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A Guide to Butterfly Gardening in Harris County

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In addition to their role as pollinators, butterflies add an extra dimension of beauty to a garden as they flutter from one flower to the next. There's little doubt that butterflies are just about everyone's favorite insects. Though unlikely to match the widespread popularity of bird watching, butterfly watching has gained significant favor in recent years. However, urban growth, agricultural development, deforestation and other forms of habitat destruction are placing many butterfly species in danger of extinction.

In Harris County, butterflies can be enjoyed during almost all seasons of the year. Providing butterfly habitats in our home gardens is an easy way to provide an oasis for these delicate creatures.

The Back Yard Sanctuary

Plants that attract butterflies require a bright, sunny spot. Large masses of color attract more butterflies than small, scattered clumps, as groups of flowers are easier for butterflies to see than are isolated plants. Try to plant a variety of flowers that will bloom over a period of many months to provide a stable nectar source. Be sure to include both host plants and nectar plants. A number of weeds and wildflowers also attract butterflies, and planting a row of trees or shrubs will provide protection from strong winds and rain.

Provide shallow pools and mud puddles with exposed sandy edges. Butterflies prefer to drink water mixed with soil and sand and often congregate in these spots. This behavior, called "puddling," provides butterflies with essential salts, minerals and other nutrients from the soil.

Place flat stones in the yard. Butterflies frequently perch on stones, bare soil or vegetation. They often spread their wings and bask in the sun to raise body temperature so they can fly and remain active.

Do not use insecticides in the garden. All insecticides, including the bacterial insecticide Bt (*Bacillus thuringiensis*), are by definition toxic to insects. Since butterflies are insects, they too will be affected.

Early instar of the black swallowtail butterfly on fennel.

Different species of butterflies have different tastes for color, nectar and flavor. A variety of food plants will provide flavor diversity and help attract a variety of butterflies.

Female butterflies are as interested in finding the right place to lay their eggs as they are in finding food to eat. In the caterpillar stage, each species of butterfly can feed only on specific plant species, referred to as host plants. Providing these host plants will encourage butterflies to remain in your garden year-round.

After the eggs hatch, caterpillars, with their voracious appetites, may eat all the foliage from the host plants, completely denuding them. Don't worry; the plants will recover. If you can learn to tolerate a few defoliated plants, you'll be rewarded by seeing many more butterflies in the garden. Since some caterpillars eat weeds and native grasses, leaving a patch of native vegetation will also help attract butterflies.

Butterfly Life Cycle

The most successful habitats will meet the needs of butterflies during all four stages of their life cycle: egg, larva (caterpillar), pupa (chrysalis) and adult.

After mating, a female butterfly searches for an appropriate place to deposit her eggs. Certain butterfly species lay eggs on only one plant species, or a few closely related species; others lay eggs on many plant species. Generally, butterflies lay eggs on or near plants that later will provide the appropriate food source for the larvae. For example, monarchs lay eggs on milkweed; black swallowtails on parsley; and tiger swallowtails on tulip trees or wild cherry. A female butterfly finds a suitable nursery by scratching leaves with her feet. Sensory organs analyze the chemical content of the plant. If it tastes right, she curves her abdomen around to lay eggs on the leaf. Depending on the species, a butterfly may lay one to hundreds of eggs per leaf.

Within a few days, the caterpillars emerge from the eggs and begin to eat. If the appropriate food source is not available, they will die from starvation. When you plant for caterpillars, provide lots of food. A caterpillar may increase in size as much as 1000 times from egg to final molt. Don't let the caterpillars starve by not providing enough host plants in your garden design. It is better to plant a lot of one food source than just a few plants of many species.

When the caterpillar is full grown, it enters the pupal or chrysalis stage. Using silk produced by silk glands, it attaches itself to an object, usually a plant, where it is somewhat protected by surrounding vegetation. In the pupal phase, inside the cocoon, the caterpillar undergoes changes and metamorphoses into an adult butterfly.

After emerging from the chrysalis, the adult butterfly crawls out with its wings folded up, maneuvering into an upside-down position. Hanging from its legs, the butterfly swallows air, which helps to pump fluid into the veins of its wings to fully expand them. It spills all the waste accumulated during pupation and remains almost motionless until its wings harden. Then it takes to the air and begins searching for the food of nectar-rich flowers. As butterflies gather nectar, they also act as pollinators, assisting the natural process of fruit production.

Most butterflies have a very short life span, usually only a week or two. Most adults feed solely on nectar produced by flowers, sipping the nectar through a long hollow tube, called a proboscis. A few butterflies do not visit flowers, but instead feed on tree sap or rotting organic material.

Remember These Points

- Butterflies, like all other living organisms, need food, water and shelter. By increasing any one of these requirements, you will increase the number of butterflies in your area.
- In general, butterfly larvae prefer “unimproved” plant varieties. Native plant varieties produce the best results.
- Plant a variety of nectar and host plants. Groups of flowers are easier than isolated plants for butterflies to locate. Use at least five to seven of each flower type.
- Furnish basking stones on which butterflies can perch when sunning.
- Provide caterpillar food sources in both sunny and shaded areas.
- Since butterflies cannot drink from open water sources, provide damp areas in your garden for moisture. Wet sand, earth or mud provide the best watering holes for thirsty butterflies and also provide the minerals they require.
- A plate of mashed fruit such as bananas or pears attracts butterflies.
- Do not use pesticides in your garden, as they kill butterflies. A healthy plant can defend itself.
- If hungry caterpillars eat all the leaves of a plant, it will soon recover as part of the natural process.
- Attracting butterflies adds a whole new dimension to gardening. By enticing butterflies into your yard, you not only will enjoy their beauty and learn about their needs and the plants that provide them, but will contribute to the continuation of the species.

Host Plants for Butterfly Larvae

Butterfly Species	Food Plant for Caterpillar Stage
American snout (*Libytheana carinenta*)	hackberry
black swallowtail (*Papilio polyxenes*)	dill, parsley, anise, fennel, carrots, rue, Queen Anne's lace
cabbage white (*Pieris rapae*)	cabbage, broccoli, cauliflower, brussels sprout
cloudless sulphur (*Phoebis sennae*)	senna, partridge pea
common buckeye (*Junonia coenia*)	plantain, snapdragon
giant swallowtail (*Papilio cresphontes*)	plants of the citrus family, rue, money or hop tree, prickly ash
goatweed leafwing (*Anaea andria)*	goatweed, croton
gray hairstreak (*Strymon melinus*)	various legumes
great purple hairstreak (*Atlides halesus*)	mistletoe
Gulf fritillary (Agraulis vanillae)	passion flower vines
hackberry emporer (*Asterocampa celtis*)	hackberry
little yellow, little sulphur (*Eurema lisa*)	partridge pea
long-tailed skipper (*Urbanus proteus*)	pole beans, hyacinth beans
monarch (*Danaus plexippus*)	Mexican milkweed, butterfly weed
painted lady (*Vanessa cardui*)	hollyhock, thistles
pearl crescent (*Phyciodes tharos*)	aster
pipevine swallowtail (*Battus philenor*)	Dutchman's pipe vine, Brazilian pipe vine
queen (*Danaus gilippus*)	milkweeds
question mark (*Polygonia interrogationis)*	hackberry, elm
red admiral (*Vanessa atalanta)*	nettles, false nettle
red-spotted purple (*Limenitis arthemis)*	willow, cottonwood, black cherry
sleepy sulphur (*Eurema [Abaeis] nicippe)*	senna, partridge pea
spicebush swallowtail (*Papilio troilus)*	camphor tree, red bay, spicebush, sweet bay, sassafras, tulip tree
tawny emperor (*Asterocampa clyton)*	hackberry
Texan crescent (*Phyciodes texana)*	shrimp plant, dicliptera, ruellia
viceroy (*Limenitis archippus)*	cottonwood, poplar, willow

Nectar Plants for Butterflies

Common Name	Botanical Name	Flower Colors	Height
asters	*Aster* spp.	pink, purple, lavender, white	up to 2 ft.
bee balm	*Monarda* spp.	red, pink, lavender, white	2–5 ft.
black-eyed Susan	*Rudbeckia* spp.	yellow	up to 2 ft.
blazing star	*Liatris* spp.	purple	2–5 ft.
bluebonnet	*Lupinus texensis*	blue	12 in.
butterfly bush	*Buddleia davidii*	purple, lavender, white	more than 5 ft.
butterfly weed	*Asclepias tuberosa*	yellow, orange, red	up to 2 ft.
buttonbush	*Cephalanthus occidentalis*	cream or white	more than 5 ft.
cassia	*Senna* spp.	yellow	10 ft.
cigar plant, firecracker plant	*Cuphea* spp.	red, orange	2–5 ft.
coneflower	*Echinacea purpurea*	dark pink	up to 2 ft.
coral plant	*Russelia equisetiformis*	red	3–4 ft.
coreopsis	*Coreopsis sp.*	yellow	24 in.
cosmos	*Cosmos bipinnatus*	yellow, orange	up to 2 ft.
cypress vine	*Ipomoea quamoclit*	red	vine
Dahlberg daisy	*Thymophylla tenuiloba*	yellow	8 in.
flame bush, firebush	*Hamelia patens*	red-orange	more than 5 ft. in this area
fleabane	*Erigeron* spp.	white, pink, yellow	4 in.
frogfruit	*Phyla incisa*	white, light pink	4 in.
golden dewdrop	*Duranta repens*	lavender	more than 5 ft.
goldenrod	*Solidago* spp.	yellow	2–5 ft
heliotrope	*Heliotropium arborescens*	blue, purple, pink	up to 2 ft.
ironweed	*Vernonia* spp.	purple, pink	2–5 ft.
jatropha, peregrina	*Jatropha integerrima*	red, pink	more than 5 ft.
Joe Pye weed, boneset	*Eupatorium purpureum*	pink, lavender, white	2–5 ft.
lantana	*Lantana camara*	yellow, orange, pink, white	2–5 ft.
Mexican blanket	*Gaillardia pulcherrima*	red and yellow	10 in.
Mexican flame vine	*Senecio confusus*	orange	more than 5 ft.
Mexican false heather	*Cuphea hyssopifolia*	lavender	up to 2 ft.
Mexican milkweed, scarlet milkweed	*Asclepias curassavica*	red-orange-yellow	2–5 ft.
Mexican orchid tree	*Bauhinia mexicana*	white	15 ft.
Mexican sunflower	*Tithonia rotundifolia*	orange	more than 5 ft.
mist flower, ageratum, floss flower	*Ageratum houstonianum*	blue	2–5 ft.
morning glory vine	*Ipomoea coccinea*	white, light pink	vine

Common Name	Botanical Name	Flower Colors	Height
passionflower	*Passiflora incarnata, P. 'Incense'*	white, purple	vine
pentas	*Pentas lanceolata*	red, pink, lavender, white	2–5 ft.
phlox	*Phlox* spp.	purple, pink, red, white	up to 5 ft.; varies by species
pink candle celosia, cockscomb	*Celosia argentea* var. *cristata*	pink and white	2–5 ft.
porterweed	*Stachytarpheta jamaicensis*	purple, blue, coral	2–5 ft.
ruellia	*Ruellia* spp.	white, red, pink	18 in.
salvia	*Salvia* spp.	red, pink, lavender	2–5 ft.
shrimp plant	*Justicia brandegeana*	rose pink, yellow	24 in.
spiraea	*Spiraea japonica*	white	5–8 ft.
Stokes aster	*Stokesia laevis*	blue	24 in.
Turk's cap	*Malvaviscus arboreus*	red	up to 10 ft.
verbena	*Verbena* spp.	purple, lavender, blue, red	up to 2 ft.
yellow bells	*Tecoma stans*	yellow	more than 5 ft.
zinnia	*Zinnia* spp.	yellow, orange, red, pink, white	up to 2 ft.

Resources

The Cockrell Butterfly Center at the Houston Museum of Natural Science (Information: 713.639.4629) showcases hundreds of live butterflies in a naturalistic rainforest setting and promotes butterfly gardening. We gratefully acknowledge their plant lists as an important information source in the preparation of this publication.

"The Cockrell Butterfly Center Guide to Butterfly Gardening in Houston." http://www.hmns.org/files/education/bflygardeninglistnew.doc

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HARRIS COUNTY Master Gardener ASSOCIATION

Gardening fact sheets are distributed by Harris County Master Gardeners, community volunteers trained in basic horticulture by Texas Cooperative Extension. For information about Master Gardener volunteer training classes, call Harris County Cooperative Extension at 281.855.5600, or send an e-mail to harris@ag.tamu.edu.