Final Draft:

Tribal Pollinator Protection Plan Template

Pacific Southwest Region

February 17th, 2017

Prepared by EPA Region 9 Pesticides Program

Disclaimer

The development of a Pollinator Protection Plan is voluntary and not subject to EPA approval.

Measures of the plan's effectiveness will be state- or tribe-specific.

Instructions

This Pollinator Protection template includes background information, sample text, Region 9 state resources, and numerous fillable areas to customize a tribe-specific plan. Below is a key to guide the user through this template document:

Template Key:

Italicized blue text – Directions for each section are written in italicized blue text. When completed, all blue text from document should be removed.

[Red text in brackets] – Tribe-specific information, concerns or ideas can be added in place of the bracketed red text. Do not feel constrained by red brackets; add as much information as needed throughout the document.

Black text – Educational background information, example ideas, stakeholder challenges and concerns, and best management practices are captured in black text. Much of this information can be kept in the final pollinator protection plan for reference. It is advised to remove any black text that is not applicable to the tribal community.

Prepare a title sheet for the Pollinator Protection Plan that includes the:

- *Name of document e.g., "Tribe name Pollinator Protection Plan"*
- *Name and address (optional)*
- *Date*
- *Version number of the document (this can be a live working document that can be edited as needed)*

Sample Format below:

[Tribe Name]

Pollinator Protection Plan

[Tribe]

[Address (optional)]

2016

[Version [#] Month, date, year]

Prepare an optional Signature Sheet for the Pollinator Protection Plan: *This will include title and date of document, the names and titles of all parties who worked on the development, and agree to implement the plan.*

[Insert Tribe name here]

Pollinator Protection Plan

Signature Page

_____	_____
[Insert name and Title here]	[Insert date here]
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[Insert name and Title here]	[Insert date here]

[Add additional names as necessary]

Directions: *Insert names of the template document's author(s) here:*

Authors:

[Insert template author(s) name here] [Insert Author(s) email here]

Contributions by: [Insert contributers here]

This plan is intended for use by [Name of tribe] to establish and/or upgrade pollinator protection programs, policies and best management practices. The plan is suitable for use as a guidance document for stakeholders and the tribal community. This document is a working document, and can be updated with revisions as necessary.

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Section One:

Introduction

Section One: Introduction

I. Education and Background on Pollinators and Pollinator health

a. What are pollinators and why are they important?

Many types of plants, including about 1/3 of the fruit and vegetable crops we eat, depend on animals for pollination (moving pollen within flowers, or carrying it from flower to flower.) In addition to honey bees, many other types of animals pollinate crops and wildflowers, including:

- Wild bees
- Ants
- Beetles
- Wasps
- Lizards
- Birds
- Bats
- Butterflies

b. What is happening to pollinators?

There have been simultaneous declines in unmanaged and managed pollinator populations globally, with noted decreases in honey bees, bumble bees, and monarch butterflies. These declines have brought into focus the importance of pollinator conservation, as well as changing dynamics of pests, pathogens, predators, and competitors.[1] The general declining health of honey bees specifically is related to complex interactions among multiple stressors including the following:

- Pests (*e.g.*, varroa mite), pathogens (*e.g.,* the bacterial disease American foulbrood) and viruses.
- Poor nutrition (e.g., due to loss of foraging habitat and increased reliance on supplemental diets).
- Pesticide exposure.
- Bee management practices (e.g., long migratory routes to support pollination services).
  Lack of genetic diversity.[2] (https://www.epa.gov/pollinator-protection/pollinator-health-concerns)

c. What is happening to unmanaged pollinators?

There are over 4,000 unmanaged bee species in the United States, along with many other unmanaged pollinators such as butterflies, moths and bats. Not only do unmanaged pollinators pollinate most of our flowering plants, their bodies feed other wildlife and their ground-nesting behaviors aerate and enrich soils. Many of the same factors affecting honey bee health are also affecting native bee species, but there are unique concerns facing unmanaged pollinators.[3] Human activities have destroyed and fragmented many native pollinator habitats, which have made many remaining habitat areas isolated and degraded by invasive plant species, making them less suitable for native pollinators and other wildlife. These changes in habitat have led to a reduction of native pollinator food sources and sites for mating, nesting, roosting, and migration. Excessive use and improper application of many pesticides impact pollinators and their habitats. Some insecticides directly kill pollinators, particularly pollinating insects, and herbicides reduce forage plant diversity by killing

[1] (P. 6 National Strategy)
[2] (https://www.epa.gov/pollinator-protection/pollinator-health-concerns)
[3] (Fs.usda link)

wildflowers. Non-native pollinators, such as honeybees, can out-compete native pollinators for local nectar resources, placing them at greater risk of decline.[4]

II. Pollinator Protection Goals

a. Setting tribal pollinator protection goals

The purpose of a tribal pollinator protection plan is for each tribe to work with their stakeholder groups to collaboratively understand their landscape and unique pollinator protection needs. The goals set by a tribe can be recommendations or enforceable policies. Each goal should include an implementation strategy outlining timelines and a specific method to measure the success of each goal. A plan is meant to be a dynamic document, which can be periodically reviewed and updated with essential stakeholder input.

b. National Pollinator Protection Goals

The 2014 White House *National Strategy to Promote Health of Honey Bees and Other Pollinators* has the following National goals outlined:

- *Honey Bees:* Reduce honey bee colony losses during winter (overwintering mortality) to no more than 15% within 10 years. This goal is informed by the previously released Bee Informed Partnership surveys and the newly established quarterly and annual surveys by the USDA National Agricultural Statistics Service. Based on the robust data anticipated from the national, statistically-based NASS surveys of beekeepers, the Task Force will develop baseline data and additional goal metrics for winter, summer, and total annual colony loss.

- *Monarch Butterflies:* Increase the Eastern population of the monarch butterfly to 225 million butterflies occupying an area of approximately 15 acres (6 hectares) in the overwintering grounds in Mexico, through domestic/international actions and public-private partnerships, by 2020.

- *Pollinator Habitat Acreage:* Restore or enhance 7 million acres of land for pollinators over the next 5 years through Federal actions and public/private partnerships.

c. Examples of current tribal pollinator protection efforts

Summarized in Table 1 are examples of pollinator protection efforts reported by tribes who participated in the 2015 Pollinator Protection Training for Tribes in Spokane, Washington.

Table 1: Tribal Pollinator Efforts (ongoing)

Cherokee Nation	• Developed community gardens in several tribal communities, which were initiated through the Natural Resources Department of the Cherokee Nation. • Various Tribes and Organizations have joined Monarch Butterfly restoration projects. These projects were presented at the Region Six Tribal Summit, and

[4] (Source: https://plants.usda.gov/pollinators/Native_Pollinators.pdf http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf)

	at the Inter Tribal Environmental Council Conferences as outreach to tribes to promote pollinator health. • Scheduled for EPA personnel to speak on the MP3 initiative. Also planned for the Oklahoma Department of Agriculture Food and Forestry to present the outline of their MP3 plan. • Conducted outreach efforts in local communities. • Developed an outreach booth to set up at community meetings and conferences with pesticides safety information as well as handouts on the importance of pollinator health/protection. The booth also included free wildflower seeds, and tribal contact information for tribal members to start native pollinator friendly plantings plots. • Contacted the tribe's Natural Resources Department, who is in charge of developing and maintaining community gardens in several tribal communities within jurisdictional area. • Reviewed The State Department of Agriculture, Food and Forestry draft proposal for a "Oklahoma Managed Pollinator Protection Plan"
Fond du Lac Band of Lake Superior Chippewa	• Planned community outreach including pollinator plantings with local gardening programs and pollinator seed distribution. • Planned to create a pollinator protection plan
Fort Sill Apache Tribe of Oklahoma	• Planned outreach efforts with flyers and presentations.
Inter-Tribal Council of Nevada	• Demonstrated simple nesting structures to Nevada tribes and promoted the planting of flowering plant species that provide summer long blooms.
Navajo Nation	• Planned to draft a pollinator plan focused on native pollinators and small scale commercial beekeepers. The plan will be inclusive of farmers, commercial growers, beekeepers, land owners, and pesticide applicators.
Nez Perce Tribe	• Planned ongoing development of Integrated Resource Management Plan that attempts to programmatically address pollinator health as part of broader ecosystem-based management of tribal resources.
Sac & Fox Tribe of the Mississippi	• Worked on a draft pollinator policy for the tribal departments and educational materials for the tribe to use.
Spokane	• Avoided spraying bugloss and hairy vetch in an area that a commercial bee keeper store hives on property.
Aroostook Band of Micmacs	• Planned to work on projects with Tribal youth and Tribal farms to protect pollinator health. • Interested in coordinating with the Northern New England Pollinator Habitat Working Group.

Chickasaw Nation	• Planned to plant native plants to provide habitat. • Partnered with Monarch Watch to help bring habitat back for monarchs and other pollinators. • Planned to install the first of many Monarch butterfly gardens. • Planted spiral mound garden that incorporated native plants to attract native pollinators.
Cocopah Indian Tribe	• Planned to bring together beekeepers, farmers and pesticide vendors to get everyone together to protect natural resources.
Coeur d'Alene	• Planned to keep pollinators in mind during herbicide treatments.
Colorado River Indian Tribes	• Implemented bee "assistance" in removal of Africanized honey bees, wasps, etc. that have hives adjacent to homes and community buildings. • Educated on particular contributors to prevent future nesting at each respective call-in site. • Planned to develop a foundational database of contact information with the local commercial beekeepers, coordinated through monthly irrigation committee (farmers). • Conducted outreach to create the foundation to understand the need for an MP3 plan.
Confederated Salish & Kootenai Tribes	• Partnered with a school to develop pollinator protection gardens. • Initiated discussions to integrate tribal concerns into the state plan with Montana Department of Agriculture.
Fond du Lac Band of Lake Superior Chippewa	• Worked on developing a small demonstration pollinator garden in front of tribal Resource Management Division Building as well as around the reservation. • Planned to develop a pollinator protection plan, particularly to address pesticide use and establish a policy for program facilities and guidance for residents.
Gila River Indian Community	• Initiated 1985 Beehive ordinance revision, and planned for it to be replaced by an apiary registration ordinance.
Hoh Indian Tribe	• Planned to review forest practice applications for pesticide and herbicide use in the Hoh to reduce impacts to pollinators • Considered what tools are available to influence private and state landowners to consider pollinators when planning spraying operations.
Hoopa Valley Tribe	• Interested in developing a pollinator protection plan that would include pollinator habitat creation plans.

Inter-Tribal Council of Arizona	• Planned to incorporate pollinator protection information on developing MP3 plans for tribes in 2016. • Planned to gauge what pollinator protection activities tribes are interested in, and to provide assistance and guidance in implementing those activities.
Navajo Nation	• Highlighted the need to encourage pesticide applicators to follow best practices when using pesticide products near beehives to minimize pesticide exposure to honey bees and certain pollinators. • Planned to work with local farmers and land managers to promote pollinator health by planting pollinator friendly plants.
Nez Perce Tribe	• Planned to incorporate public outreach for youth and adults focused on bee and butterfly conservation; • Incorporated native shrubs and forbs in a community park developments and wildlife management areas. • Planned to develop an Integrated Resource Management Plan, to incorporate pollinator conservation concerns within the decision framework, with plans to focus on native plants and reduction of home-level pesticide use.
Ohkay Owingeh	• Planned to seek funding through available pollinator grants.
Poarch Creek Indians	• Planned to increase the size of apiary to at least 20 hives by mid-summer 2016. • Planned to use community garden to provide forage for bees, and initiated use of additional tribal land to grow wildflowers for the bees.
Sac & Fox Tribe of the Mississippi in Iowa	• Planned to complete an assessment of the tribal community's opinion on what community requests of the Natural Resources Department and their opinion on pollinator protection needs within the settlement. • Planned community outreach and educational programs for tribal members on pollinators (native and managed), and aimed to include events that involved hands-on activities to increase attendance. • Planned to complete a native pollinator survey on tribal lands to understand which areas have a larger amount of pollinators, which have better pollinator habitats, and which types of pollinators are being impacted. • Planned to monitor community gardens to determine their progress towards pollinator habitat enhancement, and complete an assessment for a managed bee colony at the gardens. • Planned to have the fundamentals of a tribal pollinator policy completed based on science, culture and needs of the community.
Salt River Pima-Maricopa	• Conducted Pollinator Protection education outreach to farmers and community members that work and live within community.

Indian Community	
St. Regis Mohawk Tribe	• Developed a pesticide regulation plan being reviewed by the Saint Regis Mohawk Tribe / Environment. Arranged meetings to review plan for legality and a forecasted implementation in 2017. Plans to develop a pollinator protection plan to follow development of the pesticide regulation plan. • Organized the following activities for pollinator protection: Earth Day (gave away more than two hundred packets of organic/neonicotinoid free seed mix for pollinators), Pesticide and Hazardous waste collection event at transfer station (hired contractor disposed of hazardous waste properly) • Managed to increase Honey Bee hives in the Akwesasne area. • Planned a workshop to preform a bee colony extraction from a house that will be covered by media. • Planned to attend the Franklin County Fair and host a booth in the main barn for an outreach post for the SRMT environment department, and will attend a Wellness day as an outreach activity with a table set up in it for pollination protection. • Planned an IPM and Pollination Protection Forum.

Table 2 includes examples of Tribal pollinator protection goals planned for 2016 and/or 2017 as reported during the 2015 Pollinator Protection Training for Tribes in Spokane, Washington.

Table 2: Planned Tribal Pollinator Protection Activities (reported in 2015, to be completed 2016-2017)

Chickasaw Nation	• Plan to expand planting areas across the Chickasaw nation, with additional native plants to provide a healthy and luscious habitat for pollinators. • Plan to plant on green roof with milkweed for monarch butterflies.
Cherokee Nation	• Plan to continue outreach efforts to Tribes in Region Six, as well as outreach and community garden activities in local communities. • Plan to continue to review Oklahoma's state MP3
Fort Sill	• Plan to potentially install a garden on tribal land. • Plan to distribute pollinator protection information to allottees.
Hoopa Valley Tribe	• Plan to start working with as many people as possible to get some type of pollinator management practices in place. • Plan to address the pesticide use on the reservation

Nez Perce Tribe	• Plan to implement Integrated Resource Management Plan.
Otoe-Missouria Tribe	• Plan to develop a community outreach project with tribal community and youth to plant at least one rain garden that includes pollinator friendly plants.
Pechanga Band of Luiseno Indians	• Placed development of a pollinator protection plan on 16-17 GAP • Plan to develop community outreach on pollinator protection with protection of native flora and fauna on the forefront.
Sac & Fox Tribe of the Mississippi	• Plan to get Tribal Council approval of the draft documents created earlier in the year.
Spokane Tribe of Indians	• Plan to plant seeds from native forbs in a strip across a large field that we converted to native grass in FY17.
St. Regis Mohawk Tribe	• Plan to finalize Akwesasne Pesticide regulations and Akwesasne Pollinator Protection plan. The implementation of the plan will also go into effect. • Plan for ongoing webinar courses and training in this area throughout the year. Conferences, workshops and seminars will also be looked at upon availability. Community outreach will be on going.
Yakama Nation	• Plan to do a baseline study to understand how commercial bees are being used in the interior land of the Yakama Nation.
St. Regis Mohawk	• Establish a list of applicators on reservation who apply pesticides, and determine whether they are licensed at the federal and/or state level. If the license was at the state level, the applicator will be asked to sign a waiver form stating they will not apply any restricted use pesticides. • Plan community outreach focused on MP3s. • Plan on identifying the local agriculturalist, farmers, local beekeepers, and gardeners to get them together to discuss best management practices to protect pollinators. .
Taos Pueblo	• Plan to continue to work with the youth at the local Taos Day School (elementary-middle school) kids to integrate pollinators and get the kids involved in sustainable agriculture.
Three Affiliated Tribes	• Plan to develop MP3 plan.

White Mountain Apache Tribe	• Plan to work with NRCS to select seeds that promote pollinator health. • Plan for community outreach efforts to start in 2016 to discuss pollinator health and forage.

i. Pollinator policy options to consider

Below are some pollinator protection policy considerations developed by Tribes who participated in the 2015 Tribal Pollinator Training in Spokane, Washington:

- Restrict the use of Pesticides (buffer zones, no fly zones, define sensitive areas)
- Bee hive ordinance/registration
- Registry of hives / organic production
- Applicator certification / notification record
- Waiver prohibiting restricted use pesticides (RUPs)
- Lease "improvements" could include pollinator protection requirements
- Implement land management practices to improve pollinator habitat and forage
- Provide tribal lands for pollinator forage for hobby or commercial beekeepers
- [Insert additional potential policy considerations for tribal community here]

d. Questions to define scope of a pollinator protection plan

Below are some questions to answer to define the scope of a Tribal Pollinator Protection Plan. These questions were developed during the March 2016 MP3 symposium in Washington D.C.:

1. What types of species of managed and unmanaged pollinators are present?
2. What types of beekeeping (e.g., backyard, sideliner, commercial) is present on reservation?
3. What types of pesticide use (e.g., agricultural, residential, public health, public recreational, landscape, etc.) occurs on reservation?
4. What type of land use (e.g., home garden, rights of way, residential, crop-specific, ornamental landscapes, etc.) occurs on reservation?
5. Who monitors hive health and hive pest/disease control?
6. How can increasing acreage of and improving access to pollinator friendly forage and habitat be accomplished?
7. [Insert additional questions to define the scope of tribal pollinator protection plan here]

IV. Incorporating Traditional Ecological Knowledge

Each tribe working on pollinator protection should incorporate their Traditional Ecological Knowledge into their goal and plan development process.

[Insert Traditional Ecological Knowledge to consider for pollinator protection plan/goals here]

Section Two:

Stakeholder Participation and Challenges

I. Stakeholders Defined

- *Beekeepers* – Approximately 2,000-3,000 commercial U.S. beekeepers manage their bee colonies as livestock, traveling across the country with their bees to service pollination contracts with U.S. farmers and to support honey production.[5]
- *Growers* – landowners/farmers
- *Pesticide Applicators* – any person (professional or non-professional) who applies general use pesticides
- *Certified Applicators* – a professional who applies or supervises the use of restricted use pesticides (RUPs)
- *Pest Control Advisor (PCA)* – any person who offers a recommendation on any agricultural use, holds themselves as an authority on any agricultural use, or solicits services or sales for any agricultural use (Reference: CDPR Food and Agricultural Code sections 11410, 11411).
- *Land Management Entities* – This can include rangeland or wildlife staff, along with those who are responsible for maintaining rights of way on reservation
- *Tribal Community members* – all the members of the tribal community adopting a pollinator protection plan
- *Lease holders* – those who lease land on reservation
- [Insert additional key stakeholders and define their role]

a. Pollinators (Managed vs. Unmanaged)

Pollinators - A variety of animals including bees, wasps, flies, butterflies, moths, bats, beetles, and birds that move pollen within flowers, or carry it from flower to flower.

Managed Pollinators - include European honey bee (*Apis mellifera),* orchard mason bees (*Osmia lignaria*), alfalfa leaf cutting bees (*Megachile rotundata*), and bumble bees (*Bombus spp*.). There are some managed pollinators like the Orchard mason bees and some bumble bees that are native to the United States, while others like the alfalfa leaf cutting bees are not.

Unmanaged Pollinators – Wild/native pollinators are referred to as unmanaged pollinators in this document. There are an estimated 4,000 or more species of wild, native bees in the United States. Nonnative bees, including honey bees, may also be unmanaged, i.e., wild. All non-bee pollinators also fall into this unmanaged category.[6]

[5] (p. 3 National Strategy)
[6] (GAO report footnote page 1)

II. Considerations to guide stakeholder BMP goal development

1. Who are our stakeholder groups, and how can they effectively work together?
2. Is pollinator protection an issue people can come together on?[7]
3. What are threats facing pollinators on reservation?
4. How can timely communication and coordination occur across stakeholders?
5. Is an assessment necessary to understand the education and level of tribal commitment?[8]
6. [Insert additional considerations to guide stakeholder BMP development here]

III. Stakeholder Participation

The state plans that have been developed to date are a result of direct discussions among diverse stakeholders. Public participation is essential to gain buy-in from stakeholders for plans, build relationships and trust, and identify key issues affecting pollinator health. This process works best through face-to-face public meetings involving broad stakeholder groups. The process should provide opportunities for the public to comment on a draft plan prior to it being finalized and implemented.[9]

A plan can articulate means through which stakeholders such as tribal community members, growers, applicators, and beekeepers can quickly and effectively communicate pesticide applications in close proximity to managed and unmanaged pollinators.[10] There is a definite need to create physical and temporal space between the use of pesticides and those areas and times when pollinators are present.[11] Many of the strategies to mitigate the risk of pesticide exposure to managed pollinators are also expected to reduce the risk to unmanaged pollinators.[12] Additionally, there are precautions for general use pesticide applicators, such as home gardeners, to protect unmanaged pollinators.

a. Stakeholder Survey developed by Hawaii Department of Agriculture

The Hawaii Department of Agriculture developed a survey to inform the development of their Managed Pollinator Protection Plan (MP3). The survey questions are located in Appendix A of this document, and can be adapted and refocused to define the concerns which exist for pollinators in a tribal community. A survey can also determine initial stakeholder interest in participating in the development of a Tribal Pollinator Protection Plan. The survey can be distributed in hardcopy, or electronically prior to an in-person meeting. Alternatives to developing surveys is to invite known stakeholders directly to assist in the development of a plan.

[7] (TPT)
[8] (RTOC Caucus)
[9] (SFIREG GUIDANCE)
[10] (National Strategy p. 50)
[11] (National Strategy p.47)
[12] . (According to SFIREG's draft guidance.)

IV. Stakeholder Challenges

In this section challenges faced by stakeholders in some Region 9 states are summarized. It is important to openly discuss challenges with stakeholders prior to developing and implementing a tribal pollinator protection goal or plan.

Directions: *Discuss the listed challenges with stakeholders. Include any additional challenges addressed during stakeholder meetings. Remove challenges not applicable to tribal community.*

a. Examples of Beekeeper challenges/concerns

- Beekeepers face a challenging task of keeping colonies alive with the threats of 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 with some beekeepers reporting winter losses over 35%.[13]

- 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 exposed to various pesticides and poor forage that weaken the hive. (ADA Plan)

- 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. Bees can become easy targets for pests, predators and pathogens when they do not obtain the proper balance of nutrients. Bees provided with high quality forage are better able to handle stressors from all directions including pesticides.[14]

- 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 bees through direct contact or by contaminating forage. Beekeepers worry not only about immediate lethal effects from exposure but also the sub-lethal impacts and their impact on brood mortality and reduced adult longevity.[15]

- Beekeepers find it difficult to find land that will not be exposed to pesticides.[16]

- Some beekeepers will be hesitant to use any system that makes members of the public aware of hive location and the number of hives they have because of conflicts with neighboring beekeepers, concerns with theft and concerns that the bees/hives will be damaged by neighbors that do not like having bees around. Ultimately, bee keepers will have to make their own decisions about posting locational data, since beekeepers are not required to register their hive and include locational data.[17]

- [Add additional Bee Keeper challenges addressed in Tribal Community]

b. Examples of Grower challenges/concerns

[13] (ADA Plan)
[14] (ADA Plan)
[15] (ADA)
[16] (ADA Plan)
[17] (ADA Plan)

- Growers face many challenges in an attempt to obtain acceptable yields. Growers contend with insect pests, diseases, weeds, and other factors that impact crop production and quality. They have a variety of pest management tools and strategies to choose from.[18]
- Growers do not have to try to kill a mite on an insect, they often need to eliminate pests and competing plants without impacting yields.[19]
- Growers must consider the timing of pesticide applications with respect to harvest, where the crop is going and rotational intervals.[20]
- Even with integrated pest management systems, pests often adapt quickly to different methods, rotations, or pesticides, or reproduce so quickly that they seem to multiply within a short amount of time. Because of the nature of such pests, making timely pesticide applications as part of an IPM plan are essential to manage pests effectively.[21]
- Growers face difficult decisions when managing pests and minimizing impacts to pollinators.[22]
- [Add additional challenges growers face in Tribal Community]

[18] (ADA Plan)
[19] (ADA Plan)
[20] (ADA Plan)
[21] (ADA Plan)
[22] (ADA Plan)

c. Examples of Applicator challenges/concerns

- In many cases, pesticide applicators have a limited window of time to make an application. Factors such as human safety, pest infestation levels, temperature, precipitation, wind speed, use buffers, plant growth stage and mere presence of pollinators all affect pesticide choices and decisions on when, where, and how to apply them.[23]

- Applicators also must pay attention to the location of sensitive sites adjacent to treatment sites, such as water sources, endangered species, organic fields, vineyards, farm animals, schools, homes, pets, and beehives.[24]

- The ideal time to apply pesticides may coincide with when the pollinators are most active, putting pesticide applicators in a difficult position of balancing pest management needs and protecting pollinators.[25]

- [Add additional challenges growers face in Tribal Community]

d. Additional Stakeholders and their challenges/concerns

[Based on stakeholders who were defined in the beginning of Section Two, add additional challenges addressed during stakeholder meetings]

[23] (ADA Plan)
[24] (ADA Plan)
[25] (ADA Plan)

Section Three:

Elements for Pollinator Protection Plan

I. Pesticide Best Management Practices (BMPs)

Stakeholder collaboration, communication and agreement is important for the success of a plan. Discussions involving growers, beekeepers, pesticide users, tribal government officials and other community members can provide an opportunity to provide input on reasonable practices each stakeholder can participate in to protect pollinators, with consideration for each stakeholder's interests and concerns.[26]

Some Region 9 tribes do not have managed bees on their land, however it is still important to consider whether there are unmanaged pollinators on their land or managed pollinators on neighboring lands, which would require protection from pesticide application and drift.[27]

The following sections will propose potential best management practices (BMPs) that can be adopted by stakeholders to create the following positive outcomes: Positive relationships and peaceful co-existence among beekeepers, landowners, and pesticide applicators, along with reduced pesticide exposure and subsequent risk of pesticides to pollinators.[28]

Directions: *Review the following list of example best management practices (BMPs) that apply to the tribal community. Through active discussion with stakeholders, add additional tribe specific BMPs.*

[26] (ADA Plan)
[27] (Nevada MP3)
[28] (ADA MP3)

a. Examples of BMPs for Beekeepers

- Work with landowners/growers 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 which roads to travel. Discuss with landowners their preferred access as some roads may not be built for heavy loads. Beekeepers should also request contact information for applicators, renters and surrounding growers.[29]
- Be cognizant of neighboring landowners/growers when placing and moving hives. Neighboring landowners/growers often use the same roads and trails. Do not block right-of-ways or place hives so close they may cause problems for other land-users. Take appropriate steps to ensure that bees do not negatively affect operations of neighboring landowners/growers, such as considering the proximity of hives to neighbor's, equipment and property.
- 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 say they are going to apply pesticides, or find other strategies to allow pesticide applicators to manage pests while minimizing pesticide exposure by bees. When this is impracticable, work with the applicator and grower to find an alternative product less toxic to the hives or timing of the application, such as applying after dark.[30]
- Notify landowners and applicators when arriving and when moving hives. If possible, notify nearby pesticide applicators and landowners when beehives are moved or placed down. This will ensure they are aware of current hive locations and before making pesticide applications. Contact information for nearby pesticide applicators can usually be obtained from landowners. [31]
- Obtain landowner permission for hive placement every year and keep in contact. As landowner information changes, it is important to ensure everybody is aware and bees are not placed without permission. This step is imperative to ensure hives are not seen as a nuisance and are allowed the necessary precautions.[32]
- Use registered pesticides according to the label. When pesticide use is necessary to manage pests within hives, use registered pesticides and comply with all restrictions, precautions and directions found on the pesticide label. Failure to comply with label directions may decrease the effectiveness of pesticides, increase the risk of adverse effects to bees, cause unsafe pesticide residues in bee related products and potentially lead to pesticide resistance.
- Clearly post contact information at all hive locations and continue to communicate hive locations throughout the year. Communication is necessary with both the applicator and the grower to help avoid problems.
- Make hives as visible as possible to applicators. Shade is a necessity in AZ, but hives must be visible so applicators can locate them before spraying. It is strongly suggested that hives are painted white or a color that stands out from the surrounding area. Work out a mechanism with other agricultural operations as to how hives can be marked…maybe bright flags could be used similar to Mississippi.
- [Add additional BMPs for beekeepers in tribal community]

[29] (refer to appendix See AZ Laws for Bee Protection on pages 5 and 6.).
[30] (Refer to appendix See AZ Laws for Bee Protection on pages 5 and 6.)
[31] (Refer to appendix See AZ Laws for Bee Protection on pages 5 and 6.)
[32] (See AZ Laws for Bee Protection on pages 5 and 6.)

b. Examples of Grower BMPs

- Work with beekeepers to choose hive locations. Ideal locations for hives will have minimal impact on farming/ranching operations, but will still allow bees to access forage and water. Communicate with beekeepers any roads which can be problematic for heavy loads or if there are any preferred traffic routes. Landowners may also want to provide contact information for applicators, renters and neighbors (if applicable).[33]
- Communicate with renters about bee issues. Renting land for agricultural production is a common practice. Landowners and renters should discuss bee issues, such as who has authority to allow bees, how long they will be allowed and hive placement. These issues should be addressed and included when rental agreements are negotiated.[34]
- 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 may prefer to make beekeeper contacts themselves.[35]
- Communicate with Pest Control Advisor to consider pollinator impacts when making pesticide recommendations, including product choices and pesticide timing decisions.
- Plant bee forage near crops not dependent on bee pollination. Plant flowering plants, trees and shrubs to improve bee forage especially in non-farmable or non-crop areas. Doing so provides forage and it may also concentrate bees away from fields to be treated with pesticides, thereby minimizing impacts to pollinators. For crops dependent on bee pollination, a variety of flowering plants will help improve bee health.
    - Many pesticide labels require untreated vegetative buffer strips around sensitive sites. Plant flowering plants in those buffer strips to provide additional bee 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.[36]
- Ensure pest pressure warrants the seed to be treated.
    - 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.[37]
- Stagger planting of any one variety of a crop or choose multiple varieties to provide an extended or diverse flowering time. [38]

[33] (ADA Plan)
[34] (ADA Plan)
[35] (ADA Plan)
[36] (ADA Plan)
[37] ADA
[38] (ADA Plan)

- [Add additional BMPs for Growers in Tribal Community]

c. Examples of Applicator BMPs

- Utilize economic thresholds and integrated pest management (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. (ADA Plan)
- Avoid pesticide applications when crops are in bloom.[39]
- 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 bees are foraging in the treatment area. Some labels prohibit applications when crops are blooming and require 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.[40]
- When pesticides are needed, apply pesticides at night or in the evening. Pollinators are most active during daylight hours and when the temperature is over 55 degrees Fahrenheit. Apply pesticides at night when bees are less active to reduce the chances that bees will be foraging in or near the treatment site.[41]
- Be cognizant of temperature restrictions on pesticides. The efficacy of some pesticides is reduced at certain temperatures.[42]
- Be aware of temperature inversions when choosing the best time for applications. (ADA Plan)
- Pay attention to label warnings as some pesticides have residuals that are toxic to bees. So applications must be made at times to allow label required times to lapse before bees will begin foraging. Look for the bee symbol on labels.[43]
- Avoid drift. Pesticide drift is 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 pesticide applied since only part of the applied amount reaches the target. Drifting pesticide also can pose a risk to non-target organisms that come in contact with the off-target residues. Insecticides can negatively affect bees and other beneficial insects by direct contact or by contaminating their forage and habitat. **Most labels have a requirement not allowing drift, which if ignored, could be cause for a citation and penalty.*[44]
- Although herbicides, fungicides, spray oils and adjuvants do not have direct toxicity on bees, direct contact with these can cause impact on bees - death due to suffocation, impact on hive development or a reduction of quality forage available to pollinators. Communication with the beekeeper can help as they may have had experience with this in the past.[45]
- Identify and notify beekeepers in the area prior to pesticide applications. Bees will fly several miles to find quality forage. Therefore, pesticide applicators should identify and notify beekeepers within an agreed upon distance of a site to be treated at an agreed on time prior to application. Timely

[39] (ADA Plan)
[40] (ADA Plan)
[41] (ADA Plan)
[42] (ADA Plan)
[43] (ADA Plan)
[44] (ADA Plan)
[45] (ADA Plan)

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 on blooming plants if pollinators are present in the treatment area.*[46]

- Choose products with lower risk to bees. Avoid use of dusts and wettable powder insecticide formulations. Dust and wettable powder pesticide formulations can leave a powdery residue which sticks to hairs on 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 are not typically picked up by bees, and liquids dry onto plant surfaces. Also choose products with lower residual toxicity to bees.[47]
- Give at least a 24 hour notice to any managed pollinator contact which is near the application site. This has typically been defined as an area within a 1-2 mile radius of the treatment site in agricultural areas; in urban settings an abutting or adjacent area to application site will be considered near.[48]
- [Add additional BMPs for Applicators in Tribal Community]

[46] (ADA Plan)
[47] (ADA Plan)
[48] (Nevada Mp3)

d. Examples of Pest Control Advisor BMPs

- Consider pollinator impacts when making pesticide recommendations. Include product choices and pesticide timing decisions to have the least impact on pollinators.[49]
- Communicate with growers and applicators known bee locations. Act as a check and balance to remind growers and applicators to take necessary precautions to protect bees.[50]
- Communicate with the landowner locations that may be good for locating hives and helping to minimize the impacts on both bees and the grower.[51]
- Help in the communication process by maintaining open lines of communication between apiarists, growers and pesticide applicators.[52]
- Utilize smart bee management processes. When called in to control bees as a pest, first assess the situation to see what can be done. Do the bees pose a threat to health? If so, control the bees as allowed on pesticide labels. If not, consider bee removal versus killing of bees. [53]
- Provide smart bee advice to homeowners to avoid having bee problems or even ways they can help bees.[54]
- [Add additional BMPs for Pest Control Advisors in Tribal Community]

[49] (ADA Plan)
[50] (ADA Plan)

[51] (ADA Plan)
[52] (ADA Plan)
[53] (ADA Plan)
[54] (ADA Plan)

e. Examples of Home Gardener BMPs

Some pesticides are highly toxic to bees. Overuse and misuse of pesticides can be bad for pollinators. Home gardeners should think about when and where pesticides may be applied without harming pollinators.

i. Tips for protecting bees when pesticide use is necessary:

- Do not apply pesticides when bees are likely to be flying.
- Do not apply to blooming flowers.
- Bees generally are inactive from one hour after sunset to two hours before sunrise or when the temperature is below 55 F.
- Early evening application is best so pesticides can dry during the night.
- To minimize drift, do not apply pesticides on a windy day.
- Reduce or eliminate pesticide use on pollinator-friendly garden.

ii. Step by Step Integrated Pest Management BMPs for Home Gardeners

- *Step 1: Identify the problem*
  Knowing the problem is the first step towards solving it.

- *Step 2: Try to solve the problem without pesticides*
  Pests can often be managed safely without use of pesticides: Explore the University of California statewide Integrated Pest Management Program[55]:
  http://www.ipm.ucdavis.edu/index.html

- *Step 3: Find the product that solves the problem*
  All products do not work on every pest. Labels tell how and when products should be applied to deal with certain types of pests

- *Step 4: Buy and use the right amount; more is not necessarily better*
  Product labels tell how much to use to treat a problem. Using more can harm plants and lawns, and may be unsafe for people and pets. Some products might not work as well after being stored for a long period. A larger size might not be a good value.

- *Step 5: Use the product according to the label*
  Labels tell how to safely use products for best results. Use only the amount indicated. If the label says to mix a product in another container, make only as much as needed for use. Do not ever apply more than is allowed by the label.

- *Step 6: Pay attention to warnings affecting bees and other pollinators*
  Understand when and how to apply the product to ensure pollinator safety.

- [Add additional BMPs for Home Gardeners in Tribal Community]

[55] **http://www.ipm.ucdavis.edu/index.html**

II. Pollinator Habitat Enhancement BMPs

a. Stakeholder considerations to guide pollinator habitat needs

1. Are there managed bees present?
2. Which type of unmanaged pollinators have been observed in the area?
3. What areas are critical for habitat restoration?
4. What type of notification system is in place now if managed bees are known to be around?
5. Does reservation know what areas are pollinator sensitive?
6. Can tribal community establish pollinator sensitive areas?
7. [Insert additional general pollinator habitat enhancement consideration questions here]

b. Stakeholder considerations for evaluating suitability of habitat for pollinator forage[56]

1. Which types of foraging pollinators are present in the project area?
2. Which plant species are present and are they native?
3. Are the flowers attractive to the target foraging pollinators?
4. Does the vegetation provide a continuous bloom from early spring through fall?
5. Does the project area provide a variety of ground-nesting areas including woody plant stems and twigs with pithy centers, small cavities, abandoned rodent nests, or stands or patches of undisturbed native grass for native bees?
6. Is the number of standing dead or partly dead trees, dead limbs, and amount of downed wood is sufficient for cavity nesting pollinators?
7. Is there sufficient nesting habitat present for hummingbirds?
8. [Insert additional evaluation of suitability of habitat for pollinator consideration questions here]

c. Background on attracting unmanaged pollinators[57]

To attract native pollinators, an area must have adequate sources of food, shelter, water, and nesting sites. Habitat management activities can be undertaken to ensure that habitat needs are met. For example, landowners can purchase, build, or plant additional nest sites or shelter for bats, bees, and butterflies. Pollinator Friendly Practices to attract native pollinators include six different areas of land use management: foraging habitat, reproduction, shelter, invasive/exotic species control, chemical use, and monitoring. Habitat management practices vary depending on the type of native pollinator targeted. However, there are a number of habitat management practices that will benefit most, if not all, groups of native pollinators. These include planting appropriate vegetation, providing water, and using pesticides carefully.[58]

d. General BMPs for pollinator habitat enhancement

- Ensure that different types of pollinators visit by planting flowers of different shapes, sizes, colors, and plants that bloom from early spring into late fall.

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[56] http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf)

[57] (https://plants.usda.gov/pollinators/Native_Pollinators.pdf)

[58] (https://plants.usda.gov/pollinators/Native_Pollinators.pdf)

- Plant flowers in clumps, rather than scattering single flowers throughout the yard, makes it easier for pollinators to locate their next meal.[59] (NPS.Gov)
- Include plants native to the region. Natives are adapted to local climate, soil and native pollinators.
- Incorporate night-blooming flowers to support moths and bats.[60] (Forest service)
- Avoid modern hybrid flowers, especially those with "doubled" flowers. Often plant breeders have unwittingly left the pollen, nectar, and fragrance out of these blossoms while creating the "perfect" blooms for us.[61] (Forest service)
- Before using a pesticide, consider: Are flowers in bloom or are pollinators active during the pesticide application? Are there alternatives to using the pesticide? Am I applying the pesticide according to the instructions? Remember, pollinators can be harmed if they consume nectar or pollen that has come into contact with pesticides. Pesticides can be applied at night when bees and other pollinators are inactive to help reduce the risk of exposure. (NPS.gov)
- Include larval host plants in landscape for caterpillars**.** Place them where unsightly leaf damage can be tolerated. Accept that some host plants are less than ornamental if not outright weeds.[62] (Forest service)
- Create a damp salt lick for butterflies and bees using a dripping hose, drip irrigation line, or by placing a bird bath on bare soil to create a damp area. Mix a small bit of table salt (sea salt is better!) or wood ashes into the mud.[63] (Forest service)
- Leave dead trees or dead limbs out for nesting sites for native bees. Or Build a bee condo by drilling holes of varying diameter about 3 to 5 inches deep in a piece of scrap lumber mounted to a post or under eaves.[64] (Forest service)
    1. Wood-nesting bees are solitary, often making individual nests in beetle tunnels in standing dead trees.
    2. Ground-nesting bees include solitary species that construct nest tunnels under the ground.
    3. Cavity-nesting social species—bumble bees—make use of small spaces, such as abandoned rodent burrows, wherever they can find them.

- Add to nectar resources by providing a hummingbird feeder. To make artificial nectar, use four parts water to one-part table sugar. Never use artificial sweeteners, honey, or fruit juices. Place something red on the feeder. Clean feeder with hot soapy water at least twice a week to keep it free of mold.[65] (Forest service)
- Place a shallow dish of water on deck or window sill to help thirsty pollinators stay hydrated. By placing several semi-submerged stones in the water dish, provide pollinators with places to land so they can drink without running the risk of drowning.[66]

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[59] (NPS.Gov)
[60] (Forest service)
[61] (Forest service)

[62] (Forest service)
[63] (Forest service)
[64] (Forest service)
[65] (Forest service)
[66] Backyard tips https://www.nps.gov/subjects/pollinators/helping-in-our-own-backyards.htm

- Butterflies need resources other than nectar. They are attracted to unsavory foodstuffs, such as moist animal droppings, urine and rotting fruits. Try putting out slices of overripe bananas, oranges and other fruits, or a sponge in a dish of lightly salted water to see which butterflies come to investigate. Sea salt provides a broader range of micronutrients than regular table salt.[67]
- Municipalities can add trees, shrubs and flowers to their planting lists which are of benefit to pollinators. Pollen and nectar of different plants carries distinct nutritional qualities for the honey bees. Diversification of forage sources can be worked into new plantings. For instance, whenever a plant is added or replaced in a landscape, choose a plant that expands the diversity of forage sources available to bees. (State of Utah MP3)
- Counties can plant or encourage the growth of bee forage sources along secondary roads. Secondary road ditches often have numerous plants that provide forage sources for honey bees. Ditches are often mowed for motorist safety and to prevent drifting snow. Consider spot spraying noxious weeds and mowing ditches later in the year to ensure that bee forage is accessible. Incorporate shorter flowering plants into secondary road ditches to decrease attraction of large wildlife.[68]

e. BMPs for pollinator habitat enhancement in agricultural settings and open landscapes

- Know the habitat on the farm; look for areas on and around land that can support native bees.
- Plant hedgerows or windbreaks with a variety of flowering plants and shrubs, and work with neighbors to protect natural areas around farm.
- Protect flowering plants and nest sites protect these resources from disturbance and pesticides use on crops.
    - Exercising Care with pesticides If insecticides are used, choose ingredients targeted to specific species and the least harmful formulations (i.e., granules or solutions). Spray on calm, dry evenings, soon after dark when bees are not active. Keep in mind that even when crops are not in bloom, some of the best pollinators are visiting nearby flowers, where they may be killed by drifting chemicals.[69]
- Allow crops to bolt. If possible, allow leafy crops like lettuce to flower if they need to be tilled right away. This gives bees additional food sources.
- Minimize tillage. Many of the best crop pollinators live underground for most of the year, sometimes at the base of the very plants they pollinate. To protect them, turn over soil only where needed.
- The table below outlines a variety of conservation practices that can be used on farmlands and other types of open landscapes.

[67] (Forest service) Source: http://www.fs.fed.us/wildflowers/pollinators/gardening.shtml
[68] (State of Utah MP3)
[69] (USDA http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/farmers/)

Table 3: Conservation BMPs that can be used to create or enhance pollinator habitat in agricultural settings and open landscapes[70]

Alley Cropping (acre)	Include native trees, shrubs and vines (e.g., black locust (*Robinia pseudoacacia*), *Rubus* spp., etc.) or row covers (e.g., various legumes) that provide nectar or pollen. **Note**: Black locust should be used with care because it is invasive in certain habitats outside of its natural range.
Channel Bank Vegetation (acre)	Include diverse flowering trees, shrubs, vines, and forbs. Channel banks provide a unique opportunity to supply early-flowering willow and, in dry areas, late flowering native forbs (e.g., goldenrod (*Solidago* spp.)). These stable areas of habitat also may support solitary bee ground-nests where the soil surface is accessible, or bumble bees where vegetation becomes dense or duff layers accumulate.
Conservation Cover (acre)	Include diverse forbs (e.g., various legumes) to increase plant diversity and ensure flowers are in bloom for as long as possible, providing nectar and pollen throughout the season.
Conservation Crop Rotation (acre)	Cover crops used during conservation crop rotations can include forbs (e.g., various legumes, buckwheat (*Eriogonum* spp.), phacelia (*Phacelia* spp.), etc.) that provide abundant forage for pollinators. Insecticides should not be applied to these conservation covers. Moving insect-pollinated crops no more than 800 feet during the rotation may help maintain local populations of native bees that have become established because of a specific crop or conservation cover.
Constructed Wetland (acre)	Include stable soil as nesting substrate in more upland areas, as well as plants that provide pollen and nectar for native bees and other pollinators. Look for appropriate wetland plants for the region from these and other genera.
Contour Buffer Strips (acre)	Include diverse legumes or other forbs that provide pollen and nectar for native bees. In addition, mowing only every 2 or 3 years to benefit wildlife also will benefit nesting bumble bees. To protect bumble bee nests, mowing should occur in the late fall when colonies have died for the year and queens are overwintering.
Cover Crop (acre)	Include diverse legumes or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of cover crop plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Some examples include clover (*Trifolium* spp.), phacelia (*Phacelia* spp.), and buckwheat (*Eriogonum* spp.). Many "beneficial insect" cover crop blends include plant species that will also provide forage for pollinators.
Critical Area Planting (acre)	Include flowering plant species that provide abundant pollen and nectar for native bees and other pollinators. Planted areas may support stable soil for ground-nesting solitary bees, or dense vegetation under which bumble bee queens may hibernate or build nests.
Early Successional Habitat Development/Management (acre)	This management practice is important for maintaining open and sunny habitat for pollinators. **Note**: To minimize damage to pollinator populations, disturbance practices should be implemented only every 2 to 3 years in rotation and, ideally, on only 30% or less of the overall site. This allows for habitat heterogeneity and opportunities for recolonization of non-treated habitat. For example, managers could mow or burn a small portion of the habitat (less than 1/3 of the site each year or two) on a 3- to 6-year cycle. Alternatively, they could treat a fifth of the site each year, on a 5-year cycle. In addition, when possible, disturbance practices should be implemented when most pollinators are inactive, such as from late fall to early spring. For details, see the Xerces Society publication *Pollinators in Natural Areas: A Primer on Habitat Management.*
Field Border (foot)	Include diverse legumes or other forbs that provide pollen and nectar for native bees. Strive for a mix of forbs, vines, and shrubs that come into bloom at different times throughout the year. Site management (for example, mowing) should occur in the late fall to minimize impacts on pollen and nectar sources used by pollinators. Alternatively, allowing field borders to become overgrown may provide nesting habitat for bumble bees, as well as abundant forage. Stable (untilled) field borders may provide opportunities for solitary bees to nest in the soil.
Filter Strip (acre)	Include legumes or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of cover crop plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Site management (for example, mowing or burning) should occur in late fall to early spring to minimize impacts on pollinators.

[70] (Source: USDA https://plants.usda.gov/pollinators/Using_Farm_Bill_Programs_for_Pollinator_Conservation.pdf

Grassed Waterway (acre)	Include diverse legumes or other forbs that provide pollen and nectar for native bees. In dry regions, these sites may be able to support flowering forbs with higher water requirements and thus provide bloom later in the summer.
Hedgerow Planting (foot)	Include forbs, vines, and shrubs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year. Bee nesting sites also may be incorporated, including semi-bare ground or wooden block nests. Including strips of unmowed grasses and forbs along the edge of the hedgerow may provide nesting opportunities for bumble bees. This practice also can help reduce the drift of pesticides into areas of pollinator habitat.
Herbaceous Wind Barriers (foot)	Include diverse forbs and shrubs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year.
Multi-Story Cropping (acre)	Include woody plants carefully chosen to supply pollen and nectar for pollinators. Look for mixes of plants that flower at different times throughout the growing season and can support populations of pollinators over time.
Pasture and Hay Planting (acre)	Include diverse legumes (e.g., alfalfa) or other forbs that, when in bloom, provide pollen and nectar for native bees.
Pest Management (acre)	In general, implementing Integrated Pest Management (IPM) for a crop reduces the use and impact of pest control chemicals on pollinators. In addition, plant species commonly used in IPM to support the beneficial insects that help manage pests also can support bees. Examples of these plants include: phacelia (*Phacelia* spp.), sunflowers (*Helianthus* spp.), buckwheat (*Eriogonum* spp.), and yarrow (*Achillea* spp.). Pest management practices also can include replacement of invasive or exotic plant species with flowering native trees, shrubs, vines, legumes, or other forbs that provide pollen and nectar for native bees. Look for a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year.
Prescribed Burning (acre)	Maintain a diverse mix of open, early successional habitat in various stages of habitat maturity.**Note**: It is best if: 1) only 30% or less of a site is burned at any one time to allow for recolonization by pollinators from adjacent habitat; 2) burning occurs only every 3 to 6 years; and 3) burning occurs when pollinators are least active, such as when most plants have senesced or in the fall.
Prescribed Forestry (acre)	Help maintain open understory and forest gaps that support diverse forbs and shrubs that provide pollen and nectar for pollinators. Standing dead trees may be kept or drilled with smooth 3- to 6-inch deep holes to provide nesting sites for bees.
Prescribed Grazing (acre)	Help maintain early successional habitat and its associated flowering plants. Ensure that grazing objectives include a diverse plant community that incorporates legumes, forbs, and appropriate flowering woody species to create floral and structural diversity.
Range Planting (acre)	Include diverse legumes, other forbs and shrubs that provide pollen and nectar for native bees.
Residue and Tillage Management, No-Till/Strip Till/Direct Seed (acre)	Protect bees that are nesting in the ground at the base of the plants they pollinate. Soil tillage digs up these nests (located 0.5 to 3 feet underground) or blocks emergence of new adult bees bred the proceeding year.
Restoration and Management of Rare and Declining Habitats (acre)	Provide diverse locally grown native forage (forbs, shrubs, vines, and trees) and nesting resources for pollinators. Many specialist pollinators that are closely tied to rare plants or habitats may significantly benefit from efforts to protect rare habitat. In addition, certain rare plants require pollinators to reproduce. **Note**: Pollinator plants should only be planted if they were part of the rare ecosystem that is being restored.
Riparian Forest Buffer (acre)	Include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. The stable habitat may supply nest sites to solitary ground and wood-tunnel nesting bees, as well as bumble bees. This practice also can help reduce drift of pesticides onto areas of pollinator habitat.
Riparian Herbaceous Cover (acre)	Include diverse forbs that provide pollen and nectar for native bees. In drier parts of the U.S., many of these forbs flower in the late summer and fall, when pollinator forage is needed most.
Silvopasture Establishment (acre)	If grazing intensity is low enough to allow for plants to flower, this practice can include legumes and other forbs that provide pollen and nectar for bees. Trees and shrubs that provide pollen and nectar also can be planted.

Stream Habitat Improvement and Management (acre)	Plants chosen for adjoining riparian areas can include trees, shrubs, and forbs that provide pollen and nectar for pollinators. Maximizing plant diversity along riparian corridors will result in more pollinators and other terrestrial insects to feed fish in the streams.
Streambank and Shoreline Protection (foot)	If vegetation is used for streambank protection, plants can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Good candidates include willow (*Salix* spp.), dogwood (*Cornus* spp.), and goldenrod (*Solidago* spp.).
Stripcropping (acre)	Can include diverse legumes or other forbs that provide pollen and nectar for native bees. If insect pollinated crops are grown, plants used in adjacent strips of vegetative cover may be carefully chosen to provide a complementary bloom period to the crop, such that the flowers available in the field are extended over a longer period of time.
Tree/Shrub Establishment (acre)	Include trees, shrubs, and vines especially chosen to provide pollen and nectar for pollinators. Woody plants with pithy stems (e.g., elderberry (*Sambucus* spp.), boxelder (*Acer negundo*), and raspberries (*Rubus* spp.) also may be chosen to provide potential nest sites for solitary bees that nest in wood stems.
Upland Wildlife Habitat Management (acre)	Include managing for pollinator forage or pollinator nest sites, such as including nest blocks or snags for solitary bees that nest in tunnels in wood, access to bare soil for ground-nesting solitary bees, and small mammal burrows or overgrown grass cover for bumble bees. **Note**: Please see Early Successional Habitat Development/Management (647) and Prescribed Burning (338) for management techniques that minimize the disruption of pollinator communities.
Vegetative Barriers (foot)	Include plants that provide pollen and nectar for pollinators.
Wetland Enhancement (acre)	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected.
Wetland Restoration (acre)	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected.
Wetland Wildlife Habitat Management (acre)	Wetland and adjacent upland can include trees, shrubs, and forbs especially chosen to provide pollen and nectar for pollinators. Snags can be protected or nest blocks for bees erected. **Note**: Please see Early Successional Habitat Development/Management (647) and Prescribed Burning (338) for management techniques that minimize the disruption of pollinator communities.
Windbreak/Shelterbelt Establishment (foot)	Include trees, shrubs, vines, and forbs especially chosen to provide pollen and nectar for pollinators. Windbreaks and shelter belts are a good place to put nesting structures for native bees, and they can help reduce drift of insecticides onto a site.
Windbreak/Shelterbelt Renovation (foot)	Include trees, shrubs, vines, and forbs especially chosen to provide pollen and nectar for pollinators. If appropriate, dead trees and snags may be kept or drilled with holes to provide nesting sites for bees.

f. Landscaping BMPs for pollinator habitat enhancement[71]

- Decrease lawn mowing frequency to protect lawn flowers for increased foraging opportunities and to reduce compaction to support ground-nesting bees.
- Mow every 2 weeks in high-traffic areas and every 3 weeks in low-traffic areas.
- Develop a mowing rotation plan for each site to ensure that lawn flowers persist throughout the growing season.
- Mulch for landscaping and in gardens in a manner that conserves native ground-nesting pollinators.

[71] http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf)

- Do not apply mulch to all areas; keep some bare dirt exposed. A few small open patches of soil between planting beds will provide habitat for ground-nesting bees.
- Preserve a mulch-free zone of 6–12 inches around the bases of plants to enable ground-nesting bees to construct nests in proximity to the plants they pollinate.
- Install pots of soil buried 8- to 10-inches deep within mulched areas for use by ground-nesting bees.
- Maintain patches thinly top-dressed with less than 1 inch of compost to provide habitat for digging bees while also offering some of the benefits associated with mulch.
- Remove all plastic mulch (of any color). Plastic is detrimental to digging bees and also smothers soil.[72]

g. Background and BMPs for pollinator habitat on roadsides:

Roadside vegetation can provide much needed habitat for pollinators, providing food, shelter, and connections to other patches of habitat. Roadside managers, maintenance staff, and landscape designers can all take steps to improve the quality of roadside vegetation to benefit pollinators, steps that can also reduce costs, maintain public safety, and improve public good will. Roadsides play an important role in the conservation of declining wild pollinators and in supporting the health of managed pollinators. Below is a link to understand Best Management Practices for Roadside maintenance. It was developed by the Department of Transportation

Roadsides are typically dominated by early successional plant communities and can offer feeding, breeding, or nesting opportunities for pollinators, and also aid dispersal of pollinators by linking fragmented habitats. With the right conditions, roadsides can support a diversity of generalist pollinators, including bumble bees, honey bees, butterflies, and hummingbirds as well as rare or federally listed species. Roadsides extend through all landscapes and can be particularly important sources of habitat for pollinators in highly altered landscapes such as intensely managed agricultural lands.[73]

Increase pollinator abundance and diversity by managing roadsides to provide larval host plants, food plants for caterpillars, as well as nectar, pollen, and nesting habitat for ground-nesting bees. Since most solitary bee species have limited foraging ranges, roadsides can provide all of their habitat needs. Some specific strategies are listed below:

- Use an adaptive management approach to test various techniques on a small scale to determine what works best in a given area.
- Select sections of roads with exposure to good sunlight for extended periods, accessibility, and ease of management. Some tree removal along roads to increase sunlight will favor both plant growth and bee nesting and butterfly habitat.
- Native pollinators evolved with and are adapted to native plants. Roadsides that contain monocultures of nonnative plant species can be managed to provide canopy openings for native species to establish.

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72 http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf)

73 https://www.environment.fhwa.dot.gov/ecosystems/Pollinators_Roadsides/BMPs_pollinators_landscapes.asp

- If necessary, initially mow closely, and possibly couple with light soil disturbance, to prepare a seedbed, and expose soil for seed germination and seedling growth. Eliminating nonnative species with herbicide application may be necessary after light soil disturbance or close mowing.
- With permission, collect seeds from forest openings with diverse native wildflower populations as a source of material for roadside plantings.
- Select areas for tree removal to provide more sunlight to promote herbaceous plant growth and flowering in places where subsequent management to maintain the roadside (e.g., mowing) will be possible. Select trees that flower at different times of the year to provide pollen and nectar throughout the growing season. Removing wind-pollinated trees and favoring animal-pollinated ones will provide more flower resources.
- Remove additional trees at the edges of intersections and other large forest openings to provide additional sunlight and better growing conditions for herbaceous flowering plants.[74]

[74] http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf

III. Tribal Pollinator Protection Goals

The examples discussed from the 2015 Tribal Pollinator Protection training along with the BMPs in this document can be used as a starting point for a tribal community to start developing goals with their stakeholders. Along with both the goal, an implementation strategy, a set deadline, and method to measure the success should be included.

After completing the template, summarize the three steps for each tribal goal developed and agreed on by tribal stakeholders.

Step one: Select goal and start date
Step two: Develop an implementation strategy, deadline and a method to measure success
Step three: Measure success at deadline

a. Example: Pollinator habitat enhancement goal

Step one: Increase pollinator forage/habitat on reservation (Start date: January 1, 2017)

Step two: Increase habitat at 5 farms and 3 schools totaling 10 additional acres of pollinator habitat by March 2018. (Deadline March 31st, 2018)

Step three: After March 31st, 2018 record the acreage of Pollinator habitat that increased since the start date

[Insert a three step outline of each tribal pollinator protection goal:]
Goal 2:
Step one: [select goal and start date]
Step two: [implementation strategy, set deadline, and method to measure success]
Step three: [Measure success at deadline]

Goal 3:
Step one: [select goal and start date]
Step two: [implementation strategy, set deadline, and method to measure success]
Step three: [Measure success at deadline]

Section Four:

Funding Resources And Implementation

Section Four: Funding Resources and Implementation

I. Funding Resources

a. General Assistance Program Funding

The General Assistance Program (GAP) was created to assist federally recognized tribes and intertribal consortia to plan, develop, and establish the capacity to implement programs administered by the EPA and to assist in the development and implementation of solid and hazardous waste programs for Indian lands. When identifying fundable GAP activities, the program capacity building indicators in Appendix I of the GAP Guidance are a helpful resource because they provide specific examples of milestones that GAP-funded activities, or a combination of activities, could support toward building environmental program capacity, consistent with EPA's environmental protection programs. The indicators offer a non-exclusive menu of choices organized by category of environmental program development.

Once a capacity is established, tribes may seek funding under EPA's media-specific programs to support more complex program development and implementation while continuing to use GAP resources for ongoing capacity building activities.

Examples of GAP eligible Pollinator Protection planning work:

1. Developing a pollinator protection plan
2. Training on Pollinator Protection (developing skills and expertise on the subject)
3. Compiling relevant baseline data to make decisions (Pollinator Baseline Needs Assessment)
    a. Inventory of pollinator friendly plants on the reservation
4. IPM program development
5. Strategies for Tribal Government
    a. Developing a code/ordinance on what types of plants that government should plant around the reservation – "Pollinator Friendly Purchasing Ordinance"
6. Outreach/Education
    a. Developing a tool for members to identify pollinator friendly plants they have around.
    b. Developing a guide for members to create their own pollinator friendly gardens
    c. Developing Newsletter Articles on Pollinator Protection
    d. Developing Education and Outreach materials to present at tribal events on Pollinator Protection
    e. Developing MOUs with neighboring communities about pollinator protection

For more information on GAP funding visit:
https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=1fc6cafa066f81b0cd60e9f76887bab1

https://www.epa.gov/sites/production/files/2015-05/documents/gap-guidance-final.pdf

b. EPA funding programs that support tribal capacity development and/or implementation of TSCA and FIFRA (GAP GUIDANCE Pages 4-6)

- Consolidated Pesticides Enforcement Cooperative Agreements [CFDA No. 66.700]: Assistance for developing and maintaining comprehensive pesticide programs that address all aspects of pesticide enforcement, and special pesticide initiatives; sponsor cooperative surveillance, monitoring and analytical procedures; and encourage regulatory activities to support and strengthen pesticide compliance programs, including pesticide compliance monitoring, inspection and enforcement activities.
  - For more information on Pesticide Enforcement Cooperative Agreement grants visit: https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=c5fd50b85f1c5a536ab587cfd0797256

- Pesticide Environmental Stewardship Regional Grants [CFDA No. 66.714]: Assistance to support integrated pest management approaches that reduce the risks associated with pesticide use in agricultural and non-agricultural settings, including: pesticide risk reduction, pesticide pollution prevention, Integrated Pest Management (IPM) implementation, and children's health issues related to pesticides.

  - For more information on Pesticide Environmetnal Stewardship Regional grants visit: Website: https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=f15f2b5abe46757556e82ba1496968d2

- Research, Development, Monitoring, Public Education, Training, Demonstrations, and Studies [CFDA No. 66.716]: Assistance support Research, Development, Monitoring, Public Education, Training, Demonstrations, and Studies assistance relating to the protection of public health and the environment from pesticides and potential risk from toxic substances. Projects for safer use of pesticides, including worker protection, certification and training of pesticide applicators, protection of endangered species, tribal pesticide programs, integrated pest management; environmental stewardship.
  - For more information on Research, Development, Monitoring, Public Education, Training, Demonstrations, and Studies grants visit: https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=dd4ecc4247b81e51b868232d40d953fc

c. USDA funding opportunities

- **EQIP (Environmental Quality Incentives Program)**

EQIP provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.

For more information on EQUIP funding visit: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelprdb1242633

- **CRP (Conservation Reserve Program)**

The Conservation Reserve Program (CRP) pays a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that will improve environmental quality.

For more information on CRP funding visit:

http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index

- **Conservation Reserve Enhancement Program**

The Conservation Reserve Enhancement Program (CREP), an offshoot of CRP, targets high-priority conservation issues identified by government and non-governmental organizations. Farm land that falls under these conservation issues is removed from production in exchange for annual rental payments.

For more information on CREP funding visit:

http://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-enhancement/index

d. U.S. Fish and Wildlife Service funding opportunities

- **Tribal Wildlife Grants**
  Tribal Wildlife Grants are used to provide technical and financial assistance to Tribes for the development and implementation of programs that benefit fish and wildlife resources and their habitat. Activities may include, but are not limited to, planning for wildlife and habitat conservation, fish and wildlife conservation and management actions, fish and wildlife related laboratory and field research, natural history studies, habitat mapping, field surveys and population monitoring, habitat preservation, conservation easements, and public education that is relevant to the project. The funds may be used for salaries, equipment, consultant services, subcontracts, acquisitions and travel.

For more information on Tribal Wildlife Grants visit: https://www.fws.gov/nativeamerican/grants.html

II. Communication, Outreach and Resources

a. Stakeholder considerations to guide communication and outreach

- What are good practices to communicate and work together with neighbors, within and outside of tribal jurisdiction on pollinator issues?
- What are strategies to change public perception on bees being a nuisance?
- What are the best formats to educate the tribal community about pollinator health and pollinator protection? (ex. brochures, radio ads, classes, workshops, newspapers)
- What is the best way to inform the public who are concerned about bee allergies?
- Framing messaging and outreach to gain consensus among stakeholders (developed during Tribal Pollinator Training November 2015)
  - Why – the value of protecting pollinators
  - We're in this together (cross stakeholder collaboration)
  - Jurisdictional questions – need consensus among stakeholders

- Lease "improvements" could include PP requirements
- [Insert additional communication and outreach considerations and questions relevant to tribal community here]

b. Targeting the "right" people with outreach and education

The tribal community as a whole is a diverse stakeholder group, and targeted outreach on specific BMPs may be appropriate for certain members of the community. Major stakeholder in pollinator protection, and as discussed in previous sections there are also specific BMPs they can adopt. Listed below are examples of community members who may need focused outreach:

- Members outside of the agricultural community
- Lease Holders
- Cooperation with non-tribal owners, land users, and neighbors
- Trust land considerations
- Stakeholders involved with checker boarding within and off reservation

c. Engaging and informing the public on pollinator habitat enhancement[75]

Community engagement and education are critical components for achieving pollinator habitat objectives. Large expanses of prime pollinator habitat may appear unkempt to the untrained eye, and efforts must be made to inform the public, in advance, of the benefits of maintaining this type of habitat. Some Community outreach and education approaches are listed below:

- Holding community gardening events (TPT)
- Develop educational gardens at K-12 schools (TPT)
- General Mailings (TPT)
- Mail pollinator protection information out with lease packet (TPT)
- Newspaper advertisements (TPT)
- Develop PSA for radio and TV advertisements (TPT)
- Using Social Media to spread the word (TPT)
- Posting signs indicating the intent of the habitat project, as well as the species of plants and pollinators that may be found there;[76] (FS)
- Clearly indicating that pollinator habitat is being prioritized, such as with obvious markings and lines between mowed areas and pollinator habitat on rights-of-way;[77]
- [List additional approaches for community outreach here]

d. Web links to outreach materials

U.S. Fish and Wildlife Service

- Attracting Pollinators to your Garden. (Web and Print Version)
  - https://www.fws.gov/pollinators/pollinatorpages/yourhelp.html
- Reducing Risks to Pollinators from Pest Control
  - https://www.fws.gov/pollinators/pdfs/Reducing_Risks_to_Pollinators_from_Pest_Control_factsheet.pdf

USDA

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[75] (TPT)

[76] (FS) (http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf)

[77] (FS) (http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf)

- NRCS Wildlife Habitat Management Institute Native Pollinators brochure
  - http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1048334.pdf

US EPA

- **Bee Careful with Pesticides! (Infographic and brochure)** Basic tips for consumers to protect pollinators: Consumers can help protect pollinators when managing the pests in their yard and garden. These tips, including using pollinator-friendly plants and following product label directions, can help you protect pollinators
  - https://www.epa.gov/pollinator-protection/basic-tips-consumers-protect-pollinators

e. Pollinator friendly plant selection resources

The technical documents on the website below include plant lists, fact sheets, and other general guidance such as technical notes, habitat installation guides, and habitat assessment guides that provide additional information to improve planning and implementation of conservation practices or broaden understanding of a practice's value. The NRCS and its partners have also presented and recorded webinars to help train NRCS staff, partners, and landowners on pollinator habitat conservation techniques.

State PLANTS checklist: http://plants.usda.gov/dl_state.html

USDA PLANTS Website: http://plants.usda.gov/pollinators/NRCSdocuments.html

[Insert types of plants appropriate for tribal land based on geography]

Section Five:

Appendices

Appendix A: Hawaii Department of Agriculture Stakeholder Survey Example

Directions: *Distribution of a survey can determine what tribal stakeholder concerns are. The three sample surveys below were created for beekeepers, growers and landscape technicians, and public school principals. Customize the survey for your tribe, by including tribe specific concerns and challenges that can inform the development of a plan.*

Optional Introductory Statement for Survey Participant:

Multiple federal reports have identified pollinator declines as a concern. While the USDA and EPA have identified multiple factors associated with pollinator declines; no factor has been identified as a single "cause". Amongst these factors are:

- Disease/Parasites
- Agricultural Practices
- Urbanization
- Pesticides
- Nutrition
- Best Management Practices

The [Insert tribe name here] along with other tribal and state lead agencies are being called upon to develop Pollinator Protection Plans to address these concerns.

The purpose of this survey is to help define whether problems exists for pollinators and their habitats in the [insert tribe name here] community and how much interest you have to help support the development of a Pollinator Protection Plan for [insert tribe name here].

[SAMPLE SURVEY #1 Beekeepers]

The purpose of this survey is to help define whether a problems exists for pollinators and their habitats in [Insert tribe name here] and how much interest you have to help support the development of a Pollinator Protection Plan in [Insert tribe name here]

Q1. I am aware of the federal effort to protect pollinators and their habitats?

- Yes
- No

Q2. Do you provide bee pollinator services for a fee or other compensation?

- Yes
- No

Q3. I am a ….. (Check all that may apply)

- Hobbyist beekeeper (1 – 10 hives)
- Sideliner (11 – 199 hives)
- Commercial honey producer (3200 = hives)
- Queen Breeder

Q4. As a beekeeper, would you support a "*mandatory*" apiary registry?

- Yes
- No

Q5. As a beekeeper, would you support a "*voluntary*" apiary registry?

- Yes
- No

Q6. As a beekeeper, would you participate in a reporting system that alerts farmers as to the location of your hives?

- Yes
- No

Q7. As a beekeeper, what would you expect growers to do to better protect your beekeeping operation? (Check all that may apply)

- Use less toxic pesticides
- Make no spray applications when bees are actively foraging
- Create pollinator habitats
- Keep spray applications to a minimum
- Alert neighboring beekeeper in advance of spray application(s)

Q8. As a beekeeper, if you experience a sudden bee die off or bee kill, what would you do? Check as many as apply.

- Check on sanitation of hives
- Look for pest predators i.e. Varroa mite, small hive beetle,
- Look for diseases
- Look for abnormal bee behavior in or around the hive
- Review your hive sanitation protocols.
- Contact State Apiary Program for assistance.
- Contact State Pesticides Program enforcement section.
- Contact EPA Region 9
- Other; please list.

Q9. Have you recently (within the past 3 years) experienced any bee kill that may be attributed to pesticides?

- Yes
- No

Q10. Are you aware of the symptoms to watch for with a pesticide kill?

- Yes
- No

Q11. Are you aware how to monitor for varroa mite and watch for symptoms?

- Yes
- No

Q 12. Are you concerned about current pesticide use having an impact on pollinator's health or their habitats?

- Yes
- No

Q13. I am aware of resources from state government available to help beekeepers with managing and caring for bee hives.

- Yes
- No

Q15. I would participate in a stakeholders meeting to further discuss the goals of a Pollinator protection plan [insert tribe name here]

- Yes
- No

Q16: If the answer to question 15 is no, please explain why you are not interested/or are not able attend stakeholder meetings in the box below:

Q18: **[Add additional questions for beekeepers here]**

[SAMPLE SURVEY Growers and Landscape Maintenance Technicians]

For **Growers or Landscape Maintenance Technicians**: The purpose of this survey is to help define whether a problems exists for pollinators and their habitats in [insert tribe name here]. Specifically if there are concerns about current pesticide use having an impact on pollinator's health or their habitats?

Q1. How critical is the status of pollinator health that warrants immediate action to address their plight?

- Not critical
- Very critical
- I am not familiar with pollinator decline

Q2. As a growers or landscape maintenance technician who applies pesticides, I am concerned with the issue of pesticide use and the wellbeing of pollinators?

- Concerned
- Not concerned

Q3. I am aware of the federal effort to protect pollinators and their habitats?

- Yes
- No

Q4. As a spray applicator, I would be willing to voluntarily alert beekeepers nearby my farm or landscape maintenance projects prior to my application(s) so as not to impact bees.

- Yes
- No

Q5. As a spray applicator, I would participate in a mandatory reporting system that alerts bee keepers of my spray applications?

- Yes
- No

Q6. As a spray applicator, I am aware that my pesticide spray applications could impact foraging and other pollinator types?

- Highly aware
- Somewhat aware
- Just don't care

Q7. I utilize some of these Best Management Practices (BMPs) to Protect Pollinators

- Make no spray applications when bees are actively foraging
- Review and understand my pesticide labels so as not to impact bees and other pollinators
- Limit my use of neonicotinoid products
- Other: Please list _____

Q8. I would participate in a stakeholders meeting to further discuss the goals of a pollinator protection plan for [Insert tribe name here.]

- Yes
- No

Q9. If the answer to question 8 is no, please explain why you are not interested/or are not able attend stakeholder meetings in the box below:

Q10. I would interested in planting a habitat for pollinators around my farm or a designated area in a public setting.

- Yes
- No
- Currently already doing something similar

Q11: **[Add additional questions for growers or landscape technicians here]**

[SAMPLE SURVEY for Public School Principals]

The purpose of this survey is to help define whether a problems exists for pollinators and their habitats in **[Insert tribe name here]** and how much interest you have to help support the development of a Pollinator Protection Plan.

Q 1. I am aware of the federal effort to protect pollinators and their habitats?

- Yes
- No

Q. 2. Our school has a dedicated garden but we would be interested in planting a habitat for pollinators around the school campus as well.

- Yes
- No
- Currently already doing something similar

Q 3. Our school would participate in a stakeholders meeting to further discuss the goals of a Pollinator Protection plan in **[Insert tribe name here]**

- Yes
- No

Q4: If the answer to question 3 is no, please explain why you are not interested/or are not able attend stakeholder meetings in the box below:

Q5: **[Add additional questions for public school principals here]**

Appendix B: Region 9 State pollinator laws, codes, policies, and contacts

a. Arizona

Arizona's Law for Bee Protection in Agriculture

- **Arizona's law was developed to be used as a base to help aid in communication between landowners/growers, pesticide applicators and beekeepers. In addition, two forms have been developed to be used with the law to help ensure clear communication and so everyone understands how that communication will occur so as to minimize impacts on both parties and yet provide needed protections. These forms, which can be found in the Appendix, may be modified so they work best for the situation being faced and are available on our webpage: https://agriculture.az.gov/forms-library?field_category_term_tid=42&=Apply**
- ***A.R.S. § 3-367.02. Notification by beekeepers of bees located in a commercial agricultural area***
- ***A. Before locating bees on an apiary site, the owner of the bees shall obtain the landowner's or lessee's permission and notify in writing persons engaged in commercial agriculture on whose land the bees may forage. The notice shall include the beekeeper's address and telephone number, the location of the hives within a quarter section and the exact dates that the bees will be in the area.***
- ***B. After receiving the notice required by subsection A, the person who engages in commercial agriculture shall inform the beekeeper, before application, when a bee sensitive pesticide will be applied to the area in which the bees are foraging.***
- ***C. A failure by the beekeeper or the owner of the bees to notify the person or persons who engage in commercial agriculture as provided by subsection A constitutes prima facie evidence that no loss occurred due to a pesticide application and no pesticide violation related to bees has occurred.***

Arizona Landowner Notification Form Text:

Arizona Law requires that I _____ get permission to place my bees on your lands and notify ag operators in the area where my bees will forage. This allows us to keep an open line of communication so that you can notify me and I can take appropriate actions to protect my bees - avoiding pesticide label violations. By working together we can avoid problems.

I seek permission to place my bees in the following locations: (*list them, attach maps and then state how many maps are attached - whatever works to clearly show where the hives will be and the anticipated dates you would like to place them there.)*

This agreement is good from _____, 20__ through _____, 20__.

_____ _____

Landowner/Lessee Signature Date

_____ _____

Beekeeper Signature Date

Arizona Beekeeper Notification Form Text:

Arizona Law requires that I _____ get permission to place my bees on lands and notify ag operators in the area where my bees will forage. This allows us to keep an open line of communication so that you can notify me and I can take appropriate actions to protect my bees - avoiding pesticide label violations. By working together we can avoid problems.

I have obtained permission to place my bees in the following locations: (*list them - attach maps and then state how many maps are attached, whatever works to clearly show where the hives will be and the anticipated length of time you will place them there.)*

This is to let you know of my bee locations so that you can notify me prior to making pesticide applications that may be harmful to my bees. I can be reached at the following numbers: _____. As we have discussed this is how the procedure will normally work, realizing there may be times when alternate methods of communication will be needed. _____ _____ (*put in here how you both agree the procedure should work – realizing that neither party wants to be taken advantage of – not moving bees in a timely manner or notification of applications without allowing time to take protective measures for the bees)*

This agreement is good from _____, 20__ through _____, 20__.

_____ _____

Grower Signature Date

_____ _____

Beekeeper Signature Date

i. Arizona Contacts

Jack Peterson
Associate Director, Arizona Department of Agriculture
1688 W. Adams St.
Phoenix, Arizona 85007
Phone: (602) 542-3575
Email: Jpeterson@azda.gov

Arizona Bee Kill Reporting:
Report suspected pesticide-related bee kills to the ADA Environmental Services Division immediately. Inspect bee behavior regularly. The ADA is the lead pesticide regulatory agency in the state. The ADA will respond to complaints, including collecting and analyzing locations for pesticide residues. Some pesticides degrade rapidly so timely reporting will aid the pesticide investigation. Beekeepers can report suspected pesticide incidents by calling **1-800-423-8876 or 602-542-0986** and asking to speak to a representative about a pesticide complaint.

Arizona web resources:

- Beekeepers Association of Central Arizona- http://www.azbaca.org/index.html
- Carl Hayden Bee Research Center - http://www.ars.usda.gov/main/site_main.htm?modecode=20-22-05-00
- University of Arizona Bees - http://ag.arizona.edu/urbanipm/buglist/bees.pdf
- http://www.apiaryinspectors.org/members/states.html#az

Brett Cameron
Assistant Director
Arizona Department of Agriculture
Agricultural Consultation & Training
1688 West Adams St.
Phoenix, AZ 85007
Phone: 602-542-0984
Fax: 602-364-0830
Email: *bcameron@azda.gov*
Website: *azda.gov*
Land Grant University Website: *ag.arizona.edu/ento*

State Beekeeper's Association:
www.azbaca.org

b. California

6652. Availability for Notification.

(a) Each beekeeper who desires advance notice of applications of pesticides shall inform the commissioner of a two-hour period between 6 a.m. and 8 p.m. each day, during which time the beekeeper shall be available for contact, at the beekeeper's expense, to receive advance notice from persons intending to apply pesticide(s). This request for notification shall expire on December 31 each year.

(b) This Section shall apply statewide. However, from March 15 through May 15 in a citrus/bee protection area, if there are conflicts between the provisions of this Section and those of Section 6656, Section 6656 shall prevail.

NOTE: Authority cited: Section 11456 and 29102, Food and Agricultural Code.

Reference: Section 29102, Food and Agricultural Code.

6654. Notification to Beekeepers.

(a) Each person intending to apply any pesticide toxic to bees to a blossoming plant shall, prior to the application, inquire of the commissioner, or of a notification service designated by the commissioner, whether any beekeeper with apiaries within one mile of the application site has requested notice of such application.

(b) If the person performing pest control is advised of a request for notification, he or she shall notify the beekeeper, at least 48 hours in advance of the application, of the time and place the application is to be made, the crop and acreage to be treated, the method of application, the identity and dosage rate of the application to be applied, and how the person performing pest control may be contacted by the beekeeper. This time may be increased or decreased by the commissioner, or by an agreement of both the beekeeper and the person performing the pest control work.

(c) This section shall apply statewide. However, from March 15 through May 15 in a citrus/bee protection area, if there are conflicts between the provisions of this section and those of section 6656, section 6656 shall prevail.

NOTE: Authority cited: Section 29102, Food and Agricultural Code.

Reference: Section 29102, Food and Agricultural Code.

6655. Notification Region for Butte, Glenn and Tehama Counties.

(a) The counties of Butte, Glenn, and Tehama are established as a region for the notification of apiary owners of pesticide applications by pest control operators who are registered with the commissioners of any of these counties pursuant to Section 11732 of the Food and Agricultural Code, and who are required to give notification to beekeepers pursuant to Section 6654.

(b) The agricultural commissioner of Glenn County shall be the coordinator for the region.

(c) Pest control operators specified in (a) shall pay an annual fee of $75.00 to the coordinator. The fee shall be paid at the same time the operator registers with any of the commissioners in the region as specified in (a).

(d) Beekeepers who have filed a request with any of the agricultural commissioners of the region for notification of pesticide usage pursuant to Section 29101 of the Food and Agricultural Code, shall pay an annual fee to the coordinator in accordance with the following schedule:

Beehives	Annual Fee
1 to 100	$10.00
101 to 500	$25.00
501 to 2,000	$50.00
Over 2,000	$100.00

The fee shall be paid at the same time the beekeeper files a request for notification of pesticide applications with any of the commissioners of the region.

NOTE: Authority cited: Sections 11456, 29080, 29081 and 29082, Food and Agricultural Code. Reference: Sections 29080, 29081, 29082, and 29101, Food and Agricultural Code.

State of California Food and Ag code Text
29100.

(a) The Legislature hereby finds and declares that bees perform a valuable service to agriculture in this state.

(b) The Legislature further finds and declares that the necessary application of certain pesticides to blossoming plants poses a potential hazard to bees.

(c) The Legislature further finds and declares that the use of pesticides is necessary for the protection of agricultural crops. (d) The Legislature further finds and declares that certain factors, including, but not limited to, the time of application, the type of pesticides used, the type of blossoming plant involved, the proximity of the apiaries, and the ability to locate and notify the owners of the apiaries involved, directly affect the extent of the harm to bees resulting from pesticides. (http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fac&group=29001-30000&file=29100-29103)

State of California Pollinator Protection Laws Text

29101. (a) Each beekeeper shall report to the commissioner of the county in which his or her apiary is located on a form approved by the director, each location of apiaries for which notification of pesticide usage is sought. This report for notification may be filed with and be part of the form used for registration pursuant to Article 4 (commencing with Section 29040), or shall be thereafter submitted in writing if telephonic notice of relocation is made as set forth in Section 29070. Except for reports filed as part of an initial registration pursuant to Section 29040, each request shall be mailed within 72 hours before locating an apiary, where feasible, but in no event later than 72 hours after locating an apiary.

(b) The beekeeper shall not be entitled to notification until receipt and processing of the report is made by the commissioner. However, the commissioner may provide notice earlier if practicable.

(c) Notice to pesticide applicators shall not be required until the written report by the beekeeper has been received and processed by the commissioner, except that the commissioner may provide notice earlier if practicable.

(d) The commissioner shall process the written report as expeditiously as reasonable, but shall not exceed 16 working hours. The 16-hour period shall commence upon receipt of the written report. 29102.

(a) The director shall adopt regulations necessary to minimize the hazard to bees, while still providing for the reasonable and necessary application of pesticides toxic to bees to blossoming plants. The regulations may be limited to specific blossoming plants.

(b) Regulations adopted pursuant to this section may be applicable to either the entire state or specified areas of the state. Regulations that are applicable to only specified areas of the state shall include provisions for the mandatory notice of movement of apiaries, including any relocation thereof within the area to which the regulations are applicable.

(c) The regulations may also include provisions for timely notification of apiary owners of proposed pesticide applications, and limitations on the time and method of application of pesticides and the pesticides used.

29103. Failure of a beekeeper to remove hives from a specific location, except during specific periods of time, as provided in subdivision (c) of Section 29102 after notification, shall not prevent the application of pesticides to blossoming plants if consistent with the pesticide's labeling and regulations. When the pesticide applicator has complied with the notification pursuant to subdivision (c) of Section 29102 the applicator shall not be liable for injury to bees that enter the area treated during or after the application.

CDPR “Protection Areas”

6656. Citrus/Bee Protection Area.

(a) The area within one mile of any citrus planting of one acre or more in Fresno, Kern, or Tulare County is designated as a citrus/bee protection area.

(b) The citrus bloom period, in any citrus grove, for purposes of declaring bloom and label interpretation, shall be from when 10 percent of the total citrus blossoms are open until 75 percent of the blossom petal on the north side of the trees have fallen. The commissioner shall give public notice of the official beginning and ending dates of each citrus bloom period for each citrus growing district in the county, at least three days before establishing such dates.

(c) Pesticide applications may be made 48 hours or more after the official end of citrus bloom without advance notification to beekeepers until March 15 of the following year pursuant to section 6654(c). Growers/pesticide applicators wishing to make pesticide applications prior to 48 hours after the official end of bloom shall follow the inquiry and notification procedures specified in subsections(a) and (b) of section 6654.

(d) Each person who owns or operates any apiary within a citrus/bee protection area from March 15 through May 31, shall file a written notice of apiary locations with the commissioner before March 15 and shall update such notice, including notice of departure from the citrus/bee protection area.

(e) Within a citrus/bee protection area, each beekeeper who desires notifications of applications of pesticides shall be available for telephone contact at the beekeeper's expense between 4 p.m. and 7 p.m., Monday through Saturday from March 15 through May 31, to receive advance notice for persons intending to apply pesticide(s).

(f) Any person intending to apply a pesticide toxic to bees to citrus during a citrus bloom period, except as otherwise provided in this subsection, shall file a notice of intent with the commissioner as provided in section 6434(b) at least 48 hours prior to the intended application. This subsection shall not apply to pesticides listed in section 6656(g) applied when bees are inactive.

(g) Notwithstanding section 6654(b), the following pesticide applications may be made within a citrus/bee protection area during the citrus bloom period when bees are inactive without notifications to beekeepers:
(1) Methomyl (Lannate);
(2) formetanate (Carzol);
(3) Chlorpyrifos (Lorsban);
(4) Any pesticide applied so that the RT period shown on the labeling will expire before the next period of bee activity.

(h) Except for applications of pesticides listed in subsection (g), and applications of pesticides that are not toxic to bees, within a citrus/bee protection area during the citrus bloom period, an application delay of 48 hours or more requires that the person intending to apply the pesticide re-contact beekeepers and inform them of the change in scheduling.
(i) The following applications to citrus are prohibited within a citrus/bee protection area:

(1) Carbaryl (Sevin) from first bloom until complete petal fall.
(2) Any pesticide toxic to bees, except those exempted in subsection (g) during a citrus bloom period, unless the need for control of lepidoptera larvae or citrus thrips (Scirtothrips citri) has been established by written recommendation of a representative of the University of California, Agricultural Extension

Service, or a licensed agricultural pest control adviser. The recommendation shall state either that the citrus planting does not meet the citrus bloom period criteria, or why alternatives less hazardous to bees would not be effective. For azinphos-methyl (Guthion), this requirement shall remain in effect until complete petal fall.

NOTE: Authority cited: Sections 11456 and 29102, Food and Agricultural Code.

Reference: Sections 29100, 29101 and 29102, Food and Agricultural Code.

I. California contacts

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Website: *www.cdfa.ca.gov/phpps*

Land Grant University Website:
beebiology.ucdavis.edu

State Beekeeper's Association:
www.californiastatebeekeepers.com
Source http://www.apiaryinspectors.org/members/states.html#ca

b. **Hawaii contacts**

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NAC 555.470, requires any pest control licensee who intends to apply any pesticide known to be harmful to bees, give 24 hours advance notice to any apiarist having bees on the land or adjacent land by telephone or in person. The current regulation also requires beekeepers to notify pest control licensees about the location of their bee colonies. Although not required, it is highly recommended that beekeepers post, in an obvious place, the name and contact information in or near the apiary to help applicators give notification. Although the regulation needs updating, the notification requirements are sufficient for implementation of this plan. (Nevada MP3)

NAC 555.470 Protection of bees. (NRS 555.380, 555.400)

1. Except as otherwise provided in subsection 2, any licensee who intends to apply to agricultural crops any pesticide known to be harmful to bees shall give notice of that intent to any apiarist having bees on the land to be treated or on adjacent land, so that the apiarist will be able to protect his or her bees.

2. The notice is not required if the apiarist has not given the licensee current information regarding the location of the apiary.

3. The notice required by this section must be given personally or by telephone to the apiarist.

4. Except as otherwise provided in this subsection, the notice must be given not more than 72 hours and not less than 24 hours before the application. Notice of an intent to apply the organophosphorous insecticide Parathion in microencapsulated formulations or carbamate insecticides (Sevin, carbaryl; Furadan, carbofuran) must be given at least 48 hours before the application to each apiarist having apiaries within 2 miles of the field to be treated if the apiarist has provided the licensee with the location of his or her apiaries. If an application is postponed after proper notice has been given, the licensee must repeat the notice at least 12 hours before the rescheduled application.

5. The notice required by this section must include:

(a) The name of the person for whom the application is to be made;

(b) The location and acreage of the land to be treated; and

(c) The name of the pesticide to be applied.

[Dep't of Agriculture, part No. 55.34, eff. 6-1-59; A 7-1-69; 5-22-72; + part No. 55.37, eff. 8-1-74; A 1-17-77; 5-2-78; 6-11-80]—(NAC A 2-5-82; 10-14-82; 10-17-86)

D. Nevada

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Land Grant University Website: *www.unce.unr.edu*

Northern Nevada Beekeepers Association

The Northern Nevada Beekeepers Association web site maintains an up-to-date contact list of beekeepers willing and available to pick up swarms and to remove established colonies from structures. Since there is not a similar single list for Southern Nevada, it is recommended that individuals who are willing to collect swarms in Southern Nevada include their contact information on the Northern Nevada Beekeepers Association web site (this is already being done). Nearly all of the swarms and unmanaged colonies in Clark County are Africanized. For that reason, the recommendation has been to destroy the swarms. However, any effort to save these swarms would enhance the honey bee population. Beekeepers who collect these swarms are required to re-queen them as soon as possible under existing state law and in doing so, will help to reduce, to a certain extent, the spread of the Africanized bee. (Nevada Plan)

http://www.northernnevadabeekeepersassociation.org/

Appendix C: Additional Resources

Directions: Below are additional resources to include in plan

Reporting Bee Kills
Suspected bee poisoning incidents can be reported to U.S. EPA, using the following internet link: beekill@epa.gov.

[Insert additional tribe specific resources or contacts here]

Appendix D: Glossary of Acronyms

- USDA NASS: United States Department of Agriculture National Agricultural Statistics Service
- MP3: Managed Pollinator Protection Plan
- PCA: Pest Control Advisor
- BMPs: Best Management Practices
- NRCS: Natural Resource Conservation Service
- CDPR: California Department of Pesticide Regulation
- RUPs: Restricted Use Pesticides
- TSCA: Toxic Substance Control Act
- FIFRA: Federal Insecticide Fungicide and Rodenticide Act
- GAP: General Assistance Program
- [Insert additional acronyms here]

References

USDA Forest Service: Gardening For Pollinators

http://www.fs.fed.us/wildflowers/pollinators/gardening.shtml

USDA NRCS: Using Farm Bill Programs for Pollinator Conservation (August 2008)
https://plants.usda.gov/pollinators/Using_Farm_Bill_Programs_for_Pollinator_Conservation.pdf

National Park Service: Helping in your Backyard

https://www.nps.gov/subjects/pollinators/helping-in-our-own-backyards.htm

USDA Forest Service: Bee Basics An Introduction to our Native Bees

http://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLands05152015.pdf

US Department of Transportation Federal Highway Administration: Roadside Best Management Practices that Benefit Pollinators

https://www.environment.fhwa.dot.gov/ecosystems/Pollinators_Roadsides/BMPs_pollinators_landscapes.asp

USDA NRCS: Native Pollinators
https://plants.usda.gov/pollinators/Native_Pollinators.pdf

USDA Forest Service:
http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf

The Xerces Society: Habitat Assessment Guides
http://www.xerces.org/pollinator-conservation/habitat-assessment-guides/

The Xerces Society Native Bee Conservation Pollinator Habitat Assessment Form and Guide for Farms and Agricultural Landscapes
http://www.xerces.org/wp-content/uploads/2009/11/PollinatorHabitatAssessment.pdf

MP3s and State documents
Arizona Department of Agriculture (ADA) Pollinator Protection Plan (2016) (Sent Via email by Jack Peterson, Assistant Director, Arizona Department of Agriculture)

State of Utah Managed Pollinator Protection Plan

Nevada Department of Agriculture (NDOA) Pollinator Protection Plan (2016) (Sent via Email from Charles Moses, Environmental Scientist IV | Plant Industry Divison, NDOA)

Hawaii Department of Agriculture (HDOA) Pollinator Stakeholder Survey (May 2016) (Provided by Tom Matsuda, Pesticides Program Manager HDOA

California Pollinator Protection Documents
http://www.cdpr.ca.gov/docs/enforce/pollinators/index.htm

Government Accountability Office (GAO) Bee Health: USDA and EPA Should Take Additional Actions to Address Threats to Bee Populations (February 2016) http://www.gao.gov/products/GAO-16-220

White House's National Strategy to Protect the Health of Honey Bees and Other Pollinators (May 2015)
https://www.whitehouse.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf

State FIFRA Issues, Research, and Evaluation Group Final Guidance for State Lead Agencies for the Development and Implementation of Managed Pollinator Protection Plans (June 2015)
https://aapco.files.wordpress.com/2015/08/sfireg-mp3-guidance-final.pdf

Meeting Notes:

MP3 symposium notes (March 2016 Washington D.C)
2015 Pollinator Protection Training for Tribes
Spokane, Washington – November 17-19, 2015
Final Report *(draft 8.3.2016*