

Pollinator Health Postdoctoral position

A Postdoctoral Research Associate position is available at the USDA-ARS Invasive Species and Pollinator Health Research Unit located in Davis, California. The research team is seeking a broadly trained biologist that has experience with bees and plant-insect interactions. Ideal candidates will possess a thorough knowledge of chemical ecology, insect behavioral ecology and insect physiology. Additional preferred qualifications include strong theoretical and statistical skills, and proficiency in experimental design and data analyses. Supplemental knowledge of molecular techniques (ID plant pollen, genotype bees *etc.*) and floral chemistry are desirable. Demonstrated ability in oral and written communication of research results is required. The successful candidate will participate in research projects that integrate longitudinal studies and apply nutritional ecology framework to improve honey bee health and colony performance. Building on the applied value of plant-pollinator mutualisms and chemical ecology, the successful applicant will develop tools to assay colony and worker performance under laboratory and field conditions and explore interactions between the different honey bee genotypes and their nutritional environment.

Qualifications: Ph.D. in biology, ecology, entomology or a closely-related field.

US citizenship is preferred.

To apply, please send an application package that includes a cover letter, current CV and contact information for 3 references to arathi.seshadri@usda.gov

The position is funded for an initial period of 2 years but may be extended based on performance. A comprehensive benefits package is included.

Review of applications will begin immediately and continue until the position is filled. Selected candidate must provide proof of completion of the degree before the appointment can start.

USDA-ARS is an Equal Opportunity Provider and Employer.

Detailed position description:

Research Assignment

The position is a Postdoctoral Research Associate at the USDA-ARS located in Davis, California. The broad goal of our research is to understand factors contributing to losses in managed honey bee populations and developing guidelines to mitigate these losses. Specific research projects are aimed at assessing the effects of nutritional factors and their interactions with honey bee behavior and colony performance under varied levels of biotic and abiotic stresses. The focus will be on conducting controlled laboratory experiments in conjunction with small and large scale field studies to identify the dietary factors that influence individual and colony level performance.

1. Assigned Responsibility

The successful candidate will conduct independent and collaborative research on the effects of nutrition on honey bee health, behavior, and colony performance by integrating parameters relating to nutritional ecology with parasite, pathogen, and pesticide tolerance through longitudinal studies to support the objectives of the long-term research project. The incumbent will work as a member of a research team that includes a supporting technician. With approval from the supervisor, the incumbent will work with other scientists within the Research Unit, in other Units at the WRRC, and with scientists outside of ARS, such as entomologists within the University of California and the California Department of Food and Agriculture.

2. Research Objectives and Methodology

The broad goals of the research projects are to elucidate the nutritional profiles of honey bee colonies, characterize pollen (molecular analyses to determine plant source), identify seasonal deficiencies in honey bee diet and delineate steps to mitigate deficiencies, with a focus on beneficial phytochemicals and their effects on colony success. The successful candidate will participate in research projects that integrate longitudinal studies and apply nutritional ecology framework to improve honey bee health and colony performance. Building on the applied value of plant-pollinator mutualisms and chemical ecology, the successful applicant will develop tools to assay colony and worker performance under laboratory and field conditions, explore interactions between the different honey bee genotypes and their nutritional environment and study the modulation of important honey bee behaviors as related to colony nutritional state. The work will be published in support of cooperative research efforts conducted by USDA-ARS and regional, state, and Federal agencies that manage land and/or water resources.

3. Knowledge Required

Ideal candidates will possess a thorough knowledge of chemical ecology, insect behavioral ecology and insect physiology. Additional preferred qualifications include strong theoretical and statistical skills, and proficiency in experimental design and data analyses. Supplemental knowledge of molecular techniques (to identify pollen source, genotype bees *etc.*) and floral chemistry are desirable. Demonstrated ability in oral and written communication of research results is required.

Supervision Received

1. Assigned Authority

Within the defined research area, and with approval from the supervisor, the incumbent has authority to select and modify research methods to be applied in the study of the biology and ecology of insects as they relate to the management and study of honey bees.

2. Research Guidance Received

The supervisor provides guidance in selecting the areas of investigation, including the phytochemicals to examine, bee behaviors and genotypes to explore, plant species to target, the research objectives to apply, and the formation of research teams to address research problems.

3. Review of Research Results

The incumbent is responsible for generating and interpreting research results, and keeping the supervisor informed of these results. The incumbent is free to consult with others when seeking technical input into the interpretation of the results. Manuscripts resulting from the research will

be planned and written by the incumbent with participation and oversight by the supervisor and will be subject to review by the Research Leader and other peers according to standard ARS policy.

4. General Supervision

The research is planned and conducted by the incumbent with approval from the supervisor, who assists in determining the direction of the work. Within this framework, the incumbent is responsible for conducting experiments and for summarizing and analyzing data without direct technical supervision. The incumbent may consult with the supervisor on technical issues as needed.

Guidelines and Originality

1. Available Literature

The effects of nutritional factors on the short-term health and biology of honeybee workers is a growing field of research. Available scientific literature on dietary needs of healthy honey bees, techniques for the assessment of need, behavioral expression based on nutritional status, plants sourcing the pollen and seasonal variation in pollen quality and quantity is limited. Additionally, information on the long-term effects of hive and agroecosystem management and how they modulate colony health and performance in responses to environmental stressors is limited.

2. Originality Required

This work will require originality, including the development of new techniques, or adaptation of techniques used on different insects or for different purposes. Thus, a high degree of originality must be used in designing and interpreting new experimental methods in the study of honey bee health.