

# ARIEL MULDOON

I have worked as an applied statistician since I graduated with a Master's degree in Statistics in 2009. I would like to continue to use my statistical experience to work in applied statistics, with a focus on designing and implementing research projects and analyzing the resulting data with statistical rigor. I am passionate about the importance of collaboration between statisticians and applied scientists in research, and believe that we can practice better science by working together.

## EDUCATION

- 2009  
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2007

**M.S., Statistics**  
Oregon State University  
Corvallis, OR
- 2007  
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2005

**M.S., Fisheries and Wildlife Science (minor Statistics)**  
New Mexico State University  
Las Cruces, NM

  - Thesis: Site fidelity and habitat use of a nonnative predatory fish in a manmade canal in New Mexico.
- 1999  
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1995

**B.A., Environmental Studies (minors Geology, Spanish)**  
Robert D. Clark Honors College, University of Oregon  
Eugene, OR

  - Thesis: Water quality and quantity issues and current policies in the Mexico City Metropolitan Area, Mexico, and the world.

## PROFESSIONAL EXPERIENCE

- Current  
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2012






**Research Consulting Statistician**  
College of Forestry, Oregon State University  
Corvallis, OR

  - I provide statistical expertise, direction, and guidance to graduate students and faculty on topics ranging from experimental and study design, statistical analysis and interpretation, and software programming. I consult on a wide variety of topics, from basic linear models to generalized linear mixed models, random forest models, probability sampling and estimation, survival analysis, survey design and analysis, and statistical models appropriate for time series and spatial statistics. Statistical consulting requires that I have a wide breadth of statistical expertise in many specialized areas of statistics and that I have an organized set of methods for helping clients to learn about these topics. When I do not have current expertise in a statistical area, I spend time researching with a client to gain the knowledge.
  - I teach workshops on statistical software programs and participate in the teaching a data analysis class offered within the Department of Forest Ecosystems and Society.
  - I develop examples of R code for common issues that come up for clients and make them available in blog posts to expand my consulting reach.



View this CV online with links at [ariel.rbind.io/files/acm\\_resume.html](http://ariel.rbind.io/files/acm_resume.html)

## CONTACT

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 [aosmith16](https://twitter.com/aosmith16)  
 [github.com/aosmith16](https://github.com/aosmith16)  
 [aosmith.rbind.io](http://aosmith.rbind.io)  
 [ariel.rbind.io](http://ariel.rbind.io)

## SOFTWARE SKILLS

R/RStudio  
SAS  
Git/GitHub  
Shiny  
Markdown  
SPSS  
WinBUGS

Made with the R package  
[pagedown](https://github.com/josiahmiller/pagedown).

The source code is available on  
[github.com/aosmith16/resume](https://github.com/aosmith16/resume).

Last updated on 2021-10-12.

2021  
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2020

### Statistical Consultant

Food and Agriculture Organization of the United Nations 📍 Rome, Italy

- I am part of the Food and Agriculture Organization's Expert Working Group on Woodfuels Modeling, working on approaches to estimate wood fuels production when a country does not provide official data. I volunteered time to assist with the predictive modeling using country and time level variables related to wood fuels production. My work involved complex data cleaning and joining of multiple wood fuels and covariate datasets, imputation of missing covariate data used as predictors, and predictive modeling using machine learning methods. Imputation was done using predictive mean modeling. I used quantile random forest to build models to predict wood fuels for countries from 1999-2019 along with 95% prediction intervals. All work was done using R.
- Since wood fuels production will need to be calculated in the future, I created a directory that uses a parameterized report to summarize future predictions and output datasets of predicted values based on inputs. This will allow FAO employees to calculate wood fuel values for later years without my direct assistance.

2012  
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2010

### Fisheries Biometrician

Oregon Department of Fish and Wildlife

📍 Salem, OR

- I worked with fisheries biologists around the state to address management and research questions through appropriate design. I consulted on a variety of statistical questions, including sample size estimates for laboratory experiments and observational studies, appropriate design and analysis for mark-recapture studies, and the appropriateness of a statistical method. In particular, I worked with the design and analysis of angler creel surveys to estimate catch numbers in water bodies throughout the state. These involved site visits, planning, preparing data sheets, oversight of the data collection, working with district biologists on data cleaning, and doing the appropriate analysis for harvest estimates.
- I led a state-wide angler survey to answer questions about perceptions of fishing on the McKenzie River.
- I developed software scripts for managers to analyze angler surveys locally.

2010  
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2009

### Statistician

Department of Fisheries and Wildlife, Oregon State University

📍 Corvallis, OR

- I analyzed data from a long-term dataset collected on larval shortnose and Lost River suckers in Upper Klamath Lake while working with researchers to improve the study design.
- I estimated status and trends for the two species of suckers in Upper Klamath Lake while incorporating Berkson measurement errors as well as age-length curves for juvenile suckers.

2009  
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2007

### Teaching Assistant

Department of Statistics, Oregon State University

📍 Corvallis, OR

- Taught laboratory recitations for undergraduate and non-statistics major graduate statistics classes.

2007  
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2005



### Graduate Assistant

Fisheries and Wildlife, New Mexico State University  Las Cruces, NM

- Designed research of the irrigation systems around the middle Rio Grande to investigate if ditches and drains could be used as refugia by the endangered Rio Grande silvery minnow.

2005  
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2000



### Temporary Seasonal Work

Various

- After graduating with my Bachelor's degree I held a variety of seasonal jobs, primarily in natural resources positions, for various federal and state agencies and consulting firms.
- My seasonal work ranged widely, including performing angler creel surveys along the Columbia River, surveying for marbled murrelets in NW Oregon, tracking Northern pintail ducks in the Klamath basin, doing wadeable and nonwadeable stream surveys across the Western U.S, and tracking giant garter snakes in the Sacramento Valley.



## TEACHING EXPERIENCE

Current  
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2013



### Data Analysis for Natural Resources

Forest Ecosystems and Society, Oregon State University  Corvallis, OR

- As co-instructor, I developed material in R and instructed lab recitations for this graduate level course on linear mixed and generalized linear models. I worked with the primary instructor to create new assignments based on realistic natural resources studies when we added new statistical topics to the course.
- In 2019 through 2021 I was the primary instructor for this 4-credit graduate level course. I adapted lectures and updated materials to discuss modern issues in statistical analysis for applied scientists and taught the lab recitations to talk about R code to do the relevant analyses.

2021



### Advanced R Topics

College of Forestry, Oregon State University

 Corvallis, OR

- This 1-credit course introduced tools that students at OSU don't use in introductory R courses, such as making websites with package distill and using version control with Git/GitHub. Class materials are online<sup>7</sup>

2020  
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2013



### R Workshops

College of Forestry, Oregon State University

 Corvallis, OR

- I develop and present 2-hour workshops for the R programming language, including workshops on data manipulation, R markdown, using ggplot2, and R basics.
- I create annotated code examples as well as detailed handouts that go through the workshop in written format and have added interactive tutorials, all of which are available online<sup>2</sup>.

- 2019 • **Introduction to Shiny**  
Forest Ecosystems and Society, Oregon State University 📍 Corvallis, OR
- Taught a 1-credit course to help graduate students and research faculty get started using Shiny. Class materials are online<sup>3</sup>.
- 2019 • **Data Visualization**  
Forest Ecosystems and Society, Oregon State University 📍 Corvallis, OR
- Led a 1-credit discussion course for graduate students based on Healy's Data Visualization: a practical introduction<sup>4</sup> and Wilke's Fundamentals of Data Visualization<sup>5</sup>.
- 2012 • **Structural Equation Modeling**  
Forest Ecosystems and Society, Oregon State University 📍 Corvallis, OR
- Designed from bottom up course to teach best practices for scientific visualizations.



## PUBLICATIONS

- 2021 • **Understanding dissolved oxygen concentrations in a discontinuously perennial stream within a managed forest**  
Forest Ecology and Management. 479. 118531.
- with George G. Ice (1st), V. Cody Hale, Jeffrey T. Light, Amy Simmons, Terry Bousquet
  - DOI: 10.1016/j.foreco.2020.118531<sup>7</sup>
- 2019 • **Consequences of reduced light for flower production in conifer-invaded meadows of the Pacific Northwest, U.S.A**  
Plant Ecology. 220. 901-915.
- with Jessica Celis (1st) and Charles Halpern
  - DOI: 10.1007/s11258-019-00952-x<sup>8</sup>
- 2017 • **Current landscapes and legacies of land-use past: Understanding the distribution of juvenile coho salmon (*Oncorhynchus kisutch*) and their habitats along the Oregon Coast, USA.**  
Canadian Journal of Fisheries and Aquatic Sciences. 74(4): 546-561.
- with E.A. Steel (1st), R.L. Flitcroft, J.C. Firman, K.J. Anlauf-Dunn, K.M. Burnett, and R. Danehy
  - DOI: 10.1139/cjfas-2015-0589<sup>9</sup>
- 2016 • **A large-scale, multiagency approach to defining a reference network for Pacific Northwest Streams.**  
Environmental Management. 58(6): 1091-1104.
- with S. Miller (1st), P. Eldred, K. Anlauf-Dunn, C. Stein, S. Hubler, L. Merrick, N. Haxton, C. Larson, A. Rehn, P. Ode, J. Vander Laan
  - DOI: 10.1007/s00267-016-0739-6<sup>10</sup>

I also blog about coding in R and statistics at [aosmith.rbind.io](https://aosmith.rbind.io)<sup>6</sup>.

## LINKS

- 1: <https://aosmith16.github.io/spring-r-topics/>
- 2: <https://ariel.rbind.io/#workshops>
- 3: [https://github.com/aosmith16/shiny\\_class](https://github.com/aosmith16/shiny_class)
- 4: <https://socviz.co/>
- 5: <https://serialmentor.com/dataviz/>
- 6: <https://aosmith.rbind.io/>
- 7: <https://doi.org/10.1016/j.foreco.2020.118531>
- 8: <https://doi.org/10.1007%2Fs11258-019-00952-x>
- 9: <https://doi.org/10.1139/cjfas-2015-0589>
- 10: <https://doi.org/10.1007/s00267-016-0739-6>