Ecological Society of America announces 2021 award recipients

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For Immediate Release

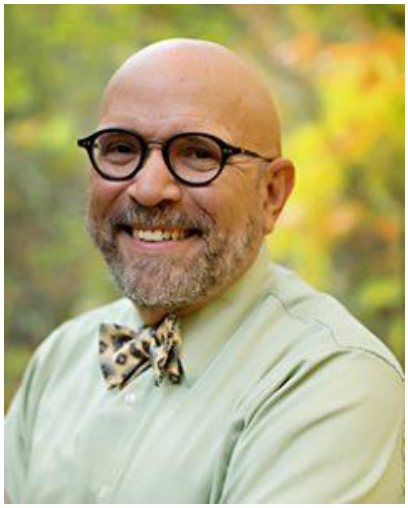
Contact: Heidi Swanson, (202) 833-8773 ext. 211, gro.ase@idieh

The Ecological Society of America is pleased to announce the winners of its 2021 awards, which recognize outstanding contributions to ecology in new discoveries, teaching, sustainability, diversity, and lifelong commitment to the profession.

“This year’s award recipients have shown remarkable leadership and creativity,” said Kathleen Weathers, ESA President. “On behalf of the Ecological Society of America, I congratulate the award winners and thank them for their significant contributions to building both ecological knowledge and the community of ecologists.”

ESA will present the 2021 awards during a ceremony at the Society’s upcoming Virtual Annual Meeting, which will take place from Monday, August 2, to Sunday, August 6, 2021. *Learn more about ESA awards*.

Eminent Ecologist Award: Steward T. A. Pickett



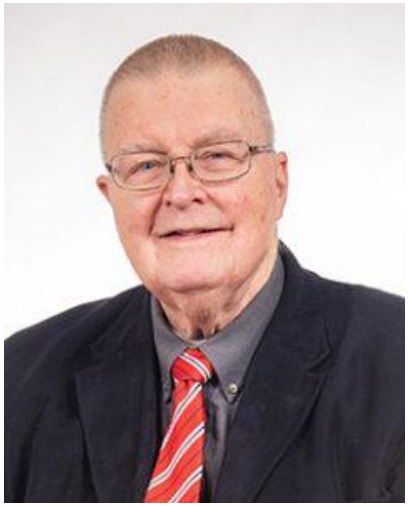
The Eminent Ecologist Award honors a senior ecologist for an outstanding body of ecological work or sustained ecological contributions of extraordinary merit.

Dr. Steward T. A. Pickett, Distinguished Senior Scientist at the Cary Institute of Ecosystem Studies, is a pioneer in understanding the non-equilibrium dynamics of landscapes and the ecology of urban environments. During his nearly 45-year research career, he has advanced knowledge in areas including physiological plant ecology, disturbance, succession and the nature of ecological theory, and his work has spanned environments from forests and old fields to urban centers. His scholarship on the philosophy and practice of ecological science has provided clarity for a complex science. Pickett's experimental work on succession in the Buell-Small long-term succession experiment in the Hutcheson Memorial Forest Center in New Jersey revolutionized thinking about non-equilibrium dynamics in ecology. His later groundbreaking work applying non-equilibrium ecological theory to cities led a transformation in American ecology in the 1990s from a science that shunned cities to one that now embraces them as proper subjects for ecological study.

Pickett's research has influenced practice, including both conservation and urban decision-making policies. One of his edited books ("The Ecological Basis of Conservation: Heterogeneity, Ecosystems, and Biodiversity") is devoted to the application of basic ecological theory and concepts to conservation practice. Pickett and colleagues also have extended the ecology *of* cities to a newer concept of ecology *for* cities, shifting focus to envisioning and advancing urban stewardship and social goals of urban sustainability. This work is followed closely by city leaders in many locations, including Baltimore, where he has done much of his urban research.

Pickett also has influenced the field through immense service contributions to the scientific community. He has served on the editorial boards of numerous journals, on the boards of directors for the American Institute of Biological Sciences and the Defenders of Wildlife, on the Biological Sciences Advisory Committee for the National Science Foundation, and on several National Research Council committees and boards, including the Committee on Scientific Issues of the Endangered Species Act, the Panel on New Research on Population and Environment, and the Board on Environmental Studies and Toxicology. In service to the ecological profession, he served as the ESA Vice President for Science in the mid-1990s and then as ESA's President from 2010 to 2013.

Distinguished Service Citation: Harold E. Balbach



The ESA Distinguished Service Citation recognizes long and distinguished volunteer service to ESA, the scientific community and the larger purpose of ecology in the public welfare.

Dr. Harold E. Balbach receives the Distinguished Service Citation for his dedication to bringing excellent ecological science to the management of federal lands managed by the US Army. He has also made significant contributions to ESA through his leadership in applied ecology, his role in supporting the documentation of ESA's history and his role in organizing annual meetings.

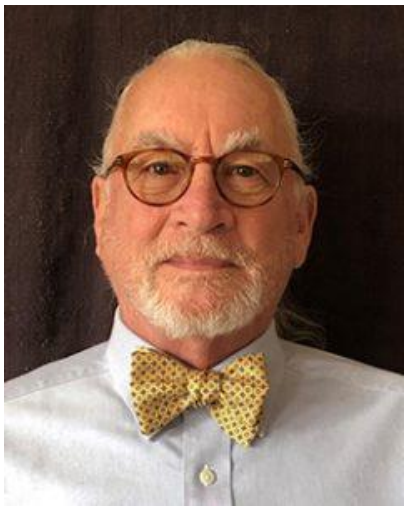
Balbach served as Secretary, Vice-Chair and Chair of ESA's Applied Ecology Section, and during this period, he was instrumental in securing funding to support ESA-sponsored Bioblitzes at Annual Meetings. He also served on the Program Committee from 2012 to 2015. In 2014, he served as Program Chair for 99th ESA Annual Meeting in Sacramento, an enormously important – and time-consuming – contribution to the Society. Finally, he has been a valuable member of the ESA Historical Records Committee since 2010.

Balbach had a long and distinguished career with the US Army Corps of Engineers (ACE) focused on environmental impact assessment, protection of endangered species, management of invasive species, and natural resource management. Overall, this work included research on high-visibility environmental problems associated with management of military installation resources, support to Department of Defense land and facilities managers, and analysis and documentation associated with the National Environmental Policy Act. Although Balbach is now officially retired, he continues to contribute to the Army Threatened and Endangered Species and Climate Change research programs. Over his career, much of Balbach's research was published in technical bulletins and management plans, rather than academic journals, but the impact of this research has been extremely significant. In sum, his accomplishments have been instrumental in developing protections and management strategies for the more than 11.4 million acres managed by the military across the US.

Balbach received many awards during his ACE tenure, including: 1) the Chief of Engineers Unit Coin award for leadership in developing and coordinating the Gopher Tortoise Interagency Memorandum of Agreement; 2) the Award for Superior Civilian Service from the US Army Engineer Research and Development Center in recognition of contributions to the Army in natural resources research; and 3) the Construction Engineering Research Laboratory Team Award for Excellence in Operational Support for assistance to ACE Headquarters, for developing tools to support development of a sustainability plan and goals. These commendations demonstrate Hal's effectiveness in carrying out research in service to the larger purpose of ecology in the public welfare.

In all respects, Hal Balbach has exemplified distinguished service to the ESA, to the larger scientific community, and to the larger purpose of ecology in the public welfare.

Eugene P. Odum Award for Excellence in Ecology Education: George A. Middendorf



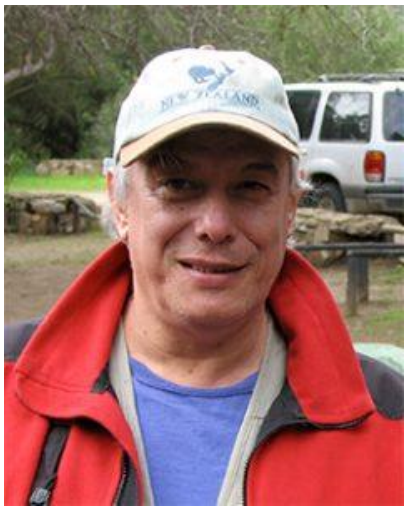
Odum Award recipients demonstrate their ability to relate basic ecological principles to human affairs through teaching, outreach, and mentoring activities.

Dr. George Middendorf is this year's choice for the Eugene P. Odum Award for Excellence in Ecology Education. He is an established leader in ecology education who has dedicated his career to developing and expanding high-quality, research-based pedagogy for all students. He has made a significant and long-lasting impact on ecology education through his sustained active engagement as one of the major leaders in the field, initiating many of the major ecology education initiatives in recent decades.

Over his 40 years as a member of ESA and as a faculty member at Howard University, he has taught, mentored and inspired countless students and colleagues, specifically focusing on addressing and including underrepresented populations in ecology. His broad impact is also reflected in his scholarship in ecology education, with a wide array of high-impact publications on topics such as 4DEE, active learning pedagogy, curriculum reform, ecological literacy, inclusion and diversity, environmental justice, community engagement and informed public decision-making related to the environment.

Middendorf has worked on national and international education programs and mentored undergraduate and graduate students at Howard University, regularly taking students on summer field research experiences to the American Museum of Natural History's Southwestern Research Station. He has also inspired and transformed the lives of many ecologists in the early stages of their professional careers by thoughtfully mentoring them through ESA. He has pushed to include the human dimension in ecology teaching and for all ecologists to engage in environmental justice.

Robert H. Whittaker Distinguished Ecologist Award: Juan J. Armesto



The Whittaker Distinguished Ecologist Award recognizes an ecologist with an earned doctorate and an outstanding record of contributions in ecology who is not a U.S. citizen and who resides outside the United States.

The 2021 recipient of the Robert H. Whittaker Distinguished Ecologist Award is Dr. Juan J. Armesto, a professor in the Department of Ecology at Pontificia Universidad Católica de Chile, where he has worked since 2002. He also currently holds an appointment at the Universidad de Concepción, Chile, and honorary appointments at the Cary Institute of Ecosystem Studies and the Universidad de Chile.

Armesto has significantly advanced science education in Chile and around the world, and is the founder of the Biogeochemical Laboratory at the Pontificia Universidad Católica de Chile, cofounder of the Chilean Network of long-term socio-ecological studies (LTSER-Network), the international research network Southern Connections, the Laboratory of Systematic and Plant Ecology and the Universidad de Chile, the Senda Darwin Foundation and Biological Station, among many others. He is a cofounder of, and currently leads, the Institute of Ecology and Biodiversity, a research and education center that has created a national research network spanning six academic centers across Chile.

His work also reaches governance and industry. Armesto has worked closely with the Chilean Ministry of the Environment to inform monitoring and management of Chile's Biosphere Reserves; some of this work has advanced governmental regulation, environmental legislation and biodiversity and ecosystem assessment.

His work with the Senda Darwin Foundation was the first to bring research and environmental education to Chiloé Island in Chile. He worked for more than 20 years with local schools and provided training to landowners, government officials, park rangers and foresters interested in conservation, local watershed governance, stewardship and problem-solving in rural communities.

Armesto has authored hundreds of scientific manuscripts that, together, have more than 15,000 citations in the fields of ecology, conservation, forestry, biogeochemistry, ecosystem science, the social sciences, education, policy, and more. He has edited and co-authored multiple academic books, popular non-fiction books, and educational materials that have been widely distributed by the Chilean government to schools across the country. Juan's impactful work in ecology and conservation, and his outstanding commitment to education and outreach are demonstrated in the substantial influence he has had on hundreds of thousands of scientists, students, and citizens in Chile and around the world.

W.S. Cooper Award: **Rachel C. Putnam** and **Peter B. Reich**

The W.S. Cooper Award honors the authors of an outstanding publication in the field of geobotany, physiographic ecology, plant succession, or the distribution of plants along environmental gradients. William S. Cooper was a pioneer of physiographic ecology and geobotany, with a particular interest in the influence of historical factors – such as glaciations and climate history – on the pattern of contemporary plant communities across platforms.

Rachel C. Putnam and Peter B. Reich's 2017 *Ecological Monographs* paper wins the W.S. Cooper Award for 2021. This paper reports the findings of a large-scale field experiment spanning the distribution of an ecologically important tree species in North America across a large climatic gradient. The field experiments, observations, and modelling exercises give insight into drivers of current species' distributions and forecasts for shifts under contemporary climate change. One particularly notable contribution is the authors' integration of biotic interactions, environmental conditions and local adaptation into their study across the entire latitudinal distribution of sugar maple. Such integration of multiple drivers across species' ranges is critical for understanding species' responses to ongoing global change.

Climate and competition affect growth and survival of transplanted sugar maple seedlings along a 1700-km gradient. *Ecological Monographs*, 87(1), 130-157. DOI: 10.1002/ecm.1237

George Mercer Award: Bethany A. Bradley, Brit B. Laginhas, Raj Whitlock, Jenica M. Allen, Amanda E. Bates, Genevieve Bernatchez, Jeff Diez, Regan Early, Jonathan Lenoir, Montserrat Vilà, Cascade J. B. Sorte

The Mercer Award recognizes an outstanding, recently published, ecological research paper by young scientists.

This year's Mercer Award goes to the authors of "Disentangling the abundance–impact relationship for invasive species." This paper is the first meta-analysis to win the Mercer Award. Meta-analyses have become an important ecological research tool since their introduction into ecology in the early 1990s, and the work by Bethany A. Bradley and colleagues identified a novel general pattern that likely could not have been discovered or confirmed except via meta-analysis. Their comprehensive global meta-analysis of 1258 studies addresses how the impacts of invasive species scale with their abundances. The analysis revealed striking general pattern across trophic levels: invasive species' impacts on lower trophic levels increase steeply but nonlinearly with their abundances, so that per-capita impact declines with increasing invader abundance, while invasive species' impacts within their own trophic level increase less steeply and linearly with their abundances. Their findings are valuable for managers, who need to decide whether it is worthwhile to attempt eradication of undesirable invasive species.

Disentangling the abundance–impact relationship for invasive species. *Proceedings of the National Academy of Sciences of the United States of America*, 116(20), 9919-9924. DOI: 10.1073/pnas.1818081116

Sustainability Science Award: Ryan A. McManamay, Sujithkumar Surendran Nair, Christopher R. DeRolph, Benjamin L. Ruddell, April M. Morton (*in memoriam*), Robert N. Stewart, Matthew J. Troia, Liem T. Tran, Hyun Kim, Budhendra Bhaduri

The Sustainability Science Award recognizes the authors of the scholarly work that makes the greatest contribution to the emerging science of ecosystem and regional sustainability through the integration of ecological and social sciences.

The 2021 Sustainability Science Award is given to the authors of "US cities can manage national hydrology and biodiversity using local infrastructure policy." The interdisciplinary team used spatially referenced data from cities and surrounding rural areas to show how local and regional policy choices can affect hydrologic system integrity and biodiversity conservation. Their work highlights ways to make better choices about land use, water management, and electricity production, and it promotes integrated planning and decision-making for greater sustainability of cities and the water- and energy-sheds that support them. This research demonstrates a novel approach to integrating ecosystem and social sciences, embodying the mission of ESA's Sustainability Science Award.

US cities can manage national hydrology and biodiversity using local infrastructure policy. *Proceedings of the National Academy of Sciences of the United States of America,* 114(36), 9581-9586. DOI: 10.1073/pnas.1706201114

Forrest Shreve Research Award: Edauri Navarro-Pérez

Forrest Shreve was an internationally known American botanist devoted to the study of the distribution of vegetation as determined by soil and climate conditions, with a focus on desert vegetation. The Forrest Shreve Research Fund award supplies $1,000-2,000 to support ecological research by graduate or undergraduate student members of ESA in the hot deserts of North America (Sonora, Mohave, Chihuahua, and Vizcaino).

The winner of this year's Forrest Shreve Research Award is Edauri Navarro-Pérez, a Ph.D. student at Arizona State University working under the mentorship of Dr. Heather Throop. Navarro-Pérez is studying root traits and their influence on and interactions with soil biogeochemistry in drylands. She will use funds from the Forrest Shreve Research Award to purchase supplies to measure plant root functional traits, and materials to analyze soil chemical properties in greenhouse experiments. Her graduate research addresses fundamental and societally relevant questions in ecology that experimentally test the influence of native perennial desert grasses on soil biogeochemical properties and processes. Her work will employ novel technologies to examine root structures in three dimensions, something few researchers have done before. Navarro-Pérez aims to directly apply her findings to ecological restoration, thereby informing management actions that can improve soil management and prevent erosion and land degradation in these critical systems across the Southwest.

Commitment to Human Diversity in Ecology Award: Erika S. Zavaleta

The Commitment to Human Diversity in Ecology Award is in recognition of long-standing contributions of an individual toward increasing the diversity of future ecologists through mentoring, teaching or outreach.

Dr. Erika S. Zavaleta, professor of ecology and evolutionary biology, is the recipient of this year's award. Zavaleta's development of innovative and accessible field experiences has enhanced the science skills, confidence and leadership potential of many underrepresented students in conservation science, who are now pursuing or fulfilling their goals of an environmental career and sharing her vision to diversify today's environmental workforce.

Zavaleta has launched and directed three diversity in ecology programs in the last five years at the University of California, Santa Cruz, which have impacted several hundred students by mentoring them through their career pathways.

Since 2015, she has directed the Doris Duke Conservation Scholars Program; as a Howard Hughes Medical Institute Fellow, she launched the Center to Advance Mentored, Inquiry-Based Opportunities (CAMINO) for students in ecology and conservation programs and developed a training program for preventing sexual harassment in field biology activities. Her implementation of innovative and accessible field experiences has enhanced the science skills, confidence and leadership potential of many underrepresented students in conservation science, who are now pursuing or fulfilling their goals of an environmental career and sharing her vision to diversify today's environmental workforce. Their testimonials attest to the success of her programs and her ability to share her commitment to human diversity in ecology.

Zavaleta's scholarship has also focused on developing inclusive field experiences for students from diverse backgrounds, and on elevating the human dimension in her research on climate change impacts on ecosystem function and services. She has been the recipient of several awards for her innovative and meaningful work, including being elected in 2018 as an Ecological Society of America Fellow, being a co-recipient of the 2006 ESA Sustainability Science Award, being chosen as a Fellow of the California Academy of Sciences in 2016 and being appointed the 2018 Howard Hughes Medical Institute Professor at the University of California, Santa Cruz. Her science communication skills have also been impactful, as seen in her 29 short field-based films about California's ecology and conservation and in her award-winning book, co-edited with Hal Mooney, "Ecosystems of California."