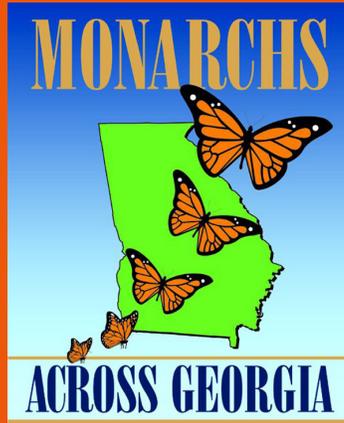


The Chrysalis

Emerging News from Monarchs Across Georgia

A Committee of the Environmental Education Alliance of Georgia



Upcoming Events

Invite a Monarch to Lunch

March 30
9:30am - 11:00am

North Georgia College & State University, Dahlonega

Monarchs Across Georgia Educator Workshop

April 19, 5:00pm - 8:00pm &
April 20, 9:00am - 4:00pm
Sawnee Mountain Preserve & Visitor Center, Cumming

Monarchs Across Georgia Service Learning Project

April 27
10:00am - 2:00pm

Watson-Brown Foundation, Thomson

Master Gardener Volunteers of Cobb County Plant Sale

May 11
10:00am - 4:00pm

Cobb Co. Water Quality Lab, Marietta

National Pollinator Week 2013

June 17-23
www.pollinator.org

Monarchs Across Georgia Educator Workshop

August 23 & August 24
Watson-Brown Foundation, Thomson

For more information about these events or to register, please visit www.eealliance.org/mag-events

2012 Monarchs Across Georgia Award Winners

2012 Service Award

Mary "Jennie" Landrum
C.T. Walker Magnet School, Augusta

In the words of Michele Zupan, Curator for the Watson-Brown Foundation, Inc., who nominated Jennie for this honor, "Jennie is DYNAMIC! I have never met a teacher more passionate about not only her students but also about all things BUTTERFLY!"

After attending at Monarchs Across Georgia workshop at Watson-Brown, Jennie began a fervent campaign to construct a pollinator garden at her school. She raised money, secured donations of materials, and organized volunteer labor. A Master Gardener designed the beds not only for ease of access, but also for water conservation. The garden dedication became a school-wide event with performances by several grades, speeches from Board of Education Administrators, and coverage by local media. The Certified Pollinator Garden contains host plants for Monarchs and many other native butterfly species. In 2011, a community vegetable garden was added. What better place for pollinators and people to reap the benefits of plants! Produce is shared with school neighbors who are economically disadvantaged. Teachers conduct lessons in and about the gardens as they are designed to enhance learning in science, nature, writing and mathematical skills. In 2012, educators from the Watson-Brown Foundation were invited by Jennie to conduct a professional development program for K-3 teachers to learn how to effectively utilize the garden and to align the butterfly curriculum with Georgia's education standards.



Jennie Landrum (in red) helps her students in their school garden.

C.T. Walker Elementary is surrounded by an "asphalt jungle." The garden is an oasis in a sea of parking lots, abandoned buildings, and urban blight. The efforts of Jennie Landrum have brought together this community, fostering a culture of service and involvement for the conservation and preservation of the Monarch butterfly as well as for the American child.

Continued on page 6

color, we used general linear modeling, where total flight distance, total flight duration and flight speed (km/hr) were separate response variables, sex and experiment were categorical predictors, and wing area, aspect ratio, relative body size, orange hue score and percent black were continuous covariates. Analyses were conducted using Statistica 6.1 software.

DISCUSSION

Our results show an association between monarch wing hue and flight endurance, with monarchs having the deepest-orange, or reddish-colored wings flying farther distances and for longer durations on average than those with yellow-colored wings. These experimental results are consistent with a prior study showing that wild monarchs captured during the fall migration in eastern N. America were on average redder than non-migratory individuals captured in the summer. Because the monarch generation that emerges in late summer migrates to central Mexico and part-way back, long distance flight is of paramount importance to this cohort. It is possible that developmental pathways that affect flight endurance in this generation also influence wing pigmentation. Importantly, butterflies in our experiments were reared under similar environmental conditions: all larvae were fed greenhouse-grown cuttings of a single host plant species, *Asclepias incarnata*, and adults were flown under similar conditions of light and temperature (with minimal air currents). Thus, associations between flight performance and wing color observed here should reflect individual differences in these parameters and are unlikely to arise from external confounding variables.

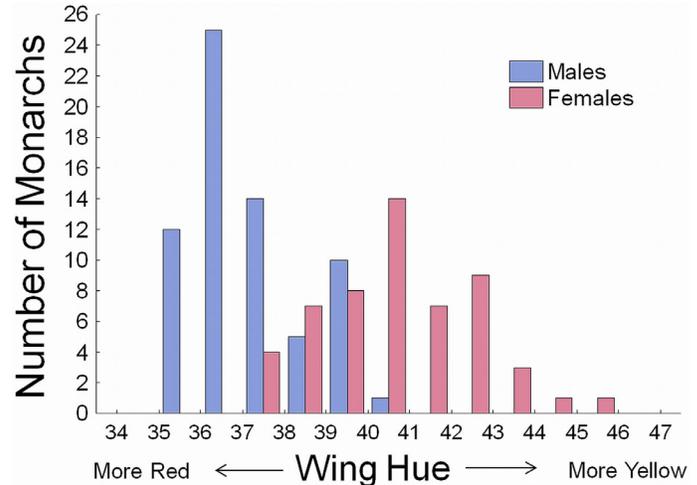


Figure 2. Frequency-distribution of male and female orange hue scores aggregated across experiments 1–3.

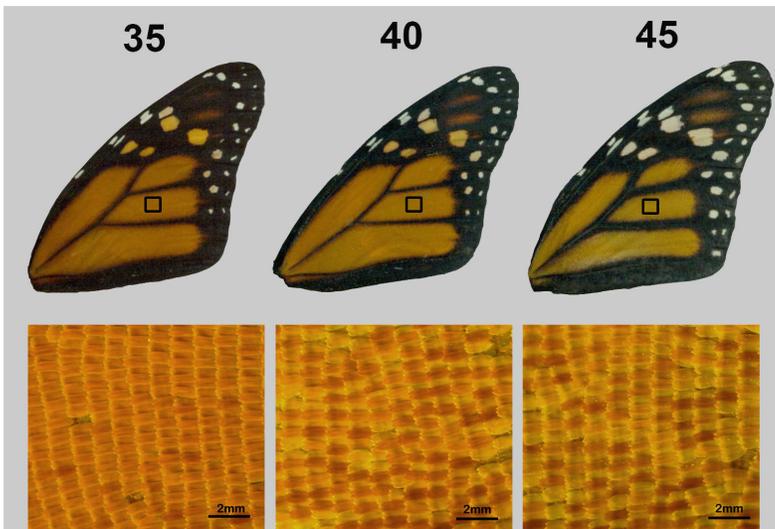


Figure 3. Forewings from three monarchs that span the range of hue scores (values above wings) in this study. Magnified sections show close-up of scales from each individual.

monarchs, for which survival hinges on flight endurance, or also occur in other butterfly species. Finally, our results add new information to a growing body of work on the fitness correlates of wing color traits, expanding on their known roles as signals to potential mates and predators.

Further work is needed to uncover the mechanism causing the association between wing hue and monarch flight documented here. Correlations between these two variables could be caused by overlapping biochemical pathways during monarch development, or by metabolic constraints that affect both flight and wing color independently. We can surmise that variation in wing redness is caused by the differential deposition of color pigments such as pterins and ommochromes onto wing scales. Indeed, microscopic comparisons of wings from monarchs with low to high hues showed that redder wings are associated with uniformly darker-pigmented scales, whereas yellower wings have scales with either uniformly light pigmentation, or with a mix of light and dark pigment. Studies that compare the thoracic flight muscles, energy storage or metabolism across individuals with different hue scores could shed further light on this association. Moreover, it would be important to determine whether color-flight associations are unique to migratory insects like

Monarchs Across Georgia unveils its new Certified Pollinator Habitat sign!

Since it's been a long time since our first Certified Pollinator Habitat sign was adopted, we felt it was time to give it an updated look! After approximately three months of work, we now have a lovely sign that portrays a few of our favorite pollinators - bees, butterflies, hummingbirds, and beetles! Check it out below, and [learn how you can get one for your own garden!](#)



Currently certified gardens can [order a replacement sign](#) for \$25!

Pollinator Habitat Certification

Do you enjoy watching and studying caterpillars on their host plants; searching for chrysalides hidden from predators; observing butterflies and hummingbirds flitting from flower to flower? Does your schoolyard, workplace or backyard have bushes, trees and flowers that provide host plants, nectar and protection for butterflies, bees, hummingbirds and other pollinators? Is there a source of water/puddling areas for thirsty butterflies? Are there places for them to roost at night? If so, you might want to look into registering your backyard/schoolyard/workplace habitat with Monarchs Across Georgia's Pollinator Habitat Program. For more details and to download the form visit www.eealliance.org/mag. No garden is too big or too small!

Congratulations to the latest gardens to be certified:

Teri Nallett-Carmine and Ed Carmine
Tucker, GA

Radium Springs Gardens
Albany, GA

2013 Pollinator Habitat Grant Winners!

Congratulations to the five organizations who have been awarded \$750 Pollinator Habitat Grants!

Milford Elementary School, Marietta, GA
Smoke Rise Charter School, Stone Mountain, GA
The Champion School, Stone Mountain, GA
Cane Creek Farm, Cumming, GA
Sawnee Mountain Preserve, Cumming, GA

Thank you to all seventeen organizations that submitted applications. With such innovative and interesting concepts for creating and utilizing pollinator habitats, it was difficult to select only five to be funded. Special thanks goes to the U.S. Fish & Wildlife Service for providing \$2,500, allowing us to award three additional grants this year.

From the transformation of a library courtyard or the enhancement of an existing garden space, an outdoor pollinator habitat that fulfills the specific requirements of the Monarchs Across Georgia Certification Program will be created at each site. Signage about host and nectar plants, hands-on lessons about butterfly life cycles, student-designed brochures with information on how to certify, and the inclusion of "farmscaping" as a component of an organic growing course are just a sampling of the educational components that will be developed and utilized as part of the process. How exciting it will be to report each organization's accomplishments as they complete their work and submit reports in June 2013!



SPOTLIGHT... Plants For Your Pollinator Garden

Black Cherry (*Prunus serotina*)



Black cherry is a common sight in the central and eastern United States from Florida to southern Canada. It is a medium sized deciduous tree with very distinctive dark “broken” bark that resembles burnt cornflakes. The long, thin leaves have a glossy sheen and slightly curled edges. The tiny white flowers are arranged on long, drooping racemes and appear late in the season, hence the species name *serotina* which means “late.” The red fruit appears in late summer and darkens to black in autumn. Although the leaves, twigs, and bark are poisonous to livestock, they are readily eaten by deer. The fruit is a favorite food of songbirds, rabbits, fox,



raccoons, opossum, and black bears. It has been traditionally used in the Appalachians as a tonic and sedative. Wild cherry cough syrup is made from the bark, while wine and jelly can be made from the fruit. The dense wood is also valued for furniture and cabinetry.

As an ornamental addition to your garden, it can thrive in poor soils, but prefers well-drained sites ranging from dry to moist. It is easy to grow in both sun and shade and is valued for its lace-like flowers and glossy foliage, as well as its ability to attract birds and butterflies. It grows quickly, but pick the site for your tree with care as it drops a lot of leaves, twigs, and fruit.

Red-spotted purple (*Limenitis arthemis astyanax*)

The red-spotted purple (*Limenitis arthemis astyanax*) is a beautiful, metallic blue butterfly that is common in wooded and suburban areas of the southeastern United States. It’s northern sub-species counterpart, the white admiral (*Limenitis arthemis arthemis*) is found in the northeastern United States and southern Canada. Where the ranges of these subspecies overlap, there may be interbreeding that results in fertile offspring.

The surface of the distinctive looking eggs is covered in a sculptural hexagon pattern, with hairs rising from the corners of the hexagons. The caterpillars resemble bird droppings and are polyphagous, dining on several species of deciduous trees and shrubs including black cherry, deerberry, willow, oak, poplar, beech, birch, elm, alder, hornbeams, and hawthorns. There can



be 2-3 generations hatched each summer, and some caterpillars will overwinter in a small leaf shelter attached to the host plant with silk. After emergence, male butterflies will often puddle on the damp ground and feed from dung, carrion, tree sap, or aphid secretions, whereas females prefer flower nectar. The adults are batesian mimics of the poisonous pipevine swallowtail (*Battus philenor*), but they lack the distinctive “tails” on the lower hindwings.

Continued from page 1

2012 Outstanding Pollinator Habitat

After almost two years of preparation, the Monarch Butterfly Garden at Radium Springs was dedicated on Tuesday morning, October 23, 2012. This collaborative effort between Dougherty County, Southwest Georgia Master Gardeners and Albany Technical College is an example of the how partnerships can benefit the community.

The Radium Springs Garden sits on the site of what remains of the former Radium Springs Casino. After major floods in 1994 and 1998, the facility was placed on a federal flood plain demolition list and eventually destroyed.



Radium Springs Monarch Butterfly Pollinator Garden, Albany

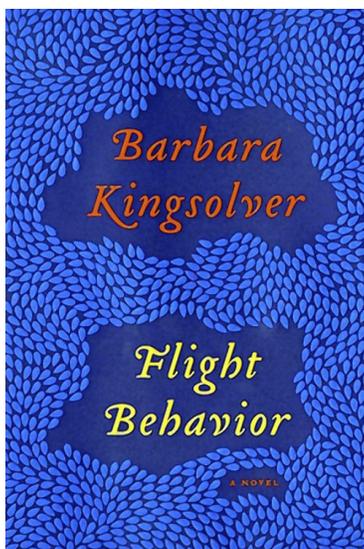
In the words of Suzanna MacIntosh, the Master Gardener co-project manager, “The restoration of this beautiful natural area in order to share it with the community, to honor all who have come before and loved it, and to leave as a legacy for future generations is reflected in the imagery of the butterfly which holds a promise of renewal and rebirth.



We hope the garden will be something very special for the community and that it will help bring us together in our appreciation of the gifts of our natural world and continue to provide an opportunity to partner with and highlight the natural resources and beauty of southwest Georgia and the great people who live here.

This long-term project is designed to teach about the importance of our pollinators, native plants and sound gardening practices. We want to encourage a network of butterfly gardens throughout southwest Georgia and we are so happy that the Camilla Garden Club will soon have the very first satellite butterfly garden in Camilla!”

We will recognize our award recipients at the Environmental Education Alliance of Georgia Awards Luncheon at The Classic Center in Athens on Saturday, March 23, 2013 with the presentation of framed certificates denoting a donation to the Monarch Butterfly Fund was made in their honor.



Recommended Reading

Can the beauty of nature distract us from the reality of what changes in her behavior can mean in our world? One of the most beautiful of nature's creatures is the butterfly, majestic and noble. A change in the migration patterns of these beautiful creatures would be an anomaly to the science world, but could bring about misunderstanding in the community that becomes their home.

Flight Behavior is a heady exploration of climate change, along with media exploitation and political opportunism that lie at the root of what may be our most urgent modern dilemma. Set in Appalachia, its suspenseful narrative traces the unforeseen impact of global concerns on the ordinary citizens of a rural community. As environmental, economic, and political issues converge, the residents of Feathertown, Tennessee, are forced to come to terms with their changing place in the larger world.

~ From kingsolver.com & blogcritics.org