



Common eastern bumble bee, *Bombus impatiens*

INDIANA POLLINATOR PROTECTION



PLAN

What we're doing to protect the vital species that impact our agricultural industry, food supply, and natural heritage

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INTRODUCTION

The origins of the Pollinator Protection Plan

Pollinator health is a high-priority national issue due to significant colony losses experienced by U.S. beekeepers over the past decade, as well as dramatic declines in wild pollinator populations.

In his June 2014 memo, “Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators”, President Obama called attention to the issue of pollinator health and directed federal efforts to reverse pollinator losses and help restore populations to healthy levels. The federal task force charged with developing a national strategy for promoting bee health and survival has set several goals, including:

- 1) reduce overwintering hive losses to less than 15%
- 2) restore or enhance over seven million acres of pollinator supportive forage and habitat
- 3) minimize impacts from pesticide exposure.

In particular, the President’s memo directed the U.S. Environmental Protection Agency (EPA) to engage state agencies in developing state pollinator protection plans as a means of mitigating the risk of pesticides to bees and other managed pollinators.

In Indiana the Office of Indiana State Chemist (OISC) is the state agency charged with regulating the use of pesticides. The Indiana Pesticide Review Board (IPRB) is the Governor-appointed board charged with developing state pesticide policy and advising the OISC on matters of pesticide regulation. The IPRB and OISC are working collaboratively to facilitate the development of this state Pollinator Protection Plan to identify activities that can improve pollinator health. Key activities will include but will certainly not be limited to:

- 1) reduce pesticide exposure to bees and other pollinators through timely communication and coordination among key stakeholders
- 2) increase foraging, shelter, nesting, and brooding areas for bees and other pollinators



Squash bees, *Peponapis pruinosa*

FUN FACT:

Bees don't see red well. Most bee-pollinated flowers are purple, orange, or yellow.



PLAN GOAL, SCOPE, AND PROCESS

of the Pollinator Protection Plan

The goal of this plan is not to serve as the sole definitive source of how pollinators should be supported or protected by every relative stakeholder group or agency in Indiana. Nor is the goal to eliminate or ban pesticide (insecticide, fungicide, herbicide, etc.) use in areas frequented by pollinators. Instead, the goal is to bring awareness to the issues faced by pollinators and all related stakeholders. The hope is that this plan can serve as a starting point to develop a blueprint of how each stakeholder group might contribute to the task of improving pollinator health.

It is estimated that one-third of our current food production requires pollinators. Managed pollinators and contracted pollination services on Indiana-grown agricultural crops such as apples, melons, blue berries, and cucumbers are some of the more obvious examples of this fact. The term “managed pollinators” includes any species of pollinators that are managed by humans. Pollinator management is usually conducted for purposes of pollination services or the production of honey, beeswax, and other related products. Managed pollinators are primarily honey bees (*Apis mellifera*) but could include other species of bees, such as alfalfa leafcutting bees (*Megachile rotundata*), orchard bees (*Osmia* spp.), mason bees (*Osmia* spp.) and some species of bumble bees (*Bombus* spp).

Managed pollinators are the easiest to clearly associate with a stakeholder group, i.e. beekeepers. However, it is widely recognized that unmanaged native pollinators such as butterflies, flower flies, and hundreds of wild bee species are also important to agriculture, home gardens, orchards, and other successful plant development processes. It is also recognized that strategies that are protective of managed pollinators will also be protective of unmanaged native pollinators. Therefore, the scope of this plan will extend to all pollinators, not just

managed pollinators, where feasible. In addition, the plan will attempt to incorporate agriculture and non-agricultural settings, commercial beekeepers and hobbyists.

In consideration of the relatively broad scope of this plan, insuring participation by all potential stakeholders is challenging. However, one of the objectives is to facilitate participation as effectively as possible. To that end, an open face-to-face organizational and information gathering meeting was held on March 31, 2015, followed by open discussion and comment on drafts of the plan at three different quarterly meetings of the Indiana Pesticide Review Board (IPRB). Even though the scope of this plan has not been limited to just protection of pollinators from pesticide exposure, the IPRB was utilized as a vehicle for plan development based on their meeting schedule and open public process.

In addition, because enhancing pollinator habitat and forage has been identified as a crucial component to improving pollinator health, this plan is being coordinated with the Indiana State Department of Agriculture (ISDA). ISDA is taking the lead to coordinate and facilitate pollinator habitat and forage enhancement efforts.

Activity Leaders:
Indiana Pesticide Review Board
Indiana State Department of Agriculture
Office of Indiana State Chemist

FUN FACT:
About 90% of wild plants
and 35% of crops worldwide
depend on pollinators

GOALS



1. Educate & inform stakeholders & the public about the Plan
2. Make growers & applicators aware of pollinators near pesticide application sites
3. Encourage growers & pesticide applicators to contact pollinator managers
4. Support regulatory measures to promote pollinator protection & health
5. Promote Best Management Practices (BMPs) for pollinator protection & health

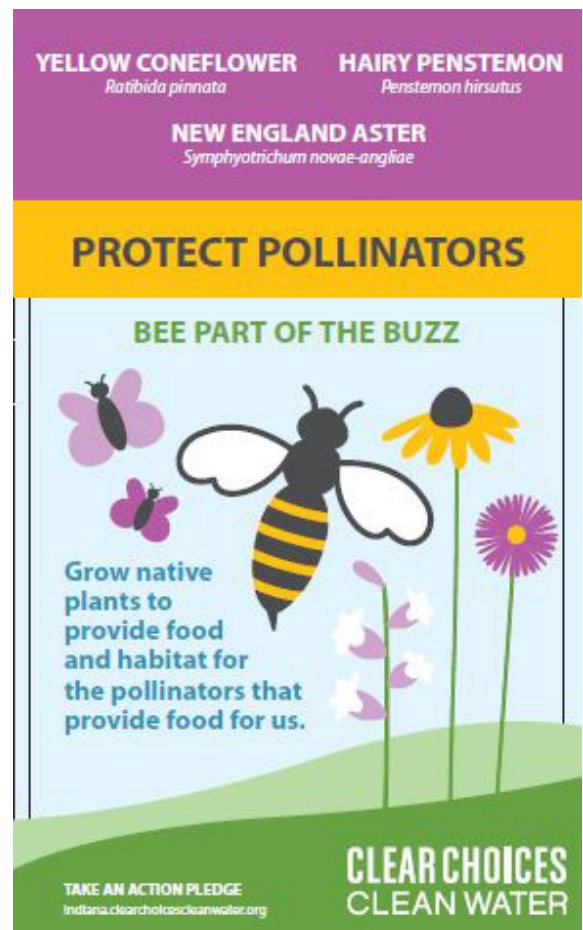
1. Educate & Inform

stakeholders & the public about the plan

This plan will be successful only if there is robust adoption of the measures herein. One way to accomplish this is through outreach to publicize the plan and its recommendations and requirements. Outreach efforts should target both key stakeholders and the general public and should include:

- 1) both initial and continuing certification training for licensed commercial pesticide applicators
- 2) both initial and continuing certification training for licensed private applicators (growers/farmers)
- 3) consumer brochures and fact sheets provided at point-of-sale pesticide distributors
- 4) communication through beekeeper association meetings
- 5) communication through neighborhood and homeowner association meetings
- 6) public outreach through Master Gardner programs (CES) and Master Naturalist programs (IDNR)
- 7) educational displays at Indianapolis Zoo Butterfly Building and White River Gardens
- 8) publications by Indiana Native Plants and Wildflower Society (INPAWS)
- 9) publications by the Xerces Society
- 10) stakeholder targeted BMPs, publications and outreach through Purdue University Cooperative Extension Service (CES) Issues Based Action Team (IBAT) on Protecting Indiana Pollinators
- 11) government agency web sites

Activity Leaders for Goal 1:
Purdue CES
Purdue Pesticide Programs
INPAWS
IDNR
OISC



INSECTS MADE MY SUNDAE

WHIPPED CREAM

is made from the cream part of cow's milk. Cows eat hay and grains that are pollinator dependent.

CHERRIES

along with most other fruit toppings, require pollinators in order to produce fruit.

NUTS

are grown from trees and plants, most of which require pollination.

CHOCOLATE

comes from the cacao tree which is only pollinated by two types of midge.

SUGAR

comes from either the sugar beet or sugar cane, both of which require pollinators.

VANILLA

flavoring is derived from vanilla orchids that are pollinated by one species of bee and hummingbirds.

ICE CREAM

is made from milk that comes from cows. A cow's diet is made up of hay (alfalfa, timothy, clover) and grain which are dependent on pollinators.



Pollinators create more than **\$250 BILLION** in output annually **ACROSS THE GLOBE.**

About **90% OF ALL FLOWERING PLANTS** and about **35% OF CROPS** worldwide depend on pollinators.

We need your help protecting pollinators!
Learn more and take an action pledge at

Indiana.ClearChoicesCleanWater.org



Education tools like this are available from the Purdue Extension store,
mdc.itap.purdue.edu/

POLLINATORS are more than just HONEY BEES



There are over **4,000** species of **BEES** native to **NORTH AMERICA**
DID YOU KNOW?
Honeybees are not native.
They are actually from Europe!



BUMBLE BEES WORK LONGER HOURS
and will do **MORE WORK** than other bees



A single female **SOUTHEASTERN BLUEBERRY BEE** can produce nearly **6000 BLUEBERRIES** in her short life. Honey bees can't pollinate blueberry flowers.



BATS TAKE THE NIGHT SHIFT, working under the cover of the dark to produce **BANANAS, PEACHES, MANGOS**, and even the agave used for **TEQUILA**

NATIVE BEES do **90%** of the pollination for **WATERMELONS**



Many **HUMMINGBIRDS** migrate distances well over **2000 MILES**, stopping many places for food and rest, so **HABITAT LOSS ALONG THEIR ROUTES IS A MAJOR THREAT**



HONEY BEES contribute about **\$20 billion** to the economy

BEES DON'T SEE RED WELL
Most bee-pollinated flowers are **PURPLE, YELLOW, or ORANGE.**



We need your help protecting pollinators!
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Education tools like this are available from the Purdue Extension store,
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2. Make Growers & Applicators Aware of pollinators near pesticide application sites

In order to help protect pollinators from potentially harmful exposure from pesticides, it is important that both growers and pesticide applicators have access to accurate and timely information on the location of nearby pollinators. This is important for the protection of both managed colonies and harborage areas of native pollinators, such as dedicated state nature preserves. Therefore, a critical element of this plan is the ability for a pesticide applicator to contact nearby beekeepers and property managers of pending pesticide applications.

The distance from the pesticide treatment site inside which the applicator should be cognizant of the location of pollinator concentrations (i.e. managed colonies, nature preserves, and designated forage areas) will henceforth be referenced as the “pollinator awareness zone”. For purposes of this plan, the pollinator awareness zone associated with agricultural, forestry, or area-wide invasive insect management pesticide application sites shall be considered an area within a two mile radius of the plotted and recorded pollinator site. For residential, turf, ornamental, and outdoor structural pesticide applications the zone shall be limited to properties immediately adjacent to the pollinator site. It should be noted that pesticide applications may be necessary to intentionally eliminate feral bees within or around structures if they pose a threat to human health or property. In addition, pesticides not identified on the product label as toxic to bees will most likely not be targeted for inclusion in this communication activity.

The proposed mechanism by which a pesticide user will be able to identify the location of pollinator concentrations within the pollinator awareness zone should be the voluntary web-based registry BeeCheck™ <https://beecheck.org>. Beekeepers and other known pollinator property managers are encouraged to register and routinely update

the locations of their hives on BeeCheck™ during the pesticide application season. Growers and pesticide applicators are encouraged to register to get automated email messages alerting them to the presence of pollinators in their application area(s). In addition, it is recommended that dedicated state nature preserves be added to BeeCheck™ as potential pesticide sensitive sites in order to raise awareness of pesticide applicators for pollinators living and foraging in these areas.

Two-way communication between pollinator managers and pesticide users prior to pesticide application is voluntary, as is participation in BeeCheck™. However, both activities are strongly recommended as they are critical to the success of this plan.

Activity Leaders for Goal 2:
FieldWatch, Inc.
Indiana Nature Conservancy
Indiana Department of Natural Resources (IDNR)
Beekeeper Associations
Grower and Applicator User Groups



A Hoosier beekeeper

3. Encourage Growers & Pesticide Applicators to contact pollinator managers

Once growers and applicators identify registered pollinator concentrations in the pollinator awareness zone, there needs to be a means for growers and applicators to contact those beekeepers to notify them of a pending pesticide application. Pollinator managers, in turn, need a reasonable time period to initiate pollinator protection practices, if necessary. Advance communication allows growers or applicators and pollinator managers to discuss and decide upon appropriate Best Management Practices (BMPs) to protect the pollinators in the defined area, while still allowing for management of the pest(s).



Pesticide application

It is recommended that the grower or pesticide applicator make a reasonable attempt to contact all BeeCheck™ registered site managers in the pollinator awareness zone a minimum of 24 hours prior to an anticipated pesticide application. However, it is important to recognize that there are often competing priorities and challenges to consider. For example, the presence of other nearby pesticide sensitive sites, changing weather conditions, and emerging development stages of plants and pests will introduce complicating variables into the pesticide application decision making process.

Activity Leaders for Goal 3:
Office of Indiana State Chemist
Purdue Pesticide Programs
Beekeeper Associations
Grower and Applicator User Groups



4. Support Regulatory Measures to promote pollinator protection & health

There are a number of federal and state regulatory measures that are being proposed or are already in place to promote protection of pollinators. Pesticide risk management must be based on sound science, consistent with the laws under which pesticides are regulated in the United States. At the federal level, EPA has been working aggressively to protect bees and other pollinators from pesticide exposure. EPA's actions to protect pollinators from pesticide exposure include:

1. Implement a policy in 2017 that protects bees from agricultural pesticide spray and dust applications while the bees are under contract to provide pollination services.
2. Prohibit the use of certain neonicotinoid pesticides when bees are present.
3. Expedite the re-evaluation of the neonicotinoid family of pesticides, as well as other pesticides, using the harmonized risk assessment process.
4. Temporarily halt the approval of new outdoor neonicotinoid pesticide uses until new bee data is submitted and pollinator risk assessments are complete.
5. Expedite the review of new Varroa mite control products.
6. Develop new bee exposure and effect testing priorities for the registration of new pesticides, new pesticide uses, and registration review of existing pesticides
7. Issue data requirements and risk assessment approaches for pollinators as we review the registrations of all of the neonicotinoid pesticides.
8. Establish guidance and best practices for regional, state and tribal inspectors conducting FIFRA inspections of apparent cases of pesticide-related bee deaths.
9. Develop a new risk management approach for considering the impacts of herbicides on monarch butterfly habitats and protecting milkweed from pesticide exposure.
10. Provide farmers and beekeepers with EPA's residue toxicity time (RT25) data as a means of

gauging the lengths of time that specific pesticide products may remain toxic to bees and other pollinators following application of these products to plants.

11. Work 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.

At the state level, OISC has been monitoring the implementation of the improved pollinator protection language on pesticide labels and has initiated compliance and enforcement activities accordingly. Some pesticide labels have restrictions prohibiting application when bees are foraging. Others may prohibit application when crops are blooming. Still other labels may restrict off-target drift to pollinators or their forage. Where adequate label drift restrictions do not exist, Indiana law provides a restriction against off-target drift that documentably causes harm. OISC has developed bee kill complaint response procedures to assess regulatory compliance.

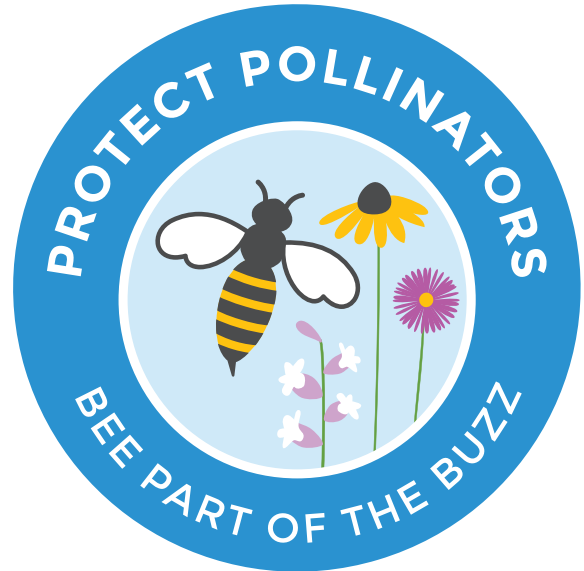
Activity Leaders for Goal 4:
U.S. Environmental Protection Agency
Office of Indiana State Chemist



Ruby-throated hummingbird, *Archilochus colubris*

5. Promote Best Management Practices (BMPs) for pollinator protection & health

Regulatory safeguards aside, it is a primary objective of this plan to promote pollinator Best Management Practices (BMPs) that can be utilized by beekeepers, pesticide users, growers, land managers, government, homeowners and other stakeholders engaged in the protection of pollinators. While no one set of BMPs can be designated as the definitive source, this plan has identified BMPs developed by the Purdue University Cooperative Extension Service (CES) Issues Based Action Team (IBAT) as a logical source. The IBAT is an inter-departmental multi-discipline team focused on protecting Indiana pollinators. The various stakeholder organized IBAT BMPs are available at <https://extension.entm.purdue.edu/publications/pubs/PollinatorProtection.html>.



Take An Action Pledge Now at
Indiana.ClearChoicesCleanWater.org/plants/pollinators

Activity Leader for Goal 5:
Purdue CES IBAT

FUN FACT:
Not all pollinators are bees.
Birds, bats, and even insects
like this hover fly also take
part in the process.



Hover or flower fly, *Toxomeris* spp.



REVIEW & MEASURE

1. Process for periodic review
2. Measuring Effectiveness

Process for Periodic Review of the Pollinator Protection Plan

This plan is meant to be a dynamic document that will be periodically reviewed and updated. The IPRB must determine whether or how to adjust the plan based on stakeholder feedback so that the plan ultimately leads to better relationships among the stakeholders and greater degrees of protection for pollinators. Therefore, in addition to providing opportunities for review and update at regularly scheduled quarterly IPRB meetings, this plan should be comprehensively evaluated at least every three years. As with the initial plan development, it is critical that this comprehensive review include a public stakeholder process to evaluate the effectiveness of the plan and to make modifications as needed.

Activity Leaders:
IPRB
OISC



Honey bee, *Apis mellifera*

INDIANA PESTICIDE REVIEW BOARD

The IPRB is an approximately twenty-member board created by law to develop pesticide policy and regulations for the State of Indiana and to serve in the formal appeal process for those who might be aggrieved of enforcement actions by the State Chemist.

Board Members are appointed by the Governor to serve four-year terms.

The Indiana Pesticide Review Board meets four times each year. These meetings are open to the public.

These meetings are open to the public. If you are interested in having your name added to the meeting announcement list, please contact Linda Schiuszi at lschiusz@purdue.edu.

Measuring the Effectiveness of the Pollinator Protection Plan

Indiana has been working with EPA and other stakeholders to discuss appropriate measures for the effectiveness of state Pollinator Protection Plans. A document entitled, *SFIREG Joint Working Committee Performance Measures for Managed Pollinator Protection Plans* has been created to assist with developing measures for this plan. The process for identifying suitable measures for Indiana is currently on-going.

Activity Leaders:

IPRB
OISC
IDNR

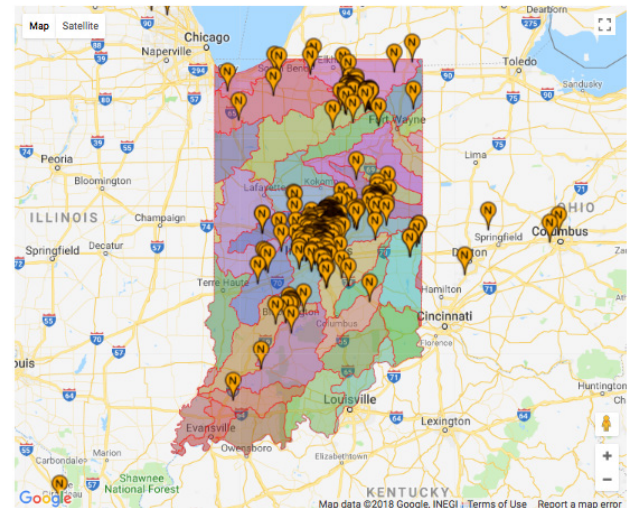
FUN FACT:

Native bees, like this sweat bee, do 90% of the pollination for watermelons.



Sweat bee, *Agapostemon* spp.

WHO ELSE IS DOING IT?



With our **CLEAR CHOICES CLEAN WATER** campaign, **747** action pledges have resulted in **76,285** acres of new native plants for pollinators.

Find more information here:

[http://indiana.](http://indiana.clearchoicescleanwater.org/plants/pollinators)

[clearchoicescleanwater.org/plants/pollinators](http://indiana.clearchoicescleanwater.org/plants/pollinators)



**POLLINATOR
PROTECTION
PLAN**