

**Position Title:** Invasive Weed and Restoration Ecology CE Specialist (100% CE)

**Position:** This position will provide statewide leadership in weed management and ecological restoration in rangelands, wildlands, and natural areas. A Ph.D. in Restoration Ecology, Weed Science or a closely related field and applied research experience will be required. The CE Specialist's research and extension program will focus on working landscapes, ranging from natural to managed ecosystems (e.g., grasslands, woodlands and associated freshwater wetlands). Because invasive weeds are commonly either a cause or symptom of degraded landscapes, this position will also require an extensive understanding of weed science principles and weed management strategies.

**Justification:** Rangelands and natural areas (e.g., woodlands, forests, riparian areas, grasslands) make up about 75% of the land area of California. These areas provide economic benefits and ecological services critical to the cultural and social fabric of societies. However, the proliferation of invasive non-native plants have altered these systems and have led to numerous economic and ecological impacts on wildlife habitat, biodiversity, endangered species, as well as timber and livestock production, quality, and health. In the US, the annual financial impact of invasive plants in rangelands alone has been estimated to be \$2 billion, which is more than all other pests combined. In recent years, there has been an increasing focus on ecological restoration in both the agricultural and environmental sectors which has led to hundreds of millions of dollars being spent on restoration in California. However, restoration of degraded landscapes often is hampered by an incomplete understanding of the interactions among invasive plants, available restoration tactics, and the spatial and temporal environmental constraints that affect success/failure. Maintaining sustainable natural and agricultural systems and restoring degraded and highly-invaded ecosystems and landscapes are crucial to providing the goods and services emphasized in the ANR Strategic Vision. This position is a critical network link between AES faculty and CE Advisors with research and extension programs on invasive plant management, especially in light of the retirement of Dr. Joe DiTomaso (invasive weed specialist) and the departure of Dr. Elise Gornish (restoration ecology specialist) in 2017.

**Extension:** Research and education emphasis will be on development and implementation of sustainable and innovative weed management and restoration practices across California's rangelands and natural systems to protect and improve multiple ecosystem services. The key clientele groups the candidate would be expected to interact with include federal and state agencies, regional land managers, and non-governmental organizations. In addition, the specialist will have a significant impact on the activities of ranchers and other landowners and private businesses that manage and conduct restoration activities on natural areas. The appointee will cooperate with county-based CE Advisors serving land management agencies, pest control advisors and applicators, and will develop an innovative statewide outreach program linking landscape restoration, invasive plant management, and environmental quality. The candidate will extend results through cooperation with Advisors via demonstration, outreach, networking and communication activities.

**Research:** The major research activities of this specialist will focus on the intersection of invasive weed management and the conservation and restoration of rangelands and natural areas. Because weeds are both a symptom and cause of degraded landscapes, successful conservation and restoration of these landscapes requires a multidisciplinary understanding of both the weedy and desired species, as well as the management practices and goals of the land managers. Specific research could focus on the biology, ecology, and management of invasive plants or on the restoration practices, materials and site-specific management options that lead to success/failures in restoration efforts. Regardless of the approach taken for specific research projects, the overall goal for this specialist should be to conduct research designed to lead to cost-effective restoration and land management practices on

working and natural landscapes. The individual's research program will be coordinated with both campus-based faculty and county-based CE Advisors. Publication outlets for this type of research include UC ANR online and print publications, and scientific journals focused on invasive plants or ecological restoration (e.g. *Invasive Plant Science and Management*, *Weed Science*, *Restoration Ecology*, *Ecological Restoration*).

**ANR Network:** This position would primarily address the goals of the *Sustainable Natural Ecosystems* initiative and the *Endemic and Invasive Pests and Diseases* initiatives outlined by UC ANR. This position would also significantly and directly contribute to UC ANR's public values for securing safe and healthy environments for protecting California's natural resources and building climate-resilient ecosystems, while also promoting economic prosperity. Whether from the perspective of agricultural productivity, ecosystem sustainability, response to a changing climate, or another UCANR core competency, this position is central to the programs of many of the Advisors, Specialists, and stakeholder groups focused on managing working landscapes throughout the state. In addition to UCCE livestock, natural resource, weed science, and crop advisors and specialists, this position would provide a key linkage to AES faculty engaged in research on the ecology of invasive plants and ecological restoration.

**Network External to ANR:** The external stakeholder network for this position is diverse and includes a variety of state, county and federal agencies, environmental groups, and policy makers such as the US Department of Agriculture Natural Resource Conservation Service, CA Dept. of Food and Agriculture, CA Resource Conservation Districts, US Forest Service, US Bureau of Land Management, California State Parks, CA Dept. of Fish and Wildlife, CA Dept. of Water Resource, regional land management agencies, and non-government organizations (e.g. The Nature Conservancy, California Invasive Plant Council, Audubon Society, Point Blue Conservation Science). Each of these groups could be important collaborators and stakeholder in the network of this CE Specialist position.

**Support:** Office, lab and field facilities are available for this position in the Plant Science Department at UC Davis. The Department also will provide business support for purchasing, hiring, and account management for research and extension activities. Direct financial support will include a startup package as well as the CAES allocation for CE Specialist support; however, the majority of the research and extension will need to be supported by external funding.

**Other support:** Research funding would be expected from a variety of local and state sources such as the UC Davis managed Rustici Rangeland Endowment, CDFA, CA Dept. of Pesticide Regulation, federal and state land management agencies and research collaborations directly with the related industries. Because of the large interest in invasive plants, landscape restoration, and sustainable ecosystems, research and outreach programs led by this specialist could also be competitive for grant funds from USDA-NIFA and other national-level programs.

**Location:** UC Davis, Department of Plant Sciences.

Developed and proposed by: *This position was developed by the UC Davis Department of Plant Sciences in order to simultaneously address important programmatic gaps that emerged with the departure of two high-profile CE specialists since the last call for positions. Members of the Pest Management Program Team and the Sustainable Natural Ecosystems Initiative were consulted*

*during the development of two initially separate position proposals and strongly support this combined position.*