

## Urbanization crowds out oaks

Over the past 40 years, urbanization has elbowed aside 1 million acres of California's oak rangelands. Natural resource researchers recognized that several species — blue oak, valley oak and Engelmann oak — were not regenerating well in some locations, that there were not enough young trees to replace the old ones. Concern that large acreages of oaks were being lost to firewood cutting, agricultural conversion, and residential and commercial development led to the formation of the Integrated Hardwood Range Management Program. The 10-year-old program aims to conserve the state's 10 million acres of hardwood range. It is a collaborative effort by UC, and the California Departments of Forestry and Fire Protection, and Fish and Game.

In addition to their aesthetic qualities, oaks play a role in stabilizing soils, cycling soil nutrients and enhancing water quality and storage. They are also an important source of food and shelter for a wide range of wildlife. Biologists estimate that of the 647 terrestrial vertebrate species in California over half use oak woodlands at some time during the year.

The Integrated Hardwood Range Management Program is supporting numerous projects designed to enhance understanding of the biology of native California oaks and promote their long-term conservation. Three of these projects are described in this issue of *California Agriculture* (see pages 7-21).

Researchers at Hastings Reservation east of Monterey evaluated five oak species to determine how variable seed crops contribute to oaks' long-term survival (p. 7). It was once thought that the size of acorn crops was primarily determined by rainfall. However, the Hastings Reservation study indicates that crop size does not correlate with the previous year's rainfall. Instead, it correlates to weather conditions favorable for pollination, which can be 1 or 2 years before the crop itself, depending on the species.

The scientists conclusion: Variable acorn production helps oaks to increase the chance that their acorns will evade predators and survive to germination.

A series of studies conducted in the South Sierra Hardwood Range of Madera County exam-

ined factors inhibiting establishment of blue oaks in California (p. 13). To measure the impact of competition from annual herbaceous plants, drought and large and small mammal depredation, researchers compared the emergence and survival of directly seeded acorns and 2-month-old nursery stock. The results suggest that successful restocking of blue oaks on California rangelands may depend on careful site selection, control of competition and protection from gophers and other mammal predators.

In another study, researchers gathered acorns from native blue oaks growing in Madera and Kern counties and evaluated acorn quality (p. 18). They observed that acorns from Madera County were larger and that more of their seedlings emerged from the soil and at a faster rate than acorns from Kern County, indicating the variability in oak populations that adapt to local climatic factors.

Other studies focus not only on oak regeneration, but on relationships between oaks and wildlife, and oaks and economic enterprise, like ranching, according to UC natural resources specialist Doug McCreary.

An important area of study, says McCreary, who works at the Sierra Foothill Research and Extension Center (SFREC) in Browns Valley, is how to keep cattle ranchers in business because 80% of oaks are on privately owned properties. "The economic base is ranching, so we're interested in keeping ranchers in business to protect open space values. They keep lands in natural undeveloped states," McCreary says. "If the owners sell out to developers who create 2 ½-acre ranchettes, the open space is lost."

SFREC has hosted a number of community and student groups, including members of Fu-



Roxanne McCreary

**Specialist Doug McCreary and his daughter Megan walk among the oaks.**

*...oaks help stabilize soil, cycle soil nutrients and enhance water quality and storage.*

*"If the owners sell out to developers who create 2 1/2-acre ranchettes, the open space is lost."*



Douglas McCreary

**A group of FFA students estimate the volume of wood in these oak stands.**

ture Farmers of America. "We bring them to the research center to show them what's going on," McCreary says of ag students. "They look at the cows and we discuss aspects of cattle management, and we tell them about natural resources research too."

There are some impacts from the livestock themselves, heavy grazing can inhibit natural regeneration. However the ranchers work with the researchers to develop regeneration techniques along with proper timing of cattle grazing to protect individual plants.

The Integrated Hardwood Range Management Program publishes a newsletter, *Quercus*, describing issues affecting oaks, conservation methods and how they can be implemented. *Quercus* is sent to planners, private consultants and other interested individuals.

## Letters

**W**ith this issue *California Agriculture* introduces a *Letters* section. Space permitting, we will publish selected letters, which may be condensed. They must include the writer's name, address and telephone number. Letters may be mailed to Editor, *California Agriculture*, 300 Lakeside Drive, 6th floor, Oakland, CA 94612; or e-mailed to [janet.white@ucop.edu](mailto:janet.white@ucop.edu).

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I read with interest your opening statements regarding the current and future status of the Mediterranean fruit fly in California in the most recent issue of *California Agriculture* (49[4]: 4-6). Generally, you have provided an accurate assessment of the current situation. If you will permit me, I have just one or two points to clarify.

The area of origin of the Medfly has long been a controversial issue, and has only recently been resolved with some degree of certainty. The inability of earlier scientists to locate and confirm the Medfly's area of evolutionary origin has had unusual and far-reaching consequences relating to Medfly control. I will not expound upon them here, but I have done so in a recent article for *Biological Control*. Our current understanding of the zoogeography of *Ceratitidis* leads us to believe that the group originated in east central Africa, more specifically in the higher elevations of Kenya, Tanzania, Mozambique and Zimbabwe.

The Medfly was first recognized as a pest in fruit sent from the Azores to England in 1829, and as a pest on Malta as early as, perhaps, 1820. By the turn of the century the Medfly had managed to invade nearly every major continent and island, except for North America. The first invasion into North America took place in 1929 in the Orlando area of Florida. The current distribution in Asia is of some concern and deserves further investigation. There are anecdotal records that indicate Medfly may occur in the tropical and subtropical areas of China. Many Asian export markets claim to be free of Medfly, I should think that this claim warrants verification.

David Headrick  
UC Riverside

I am writing to express my appreciation for *California Agriculture*. This publication has proven to be a valuable information resource. I teach a course called Pesticides in the Environment and use information from the publication on a regular basis to enhance technical presentations of the fate of pesticides in terrestrial ecosystems. Students will often comment on the quality of the publication and on the usefulness of the information when they return a loaned copy. I must say that I agree wholeheartedly.

Larry Zibilske  
University of Maine