Juan Lopez Arriaza

Curriculum Vitae

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Education

Sept. 2015 **Ph.D. Applied Mathematics and Statistics**, *University of California*, Santa Cruz.

June 2013 **M.Sc. Applied Mathematics and Statistics**, *University of California*, Santa Cruz.

May 2011 **B.S. Applied Mathematics with emphasis in Environmental Sciences**, *University of California*, Merced.

Awards

2014 NSF GROW (Graduate Research Opportunities Worldwide) Award

2012 NSF GRFP (Graduate Research Fellowship Program) Fellow

2011 Eugene Cota-Robles Fellowship

2011 Award for Outstanding Undergraduate Oral Presentation, Central California Research Symposium, California State University, Fresno

2011 Outstanding Persenter Award, UCLEADS Symposium Poster Competition, UC Berkeley

2010 UCLEADS Scholar

Research Experience

Current Research **Postdoctoral Scholar**, Collaborators: Dr. Munch (NOAA, Southwest Fisheries Science Center).
The development of a nonparametric framework for multi-species ecosystem based fisheries management. The framework is based on time-delay embedding combined with Gaussian Processes and Dynamic programing to evaluate different management strategies without a pre-specification of the dynamics of the system.

2011-2015 **Ph.D. Candidate**, Collaborators: Dr. Munch (NOAA, Southwest Fisheries Science Center), Dr. Boughton (NOAA, Southwest Fisheries Science Center), and Prof. de Roos (University of Amsterdam). Advisor. Prof. Marc Mangel.
Through an integrated approach of field work, laboratory work and both statistical and mathematical modeling I'm interested in modeling the effects that temperature, individual food consumption and competitive interactions have on the growth, survival and migratory tendencies of steelhead. More broadly I'm interested in developing tools to better understand ecological processes and their implications in the management of fisheries.

2014 **NSF GROW Fellow**, Advisor: André de Roos, Ph.D., Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam.
Developed a physiologically structured population model to study the effects of temperature, growth, and intraspecific competition on population dynamics of steelhead trout

2009–2011 **Undergraduate Researcher**, Advisor: Teamrat Ghezzehei, Ph.D., University of California, Merced.
Projects include developing a mathematical models to describe the evolution of soil structure through wetting and drying cycles and describing hydrodynamic dispersion through measurable physical properties.

2010 **Undergraduate Researcher**, Advisor: Marc Mangel, Ph.D., University of California, Santa Cruz.
Analyzed reliability and accuracy of mathematical models for the growth of steelhead trout.

Publications

Submitted V. Poynor, J. Lopez Arriaza, S. Munch. "Circumventing structural uncertainty: a Bayesian perspective on nonlinear forecasting for ecology" *Ecological Complexity*

2015 D. Boughton, L. Harrison, A. Pike, J. Lopez Arriaza, M. Mangel. "Thermal Potential for Steelhead Life History Expression in a Southern California Alluvial River." *Transactions of the American Fisheries Society*

2013 M. Mangel, N.A. Dowling, J. Lopez Arriaza. "The Behavioral Ecology of Fishing Vessels: Achieving Conservation Objectives Through Understanding Fishing Vessel Behavior." *Environmental and Resource Economics*

2013 J. Lopez Arriaza, T.A. Ghezzehei. "Explaining Longitudinal Hydrodynamic Dispersion Using Variance of Pore Size Distribution." *Journal of Porous Media*

2013 J. Lopez Arriaza, "The use of mathematical models for informing management strategies: An application in Steelhead Trout and fleet dynamics." *Master's Report*, University of California, Santa Cruz

Presentations

2015 J. Lopez Arriaza. "A Semiparametric Bayesian Approach for the Estimation of Individual Growth." Oral Presentation. *MPE 2013+ Workshop on Management of Natural Resources*

2014 J. Lopez Arriaza. "A Semiparametric Bayesian Approach for the Estimation of Individual Growth." Oral Presentation. *American Society of Naturalists*

2011 J.. Lopez Arriaza, T. A. Ghezzehei. "Explaining Hydrodynamic Dispersion using Measurable Physical Properties." Oral Presentation. *Central California Research Symposium, CSU Fresno*

2011 J. Lopez Arriaza, Marc Mangel. "Growth Model Analysis for Steelhead Trout." Poster. *UCLEADS Symposium,University of California, Berkeley*

2010 J. Lopez Arriaza, T. A. Ghezzehei. "Role of wetting and drying cycles in formation and growth of soil aggregatesÓ" Poster. *SACNAS, Anaheim, CA*

2010 J. Lopez Arriaza, Marc Mangel. "Growth Model Analysis for Steelhead Trout" Poster, *Undergraduate Research Symposium, University of California, Santa Cruz*

2010 J. Lopez Arriaza, T. A. Ghezzehei. "Role of wetting and drying cycles in formation and growth of soil aggregates" Poster. *UCLEADS Symposium,University of California, Irvine*

2010 J. Lopez Arriaza, T. A. Ghezzehei. "Role of wetting and drying cycles in formation and growth of soil aggregates" Poster. *Research Poster Competition, University of California, Merced*

2009 J. Lopez Arriaza, T. A. Ghezzehei. "Role of wetting and drying cycles in formation and growth of soil aggregates" Poster. *American Geophysical Union Fall Meeting, San Francisco, CA*

2009 J. Lopez Arriaza, T. A. Ghezzehei. "Colloidal Cementing Agents in Solids and Their Role in Soil Aggregation" Talk. *UCLEADS, University of California, Merced*

Teaching Experience

2015 **Teaching Assistant**, *Department of Astronomy and Astrophysics, Univ. of Calif., Santa Cruz*, Astronomy 5 - Introductory Astronomy: The Formation And Evolution Of The Universe.
The universe explained. Fundamental concepts of modern cosmology (Big Bang, dark matter, curved space, black holes, star and galaxy formation), the basic physics underlying them, and their scientific development.

2014 **Teaching Assistant**, *Department of Physics, Univ. of Calif., Santa Cruz*, Phyics 5L - Introduction To Physics Laboratory.
Laboratory course covering elementary mechanics. Vectors, Newton's laws, inverse square force laws, work and energy, conservation of momentum and energy, and oscillations.

2013 **Teaching Assistant**, *Department of Applied Mathematics and Statistics, Univ. of Calif., Santa Cruz*, AMS 10A - Mathematical Methods for Engineers 1.
An applications-oriented course on complex numbers and linear algebra integrating Matlab as a computational support tool. The topics include introduction to complex algebra, system of linear equations, vectors, matrix algebra, eigenvalue and eigenvector, vector space, orthogonality, etc.