



## PhD Student Opportunity at UC Santa Barbara

Evolutionary adaptation across a geographic gradient in *Nemophila menziesii* (Baby blue eyes: Boraginaceae):  
testing Fisher's Fundamental Theorem of Natural Selection

**The Mazer lab in the Department of Ecology, Evolution and Marine Biology at the University of California, Santa Barbara is recruiting highly motivated PhD students for entry into our graduate program in Fall 2019.** Researchers in my lab focus on detecting the fitness consequences of variation in life history, phenological, and floral traits while testing specific evolutionary predictions. We are particularly interested in identifying students interested in investigating the process and outcome of adaptive evolution within and among populations of the annual forb, *Nemophila menziesii* (Baby blue eyes, Boraginaceae).

Successful candidates will participate in a project recently funded by NSF (*Evolutionary adaptation to intensifying drought across a geographic gradient: a comprehensive evaluation of Fisher's Fundamental Theorem*) with Drs. Susan Mazer, Amber Nashoba, and Ruth Shaw. In this work, we are using quantitative genetic methods and random effects Aster models applied to pedigreed populations in the field to test predictions derived from Fisher's Fundamental Theorem, which states that the rate of adaptive evolution of a population can be predicted from the additive genetic variance in fitness that it exhibits.

We are testing this prediction in wild populations of *N. menziesii* distributed across an aridity gradient in California. Incoming students will be invited to develop and to conduct independent research that extends and enhances the research supported by this grant. Promising areas of research include, but are not restricted to, the following:

- The evolutionary significance of variation within and among populations in fitness-related traits such as size at first flower, flowering date, petal area, pollen performance, pollen and seed size, and sex allocation;
- pre- and post-pollination sexual selection;
- the functional significance of variation in floral and vegetative pigments, including UV absorption;
- the evolution of phenotypic plasticity in life history and morphological traits; and
- the causes and consequences of variation in water use efficiency across an aridity gradient.

Prospective students may write directly to Professor Susan Mazer ([sjmazer@ucsb.edu](mailto:sjmazer@ucsb.edu)). For more information about the Department of Ecology, Evolution and Marine Biology (EEMB), please explore: <https://www.eemb.ucsb.edu/>. EEMB provides competitive funding packages for graduate students, and several quarters of Graduate Student Research support are available for this project (along with Tships).

Graduate students may apply electronically to UCSB's Graduate Division via the following URL: <https://www.graddiv.ucsb.edu/eapp/Login.aspx>