Developed and proposed by: Entomology, Arthropod, and Vertebrate Pests Program Team, West Side REC

Position title: UCCE Vertebrate Pests Management Advisor of Tree, Field and Vegetable Crops Advisor.

Headquarter location and coverage area:
The Advisor will be headquartered at the West Side Research and Extension Center (WSREC), where laboratory and office space will be available. This position will be under the supervision of the Director of the UC Entomology Program, who has disciplinary knowledge of performance expectations and experience in managing Vertebrate Pests Management academics. The advisor will be based in one of the REC centers in the Central San Joaquin Valley, and serve directly to the clientele of multiple counties - Madera, Fresno, Kings, Tulare; but contributes to the entire San Joaquin Valley through invited extension talks, and other collaborations with advisors in other counties of the San Joaquin Valley.

Position overview, briefly describe:

a) The UCCE Vertebrate Pests Management Advisor of Tree, Field and Vegetable Crops Advisor will focus on research and education to effectively manage vertebrate pests in agricultural areas, with special emphasis on rodents, including rats, mice, voles, squirrels, and gophers, that cause damage in production and post-production agriculture.

b) A minimum of a Master's Degree in vertebrate management, pest management, applied vertebrate ecology, or a closely related field is required at the time of appointment.

c) The vertebrate pest control advisor will be responsible programmatically to the UC Statewide Integrated Pest Management (UCIPM) program, but serve directly growers and pest control advisers in the Central San Joaquin Valley counties - Madera, Fresno, Kings, and Tulare. The advisor will report administratively to the KARE/WSREC Director.

Justification: Vertebrate pests, especially rodents, cause significant damage in California's agricultural production systems. For example, previous studies have estimated revenue losses of 11% and 9% when voles and gophers were found in alfalfa, respectively. Rodents also pose a human health risk due to potential disease transmission to humans and domestic animals, and they represent a food safety risk when found in ag fields and storage and processing facilities. However, the importance of this position is most clearly illustrated by a recent outbreak of roof rats in the southern Central Valley, where a joint study by CDFA and UC Davis estimated roof rat damage in almond orchards during fall 2024 at between $109 and $311 million! Unfortunately, management of these rodent species has become more challenging due to increased regulation on the use of pesticides, as well as changes in farming practices and climatic conditions that favor rodent infestations.

Additional Extension capacity is needed to help address these challenges faced by growers and local communities. Currently, there is only one CE Specialist dedicated to these issues, and no

CE Advisors have the expertise or time to help growers address rodent and other vertebrate damage in agricultural production systems. This proposed position would help fill this gap in arguably the most important agricultural production area in the U.S.

This position addresses the priorities of agricultural producers, county agricultural departments, state and federal agencies, and pest control professionals. Key knowledge gaps include burrowing rodent management strategies under changing pesticide regulations; impacts of species of special concern on vertebrate pest control management strategies; economic considerations associated with vertebrate pest management; methods to minimize potential health and food safety risks associated with vertebrate presence in ag production areas; and strategies that balance agricultural viability, public safety, animal welfare, and wildlife conservation. Consequently, this position was ranked #1 by the Entomology, Arthropod, and Vertebrate Pests Program Team and was strongly supported by WSREC as host location.

Outcomes/Impact: This position contributes directly to UC ANR's public value framework and condition changes by advancing improved land management, ecological sustainability, animal management and productivity, agricultural efficiency and profitability, and community health and wellness. It also supports UC ANR's Strategic Vision 2040 by delivering science-based solutions that strengthen sustainable agriculture, resilient ecosystems, economic prosperity, and thriving communities.

The proposed position will demonstrate impact through peer-reviewed publications, popular articles, bilingual outreach materials, applied research projects, extension presentations, and technical assistance for agencies, agricultural producers, homeowners, Master Gardeners, 4-H audiences, and others. Numerous commodity groups, pest control professionals, public agencies, and federal and state governments have increasingly requested educational materials and presentations on vertebrate pest management. This position will build upon the expertise currently provided by CE Specialist Baldwin, which will amplify their ability to research vertebrate pest management topics and educate clientele on their findings. In particular, this position will expand ANR's capacity to deliver science-based solutions for vertebrate pest management, and more broadly, human-wildlife conflict. In 20 years, success would include reduced vertebrate damage in cropping systems, increased profitability for agricultural producers, fewer environmental impacts from management actions, and stronger alignment between agricultural viability, community well-being, and wildlife conservation.

Extension: The Advisor will develop and deliver extension programs for livestock producers, agricultural producers, land managers, pest management professionals, public agencies, Master Gardeners, 4-H groups, and the public.

Extension activities will include rodent management workshops, general vertebrate pest advice, agency briefings, field days, webinars, bilingual factsheets, decision-support tools, and train-the-trainer resources. Topics will broadly cover vertebrate pest management, with a heavy emphasis on management of various rodent species that could include California ground squirrels, tree squirrels, gophers, voles, rats, mice, and rabbits. The Advisor will also serve as a

neutral, science-based resource where stakeholders hold conflicting values regarding wildlife conservation, crop protection, public safety, and animal welfare.

Research: The Advisor will conduct applied research that supports management decisions and extension programming, with a special emphasis on the development and evaluation of IPM programs to address high-priority vertebrate pests in agricultural crops including ground squirrels, tree squirrels, gophers, voles, rats, mice, and rabbits. Topics of interest will include: develop best practices for using existing chemical tactics; develop and test alternatives to chemical tactics, such as fertility control and the use of predators to control rodents; develop and test methods to manage pests of public health significance in post-harvest environments; quantify the economic damage caused by vertebrate pests; and develop and test tools for organic growers to manage vertebrate pests.

The program will require collaboration across wildlife ecology, vertebrate pest management, crop production, environmental economics, regulatory policy, and extension education. Outputs will include peer-reviewed publications, UC ANR and UC IPM resources, California Agriculture articles, technical reports, popular articles, policy briefs, and extension materials.

UC ANR network: The Advisor will be part of a team of academics working on IPM and crop production issues with projects at University of California West Side Research and Extension Center, which is centrally located within a major production area of these commodities. The entomology/IPM specialization is a complement to a team located in these counties who work in the entomology, arthropod, and vertebrate pests management. In addition, this position would be complementary to IPM positions in other production areas or other crops within this area and could provide opportunities for systems approaches to management challenges. This position strengthens ANR's capacity in the Central San Joaquin Valley to conduct collaborative grant-funded multi-disciplinary, impactful projects that benefit all Californians. The expertise brought by this position increases the capacity of academics that work at the West Side and Kearney REC's, and the UCCE offices in Madera, Fresno, Kings, and Tulare counties by filling this disciplinary void with different production systems in San Joaquin Valley. In addition, an Advisor with entomology expertise strategically located in this massive production area can serve as a research partner to encourage academics at other UC campuses and AES scientists to engage in this critical technical area or research and extension.

Network external to UC ANR: The Advisor is expected to network with both academic and non-academic clientele and serve as an educator at workshops and symposia (e.g., PAPA, CAPCA, Vertebrate Pest Council [VPC], ANR's Integrated Pest Management Program area and similar events). The Advisor will actively network and participate with other agencies and groups involved in vertebrate pest management issues and policy (CDFW, CDFA, CDPR, CDPH, USDA APHIS Wildlife Services, US EPA, County Agricultural Commissioners, commodity boards, and others) through both extension and research activities. The importance of interaction with nonprofit and conservation organization should be recognized.

Support: The WSREC is a strategic and ideal location for this position, as it lies within the most diversified, intensively cropped region of the state and the most productive region in the state. In addition, the region is a national leader in the production of crops such as tomatoes, onions, cotton, sorghum, garlic, melons, sugar beets, and many others. The region produces a major percentage of these crops nationwide. This diversity is associated also with the diversity of rodents that cause huge damage to the industry in the region. Therefore, adequate and timely IPM advisory services related to vertebrate pest management are critically important for sustainable agricultural production in this region. Increasingly unpredictable climatic conditions impact natural systems as well as these large intensive cropping systems, making the vertebrate pest more problematic. This makes this research and extension interventions critically important more than ever before. The UC West Side Research and Extension Center (WSREC) represents a rare opportunity for an advisor position at a Research and Extension Center strategically located in a region facing multidimensional challenges centered on annual and perennial crops. WSREC provides a location to conduct research and extension for a variety of crops/cropping systems utilizing different soil types and water sources with different qualities (groundwater, surface water and saline water). Office and laboratory spaces are available for this position, including office supplies, IT, and internet and telephone access. Administrative and technical support will be provided by the UC Entomology Team. While the successful candidate is expected to support their research and extension program primarily with competitive extramural funding, additional support funding is provided by UC ANR. Additionally, WSREC is well-equipped with training and outreach facilities that will be a great asset for this position in implementing extension activities in collaboration with CE advisors and specialists at the Center. KREC, under the same administrative leadership and only one hour apart, provides additional direct connections and interactions with more academics at that location. This model has worked well in the past and currently works well for CE Advisors housed in both centers.

This position will be housed at WSREC, covering Madera, Fresno, Kings, and Tulare counties. Therefore, transportation support is expected to be provided by the served counties.

Other support: Financial support will be competitively available from various sources, including the CDFA Vertebrate Pest Control Research Advisory Committee (VPCRAC), Federal and Regional IPM grants, commodity boards, CDPR, CDFA grants, and gifts in support of research.