

## ESA Awards

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## Recipients of the 2012 Ecological Society of America Awards



### MURRAY F. BUELL AWARD

Murray F. Buell ascribed great importance to the participation of students at meetings and to excellence in the presentation of papers. To honor his dedication to the Ecological Society of America and to the younger generation of ecologists, this award is presented to a student for the outstanding oral paper presented at the Society's Annual Meeting.

The winner of the Murray F. Buell award in 2012 is Ebony Murrell, for her presentation "Do trade-offs among colonization ability, competitive ability, and predation govern succession in an aquatic insect community?" which was based on her work at Illinois State University with Steven Juliano. Ebony studied the oft-cited competitive ability–colonization ability trade-off in succession by using elegant manipulative experiments in aquatic mesocosms. Ebony's novel idea was to investigate whether predation could alter the competitive ability/colonization ability trade-off in simple communities. She found that predation may indeed decrease the competitive abilities of late-colonizing species, leading to a quadratic relationship between colonization time and competitive ability in these systems.



The judges were impressed by Ebony's clear presentation of her research and the connections she made between current theory and her empirical work. The judges appreciated her novel questions and the way in which she presented both her hypotheses and alternative explanations for what she observed. Several judges even commented that Ebony's talk was one of the best student presentations that they had seen at ESA.

## E. LUCY BRAUN AWARD

E. Lucy Braun was an eminent plant ecologist and the first woman president of the Ecological Society of America. Besides describing and mapping the deciduous forest regions of eastern North America, she served as a dedicated teacher and role model to her students. To honor her, this award is presented to a student for the outstanding poster presentation at the Society's Annual Meeting.

The 2012 winner of the Braun Award is Ernane H. M. Vieira Neto, for his poster entitled "How proximity to roads influences the

local spatial dynamics and population growth rates of a Neotropical herbivore." This work was based on Ernane's research with Heraldo L. Vasconcelos, Alan N. Costa, and Fabiane M. Mundim at the University of Florida under the supervision of Emilio Bruna.



Ernane investigated the possible positive impacts that roads in the Neotropics may have on the leaf-cutter ant *Atta laevigata*. For four years, Ernane and his colleagues marked, mapped, and followed ant colonies in a 19-ha Cerrado site in Brazil that was surrounded by dirt roads. They found that colonies were significantly closer to the roads than would be expected by chance and that populations near roads grew 65% faster than those distant from roads. These findings suggest that *A. laevigata* populations may be expanding with the improvement of road networks in the Cerrado.

Judges found that Ernane was extremely knowledgeable about the study system, the impacts of his research, and the literature about his question. Others remarked on Ernane's great enthusiasm about his research and his careful consideration of alternative hypotheses explaining his data. The judges felt that his work brought important attention to the positive effects that roads may have on some species in the Cerrado system.



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## COOPER AWARD

The William S. Cooper Award is given by the Society in honor of one of the founders of modern plant ecology, in recognition of an outstanding contribution in geobotany, physiographic ecology, plant succession, or the distribution of organisms along environmental gradients. This year's award goes to Kevin Boyce, Jung-Eun Lee, Taylor S. Feild, Tim J. Brodribb, and Maciej A. Zwieniecki for their 2010 paper "Angiosperms helped put the rain in the rainforests: the impact of plant physiological evolution on tropical biodiversity," published in the *Annals of the Missouri Botanical Garden*.



Most recipients of the Cooper Award have explored the ways in which vegetation distribution, composition, and function is governed by various abiotic and biotic processes. This innovative paper takes the opposite tack. Boyce et al. (2010) compellingly argue that the evolutionary rise to dominance of angiosperms, roughly 100 million years ago, fundamentally transformed the global hydrological cycle and led to the formation of tropical rain forests as we know them today. The key evolutionary innovation was a higher transpiration capacity, caused by leaf vein densities that are typically four times that of other living and extinct plant groups. This enhanced transpiration capacity accelerates a positive feedback loop in which angiosperm evolution increased rates of moisture recycling and precipitation over the tropical rain forests, which may have further fostered angiosperm radiation. This exciting hypothesis is based on a clever synthesis of climate model sensitivity experiments and the evolutionary history of leaf venation as revealed in the fossil plant record. Thus, Boyce et al. tie the evolution of a key innovation with the formation of a new biome, explicitly linking the evolving ecological landscape with a changing evolutionary one.

## 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.





## ODUM AWARD

The Eugene P. Odum Award for Excellence in Ecology Education recognizes an ecologist for outstanding teaching, research, and mentoring activities, and for demonstrated ability in relating basic ecological principles to human affairs. The winner of the 2011 Odum Award is Dr. Charlene D'Avanzo, Professor of Ecology and Director of the Center for Teaching and Learning at Hampshire College.

For the last 20 years, Dr. Charlene D'Avanzo has been working tirelessly, creatively, and collaboratively with Ecological Society of America committees and faculty members to improve and develop the field of ecology education into a scholarly area that showcases the application of education research in enhancing student learning in ecology. Her collaborators laud Dr. D'Avanzo for

her work in bringing vision, direction, and a mentoring voice to many education efforts at ESA. In 1999 she led a team of ESA educators to unify the ESA Education Section efforts, obtained National Science Foundation funding, and started the journal *Teaching Issues and Experiments in Ecology* (TIEE). The TIEE journal is now widely used by ESA members and beyond and is working toward its eighth volume.

Dr. D'Avanzo was also a major voice in the development of the Education plan for the National Ecological Observatory Network (NEON) project. Currently, she continues national training of ecology faculty on new techniques for enhancing learning of ecological concepts, in National Science Foundation-funded programs on how to use Biological Diagnostic Question Clusters for improving ecological and biological concept learning. She has become a mentor for many junior ecology faculty in how to apply education research to their undergraduate teaching enhancement. This latest project has opened up new intellectual opportunities and career possibilities for young ecology faculty members who have continued to participate in her workshops at the ESA Annual Meetings, developing into effective ecology teachers. She has been extremely generous of her time in mentoring young faculty and encouraging them to assess their talents and share them with others for the improvement of ecology education nationally.



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## SUSTAINABILITY SCIENCE AWARD

The Sustainability Science Award is given to the authors of work published in the past five years that makes the greatest contribution to the emerging science of ecosystem and regional sustainability through the integration of ecological and social sciences.

This year's award goes to Dr. R. S. Reid and a very large group of co-authors for their 2009 paper "Evolution of models to support community and policy action with science: balancing pastoral livelihoods and wildlife conservation in savannas of East Africa," published in *Publications of the National Academy of Sciences*.

This highly collaborative paper builds on long-term efforts to integrate the social and ecological sciences of pastoralism at a systems level to explore methods for balancing wildlife conservation with poverty alleviation efforts in East Africa. Reid et al. present an example of "continual engagement" between scientists, practitioners, and stakeholders that provides a platform for "connection and integration of knowledge...to support action." Their team developed this approach as a response to a perceived inadequate impact of science on local and national decision-making.

Reid et al. is a particularly unique contribution because, rather than focusing on research outputs, it focuses on the research process itself, and provides valuable and detailed insights into how the process of ecological research can align itself better with end-goals, including conservation and poverty alleviation.





## HONORARY MEMBER AWARD



The ESA's Honorary Member Award is given to a distinguished ecologist who has made exceptional contributions to ecology and whose principal residence and site of ecological research are outside of North America. There are a maximum of 20 Honorary Members at any one time. This year Dr. Richard Shine of the University of Sydney has been recognized as a new honorary member of ESA.

Professor Shine is internationally recognized as a leading authority on the ecology and evolutionary biology of reptiles and amphibians, and the leading authority on the ecology of Australian reptiles.

He is undoubtedly among the most eminent scholars in his field of study in any worldwide comparison. This eminence has been recognized by a host of awards from national and international scientific societies, as well as by his election to the Australian Academy of Science. An amazing thing about Rick's research record in ecology is the breadth of topics in which he has made fundamental contributions including, just to name a few—the evolution of viviparity, the evolution of life history traits, phenotypic plasticity, reproductive mode, effort, and frequency, sex determination, and conservation biology. In each of these areas, and another 10, Rick has produced a huge body of work that has critically tested long-held views and, in many cases, changed the way people think.



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## MACARTHUR AWARD

The Robert H. MacArthur Award is given every two years to an established ecologist in mid-career for meritorious contributions to ecology, in the expectation of continued outstanding ecological research. The 2012 Robert MacArthur Award has been given to Dr. Tony Ives of the University of Wisconsin.

Tony has made breakthrough contributions on deep, fundamental issues in ecology over an impressively broad range of topics and in diverse systems. He has clarified several confusing and complex issues in ecology by synthesizing and reconciling different approaches and models. To an unusual degree, Tony Ives has been formulating theories that are testable with data, then working hard in agro-ecological, freshwater, and landscape-level systems to parameterize models and test them with statistical rigor.



Tony has also made outstanding contributions to mentoring the next generation(s) of ecologists. His graduate students and postdocs have worked on an even broader array of problems than he does, and almost all his fledged students have achieved major career successes, most as faculty in academia or research scientists at agencies. These students already have broad recognition in the field for their contributions to theoretical, rigorous empirical, and international ecology, ranging from interactions of African wildlife, to amphibian conservation in China, to bacterially mediated processes in ecosystems.



## DISTINGUISHED SERVICE CITATION

The Distinguished Service Citation is given to an ecologist for long and distinguished service to the Society, to the larger scientific community, or to the larger purpose of application of ecology in the public welfare. This year's recipient is Janet Lanza of the University of Arkansas at Little Rock .



For 20 years, Dr. Janet Lanza has been the volunteer Book Review Editor for Ecology. In this age of rapid publication, online access, and internet searching, books and book reviews continue to have high value. Books, whether on paper or born digital, represent thoughtful distillation and syntheses of years of knowledge, and for many a scientist, summarize the intellectual paths and achievements of his or her entire career. There are many more books published every week than any one individual can read, and book reviews help guide us to books worth reading and steer us clear of books that we can afford to miss. A book review editor needs not only a good eye for a book worth reviewing, and a familiarity with the broad brush of the discipline, but also a keen and discriminating awareness of the pool of book reviewers—those of us who are willing both to pen a good review and to sign a critical one. Janet Lanza is such an editor. We should thank and honor Janet Lanza for her two decades of distinguished service to ESA as its Book Review Editor.

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## EMINENT ECOLOGIST AWARD

The Eminent Ecologist Award is given in recognition of an outstanding body of ecological work or of sustained contributions of extraordinary merit. It is the highest honor bestowed by the Ecological Society of America. This year's winner is Dr. Robert J. Naiman, who is on the faculty at the University of Washington.

Dr. Naiman has published over 225 peer-reviewed papers and book chapters. His work has also included synthesis, as evidenced from his leadership of the project that resulted in the publication of *The Freshwater Imperative* in 1995, which was instrumental in establishing a national ecological research program in freshwater science at NSF and EPA. His work is clearly extremely influential in the development of freshwater ecology, but his influence has been much broader. He has made fundamental contributions to the study of riparian systems and to the concept of ecotones.



His focus on how transport and retention of organic matter and associated metabolic rates are influenced by the characteristics of the stream network in large watersheds has been particularly influential. He has also been an important mentor to many graduate students, postdocs, and colleagues. For all these reasons, and more, we deem Dr. Robert J. Naiman to be richly deserving of the ESA Eminent Ecologist Award in 2012.