Spring 2009 www.MonarchsAcrossGA.org

The Chrysalis

Emerging News from Monarchs Across Georgia

A Committee of the Environmental Education Alliance of Georgia

June 22-28, 2009: Celebrate Pollinator Week

Monarchs Across Georgia and Stone Mountain Memorial Association would like to invite you to celebrate National Pollinator Week, June 22-28, 2009, at Stone Mountain Park. The state butterfly of Georgia, the Eastern Tiger Swallowtail, will be highlighted in the lobby display inside of Confederate Hall.

Tuesday, June 23, 10:00 – 11:00 a.m., Pollinator Habitat Walk

Join us for a walk on the 1-mile loop in the meadow of the Songbird Habitat to observe pollinators at work and learn about the plants and places that they need to survive. Dress for the weather and wear closed-toe shoes. Bring a water bottle. Open to all ages. Meet at the trail head in the parking area off of Stonewall Jackson Drive.

Wednesday, June 24, 1:00 – 2:00 p.m., Monarch Mania

Participants will learn about the migration and life cycle of the Monarch butterfly and make a butterfly craft. Open to all ages. Meet inside Confederate Hall.

Saturday, June 27, 10:00 a.m. – 12:00 p.m. Create a Pollinator Garden

Drop in any time during this program to receive information about what to plant in your garden to attract butterflies and other pollinators. Participants will make pots out of newspaper strips and plant seeds to take home for their own garden. Open to all ages. Meet in front of Confederate Hall.

Reservations are not required. For directions, visit **www.stonemountainpark.com/maps-directions/**.

Upcoming Events

May 9, 2009

Cobb County Master Gardener Plant Sale
cobbmastergardeners.com
MAG will be selling milkweed and nectar plants!

June 22-28, 2009

Pollinator Week
pollinator.org

July 4, 2009

North American Butterfly Association
Butterfly Count
naba.org/counts.html

Our Mission: To engage schools and families in learning experiences involving monarchs and other native butterflies. MAG promotes stewardship of the natural environment through multi-disciplinary exploration and scientific investigation.

Plant Pollination Strategies

Pollination occurs when birds, bees, bats, butterflies, moths, beetles, other animals, water, or the wind carries pollen from flower to flower or it is moved within flowers. The successful transfer of pollen in and between flowers of the same plant species leads to fertilization, successful seed development, and fruit production. Other factors such as drought, extreme temperature shifts, or diseases may prevent full fruit and seed production.

Morphological Adaptations

Flowering plants have co-evolved with their pollinator partners over millions of years producing a fascinating and interesting diversity of floral strategies and pollinator adaptations. The great variety in color, form, and scent we see in flowers is a direct result of the intimate association of flowers with pollinators. The various flower traits associated with different pollinators are known as pollination syndromes. Flowering plants have evolved two pollination methods: 1) pollination without the involvement of organisms (abiotic) and 2) pollination mediated by animals (biotic). About 80% of all plant pollination is by animals. The remaining 20% of abiotically pollinated species is 98% by wind and 2% by water.

Wind

Plants that use wind for cross-pollination generally have flowers that appear early in the spring, before or as the plant's leaves are emerging. This prevents the leaves from interfering with the dispersal of the pollen from the anthers and provides for the reception of the pollen on the stigmas of the flowers.

In species like oaks, birch, or cottonwood, male flowers are arranged in long pendant catkins or long upright inflorescences in which the flowers are small, green, and grouped together, and produce very large amounts of pollen. Pollen of wind-pollinated plants is lightweight, smooth, and small. Plants that are wind pollinated generally occur as large populations so that the female flowers have a better chance of receiving pollen.

Wind-pollinated species like this cottonwood releases copious amounts of pollen from its catkins before the tree leafs out. Photo by Teresa Prendusi.

Wind-pollinated flowers are typically:

- No bright colors, special odors, or nectar
- Small
- Most have no petals
- Stamens and stigmas exposed to air currents
- Large amount of pollen
- Pollen smooth, light, easily airborne
- Stigma feathery to catch pollen from wind
- May have staminate and pistillate flowers, may be monoecious or dioecious
- Usually single-seeded fruits, such as oak, grass, birch, poplar, hazel, dock, cat-tail, plantain, and papyrus

Water

The small percentages of plants that are pollinated by water are aquatic plants. These plants release their seeds directly into the water. Pollen can also float on the water's surface drifting until it contacts flowers. This is called surface hydrophily and is relatively rare. This water-aided pollination occurs in waterweeds and pondweeds. In a very few cases, pollen travels underwater.

Many of the water-pollinated plants have become invasive throughout the United States.

Animals

Flowering plants and their animal pollinators have co-evolved where the forces of natural selection on each has resulted in morphological adaptations that have increased their dependency on one another. Plants have evolved many intricate methods for attracting pollinators. These methods include visual cues, scent, food, mimicry, and entrapment.

Likewise, many pollinators have evolved specialized structures and behaviors to assist in plant pollination such as the fur on the face of the black and white ruffed lemur or a bat. Animal pollinated flowering plants produce pollen that is sticky and barbed to attach to the animal and thus be transferred to the next flower.

Pollinator Syndromes

Plants and pollinators have co-evolved physical characteristics that make them more likely to interact successfully. The plants benefit from attracting a particular type of pollinator to its flower, ensuring that its pollen will be carried to another flower of the same species and hopefully resulting in successful reproduction. The pollinator benefits from its adaptation to a particular flower type by ensuring that it will be able to find and access important food resources - nectar and pollen. Such relationships are considered mutualistic. The flower type, shape, color, odor, nectar, and structure vary by the type of pollinator that visits them. Such characteristics are considered pollination syndromes and can be used to predict the type of pollinator that will aid the flower in successful reproduction.

Pollinator Syndrome Table

Trait	Bats	Bees	Beetles	Birds	Butterflies	Flies	Moths	Wind
Color	Dull white, green or purple	Bright white, yellow, blue, or UV	Dull white or green	Scarlet, orange, red or white	Bright, including red & purple	Pale to brown/purple; flecked with translucent patches	Pale and dull red, purple, pink or white	Dull green, brown, or colorless; petals absent or reduced
Nectar guides	Absent	Present	Absent	Absent	Present	Absent	Absent	Absent
Odor	Strong musty; emitted at night	Fresh, mild, pleasant	None to strongly fruity or fetid	None	Faint but fresh	Putrid	Strong sweet; emitted at night	None
Nectar	Abundant; somewhat hidden	Usually present	Sometimes present; not hidden	Ample; deeply hidden	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
Pollen	Ample	Limited; often sticky & scented	Ample	Modest	Limited	Modest in amount	Limited	Abundant; small, smooth, & not sticky
Flower Shape	Regular; bowl shaped – closed during day	Shallow; have landing platform; tubular	Large bowl-like, Magnolia	Large, funnel like; strong perch support	Narrow tube with spur; wide landing pad	Shallow; funnel like or complex & trap-like	Regular; tubular without a lip	Regular: small & stigmas exerted

This article was originally published at www.fs.fed.us/wildflowers/pollinators/plantstrategies/index.shtml.

SPOTLIGHT... Plants For Your Pollinator Garden

Homestead Verbena (*Glandularia canadensis*)

Verbena bonariensis, has many common names: Brazilian Verbena, Tall Verbena, and Purpletop Vervain. This verbena is sometimes thought of as a native wildflower but in fact it originated in South America. Due to its ability to reseed readily it has naturalized throughout the southeast and is a wonderful plant for the butterfly garden. This is a tall airy plant with tiny lavender flowers on a thin square stem, usually reaching about 4 feet. Start this plant form seed and although it is not perennial in our area it will reseed year after year.

Verbena canadensis, also called trailing verbena or rose verbena is a native perennial ranging from southern New England, west to Colorado, and south to Florida. It flowers profusely all summer and is tolerant of heat and drought once established.

Trailing Verbenas are best planted in the spring or summer and need to be kept moist for the first few weeks until roots have spread in the surrounding soil. In the fall you can trim back lightly to give a neater appearance to the garden, but do not cut severely until spring as new growth begins to appear. Severe fall pruning can reduce cold hardiness and plant s may not survive a cold winter.

'Homestead Purple' is our most popular trailing verbena. Discovered by University of Georgia's Dr. Allan Armitage and Dr. Michael Dirr at a country homestead in Georgia, it is very vigorous in growth and flower production. The plant has large clusters of purple flowers that bloom all summer until frost. 'Homestead Purple' is a good nectar source for butterflies and great addition to any sun perennial garden.

Habitat: Full sun. Prefers dry, well-drained sites.

Bloom Time: late Spring - early Fall

Wildlife Uses: Homestead verbena attracts birds, butterflies, and bees. The leaves are a favorite of rabbits.

Annual Monarchs Across Georgia Awards

Nomination Eligibility & Process

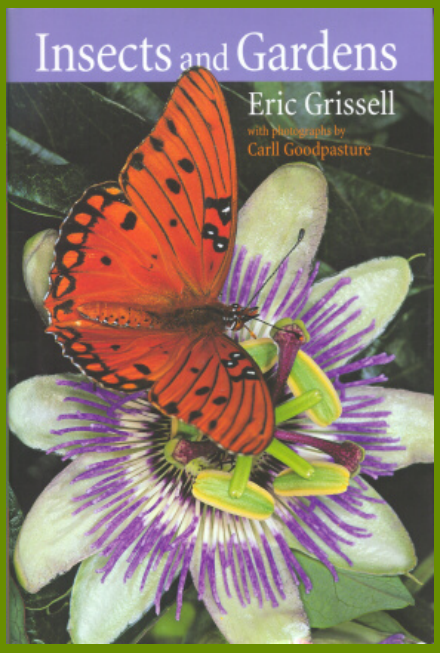
Monarchs Across Georgia is looking for some outstanding volunteers for the 2008 awards!

This award is intended for an individual or organization whose efforts in the arena of monarch education, conservation and/or habitat restoration have made an impact in the state of Georgia. In order to be eligible for the "2008 Outstanding Pollinator Habitat Award," you must submit an application to certify your back yard, school yard, workplace, farm, community garden/park, church garden or rooftop/apartment garden and receive certification from Monarchs Across Georgia in the year 2008. All applicants in the calendar year are eligible; however, one factor that will be assessed for the award is the impact of the habitat, i.e. its use for community outreach and/ or education.

Application for the "2008 Monarchs Across Georgia Service Award" can be made on-line at www.monarchsacrossga.org. One winner will be chosen from the applications received by the deadline of June 30, 2009. The award will be presented at the 2009 Outdoor Classroom Symposium.

Recommended Reading

Insects and Garden
by Eric Grissell



This is a thorough introduction to the biology and ecology of insects commonly found in North American gardens, as well as a guide to the principles of ecologically-sound gardening. Grissell, a research entomologist with the U.S. Department of Agriculture, emphasizes that insects, as well as other invertebrates, play key roles in maintaining a garden's ecological balance; furthermore, he advocates that gardens be managed as balanced, biologically diverse "naturalistic" systems, since they are, for the gardener, more enjoyable and easier to maintain.

- From Library Journal