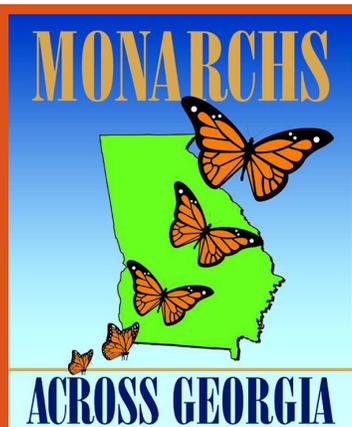


The Chrysalis

Emerging News from Monarchs Across Georgia

A Committee of the Environmental Education Alliance of Georgia



Upcoming Events

**Cobb County Master Gardeners
Tour & Plant Sale**
May 7
www.cobbmastergardeners.org

National Pollinator Week 2011
June 20-26
www.pollinator.org

**Chattahoochee Nature Center
Flying Colors Butterfly Festival**
July 17 • 9:00am - 2:00pm
July 18 • 12:00pm - 5:00pm
Roswell, GA

**Monarchs Across Georgia
Educator Workshop**
August 26 - 27
Watson-Brown Foundation,
Thomson, GA

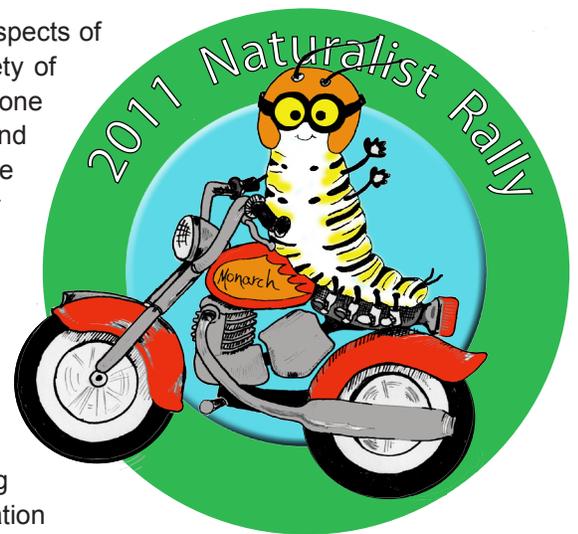
Naturalist Rally
September 24 • 9:00am - 5:00pm
Stone Mountain Park

For more information about these
events or to register, please visit
www.monarchsacrossga.org

2011 Naturalist Rally

Saturday, September 24, 2011
9:00am - 5:00pm (optional dinner and night programs 5:30 – 9:00 pm)
Stone Mountain Park

Join us for a full day of discovering all aspects of nature! We are assembling a wide variety of field trips within the Natural District of Stone Mountain Park to help you get outside and observing. Explore during a paddle on the lake, a short or long hike in the Park, or on a butterfly or mushroom walk. Kid-friendly sessions will be planned. As a MAG supporter, you will be interested to know that a special track will feature 'Butterfly Symposium' sessions. Our featured evening speaker, Larry McDaniel, will present his 'Porch Light Insects' talk that he developed by recording what comes by his porch light. Registration will be available soon at www.eealliance.org.



Sponsored by MAG, EEA Member Services Committee,
and Stone Mountain Memorial Association

Facts About Monarchs

that you probably didn't know

The following article consists of excerpts from Dr. Chip Taylor's April 2009 Monarch Butterfly Press Briefing. In this briefing, Dr. Taylor provides factual details that should help explain Monarch biology to the public.

REPRODUCTIVE DIAPAUSE

Migratory monarchs are non-reproductive and generally remain so until mid-February when sexual activity begins as monarchs are about to leave the colonies on their journey northward. This state of suspended reproduction is termed "reproductive diapause". During diapause, juvenile hormone (jh), a necessary hormone for reproduction, is absent or nearly absent from these butterflies, indicative of a major shift in their physiology. In the late summer it is only the newly emerged butterflies that enter reproductive diapause. Butterflies that are already reproductive at the time the migration starts do not enter diapause and do not join the migration. Although there is some evidence that quality of late summer milkweeds eaten by larvae and the temperatures experienced by pupae and adults have a role in diapause, the factors that contribute to the initiation of this non-reproductive condition are not fully understood.

PACE OF MIGRATION

The migration starts slowly in the far North, picks up a bit of speed in middle latitudes of the United States, and then slows again as the butterflies approach the overwintering sites. This detail is relatively unimportant. A more important point is that the migration advances at a rate of 25-30 miles per day on average in the central portion of the continent and is reasonably predictable. In other words, it is possible to predict the date of arrival of the leading edge of the migration to within three days for any latitude from northern Minnesota to the Mexico border.

NAVIGATION

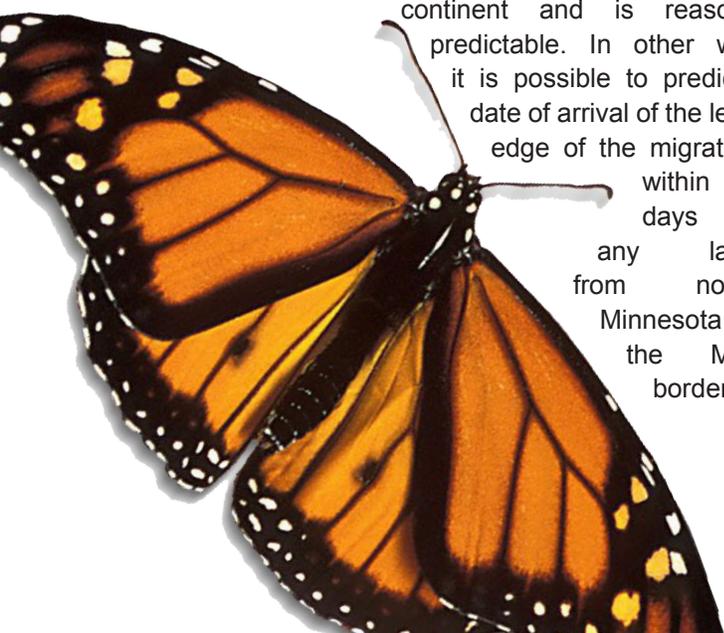
Migrating monarchs in the interior of the continent fly in directions (bearings, headings) that seem to be geographically appropriate, given the need to reach Mexico. For example, monarchs leaving Minnesota fly almost due south while those in eastern Kansas have bearings averaging 210 degrees and those just north of Atlanta fly toward 260 degrees. How the butterfly determines these geographically appropriate directions is the unanswered navigation question. It seems likely that monarchs integrate locally acquired signals to set direction but the signals used and the manner of integration are unknown. Components of the navigational system that are known involve a time-compensated sun compass linked to the circadian clock, and a protein that is sensitive to blue light and ultraviolet wavelengths. Magnetoreception (the ability to detect a magnetic field) may also be involved in navigation.

SPEED OF FLIGHT

Monarchs have two flight modes - powered flight and gliding. Powered flight can be broken down into short escape flights of greater than 12 mph, directional flight toward another individual or a resource of 10-12 mph or less, and normal flight of less than 10 mph when looking for flowers or host plants in the case of females. Migrating monarchs employ both powered and gliding flights; minimizing the former and maximizing the latter to save energy and reduce wear and tear on the wings and flight muscles on the 1200-2000+ mile continental traverse to Mexico. Gliding flight is composed of soaring (i.e., catching thermals in the manner of hawks and vultures to gain altitude) and then gliding S/SW with the aid of the wind. The glide ratio for monarchs ranges from 3-4 to 1 meaning that they can glide forward 3-4 feet for every foot they drop in altitude. If utilizing favorable tail and quartering winds, they can maintain altitude by flapping the wings once every 20-30 feet.

DISTANCE PER DAY

Although the overall migration advances only 25-30 miles per day, some tagged individual monarchs have covered distances of hundreds of miles in a few days. Most of the



long distance records are associated with weather fronts and other favorable wind conditions. One late season monarch averaged 61 miles per day for 2 weeks while flying from Virginia to Texas.

HEIGHT OF THE MIGRATION

Although the monarch migration is visible at ground level, observations by pilots of gliders and commercial aircraft have reported monarchs from the boundary layer (+/-1200ft) to over 10,000 ft under certain conditions. What appear to be monarchs have also been seen on NEXRAD radar. From these observations it is clear that much of the monarch population can pass through an area without being seen by those of us at ground level. How often these high elevation flights occur is not clear.

COMPOSITION OF THE COLONIES

Two techniques which identify the geographic origin of each monarch, one using stable isotopes and the other using tagged monarchs, show that the monarchs at each colony come from all portions of the eastern breeding range. For example, more than 2800 monarchs tagged at one Kansas site in a 4-hour period were recovered at three overwintering sites in numbers proportional to all tags recovered from these sites. In other words, if 7% of all tags were recovered from one colony, then roughly 7% of all the tags recovered from that Kansas site were found at that colony. This result shows that the butterflies originating from one location are randomized as they arrive at the overwintering sites and that none of the colonies are representative of a particular region of the northern breeding range.

ANNUAL CYCLE

The monarch's annual cycle can be broken down into two phases, a migratory phase and a reproductive phase. Because the monarch population utilizes much of the North American continent, these phases overlap on the calendar but not by latitude,

meaning that at each location only one of these two phases predominates at any given time.

MIGRATORY PHASE

At the northern limit of milkweeds (50N = Winnipeg), the migration starts on 15 August and continues until the last of the monarchs arrive at the overwintering sites near the end of the first week of December.

REPRODUCTIVE PHASE

Reproduction begins shortly after the overwintering monarchs begin moving north at the end of February and continues until November when the last of the last generation monarchs join the migration in Texas or Mexico.

GENERATION LENGTH

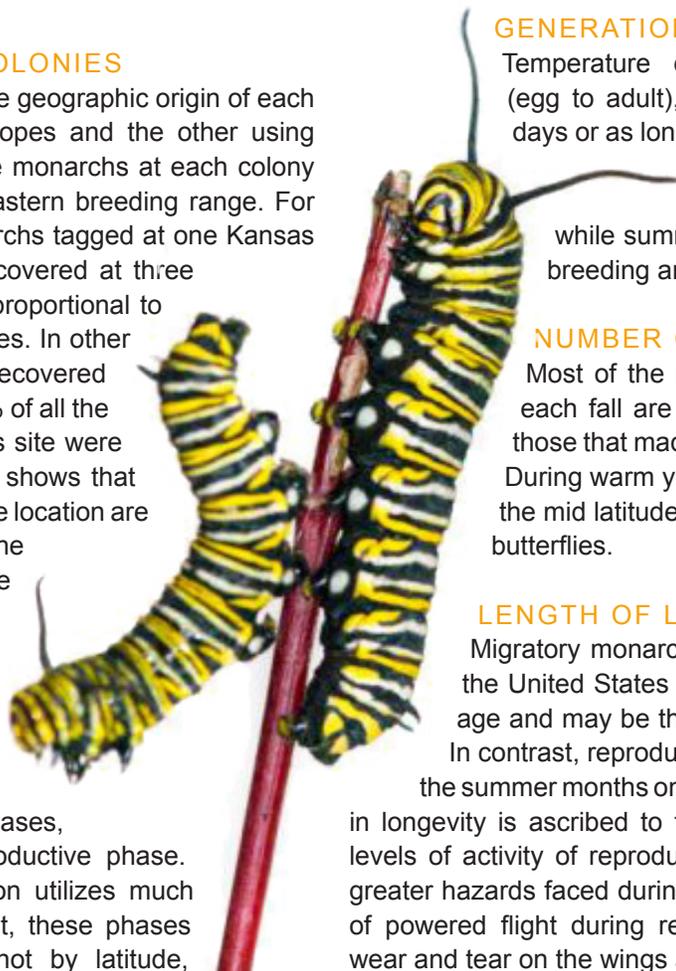
Temperature determines generation length (egg to adult), which can be as short as 25 days or as long as 50 days. Generation length is about 40 days in March-April in much of the South while summer generations in the northern breeding areas are usually 30-36 days.

NUMBER OF GENERATIONS

Most of the monarchs joining the migration each fall are 3-4 generations removed from those that made the journey the previous year. During warm years, a few of the migrants from the mid latitudes of the U.S. are 5th generation butterflies.

LENGTH OF LIFE

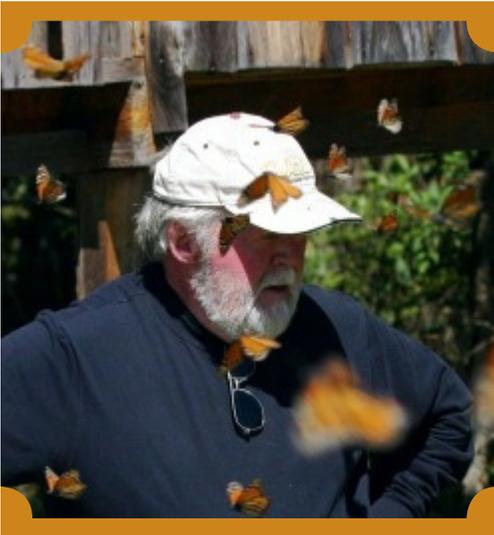
Migratory monarchs that survive to reproduce in the United States in the spring are 8-9 months of age and may be the longest lived of all butterflies. In contrast, reproductive monarchs breeding during the summer months only live 2-5 weeks. The difference in longevity is ascribed to the higher metabolic rates and levels of activity of reproductive monarchs as well as the greater hazards faced during reproduction. Continuous use of powered flight during reproduction also contributes to wear and tear on the wings and perhaps the flight muscles.



To read the full article, please go to www.monarchwatch.org/press/

Don't forget to order your tags from Monarch Watch!!!

Monarchs Across Georgia Welcomes New Advisory Board Member



Chip Taylor

MAG would like to extend a warm welcome to Orley R. “Chip” Taylor who is serving on our Advisory Board. Not only is Chip the founder and director of Monarch Watch, an unpaid but fulfilling volunteer activity in itself, he is a Professor of entomology in the Department of Ecology and Evolutionary Biology at the University of Kansas in Lawrence.

Trained as an insect ecologist, Chip Taylor has published papers on species assemblages, hybridization, reproductive biology, population dynamics and plant demographics and pollination. Starting in 1974, Chip Taylor established research sites and directed students studying Neotropical African honey bees (killer bees) in French Guiana, Venezuela, and Mexico. In 1992, as the bee research was coming to an end, Taylor founded Monarch Watch, an outreach program focused on education, research and conservation relative to monarch butterflies. Through the last 18 years Monarch Watch

has enlisted the help of volunteers to tag monarchs during the fall migration. This program has produced many new insights into the dynamics of the monarch migration. Four years ago, in recognition that habitats for monarchs are declining at a rate of 6000 acres a day in the United States, Monarch Watch created the Monarch Waystation program. The goal of this program is to inspire the public, schools and others to create habitats for monarch butterflies and to assist Monarch Watch in educating the public about the decline in resources for monarchs, pollinators and all wildlife that share the same habitats.

In Chip’s own words....”In 1992 I had no idea how this small project would change my life nor did I envision Monarch Watch as it is today. It’s fair to say that Monarch Watch continues to lead me into new areas of public education and lines of research I hadn’t anticipated. Each year brings new adventures and connections that seem to arise simply because Monarch Watch exists.”

Chip was recently honored by “Chip in for Monarch Watch”, a successful fundraising campaign that allowed “Monarch Watchers”, colleagues, friends, and family across the planet to show their support for Chip and the Monarch Watch program he brought to life nearly two decades ago. We are proud to add Chip to our growing list of monarch supporters here in Georgia.

High School Lesson Plans

Monarchs Across Georgia congratulates Druid Hills High School Media Specialist, Betsy Razza, on the completion of her Plan of Action and receipt of the \$1,000.00 scholarship for the 2010 Monarchs in Mexico trip. In addition to numerous published articles about her experiences in Mexico, Betsy wrote three lesson plans for high school students.

Why a Butterfly Garden?
Seeking Pollinator Habitat Certification*

Native versus Alien Invasive Plants

The Days of the Dead/ Los Dias de los Muertos
& The Migration of the Monarch Butterflies

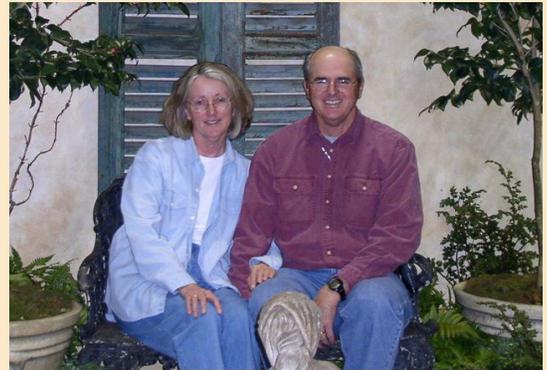
Lesson plans include background information, PowerPoint presentations, vocabulary, and student assessment tools. Click on “Educational Resources” on the Monarchs Across Georgia page of the Environmental Education Alliance of Georgia’s website at www.eeag.memberclicks.net and incorporate these lessons into your classroom or informal educational settings.

**From Scholarship Winner
Betsy Razza**

CONGRATULATIONS **to the 2010 Monarchs Across Georgia award winners!**

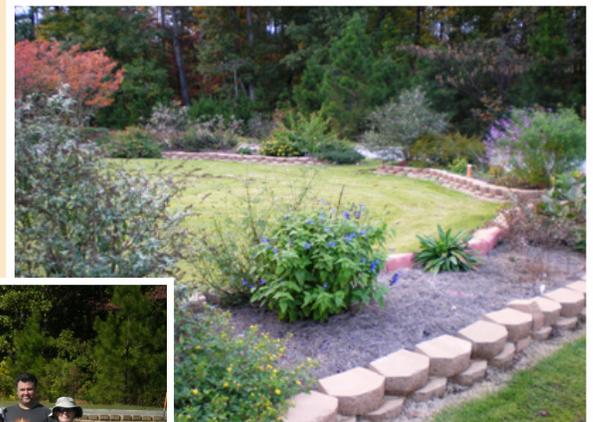
Chris and Chuck Stewart, Tapestry Greenhouse and Nurseries Service Award Winner

Finding locally grown, Georgia native milkweeds can be difficult but for the past three years, Chris and Chuck Stewart have converted a portion of their wholesale grower business, Tapestry Greenhouse & Nursery, to producing milkweeds for Monarchs Across Georgia's plant sales and teacher workshops. This endeavor comes not in response to the huge profit margins for this particular plant but because of the Stewarts' awareness and appreciation of the Monarch butterfly and willingness to do something to help restore its habitat here in Georgia.



Through their growing efforts over the past three years, the Stewarts have made it possible for Georgia residents to put hundreds of milkweeds in home and school gardens, providing the Monarch butterfly with its only host plant, and restoring suitable habitat for this migrating species. They have worked closely with Monarchs Across Georgia to provide a variety of appropriate host and nectar plants in demonstration gardens and for special projects fulfilling the requirements of Monarchs Across Georgia's Pollinator Habitat Certification. Plants are always of the highest quality, demonstrating the pride and care that Chris and Chuck take in their work. At Saturday markets in Madison, the Stewarts entice children with live caterpillars and teach them about their life cycle and its dependence on plants. On many occasions, they have shared their caterpillar "wealth" with local teachers to bring live science into the classroom.

Parsons Elementary School Outstanding Pollinator Garden Award Winner



SPOTLIGHT... Plants For Your Pollinator Garden

Blue False Indigo, Wild Blue Indigo (*Baptisia australis*)

USDA Native Status: Native to eastern U.S. • USDA Plant Hardiness Zones 3 to 10

Baptisia is a native wildflower growing 3-4 feet tall with foot long spires of intense indigo blue flowers. This is another one of those indestructible perennials that everyone should have in their garden. It is drought tolerant, has no serious insect or disease problems, deer resistant and of course a wonderful butterfly attractant.

Baptisia will perform best when planted in full sun. It tolerates average to poor soils but requires a well-drained soil. Plant as a backdrop in your perennial garden or group several together for spectacular color in the spring. Propagate by seed as separating is not recommended due to Baptisia's long tap root.

In early spring, when I'm checking to see if my bulbs are starting to emerge, I'm always delighted to see my Baptisia poking its head up through the soil. Through drought, clay soils and very little care this native has been an excellent performer in my garden and very long lived.

The Perennial Plant Association chose this member of the pea family as perennial plant of the year in 2010.

Virginia Brewer
Lavender Mountain
HARDWARE
and garden



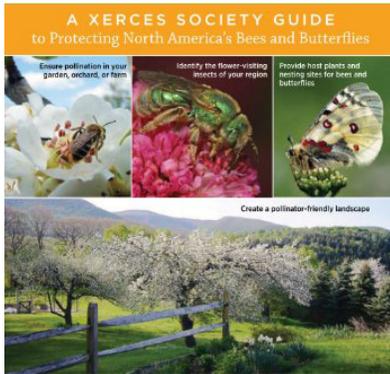
Species Profile: Gray Hairstreak (*Strymon melinus*)

An occasional pest of beans and other legumes, the Gray Hairstreak (*Strymon melinus*) is common in weedy, disturbed areas but can be found in any open habitat. It is the most widely distributed hairstreak in North America. One of the most polyphagous species, they will host on more than 20 different plant families, including corn and cotton. However, they seem to prefer the pea (Fabaceae) and mallow (Malvaceae) families.

Gray Hairstreaks are often bluish-gray or olive green with a bright red spot on the hindwing. They have a habit of rubbing the hindwings together while feeding, which may serve to confuse predators by vibrating the red eye spots and false antenna (actually the hindwing protrusion). Males (who can be determined by an orange-tipped abdomen versus gray-tipped in females) will perch all afternoon on small trees seeking receptive females. Eggs are laid singly on the host plant. Young caterpillars prefer to feed on flowers and fruit while older caterpillars will eat leaves. They are bright green with long hairs on the dorsum and may be attended by ants, who feed on the sugary substance secreted from the nectary organ. It overwinters as a reddish-brown, fuzzy pupa.



Attracting NATIVE POLLINATORS



Recommended Reading

Attracting Native Pollinators *from The Xerces Society*

The work of bees and other pollinators is something that touches us all through the food we eat, the clothes we wear, and the landscapes we enjoy. *Attracting Native Pollinators* offers a window onto the fascinating lives of these insects and provides detailed information about how you can care for these vital animals wherever you live. Whether you are an urban gardener, a suburban park manager, a working farmer, or caring for a nature reserve *Attracting Native Pollinators* has something for you. More than 380 pages long, *Attracting Native Pollinators* is illustrated throughout with hundreds of color photographs and dozens of custom-drawn illustrations.

2011 Mexico Book Project

Since 2004, when Monarchs Across Georgia began organizing trips to the Mexican overwintering colonies of monarch butterflies, we have brought books to the children in nearby schools. In an effort to generate awareness and understanding between two cultures, the monarch butterfly has served as our ambassador with literacy and education being our tools. Monetary donations from trip participants, their schools and communities have funded the project. One year, our major supplier, Scholastic Mexico, Inc. contributed by actually doubling the number of books that we ordered. In the past seven years, thousands of books have been distributed to six schools; one creating a community library where previously no reading books had been available.

Hand-delivering these books and other schools supplies has always been a highlight of each week that we traveled. The smiles on the children's faces and words of appreciation from parents and teachers make our efforts worthwhile. Although our 2011 trips were canceled, seventy-seven books were purchased with the donations made and delivered to schools in Angangueo, Michoacán. (Angangueo is located near the El Rosario Sanctuary and one of the towns that sustained major damage from mudslides in February 2010.) Special thanks to the following people who made this happen:

- 2010 trip participant and *The Secret Lives of Butterflies* filmmaker, **David McCallum** of Kingston, Ontario for his generous donations
- Our friend and fifth grade teacher, **Belinda Alfaro Vidales** of Morelia, Michoacán for her help in choosing appropriate books from a local bookstore
- Our friend, bus driver, and Belinda's husband, **Hugo Huber Torres** of Morelia, Michoacán for delivering the books to Angangueo
- Our friend and Journey North reporter, **Maria Estela Romero** of Angangueo, Michoacán for delivering the books to the school children



Please visit the Monarchs Across Georgia page at www.eealliance.org to see the complete list of 2011 donors. Consider making a donation for the 2012 Mexico Book Project. In appreciation, a bookplate with your name (or one designated by you) will be attached to the inside cover. We will also recognize donors by publishing their names on our website. Certificates and a letter denoting your tax-deductible donation will be provided. It's a great gift idea for any occasion!

Monarchs Across Georgia thanks webmaster

Patricia Smith



Would you like to volunteer...

To create an intricate and informative website from scratch?

To update the events and resources on it regularly?

To take care of every little detail and glitch that occurs?

To devote countless hours of your free time?

Would you be willing to do that for a period of six years?

Patricia Spicer Smith, a retired Senior Software Engineer living in Walkerton, VA said yes to this proposition in February 2005 when she committed to be the webmaster for Monarchs Across Georgia (www.monarchsacrossga.org.) Perhaps Pat didn't realize exactly what she was getting herself into at the time but with her passion for programming and her devotion to the project, she worked tirelessly and patiently with the MAG committee chair to craft the website that we can boast about today.

Over those six years, the MAG committee expanded its programs creating Pollinator Habitat Certification, the Map Asclepias Project, an on-line newsletter, and a resource section with lesson plans. We also better defined our Mexico Book Project and Monarchs in Mexico trip experiences. Our connections with national monarch programs such as, Journey North, Monarch Watch, and Monarch Health were strengthened. All of these changes and improvements were documented and displayed on our website with accuracy and speed thanks to Pat Smith.

Monarchs Across Georgia's website is not the only website managed by Pat. She is the paid webmaster for at least six others but Pat has never asked for payment or even a reprieve from her commitment to MAG. Who knows what monetary value could be accessed for her six years as volunteer webmaster? I simply know that we have been incredibly blessed to have had her talent and expertise contribute to our organization. As the Environmental Education Alliance of Georgia revamps and consolidates its web resources, we thank you, Pat, for your years of devotion to Monarchs Across Georgia.

Make Your Pollinator Garden Official - Have it Certified!

It's that time of the year again! Take a deep breath. Can you smell the sweet scent of the freshly turned soil? Spring is finally here and gardeners are starting to think about the upcoming season. This is also the time of year when our pollinator friends return. What better way to support them than by creating a pollinator garden. However, it gets better! Whether you have an apartment balcony or a 10-acre farm, you can create a garden that provides food, water, shelter, and places for pollinators lay their eggs and have it certified as a Monarchs Across Georgia Pollinator Habitat. What a great way to celebrate all your hard work! For more information visit www.monarchsacrossga.org.

