

# Building a research program: 1951-1976

A.H. Murphy • R.M. Love • W.C. Weir



The terrain surrounding the station headquarters area is typical of the rangeland that occupies much of the station's acreage.

Madson's committee was given responsibility for locating a suitable site for the station by College of Agriculture Dean C. B. Hutchinson.

After several months of reviewing prospective sites, it was agreed that the 4,630-acre Roy L. Pratt ranch in southeastern Mendocino County near Hopland was most suitable for carrying out the university's range research objectives. The ranch was purchased by the university on July 1, 1951 for \$200,000-\$135,000 for the land and \$65,000 for the buildings, equipment, supplies, and 1,135 head of sheep that came with it. (Additional acreage was acquired in the 1960's, increasing the size of the station to 5,358 acres.)

A Range Land Utilization subcommittee, consisting of Madson, H. H. Biswell, C. N. Johnson, R. M. Love, T. I. Storer, and W. C. Weir, was appointed to develop specific recommendations to be implemented following purchase of the station. The recommendations included: establishing a 630-acre grazing study area; setting aside a 500-acre sheep-free area for wildlife studies; using a small lake near the headquarters for a wildlife area; assigning an area for general research work; establishment of three range-plant testing areas, at 800-, 1,000-, and 3,000-foot elevations; making a botanical survey; setting up permanent stations for photographing changes in forage conditions; and establishing two sheep flocks--one for animal husbandry experiments and one for farm-flock range studies.

Staff during the station's first year of operation included A. H. Murphy, superintendent; D. T. Torell, animal husbandry specialist; William M. Longhurst, wildlife specialist; Vic C. Tuck, shepherd; Jim G. Tuck, superintendent of cultivations; and Custer Cline, Bob Hiatt, John Poor, and George Wood, general ranch laborers.

**T**he Regents of the University of California, at their September 20, 1950, meeting, unanimously approved the concept of establishing a field experiment station within the College of Agriculture to investigate problems pertaining to the conservation and use of the natural resources represented in some 30 million acres of rangeland in California.

Regent endorsement of this concept was based on recommendations made by the college's Range Land Utilization Committee, which consisted of B. A. Madson, agronomy and range science, F. S. Baker and H. H. Biswell, forestry, G. H. Hart and E. H. Hughes, animal husbandry, T. I. Storer, zoology, F. J. Veihmeyer, irrigation, J. J. McElroy, Agricultural Extension Service, and H. R. Wellman, agricultural economics.

Committee chairman Madson spelled out the needs for a field research station in a statement prepared for the committee's December 13, 1950, meeting. The statement read:

"Very little work has been done on range management problems, the answers to which are essential to determine how a range must be handled in order that it may be maintained in a productive and improved condition. These latter types of investigations must be carried on under carefully controlled conditions and for a long period of time. It is for these studies in particular that a range experiment station is required.

"While the production of feed for livestock has been and often is regarded as the primary purpose of these range areas, they have other uses and values which must be considered, i.e., production of game and other wildlife, recreation, and water sheds. These multiple uses pose problems which have received but little attention and on which very inadequate information is available....

"Many of the important problems will require the coordinated effort of several divisions of the College over a considerable period of time, and such work can be effectively done only on a permanent site."

## General research development

It was soon found that grazing capacity varied greatly from one area of the station to another. In the best areas, forage production would support one sheep per acre. In the poor producing areas, it took more than 20 acres to support one sheep. A soil inventory, plant survey, and forage analysis were made to help explain the production variations. Wildlife populations, especially deer, were counted to determine the impact these noncontrolled range harvesters had on the feed resources. Water resources were surveyed to determine how they interacted with range users.

These early studies gave researchers a basis for further study into the complex problems associated with management of range animals and plants. The large deer population on the station made it necessary to protect some areas with deer-proof fences to eliminate deer as a variable in some of the studies and to make possible controlled studies of the interaction among deer, livestock, and plants. Experience with building deer fences led to a publication explaining how these structures could be used. Upon completion of the deer fences, many coordinated studies of livestock, plant, and deer relationships were initiated on various parts of the range.

Early in the research planning, two watershed areas were assigned to general studies emphasizing water and soil. The main thrust of this work was to learn what happens when the trees and brush in a drainage area are removed and replaced with herbaceous plants. Then the consequences of this treatment were measured by various hydrologic methods, and concurrent studies were made of the vegetation and the animals using the treated area.

Research on rangeland sheep production has included numerous projects, from developing an esophageal fistula in order to examine what a sheep eats to increasing lamb production by breeding for multiple births. Sheep and cattle have been studied to learn the botanical composition, chemical dietary component, and digestibility of both the green and dry mature forages that they eat. Various natural range feed components have been examined to determine their value in the diet and to learn how supplemental feeds

might be used to improve livestock performance.

Adverse weather at the station during the winter lambing season prompted research on ways to save lambs. Low-cost range shelters, barn lambing, and the effect of improving the nutritional status of ewes have been studied.

Management to reduce wide annual fluctuations in forage quantity and quality has been investigated in studies using introduced grasses and clovers in combination with various fertilizers. Results show that rose and subterranean clovers, combined with correcting soil deficiencies of phosphorus and sulfur, can improve forage production and quality. Many varieties of these clovers have been observed to evaluate their use on ranges as well as to help solve inoculation problems. The general nitrogen deficiencies of California rangeland can be alleviated when nitrogen-producing clover roots are actively growing.

Tree and brush management to improve range production also has been emphasized. Many chemicals have been tested for their potential in managing woody plants. A simple, economical method of thinning trees by placing chemicals in cuts around the trunks was developed to open up the soil and increase forage production.

Station research has shown how fire can be used to keep brush at a stage of growth where it is useful to livestock and wildlife. Ways to prepare woody plants for burning and manage burned-over areas by seeding with useful forage species to upgrade production also have been studied. Both chemical and grazing programs have been developed to manage brush, and their effects on wildlife have been studied.

The deer herd, which numbers between 600 and 800 animals, has been the object of much research directed toward better management of this valuable resource. Deer population dynamics, utilization of deer for sport hunting, diseases and parasites common to deer and livestock, and the interrelationships of deer and livestock eating habits have all been studied.

Another wild animal, the coyote, also has received research emphasis because of the losses it inflicts on livestock, especially sheep. The goal of this research is a better understanding of the coyote's interaction with its surroundings and

development of controls that might be used to reduce coyote damage to domestic livestock and deer.

In the process of these studies, much useful information is gathered that provides base data for future research. Weather data--rainfall, temperature, humidity, and wind--have been accumulated to characterize the climate. Information on forage yields and botanical composition, gathered over a long period, shows the changes that develop under different management and climatic situations. The livestock data for weights, wool production, lamb numbers, frequency of disease, loss to predators, and response to various feed conditions indicate some of the expected potentials. Sampling of the various wildlife populations gives a better understanding of their ecology and how they adapt to man's change of their environment. Data on response of soil to fertilizers and management techniques provide knowledge about the potential of various soil types to produce in the range environment. These and other aspects of the research program developed at the Hopland Field Station during its first 25 years have contributed significantly to research and rangeland management programs in California and many other parts of the world.

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