. Planning with Nature: Biodiversity Information in Action. ELI, Washington, DC. 33pp.

Filbey, M., **C. Kennedy**, J. Wilkinson, and J. Balch. 2002. Halting the Invasion: State Tools for Invasive Species Management. ELI, Washington, DC. 112pp.

Wilkinson, J., **C. Kennedy**, K. Mott, M. Filbey, and S. King. 2002 (Sep.–Oct.). Banks and fees mitigation study reveals an industry transformed. *National Wetlands Newsletter* 24(5):5–6, 16.

Wilkinson, J., **C. Kennedy**, K. Mott, M. Filbey, S. King, and J. McElfish. 2002. Banks & Fees: The Status of Off-site Wetland Mitigation in the U.S. ELI, Washington, DC. 200pp.

Wilkinson, J., **C. Kennedy**, K. Mott, and J. McElfish. 2001. Status of the States: Innovative State Strategies for Biodiversity Conservation. ELI, Washington, DC. 68pp.

#### **PRESENTATIONS AT PROFESSIONAL MEETINGS** (\* indicates presenter)

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**Kennedy, C.\***, P. Marra, M. Neel, and W. Fagan. "Landscape matrix influences avian community stability in fragmented tropical forests in Jamaica." 94<sup>th</sup> Ecological Society of America Meeting, Albuquerque, NM, 2-7 August 2009.

**Kennedy, C.\***, P. Marra, M. Neel, R. DeFries, and W. Fagan. "Response of birds in Jamaica to landscape matrix." 93<sup>rd</sup> Ecological Society of America Meeting, Milwaukee, WI, 3-8 August 2008.

**Kennedy, C.\***, P. Marra, M. Neel, R. DeFries, and W. Fagan. "Birds in fragmented landscapes in Jamaica: Differential mechanisms of matrix response." NASA Joint Workshop on Biodiversity, Terrestrial Ecology & Related Applied Sciences, Adelphi, MD, 21–25 August 2006.

**Kennedy, C.\***, P. Marra, M. Neel, R. DeFries, and W. Fagan. "Response of birds to landscape matrix in fragmented forests in Jamaica." NASA Biodiversity & Ecological Forecasting Team Meeting, Westin Grand Hotel, Washington, DC, 29–31 August 2005.

Fagan, W., **C. Kennedy\***, and P. Unmack. "Quantifying rarity, losses, and risks for lower Colorado River Basin fishes: Implications for conservation listing." Bioscience Research & Technology Review Day, University of Maryland, College Park, MD, 5 November 2003.

**Kennedy, C.\***, J. Wilkinson, K. Mott, and M. Filbey. "Banks & fees: The status of off-site wetland mitigation in the U.S." Wetlands Law & Regulation Conference, American Law Institute–American Bar Association, Washington, DC, 29–30 May 2003.

**Kennedy, C.\***, J. Wilkinson, K. Mott, and M. Filbey. "Banks & fees: The status of off-site wetland mitigation in the U.S." 6<sup>th</sup> National Mitigation Banking Conf., San Diego, CA, 23–25 April 2003.

**Kennedy, C.\*** and J. Wilkinson. "Planning for nature: How U.S. state laws influence the use of natural heritage data in planning." 2003 Leadership Conference: Networking to Connect Science with Conservation, Ellicott City, MD, 5–9 April 2003.

**Kennedy, C.\***, M. Filbey, J. Wilkinson. "Halting the invasion: State tools for invasive species management." Invasive Species Workshop, The Nature Conservancy of California, San Francisco Zoo, San Francisco, CA, 9–10 January 2003.

**Kennedy, C.\***, J. Wilkinson, K. Mott, and M. Filbey. "Banks & fees: The status of off-site wetland mitigation in the U.S." New Developments and Trends in Federal Wetlands Protection and Mitigation Policy, Environmental Law Institute, Washington, DC, 30 October 2002.

**Kennedy, C.\***, J. Wilkinson, K. Mott, and M. Filbey. "Banks & fees: The status of off-site wetland mitigation in the U.S." Wetlands 2002: Restoring Impaired Wetlands and Other Waters, Association of State Wetland Managers, Indianapolis, IN, 7–9 October 2002.

Johnson, E.\*, **C. Kennedy**, E. Gordon, and J. Wilkinson. "Needs assessment of biodiversity information users in New York State." Society for Conservation Biology, 15<sup>th</sup> Annual Meeting, University of Hawaii, Hilo, HI, 29 July–1 August 2001.

**Kennedy, C.\***, J. Wilkinson, K. Mott, and M. Filbey. "Status of wetland mitigation banking in the U.S." Communities Working for Wetlands Conference, Orlando, FL, 16–18 May 2001.

#### **INVITED SEMINARS & SELECT PRESENTATIONS**

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- 2010 Smithsonian Ornithological Exchange, Conservation & Science Seminar Series, Conservation & Science Building, National Zoological Park, Washington, DC
- 2010 Restoring Pollination Services in Degraded Landscapes, National Center for Ecological Analysis and Synthesis, Santa Barbara, CA
- 2007 Regional U.S. Fulbright Student Enhancement Seminar, Embassy of the United States of America, Kingston, Jamaica
- 2006 Commonwealth Scientific and Industrial Research Organization (CSIRO), Centre for Environment and Life Sciences, Sustainable Ecosystems, Perth, Australia
- 2005 Avian Biology Seminar, Smithsonian Migratory Bird Center, National Zoological Park, Washington, DC

## INVITED CONFERENCE PARTICIPANT

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- 2009 U.S. Fulbright Workshop on the Environment: Creating Regional Partnerships in the Americas, Harvard University, Cambridge, MA
- 2008 NASA Biodiversity & Ecological Forecasting Team Meeting, University of Maryland Inn & Conference Center, Adelphi, MD
- 2006 NASA Land-Cover & Land-Use Change (LCLUC) Science Team Meeting, University of Maryland Inn & Conference Center, Adelphi, MD
- 2006 NASA Joint Workshop on Biodiversity, Terrestrial Ecology & Related Applied Sciences, University of Maryland Inn & Conference Center, Adelphi, MD
- 2005 NASA Biodiversity & Ecological Forecasting Team Meeting, The Westin Grand Hotel, Washington, DC
- 2004 NASA First Symposium for the Earth System Scholars Network (ESSN), University of Maryland Inn & Conference Center, Adelphi, MD
- 2004 NASA Land-Cover & Land-Use Change Science Team Meeting, University of Maryland University College, Adelphi, MD

## CONFERENCES ORGANIZED

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### **Invasives Forum**, ELI, Washington, DC, September 2002

1-day forum with national and state leaders on invasive species to discuss the development of more effective state-level invasive species prevention and management laws and programs.

### **Delaware's Biodiversity Conservation Partnership**, Sheraton Dover Hotel, February 2001

1-day forum convening 300 professionals in environmental, agricultural, and business sectors and politicians to build support for a statewide biodiversity strategy in Delaware.

### **State Strategies for Biodiversity Conservation**, ELI, Washington, DC, January 2001

2-day forum with key leaders from 23 state-level biodiversity programs to examine effective and innovative state strategies for biodiversity conservation.

### **National Wetlands Program Annual Ceremony**, Washington, DC, 2000–2003

Raised >\$100,00 annually to support and organize a ceremony on Capital Hill honoring leaders in education and outreach, scientific research, voluntary leadership, private land stewardship, and program management related to wetlands.

## TEACHING EXPERIENCE

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### Teaching Assistant, University of Maryland, College Park, MD

Introductory lecture and lab course on "The World of Biology", covering molecular and cell biology, evolution, and organismal biology (undergraduate level), Fall 2008

### Guest Lecturer, University of Maryland, College Park, MD

Seminar in Conservation Biology (undergraduate level), "Landscape matrix effects on Neotropical bird responses to forest fragmentation," Summer 2010

### Guest Lecturer, University of Maryland, College Park, MD

Seminar in Geospatial Analysis Methods & Technologies for Conservation Studies (graduate level), "Analysis of habitat fragmentation and connectivity," Fall 2009

### Guest Lecturer, University of Maryland, College Park, MD

Seminar in Extinction Risk: Where Biology, Geography, and Mathematics Meet (Honor's undergraduate level), "Spatially fragmented populations," Spring 2008

### Guest Lecturer, Northern Caribbean University, Mandeville, Jamaica

Seminar in Principles and Practices of Conservation (graduate level), "The role of habitat fragmentation in conservation in the tropics," Spring 2007

### Guest Lecturer, University of Maryland, College Park, MD

Seminar in Sustainable Development and Conservation Biology (graduate level), "Birds in fragmented landscapes in Jamaica: The role of the matrix," Fall 2005

## UNDERGRADUATE TRAINING & MENTORING

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**ArcGIS & Database Supervisor**, Biology Department, University of Maryland, Fall 2006–present

Hired, trained, and/or supervised 14 undergraduate researchers in ArcGIS mapping, excel/access database development, and scientific literature review (E. Abraham, C. Chanza, D. Fink, S. Gupta, D. Harris, P. Kundu, M. Loman, J. Lovell, A. Pyle, N. Sofoluke, M. Thomas, V. Tran, R. Verma, and L. Wells).

**Avian Monitoring Supervisor**, Mandeville, Jamaica, January–July 2005–2007

Hired, trained, and supervised 7 undergraduate and graduate students (including 3 Jamaican citizens) in bird and vegetation sampling in support of dissertation research in Jamaica (M. Beale, H. Davis, J. Hamilton, S. Lorenz, M. Podolsky, C. Samuels, and M. White).

**Residential Advisor**, Duke University, August 1998–2000

Supervised and monitored residential activities, organized social and education events, and served as a mentor for >20 freshman female students per year.

## PROFESSIONAL AFFILIATIONS & SERVICE

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2010 Member, The Wildlife Society (TWS)

2008–10 Member, Ecological Society of America (ESA)

2006 Member, American Ornithologists' Union (AOU)

2000–03 Member, Society for Conservation Biology (SCB)

*Reviewer of Manuscripts*: Biological Conservation (2010), Global Ecology and Biogeography (2010)

## TRAINING

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**Introduction to WinBUGS for Ecologists Workshop**, USGS Patuxent Wildlife Research Center, Laurel, MD, 2–6 November 2009

5-day training on statistical analysis and Bayesian estimation.

**Model Selection & Multi-Model Inference Workshop**, Smithsonian Environmental Research Center, Edgewater, MD, 19–20 July 2007

2-day training on the information-theoretic and multi-model selection approach.

**Modeling Patterns & Dynamics of Species Occurrence Workshop**, USGS Patuxent Wildlife Research Center, Laurel, MD, 7–9 August 2006

3-day training on modeling patterns and dynamics of species occurrence while accounting for imperfect detection of species.

**Intermediate ArcView Workshop**, Smithsonian Institution, Washington, DC, 26–27 Feb. 2002

2-day training on using ArcView for scientific research.

**Facilitative Leadership Workshop**, Interaction Associates, Cambridge, MA, 28–30 Nov. 2001

3-day training on effective leadership, team-building, and facilitation in the workplace.

## SKILLS

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Adept in various word processing, database (Excel, Access), statistical programs (R, Pcord, JMP/SAS, EstimateS, PRESENCE), and ArcGIS/ArcView; familiar with satellite remote sensing (ErdasImagine, ENVI); skilled in avian surveying and mist-netting; proficient in Spanish.