



CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

**POLLINATOR COMMUNITY WEBINAR**

**Monday, June 24, 2013, 1:00 pm – 3:00 pm**

CDFA Room 133, 1220 N Street, Sacramento, CA 95814

**MEETING SUMMARY**

**Contents**

1. Action Items ..... 1

2. Welcome and Opening Remarks..... 1

3. Presentation: Review of Current CDFA and USDA ARS Research Efforts ..... 2

4. Shared Presentation: Other Current Research Projects ..... 3

    Existing research areas..... 3

    Existing project areas ..... 4

5. Discussion: Future Research Needs in California ..... 5

    Potential criteria for prioritizing research needs ..... 5

    Potential research needs..... 5

6. Discussion: Potential Bee Forage and Pasture Projects..... 6

7. Closing Remarks ..... 8

8. List of Attendees ..... 8

**1. Action Items**

1. Jason Leathers to distribute link to *USDA Report on the National Stakeholders Conference on Honey Bee Health*.
2. Jason Leathers to distribute raw notes taken in real-time to participants, and (later) the meeting summary. Note: the raw notes distributed on June 24 were not an official meeting summary.

**2. Welcome and Opening Remarks**

Dr. Jason Leathers, Primary State Entomologist, CDFA, opened the webinar and thanked participants for attending. He encouraged participants to provide input on the topics identified, and reiterated the meeting goals:

- To update both the pollinator community and the Department on current research efforts.

- To engage the pollinator community in identifying gaps in current research and prioritizing critical research needs for California.

### 3. Presentation: Review of Current CDFA and USDA ARS Research Efforts

Dr. Jason Leathers, CDFA, provided an overview of current major research efforts by CDFA and the USDA Agricultural Research Service (ARS). He first presented two videos on the importance of bees in California and current bee pollinator issues: "[Blossom Buddies - Part 1](#)" and "[Blossom Buddies - Part 2](#)." The following key points were addressed:

- Bees are necessary for California's agriculture industry to pollinate crops such as almonds, California's largest export crop.
- Migratory bee operations transport hives to help pollinate crops in California and other states, but recently there has been high bee colony mortality.
- No one variable correlates strongly to the high colony mortality, but there are various hypothetical contributing factors: lack of forage plants causing malnutrition, parasitic *Varroa* mites that can also transmit viral diseases, and a mixture of pesticides.
- Some research projects, such as those by Project Apis m (PAm) and CDFA, create forage plots to determine which plants are best for complementing crop plants by helping to provide diverse and balanced nutrition for bees.
- Forage restoration is key for improving the continued health of migratory bee colonies.

Dr. Jason Leathers then gave a PowerPoint presentation that provided a synopsis of the major current CDFA research efforts. The following key points were discussed:

- The current CDFA responsibilities in regards to bees includes:
  - Registering bee hives with bee brands
  - Providing information, training, and resources (e.g., water for bees) to border stations
  - Understanding and following label instructions for pesticides, and
  - Supervising CEQA issues and permits as they might affect bees (e.g., preventing introduction of non-native bumblebee subspecies).
- In 2012, the USDA compiled a document that addressed current research issues for honey bees in the US – *Report on the National Stakeholders Conference on Honey Bee Health*. This document provides more comprehensive detail on the main areas of research. Some primary areas of research included:
  - Genetics (e.g., breeding strains of bees that are resistant to the *Varroa* mite parasite)

- Pathogens and parasites (e.g., bees' increased susceptibility as *Varroa* becomes more chemical-resistant)
- Chemicals (e.g., additive sub-lethal effects of pesticides)
- Health and nutrition (e.g., availability of food for a balanced and nutritious diet, digestive tract's microbiology and nutrient synthesis, and immune response to nutrition and travel stress)
- Habitat conservation (e.g., buffer forage strips of wildflowers, overwintering sites, and pesticide refuges)
- Future research will need to consider how land use patterns are changing (e.g., weed control, efficient drip irrigation, and decreasing food availability).

Questions and/or clarifications:

There were no questions of clarification or follow-up questions.

**ACTION ITEM:** Jason Leathers to distribute link to *USDA Report on the National Stakeholders Conference on Honey Bee Health* to webinar participants.

#### 4. Shared Presentation: Other Current Research Projects

All participants were invited to share other industry and non-government organizations' current research interests and projects. The following key points were discussed:

- Many of the current CDFA research areas coincide with other current research projects.
- The pollinator issue may be particularly critical for California, but research projects require collaboration among governmental agencies, research institutions, non-governmental agencies, and private entities across state and national borders, for example, the entire American Southwest.
- CDFA Secretary Karen Ross visited the meeting, thanking participants and emphasizing the opportunity to bring together different members of the bee community. She encouraged the group to continue to identify ways to coordinate efforts and collaborate, especially in this period of limited funds.

#### Existing research areas

The following list includes the examples provided by Dr. Leathers as well as webinar participants.

- Genetics
  - Breeding strains of bees that are resistant to the *Varroa* mite parasite
  - Discovering new virus(es)
- Parasites and pathogens:

- Investigating potential increased bee susceptibility as *Varroa* becomes more resistant to pesticides
- Controlling *Varroa* through fungi
- Chemicals
  - Determining sub-lethal effects on bees of additive chemicals (e.g., fungicides, pesticides, Insect Growth Regulators (IGRs), etc.)
  - Creating a pesticide database for tracking and ongoing re-evaluations
- Health and Nutrition
  - Determining adequate forage availability in terms of quantity and nutritional quality
  - Analyzing the bee's digestive tract's microbiology and nutrient synthesis
  - Exploring the bee's immune response to nutrition and travel stress
  - Investigating effects of diverse landscape composition on forage availability
- Ecology
  - Improving stock
  - Exploring wild and native pollinator synergies and competition
- Habitat Conservation
  - Establishing buffer forage strips of wildflowers, overwintering sites, and pesticide refuges
  - Establishing and protecting habitat in agricultural areas (including almond areas)
  - Mitigating detrimental habitat impacts in agricultural and non-agricultural areas
  - Evaluating existing conservation programs
  - Analyzing nest/egg-laying site distribution
  - Analyzing nesting biology for ground-nesting bee species
  - Searching for potential refuges from pesticides (including refuges within field)

## Existing project areas

- Education and Outreach
  - Engaging farmers to increase awareness and understand their perspectives
  - Informing public and private managers of Best Management Practices (e.g., creating refuges for pollinators)
  - Developing training tools for professional applicators and producers to use on their property
- Technical tools
  - Creating databases for pesticides and for plants that support bee nutrition
  - Developing disease identification tools
  - Identifying rest and habitat sites for land managers
- Inter-agency collaboration on pollinator risk assessments

- Pesticide label improvement
- Block grants (e.g., USDA Conservation Innovation Grant, Integrated Crop Pollination (ICP) project block grant)

## 5. Discussion: Future Research Needs in California

Discussion was then opened to all participants to identify future research needs for bee pollination in California, and also to suggest criteria that could be used to prioritize these research gaps. The following key points were discussed:

### Potential criteria for prioritizing research needs

- The research focuses on critical questions and unknowns (e.g., bee biology, pesticide synergies, etc.)
- The research supports both native and commercial bee viability
  - Adequate stock of bees
- The research is a coordinated, collaborative effort
  - Includes national level coordination
    - Corn Dust Research Consortium is a good example
  - Utilizes and improves existing programs
  - Engages beekeepers in research efforts
- The research engage and builds stakeholder buy-in
  - Practical significance for beekeepers and farmers
    - Example stakeholders include farmers using pesticides, applicators, regulators, equipment manufacturers, trade associations, producers, etc.
  - Need to understand and address stakeholder concerns (e.g., pesticides, antibiotics, production, land fees, etc.)
    - Citrus industry is good example of buy-in
    - California Almond Board has also been heavily involved in bee research
  - Need buy-in from growers who do not require pollinator services

### Potential research needs

- Parasites and pathogens
  - Control *Varroa* (e.g., breeding resistant bee strains, chemical control)
- Chemicals
  - Analyze various aspects of numerous pesticides, their synergies, and their impact on the entire bee colony
  - Identify factors of pesticide application that significantly affect honey bee health (e.g., timing of application, combination of pesticides, effects of adjuvants, etc.)

- Trace residual toxicity over time after pesticide application, and how environmental factors might affect toxicity persistence
- Investigate sub-lethal and chronic effects that affect colony health (e.g., bees' temperature-dependent metabolism cannot keep up with sub-lethal residual permethrin during the cold winter season)
- Review pesticide use in forest management with potential persistence in the soil
- Health and Nutrition
  - Analyze processes in the bee's digestive tract – gut biome and absorption of macro/micronutrients
  - Describe nutrient content of forage plants (e.g., trace minerals and complete amino acid profiles)
  - Determine effective seed mix compositions that are suitable for California's habitats and climates, and provide adequate forage diversity and nutrition
- Ecology
  - Identify types of high quality habitat available to bees within their flight distance, and analyze associated variables
  - Estimate carrying capacity and other limiting factors for high quality habitat
  - Explore indirect factors impact on pollinator health at a certain site and off-site interactions (e.g., interaction with adjacent lands at the landscape level)
- Education, Outreach, and Practical Application
  - Investigate public's perceptions and values. For example, what do they consider acceptable agricultural practices?
  - Create a procedure for planting seed mixes and continued maintenance
  - Develop commitment and support for providing habitat or providing access to existing habitat
  - Improve pesticide labels to cover the numerous tree crops and ornamentals
  - Identify native bee species that are the most effective pollinators for specific crops. Can some of these native bees become "managed pollinators", and if so, how?

## 6. Discussion: Potential Bee Forage and Pasture Projects

After identifying future research needs, participants were asked to identify potential bee forage and pasture projects. The following key items were suggested:

- Health and Nutrition
  - Develop suitable seed mixes to provide adequate forage nutrition
    - It requires 1-2 colonies per acre of mature almond groves for pollination, but often the grower will have more colonies as insurance. This is a daily

- quantitative requirement, but bees will also need to forage on other plants to receive quality, diverse nutrition.
          - Planting forage can be constrained by the quantity and quality of plants, and the suitability of plants to California’s changing climate (e.g., drought periods, changing water use plans, etc.)
        - Continue monitoring and assessing what plants work
- Management
  - Expand integrated pest management (IPM) programs to include pollinator protection as IPM protocol
  - Increase access to public right of ways, canals, roadways, and underneath high tensions wires to improve forage diversity
  - Incorporate multi-use landscapes into conservation/management planning – build compatible and supportive habitats across agricultural, urban, and corporate lands to increase forage availability and diversity
  - Address critical management limitations and constraints for bee health improvement projects
    - Example would be irrigation ditches and canals and policy barriers. County irrigation districts do not allow vegetating these areas, even though they would be good forage connection pathways
  - Explore opportunities for collaboration with management authorities such as Irrigation Districts
  - Develop best management practices (BMPs) to reduce pesticide impacts (e.g., timing, pesticide use, etc.)
  - Need enhanced ARS presence regarding pollination in California to provide additional resources to address problems
  - Emphasize improving exotic species management as this will benefit bee health
- Education and Outreach
  - Educate landowners and growers of existing forage benefits and supportive actions (e.g., avoid spraying and mowing, allowing bloom to continue for a longer period)
  - Address landowners’ concerns and develop methods for encouraging forage planting
    - Concerns often include the cost of water, the additional labor, the effects of weeds, CEQA compliance, zoning issues, etc.
    - Incentives could include funding for seeds or identification of opportunities for economic return (e.g., growing specialty oilseed crops)
    - Example would be the tricolored blackbird where dairy farmers received monetary compensation for protecting nests by delaying harvest

- Compensation is costly, but NRCS does provide cost-share assistance for providing forage, hedgerows, bee pastures, etc.
  - Engage and support professional beekeepers at border stations with informational handouts and encourage registration (e.g., PAm has outreach material for border stations)
  - Improve border guard training, including proper shelter procedures
- Multi-use landscape research
  - Explore indirect effects and connections of adjacent, off-site factors on pollinator health at a certain site and at the landscape level (e.g., timberland management incorporating bee habitat restoration and protection)
  - Monitor pollen use over different landscapes
    - Develop model that describes pollen use from different landscapes
    - How much landscape should be incorporated and what type of landscape
    - Existing model in its infancy through the ICP project
- Tools and Protocols
  - Develop methods for information and technology to be transferred to beekeepers for quick and practical application
  - Develop planting procedures promoting native wildflowers and prevent non-natives

**ACTION ITEM:** Jason Leathers to distribute raw notes taken in real-time to participants, and (later) the meeting summary. Note: the raw notes distributed on June 24 were not an official meeting summary.

## 7. Closing Remarks

Dr. Jason Leathers, CDFA, and Dr. Robert Leavitt, CDFA, delivered closing remarks and next steps. They emphasized the importance of collaborative events such as these, which bring together diverse constituents of the pollinator community. With diminishing funds and resource allocation, strengthening these relationships with other agencies and research institutions will be key for developing successful projects and programs.

CDFA welcomes feedback from all affected parties and encourages participants to invite additional industry and public representatives to these events. CDFA would like to meet again for updates and tracking progress, and looks forward to additional meetings in the future.

## 8. List of Attendees



On-Site:

1. Richard Bireley – Department of Pesticide Regulation (DPR)
2. Gene Brandi – American Beekeeping Federation
3. Nick Condos – CDFA
4. Dorian Fougères (facilitator) – Center for Collaborative Policy
5. Jessa Guisse – Xerces Society, Pollinator Conservation Center
6. Christi Heintz – Project Apis m (PAm)
7. Jason Leathers – CDFA
8. Robert Leavitt - CDFA
9. David Pegos – CDFA
10. Duane Schnabel – CDFA
11. Austin Webster – CDFA

Webinar:

1. Carolyn Cook – CDFA
2. Will Crites - Hobbyist
3. Laurie Davies Adams – Pollinator Partnership
4. Casey Estep – CDFA Webinar Coordinator
5. Stephanie Horii - CCP
6. Marilyn Kinoshita – Tulare Co. Ag. Commissioner
7. Thomas Moore – USDA-NRCS
8. Joseph Morse – UC Riverside
9. Eric Mussen – UC Davis
10. Justin Oldfield – California Cattlemen’s Association
11. Robbin Thorp – UC Davis
12. Mace Vaughan – Xerces Society
13. Gordon Wardell – Project Apis m (PAm) and Paramount Farming
14. Neal Williams – UC Davis Entomology
15. Vicki Wojcik – Pollinator Partnership