

**Pioneer in genetics, conservation . . .**

## **Q & A with Ledyard Stebbins**

*George Ledyard Stebbins received his Ph.D. in biology from Harvard University in 1931 and joined the faculty at UC Berkeley in 1935. He transferred to the Davis Campus in 1951 as the founding chair of the Genetics Department, a post he held until 1963. His pioneering work on plant genetics and flowering plant evolution led to the publication of several seminal books including Variation and Evolution in Plants (1950), and Flowering Plants: Evolution above the Species Level (1974). He was influential in promoting the California Native Plant Society's efforts to conserve native plants and their habitats. Professor Stebbins became an active retiree in 1973. Today he has an international reputation not only as a scholar, but as a sensitive mentor and a lively lecturer with an encyclopedic knowledge of biological diversity of plants. California Agriculture presents a short interview with Professor Stebbins in the year of his 90th birthday.*

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**What is biodiversity? Give us some examples of what it means for California.**

Biodiversity encompasses all the species we see around us, whether we are in our own city or suburban environments, out on a farm or camping in the wilderness. Of all the continental United States, California has the greatest biodiversity. In coastal forests, giant redwoods rise above a carpet of wildflowers such as wood sorrel, lilies, and calypso orchids. Underneath hide creatures ranging from banana slugs to tiny spotted beetles and spiders. California's deserts have plants and animals adapted to the harshest conditions of drought that one can imagine. Curious, twisted Joshua trees bear clusters of creamy flowers. At night, sidewinder rattlesnakes and hairy ta-

rantulas emerge, and kangaroo rats leap around in search of seeds. Still further treasures of wildlife live in sandy beaches, tidepools, wetlands, and lakes.

Altogether, California has many native species which are found nowhere else. California is also home to more than 30 million people and we must balance our need to maintain our way of life with the need to save the biodiversity that lies all around us. As many as 1100 of California's 5800 native plant species are rare or endangered.

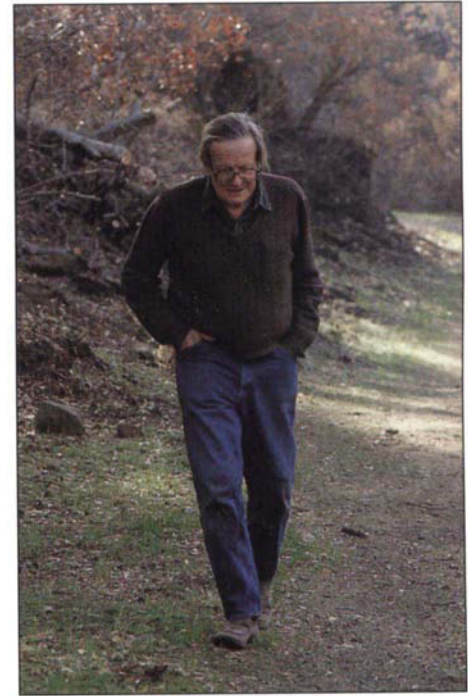
We urgently need both to establish priorities for saving these species and to increase the number of species that are being preserved. Many rare species grow in places where people can revitalize themselves by getting away from the hustle and bustle of California's rapidly expanding urban sprawl.

**Why does California have so much biodiversity?**

California owes its rich biodiversity in part to the diversity of its geography, which can be divided into zones according to their wetness or aridity. There are gradients in these zones from arid to wet both from east to west and from south to north in the state. Current climate, as well as the topography and past climates, produce these gradients, which in turn influence the ranges of plant and animal species.

**Why has California lost biodiversity?**

California has been losing biodiversity since the Europeans began settling the state. The most dramatic increases in population began



Debbie Van Blankenship

with the discovery of gold in 1848 and immigration and increasing population density remain the major reasons for loss of California biodiversity. Cattle introduced in the 18th century during the Spanish occupation initiated the loss of the original cover of perennial grasses, allowing annual species introduced from Europe to gain the almost exclusive dominance which they still hold today. Irrigation projects, beginning with the systems developed by the Spanish missionaries and continuing with those being developed today, allow agricultural development that replaces native species.

**How and why did you make the transition from basic research to a combination of your research and conservation of California's native plants?**

I did it in two steps. I came to California as a research fellow with E.B. Babcock in the genetics department of UC Berkeley in 1935. And then 4 years later when I became an assistant professor, the vice president asked all the younger faculty members for research programs. I was developing grasses for forage in rangelands, which got me in the direction away from pure research. The second step was when I started working with the California Native Plant Society in 1967 about a year after it was formed in Berkeley.

**What was your role during the early years of the California Native Plant Society?**

I was not a charter member but about a year after CNPS was founded I was asked to be the president. I was the president for 6 years beginning in about 1967. I organized a chapter for Davis and the Sacramento Valley and I did something that no one else was doing at that time. I organized weekly field trips that got people in the habit of "taking nothing but pictures, leaving nothing but footprints." I also gave a series of lectures to other CNPS chapters, which raised people's interest in preserving rare plants. My other main contribution was helping with the CNPS' native plant sales. I resigned when I retired from UC Davis in 1973 because I signed up for visiting positions in Chile and France and was out of the country much of the time until 1979.

**What California habitats would you most like to see protected and why?**

Protecting the desert mountains of southeast California like the Kingstons and the Little San Bernardinos is of the highest priority. They're full of local rarities. Naturally lots of the plants there are cacti and these sell for high prices. Legally protecting these mountains is not enough—we need vigilant monitoring to keep down the poaching. Vernal pools also need protection but that's difficult because we're competing with high-powered developers.

**How can we increase local involvement in conservation?**

We need to look for issues that particular segments of the public are interested in. For example, on the Monterey peninsula there is an area that I dubbed "Evolution Hill," which is a raised beach that was uplifted about 5 million years ago. When I was teaching evolution at UC Berkeley, I found that all the problems of evolution were in that little patch. The plants there illustrate the ways that species differentiate. For example, two species of pine—Monterey pine and Bishop pine—grow side-by-side but there are no crosses. The reason is that the Monterey pines shed their pollen in February while the Bishop pines shed their pollen in March.

This area was owned by Del Monte Properties and in 1967 the company appointed a new head who was also an executive of the Corning Glass factory. He decided to bring heavy machinery into the area to quarry the soil and convert it into glass—to him this was the only possible value of the area. We teamed with owners of nearby, expensive homes who were faced with the prospect of the rattling and banging of a quarry. After several months of protest and litigation, we prevailed and the area was made a botanical preserve called the S.F.B. Morse Botanical Area. We conservationists could never have won this victory by ourselves but succeeded because we recognized the power of wealthy and influential allies.

**What should the role of UC be in conservation? How can it be improved?**

The University should offer more field courses on conservation for non-majors and on the Extension level. I taught such a course last spring. I took them out into the field and showed them rare plants—you can talk all you want about something but showing is what makes the biggest impact. For example, I showed them a north coast biodiversity transect from Lake Berryessa to the coast. There's only about 25 inches of variation in the mean rainfall along the transect but the vegetation is very different due to the influence of fog near the coast. Several conservation agencies asked officials to take the course. We had people from the Bureau of Land Management, the state forest service and the state park service.

**What advice would you give to scientists doing basic research with conservation implications?**

This is a problem because promotion is on the basis of scholarship and conservation is not widely regarded as scholarship. Therefore researchers are not rewarded for conservation. I was not encouraged to shift from basic research. I did it on my own and at the end of my career. People have to be concerned with their livelihoods. There are lots of conservation-minded people and the University needs to tell them that won't hurt their careers.

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