USDA Activities Addressing Pollinator Protection

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USDA Office of Pest Management Policy
President’s Pollinator Task Force

Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators

• Task Force co-chaired by USDA and EPA

• Includes heads, or designated representatives, from 15 Depts/agencies

• **National Pollinator Health Strategy** which shall include explicit goals, milestones, and metrics to measure progress
  
  • Pollinator Research Action Plan
  • Public Education Plan
  • Public-Private Partnerships
  • Plans to Enhance Pollinator Habitat

• Expected Release Date of Strategy: Spring 2015
USDA Agencies

Research, education and outreach, & providing technical assistance to land owners

- ARS
- NRCS
- FSA
- APHIS
- NIFA
- USFS
- NASS
- ERS

complex mix of factors affecting pollinators

emphasizing longitudinal studies and meta-analyses in USDA research priorities

A longitudinal survey is a correlational research study that involves repeated observations of the same variables over long periods of time — often many decades.
4 honey & non-Apis bee research labs across the United States

- Bee Research Lab, Beltsville, MD
- Honey Bee Breeding, Genetics & Physiology; Baton Rouge, LA
- Carl Hayden Bee Research Center, Tucson, Arizona
- Bee Biology And Systematics Laboratory, Logan, UT

✓ For FY15: longitudinal studies ($1.3 M), and a cryopreservation of bees (with a focus on embryos) project at Fargo to develop a Bee Genebank (housed at Ft. Collins, initially using bee semen)

✓ For FY16, $7M focus - expand on longitudinal studies, conduct research on varroa control, pesticides (sub-lethal effects), bee disease, and providing better nutrition/forage for bees, etc.
Bee Research Lab, Beltsville, MD

Lab focuses on using microbiological, genomic, physiological, and toxicological approaches to improve bee health

- Manipulate honey bee immune responses for disease res.
- Look for new pathogens
- Exploit gut symbionts to help defend bees against disease
- Use genomic information to develop novel controls for parasites, e.g., controls based on RNAi strategies

*Bee disease diagnostic service*
Bee Research Lab - Projects

- Determine the impacts of physiological stress on worker and queen development and longevity, including that caused by overwintering and unbalanced diets. (Chen, Cook, Corona, Evans, Pettis)
  - Impacts of nutrition on behavioral development, immune response and susceptibility to disease
  - Determine effects of dietary fatty acids on HB colony survival.
  - Improve queen fecundity and longevity through better nutrition.

- Impacts of in-hive and environmental pesticides on bee health, including sub-lethal effects and interactions with bee pathogens
- Synergisms between chemical exposure and disease
- Determine whether pesticide exposure increases oxidative stress in HB
Bee Research Lab

- Develop and test hive-level treatments against mites and other bee threats. (Corona, Pettis)
  - Develop best practices for mite control, and colony health for migratory commercial beekeepers.
  - Develop colony management strategies for improved queen health.
Honey Bee Breeding, Genetics & Physiology
Baton Rouge, LA:

- Breed and Develop Honey Bee Stock with Useful Economic Traits
- Improve Honey Bee Management

The program is a unique blend of traditional breeding and molecular biology

Mite-resistant honey bees

The goal: Healthy colonies to pollinate crops

The products:
- Russian honey bees – a complete stock currently in use
- Bees with ‘varroa sensitive hygiene’ - a breeding trait under development
Expanded Scope: Evaluate the impact of honey bee exposure to pesticides on winter survival

- ARS Baton Rouge; ARS Stoneville; ARS Poplarville
- LSU Entomology
- Golden Ridge Honey Farm, Iowa
Carl Hayden Bee Research Center
Tucson, Arizona:

- Role of Microbes to process and preserve food
- Nutritional analysis of pollen and bee bread
- Physiology, chemical ecology and behavior
- Colony population dynamics
- Role of nutrition in mitigating effects of Varroa
- Effects of fungicides & neonicotinoids on the ability of bees to acquire, digest and metabolize nutrients
- Role of nutrition on queen pheromone production and queen longevity

Longitudinal study of migratory stress on colony health
Effects of pollinator plantings on colony health and survival (honey bee collecting pollen from rapini (*Brassica rapa*) florets and a field planted with rapini)
Bee Biology And Systematics Laboratory, Logan, UT
development of non-Apis bees as crop pollinators

Management of the Blue Orchard Bee (Osmia), leafcutter (Megachilidae) & Bumble Bees (Bombus spp.)
• Rearing • Supply • Dispersal/retention • Disease & pest control
• Nest materials/shelter designs • Nest site distribution
• Disease & pest • Economic feasibility • Molecular genetics
• Pollination studies • foraging studies •

◆ New project: Pesticides and bees
  ✤ understand the interactions of pesticides and pathogens
  ✤ effects of fungicides on bumble bees and mason bees in blueberry fields, especially in protected cultivation
◆ New project: Impact of Pest Detection Lures on Bees
◆ Systematics & Biodiversity
  ✤ Phylogenetic Analyses of Megachilidae
  ✤ Revisions of Pollinating Genera: interactive ID guides
  ✤ Document the native bees of western U. S.
USDA National Institute of Food and Agriculture (NIFA)

NIFA Funding of Pollinator Projects > $10.1M

- Agency Scientists
- Land-Grant Scientists

### All Federal Funded Projects

<table>
<thead>
<tr>
<th>Wildlife Type</th>
<th># Projects</th>
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<tr>
<td>Native Bee</td>
<td>38</td>
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<td>Wasps</td>
<td>20</td>
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<td>Moth/ Butterfly</td>
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<tr>
<td>Fly</td>
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<td>Vertebrate</td>
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### Federal Funding Agencies

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<th>Agency</th>
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<td>SI</td>
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<td>USDA</td>
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</table>
USDA Farm Service Agency (FSA)

Conservation Reserve Program (CRP) – 24.1 million ac nationwide

• Helps farmers voluntarily remove environmentally sensitive land from ag production to improve environmental health and quality

• Long-term goal: re-establish valuable land cover to improve water quality, prevent soil erosion, and reduce loss of wildlife habitat

• Pollinator Habitat Planting CP-42 - 110,000 acres currently enrolled; evaluating additional CRP land for pollinator friendly habitat

native plant species - flower throughout growing season; diversity of pollen sources for proper nutrition

All producers receive:

• Annual rental payment

• Cost share payment – 50 percent of establishment cost

• If enrolled in Pollinator Habitat Initiative producers also can sign-up on a continuous basis and receive: Practice Incentive Payment (PIP) – 40 percent of establishment cost

• One time $150 per acre Signing Incentive Payment (SIP)
Conservation Reserve Program

New HoneyBee Initiative

- $8 million initiative to establish honeybee forage habitat within existing CRP grasslands >22M ac
- Available in 5 states (MI, MN, ND, SD, WI): cost share up to $120/ac to establish honey bee friendly covers
- Provides incentives to CRP participants to enhance CRP covers during mid-contract management
- Uses cost-effective honeybee seed mix developed by NRCS
- Customized procedures based on local knowledge of State Technical Committee
- Potential for the large positive impact on honeybees through improving grassland covers

New for 2015: FSA/USGS/NRCS study assessing pollinator covers in 11 states (CO, IA, MI, MN, MT, NE, ND, SD, TX, WA, and WI) - monitoring the effectiveness of USDA conservation programs to enhance honey bee nutrition and health
Emergency Assistance for Livestock, Honeybees and Farm-Raised Fish Program (ELAP)

- Provides assistance for the loss of honeybee colonies, in excess of normal mortality (17.5%), due to natural causes
- 2012 and 2013 ELAP, over 1500 applications totaling over $36 million in losses were received
- Approximately $28 million (funds available) in payments are being issued to help beekeepers rebuild their hives and remain solvent.

State Acres For Wildlife Enhancement (SAFE)

- Provides participants annual rental, cost share, and incentive payments to establish specific State identified wildlife habitat within CRP
- Michigan is using SAFE to encourage CRP participants to establish a diverse stand of grasses and wildflowers designed to benefit pollinators
- Michigan FSA developed agreements with the Michigan Department of Agriculture, and Michigan Fruit and Vegetable Associations.
Natural Resources Conservation Service

Honey Bee Effort Focus: North Central States
Financial Assistance to Producers

- Environmental Quality Incentive Program (EQIP)
- Conservation Stewardship Program – (CStP)

- Conservation Cover • Cover Crops • Forage and Biomass Plantings
- Range Planting • Forage Harvest Management & Prescribed Grazing

2014 EQIP Honey Bee Pollinator Effort (Preliminary Data 10.10.14)

<table>
<thead>
<tr>
<th>State</th>
<th>Unfunded Applications</th>
<th>Contracts</th>
<th>Acres</th>
<th>Obligation</th>
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<tr>
<td>Michigan</td>
<td>73</td>
<td>48</td>
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<td>Minnesota</td>
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<td>South Dakota</td>
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<td>74</td>
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<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>226</strong></td>
<td><strong>26,796</strong></td>
<td><strong>$3,255,201</strong></td>
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$4 million in FY 2015
revised and expanded plant lists and technical guidance documents for pollinator forage conservation to maximize opportunities to improve pollinator health available:

https://plants.usda.gov/pollinators/NRCSdocuments.html

Forage demonstration field trials at Plant Materials Centers across the U.S
• National survey of honey bee pests and diseases
• Documents which bee diseases, parasites, or pests of honey bees are present and/or likely absent in the United States

◆ **Primary Objective – Exotics**
  • *Tropilaelaps spp.*, parasitic mite - Asia, feeds on HB brood
  • *Apis cerana*, or Asian honey bee, and
  • Slow Paralysis Virus - not known in U.S. apiaries

◆ **Secondary Objective – Honey Bee Health Evaluation:** ascertain the scope of parasites, diseases, and pests in US apiaries

◆ **All data included in Bee Informed Partnership (BIP) database**

• Better inform all beekeepers with the goal of reducing colony losses
• This information helps place current and future epidemiological studies in context and thus may help investigations of emerging conditions
• Survey performed in collaboration with ARS BRL and the University of MD
The U. S. Forest Service (USFS)

FY 2014: >300,000 acres of pollinator habitat were restored on the national forests and grasslands for increased floral diversity to provide pollinator habitat and improve the health of pollinator populations.

USFS has installed over 100 pollinator gardens at administrative sites across the country:

- outreach to educate the public about pollinators, ecosystem services of pollination
- to enable visitors to replicate pollinator gardens at home.
National Agricultural Statistics Service (NASS)

- Honey Survey (all states but Alaska): provides
  - estimates of the number of colonies producing honey
  - total pounds of honey produced
  - total value of production by state for a production year
  - Honey stocks as of December 15 are also estimated.

NASS also collects information on number of operations with colonies every five years as part of its census of agriculture.

FY 2015: two new colony loss surveys: quarterly and annual

- data on colony numbers, colony loss, newly added/replacement colonies, colony health, and instances of CCD.
- capture data from operations with five or more colonies every three months.
- Questions are also to be added to the current bee and honey inquiry on the costs associated with loss and colony maintenance.
Thank You