Oklahoma

Managed Pollinator Protection Plan

2016

The Oklahoma Managed Pollinator Protection Plan (OKMP3) is being developed in response to a growing need for a balanced public policy that mitigates risk to pollinator species, while minimizing the impact of that mitigation on production agriculture.

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Our goal is improving pollinator protection from all causes without causing undue hardship or economic damage to Oklahoma's agricultural industry.

Oklahoma Department of Agriculture, Food and Forestry ⬣ Oklahoma City, OK ⬣ 2016

Introduction

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), three-fourths of the world's flowering plants and about 35 percent of the world's food crops depend on pollinators to reproduce. Some scientists estimate that one out of every three bites of food we eat exists because of animal pollinators like bees, butterflies, moths, birds, bats, beetles and other insects. Each of us depends on these industrious pollinators in a practical way to provide us with the wide range of foods we eat. In addition, pollinators are part of the intricate web that supports the biological diversity in natural ecosystems that helps sustain our quality of life. Bees are considered the most important pollinators, with honey bees (Apis mellifera) pollinating $15 billion worth of crops each year, including more than 130 fruits and vegetables.

Managed honey bees are important to American agriculture because they pollinate a wide variety of crops, contributing to food diversity, security, and profitability. More than 3,500 species of native bees in the US help increase crop yields. Abundant and healthy populations of pollinators can improve fruit set and quality, and increase fruit size. In farming situations this increases production per acre. In the wild, biodiversity increases and wildlife food sources increase.

Unfortunately, the numbers of both native pollinators and domesticated honey bees are declining. Beekeepers have suffered significant colony losses over the past decade, raising questions about the sustainability of managed honey bees in the U.S. This issue has gained national attention, and in response the USDA created the Colony Collapse Disorder (CCD) Steering Committee in 2007. The Committee is made up of personnel from the USDA's Office of Pest Management Policy, National Institute of Food and Agriculture, Agricultural Research Service, Animal and Plant Health Inspection Service, and the Natural Resources Conservation Service, as well as staff from the U.S. Environmental Protection Agency (EPA), and public and private partners. The CCD Steering Committee was formed to look at factors contributing to honey bee decline. The decline has been attributed to habitat loss, disease, and the excessive and inappropriate use of pesticides. The loss of commercial honey bees to CCD has highlighted how severe the issues of proper hive management are to reduce stresses on bees caused by disease, pesticide use, insufficient nutrition, and transportation practices.

Currently, the pollination services that the commercial beekeeping industry provides are receiving much needed research and conservation resources. The efforts to understand the threats to commercial honey bees should help us understand other pollinators and their roles in the environment as well.

It is imperative that we take immediate steps to help support pollinator populations. By supporting pollinators' need for habitat we support our own needs for food and support diversity in the natural world.

To address this situation the Oklahoma Department of Agriculture, Food and Forestry (ODAFF) is developing an Oklahoma Managed Pollinator Protection Plan (OKMP3). While this plan is specifically written to pertain to managed/domesticated honey bees, many of these principles and practices can also be used to help protect native pollinators.

Oklahoma Managed Pollinator Protection Plan

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The OKMP3 is a multifaceted plan involving multiple stakeholders. These stakeholders include but are not limited to, beekeepers, pesticide applicators, farmers, ranchers, ODAFF, Oklahoma State University Cooperative Extension Service (OSU Extension), Oklahoma Department of Transportation (ODOT), Oklahoma Conservation Commission (OCC), Oklahoma Department of Education (ODE), Oklahoma county commissioners and the public.

This managed pollinator protection plan is not a static document, but a work in progress. We intend to revisit this document and update it as needed.

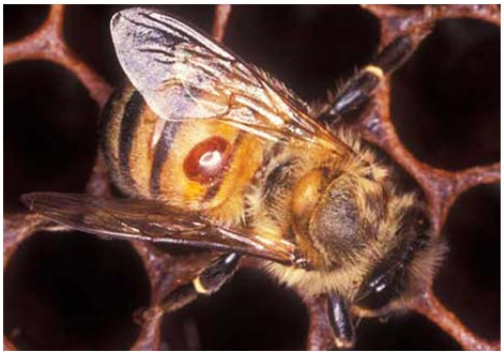
Challenges for Protecting Oklahoma Managed Pollinators--Oklahoma Bee Industry

Managed bees and native pollinators are important to U.S. agriculture. Over 90 crops in the U.S., including almonds, tree fruits, cotton, berries, and many vegetables, are dependent on insect pollinators, such as the honey bee, for reproduction (USDA 2013). Bee-pollinated crops account for 15 to 30 percent of the food we eat (USDA 2013). Although not completely dependent on insect pollination, crops such as canola, watermelons, alfalfa seed production, peaches, strawberries, sesame and sunflowers have been shown to greatly benefit from bee pollination.

The CCD Steering Committee hosted the National Honey Bee Health Stakeholder Conference in October 2012 to discuss multiple factors influencing honey bee health. The committee concluded that there are multiple factors impacting the decline of the honey bee in the United States and that no one factor can be blamed for the declines. These factors include pests, pesticides, parasites, diseases, low genetic diversity and poor nutrition. There are three challenges involved in protecting pollinators; they are those related to beekeepers, those related to crop growers and those related to pesticide users.

Challenges Related to Beekeepers

Beekeepers face the challenging task of keeping their honey bees despite threats of CCD; Varroa mites; Tracheal mites; small hive beetles; bacterial; fungal and viral diseases; declining quality forage; and pesticide exposure. Nationally, year to year colony survival is variable. According to the Bee Informed Partnership nationally the 9 year average annual winter honey bee loss is 28.7%.



Growers and pesticide users cannot help beekeepers manage threats from mites, beetles and the microbes that weaken their hives. They can, however, help with reducing their exposure to pesticides and improving the quality of forage available. Even though Varroa is considered the greatest threat to honey bee colonies, a strong colony can handle the pressures of this tiny creature better than one weakened by various pesticides and poor forage.

Honey bees feed on pollen for their protein source, and utilize nectar for carbohydrates. They must obtain these nutrients from a variety of plants in order to obtain all the essential amino acids and nutrients required to build and maintain a strong hive. Honey bees can become easy targets for pests, predators and pathogens when they do not obtain the proper balance of nutrients. Honey bees provided with high quality forage are better able to handle stressors from all factors including pesticides.

Honey bees are commonly exposed to pesticides either intended for use in agricultural production or in an attempt to rid them of the Varroa mite. Agriculturally-applied pesticides can impact honey bees from direct contact with the insect or by contaminating forage. Beekeepers worry not only about immediate lethal effects from exposure but also the more subtle sub-lethal impacts such as increased brood mortality and reduced adult longevity.

Challenges Related to Crop Growers

Crop growers face many challenges in an attempt to obtain profitable yields. Growers contend with insect pests, diseases, weeds, drought, overland flooding and other factors that impact crop production and quality. They have a variety of pest management tools and strategies to choose from. While growers do not have to try to kill a mite on an insect, they often need to eliminate pests and weeds without impacting yields. They also must consider the timing of pesticide applications with respect to harvest and rotational intervals. Even with integrated pest management (IPM) systems, pests often are able to adapt quickly to different methods, rotations, pesticides, or reproduce so quickly that their populations explode within a short amount of time. Because of the nature of such pests, making timely chemical applications as part of an IPM plan are often essential to manage pests effectively.

Challenges Related to Pesticide Users

Pesticide users face many challenges in Oklahoma. There are over 14,000 registered pesticides in Oklahoma that are used to manage agricultural and non-agricultural pests. In many cases, pesticide applicators have a limited time window to make an application. Factors such as pest infestation levels, temperature, precipitation, wind speed, water levels, use buffers, and presence of pollinators all affect pesticide choices and decisions on when, where, and how to apply pesticides. Applicators also must pay

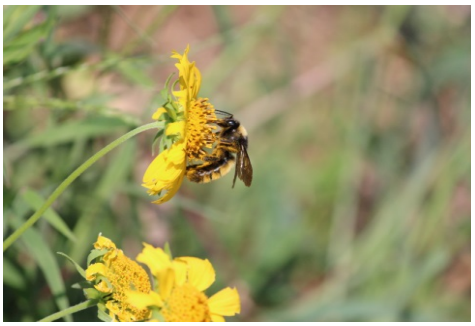
attention to the location of sensitive sites adjacent to treatment sites, such as surface water, endangered species, organic fields, vineyards, and beehives. The ideal time to apply many of these chemicals is likely to coincide with when the pollinators are most active, putting pesticide applicators in a difficult position of balancing pest management needs and protecting pollinators.

Beekeepers can have difficulty finding land with bee forage that will not be exposed to pesticides. Growers face difficult decisions when managing pests and minimizing impacts to pollinators. Pesticide users face challenges with identifying how and when pesticides can be applied to reduce negative impacts on non-target organisms. This plan should demonstrate how all three challenges could be addressed.

Components of the Oklahoma Managed Pollinator Protection Plan

ODAFF will take the lead in promoting pollinator protection by holding various stake holders meetings throughout the state to discuss the goals of a managed pollinator protection plan, requirements by EPA for a pollinator protection plan, review other state pollinator protection plans and seek input from the stakeholders.

- Provide pollinator protection information in the form of presentations and have information available at the ODAFF booth during pesticide and agricultural related industry tradeshows and annual conventions.



- Produce press releases for farmers, home owners, and beekeepers on the importance of pollinators and how they can help protect pollinators. These press releases will be produced on a regular basis and they will be available on the ODAFF pollinator protection website for viewing.

- Develop a website with information on how to protect pollinators with links to other sites promoting pollinator protection. There will also be a link to the USDA Pollinator Protection website and Grants.gov website to make it easier to find money for pollinator protection. Additionally, there will be a link to the Oklahoma Mesonet to view inversion and drift conditions for pesticide applicators.

- Develop and/or promote existing information on safer alternative pesticides to protect honey bees and other pollinators from pesticide toxicity.

- Incorporate pollinator protection information in non-commercial, commercial and private pesticide applicator training material and training sessions in the Agricultural Plant, Forest, Ornamental and Turf, Nursery and Greenhouse, Right of Way, Public Health, Regulatory Pest Control and Research and Demonstration categories.

- Create awareness of and plan activities for the Governors “Oklahoma Pollinator Week.”

- Provide pollinator protection information as part of the Ag in-the Classroom program.

- Seek state or federal grant money to be used to promoting pollinator protection. This will include developing pollinator protection information for home owners, backyard gardeners and farmers. This information will be distributed through pesticide distributors and stores that sell pesticides.

- Expand the sensitive crop registry to include the locations of farm land set aside areas established for pollinator protection so pesticide applicators can avoid spraying pesticides in these areas.

  Evaluate replacing the ODAFF in-house Pesticide Sensitive Location Viewer with one that allows growers and beekeepers to enter or change their own data and that would allow automatic notification to growers in an area where spraying will occur within 24 to 72 hours.

- Work with OSU Extension to promote established Best Management Practices for pollinator protection by the beekeeping industry, farmers, home owners and gardeners, county commissioners, highway departments and educational institutions.

Best Management Practices

Best Management Practices (BMPs) are broadly defined as "economically sound, voluntary practices or a series of production options" that when used prevent or minimize environmental impacts. In the context of pesticides, BMP's encourage the efficient use of pesticides as part of an IPM program. BMPs can also be defined as methods or techniques found to be the most effective and practical means in achieving an objective while making the optimum use of resources and or protecting the environment.

Below is a discussion of the best management practices that beekeepers, crop growers and pesticide users can utilize in order to protect pollinators. Additional BMP practices will be added as they are developed.

Practices for Protecting Oklahoma Pollinators 1--Beekeeper BMPs

- **Work with landowners and leaseholders to choose hive locations.** Ideal hive locations will have minimal impact on agricultural activities but will still have adequate access to forage and water. Avoid low spots to minimize impacts from drift or temperature inversions on hives. Give consideration to timing after rain events when determining which roads to travel. Discuss with landowners preferred roads/trails to use. Beekeepers should also request contact information for applicators, renters, and neighbors (if applicable).

- **Be cognizant of neighboring landowners and leaseholders when placing and moving hives.** Neighboring landowners and leaseholders often use the same roads, trails, and section lines. Do not block these rights-of-way or place hives so close they may cause problems for other land-users. Take appropriate steps to ensure that honey bees do not negatively affect operations of neighboring landowners, such as considering the proximity of hives to the neighbor's yard, trash bins, equipment, or storage sites.

- **Work constructively with applicators when notified of upcoming pesticide applications.** One of the recommended BMPs for pesticide applicators is to contact nearby beekeepers prior to making pesticide applications. Block, move, or net hives when applicators inform you they are going to apply pesticides, or find other strategies to allow pesticide applicators to manage pests while minimizing pesticide exposure to honey bees.

- **Notify landowners, leaseholders and applicators when arriving and when moving hives.** If possible, notify nearby pesticide applicators, leaseholders and landowners when you place or move beehives. This will ensure they are aware of current hive locations and can notify you before making pesticide applications. Contact information for nearby pesticide applicators can usually be obtained from landowners or leaseholders.

- **Obtain landowner permission for hive placement every year and keep in contact.** To help prevent miscommunication landowners and leaseholders should be contacted each year for permission and to update information. This will ensure everyone is aware of hive location and that honey bees have not been placed without permission. This step is imperative to ensure hives do not become a nuisance.

Practices for Protecting Oklahoma Pollinators 2--Landowner/Leaseholder BMPs

- **Work with beekeepers to choose hive locations.** Ideal locations for hives will have minimal impact on farming/ranching operations, but will still allow honey bees to access forage and water. Communicate with beekeepers which roads/trails can be problematic when wet and any preferred traffic routes. Landowners may also want to provide contact information for applicators, renters, and neighbors (if applicable).

- **Communicate with leaseholders about honey bee issues**. Renting land for agricultural production is a common practice. Landowners and leaseholders should discuss honey bee issues, such as who has authority to allow honey bees, how long they will be allowed, and hive placement. These issues should be addressed and included when rental agreements are negotiated.

- **Communicate with pesticide applicators whose responsibility it is to look for hives, notify neighbors, etc.** When contracting with commercial pesticide applicators, make sure that there is a clear understanding of who has the responsibility to identify hive locations and communicate with beekeepers. Applicators may do this as part of their standard procedures, but some landowners or leaseholders may prefer to make beekeeper contacts themselves.

- **Agronomists should consider pollinator impacts when making pesticide recommendations.** Ensure that agronomists and crop consultants consider pollinator issues when making pesticide recommendations, including product choices and pesticide timing decisions.

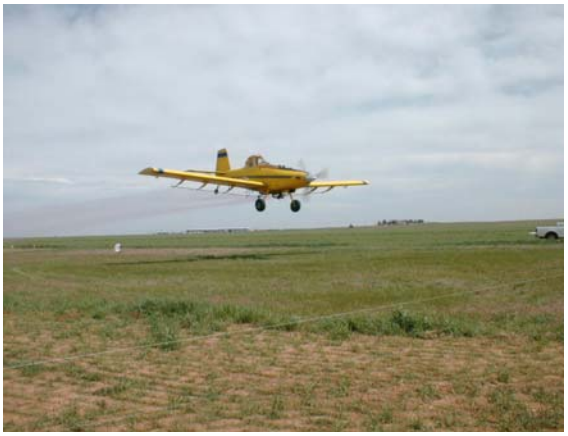
- **Plant pollinator forage crops.** Plant pollinator forage crops such as alfalfa, canola and sesame. Canola pollen has high protein content that benefits both honey bees and native pollinators, Sesame is a mid-summer to late fall flowering crop that provides forage after most flowering plants have ceased blooming. Pollinators can also be helped by planting flowering trees such fruit trees, and flowering shrubs to improve pollinator forage, especially in non-farmable or non-crop areas. The ODAFF Regeneration Center has low cost trees and shrub seedlings such as black locust and vitex. Additionally, plantings in non-crop areas would provide forage which might help concentrate pollinators away from fields to be treated with pesticides, thereby minimizing impacts to pollinators.
    - Many pesticide labels require untreated **vegetative buffer strips** around sensitive sites. Plant flowering plants in those buffer strips to provide additional pollinator forage.
    - If planting **cover crops**, add flowering plants into the mix. Even a small percentage of flowering plants can provide a considerable amount of forage for pollinators.
- **Utilize alternatives to talc/graphite in planters.** When planting seeds treated with insecticides, utilize alternatives to talc/graphite as they become available. The talc and graphite can abrade the insecticide treatment off of the seeds, thereby creating insecticide-containing dust that can drift onto hives and flowering plants.

Practices for Protecting Oklahoma Pollinators 3--Pesticide User BMP's

- **Use Integrated Pest Management (IPM).** Utilize economic thresholds and IPM to determine if insecticides are required to manage pests. When insecticides are required, try to choose insecticides with low toxicity to bees, short residual toxicity, or repellent properties towards bees.

- **Use registered pesticides according to the label.** Pesticide label language is developed to ensure that pesticides will not pose a risk of unreasonable adverse effects to human health or the environment. Failure to comply with the label not only puts humans and the environment at risk, it is also illegal. Many pesticides, especially insecticides, have use restrictions prohibiting applications when honey bees are foraging in the treatment area. Some labels prohibit applications when crops are blooming and require that the applicator notify beekeepers in the area prior to application. Always comply with these and other label restrictions to reduce risks. Applicators are bound by all directions, precautions, and restrictions on pesticide labeling, even when following other BMPs. Contact the ODAFF, OSU Department of Entomology or your county extension agent with any questions on pesticide label language.

- **When possible, apply pesticides in the early morning or evening.** Bees are most active during daylight hours and when the temperature is over 55 degrees Fahrenheit. Apply pesticides early in the morning or in the evening when bees are less active to reduce the chances that bees will be foraging in or near the treatment site.
    - Be cognizant of temperature restrictions on pesticides. The efficacy of some pesticides is reduced at certain temperatures.
    - Be aware of temperature inversions when choosing the best time for applications.



- **Avoid drift.** Pesticide drift involves the off-site movement of pesticides through the air from the treatment site to adjacent areas, either in the form of mist, particles, or vapor. Drift reduces the effectiveness of the chemical applied since only part of the applied amount reaches the target. Drifting chemicals also pose a risk to non-target organisms that come in contact with the off-target residues. These insecticides can negatively affect pollinators and other beneficial insects by direct contact or by contaminating their forage and habitat. Drifting herbicides have the potential to further reduce quality forage available to pollinators. Contact OSU Extension or the ODAFF Pollinator Protection website for more information on how to reduce pesticide drift.

  ODAFF has created an interactive searchable map where pesticide applicators can identify registered bee yards and other pesticide-sensitive sites. The Pesticide Sensitive Location Viewer (PSLV) also contains beekeeper contact information and can be found on the ODAFF homepage (http://www.ag.ok.gov).

- **Identify and notify beekeepers in the area prior to pesticide applications.** Bees will fly several miles to find quality forage. Therefore, pesticide applicators should use the Pesticide Sensitive Location Viewer to identify registered beekeepers within two miles of a site to be treated. These beekeepers should be notified at least 24 hours prior to application so they can take appropriate protective measures. Timely notification will help ensure ample time for the beekeeper and applicator to develop a mutually acceptable strategy to manage pests while mitigating risk to honey bees. This may include covering hives, moving hives, or choosing the time of day to apply. ***Notifying beekeepers does not exempt applicators from complying with pesticide label restrictions. Many insecticide labels prohibit use if pollinators (bees) are present in the treatment area.***

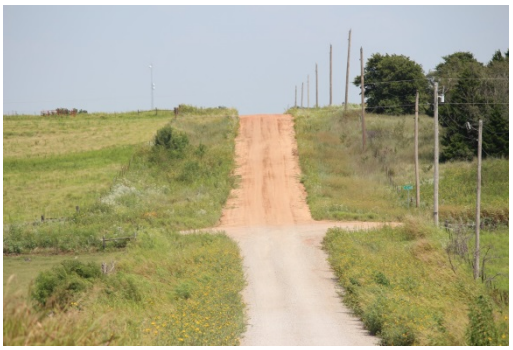
- **Choose products with lower risk to bees.** Avoid dusts and wettable powder insecticide formulations. Dust and wettable powder pesticide formulations can leave a powdery residue which sticks to hairs on pollinators such as bees. Bees then bring the pesticide back to the hive and potentially expose the entire hive to the pesticide for an unknown amount of time. Granular and liquid formulations are safer for pollinators since granules do not typically stick to the hairs of pollinators, and liquids dry onto plant surfaces. Also choose products with lower residual toxicity to pollinators.

Other Ways to Protect Pollinators

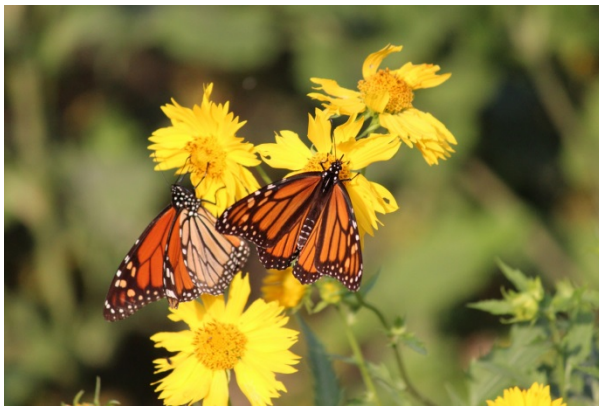
- **Pollinator Forage**. Everyone can plant flowering forage for pollinators. Plants that support pollinators are also beneficial for other wildlife, are often visually attractive, and can help improve soil health. Flowers often come to mind when thinking about pollinators, but pollinators also utilize trees, shrubs, and other less-noticeable plants for pollen and nectar sources. It is important to consider diversity when choosing plants to ensure adequate forage for the entire growing season. Diversity will also ensure pollinators have access to all of the nutrients they require to be healthy. Here are some easy, efficient ways to improve pollinator forage. Check the ODAFF pollinator protection website for specific information on pollinator friendly plants.

- **Municipalities** can plant flowering trees, shrubs and flowers that provide good forage for all types of pollinators. Diversity is important, the pollen and nectar of each species carries a different nutrient load for the pollinators. This can be worked into new plantings, every time a plant is added/replaced choose a variety that will contribute to pollinator forage. Foraging honey bees are typically not aggressive and should not pose a danger to the public.

- **Counties** have just over 85,000 miles of roads and they present an excellent opportunity to provide more forage for pollinators. While motorist safety is a primary concern, numerous ideas and practices to improve forage opportunities can be implemented at low to no cost. Many of these rights of way already have several species that provide forage for pollinators. Where appropriate, and where it does not impact the safety of motorist, county commissioners can identify and plan to mow around those plants that are beneficial at the time. County commissioners can also actively plant appropriate new beneficial species in areas that are cleared while reconstructing bridges and ditches. Finally, when possible they can plant short forbs into secondary road ditches and intersections to decrease the need to mow as often while also improving road visibility.



- **Homeowners** can put out potted flowering plants, create flowerbeds, plant flowering trees and flowering shrubs. ODAFF's Regeneration Center at Goldsby has low cost trees and shrub seedlings such as black locust and vitex. Home owners can also establish flower gardens to provide pollinator forage. Homeowners should also take special precaution when applying pesticides. The pesticide user BMPs apply to anyone using pesticides. Remember, the pesticide label is the law and it is in place to minimize risk to the environment and human health.



- **Create habitat for native pollinators.** Roughly 70 percent of native pollinators nest in the ground. They burrow into areas of well-drained, bare, or partially vegetated soil. Other native pollinators nest in abandoned beetle houses in snags or in soft centered, hollow twigs and plant stems. Native pollinators will also utilize dead trees and branches. Habitats can be created by leaving deadfalls and brush piles as nesting habitat. Consider the type of habitat you wish to create and native pollinators you want to attract. Be cognizant that certain structures might attract other animals such as fox, coyote, skunks, and porcupines.

Consumer Protection Services

2800 N. Lincoln Blvd., Oklahoma City, OK 73105