

Mosquito Control Specialist

Position description. General disciplinary focus of position is medical entomology and/or vector biology. Qualifications required for the position are PhD or equivalent degree, 10 years experience at an academic institution or in a government public health, veterinary, or equivalent agency. Units supporting this position include academic programs within the University of California (UC), public health programs in vector biology and control in the California Department of Public Health (CDPH), regulatory programs in the California Department of Pesticide Regulation, the California Water Resources Control Board, and the mosquito and vector control programs carried out by the 70 tax supported special districts that comprise the Mosquito and Vector Control Association of California (MVCAC) and its non-profit affiliated Mosquito Research Foundation.

Justification. In spite of many years of research carried out by UC on the biology and control of mosquitoes and other vectors associated with diseases of people, domestic animals, and wildlife, such diseases continue to be important health threats in California. Since 2003, for example, there have been 3,201 cases and 92 deaths of a disease caused by the mosquito-borne West Nile virus, for which there is no vaccine or cure. The virus also causes fatal disease in horses. Certain species of ticks continue to transmit pathogens to people in California causing the debilitating ailment known as Lyme disease. Many other vector-related diseases continue to result in public health, veterinary, and wildlife problems. Until recently, a formal program mandated and funded by the state legislature for research on the biology and control of mosquito vectors and administered by the Office of the UC President served the dual role of providing research funds for UC faculty as well as a cooperative extension function coordinating information exchange among UC campus faculty, mosquito and vector control agencies, and several state agencies such as the Department of Public Health. The recent loss of this program has left an enormous gap in research activity, but more importantly, in any Cooperative Extension information exchange in this vital area. In 2012, the Division of Agriculture and Natural Resources (ANR) severed the last official mosquito- or vector-related link between UC and the MVCAC and the CDPH when Drs WK Reisen of the Center for Vectorborne Diseases at UC Davis and WE Walton of the Department of Entomology at UC Riverside were discharged of their duties as official liaisons or 'Points of Contact'. At present there is no longer a formal connection in the area of mosquitoes and other vectors between UC and other relevant state agencies and the local control agencies comprising a client group that protects ca. 85% of the California population from mosquito and other vector related diseases. Thus, a relationship that goes back to the early 1930s has been completely severed.

This weakening of UC participation in problems presented by mosquitoes and other vectors comes at a time when vector and disease control problems have continued to arise and mitigation has become ever more complicated. Situated on the Pacific Rim with the world's 8th largest economy based largely on trade, tourism and agriculture, California is at continued risk for the importation of new public, veterinary and wildlife health problems associated with vectors and vectorborne disease. The invasion of California and the on-going West Nile virus epidemic has cost California billions of dollars in health care costs, blood donor testing, equine losses and vaccination programs, wildlife and zoo collection protection efforts, and emergency mosquito control. The recent invasion of Los Angeles by the Asian Tiger mosquito, *Aedes albopictus*, has the potential to alter markedly how Californians enjoy their outdoor environment and puts residents at risk for the invasion of new viruses that cause dengue fever and chikungunya arthralgia.

Presently, mosquito and vector control, and the pesticides that form an important tool in management strategies, have a broad range of public and private interest groups. These range from people that live in proximity to habitats where vectors thrive, to groups that have great concerns about deleterious effects of pesticides. For a variety of reasons, the number of pesticides available for vector control operations has been markedly reduced and federal Clean Water Act restrictions on applications of almost all pesticides in or around water has presented new and unprecedented problems. What is vitally needed in these completely changed social environments of the 21st Century is a robust research effort carried out by UC, and a strong cooperative extension program to not only serve as a link among the many agencies now

involved in policies regarding mosquito and vector control, but also to develop and disseminate honest and credible information among the public and the various stake holders in this area.

Extension. A specialist in this position would re-establish the link between UC and the many state and local agencies with responsibilities in conducting mosquito and vector control operations and with state and local agencies with regulatory responsibilities in control strategies, especially those involving pesticide applications. The number of these agencies has grown significantly within the last decade. The specialist would also evaluate all presently available publications in this area and begin a systematic review to update them for conformance with new information and new public policies. The specialist would serve as a formal liaison between UC and the Mosquito and Vector Control Association of California and the CDPH. The specialist would work in conjunction with other UC faculty to identify key research areas and then with ANR and UC faculty to coordinate and initiate research and development programs funded through the ANR Strategic Initiative program, the newly formed Mosquito Research Foundation affiliated with MVCAC, or national agencies such as NIH, CDC and NASA.

Research. The major function of the new position will be to delineate current problems and coordinate with UC faculty in the development of research programs to address these issues. Research needs have ranged widely from the development of improved surveillance diagnostics, new biochemical and molecular genetic assays to test mosquitoes for insecticide susceptibility, mechanistic models to understand the spread of an invading arbovirus such as Rift Valley Fever Virus after a point source introduction, and developing new internet tools to manage and report surveillance data. The new specialist would work with both MVCAC client agencies and UC researchers to assure translational products from research for operations.

ANR Continuum. The new specialist position would extend the agriculture focused ANR program into a new area of mosquito biology and control, thereby augmenting the capacity of ANR and impacting the well-being of Californians. This position would interact with water management, rice and wetland advisors in assuring that their recommendations and programs are combatable with mosquito management strategies.

Support. Logistic support needs should be minimum and limited to travel to regional and state meetings as well as field areas. Research support would be obtained through the ANR Strategic Initiative grant program or through other competitive extramural funding programs.

Location. It is recommended that the new position will be located at UC Davis, because of the proximity of UC units such as the Center for Vectorborne Diseases, the School of Veterinary Medicine, the strong UCD faculty interest in mosquito biology, ecology and control, the proximity to the state capital, the headquarters of the CDPH, and the central office of the MVCAC.