

# Tony Cannistra

*Environmentalist, Researcher*

439 24th Ave E  
Seattle, WA 98112  
☎ +1 (401) 793 9016  
✉ tonycan@uw.edu

🌐 [www.anthonycannistra.com](http://www.anthonycannistra.com)



## Education

- 2016–Present **Ph.D., Biology (ongoing)**, *University of Washington*, Seattle, WA.  
Advised by Dr. Lauren Buckley (Biology) and Dr. Magda Balazinska (Computer Science)  
Supported by an NSF IGERT fellowship in Big Data and Data Science at the eScience Institute and an NSF Graduate Research Fellowship.
- 2011–2015 **B.S., Computer Science and Biology**, *Tufts University*, Medford, MA.  
Advised by Dr. Benjamin Hescott (CS) and Dr. Erik Dopman (Biology). Cum Laude.

## Experience

### Applied Conservation

- Summer 2018 **Data Analyst Intern**, *Vulcan, Inc.*, Seattle, WA.  
Member of Skylight Global (<http://www.skylight.global>) team, searching for innovative ways to identify and document illegal, unreported, and unregulated fishing in our oceans with satellite-derived observations and machine learning techniques.

### Scientific Research

- 2016–Present **Graduate Student**, *Buckley Lab*, University of Washington.  
Prediction of ecological responses to climate change.
- Assisted with **building database** for research on shifting insect phenology with climate change (*Published*)
  - Designed and executed project to evaluate predictive power of **physiological information in species distribution models** when challenged with future climate scenarios using novel statistical techniques.
  - Pursued study of machine-learning based **classification of snow cover on Mt. Rainier** with Planet Labs satellite imagery.
  - **Coursework**: Machine Learning, Data Management Systems, Big Data Management Systems, Fundamentals of Climate Change, Knowledge Brokering in Climate Change Research, Ecology Seminar, Snow Hydrology
- 2013–2015 **Research Assistant**, *Hescott Lab*, Tufts University.  
Network-based protein function prediction.
- Developed and implemented algorithms in Python that built upon Hescott and Cowen's Diffusion State Distance (DSD) metric to incorporate genetic protein-protein interaction data into function prediction. (*Published.*)

### Education and Teaching

- 2017–Present **Outdoor School Instructor**, *REI Puget Sound*, Seattle, WA.  
Teach myriad outdoor recreation skills to diverse participants.

- 2015-2016 **Naturalist / Mentor Naturalist**, *Aspen Center for Environmental Studies*, Aspen, CO.
- Led daily nature hikes, ski tours, and snowshoe tours for a diverse range of clients in the Aspen, Colorado area.
  - Independently researched and developed content and delivery strategies engineered to foster a deep respect and curiosity for place in a diverse group of participants.
  - Greeted guests, answered phones, and conducted on-site Naturalist duties at the Hallam Lake Nature Center in Aspen. Trained to become a Great Horned Owl and Golden Eagle handler.
  - Trained and evaluated the fifteen 2016 Summer Naturalists.
  - Led private groups

- 2012-2015 **Teaching Assistant**, *Tufts University Department of Computer Science*.
- 5 Semesters: Programming Languages, Data Structures, Problem Solving by Computer, Machine Structure and Assembly Language Programming, Introduction to Computer Science.
  - Held office hours, labs, and graded programming assignments.

### Miscellaneous

- Summer 2015 **Photographer**, *Aspen Words*, Aspen, CO.  
Staff photographer of public lectures for social media and marketing publications.

## Publications

### 2018

Buckley, L.B., **Cannistra, A.F.**, John, P.A. 2018. Leveraging organismal biology to forecast the effects of climate change. *Integrative and Comparative Biology*. DOI: **10.1093/icb/icy018**

Leiserson, M.D.M., Fan, J., **Cannistra, A.F.**, Fried, I., Lim, T., Schaffner, T., Crovella, M., and Hescott, B. 2018. A Multi-Species Functional Embedding Integrating Sequence and Network Structure. In: *Proceedings of RECOMB*. Paris, France. **pdf**

### 2017

Buckley, L.B., Arakaki, A.J., **Cannistra, A.F.**, Kharouba, H.M., Kingsolver, J.G. 2017. Insect Development, Thermal Plasticity and Fitness Implications in Changing, Seasonal Environments. *Integrative and Comparative Biology* icx032. DOI: **10.1093/icb/icx032**

## Presentations (§ = award)

- Lightning Talk (§) **Cannistra, A.F.** 2018. Assessing High-Resolution Satellite Imagery for Detailed Snow Cover Estimation: An Ecological Perspective. UW Data Science Summit. Honorable Mention.
- Tutorial **Cannistra, A.F.**, Levesque, R.J. 2017. Tools for Visualizing Geospatial Data in Python: A Hands-On Tutorial. GeoHackWeek 2017, eScience Institute, University of Washington, Seattle, WA.
- Poster **Cannistra, A.F.**, Buckley, L.B. 2017. Improving range shift predictions: Enhancing the power of traits. Ecological Society of America Meeting, Portland, OR.

## Grants and Awards

- 2018-2020 **Graduate Research Fellowship**, *National Science Foundation*, Three years of support..
- 2016-2018 **Big Data and Data Science IGERT Ph.D. Fellowship**, *eScience Institute, University of Washington*.  
NSF IGERT DGE-1258485. Two years of support.
- 2011-2015 **Dean's List**, *Tufts University*.

## Leadership

- 2015-2016 **Conference Organizer**, *TEDxTufts*.  
Working with a stellar team of 9 others I organized Tufts' first annual TEDx event.
- 2015-2016 **Executive Board Member**, *Tufts Computer Science Exchange*.  
Developed, organized, and marketed educational and career programming for the undergraduate computer science club at Tufts.
- 2012-2015 **Lodge Caretaker**, *Tufts Mountain Club*.  
Managed 26-person guest house owned by Tufts Mountain Club on select weekends during the school year.

## Technologies + Data

- Imagery** Sentinel 2, Landsat 8, Planet Labs, Google Earth Engine
- Climate Models** CMIP5, HAD-MET, PRISM, WorldClim/BioClim
- Python** anaconda, pyspark, pandas/geopandas, scikit-learn, seaborn, numpy, multiprocessing, rasterio
- R** dplyr, parallel, ggplot
- Javascript** React, npm, deployment
- Apache Spark** Python and R, AWS cluster deployment
- AWS** EC2, RDS, S3, Lambda
- Unix** bash, fish, shell scripting, system configuration
- Tableau** data analytics, dashboards, interactive visualization, geospatial visualization.