



Integrated Pest Management

Reducing Risks to Pollinators from Pest Management Activities



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The monarch butterfly (*Danaus plexippus*) is one of many important insect pollinators.

Why are pollinators important?

Pollinators, such as honey bees, birds, bats and insects, play a crucial role in flowering plant reproduction and in the production of most fruits and vegetables. Without the assistance of pollinators, most plants cannot reproduce. In fact, over 90% of all flowering plants and over three-quarters of the staple crop plants that feed humankind rely on animal pollinators. In addition, pollinators are an integral component of natural ecosystems. The plants they pollinate, and in some cases the pollinators themselves, provide food for wildlife, such as migratory birds. Integrated Pest Management (IPM) practices have been developed to improve pest control while minimizing impacts on beneficial species, such as pollinators.

How can IPM help protect pollinators?

Integrated pest management protects pollinators by combining biological, cultural, physical, and chemical tools in a

way that minimizes economic, health, and environmental risks. It is a long-standing, science-based, decision-making process that coordinates the use of pest biology, environmental information, and available technology to prevent unacceptable levels of pest damage by the most economical means, while posing the least possible risk to people, property, resources, and the environment, including pollinators.

What are the benefits of IPM?

IPM can:

- 1) Reduce risks from pests and pest management-related strategies to people, property, resources, and the environment;
- 2) Save time and resources by understanding pest biology and eliminating conditions that favor the pest, thereby reducing the need to manage the pest;
- 3) Increase implementation of more effective pest management strategies by using a tiered decision-making process;
- 4) Increase management of pest species based on a proactive science-based approach rather than managing pests on a calendar basis or waiting until a pest outbreak;
- 5) Increase coordination and partnerships for effective pest management;
- 6) Decrease or eliminate unnecessary pesticide use;

Did you know?

Over 90% of all flowering plants and over three-quarters of the staple crop plants that feed humankind rely on animal pollinators.

7) Decrease pest resistance from repetitive pesticide use;

8) Increase the use of best management practices for pesticides and other management tools.



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*In 1962, Rachel Carson wrote the bestselling book, *Silent Spring*, which warned about the dangers of pesticide use and misuse. She feared that the application of some pesticides, like DDT, were resulting in a “silent spring,” with the absence of birds and insects. Although pesticides play a role in pest management, they must be used with proper precautions. The 100th anniversary of Rachel Carson’s birth is May 27, 2007.*

Where can you use IPM?

IPM provides an effective strategy for managing outdoor (backyards, golf courses, natural areas) and indoor (homes and businesses) pests. IPM serves as an umbrella to provide an effective, all encompassing, minimal-risk approach to protect wildlife, wildlife habitats, and people from pests.

What is a pest?

A pest is any organism that interferes with your site management goals or any organism that may cause damage to a resource (garden, house, wildlife habitat) that you are trying to protect. Some questions to consider when managing pests are:

- 1) Is the pest at levels that interfere with ongoing activities or completion of your management goals?
- 2) Is it a native or exotic species?
- 3) What conditions foster the pest?
- 4) What are the chances of successful pest management?

What are some of the components of a successful IPM approach?

- 1) Describe your objectives and establish short and long term priorities.
- 2) Build consensus with those who may be affected by your pest management actions (ongoing throughout the process).
- 3) Know your resource (site description and ecology).
- 4) Know your pest. Identify potential pest species and understand their biology and the conditions conducive to support the pest(s) (air, water, food, shelter, temperature, and light).
- 5) Understand the physical and biological factors that affect the number and distribution of pests and their natural enemies. Conserve natural enemies when implementing any pest management strategy.
- 6) Monitor pests, population levels, pathways, and other pertinent data.

7) Establish "action thresholds" at which point a management strategy will be implemented to reduce the pest population.

8) Review available tools and best management practices. Develop a management strategy specific to your site and the identified pest(s). Tools may include:

- a) no action,
- b) physical,
- c) mechanical,
- d) cultural,
- e) biological, and
- f) chemical management strategies.

9) Define responsibilities and implement the lowest risk, most effective strategy in accordance with applicable laws, regulations, and policies.

10) Maintain records; evaluate results; determine if objectives have been achieved; and modify strategy if necessary (adaptive management).

11) Outreach and education. Continue the learning cycle; return to Step 1.



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The rufous hummingbird (Selasphorus rufus) is one of many important bird pollinators.

Where can you find more information on IPM?

- ◆ Federal and state agencies, like the U. S. Department of Agriculture and the Department of Interior,
- ◆ Municipal and county governments,
- ◆ Universities, especially those with county extension offices, and
- ◆ Local community organizations, like Master Gardener Programs and Clubs.



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*The U.S. Fish and Wildlife Service uses an IPM approach to manage for invasive weed species that threaten native habitats, such as this orange hawkweed (*Hieracium aurantiacum*) infestation on Kodiak Island National Wildlife Refuge, Alaska, July 2002.*

U.S. Fish & Wildlife Service
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