The Sabal

September 2011

Volume 28, number 6

In this issue:

September Meeting of the Native Plant Project:

"Mallows of the LRGV"

by Ken King,
co-author "Plants of Deep South Texas,"

Tuesday, Sept. 27th, at 7:30 P.M.

Valley Nature Center, 301 S. Border
(in Gibson Park), Weslaco.

Ken will elucidate the many species of mallows, including one new to science, found by Ken and Dr. Alfred Richardson while exploring the RGV for their recently-published book, "Plants of Deep South Texas." The LRGV hosts a diversity of mallows; many are rarely encountered.

The Sabal *is the newsletter of the Native Plant Project.*
It conveys information on native plants, habitats and environment of the Lower Rio Grande Valley, Texas.

Previous **Sabal** issues are posted on our website [**www.NativePlantProject.org**].
Electronic versions of our **Handbooks** on recommended natives for landscaping are also posted there.

Change of address, missing issue, or membership: **<bwessling@rgv.rr.com>**
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Aliens,
by Douglas Tallamy

The following article appeared in the Spring 2011 issue of "Wings," a membership journal published by The Xerces Society [www.xerces.org]. *It is reprinted here with the permission of the author and The Xerces Society.*

Many of us are aware that native animal species diversity seems to increase in areas where native plant species diversity increases. Dr. Tallamy has hard data to support that fact and provides many clues as to why this phenomenon occurs.

The wonderful photos which illustrate this article were also provided by Dr. Tallamy.

Although I chose entomology as a profession, I understand the thrill of growing exotic plants. In graduate school, I took a class in woody landscape plants from the noted horticulturist Robert Baker. I left that course with an intense desire to plant as many of the species I had just learned about as possible. The only thing that slowed me down was that, as an apartment dweller, I had no place to plant them. Still, I gathered seeds from many of the ornamentals on campus, germinated them in the greenhouse, and planted the seedlings all over the yards of my parents and relatives.

I now find it ironic that, at the same time that Professor Baker was turning me on to alien ornamentals, I was taking courses about interactions between plants and insects. These were the classes that explained why most insect herbivores can eat only plants with which they share an evolutionary history. All of the information I needed to realize that covering the land with alien plant species might not be such a good idea had been neatly and simultaneously placed in my lap during those months in graduate school, but it was twenty years before I made the connection: **the vast majority of our native insects cannot use plant species that evolved outside of their local food webs.**

In 2000 my wife and I moved to ten acres in Pennsylvania. The area had been farmed for centuries, before being subdivided and sold to people like us who wanted a quiet rural setting close to work. We got the rural setting we sought, but it was not the slice of nature we had hoped for. At least 35 percent of the vegetation on our property (yes, I measured it) consisted of aggressive plant species from other continents. We quickly agreed to make it a family goal to rid the property of alien plants and to replace them with species that had evolved within the eastern deciduous forests.

Early on in my assault on the aliens in our yard, I noticed a rather striking pattern. The alien plants that had taken over our land—multiflora rose, autumn olive, privet, oriental bittersweet, Japanese honeysuckle, Amur honeysuckle, Bradford pear, Norway maple—all had very little or no insect-caused leaf damage, while the red maples, black and pin oaks, black cherries, black gums, black walnuts, and black willows had obviously been eaten by many insects. This was alarming, because it suggested a consequence of the alien invasion occurring all over North America that was under the radar. **If our native insect fauna cannot, or will not, use alien plants for food, then insect populations in areas with many introduced plants will be smaller than those in areas with all natives.** Because so many animals depend partially or entirely on insect protein for food, a land with fewer insects is a land with fewer forms of higher life. Birds would suffer most, because 96 percent of our terrestrial bird species rear their young on insects.

Native trees—particularly oak, maple, and willow—are required food for caterpillars of the polyphemus moth *(Antheraea polyphemus).*

Like most songbirds, the White-Eyed Vireo (*Vireo griseus*) rears its young on insects.

Ecologists suggest three reasons why most native insects do not eat introduced plants. First, many of the invasive plants that have succeeded in North America were **imported specifically because of their unpalatability to insects**. As Michael Dirr repeatedly emphasizes in his acclaimed books on ornamental plants, species that are "pest free" are favored by the ornamental industry. Unfortunately, 85 percent of the invasive woody plant species in the United States are escapees from our gardens!

The second reason is that it takes time—long evolutionary time spans, rather than short ecological periods—for most insects to adapt to the specific chemical mix that characterizes different plants. The literature is replete with evidence that the number of insect herbivores associated with transplanted aliens is only a small fraction of the number associated with these plants at home. In Europe, for example, Phragmites (the common reed) supports more than 170 species of phytophagous *(plant-eating)* insects, while only five species of our native herbivores feed on this plant in North America. Similarly, since the introduction of melaleuca to Florida in the early 1900s, only eight species of arthropods have been recorded eating the leaves of this Australian native; in its home region, 409 species are known to eat it. Similarly, *Eucalyptus stellulata*, an introduced tree touted as supplying nectar for bees in California, supports forty-eight species of insect herbivores in Australia, but only one native insect herbivore in California. These examples demonstrate that **adaptation to non-native plants by our native insects occurs, but is a slow process indeed.**

The third reason that native insects shun aliens is that most phytophagous insects feed on plants with which they share an evolutionary history. Leaders in the field of plant/insect interactions such as Dan Janzen, Doug Futuyma, Fred Gould, and Elizabeth Bernays have all estimated that 90 percent of phytophagous insects have evolved associations with no more than a few plant lineages. (It is important to highlight that **these predictions focus on how insect herbivores use plants.** They are not predictions about pollinators, parasitoids, or predators that visit flowers for nectar or pollen.)

Great spangled fritillaries (*Speyeria cybele)* nectar on many flowers, but their caterpillars eat only violets.

How do we know the actual extent to which our native insects are eating introduced plants? My students and I have been working to fill this gap in our knowledge. One of the first things we did was to compile information about Lepidoptera larvae collected from every plant genus—all 1,385 of them—in the mid-Atlantic states. We focused on Lepidoptera because host records for moths and butterflies are far more complete than those for other types of insect herbivores, and because caterpillars are disproportionately important food sources for birds. Two years and more than four hundred references later, we were able to rank mid-Atlantic plant genera, both natives and naturalized aliens, in terms of their ability to support the larvae of 2,909 Lepidoptera species.

Banded tussock moth (*Halysidota tessellaris)* caterpillars feed on a range of native trees from July to October.

We learned much from this effort. Even among natives there is tremendous variation in the ability to support caterpillars. Oaks supported the most species (534), followed by native cherries (456), willows (455), and birches (413), while there were some natives, such as sweetspire (*Itea)* and yellowwood (*Cladastris*), on which no Lepidoptera were recorded. As predicted, favorite landscape plants that evolved elsewhere such as forsythia, golden raintree, Zelkova, and Metasequoia, supported few or no caterpillar species. All members of the thirty-eight most productive genera were native to the mid-Atlantic region, with the exception of pear (*Pyrus*), an agricultural genus. Among ornamental plants, natives

supported on average seventy-four species of native Lepidoptera, while aliens supported fewer than five—just one-fifteenth as many.

These results have been supported by a large study in which we compared how well introduced plants support native insects. In a replicated common garden experiment, my students and I showed that alien plants significantly reduce the abundance and diversity of both generalist and specialist Lepidoptera. Alien plants that are congeners—close relatives—of a common native species reduced Lepidoptera communities by 50 percent, while an alien plant that is not closely related to any local species reduced Lepidoptera abundance and diversity on average by 75 percent! We know that most bird populations are limited by the amount of food they can find, so if there are dramatically fewer caterpillars in neighborhoods dominated by introduced ornamentals, it is no wonder that our birds are struggling.

The spun glass moth *(Isochaetes beutenmuelleri)* caterpillar is a specialist of oaks.

Many people justify the use of an introduced ornamental—or inaction against an invasive alien—by contending that it supports a particular butterfly, beetle, or bee. This approach, however, considers what is gained from a plant without considering what is lost through its presence. Kudzu provides an excellent example. When an acre in Virginia is overrun with kudzu, the silverspotted skipper (*Epargyreus clarus*) can still find larval food because it is able to add kudzu to its list of leguminous host plants. But the meadow fritillary (*Boloria bellona*), variegated fritillary (*Euptoieta claudia*), and great spangled fritillary (*Speyeria cybele*) would no longer be able to reproduce in that field because their violet host plants are lost. Similarly, monarch butterflies (*Danaus plexippus*) would lose their milkweed host plants, as the two hundred or more species of moths that feed on goldenrod and asters would lose theirs. Trees are not immune to kudzu, and the oaks, cherries, and willows that each support four or five hundred species of moths and butterflies would be smothered. Many more genera of native plants would be eliminated on that acre, as would the hundreds of insect species they support.

We needn't limit this discussion to invasive species. We have replaced diverse native plant communities in thousands of square miles of suburbia with ornamental plants from Asia. Most of these plants are not currently invasive, yet if planted everywhere they have a similar impact on insect herbivores. Imagine a neighborhood in which native pines are replaced by Deodar cedars from the Himalayas. The pine white butterfly (*Neophasia menapia*) is able to develop on Deodar cedars, but more than two hundred other species of pine specialists would lose their host plants.

By favoring native plants over aliens in the suburban landscape and by working to minimize the abundance of invasive plants in our natural areas, we can do much to sustain the biodiversity that has been one of this country's richest assets. Native plants support and produce more insects than alien plants do, and therefore more numbers and species of other animals. **Somehow we have come to expect an artificial perfection in our gardens and the greater landscape: the plastic quality of flowers is now seen as normal and healthy.** It is neither. Instead, it is a clear sign of a garden that is no longer a living community; a garden in which any life form other than the desired plants is viewed as an enemy and quickly eliminated. **In essence, we have demoted plants to mere decorations in our unnatural landscapes.**

To sustain biodiversity we will ultimately need to improve the complexity and stability of insect-based food webs, both in our yards and in local natural areas. Although some insects can meet their needs with introduced plants, most cannot. This illustrates the real costs associated with replacing native plant communities with alien plants but also suggests ways to reverse the losses in biodiversity that have characterized our times.

Editor's Note: This author's studies arm us with ample statistics to promote widespread use of native plants!

Life History of *Strymon istapa,* the Mallow Scrub-Hairstreak—

Photos & text by Berry Nall,

Editor's Note: Over the summer, I caught up on reading journals, including "American Butterflies," Spring 2011, published by North American Butterfly Association (NABA).

My favorite article in that issue was ***"Lifestyles of the Scaled and Beautiful: Gray Hairstreak"*** *written by our very active LRGV neighbor, Berry Nall, who reminded me that he attended NPP's February trip to the Barretal.*

Berry has an incredible website, ***"Berry's Butterfly Photos,"*** *at* [http://leps.thenalls.net/index.php].

In addition to bountiful and beautiful butterfly and moth photos, Berry has studied and documented many species' life histories with impressive photos. He's given permission to reprint virtually anything from his website in "The SABAL."

The following work by Berry Nall ties together Ken King's presentation on "Mallows of the LRGV" with Dr. Tallamy's article on the importance of native plant species in promoting healthy animal populations.

If you'd like to meet Berry Nall in person, please attend the NPP meeting on November 22, 2011 for his presentation: "Caterpillar Host Plants of the RGV"

Like other Hairstreaks, this small butterfly has distinctive hair-like projections near the lower wing-tips. Markings on the under wings (above) are more pronounced that those on the upper wings (right). On fresh specimens, the upper wings shimmer and a white margin is noticeable.

<u>In Starr County, TX, the following are recorded as host plants for the Mallow Scrub Hairstreak:</u>

Pyramid Bush, *Melochia tomentosa*

Threelobe False Mallow, Yard Mallow, *Malvastrum coromandelianum* (photo on lower right)

Waltheria, *Waltheria indica*

Of these, Yard Mallow is probably the most widespread in the LRGV, occurring in gardens and various disturbed areas. In areas where grass has not been planted, but the area is watered a bit and mown, this species can become a widespread and attractive alternative to turf grasses! It is shade-tolerant.

In addition to acting as a host plant for the Mallow Scrub Hairstreak, Yard Mallow is eaten by rabbits and Texas Tortoises.

Over a four year period of data collection, Berry Nall has noted the Mallow Scrub Hairstreak to be most prevalent in the months of July and November.

Mallow Scrub-Hairstreak (*Strymon istapa*) Life History ... *continued*

While gathering Threelobe False Mallow (*Malvastrum coromandelianum*) to feed a skipper caterpillar I was raising, I found a small hairstreak caterpillar (pictured below). It had eaten two holes in the side of a flower bud, and apparently was eating the unopened flower.

5-17-09; two eggs on Yard Mallow, caterpillar of study eclosed from right egg.

Young larva taking color of blossom, 5-18-09; even the frass is orange!

The caterpillars and pupae of *S. istapa* are very similar in appearance to those of *S. melinus* (the Gray Hairstreak butterfly).

To my eye, the *istapa* caterpillars seem a bit more velvety or fuzzy, and the side stripe is a bit more obvious. However, I was not certain these were *istapa* until I saw the first adult.

The caterpillar formed a pupa 15 days after eclosing and emerged twelve days later.

About that time I also found some eggs (above) that proved to be those of a Mallow Scrub-Hairstreak. One of these eclosed on 5-18-09, but I was unable to find the caterpillar until 5-20. This caterpillar preferred the fruit, or green seeds, of the plant to its flowers, and so it never took on the orange color of the one in the above left picture.

5-20-09, 2-day-old caterpillar

5-31-09; fully developed caterpillar

6-3-09, chrysalis

5-27-09, chrysalis

Mallow Scrub-Hairstreak adult, nectaring on Cenizo.

a positive new slant on the humble and ubiquitous Yard Mallow!!

LRGV Native Plant Sources

Heep's Nursery (& Landscaping)
(Mike Heep)
1714 S. Palm Court Drive
Harlingen, TX 78552
(956) 423-4513 * By appt. only

Valley Nature Center
301 S. Border Ave.
Weslaco, TX 78596
(956) 969-2475
<info@valleynaturecenter.org>
[www.valleynaturecenter.org]

Perez Ranch Nursery
(Susan Thompson & Betty Perez)
12 miles north of La Joya, TX
(956) 580-8915
<PerezRanchNatives@gmail.com>

Mother Nature's Creations
(Billy & Sue Snider)
2822 Nueces; Harlingen, TX 78550
Nursery open by appointment:
(956) 428-4897

NABA Butterfly Park
Old Military Hwy & Butterfly Pk Dr
Mission, TX 78552
(956) 583-9009

Rancho Lomitas Nursery
(Benito Trevino)
P.O. Box 442
Rio Grande City, TX 78582
(956) 486-2576 *By appt. only

Valley Garden Center
701 E. Bus. Hwy. 83
McAllen, TX 78501
(956) 682-9411

Landscaper using Natives:

Williams Wildscapes, Inc.
(Allen Williams)
750 W Sam Houston
Pharr, TX 78577
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[www.williamswildscapes.com]

Sponsors

NPP Board & General Meetings 2011: Oct. 25, Nov 22, (no Dec. mtg.)
(Tuesdays) Board Meetings at 6:30pm. Speaker at 7:30pm.
Most meetings held at Valley Nature Ctr. (see above)

Here are some upcoming programs for 2011-12:

October 25, 2011 - James Everitt & Bob Lonard - Grasses of South Texas - A review of the many grasses in their new book, Grasses of South Texas, by James Everitt, Lynn Drawe, Christopher Little, and Bob Lonard. Book signing available after wards by James and Bob.

November 22, 2011 - Berry Nall - Caterpillar Host Plants of the RGV - Explore some of the many native plants species, including some not so well known, that butterflies use as host plants in the Rio Grande Valley.

Jan. 24th, 2012. William (Bill) Carr — Rare Plants of Texas—A review of the plants in Jackie Poole and W. Carr's new book by the same title. Book signing available afterwards by Bill.

February 28, 2012. James Lovegren, a local native plant grower—Growing Native Seedlings for Revegetation Projects—A detailed look at what it takes to grow 100,000 native plants a year.

The **Native Plant Project (NPP)** has no paid staff or facilities. NPP is supported entirely by memberships and contributions. Anyone interested in native plants is invited to join. Members receive 8 issues of **The Sabal** newsletter per year in which they are informed of all project activities and meetings.

Meetings are held at:
Valley Nature Center, 301 S. Border, Weslaco, TX.

Native Plant Project Membership Application

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Native Plant Project presents:

Tuesday, Sept. 27th, 2011, 7:30pm

Ken King: "Mallows of the LRGV"

Ken will elucidate the many species of mallows, including one new to science, found by King and Dr. Alfred Richardson while exploring the RGV for their recently-published book, "Plants of Deep South Texas."

Sphaeralcea lindheimeri (left)

Valley Nature Center,
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TO: