

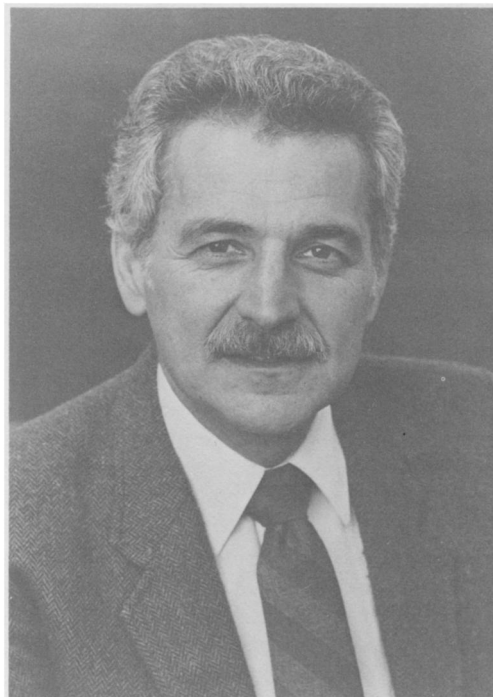
## harold a. mooney, president

1988–1989

Harold A. Mooney, the new president of the Ecological Society, has played a central role in developing the field of plant physiological ecology and has pioneered the application of ecophysiological approaches to the broader discipline of ecology. At a time when scientists are becoming increasingly specialized and narrow in their focus, Hal has consistently sought to develop the broader context within which to view plant physiological ecology. He has contributed substantially to the theoretical framework that has guided research in physiological ecology in the past two decades, he has developed bridges between physiological ecology and other areas of ecology, and he has explored the contributions that ecologists can make to resolving the growing problems of global habitability.

After completing his undergraduate education at the University of California, Santa Barbara, Hal received his Ph.D. from Duke University in 1960, working with W. Dwight Billings. His doctoral research was one of the early landmarks in the field of physiological ecology in North America, demonstrating that arctic and alpine populations of *Oxyria digyna* are distinct ecotypes, and that the morphological and physiological differences among these ecotypes are important in explaining the success of this species across broad latitudinal gradients. He received the ESA's Mercer Award for this work. As a faculty member at UCLA, Hal continued his research on the physiological ecology of alpine plants, focusing particularly on the relative importance of ecotypic differentiation and phenotypic plasticity in explaining physiological performance in the field. The issues raised in this research have inspired much of the ecophysiological research conducted in other ecosystems over the past 20 years.

In 1968, when Hal moved to Stanford University, his research focus shifted to arid ecosystems, particularly chaparral and desert. Here he and his students explored the variety of ways in which species or ecotypes can successfully exploit a range of environments. They



demonstrated the importance of trade-offs among physiological characteristics and of the ways in which costs and benefits of a particular trait could change along environmental gradients. Hal emphasized the importance of evaluating the physiology of plants within the context of morphological, phenological, and life history constraints. He summarized many of these concepts in his 1972 review on "The Carbon Balance of Plants," which has provided a major theoretical framework for ecophysiological studies since that time. Ideas of carbon balance have been instrumental in the incorporation of physiological understanding to studies of ecosystem processes.

As co-director for the IBP program on Mediterranean scrub ecosystems from 1969–1975, Hal played a key role in integrating physiological ecology into the broader context of biogeography, evolution, and ecosystem ecolo-

gy. This research program explored the convergent evolution of distinct floras in mediterranean climates of the world and the constraints that different evolutionary histories place upon physiological function. The high degree of physiological convergence among plants in different mediterranean ecosystems indicated that there are a relatively limited number of ways in which plants can successfully exploit a given environment.

Hal's work on carbon balance has led to several lines of research on the nature of interactions of plants with their biotic environment. He and his colleagues have examined the costs of defending plants against insects and the benefits derived from plant defense. The use of carbon balance to provide a quantitative basis for predicting the optimal defense allocation has provided an objective measure for evaluating many of the current theories of plant-animal interaction. Other research in Hal's lab has explored the nature of interactions between plants and other plants or between plants and mycorrhizae. The consistent emphasis upon costs, benefits, and trade-offs has made it possible to place these studies within the context of whole-plant physiology and has provided a mechanism of integrating physiological ecology with related disciplines such as population biology, community ecology, and ecosystem ecology.

There are many avenues by which Hal has contributed to ecology. Through his personal research and collaboration with colleagues, he has published more than 200 papers. His students have extended this work in other areas of physiological ecology. His lab is the constant focus of post-docs and sabbatical visitors who contribute to and benefit from Hal's broad perspective on ecology. In recent years he has organized numerous symposia in which he brought together people from many diverse disciplines to address topics that promise to contribute substantially to the advancement and integration of ecology. These conferences have consistently been of the highest caliber. Topics of these symposia and the edited volumes that have resulted include convergent evolution in mediterranean climate ecosystems, the biology of invasions, fire regimes and ecosystem processes, disturbance and ecosystems, tropical physiological ecology of North America, future direc-

tions in plant physiological ecology, plant response to multiple environmental stresses, controls over productivity of mediterranean ecosystems, current methods in ecophysiological research, sulfur dioxide and vegetation, and research needs related to nuclear winter. The breadth of these topics is indicative of the breadth of Hal's contribution to ecology.

Hal has contributed substantially to the development of ecological research through his participation on editorial boards of several journals (*Ecology*, *American Naturalist*, *American Midland Naturalist*, *BioScience*, *Trends in Ecology and Evolution*, *Plant Cell and Environment*, *Oecologia Plantarum*, *Tree Physiology*) and advisory committees of many funding agencies (NSF, DOE, EPA, Ford, NRC, UNESCO), universities and national labs, and international agencies. Among other activities he is currently a member of the U.S. National Committee of the IGBP, the National Academy of Sciences Commission of Life Sciences, U.S. advisory committee for the International Council of Scientific Unions, and advisor of the U.S. Arctic Research commission. In recognition for these services and for his contribution to research, Hal was elected to the National Academy of Sciences in 1982 and received the Merit Award of the Botanical Society of America in 1983. He is a Guggenheim Fellow, a member of the American Academy of Arts and Sciences, and a Fellow of the American Association for the Advancement of Science. Within the Ecological Society of America, Hal has served as editorial board member and editor of *Ecology*, chairman of the western section and of the physiological ecology section, and Vice President of the society.

At a time when we are becoming increasingly aware of the social responsibility of ecologists and of the need for a global perspective in the face of increasing specialization, it is appropriate that the Ecological Society of America welcomes Hal Mooney as its new president.

F. Stuart Chapin, III  
University of Alaska  
and  
James R. Ehleringer  
University of Utah