

# John Tipton | Curriculum Vitae

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## Education

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### Colorado State University

*Ph.D. Candidate in Statistics*

Advisors - Mevin Hooten and Jean Opsomer

Dissertation - Improved estimation and prediction for computationally expensive ecological and paleoclimate models.

### Colorado State University

*Masters of Science in Statistics*

Advisor - Jean Opsomer

### Colorado State University

*Bachelors of Science in Mathematics and Zoology*

**Fort Collins**

*2011–Present*

**Fort Collins**

*2008–2011*

**Fort Collins**

*2001–2005*

## Experience

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### PalEON

*Graduate Research Assistant*

*2013–2016*

Developed Bayesian hierarchical models for reconstruction of paleoclimate using proxy data.

Detailed achievements:

- Spatially explicit reconstruction of average July temperature in the U.S.
  - Data from historical military fort records
  - EOF regression with spatial random effects
  - Model selection techniques to provide shrinkage of estimates
  - Validation of predictive ability in a simulation experiment
- Reconstruction of temperature and precipitation from tree rings
  - Data assimilation from different sources and scales in the Hudson Valley, New York
  - Extension of cutting edge modeling techniques to increase predictive skill
  - Use of model selection to choose between non-linear process models for tree ring growth

### United States Forest Service

*Graduate Research Assistant*

*2009–2013*

Research on sampling methods for pilot study of tree canopy cover and application of state of the art survey sampling methodologies to aid in development of the National Land Cover Database.

Detailed achievements:

- Inclusion of powerful machine learning methods in a statistical framework
- Analysis of remote sensing and statistical techniques for creation of land cover maps
- Sample size and power calculations to improve sampling methods and decrease cost

## Teaching Experience

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### Colorado State University Statistics Department

Graduate Instructor/Teaching Assistant

2009–2015

Instructor of record for:

- ST 307 Intro to Biostatistics, three semesters
- ST 204 Business Statistics, two semesters

Teaching assistant for:

- ST 472 Statistical Consulting, one semester
- ST 301 Intro to Statistics Online, one semester
- ST 204 Business Statistics, one semester

### Discussant

Workshop on Parallel Computing, CU/CSU, 2015

2015

### Teaching Assistant

Building Capacity in Bayesian Modeling for Ecologists (NSF), 2 days

2015 and 2014

### Teaching Assistant

R Workshop (CSU-CCFRWU), 1 day

2015 and 2013

## Publications

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### Published and In Review.....

**2016:** Trevor Hefley, Kristin Broms, Brian Brost, Frances Buderman, Shannon Kay, Henry Scharf, John Tipton, Perry Williams, and Mevin Hooten. The basis function approach to modeling dependent ecological data. *Ecography*. In Review.

**2016:** Douglas Silver, Brett Johnson, William Pate, Kyle Christianson, John Tipton, James Sherwood, Brian Smith, Yun Hao, and Patrick Martinez. Effect of net size on estimates of abundance, size/age, and sex of *Mysis diluviana*. *Journal of Great Lakes Research*, In Review

**2016:** John Tipton, Mevin Hooten, Neil Pederson, Martin Tingley and Daniel Bishop. Reconstruction of late Holocene climate based on tree growth and mechanistic hierarchical models. *Environmetrics*, 27(1):42-54.

**2013:** John Tipton, Jean Opsomer, and Gretchen Moisen. Properties of endogenous post-stratified estimation using remote sensing data. *Remote Sensing of Environment*, 139:130-137.

**2012:** John Tipton, Gretchen Moisen, Paul Patterson, and Thomas Jackson. Sampling intensity and normalization: Exploring cost-driving factors in nationwide mapping of tree canopy cover. In: *McWilliams, Will and Roesch, Frank, (compilers). 2010 Forest Inventory and Analysis (FIA) Symposium*.

**2012:** Thomas Jackson, Gretchen Moisen, Paul Patterson and John Tipton. Repeatability in photo-interpretation of tree canopy cover and its effect on predictive mapping. In: *McWilliams, Will and Roesch, Frank, (compilers). 2010 Forest Inventory and Analysis (FIA) Symposium*.

**2005:** David Gammon, Myron Baker, and John Tipton. Cultural divergence within novel song in the black-capped chickadee (*Poecile atricapillus*). *The Auk*, 122, 853-871.

### In Prep.....

**2016:** John Tipton, Mevin Hooten, Simon Goring, Jack Williams. Reconstruction of spatio-temporal temperature processes from sparse historical records using probabilistic principal component regression.

**2016:** John Tipton, Mevin Hooten, Connor Nolan, Bob Booth. Bayesian multispecies ecological models for paleoclimate reconstruction.

## **Presentations**

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### **Invited**.....

**2016:** Scientific and mechanistic processes models applied to Bayesian hierarchical paleoclimate reconstructions

**2015:** Presentation - ASA - ENVR Student Paper Award: Reconstruction of late Holocene climate based on tree growth and mechanistic hierarchical models

**2015:** Poster - ASA - STATMOS: Reconstruction of late Holocene climate based on tree growth and mechanistic hierarchical models

**2014:** Presentation - American Geophysical Union: A statistical reconstruction of bivariate climate from tree ring width measurements using scientifically motivated process models

### **Contributed**.....

**2014:** Poster - American Geophysical Union - co-author: Effects of European land use on contemporary tree-climate relationships in the northeastern United States: Implications for predictive models

**2014:** Presentation - ASA: Reconstruction of historical climate using a reduced rank predictive process model

**2012:** Presentation - Forest Inventory and Analysis Symposium: Properties of the endogenous post-stratified estimator using a random forest model

**2012:** Presentation - ASA: Endogenous post-stratification using random forests

## **Honors/Awards**

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**2015:** American Statistical Association ENVR Student Paper Competition Award

**2014:** Thomas J. and Eileen C. Boardman Statistical Consulting Award

**2014:** American Statistical Association Student Travel Award

**2012:** American Statistical Association Wray Jackson Smith Award

## **Software and Computing**

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|-----------------------------------|---------|
| ○ R                               | ○ C++   |
| ○ L <sup>A</sup> T <sub>E</sub> X | ○ LINUX |
| ○ R MARKDOWN                      | ○ JAGS  |
| ○ STAN                            |         |