

CANDACE LOW, PH.D.

EDUCATION

Ph.D. Ecology, Evolution and Marine Biology, U.C. Santa Barbara

-- *Advised by John Endler and Roger Nisbet*

M.A. Conservation Biology, San Francisco State University

-- *Advised by Edward Connor*

B.A. Integrative Biology, U.C. Berkeley

-- *Advised/influenced by George Barlow, Ned Johnson, and Harry Greene*

PROFESSIONAL DEVELOPMENT

Lecturer (2013-present)

Department of Biology, San Francisco State University, San Francisco, CA

REACH Financial Literacy Coach (2023)

Department of Ethnic Studies, San Francisco State University, San Francisco, CA

Lecturer (2017-2019)

Department of Biological Sciences, San José State University, San José, CA

Biostatistician (2014-2017)

BirdReturns Project, The Nature Conservancy, San Francisco, CA

Adjunct Professor (2013-2015)

Science and Mathematics, University of California Berkeley Extension Program, Berkeley, CA

Postdoctoral Fellow, National Science Foundation (2009-2012)

Mentor: Stephen Ellner, Dept. of Ecology & Evolutionary Biology, Cornell University, Ithaca, NY

Visiting Research Scientist, USDA-ARS, Beltsville, MD (2007-2008)

Supervisor: Sonja Scheffer, Systematic Entomology Lab, USDA-ARS, Beltsville, MD

TEACHING & LEADERSHIP

Center for Equity and Excellence in Teaching and Learning (CEETL) Certificates, 2021-2022

- *Transformative Teaching Through Transitions (TTTT) / Pedagogies for Inclusive Excellence (PIE)* – 60 hours of training on different learning modes through the pandemic AND on strategies that promote feelings of inclusion, well-being, and positive academic identities.
- *Quality Learning and Teaching (QLT)* – 60 hours of training on effective online teaching and building community around anti-racist pedagogy.

Course development

- *Exploratory Data Science for Scientists* (GOLD Graduate Program, SFSU)
- *Biometry**, *Ecology*, *Animal Diversity*, *Conservation Biology*, *Entomology* (SFSU)
- *Biology of the Living World*, *Life on a Changing Planet*, *Origins of Life* (SJSU)
- *Biostatistics**, *General Biology Lab* (U.C. Berkeley Extension Program)

* Twelve semesters of upper division course (BIOL 458, 2013-2024), 4 semesters of graduate-level courses (MSCI 717, 2019-2021 and GEOG 705, 2017) and 3 semesters of an equivalent post-baccalaureate course at UC Berkeley Extension (MCELLBI X471, 2014-2015). Taught statistics to a total of 729 students, 2013-2024.

Graduate committee service and student advising

1. Vicente, Norina. Taxonomic revision of *Mesoponura* ants. California Academy of Sciences, 2023-2024.
2. Hegedus, Zoe. Genetic basis of MYB28 and MYB29 insertions *Arabidopsis thaliana*; SFSU, 2019-2022.
3. Faye, Lindsay. Master's thesis: "Temperature and salinity stress alter metabolism and epiphyte grazing of Taylor's sea hare, *Phyllaplysia taylori*", Romberg Tiburon Center, SFSU, 2017.
4. Sebilian, Serina. Master's thesis: "Temperature and salinity effects on Sago pondweed, *Stuckenia pectinata*, traits and susceptibility to grazing", Romberg Tiburon Center, SFSU, 2016.
5. Norouzi, Yasaman. Undergraduate honor's thesis: "Optimal foraging of a parasitoid wasp", Simon Fraser University, Burnaby, British Columbia, Canada, 2010.
6. Hanley, Daniel. NSF REU project: "Effect of light on distribution of a leaf-mining moth on white oak", Blandy Experimental Farm, University of Virginia, 2002. (See Low and Hanley 2012.)

PUBLICATIONS

1. Owens, M.T. and 67 others, including **C. Low**. 2018. Collectively improving our teaching: attempting biology department-wide professional development in scientific teaching. *CBE: Life Sciences Education*: March 1; 17(1):ar2.
2. Golet, G. H., **C. Low**, S. Avery, K. Andrews, C. McColl, R. Laney, M. Reynolds. 2018. Using ricelands to provide temporary shorebird habitat during migration. *Ecological Applications* 28: 409-426.
3. Reynolds, M. D. and 20 others, including **C. Low**. 2017. Dynamic conservation for migratory species. *Science Advances* 3(8): e1700707.
4. **Low, C.** and J. P. Sparks. 2017. Insect herbivory is associated with microsite quality. *Journal of the Torrey Botanical Society* 144: 26-34.
5. **Low, C.**, S. P. Ellner, and M. H. Holden. 2013. Optimal control and cold war dynamics between plant and herbivore. *American Naturalist* 182: E25-E39.
6. **Low, C.**, S. J. Scheffer, M. L. Lewis, and M. W. Gates. 2012. The relationship between variable host grouping and functional responses among parasitoids of a leafminer. *Molecular Ecology* 21: 5892-5904.
7. **Low, C.** 2012*. Variable Risk and the Evolution of the Defense Repertoire of the Tupelo Leafminer, *Antispila nysaefoliella*. In: Pontarotti, P. (editor), *Evolutionary Biology: Mechanisms and Trends*. Heidelberg, Berlin: Springer-Verlag.
8. **Low, C.** and D. Hanley. 2012. A perspective on the importance of within-tree variation in mortality risk for a leaf-mining insect. *Web Ecology* 12: 27-32.
9. **Low, C.** 2012. An experimental test of the seismic behaviors of *Antispila nysaefoliella* (Lepidoptera: Heliozelidae) to vibrational stimuli. *Florida Entomologist* 95: 16-20.
10. **Low, C.** 2010. The presence of active larvae delays the emergence of conspecifics in the tupelo leafminer, *Antispila nysaefoliella*. *Evolutionary Ecology Research* 12: 545-553.
11. **Low, C.**, S. Wood, and R. M. Nisbet. 2009[†]. The effects of group size, leaf size, and density on the performance of a leaf-mining moth. *Journal of Animal Ecology*, 78: 152-160.
12. **Low, C.** 2008. Grouping increases visual detection by specialist parasitoids. *Behavioral Ecology* 19: 532-538.
13. **Low, C.** 2008. Seismic behaviors of a leafminer, *Antispila nysaefoliella* (Lepidoptera: Heliozelidae). *Florida Entomologist* 91: 604-609.
14. **Low, C.** and E. F. Connor. 2003. Birds have no impact on a community of willow insects. *Oikos* 103: 579-89.

* Book chapter

[†] Recommended by Faculty of 1000

AWARDS, FELLOWSHIPS & GRANTS

1. **Faculty Travel Award**, College of Science and Engineering, San Francisco State Univ; 2023 (\$1,200)
2. **RSCA Recovery Research (HEERF) Grant**, College of Science and Engineering, San Francisco State University; 2021 (\$10,000)
3. **National Science Foundation Postdoctoral Fellowship in Biological Informatics**, DBI-0904395: *Adaptive Behavior & Evolution as Mechanisms of Population Stability*; 2009-12 (\$189,000)
4. **International Society for Behavioral Ecology**: Best Poster Prize and Travel Award, 2008 (\$500)
5. **National Science Foundation Dissertation Improvement Grant**, DEB-0608392: *Linking Anti-parasitism Mechanisms and Population Dynamics*; 2006 (\$12,000)
6. **Ellen Schamberg Award for Travel**, UCSB, 2006 (for ESA in Memphis, TN, \$500)
7. **UCSB Graduate Student Council Travel Grant**, 2006 (for ISBE in Tours, France, \$1,030)
8. **Blandy Graduate Summer Research Fellowships**, Blandy Experimental Farm, University of Virginia, 2001-2006 (\$3000 per year; Total: \$18,000)
9. **Sigma Xi Grants-In-Aid-of-Research Grant**, *Vibrational communication in insects*, 2004 (\$920)
10. **American Society of Naturalists Travel Award**, 2004 (for SSE/ASN in Ft. Collins, CO, \$300)
11. **Professor Hering Memorial Research Fund**, British Entomological and Natural History Society, London, *Natural History of the Tupelo Leafminer, Antispila nysaefoliella*, 2002 (\$500)
12. **Graduate Fee Fellowship**, Univ. of California, Santa Barbara, fall 2002, winter & spring 2004
13. **Cota-Robles Graduate Fellowship**, Univ. of California, Santa Barbara, 2000-2003
14. **California State Univ. Doctoral Incentive Forgivable Loan**, 2000-2003 (\$30,000; merit-based)
15. **Grad. Assistance in Areas of National Need (GAANN) Fellowship**, SFSU, 1999 -2000 (\$10,000)
16. **San Francisco State University**, Dept. of Biology, Student Research Competition, 1st place, 1999

INVITED TALKS

1. **San José State University**, Biology Department, October 2017
2. **San Francisco State University**, Biology Department Colloquium, November 2012; December 2010
3. **Cornell University**, Neurobiology & Behavior Seminar Series, April 2012
4. **Chico State University**, Biological Sciences Omicron Theta Epsilon Lecture Series, March 2012
5. **Undergraduate Entomology Club**, Cornell University, Ithaca, NY, October 2011
6. **Evo-Group Seminar**, Ecology & Evolutionary Biology, Cornell University, September 2011
7. **University of California, Berkeley**, Department of Integrative Biology Colloquium, October 2010
8. **Simon Fraser University**, Les Ecologistes Seminar Series, October 2009
9. **Blandy Experimental Farm**, University of Virginia, Summer Colloquium, May 2009
10. **Eugene Lang The New School for Liberal Arts**, Urban Ecology Faculty Search, March 2009
11. **Cornell University**, Ecology & Evolutionary Biology Series, September 2008
12. **Syracuse University**, Biology Department Seminar Series, September 2008
13. **University of Nebraska**, Lincoln, Population Biology Series, June 2008

PRESENTATIONS AT SCIENTIFIC MEETINGS

1. **150th Meeting of the American Society of Naturalists**, Asilomar, CA, January 2018
2. **European Society for Evolutionary Biology[†]**, Groningen, the Netherlands, August 2017
3. **15th Evolutionary Biology Meeting at Marseilles[†]**, Marseilles, France, September 2011
4. **International Entomophagous Insects Conference[†]**, University of Minnesota, July 2009
5. **Ecological Society of America**: Austin, TX, 2011, San José, CA, 2007; Memphis, TN, 2006
6. **Animal Behavior Society**, College of William & Mary, Williamsburg, VA, 2010

[†] By special invitation

7. **International Society for Behavioral Ecology**, USA, 2008; France, 2006; Finland, 2004
8. **UCSB, Ecology, Evolution, & Marine Biology Graduate Symposium**, 2007, 2006
9. **Southern California Animal Behavior Conference**: UC San Diego, 2006; UCLA, 2004
10. **Society for the Study of Evolution**, Colorado State University, Ft. Collins, 2004
11. **Conservation Biology Symposium**, Stanford University, 2000
12. **California State University Student Research Competition**, CSU Pomona, 1999

OTHER SERVICE

1. **Education chair**, *California Native Plants Society, Yerba Buena Chapter*, 2023-present
2. **Steering committee**, *Reimagining SF Alliance, California Academy of Sciences*, 2023-present
3. **NSF Panelist**, *National Science Foundation: DBI Rules of Life*, 2023; *Population Biology*, 2014; *Population & Community Ecology*, 2012; *Intersections in Math, Biology, Evolution, and Ecology*, 2010
4. **Advisor**, *The Wildlife Society, Student Chapter at San Francisco State University*, 2016-2022
5. **Ad hoc referee**, *American Naturalist, Animal Behaviour, Behavioral Ecology, Ecology, Environmental Entomology, European J. Entomology, National Science Foundation, Natural Sciences and Engineering Research Council of Canada, Oecologia, Philosophical Transactions of the Royal Society*
6. **Graphic designer**, *Frontiers in Life Sciences Symposium*, Cornell University, 2012.
7. **Guest teacher**, *Lesson on Sensory Ecology*, San Francisco Day School, 5th Grade, 2010
8. **Intern**, *National Center for Ecosystem Analysis (NCEAS)*, Santa Barbara, CA, 2006
9. **Project coordinator**, *Significant Natural Resource Areas Project*, San Francisco Recreation and Parks Department, San Francisco, CA, 1999-2000
10. **Intern**, *Insect Zoo, San Francisco Zoo*, 1994
11. **Field assistant**, *Smithsonian Tropical Research Institute, Gamboa, Panama*, 1992

Candace Low

Statistician/Scientist/Educator

Contact

Dept of Biology, SFSU
San Francisco, CA 94132

www.linkedin.com/in/clowsf

Key Skills

Statistical modeling: descriptive statistics, hypothesis testing, analysis of variance (ANOVA) - parametric and non-parametric tests, correlation, and regression (linear and nonlinear, multiple regression, polynomial), mixed-effects models, probability and data distributions, data wrangling and restructuring, report and grant writing, graphics, project management, liaison, communication, leadership

Activities and Interests

Ashtanga yoga, surfing, art, photography, baking, traveling, road trips, camping, insects, wildlife, evolutionary game theory, economics, social justice, the environment

SUMMARY

A versatile scientist and writer with 20 years of experience solving scientific problems with large data sets, especially those from non-experimental, uncontrolled, observational studies. Enjoys working with messy data that requires statistical manipulation to draw out patterns. Will borrow statistical methods and theory from across disciplines to answer questions. Looks for big picture and information gaps. Supporting DEI initiatives as a Financial Literacy Coach for the REACH program and teaching a graduate course in data science in the GOLD program at SF State University.

PhD in Ecology and Evolutionary Biology, with advanced technical training in statistical and theoretical modeling, and experimental design methods. Lead author of 11 peer-reviewed scientific articles reporting on analyses of time series, behavioral data, field studies, survivorship, and molecular genetics. Spearheaded 10 collaborative research projects and won 15+ competitive grants with awards totaling \$300K. Taught statistics, R programming, and data science to 700+ students since 2013.

PROJECTS

Mar 2020—Dec 2020

Statistician/Consultant • Santa Clara Valley Water District • Santa Clara, California

Conducted survivorship analyses, estimated sample size requirements; generated descriptive statistics with supporting graphical figures for final reports. Entered hand-recorded data into Excel then read into R for analyses, which were primarily descriptive statistics and comparative analyses. Made recommendations for study design and types of metrics to use for statistical robustness and clarity in future work. Project was on restoration of native habitat in the Santa Clara Valley.

Academic Positions Teaching Statistics

Aug 2013—present

Lecturer faculty

Department of Biology
San Francisco State University
San Francisco, California

Aug 2013—Dec 2014

Adjunct professor

Department of Mathematics,
Sciences & Technology
UC Berkeley Extension Program
San Francisco, California

Education

Dec 2007

PhD Ecology, Evolution, and Marine Biology

UC Santa Barbara
Santa Barbara, California

Sep 2000

MA Conservation Biology

San Francisco State University
San Francisco, California

Dec 1997

BA Integrative Biology

UC Berkeley
Berkeley, California

Mar 2014—Dec 2017

Statistician/Consultant • The Nature Conservancy San Francisco, California

Analyzed field data of ~150 species of migratory birds and waterfowl using wetlands in the California Central Valley from 4 years of study. Advised on sampling design, field protocol, metrics, wrote algorithms to handle uncontrolled visual point samples, generated figures, and conducted hypothesis tests. Analyses conducted using R packages: *vegan*, *reshape*, *ggplot*, and *descr*. Publications: [Reynolds et al. 2017](#) and [Golet et al. 2017](#)

Jun 2013—Feb 2014

Data scientist/Consultant • Search Strategy Solutions San Francisco, California

Developed sampling algorithm to choose search terms from corporate landing pages to then be used to evaluate accuracy of product matches and website marketing effectiveness.

Sep 2009—May 2013

Theoretical ecologist • Department of Ecology & Evolutionary Biology • Cornell University • Ithaca, New York

1) Applied optimal control and game theory to model the economics of defense strategies between a consumer (insect) and resource (plant) using parameter estimates from 10 years of field observations. Solved ordinary differential equations in simulations using R *deSolve*. Publication: [Low et al. 2013](#)

2) Determined hypotheses tests, partitioned variances, tested for correlations between nutrient cycling rates and environmental factors using stable isotope data. Designed and conducted field experiments. Publication: [Low and Sparks 2016](#)

Jan 2008—Aug 2009

Molecular geneticist / Research associate • United States Department of Agriculture • Beltsville, Maryland

Developed genetic barcode and used PCR to detect parasite DNA and identify cryptic (genetically novel) parasite species in host tissues. Publication: [Low et al. 2012](#)

Sep 2002—Dec 2007

PhD candidate • University of California, Santa Barbara Santa Barbara, California

Fit nonlinear mixed-effects models to data on growth rates and survivorship using *nlme* in R. Publication: [Low et al. 2008](#)



CENTER *for*
EQUITY & EXCELLENCE
in TEACHING & LEARNING

February 22, 2022

Dear Candace Low,

Congratulations on completing the **Quality Learning and Teaching (QLT) Certificate!** This accomplishment represents a minimum investment of 60-hours that you have dedicated to your own personal and professional development to support student success at SF State.

This certificate, offered by the Center for Equity and Excellence in Teaching and Learning (CEETL), supports various avenues of learning and teaching online. It is especially admirable that you completed all three of these required elements during this particularly challenging time in our lives:

1. **Online Teaching Lab:** A 25-hour course that explores comprehensive research-based foundation in effective online teaching;
2. **JEDI PIE Institute:** A 25-hour course that builds community through developing anti-racist pedagogy and dismantling white supremacy in online teaching.
3. **Teaching Square:** A 10-hour reflective learning community in which teaching peers support and celebrate one another as they apply newly learned evidence-based practices in their teaching.

Your completion of this Quality Learning and Teaching (QLT) Certificate demonstrates a significant commitment to your development as a teacher and to the betterment of teaching and learning at SF State. Please know that you have our deepest respect and gratitude for your efforts!

In Equity and Excellence,

Team CEETL

Wei Ming Dariotis, Ph.D.

Faculty Director | CEETL
Professor, Asian American Studies
Affiliate Faculty, Educational Leadership Doctoral Program,
San Francisco State University

Maggie Beers, Ph.D.

Assistant Vice President for Teaching &
Learning | Faculty Affairs
Past- President, CSU Faculty Development Council,
San Francisco State University



CENTER *for*
EQUITY & EXCELLENCE
in TEACHING & LEARNING

February 22, 2022

Dear Candace Low,

Congratulations on completing the **Transformative Teaching Through Transitions (TTTT) Pedagogies for Inclusive Excellence (PIE) Certificate!** This accomplishment represents a minimum investment of 60 hours that you have dedicated to your own personal and professional development to support student success at SF State.

This certificate, offered by the Center for Equity and Excellence in Teaching and Learning (CEETL), supports compassionate and resilient teaching in transitional learning modes to welcome and support students as we return to campus after the extended period of remote instruction due to the COVID-19 pandemic. It is especially admirable that you completed all three of these required elements during this particularly challenging time in our lives:

1. **Teaching Through Transitions:** A 25-hour course that explores bichronous, hybrid and hyflex learning modes to develop resilient teaching mindsets and strategies during this year of transition;
2. **Teaching New & Newly Returning Students:** A 25-hour course that explores inclusive teaching strategies that promote feelings of inclusion, well-being and positive academic identities that support student persistence and academic success;
3. **Teaching Square:** A 10-hour reflective learning community in which teaching peers support and celebrate one another as they apply newly learned evidence-based practices in their teaching.

Your completion of this Transformative Teaching Through Transitions Certificate demonstrates a significant commitment to your development as a teacher and to the betterment of teaching and learning at SF State. Please know that you have our deepest respect and gratitude for your efforts!

In Equity and Excellence,

Team CEETL

Wei Ming Dariotis, Ph.D.

Faculty Director | CEETL
Professor, Asian American Studies
Affiliate Faculty, Educational Leadership Doctoral Program,
San Francisco State University

Maggie Beers, Ph.D.

Assistant Vice President for Teaching &
Learning | Faculty Affairs
Past- President, CSU Faculty Development Council,
San Francisco State University