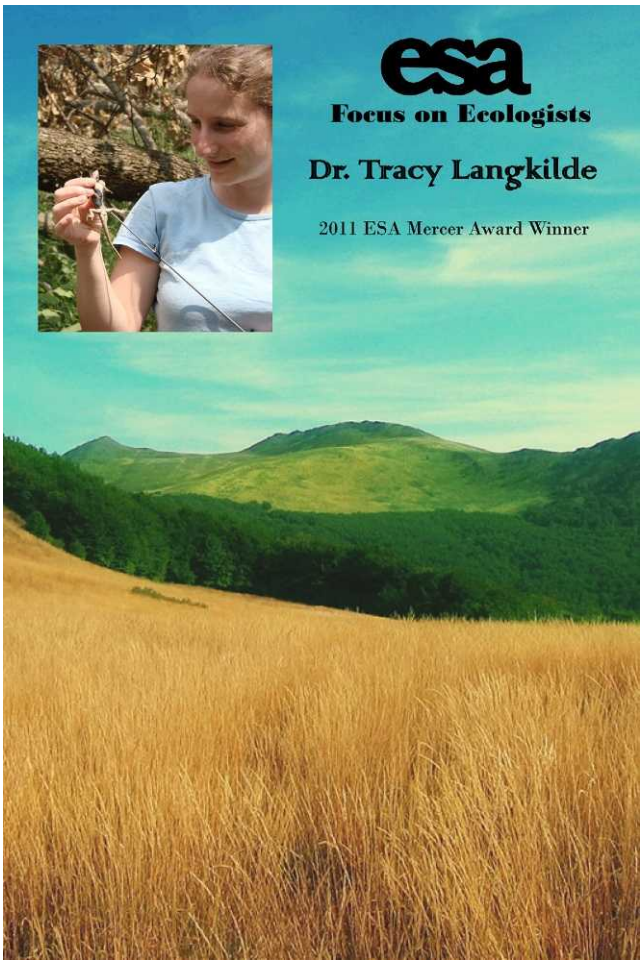
George Mercer Award

The Mercer Award is the oldest of the awards granted by the ESA. It is given in memory of a young British ecologist who was killed in action in World War I. The award is given to an author under 40 years of age in recognition of a single outstanding paper in ecology published during the past two years.

The winner of the 2011 Mercer Award is Tracy Langkilde for her paper, *Invasive fire ants alter behavior and morphology of native lizards*, published in *Ecology* in 2009.

In this paper, Langkilde elegantly combined field and laboratory experiments with analysis of museum specimens to evaluate how invasive fire ants drive rapid evolutionary change in native lizard populations. In the field, she identified a gradient in years since fire ant invasion and showed that behavior and morphology of lizards depended on the age of the invasion. Langkilde showed that adult lizards from populations with more generations of exposure were more likely to avoid attack through fleeing or twitching. Juveniles, by contrast, responded to fire ants with these behaviors regardless of their evolutionary history with the invader, suggesting that the adult response in long-invaded locations represents the ontogenetic retention of a juvenile behavioral response. Moreover, both juveniles and adult lizards in geographic locations with a longer history of fire ant invasion had longer hind limbs, a morphological trait beneficial for minimizing attack. Finally, Langkilde used museum collections to show that the geographic variation in hind limb length emerged only after fire ant invasion, supporting her hypothesis of rapid evolutionary change.

This work is exemplary for its combination of careful field work, experiments, and the use of historical data to understand evolutionary responses to novel ecological interactions. The results powerfully demonstrate how adaptation can favor the persistence of native taxa in invaded habitats, an important result for predicting the impact of exotic species.



Tracy Langkilde
Assistant Professor
Pennsylvania State University
Biology

"Follow your passion. Of course, you need to get advice and plan ahead, but don't do something just because it will make you successful, get you funding, earn you a job… Do what you love. That is, after all, why we got into this field."

My family moved from South Africa to Australia when I was nine. I moved away from home to earn my B.S. at James Cook University in Townsville and to be closer to the reef and rainforest. Afterwards, I completed a 9-month honors research degree that is designed to prepare students for a Ph.D. In 2002, I started a Ph.D. at the University of Sydney. Later, I did a 2-year postdoc program across the globe at Yale. Ultimately accepting a tenure track position at Penn State University has allowed me to grow my research program.

I study how individuals interact with one another and their environment, and how responses to changes in the environment can shape these interactions. Currently, my primary research focus is understanding how native animals (fence lizards) respond to novel pressures imposed by invasive species (red imported fire ants). Much of this research takes place in the field, so I spend time examining the behavior and physiology of the lizards in their natural environment. I also get to do lab work using physiological and molecular techniques. It has been a really exciting journey, and I can't imagine doing anything else!

I love the variety of my job. I am my own boss, I get to travel to places that most people dream of, and I get paid for it. The ability to follow my passion, communicate it to others, and explore the questions I find most exciting is really rewarding. As a kid I spent a lot of time outdoors camping with my family. I learned to SCUBA dive at fourteen and fell even more in love with the natural world. My early exposure to this new world inspired me to spend my life learning nature's secrets.