

WILLIAM S. COOPER AWARD

PETER M. VITOUSEK

The William S. Cooper Award is given by the Society for a recent contribution in geobotany, physiographic ecology, plant succession, or the distribution of organisms along environmental gradients. These were the areas of greatest interest to Professor Cooper during his productive career which spanned more than four decades.

The 1992 recipient of the William S. Cooper Award is **Dr. Peter M. Vitousek** of Stanford University for his 1989 paper with Lawrence R. Walker entitled "Biological invasion by *Myrica faya* in Hawaii: plant demography, nitrogen fixation, ecosystem effects," which appeared in *Ecological Monographs* **59**(3):247–265.

Vitousek and Walker address a central question in plant ecology: How do population and ecosystem processes interact to produce patterns of vegetation in the landscape? Their approach used both detailed observations and controlled experiments to quantify rates of invasion of the exotic *Myrica faya*, to determine the contribution of this actinorhizal nitrogen fixer to the nitrogen budget of the ecosystem, and to assess the impact of altered nitrogen budgets on other species in the system. One of Professor Cooper's more important contributions was in studies of primary succession and the role individual species play in this process. Dr. Vitousek's paper is a superb example of the invasion of a nitrogen-fixing species into a low-nitrogen young volcanic habitat, and this species' influence on the subsequent vegetation development.

The paper honored here is an example of Dr. Vitousek's signature approach to questions of nutrient cycling in ecosystems. His research is characterized by a focus on mechanisms that couple physiological, population, and ecosystem processes. His papers focus at experimental and theoretical levels and deal with local processes as well as global patterns. They present a fresh synthesis of ideas and facts that are at once compelling and, on reflection, provide a robust framework for understanding the interplay of nutrient-use efficiencies in plants, nutrient-supply processes in soils, and global patterns of ecosystems.

Dr. Vitousek is currently Professor of Biological Sciences at Stanford University. He received a B.A. *cum laude* in political science at Amherst College

in 1971 and a Ph.D. in biology from Dartmouth College in 1975. He has worked in the deciduous forests of eastern United States, in pine plantations of the Gulf Coastal Plain, in neotropical rain forests, as well as in the ecosystems of California and Hawaii. Dr. Vitousek was also elected to the National Academy of Sciences this year.

Selection Committee:

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