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 winners of this year's Mercer Award are Carla Staver and Sally Archibald, who along with Simon Levin published "Tree cover in sub-Saharan Africa: Rainfall and fire constrain forest and savanna as alternative stable states," in *Ecology* in 2011.

The paper by Staver et al. elegantly combined analyses of remotely sensed data and mathematical modeling of vegetation dynamics to argue that forest and savannah function as alternative stable states in sub-Saharan Africa. Using satellite data to obtain complete spatial coverage of sub-Saharan Africa, the authors show that tree cover exhibits a bimodal distribution, with the two peaks corresponding to savannah and forest. At intermediate rainfall, where both forest and savannah were frequent, fire was

strongly predictive of tree cover. Staver et al. then elegantly employed mathematical theory to show that the dynamics of fire and tree establishment can generate alternative stable states between forest and savannah. The committee was particularly impressed with the use of sophisticated ecological theory to understand the feedbacks stabilizing geographic-scale vegetation patterns. Among the major implications of Staver et al.'s study is that ecologists should expect fire-mediated transitions from forest to savannah with drying climate in tropical latitudes to be abrupt.

This work is exemplary for its combination of approaches, and the efforts to tackle geographic-scale questions in ecology of major relevance to climate change.