

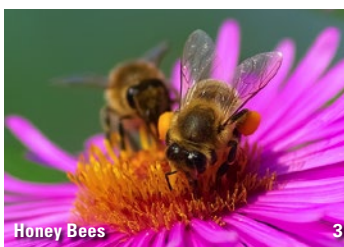
Monarch

1



Eastern Giant Swallowtail

2



Honey Bees

3



Sweat Bee

4

Gardening for Butterflies and Pollinators

The flash of a colorful butterfly and the buzz of a bumble bee traveling between flowers bring extra beauty and enjoyment to our gardens. Planning your garden or landscape to include plants that attract and sustain butterflies, bees, and other beneficial insects can increase the populations of these desired insects and increase the diversity you can observe and enjoy. You will also be doing your part to help preserve butterflies, honey bees and pollinators that are threatened and in decline.

Butterfly Life Cycle and Development

Butterflies have a complete life cycle and develop through four distinct stages: egg, larva (caterpillar), pupa (chrysalis), and adult. The larva or caterpillar stage has chewing mouthparts and eats plant foliage to grow. Some species feed on many different plants (host plants), whereas others are restricted to only one or two. The caterpillar food preferences of common Iowa butterflies are listed in Table 2.

Most caterpillars eat and grow for three or four weeks. When fully grown, they change into the pupa called the chrysalis.

Within the chrysalis, the caterpillar transforms into an adult butterfly.

Newly-formed adult butterflies force their way out of the chrysalis with their wings limp, crumpled, and soft. Over a

few hours, the wings expand to their final size, harden and dry, and the butterfly is ready to fly.

During the adult stage, butterflies use a long, coiled proboscis to feed on nectar from flowers as a source of moisture and energy. Some butterflies eat a variety of foods, whereas others are more selective. Butterflies may also feed on rotten fruit, plant sap, or carrion.

After male and female butterflies mate, the female butterfly begins to lay eggs on plants that the caterpillar will eat. The adults usually die soon after mating and egg-laying has been completed (usually within two to fourteen days). Monarch and other butterflies that migrate are programmed to survive the extended period until the next opportunity to reproduce.

Pollinators

Pollinators are animals that help plants reproduce (produce fruits and seeds) by carrying pollen from one flower to another. Specifically, pollinators carry pollen from the male flower parts to the female flower parts. A wide variety of animals that visit flowers can be pollinators, including bats, birds, and other animals, but most importantly, insects.

Pollination is necessary for the proper development of many fruits and vegetables that surround the seed. Without pollination, most fruits and vegetables will not set fruit, the fruit will be incomplete or misshapen, or yield will be low. Without pollination, we would not have the fruits, nuts, and vegetables that comprise approximately 35% of global food production.

Different plants have different ways of accomplishing pollination. Plants such as corn, grape, soybean, tomato, eggplant, and pepper have female and male parts close together in the same or adjacent flowers. Wind releases pollen that falls onto the stigma without difficulty, and no aid or assistance is needed. For other plants, the pollen will not fall easily to the stigma, and another means of transporting pollen is necessary. This is where pollinators play an essential role. Pollinators



Monarch Emergence

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carry the pollen from the male flower parts to the female parts and allow the plant to produce seeds successfully. Different flowers attract different pollinators, and flower shape, size, color, structural arrangement, and fragrance aid in attracting pollinators and maximizing pollination efficiency.

Common Pollinators in Iowa

Common insect pollinators in Iowa include honey bees, bumble bees, solitary bees, beetles, butterflies, flies, ants, and wasps. These insects are not selflessly doing a favor to the flowers. The insects are enticed to do the job with a reward of food. The food is usually nectar (sugar and water) and pollen (protein).

How to Establish a Butterfly or Pollinator Garden

Sunny Location

Locate your garden where it receives the greatest amount of sun exposure possible. Insects such as butterflies and pollinators are cold-blooded and depend on the sun to warm their bodies. Also, the plants on which butterflies and pollinators depend generally grow better in full sun (six or more hours of sunshine per day).

Nectar and Pollen Sources

Different species of butterflies and pollinating insects are active at different times of the year. Therefore it is important to provide pollen and nectar sources throughout the growing season and offer various flower shapes and sizes. Plant in groups—not rows—to increase the likelihood of butterflies and pollinators finding and choosing your garden for a feeding stop.



Table 1. Nectar Plants for the Iowa Garden and Landscape

A partial list of flowering plants that are adapted to Iowa and will be beneficial to pollinators and butterflies. Native plants are indicated by “N.” Plants that have both native and non-native species are indicated by “SN”

Herbaceous Perennials & Annuals			
• Aster (<i>Symphyotrichum</i> spp.) (N)	• Cosmo (<i>Cosmos</i> spp.)	• Joe-Pye Weed (<i>Eutrochium</i> spp.)	• Mint (<i>Mentha</i> spp.) (SN)
• Beardtongue (<i>Penstemon</i> spp.) (SN)	• False Indigo (<i>Baptisia</i> spp.) (N)	(N)	• Phlox (<i>Phlox</i> spp.) (SN)
• Bee Balm (<i>Monarda</i> spp.) (SN)	• Fleabane (<i>Erigeron</i> spp.) (SN)	• Lantana (<i>Lantana</i> spp.)	• Purple Prairie Clover (<i>Dalea purpurea</i>) (N)
• Black-eyed Susan (<i>Rudbeckia</i> spp.) (SN)	• Globe Thistle (<i>Echinops</i> spp.)	• Leadplant (<i>Amorpha</i> spp.) (N)	• Salvia (<i>Salvia</i> spp.) (SN)
• Blazing Star (<i>Liatis</i> spp.) (N)	• Goldenrod (<i>Solidago</i> spp.) (SN)	• Marigold (<i>Tagetes</i> spp.)	• Tall Stonecrop (<i>Hylotelephium</i> spp.)
• Clover (<i>Trifolium</i> spp.) (SN)	• Heliotrope (<i>Heliotropium</i> spp.)	• Marsh Marigold (<i>Caltha palustris</i>) (N)	• Violet (<i>Viola</i> spp.) (SN)
• Coneflower (<i>Echinacea</i> spp.) (N)	• Anise Hyssop (<i>Agastache</i> spp.) (SN)	• Milkweed (<i>Asclepias</i> spp.) (SN)	• Zinnias (<i>Zinnia</i> spp.)
• Ironweed (<i>Vernonia</i> spp.) (N)			
Trees			
• Basswood or Linden (<i>Tilia</i> spp.) (SN)	• Kentucky Coffeetree (<i>Gymnocladus dioicus</i>) (N)	• Sugar Maple (<i>Acer saccharum</i>) (N)	
• Flowering Dogwood (<i>Cornus</i> spp.) (SN)	• Silver Maple (<i>Acer saccharinum</i>) (N)		
Shrubs			
• American Hazelnut (<i>Corylus americana</i>) (N)	• Highbush Cranberry (<i>Viburnum opulus</i> var. <i>americanum</i>) (N)	• Silky, Gray, Redosier Dogwood (<i>Cornus amomum</i> , <i>C. racemosa</i> , <i>C. sericea</i>) (N)	
• Arrowwood Viburnum (<i>Viburnum dentatum</i>) (N)	• Nannyberry (<i>Viburnum lentago</i>) (N)	• Wild Rose (<i>Rosa</i> spp.) (SN)	
• Butterfly Bush (<i>Buddleja</i> spp.) (only plant sterile varieties)	• Ninebark (<i>Physocarpus opulifolius</i>) (N)		
• Buttonbush (<i>Cephalanthus occidentalis</i>) (N)	• Seven-son flower (<i>Heptacodium miconioides</i>)		
• Elderberry (<i>Sambucus canadensis</i>) (N)	• Serviceberry (<i>Amelanchier</i> spp.) (N)		
• Fragrant Sumac (<i>Rhus aromatica</i>) (N)			

Larval Host Plants

Host plants are necessary for the butterflies and moths to complete their life cycle. Host plants are where butterflies lay their eggs and where the caterpillars eat. Different species of butterflies use different host plants, and your garden should contain the host plants for the species of butterflies common in your area. The more varieties planted, the greater your chances of attracting more butterflies. The proper host plant for caterpillar feeding must be included to have the desired butterfly species. For example, encouraging monarch caterpillars requires including milkweeds such as common milkweed or butterfly milkweed in your garden.



Table 2. Caterpillar Host Plants

Common butterflies in Iowa and the host plants where the caterpillar will feed.

Common Name	Scientific Name	Host Plant
Black Swallowtail	<i>Papilio polyxenes</i>	Dill, Parsley, Fennel, Golden Alexanders
Cabbage White	<i>Pieris rapae</i>	Wild Mustards, Cabbage, Broccoli
Clouded Sulphur	<i>Colias philodice</i>	Clover, Alfalfa, other legumes
Common Wood-Nymph	<i>Cercyonis pegala</i>	Purpletop tridens
Eastern Comma	<i>Polygonia comma</i>	Nettles, Hops, Elm
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	Wild Cherry, Basswood, Tulip Tree, Birch, Ash, Cottonwood, Willow
Giant Swallowtail	<i>Papilio cresphontes</i>	Prickly Ash, Hop Tree
Great Spangled Fritillary	<i>Speyeria cybele</i>	Violets
Monarch	<i>Danaus plexippus</i>	Milkweeds
Mourning Cloak	<i>Nymphalis antiopa</i>	Willow, Birch, Cottonwood, Hackberry
Orange Sulphur	<i>Colias eurytheme</i>	Clover, Alfalfa, other legumes
Painted Lady	<i>Vanessa cardui</i>	Thistle, Nettle, Sunflowers, Mallow
Pearl Crescent	<i>Phyciodes tharos</i>	Asters
Question Mark	<i>Polygonia interrogationis</i>	Elm, Hackberry, Nettles
Red Admiral	<i>Vanessa atalanta</i>	Nettles, Hops, Elm
Red-spotted Purple	<i>Limenitis arthemis astyanax</i>	Poplar, Aspen, Oak
Regal Fritillary	<i>Speyeria idalia</i>	Prairie Violet, Bird's Foot Violet
Variegated Fritillary	<i>Euptoieta claudia</i>	Violets
Viceroy	<i>Limenitis archippus</i>	Willow, Aspen



Moisture

Like other animals, pollinators and butterflies need water. While some water comes from nectar, insects will also drink from pools, mud puddles, and birdbaths. A pond, stream, or water feature may be beyond the scale of most gardens, but a birdbath with rocks for perching, a container of wet sand in the ground, or a puddling area for butterflies will suffice. Change the water in open containers two to three times per week to prevent mosquito breeding.

Rocks

On cloudy or cool days large rocks and mulched paths provide a basking spot to help warm butterflies for flight.

Shelter

Trees, shrubs, fences, and buildings can provide protection from prevailing winds. A leafy cover offers a hiding place from hungry birds. Bumble bees and many solitary bees nest in the ground and need undisturbed open patches of bare ground. Some bees nest in stems and twigs, so unkempt natural areas with dead wood, rock piles, and standing dead perennials and grasses will encourage pollinator nesting and butterfly overwintering.

Untidiness

Butterflies and pollinators may benefit from leaf litter and plant stems left in the garden for overwintering habitat. Leave garden cleanup until temperatures are consistently above 50°F to provide winter protection. Some butterflies and their caterpillars feed on plants often considered to be “weeds.” Allow “weed” species, such as milkweeds, clover, violets, stinging nettle and thistle to grow in the landscape to feed specific species of caterpillars.

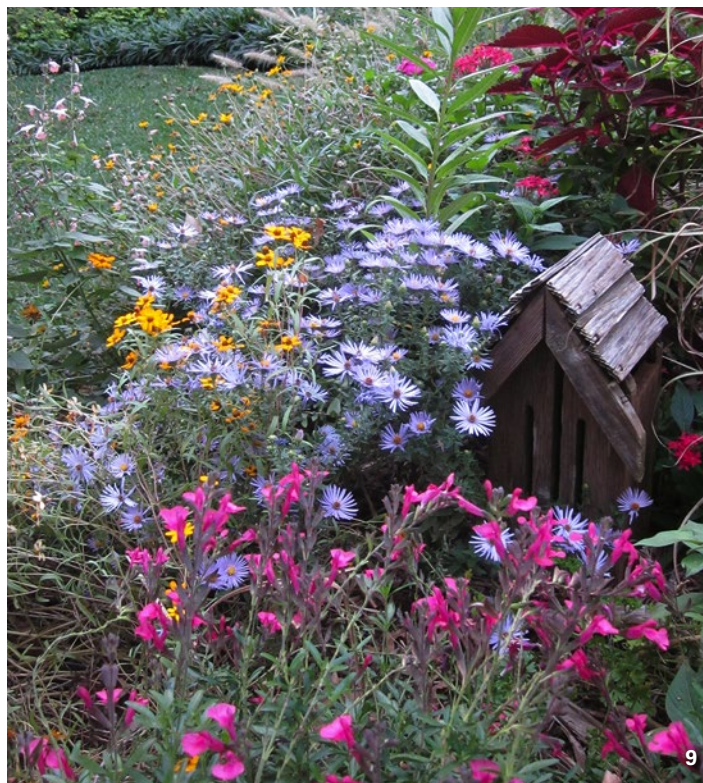
Protection from Pesticides

Avoid pesticides. Insecticides are the most dangerous, but herbicides also can be detrimental to the insects you are trying to encourage. Do not spray plants in bloom and use systemic insecticides with caution as the insecticide may be present in pollen and nectar of plants with roots growing in the treated area.

Planting and Establishment

Butterfly and pollinator habitats can be of all sizes and shapes. Adding nectar and caterpillar food plants such as milkweeds to the garden or landscape can be done as part of a new planting or as an addition to an existing garden. Host plants and nectar plants can be established as potted plants, small starts (plugs), or from seed. Potted plants and plugs are a good method for the quick establishment of small areas. Seeding will be more cost-effective for large areas.

Once a site is selected, remove existing plant debris or vegetation such as sod and weeds. Follow good gardening practices, including plant spacing, planting depth, irrigation (especially when plants are young and getting started), and mulching (for weed control and moisture conservation).



It may take several years for butterfly and pollinator habitat to establish and flower. Avoid insecticides during establishment to preserve beneficial insects. Control unwanted weeds with hand-pulling rather than herbicides.

Authors

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Resources

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