Honorary Lifetime Membership Award:

Johanna Schmitt

The American Society of Naturalists is pleased to announce that Johanna Schmitt—Annie to all of us who know her—has been named an Honorary Lifetime Member of the society. Annie received her doctorate from Stanford University, conducted a postdoctoral fellowship at Duke University, and then joined the faculty of the Ecology and Evolutionary Biology Department at Brown University. She is now a professor at the University of California, Davis, and is a past president of both the Society for the Study of Evolution and the American Society of Naturalists (ASN). Annie has received numerous awards, including election to the National Academy of Sciences and the American Academy of Arts and Sciences.

Annie's research focuses on adaptation in heterogeneous and complex environments, with a strong focus on the genetic, physiological, and ecological mechanisms underlying plant adaptation. Her areas of research inquiry include the adaptive significance of maternal effects and the shade-avoidance syndrome, phenotypic plasticity and reaction norm evolution, genetic controls on flowering time in seasonally variable settings, and most recently, the potential for adaptation under a changing climate. Her groundbreaking work in these areas provided empirical demonstrations of adaptive plasticity, shaped subsequent research on the evolution of adaptive strategies, and demonstrated the explanatory power of integrating genetic and genomic information and approaches into ecologically relevant field studies.

Among many seminal studies, she performed a series of experiments providing support for functional and ecological hypotheses related to the adaptive significance of shade-avoidance responses. The shade-avoidance network enables plants to perceive light-quality cues of neighbor proximity and elicits a suite of integrated phenotypic responses, such as increased stem elongation and accelerated flowering. Based on known controls of shade-avoidance phenotypes, Annie's studies used either genetic or environmental "engineering" to elicit diverse shade-avoidance phenotypes. She used genetic manipulations of photoreceptors in tobacco and *Brassica rapa* (which effectively expressed canalized elongation phenotypes) to test the functional hypothesis that elongation enhances performance under high-density settings but reduces fitness under low plant density (Schmitt et al. 1995, *American Naturalist* 146:937–953). This study provided rare empirical evidence that plasticity is adaptive, that is, that the expression of alternative phenotypes across divergent microsites improves fitness. Subsequent studies in her lab used elegant manipulations of light quality to either enhance or suppress stem elongation to test adaptive hypotheses within open and understory populations of *Impatiens capensis*. These studies showed that experimentally suppressed plants with short stature had lower fitness than elongated plants when growing at high density, but they had higher fitness at low density (Dudley and Schmitt 1996, *American Naturalist* 147:445–465). A related study also showed adaptive differentiation among populations in plasticity to light cues of neighbor proximity (Dudley and Schmitt 1995, *Functional Ecology* 9:655–666).

Annie's group has been at the forefront of recent attempts to integrate genomic information and the power of model systems such as *Arabidopsis* into ecological field studies. Her work spans quantitative trait loci (QTL) mapping, studies of natural variation, association mapping and genome-wide association study (GWAS), and, recently, mechanistic modeling of the environmental and genetic influences on the transition to flowering. Among other findings, her ambitious field studies in *Arabidopsis*'s native range have shown that alleles associated with high fitness in a common garden are at higher frequencies in those regions (Fournier-Level et al. 2011, *Science* 334:86–89) and upheld predictions of life-history theory on the association between mortality and selection on reproductive timing (Fournier-Level et al. 2013, *Molecular Ecology* 22:3552–3566).

Through groundbreaking integration of mechanistic information into ecologically relevant field studies, Annie's research will have enduring and significant impact on the field of evolutionary ecology. Her personal enthusiasm for field research and organismal biology has also inspired a generation of biologists. Finally, her focus on mechanisms ranging from genetic to whole-plant phenotypes embodies the American Society of Naturalists' goal of enhancing the conceptual unification of the biological sciences.

Cynthia Weinig and John Stinchcombe,
on behalf of the ASN Executive Committee