Learn the Basics: Start Your Pollinator Protection Plan to Protect Natural Resources

2019 Tribal Lands and Environment Forum

August 21, 2019

Tribal Pesticide Program Council (TPPC) &
US EPA Office of Chemical Safety and Pollution Prevention (OCSPP)

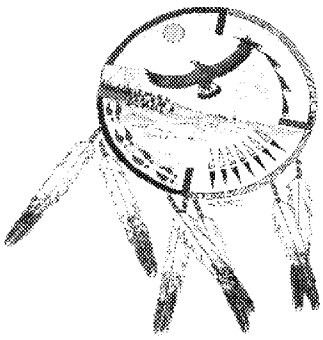
Session Overview

- Introduction to the Tribal Pesticide Program Council and EPA's Office of Chemical Safety and Pollution Prevention - Pesticide Programs
- Introduction to Pollinators
  - What is a pollinator?
  - Why are pollinators important?
  - What is happening to pollinators?
- Introduction to pollinator protection plans
  - What are pollinator protection plans?
  - Overarching elements to consider
  - Cultural importance of pollinators
  - Examples of tribal policies and efforts
- Getting Started

The Tribal Pesticide Program Council
and
EPA's Office of Chemical Safety and Pollution Prevention

Tribal Pesticide Program Council

- EPA Tribal Partnership Group; EPA's Office of Chemical Safety and Pollution Prevention - Office of Pesticide Programs
- Tribal technical resource and program and policy development dialogue group focused on pesticide issues and concerns
- Approximately 40 member tribes and tribal organizations
- Represent a diverse range of pesticide interests and concerns
- Purpose:
  - Collaborate with and educate EPA on tribal pesticide programs, perspectives, challenges, etc.
  - Strengthen and be a resource for Tribal Pesticide Programs
  - Assist tribes without pesticide programs - help determine needs
  - Help all tribes develop a better understanding of pesticides
  - Protect tribal communities from toxic chemicals



Office of Chemical Safety and Pollution Prevention – Office of Pesticide Programs

- OCSPP's mission is to protect you, your family, and the environment from potential risks from pesticides and toxic chemicals.
- OCSPP implements the: Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Federal Food, Drug and Cosmetic Act (FFDCA), Toxic Substances Control Act (TSCA), Pollution Prevention Act, and portions of other statutes.
- OPP regulates the manufacture and use of all pesticides (including insecticides, herbicides, rodenticides, disinfectants, sanitizers and more) in the United States and establishes maximum levels for pesticide residues in food, thereby safeguarding the nation's food supply.

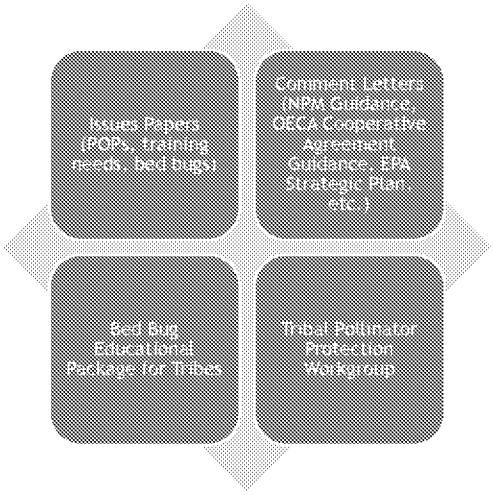
Programs and projects managed by the Office of Pesticide Programs, Examples

- Assessing Pesticide Risk
- Bed Bugs
- Endangered Species Protection Program
- Integrated Pest Management in Schools
- Pesticide Labels, Registration, Registration Review
- Pollinator Protection
- Reducing Pesticide Drift
- Worker Safety Protection

Importance of the TPPC to Tribes

- A forum to address pesticide concerns that arise at a local level
- A place to communicate and educate both tribal and federal pesticide regulatory officials
- Provides technical assistance and works with tribes to determine if a pesticide program is needed

TPPC Accomplishments



TPPC Pollinator Workgroup

TPPC Pollinator Champion: Jim Mossett, Three Affiliated Tribes, ND

Co-chaired by Jasmine Brown, Confederated Salish & Kootenai Tribes and Mary Rust, EPA OPP

Initially focused on MP3s and BMPs but has developed into a pollinator protection resource for tribes and facilitated many tribal pollinator protection activities

TPPC Pollinator Workgroup

Increasing concerns regarding loss of native pollinators and resulting loss of culturally important plants

Conducts monthly webinars with pollinator protection experts

TPPC Priorities - Risk Assessment & Direct Implementation

Risk Assessment

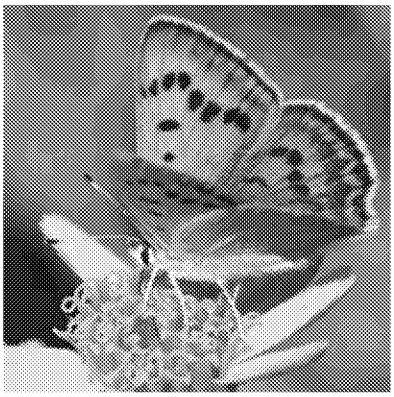
- Unique tribal lifeways may increase tribal exposures
- EPA has considered unique tribal exposures in the past (i.e., lindane)
- Seeking to work with EPA to institutionalize systematic approach(es) to screening pesticides and chemicals that may disproportionately affect tribal populations and other sensitive sub-populations
- Working with National Tribal Toxics Council, Tribal Science Council and EPA to develop a potential approach as per the new TSCA mandate

Direct Implementation

- Since inception, the TPPC has worked with EPA to strengthen tribal pesticide program capacity across the nation
- Workgroup has been developed to strategize how to increase fundamental pesticide program coverage and functions
- Seeking combination of approaches to improving coverage (DI regional plans, circuit riders, inter-agency agreements, DITCAs, etc.)

INTRODUCTION TO POLLINATORS

What is a pollinator?
Why are pollinators important?
What is happening to pollinators?



What is a pollinator?

- A pollinator is anything that helps carry pollen from the male part of the flower (stamen) to the female part of the same or another flower (stigma). The movement of pollen must occur for the plant to become fertilized and produce fruits, seeds, and young plants.
- Insects and other animals such as bats, beetles, and flies visit flowers in search of food, shelter, nest-building materials, and sometimes even mates. Some pollinators, including many bee species, intentionally collect pollen.
- Others, such as many butterflies, birds and bats move pollen accidentally. Pollen sticks on their bodies while they are drinking or feeding on nectar in the flower blooms and is transported unknowingly from flower to flower resulting in pollination.

https://www.nps.gov/subjects/pollinators/what-is-a-pollinator.htm

Why are pollinators important?

- **Do you like to eat?**
  One out of every three bites of food you eat exists because of the efforts of pollinators, including many fruits, vegetables, and seeds. Pollinators not only are necessary for our own food, but support the food and habitat of animals.
- **Do you like clean air?**
  Healthy ecosystems depend on pollinators. At least 75 percent of all the flowering plants on earth are pollinated by insects and animals! This amounts to more than 1,200 food crops and 180,000 different types of plants—plants which help stabilize our soils, clean our air, supply oxygen, and support wildlife.
- **Do you want a healthy economy?**
  In the United States alone, pollination by honey bees contributed to over $19 billion of crop production in 2010, while pollination by other insect pollinators contributed to nearly $10 billion of crop production.

https://www.nps.gov/subjects/pollinators/what-is-a-pollinator.htm

Examples of pollinators

Many types of plants, including fruit and vegetable crops, depend on animals for pollination. In addition to honey bees, many other types of animals pollinate crops and wildflowers, including:

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

Native Bees

- The value of native pollinators is increasingly recognized.
- Native bees provide free pollination service, conservatively valued at $3 billion a year
- Research demonstrated that native bees can be more effective at pollinating some crops compared to honey bees
- Some crops show improved quality and quantity when present
- Approximately 4,000 species in North America
- Native bees range in size from tiny mining bees that measure less than 1/8" to bumble bees bigger than 1"
- Vary in color from dark brown or black to metallic green or blue, and may have stripes of red, white, orange, yellow, or mother-of-pearl, with hairy stipes or patches of yellow, white, black, or orange

Nearly 70% of the native bee species in North America nest in the ground—including agricultural fields—where they may come into contact with residues from soil drenches, chemigation, or seed coatings. (Photograph courtesy of Rob Cruickshank, flickr.com.)

(The Xerces Society for Invertebrate Conservation, 2015, p. 1)

Honey bees, which were introduced from Europe in the 1600s, are perhaps our most well-known pollinator.

What is happening to pollinators?

Bee colony losses due to began to be identified in 2006. A National Research Council report in 2007 documented the decline of pollinators and discussed some of the possible causes as well as research and other actions needed to address the issue.

The prevailing theory among scientists in EPA, USDA and the global scientific and regulatory community is that the general declining health of pollinators is related to complex interactions among multiple stressors including:

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.

Concerns for Native Bees

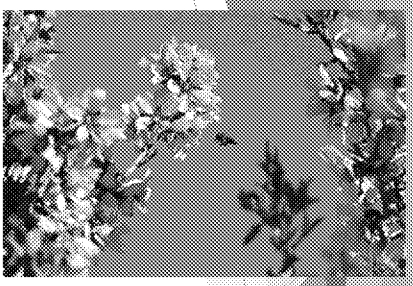
- Unlike honey bee hives with thousands of workers, solitary bees act independently– creating and provisioning their nests without assistance. If a female solitary bee dies, her nest remains incomplete.
- Existing data shows population declines for many species
- A recent assessment by the International Union for Conservation of Nature's Bumblebee Specialist Group found that more than 25% of North American bumble bee species are at risk of extinction.
- Native pollinator decline is linked to the fragmentation, degradation, and loss of habitat.
- Transmission of disease is another concern—parasites from managed pollinators are implicated in the decline of several native bumble bee species.
- Pesticides are also of concern for native bees, research suggests that native bees can be more sensitive to insecticides than honey bees.

Wild bees—such as alkali bees (*Nomia melanderi*)—pollinated over 80% of alfalfa flowers they visited; whereas, managed leafcutter (*Megachile rotundata*) and honey bees only pollinated 25% of flowers visited3. (Photograph courtesy of Washington State University.)

(The Xerces Society for Invertebrate Conservation, 2015, p. 1)

Most bee poisoning incidents occur when:

- Insecticides are applied when bees are foraging
- Insecticides are applied to bee-pollinated crops during bloom
- Insecticides are applied to blooming weeds in orchards or field margins
- Insecticides drift onto blooming plants adjacent to the target crop
- Bees collect insecticide-contaminated pollen (such as corm), nectar (such as cotton or mint), or other materials from treated crops that do not require bee pollination
- Bees collect insecticide-contaminated nectar from plants treated with systemic pesticides
- Bees collect insecticide-contaminated nesting materials, such as leaf pieces collected by alfalfa leafcutting bees
- Bees collect insecticide-contaminated water (from drip tape or chemigation, for example)
- Beekeepers and growers do not adequately communicate



(Hooven, L., Sagili, R., Johansen, E., 2013, p. 6)

National Pollinator Protection Goals

- *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.

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

EPA Actions to Protect Pollinators, Examples

- Implemented a policy (i.e., EPA's Policy Mitigating Acute Risk to Bees from Pesticide Products) in 2017 that protects bees from agricultural pesticide spray and dust applications while the bees are under contract to provide pollination services.
  - **Policy recommends that tribes develop pollinator protection plans and best management practices.**
- Prohibited the use of certain neonicotinoid pesticides when bees are present.
- Developing new bee exposure and effect testing priorities for the registration of new pesticides, new pesticide uses, and registration review of existing pesticides.
- Established guidance and best practices for regional, state and tribal inspectors conducting FIFRA inspections of apparent cases of pesticide-related bee deaths.
- Developing a new risk management approach for considering the impacts of herbicides on monarch butterfly habitats and protecting milkweed from pesticide exposure.
- Working with pesticide manufacturers to develop new seed-planting technologies that will reduce dust that may be toxic to pollinators during the planting of pesticide-treated seed.

INTRODUCTION TO POLLINATOR PROTECTION PLANS

What are pollinator protection plans?
Overarching elements to consider
Cultural importance of pollinators
Examples of tribal policies and efforts

What are pollinator protection plans?

- Pollinator plans are road maps to reduce pollinator losses and restore pollinator populations
- Each plan will be unique and focus on a tribes' own specific concerns as well as should strive to work with their stakeholder groups collaboratively
- As tribes and states develop their plans, there are overarching elements that may be considered:
  i. Habitat Installation and Enhancement
  ii. Best Management Practices to Minimize Risk of Pesticides to Bees
  iii. Policy Changes to Protect Pollinators from Pesticides
  iv. Actions to Protect Native Bumble Bees From Diseases
  v. Other State and Tribal Actions

(The Xerces Society for Invertebrate Conservation, 2015, p. 2-3)

I. Habitat Installation and Enhancement

- Where appropriate, require installation or enhancement of pollinator habitat featuring native plants on state and tribal lands—including parks, natural areas, and roadsides.
- Encourage landowners to install or enhance pollinator habitat. For example, facilitate partnerships with the USDA's Natural Resources Conservation Service and the Farm Service Agency to increase support for pollinator habitat plantings on private agricultural lands.

(The Xerces Society for Invertebrate Conservation, 2015, p. 2)

II. Best Management Practices to Minimize Risk of Pesticide to Bees

- Encourage growers to institute pest monitoring practices and set economic thresholds for insecticide treatments--including the planting of coated seed.
- Create a list of known and suspected pesticide mixtures that could be of concern for pollinators, and urge growers to avoid mixing these chemicals.
- Urge growers to create no-spray buffer zones to avoid pesticide movement into designated pollinator habitat.
- Incorporate the recommendations from *How to Reduce Bee Poisonings from Pesticides*
- Encourage crop consultants, pest control advisors, and growers to use the *USDA's Agronomy Technical Note No. 9: Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices*

(The Xerces Society for Invertebrate Conservation, 2015, p. 2)

III. Policy Changes to Protect Pollinators from Pesticides

- Extend pesticide licensing requirements to mandate licensing for anyone paid to apply pesticides, even if the products are general use
- Prohibit, during blooms, the application of pesticides via tank mixes that include active ingredients with demonstrated synergists effects
- Institute an Integrated Pest Management policy for tribal lands.

(The Xerces Society for Invertebrate Conservation, 2015, p. 3)

IV. Actions to Protect Native Bumble Bees from Diseases

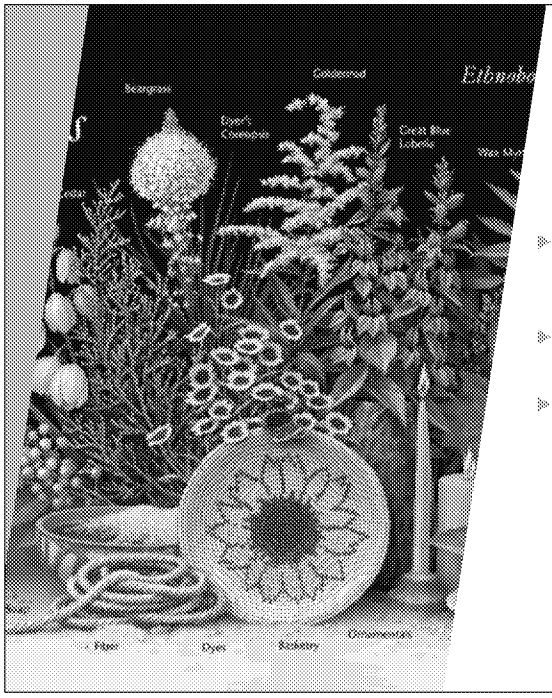
- Require that managed bumble bees entering the state or tribal lands be certified as free of pathogens and parasites that are harmful to wild bees.
- Limit commercial use of managed bumble bees to species native to the region that are also reared within their native ranges.
- Restrict usage of commercial bumble bees exclusively to greenhouses—not in open fields or orchards— that are enclosed with screen-covered ventilation systems, in order to prevent managed bumble bees from escaping and interacting with wild bees.

(The Xerces Society for Invertebrate Conservation, 2015, p. 3)

V. Other State and Tribal Actions

- Prioritize independent cooperative extension research and technical support for grower adoption of Integrated Pest Management programs that are protective of bees and other pollinators.
- Include at-risk pollinators in State Wildlife Action Plans (SWAPs).
- Inform growers and applicators about the native pollinators in their area, especially the pollinators that have been identified as "at-risk".
- Increase pesticide monitoring efforts to both evaluate success and better understand potential areas of concern.
- Address concerns of managed bees in state and trial natural areas. For example, California authorized placement of apiaries on state lands only after completing an environmental assessment.

(The Xerces Society for Invertebrate Conservation, 2015, p. 3)



Cultural Importance of Pollinators

- Plants provide food, medicine, shelter, dyes, fibers, oils, gums, soaps, waxes, etc.
- Plants are used for ceremonial and spiritual rituals
- Cultural symbolism
  - Butterflies
  - Moths
  - Hummingbirds

https://www.fs.fed.us/wildflowers/pollinators/importance.shtml

Examples: Tribal Policies

- 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

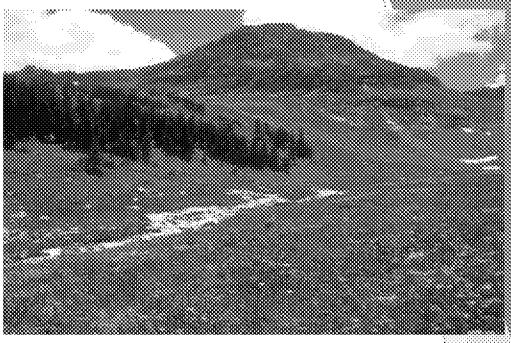
Examples: Tribal Efforts

- Developed community gardens in several tribal communities
- Joined Monarch Butterfly restoration projects
- Planted flowering plant species that provide summer long blooms
- Planted native plants to provide habitats
- Focused on native pollinators and small scare commercial beekeepers
- Collaborate and coordinate with farmers, commercial growers, beekeepers, land owners, and pesticide applicators, etc.
- Avoided spraying areas
- Developed pesticide regulations
- Initiated Beehive Ordinance
- Reviewed forest practice applications for pesticide and herbicide uses to assess impacts
- Conducted outreach in local community; planned youth projects
- Worked with federal, state, non-government organizations, etc.

GETTING STARTED

Habitat

- Quality of foraging habitat
- Reproduction sites
- Nesting and overwintering sites
- Pollinator sensitive or at-risk plant species
- Identify and remove invasive species
- Use native seeds
- Implement adaptive management
- Engage and inform the community, partners, etc.



- Best pollinator sites for foraging are open landscapes with good sun light with many different types of flowering forbs
- Some pollinators are limited in distances from their nesting sites

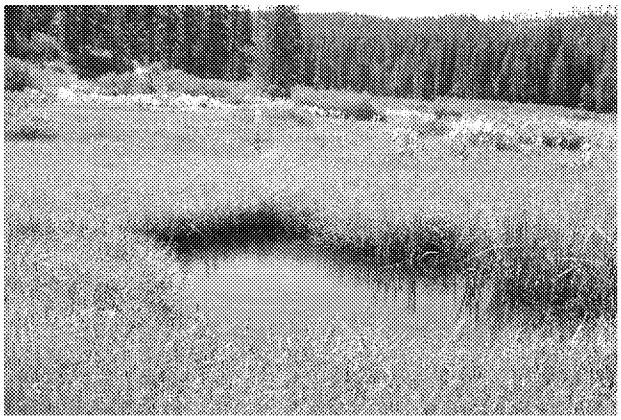
https://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLandsDRAFT05152015.pdf

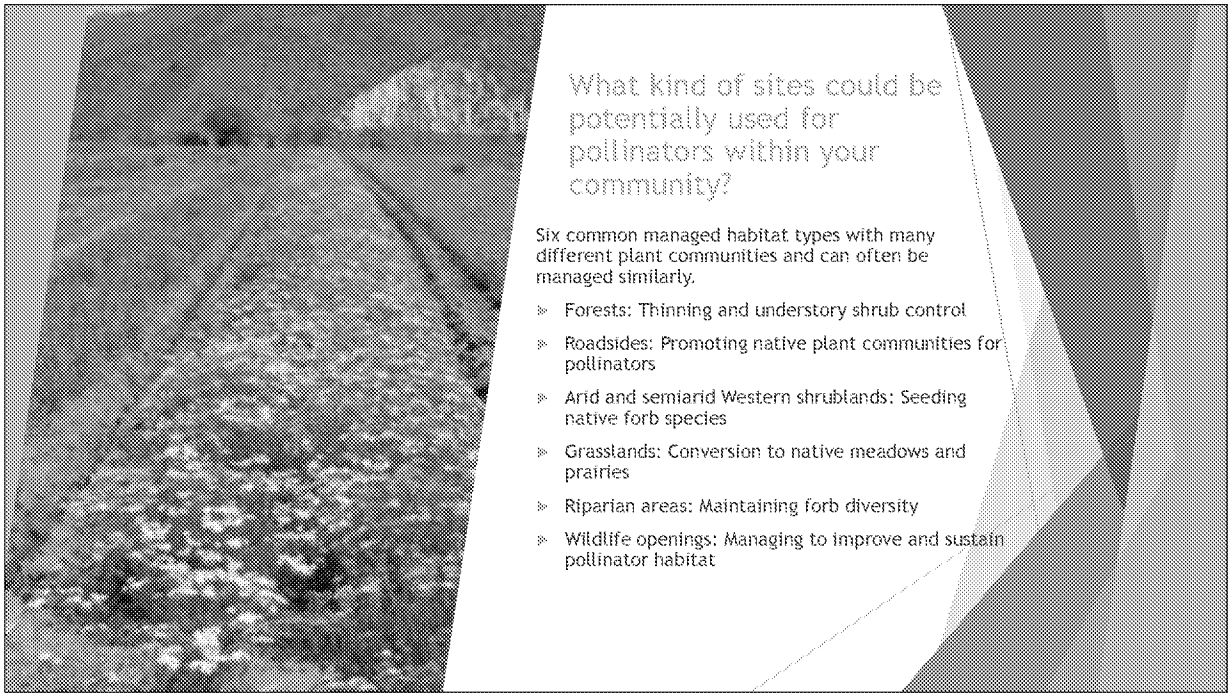
Habitat

- Evaluate the suitability of habitat for pollinator forage on the basis of the following criteria:
  - which types of foraging pollinators are present in the project area;
  - which plant species are present;
  - whether the plant species are native;
  - whether the flowers are attractive to the target foraging pollinators;
  - whether the vegetation provides a continuous bloom from early spring through fall or provides forage at times of nectar and pollen dearth in the surrounding landscape; and
  - what effects the proposed project activities have on foraging pollinators and the vegetative features mentioned above.

A sagebrush plant community with blooming forbs that provides forage for pollinators.

A clean, reliable source of water, like this high-elevation meadow with open water, is essential to pollinators. Running water and ponds provide resources for drinking. Water sources that are shallow or have sloping sides allow for easier approach without drowning.




What kind of sites could be potentially used for pollinators within your community?
Six common managed habitat types with many different plant communities and can often be managed similarly.
Forests: Thinning and understory shrub control
Roadsides: Promoting native plant communities for pollinators
Arid and semiarid Western shrublands: Seeding native forb species
Grasslands: Conversion to native meadows and prairies
Riparian areas: Maintaining forb diversity
Wildlife openings: Managing to improve and sustain pollinator habitat

Best Management Practices

Numerous best management practices have been identified, for example:

- Stakeholder collaboration, communication and agreement is important for the success of a plan.
  - Growers, beekeepers, pesticide users, tribal government officials, community members, partners
- Pesticide use
- Prescribed burning
- Livestock grazing
- Managing lawns
- Mowing along roadsides
- Agricultural practices for wildlife management
- Restoration and rehabilitation of monarch (or other pollinator) habitats

Engaging and Informing the community

- Public 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. Ways to engage and educate the public include the following:
- Engaging federal department and agency staff and the public early in the goals of a pollinator habitat activity;
- Posting signs indicating the intent of the habitat project, as well as the species of plants and pollinators that may be found there;
- 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;
- Attending to factors known to elicit adverse public comment, such as the presence of certain nonnative "weed" species that are well recognized locally. Such species may be viewed by the public as evidence of inadequate maintenance and should be spot treated with herbicide to prevent these types of adverse public comments.

Citations

- US EPA. (2017). Tribal Pollinator Protection Plan Template. Emily/Fred, do you have a link to the document?
- The Xerces Society for Invertebrate Conservation, (2015). Addressing Native Pollinator Concerns in State and Tribal Protection Plans. Fred, do you have a link to the document?
- Hooven, L., Sagili, R., Johansen, E. (2013). *How to Reduce Bee Poisoning from Pesticides. Retrieved July 19, 2019, from Oregon* State University: http://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/pnw591.pdf
- https://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPsFederalLandsDRAFT05152015.pdf
- https://www.nps.gov/subjects/pollinators/best-management-practices-for-federal-lands.htm
- https://www.fs.fed.us/wildflowers/pollinators/importance.shtml

Resources

- https://www.epa.gov/pollinator-protection

Contact Information