

# Krishna Pacifici

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## Education

### **Ph.D., Forest Resources** 2011

Warnell School of Forestry and Natural Resources, University of Georgia

Co-advised by Drs. Mike Conroy and Bob Cooper

Dissertation title: Conservation and Management of Rare Species: The development of adaptive models to reduce uncertainty influencing decision making

### **M.S., Statistics** 2009 – May 2012 (expected graduation date)

Department of Statistics, University of Georgia

Advised by Dr. Nicole Lazar

Thesis title: Spatio-temporal dynamics of West Nile Virus in New York City, NY

Course work completed.

### **M.S., Zoology, minor in Statistics** 2007

North Carolina State University, Raleigh, NC

Co-advised by Drs. Ken Pollock and Ted Simons

Thesis title: Effects of vegetation and background noise on the detection process in auditory avian point count surveys

### **B.S., Fisheries and Wildlife Sciences** 2003

North Carolina State University Raleigh, NC

*Magna Cum Laude*

## Professional Experience

2011 – present. **Research Project Coordinator** and **Postdoctoral Research Associate**, North Carolina Cooperative Fish and Wildlife Research Unit, Department of Biology, North Carolina State University, Raleigh, NC. Develop software and code (MATLAB) to conduct dynamic optimization in order to make conservation decisions in the face of climate change and other sources of uncertainty. Supervisors: Jim Nichols (USGS), Paul Fackler (NCSU) and Jaime Collazo (USGS/NCSU).

2010 - 2011. **Graduate Research Assistant**, School of Ecology and Department of Statistics, University of Georgia. Athens, GA. Develop Bayesian Hierarchical Models to understand spatiotemporal dynamics of West Nile Virus in New York City, NY.

Supervisors: Nicole Lazar (UGA) and John Drake (UGA).

2010 - 2011. **Statistical Consultant**, USFWS and BP Oil. Analysis of effects of oil spill on secretive marsh birds.

2007 - 2010. **Graduate Research Assistant**, Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA. Develop Hierarchical adaptive models to assist in sampling and estimation of rare or endangered species. Supervisors: Mike Conroy (UGA) and Bob Cooper (UGA).

2008 - 2009. **Statistical Consultant**, Aspen Marketing Company, Atlanta, GA. Supervisor: Sean Groer. Estimation and prediction of cell phone market sizes using Capture-Recapture Methodology.

2006 - 2007. **Graduate Research Assistant**, Department of Zoology, North Carolina State University, Raleigh, NC. Assess influence of environmental covariates on avian sampling and estimation. Supervisors: Ken Pollock (NCSU) and Ted Simons (USGS/NCSU).

2004 - 2006. **Graduate Teaching Assistant**, Department of Zoology, North Carolina State University, Raleigh, NC.

2004. **Statistical Consultant**, Ten Thousand Islands National Wildlife Refuge, Naples, FL. Analyzed point count data and developed regional monitoring program for select species of birds.

2004. **Field Technician**, Department of Wildlife and Fisheries, North Carolina State University, Raleigh, NC.

2002. **Field Technician**, Department of Zoology, North Carolina State University, Raleigh, NC.

1998-1999. **Summer Field/Lab Technician**, Department of Crops, Soils, and Environmental Sciences, Virginia Tech, Blacksburg, VA.

1997-1999. **Field Technician**, Department of Biology, Arizona State University, Tempe, AZ.

## Peer-Reviewed Publications

Simons, T.R., K.H. Pollock, J.M. Wettrath, M.W. Alldredge, **K. Pacifici**, and J.P. Brewster. 2009. Sources of measurement error, misclassification error, and bias in auditory avian point count data *in* Modeling Demographic Processes in Marked Populations. Thompson, D.L., E.G. Cooch, and M.J. Conroy (editors). Springer, New York, NY.

**Pacifici, K.**, T.R. Simons, and K.H. Pollock. 2008. Effects of vegetation and background noise on the detection process in auditory avian point count surveys. *Auk* 125: 600-607.

Alldredge, M.W., **K. Pacifici**, T.R. Simons, and K.H. Pollock. 2008. A field evaluation of the effectiveness of distance and independent observer sampling to estimate aural avian detection probabilities. *Journal of Applied Ecology* 45: 1349-1356.

Alldredge, M. W., T. R. Simons, K. H. Pollock, and **K. Pacifici**. 2007. A field evaluation of the time-of detection method to estimate population size and density for aural avian point counts. *Avian Conservation and Ecology - Écologie et conservation des oiseaux* 2(2): 13. [online] URL: <http://www.ace-eco.org/vol2/iss2/art13/>

### *Submitted*

**Pacifici, K.**, M. J. Conroy, R. J. Cooper, J. T. Peterson, and R. S. Mordecai. Insights from a large scale Ivory-billed Woodpecker (*Campephilus principalis*) search effort with applications to rare wide-ranging avian species. *Avian Conservation and Ecology*.

**Pacifici, K.**, R.M. Dorazio, and M.J. Conroy. A two-phase sampling design for increasing detections of rare species in occupancy surveys. *Methods in Ecology and Evolution*.

**Pacifici, K.**, R.M. Dorazio, and M.J. Conroy. Occupancy estimation within an adaptive sampling design: evaluation of a Bayesian hierarchical model for rare or elusive species. *Ecological Applications*.

Farrae, D.J., S.E. Albeke, **K. Pacifici**, N.P. Nibbelink, and D. Peterson. Movements of the Shortnose Sturgeon relative to habitat quality of the Ogeechee River, Georgia. *Canadian Journal of Fisheries and Aquatic Sciences*.

### *In preparation*

**Pacifici, K.**, J. Drake, and W. Bajwa. A hierarchical Bayesian spatial model to evaluate the influence of covariates on the spatio-temporal dynamics of West Nile Virus in New York City.

**Pacifici, K.**, J. Drake, and W. Bajwa. Spatio-temporal dynamics of West Nile Virus: scale matters.

Spear, K.A., S.H. Schweitzer, G. Gugushev, and **K. Pacifici**. Avian monitoring within tourist and reserve zones of central Balkan National Park, Bulgaria.

### **Professional Service and Outreach**

Workshop on Occupancy Analysis and Modeling. 2011. Given to Faculty, Students, and North Carolina Wildlife Resource Commission Biologists. Raleigh, NC. December 5 – 6.

Workshop on “Introduction to Structured Decision Making for natural resources management”. 2011. Given as continuing education course at American Fisheries Society 2011 Annual Conference, Seattle, WA with Dr. Jim Peterson. September 4.

Workshop on Bayesian SI Mixing (Isotope) Models in R and WinBUGS: Inference and Diagnostics. 2010. Given to students, faculty, Environmental Protection Agency Personnel, and USFWS personnel. Athens, GA. October 6.

Workshop on Parameter Estimation and Monitoring. 2010. Given to Southeast Partners in Amphibian and Reptile Conservation (SEPARC). Ocala, FL. February 19 - 20.

Attended Adaptive Management Conference Series (AMCS) workshop. 2010. Gainesville, FL. March 9 – 12.

Workshop on Adaptive Resource Management, Structured Decision Making, and Parameter Estimation. 2009. Given to Pennsylvania Game Commission with Drs. M.J. Conroy and J.T. Peterson. Pennsylvania Fish and Boat Commission's Stackhouse Facility, Bellefonte, PA. May 21 – 22.

Workshop on Adaptive Resource Management, Structured Decision Making, and Parameter Estimation. 2009. Given to Pennsylvania Game Commission with Drs. M.J. Conroy and J.T. Peterson. Pennsylvania Fish and Boat Commission's Stackhouse Facility, Bellefonte, PA. May 18 – 19.

Organized international Adaptive Management Conference Series (AMCS) workshop with invited speakers. 2009. Athens, GA. March 11 – 13.

Workshop on Adaptive Resource Management, Structured Decision Making, and Parameter Estimation. 2008. Given to Southeastern Region of the USFWS with Drs. M.J. Conroy and J.T. Peterson. Charlie Elliott Wildlife Center, Mansfield, GA. October 9 – 10.

Workshop on Adaptive Resource Management, Structured Decision Making, and Parameter Estimation. 2008. Given to Georgia Department of Natural Resources with Drs. M.J. Conroy and J.T. Peterson. Charlie Elliott Wildlife Center, Mansfield, GA. May 20 – 21.

Guest lecture on modeling and capture-recapture for WILD/FISH 8390 Estimation of Fish and Wildlife Populations. 2008, 2009, 2010. University of Georgia, Athens, GA.

Guest lecture and overview of Program Distance software to ZO/ST 506 class. 2006. North Carolina State University, Raleigh, NC.

Seminar series on Program MARK software to members of the Conservation Ecology Graduate Group of North Carolina State University. 2006. Raleigh, NC.

Presentation to 8<sup>th</sup>/9<sup>th</sup> graders from NCSU environmental camp about bird monitoring. 2006. Raleigh, NC.

Seminar on wildlife biology and research at NCSU to AP Biology class from Raleigh Charter High School. 2006. Raleigh, NC.

## **University Teaching Experience**

Estimation of Parameters of Fish and Wildlife Populations. Teaching Assistant. WILD/FISH 8390, University of Georgia, Spring 2009, 2010.

Human Anatomy. Teaching Assistant. ZO 412, North Carolina State University, Spring 2006.

Animal Anatomy and Physiology. Teaching Assistant. ZO 250, North Carolina State University, Fall 2004, 2006.

Ornithology. Teaching Assistant. ZO 501, North Carolina State University, Spring, 2005.

## Invited Presentations

**Pacifici, K.**, R. Dorazio, and M. Conroy. 2010. Occupancy modeling within an adaptive sampling design with application for rare species. USGS Amphibian Research and Monitoring Initiative Annual Conference. San Diego, CA.

## Research Presentations

\*Presenter

Albeke, S.E.\*, D.J. Farrae and **K. Pacifici**. 2010. Kriging within river networks: an application to shortnose sturgeon movements and habitat quality, Ogeechee River, Georgia. WyGIS Geospatial Forum. University of Wyoming, Laramie, WY.

**Pacifici, K\***, J. Drake, and W. Bajwa. 2010. A hierarchical Bayesian spatial model to evaluate the influence of covariates on the spatio-temporal dynamics of West Nile Virus in New York City. International Statistical Ecology Conference. Canterbury, England.

**Pacifici, K\***, M.J. Conroy, R.J. Cooper, and J.T. Peterson. 2009. Occupancy estimation within an adaptive sampling design: Evaluation of a Bayesian hierarchical model for rare or elusive species. Euring Analytical Conference. Pescara, Italy.

**Pacifici, K\***, M.J. Conroy, R.J. Cooper, and J.T. Peterson. 2008. Occupancy estimation within an adaptive sampling design: Evaluation of an integrated estimator for rare or elusive species. The Wildlife Society Annual Conference. Miami, FL.

**Pacifici, K\***, M.J. Conroy, R.J. Cooper, and J.T. Peterson. 2008. Occupancy estimation within an adaptive sampling design: Evaluation of an integrated estimator for rare or elusive species. International Statistical Ecology Conference. St. Andrews, Scotland.

**Pacifici, K.\***, T.R. Simons, and K.H. Pollock. 2008. Effects of vegetation and background noise on the detection process in auditory avian point count surveys. Warnell Graduate Student Symposium. Athens, GA.

Cooper, R.J.\*, R.S. Mordecai, B.G. Mattsson, M.J. Conroy, **K. Pacifici**, J.T. Peterson, and C.T. Moore. 2008. Design for a region-wide adaptive search for the Ivory-billed Woodpecker with the objective of estimating occupancy and related parameters. 4<sup>th</sup> International Partners in Flight Conference. McAllen, TX.

Simons, T.R.\* , K.H. Pollock, J.M. Wettröth, M.W. Alldredge, **K. Pacifici**, and J.P. Brewster. 2008. Sources of measurement error, misclassification error, and bias in auditory avian point count data. 4<sup>th</sup> International Partners in Flight Conference. McAllen, TX.

**Pacifici, K.\***, T.R. Simons, and K.H. Pollock. 2007. Effects of vegetation and background noise on the detection process in auditory avian point count surveys. The Wildlife Society Annual Conference. Tucson, AZ.

**Pacifici, K.\***, T.R. Simons, K.H. Pollock, and M.W. Alldredge. 2007. Bird Radio Update: Insights into factors affecting avian point count surveys and the future direction of avian sampling. North Carolina Partners in Flight Annual Meeting, Blue Jay Point County Park, Raleigh, NC.

**Pacifici, K.\***, M.W. Alldredge, T.R. Simons, and K.H. Pollock. 2006. Evaluation of Multiple Observer Method using a simulated point count system. Workshop on methods for inference about landbird abundance using count data. Patuxent Wildlife Research Center, National Wildlife Visitor's Center, Laurel, MD.

**Pacifici, K.\***, M.W. Alldredge, T.R. Simons, and K.H. Pollock. 2006. Distance Sampling evaluation using a simulated point count system. Workshop on methods for inference about landbird abundance using count data. Patuxent Wildlife Research Center, National Wildlife Visitor's Center, Laurel, MD.

**Pacifici, K.\***, T.R. Simons, and K.H. Pollock. 2006. Effects of vegetation on the detection process in auditory avian point count surveys. 9<sup>th</sup> Annual Graduate Student Symposium, Departments of Zoology and Botany, North Carolina State University. Talley Student Center, Raleigh, NC.

**Pacifici, K.\***, T.R. Simons, K.H. Pollock, and M.W. Alldredge. 2006. Bird Radio Update: Insights into factors affecting avian point count surveys and the future direction of avian sampling. North Carolina Partners in Flight Annual Meeting, Blue Jay Point County Park, Raleigh, NC.

Simons, T.R.\*, K.H. Pollock, M.W. Alldredge, and **K. Pacifici**. 2005. Experimental analysis of detection probabilities on avian point count surveys. American Ornithologist's Union Annual Meeting, Santa Barbara, CA.

Simons, T.R.\*, K.H. Pollock, M.W. Alldredge, and **K. Pacifici**. 2004. Experimental analysis of detection probabilities on avian point count censuses. Ecological Society of America Annual Meeting, Portland, OR.

## **Training Support**

Optimization for Natural Resource Management with MDPSOLVE. Paul Fackler, Ken Williams, and Jim Nichols. 2011. Raleigh, NC.

Introduction to R webinar, USGS, NPS. 2007. Online.

Modeling Patterns and Dynamics of Species Occurrence webinar, USGS. 2007. Online.

Program MARK Intermediate Workshop. 2005. Fort Collins, CO.

## **Professional Society Memberships and Activities**

Served as reviewer for:

- Animal Conservation
- Avian Conservation and Ecology
- Conservation Biology
- Ecological Modelling (2)
- Journal of Field Ornithology
- Journal of Wildlife Management
- Methods in Ecology and Evolution
- International Quail Symposium
- The American Statistician
- Transactions of the American Fisheries Society
- Wildlife Research

American Ornithological Union 2005-2007.

American Statistical Association 2010 – present.

Computational Ecology and Epidemiological Study Group of UGA 2007 – 2011.

Conservation Ecology Graduate Group of NCSU 2005-2007.

Ecological Society of America 2004 – present.

- Statistical Ecology Section 2007 – present.

International Biometric Society (Eastern North American Region) 2007 – present.

The Wildlife Society 2002 – present.

- Biometrics Working Group 2007 – present.

- Elected Board Member 2007 – 2008.

- North Carolina Chapter 2002 – 2007.

Warnell Graduate Student Association UGA 2008 – 2010.

- Elected Colloquium Committee Chair 2008 – 2010.

## **Awards and Distinctions**

USGS Invitational Guest to attend 75<sup>th</sup> North American Wildlife and Natural Resources Conference 2010

UGA Warnell School of Forestry and Natural Resources Travel Grant 2008 \$200

The Wildlife Society Biometrics Working Group Student Travel Grant 2007 \$200

NCSU Outstanding M.S. Presentation Zoology; Graduate Student Symposium 2006 \$200

Recipient of the American Ornithological Union student membership award 2005

NCSU Chapter of Xi Sigma Pi Forestry Honor Fraternity 2003

NCSU Chapter of the Golden Key International Honour Society 2003

NCSU Thomas L. Quay Wildlife Undergraduate Experiential Learning Award 2002

## **Programming Experience**

Languages (statistical and scientific): FORTRAN, MATLAB, python, R, SAS