





CREATING HABITATS FOR MONARCH
BUTTERFILES AND POLLINATORS
ON GOLF COURSES

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TOPICS

- POLLINATORS
- A FEW WORDS ABOUT MONARCHS
- MONARCH WATCH PROGRAMS
- NATIVE PLANTS
- POLLINATOR DEMONSTRATIONS SITES
- CREATING POLLINATOR PATCHES AND STRIPS
- NATIVE MILKWEEDS
- SIGNAGE
- PROOF OF CONCEPT
- ENHANCING BIODIVERSITY ON THE GOLF COURSE

GARDEN POLLINATORS

- BEES
- BUTTERFLIES AND MOTHS
- BIRDS
- BEETLES
- FLIES
- NECTAR, POLLEN
- NECTAR, HOST PLANTS
- NECTAR, SEEDS, BERRIES
- POLLEN, NECTAR
- NECTAR

BEEES

- HONEY BEES
- BUMBLE BEES
- CARPENTER BEES
- LEAF CUTTER BEES
- SWEAT BEES
- MASON BEES



Carpenter bee - *Xylocopa virginica*



Bombus pennsylvanicus
Bumble bees are declining in many areas

JOHN FRISCH

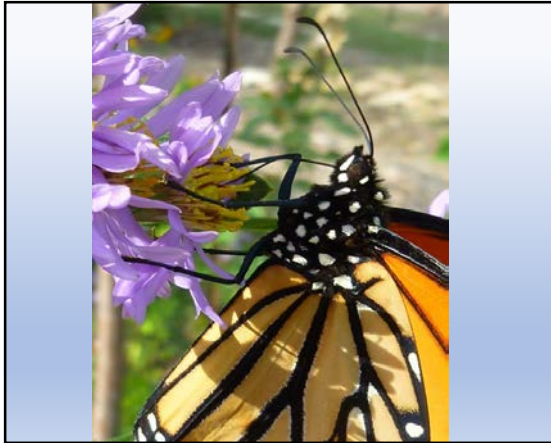


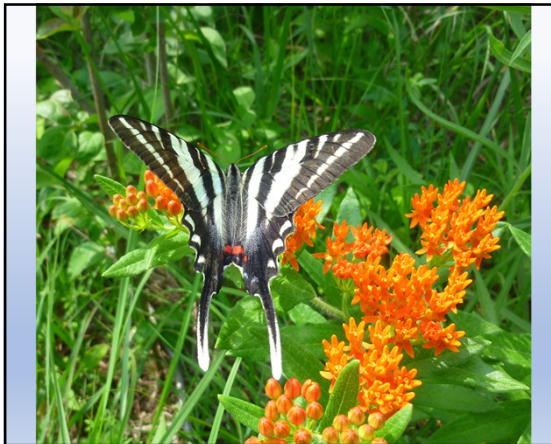
Green metallic bee - *Augochlora*

DAVID INOUE

BUTTERFLIES

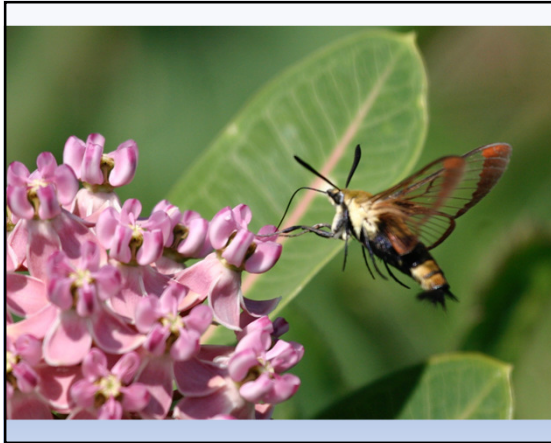
- MONARCHS
- SWALLOWTAILS
- NYMPHALIDS – LADIES, FRITILLARIES
- PIERIDS – YELLOW AND WHITE
- LYCAENIDS – BLUES, HAIRSTREAKS, COPPERS
- SATYRIDS – BROWNS
- SKIPPERS

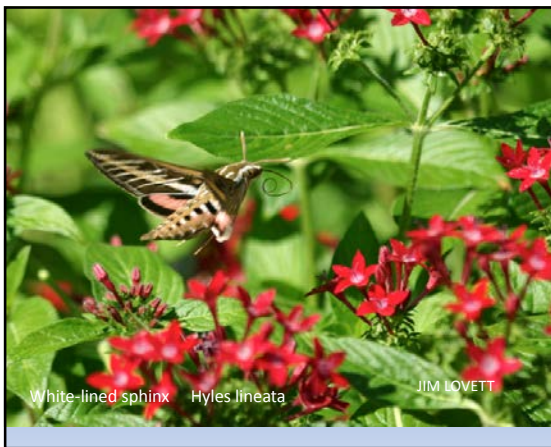




MOTHS

- DAY FLYERS
 - WHITE-LINED SPHINX
 - BUMBLE BEE MIMICS
- NIGHT FLYERS
 - HAWK MOTHS
 - TIGER MOTHS
 - MILLER MOTHS





BETLES

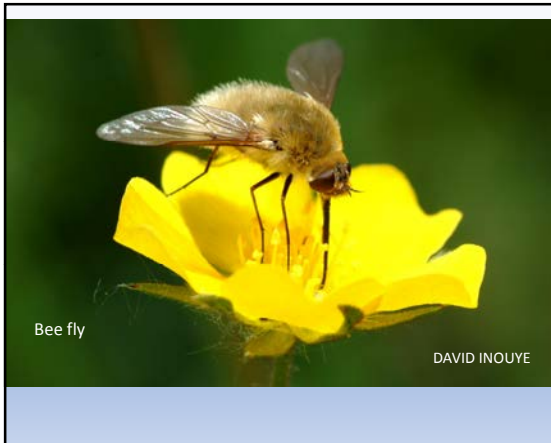
- BLISTER BETLES
- SOLDIER BETLES



FLIES

- SYRPHID FLIES
- BEE FLIES
- OTHERS





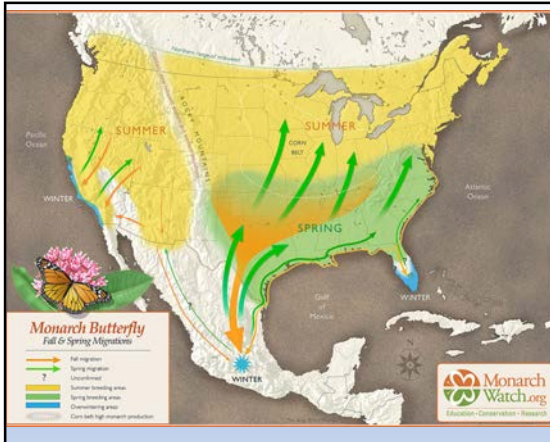
BIRDS

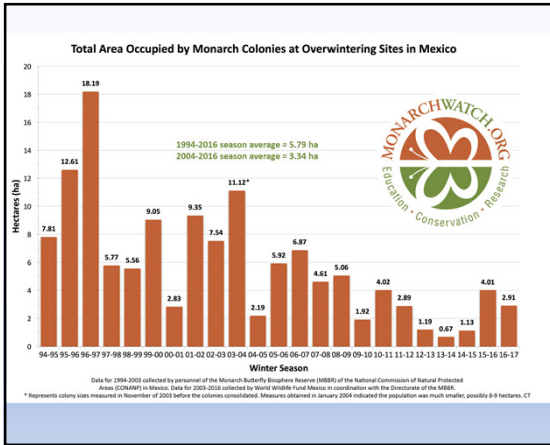
- HUMMINGBIRDS – TRUE POLLINATORS
- SEED FEEDERS
- FRUIT AND BERRY FEEDERS



MONARCH CONSERVATION







MONARCH WATCH PROGRAMS



MONARCH WAYSTATION PROGRAM

- Monarch Waystations – Started 2005

How many – >19,000 registered

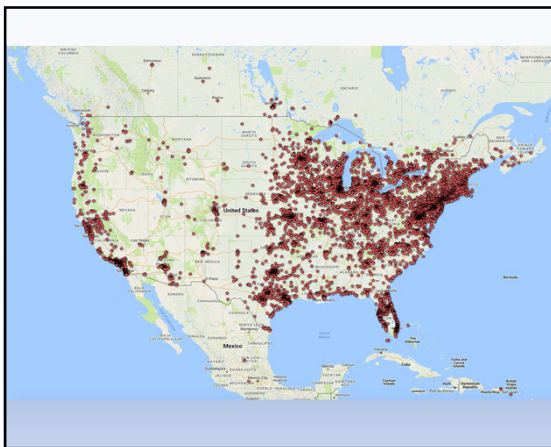
Home - 51%, school - 10%, park - 6%, farm - 5%

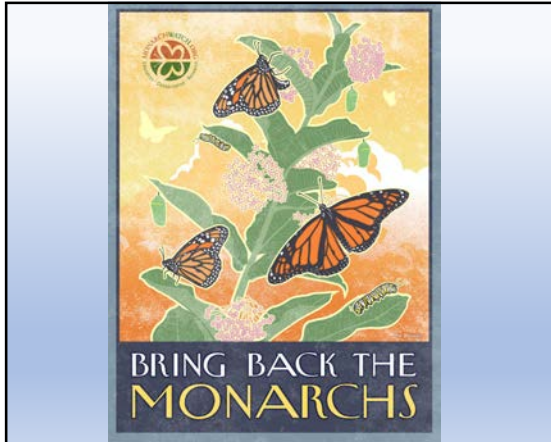
Distribution - 49 states and DC

6 Canadian Provinces

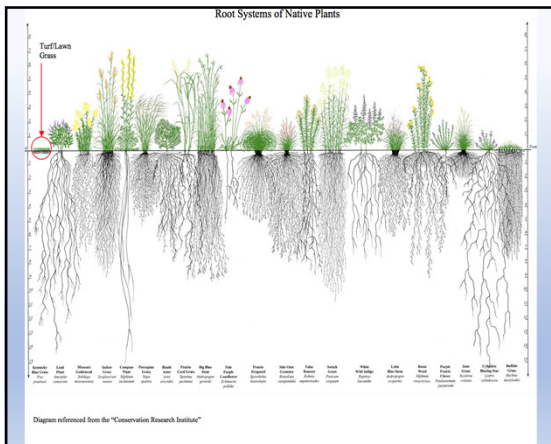
States with the most Waystations

MI, TX, IL, CA, VA, OH, PA, FL, WI





WHY WE SHOULD BE GROWING
NATIVE PLANTS



CREATING DEMONSTRATION SITES







CREATING PATCHES AND STRIPS











Augers can be rented or purchased and are highly recommended for large scale projects.



Auger bits sold separately.

www.stihlusa.com/products/augers-and-drills/planting-auger/bit45ead/







A typical plug from a 50 cell restoration tray.



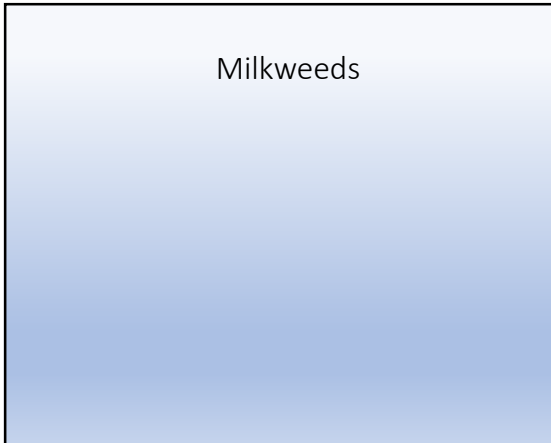
Straw mulch is used to retain moisture & reduce competition from other plants.

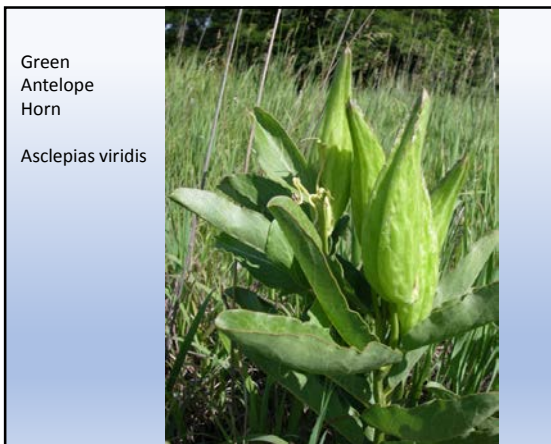




POST PLANTING CARE







Common Milkweed *Asclepias syriaca*



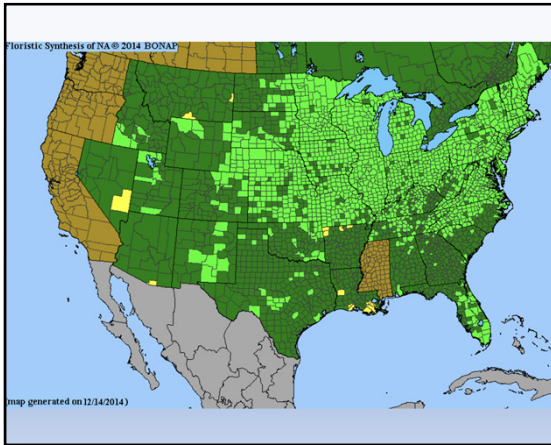
Sullivant's
Milkweed
*Asclepias
sullivantii*





Butterflyweed *Asclepias tuberosa*






SAVE THE MONARCH MIGRATION – PLANT MILKWEED
Plugs distributed
2013-2017 >540,000
We partner with nurseries in KS, OK, FL and CA

SIGNAGE

MONARCH GARDEN

Nature's Great Migratory Wonder

Each fall monarchs migrate to central Mexico where they overwinter in large clusters on trees in the mountains. They return in the spring with the females laying eggs on milkweeds, the only plants on which monarch larvae will feed. At the end of summer, after 3-4 generations, the migration starts again.



Monarchs, all bees, beetles and flies, have four life stages: egg, larva (caterpillar), pupa (chrysalis) and adult (butterfly).

While caterpillars need continuously to feed on, the adult stage needs to forage and digest. To create habitats for monarchs it's important to grow both milkweeds and host plants such as asters, bougainvillea and Joe-pye-weed.

Did you know?

- A fully-grown monarch caterpillar can weigh 2000 times more than what it first hatched from the egg.
- Monarchs fly to Mexico and return in the spring can take up to 9 months.
- It takes at least two months for monarchs to fly from the north to the overwintering areas in Mexico. The overwintering sites were not known to science until 1975.
- Monarchs populations are declining due to the loss of milkweed habitats. To maintain the migratory monarch population, planting milkweeds needs to become a priority.

BEE GARDEN

A Place Buzzing With Life

The plants in this garden represent mostly native Kansas wildflowers that attract bees. Bees are essential pollinators. Most are solitary (live alone), while others are social and live in colonies (honey bees and bumble bees). Pollination by bees results in the production of fruits, seeds, berries, nuts and foliage that are food for birds, mammals, rodents of insects and ourselves.

Bees pollinate many different kinds of wildflowers and flower shapes. Take a look at the flower shapes you see in the garden. Some are cone-shaped like black-eyed Susan or coneflowers (Rudbeckia spp.) and others are tubular like giant-ironweed (Phytolacca sp.). Popular bees, like sweat bees, prefer the tube-shaped flowers while larger bees, like bumble bees and carpenter bees, prefer to hover above flat flower heads.

Did You Know?

- This garden contains three groups of plants that are used by bees: tubular (large bees), round (small to large bees) and composite (mostly large bees).
- Bees prefer flowers in which 20-40% of the nectar consists of abundant sugars.
- Many bees need to forage with other insects, often bees or other insects, to find nectar. You can provide homes for bees by providing nesting boxes that all the bees located just to the right of the sign.
- There are an estimated 20,000 bee species worldwide, 3,500 bee species in the US, and over 200 bee species in Kansas.
- If you do not provide bees, the chances of being sting are very low. Visit www.pollinator.org for more information.







BUTTERFLY GARDEN

Flying Friends of Flowers

Butterflies fly great distances between flowers, making pollen with them and spreading genetic diversity, even though they are often not as efficient at pollinating as bees. Butterflies prefer tubular flowers that are low in nectar quantity and sugar content but often contain amino acids.

What can you do to attract butterflies in your garden?

- Great butterfly gardens consist both nectar plants for adult butterflies and host plants for caterpillars. Lists of host plants for Kansas butterflies can be found at MonarchWatch.org.
- Native plants tend to have short blooming periods, and a good variety of species are needed to have flowers in bloom most of the season.
- A list of nectar plants suitable to this region can be found by downloading the freeSmart Pollinator-Tracker App. Download the app.

Did you know?

- There are about 28,000 species of butterflies in the world, and about 725 species in the United States and Canada, with 190 in Kansas.
- The fastest butterfly, a skipper species from south central Kansas, reaches speeds of 40 miles per hour.
- Butterflies smell with their antennae and taste with their tongues (proboscis) AND their feet.
- Most butterflies recognize their own species on the basis of color and odor.

Common Buckeye

Limenitis archippe

Buckeyes arrive in Kansas each spring from Texas. The adults will be common in gardens from May through September. The larvae feed on oaks in the garden and landscape settings, and the buckeye caterpillars can often be found on the oak leaves present growing in yards and gardens.

Black Swallowtail

Papilio polydamus

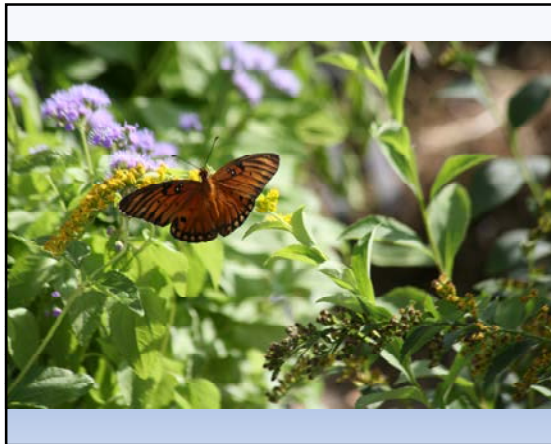
The Black Swallowtail is a trash butterfly with yellow markings on its forewings. Males have orange on the hindwings as well, while the hindwings of females are entirely black. Adult Black Swallowtails feed on nectar of various flowers, such as columbine and loquats. The caterpillars larvae can be found on pecans, hickory and many other plants in the Crotalaria family.

Red Admiral

Limenitis archippe

The Red Admiral is a widespread migrant, one of the earliest adults each spring. This continental migrant is the most common butterfly in the South. Host plants for larvae include evening primrose, fennel and ginseng. The caterpillars are easy to find since they use silk to build a mud capsule to create a need for protection from predators and parasites.

PROOF OF CONCEPT



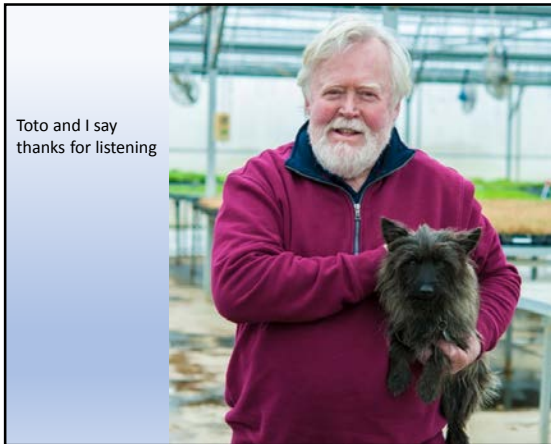




ENHANCING BIODIVERSITY
ON THE GOLF COURSE









**Thanks for joining us!
Questions?**

Upcoming Webinars

Feb. 28 @ noon, Central
Duties at the Desk: Purchasing and Budgets
Roger Stewart, Jr., CGCS

Mar. 1
**A Must Have: Written Best Management Practices
Plans for Golf Facilities**
J. Bryan Unruh, Ph.D.

Thanks again to 



The complex block contains text for a webinar announcement. It includes a date and time, a title, a speaker name, and another date and time with a title and speaker name. It also features a thank you message to Syngenta and the GCSAA logo. The background of the slide is a landscape with a golf course.
