



The Sabal

January 2018

Volume 35, number 1

In this issue:

January program p1 below
Gardening for Caterpillars p2
Gardening for Non-Nectar Feeding Butterflies:
Butterfly Food Choices
& Proboscis Morphology p3-6
LRGV Native Plant Sources & Landscapers,
NPP Sponsors, Upcoming Meetings p7
Membership Application (cover) p8

Plant species page #s in the Sabal refer to:
"Plants of Deep South Texas" (PDST).

Native Plant Project (NPP) Board of Directors

President: Ken King
Vice Pres: Joe Lee Rubio
Secretary: Kathy Sheldon
Treasurer: Bert Wessling
Drew Bennie
Ginger Byram
Raziel Flores
Carol Goolsby
Sande Martin
Jann Miller
Eleanor Mosimann
Christopher Muñoz
Rachel Nagy
Ben Nibert
Ann Treece Vacek
NPP Advisory Board
Mike Heep
Benito Trevino

Editor:

Christina Mild
<mild.christina@gmail.com>
Submissions of relevant
articles and/or photos
are welcomed.

Editorial Advisory Board:

Mike Heep, Jan Dauphin
Ken King, Betty Perez
Eleanor Mosimann
Dr. Alfred Richardson
Ann Vacek

NPP meeting topic/speaker:

“History of Native Plant Uses in the RGV”

—by Benito Trevino

Tues., January 23rd, at 7:30pm

Our native plants played a major role in the settlement of South Texas. Benito Trevino will discuss the history of the indigenous people of the Rio Grande Valley who survived by using native plants for food, fiber and fun. Benito’s presentations are always educational and fun, filled with lots of personal experiences and family stories.

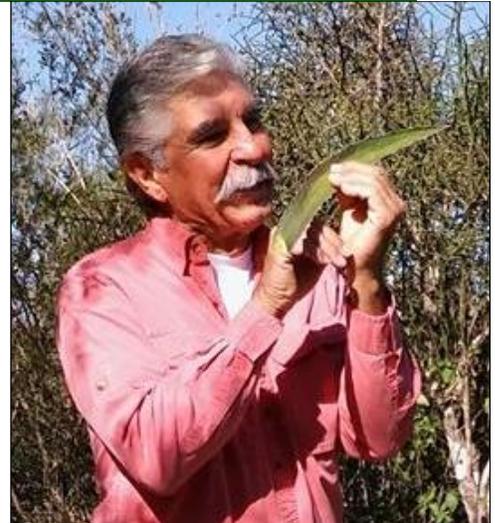
Benito is owner of Rancho Lomitas Native Plant Nursery near Rio Grande City.

It’s January, so there will be refreshments. Please join us.

The meeting is at:

Valley Nature Center,

301 S Border, (in Gibson Park), Weslaco. 956-969-2475.



Above: Benito Trevino leads a recent tour of his ranch.

Photo by Elizabeth Matushka Perdomo.

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>

President - Ken King - <wk_king01@yahoo.com>

Gardening for Caterpillars (November NPP presentation by Berry Nall).

— summarized by Christina Mild

Berry Nall's presentation for the November NPP meeting was marvelous, and his main points bear repetition here. He notes, for instance, an alarming trend at some local nature parks, of widespread herbicide application to trailsides. This is in contrast to selective pruning of encroaching woody species or removal of invasive grasses. Berry pointed out several herbaceous species commonly occurring in these sunny areas which provide nectar and also serve as butterfly hostplants. Many trailside species are wildflowers which emerge as seedlings during winter.



Trailside butterfly hostplant examples:

Bladder Mallow, *Herrisantia crisper*, Red-Crescent Scrub Hairstreak, Gray Hairstreak, Erichson's White-Skipper and several moths. (Photo above right: *Herrisantia crisper*, by Alfred Richardson)

Velvet Burr, *Priva Lappulacea*, Potrillo Skipper

Common Ruellia, *Ruellia nudiflora*, Common Buckeye.

Sweet Shaggy Tuft, *Stenandrium dulce*, Definite Patch.

There are many other herbaceous hostplant species which occur in such sunny places as trail edges. It is sometimes difficult to recognize them as seedlings. Ask for identification help before killing stuff.

The LRGV has such butterfly diversity that the North American Butterfly Association holds an annual butterfly festival and has created a national butterfly park. Those butterflies, of course, depend on our incredible native plant diversity. Berry compared population growth in the LRGV (which correlates closely with habitat loss) from 1945 to 2014 with the rest of the country: population growth in the LRGV has shown ~400% increase while the US average is ~150%.

The good news is that residential yards can support a wide diversity of butterfly species.

One typical-sized yard in Mission has recorded more than 150 species of butterflies.

Berry continued to point out phenomena which many of us may not notice. Hostplant usefulness may vary with season/conditions (drought vs. ample moisture, for example). Great Southern White larvae survived only on fresh growth on well-watered Clammyweed plants. Water your natives!

Butterflies may oviposit on plants the caterpillars can't use, if the preferred hostplant isn't available.

Berry's website documents proven hostplant use: [<http://leps.thenalls.net>]

It might be worth your time and expense to grow some "noxious" plants and buy some high-cuffed gloves. Noseburn and nettles are important hostplants (Blue-Eyed Sailor), but most people remove these "stinging" species from gardens after irritation to wrists and other soft skin surfaces.

Gardening Suggestions for incorporating more nectar and hostplants:

Use showy focus plants like Cowpen Daily (excellent nectar source, Host for Bordered Patch) to brighten the landscape.

Incorporate native hostplant shrubs into a hedge along property borders; water with drip irrigation.

Tender or potentially-invasive species: Grow in containers to protect or reduce spreading potential.

Let nature lead you: Berry's fence for excluding rabbits became a support for Noseburn and Corky-stemmed Passionflower Vine.

Gardening for Non-Nectar Feeding Butterflies:

Butterfly Food Choices & Proboscis Morphology — by Christina Mild

We often plan our yards and gardens to attract butterflies. This generally translates to planting butterfly nectar plants, most often in full-sun areas. Numerous studies indicate that nectar represents the ancestral type of food for adult butterflies.

Those who go a step further in planning gardens to attract butterflies include known caterpillar food plants (i.e. host species). NPP has published a guide for nectar and host species: “Butterfly Gardening with Native Plants of the Lower Rio Grande Valley, TX.” This handbook which is available in print and also as a .pdf file found at: [<http://nativeplantproject.com/butterflygardening.pdf>].

Less often considered are butterflies which feed on sources other than nectar. Some of these are attracted to bait stations stocked by volunteers. But what do these “bait-station butterflies” feed on when there is no bait station? And why don’t they suck nectar like a “normal” butterfly? Those are the topics of interest in this issue. Many researchers have studied these topics in depth. This issue is based on research summarized and published in two comprehensive articles which can be downloaded via Google Scholar. They are as follows:

1. Food Intake of Fruit-feeding butterflies: evidence for adaptive variation in proboscis morphology, by Freerk Molleman, et. al. *Biological Journal of the Linnean Society*, 2005, 86, 333-343.

2. Feeding behaviours of neotropical butterflies (Lepidoptera, Papilionoidea), by Harald W. Krenn. *Stapfia* 88, zugleich Kataloge der oberosterreichischen Landesmuseen Neue Serie 80 (2008): 295-304.

Obligatory Non-Nectar-Feeding Nymphalids (Brush-Footed Butterflies).

A number of adult butterflies feed on a variety of substrates containing sugar and/or mineral substances such as fruits, honeydew, tree sap, mud, rotting plant material, fungi, carrion and fresh excrement. These non-nectar feeders form a “guild” of “fruit feeders.” (Only a small proportion of butterflies regularly feed on both nectar and fruit.) The fruit-feeding guild comprises butterflies that are attracted to and feed on juices of rotting fruit, etc.

Just as nectar-feeding butterflies may specialize in certain flowers, fruit-feeders may show preferences for different fruits based on such variables as texture and chemical composition.



ABOVE: Linda Cooper photographed this Dingy Purplewing (*Eunica monima*). The proboscis (feeding-tube) appears to be at the point where a fruit was attached. It may be imbibing “honeydew” or sap which seeps from the area.

Over the past several months, a number of photos posted on the “Rio Grande Valley Butterflies” Facebook page caught butterflies with their proboscis touching or inserted into something other than a floral tube. Thus my focus on the subject.

A number of butterfly species have been photographed feeding on ripe fruits of Lantana species, including *L. horrida*.

We often note that birds eat fruit from Lantana. We’re probably providing food for fruit-feeding butterflies when we include native Lantanas and other fruit-producers in our gardens. In my own yard, Bluewings have fed on Negrito fruits.

LEFT: Berry Nall has photographed the Dingy Purplewing in Falcon Heights only in June and July. Here it appears to be “eating” from a ripe banana.

Fruit-bearing natives we plant for the birds may also be utilized by fruit-feeding butterflies.

Photo on right: Rick Snider photographed this Red Rim (*Biblis hyperia*) feasting on an open, ripe fruit of the Potato Tree (*Solanum elaeagnifolium*).

Photo below: Berry Nall studied the life cycle of the Red Rim. His photo shows the prickly larva feeding on Noseburn Vine (*Tragia glanduligera*), which will readily sting the gardener.



How is a butterfly able to feed on rotting fruit, tree sap, honeydew, or excrement? Obviously, they have no teeth.

Extensive studies of butterfly morphology (external structures) and feeding behavior shows that non-nectar feeders have marked differences in the proboscis (the long tube which butterflies coil and uncoil to feed) and in their typical feeding behavior.

Fruit-Feeding Behavior:

In general, fruit feeders exhibit similar searching and probing movements of the proboscis similar to nectar feeders. However, the proboscis of non-nectar feeders is usually relatively shorter, more brightly colored and more flexible than in nectar feeders.

When extended, the tip of the proboscis is flexed, with the upper section pointed downward, in contact with the intended food source.

This position of the proboscis curving back on itself permits the butterfly to suck liquid from a moist surface, since the openings into the food tube lie on the upper side of the proboscis tip.

If the butterfly finds a favorable location to imbibe liquids, it may remain still for several minutes.

The proboscis, in contact with a substrate, will move laterally (from side to side) between the forelegs, sensing and absorbing liquid from areas where desired substances are available.

Even though it may be easier to spot fruit-feeders due to their slower movements, they often feed with wings closed, and many species (such as the Leafwings on p5) demonstrate excellent camouflage.

Compared to the rapid movements of nectar feeders, movements of fruit-feeders proceed at a more leisurely pace, as demonstrated by the many photos of butterflies sitting with their wings at rest folded over their backs at bait stations.



It has been shown that the tropical Blue Morpho (*Morpho peleides*) deposits saliva to dilute the food and is thus able to dissolve and suck up dried fruit juices and honeydew. Movements while feeding consist of two phases of proboscis movements. In one, the butterfly performs long series of probing movements with its proboscis. In the second phase, the butterfly remains completely motionless while it sucks liquid from the moist surface. This behaviour is known as “mopping/sucking,” whereby the liquid must first accumulate on the tip region of the proboscis by adhesion to “sensilla” (sensory projections) before it can be drawn through the food-tube by suction. (Sensilla definition: see page 6.)

Left: This color-enhanced scanning electron microscope photo by Susumu Nishinaga shows the specialized structures on the proboscis tip of a swallowtail butterfly (*Papilio* sp.) Scientists are studying these structures to better understand how microscopic amounts of fluid can be efficiently absorbed.

Two potential feeding techniques have been described in fruit-feeding butterflies:

“piercing,” when the proboscis is inserted into fruits
“sweeping,” when the proboscis tip is applied to the fruit surface.

Scientists have observed and described these behaviors as early as 1909.

Most fruit-feeders obtain liquids from moist surfaces by dabbing their proboscis, i.e. “sweeping.”

As of 2005, only butterflies of the subfamily Charaxinae (Leafwings) have been shown to actually pierce fruits.

The upper photo shows a Tropical Leafwing photographed by Linda Cooper, feeding on a ripened fig. As noted previously, fruit feeders generally feed with their wings closed, providing nice camouflage.

Berry Nall reports that “in the fall of 2005, Leafwings and Emperors gathered in large numbers on mesquite trees where sap was leaking.”

Berry also reports that the Tropical Leafwing successfully uses three native croton species as a caterpillar food plant:

Low Croton, *Croton humilis*

Twocolor Croton, *Croton leucophyllus*

Mexican Croton, *Croton ciliatoglandulifer*

Javi Gonzalez’ photo shows the brilliant orange of a Tropical Leafwing basking open-winged in the sun on Low Croton. In addition to serving as a host-plant, Low Croton appears to be a favored winter nectar source for butterflies.

Below: A small selection of Mike Ricard’s many photos of butterflies nectaring on Low Croton this winter:

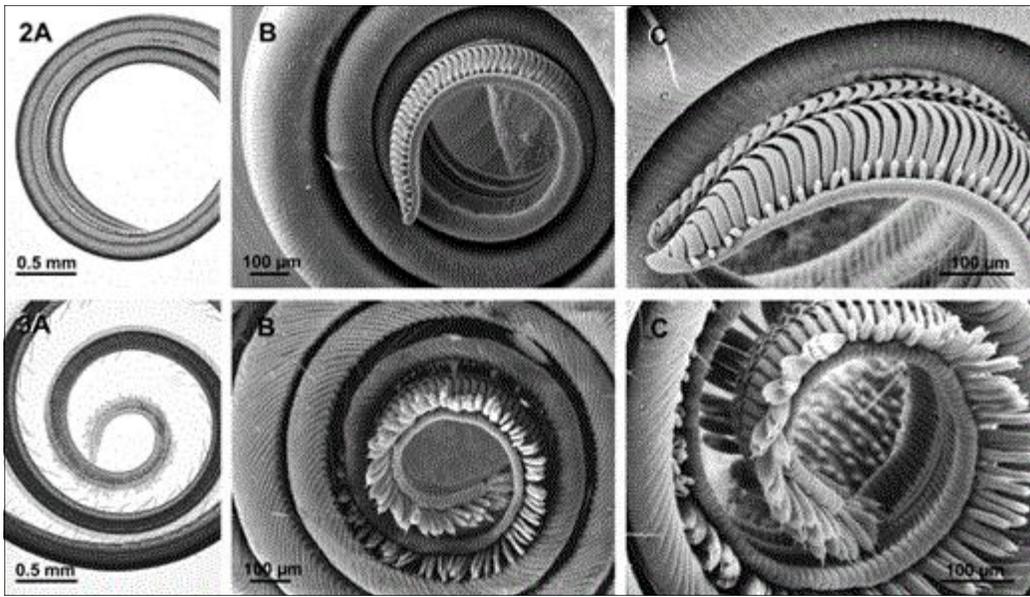
Far left: December 20th, Silver-Banded Hairstreak, *Chlorostymon simaethis*.

Middle: January 11th, Cassius Blue, *Leptotes cassius*.

Far right: December 3rd, Clytie Ministreak, *Ministrymon clytie*, accompanied by a small army of ants.



Mike Heep notes that Cortez’ Croton is also an excellent nectar plant.
Many Facebook photos bear that out.



Each series of three photos, from left to right, show increasing magnification of the proboscis. Light microscope photos are labeled A. SEM photos are labeled B and C.

The top row, (2ABC) are images of the relatively broad proboscis of a Leafwing.

The bottom row (3ABC) are images of a "sweeping" proboscis, which is brush-tipped, featuring numerous tip region *sensilla*.

(From Reference 2, p3.)

sensilla—A simple sense organ of an arthropod or other invertebrate that consists of one cell or a few cells and may take the form of a hair or bristle.

The advent of scanning electron microscopy (SEM) has enabled us to visualize these minute structures, as shown in the photos above.

The Charaxinae, or Leafwings, typically use the piercing technique.

Piercing is primarily characterized by:

- a broad proboscis,
- equipped with short sensilla,

Photo right: Goatweed Leafwing with the proboscis inserted just beneath the skin of an overripe banana. (Berry Nall photo)



The sweeping technique is employed by Nymphalinae (brush-footed) and Satyrinae (Satyrs and Wood Nymphs).

Sweeping is characterized by:

- brush-tipped proboscis
- featuring long and numerous tip region sensilla.

Many Brush-Foots occur locally, including the Mexican Bluewing. Berry Nall's fresh male (photo right) shows how colorful these can be. Many of us have planted *Adelia vaseyii*, the Bluewing caterpillar's food, in our yards. (Parrots are attracted to the fruits.)



Growing more productive native plants:

In Berry's talk for NPP, he urged us to teach about caterpillar food plants and how to grow them. Here's a simple suggestion which can provide more food for fruit-feeding butterflies and increase the productivity of your plants.

Create a compost heap. Place fallen leaves, sticks, trimmed vegetation and plant matter from your kitchen into an open-top container. It can be as simple as a cylinder of fence wire. Place overripe fruits and vegetable scraps on the top of the heap. Fruit-feeding butterflies will probably visit to feed. Decaying vegetation at the bottom of the pile will add organic matter to your yard, which will benefit your plants in myriad ways.

It is difficult to impossible for most fruit-feeders to nectar on flowers. A nectar-feeding proboscis is typically long and very thin. In contrast, the fruit feeder has a shorter proboscis with a much wider tip, probably too wide to be easily inserted into floral tubes specialized for nectarers.

LRGV Native Plant Sources

See also our
Sponsors on right

Perez Ranch Nursery

(Betty Perez)

12 miles north of La Joya, TX

(956) 580-8915

<PerezRanchNatives@gmail.com>

These vendors may sell exotics:

National Butterfly Center

Old Military Hwy/3333 Butterfly Pk Dr

Mission, TX 78572

office (956) 583-5400

Marianna Trevino Wright, Exec.Dir.

cell 956-648-7117

<mariana@nationalbutterflycenter.org>

[<http://www.nationalbutterflycenter.org>]

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

M&G Double D Native Plants & Seeds of South Texas, (Gail Dantzker)

956-342-5979; <gdld@att.net>

7500 N 21st St; McAllen, TX 78504

[mandgdoubled.com]

Grown at The Woods, Willacy Cty., TX.

Landscapers using Natives:

Landscaping, Etc. Inc.

Noel Villarreal

125 N. Tower Rd, Edinburg

Sponsors (Native Plant Nurseries)

Heep's LRGV Native Plant Nursery

Owned and operated by Mike and Claire Heep

We grow plants suited to landscaping
and revegetation in south Texas.

1714 S. Palm Court Drive, Harlingen, TX 78552

(956) 457-6834 <heep0311@yahoo.com>

[www.heepsnursery.com]



Come visit the VNC:

301 S. Border Ave.

Weslaco, TX 78596

(956) 969-2475

info@valleynaturecenter.org

www.valleynaturecenter.org



**Native Plants
for Sale**

*Watch Birds
& Butterflies*

*A Secret Garden
in the Heart of the
Rio Grande Valley*

Valley Nature Center
-6 acre Nature Park & Trails -Book & Gift Shop-
-Native Plant Nursery-Meeting Room-
-Environmental Education and Exhibit Hall-



Above:

Chris Watenpool photographed this Silver-Banded Hairstreak (*Chlorostymon simaethis*) nectaring on the tiny blooms of *Tournefortia volubilis* (Googly-Eye Vine).

Tournefortia may have suffered freeze damage this winter. If the plant is already established, it will have an extensive root system and should reappear from the root. Stems which appear to be dead may actually leaf out, given time.

Common Balloon Vine is the caterpillar food plant.

NPP Board & General Meetings are held at
Valley Nature Center

(4th Tues. each month, except thru summer)

Brd Mtgs 6:30pm — Speaker 7:30pm

2018 meeting dates: 1/23, 2/27, 3/27, 4/24, 5/22

FROM: NPP; POB 2742; San Juan, TX 78589

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

___Regular \$20/yr. ___Contributing \$45/yr
___Life \$250 one time fee/person
Other donation: _____

Please print:

Name _____

Address _____

City _____ State ____

Phone _____ Zip _____ - _____

I'm choosing the "green option!"

Send my SABAL via .pdf file to:

Email address: _____

*Please mail this form with dues check payable to:
Native Plant Project, POB 2742, San Juan, TX 78589-7742*

Membership Dues
Expire this Month:

(But not for Life Members, of course.)

TO:

NPP meeting/speaker:

The Native Plant Project will present:

“History of Native Plant Uses
in the RGV”

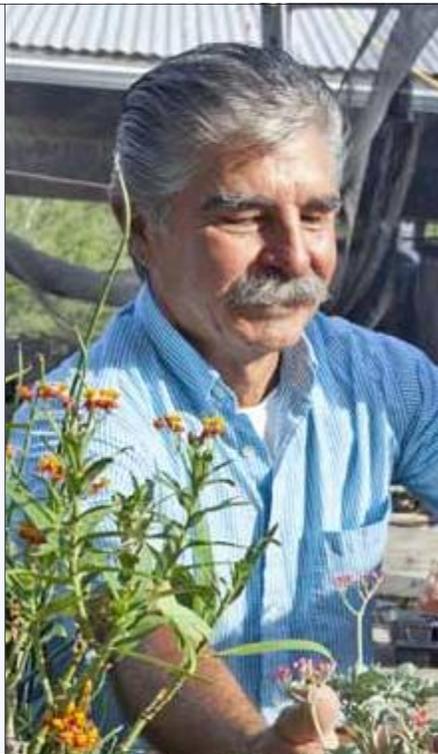
—by *Benito Trevino*

Tues., January 23rd, at 7:30pm

Center: Benito Trevino at his native plant nursery, Rancho Lomitas, near Rio Grande City.

The meeting is held at
Valley Nature Center,
301 S Border, (in Gibson Park),
Weslaco.
956-969-2475.

We hope to see you there!
Refreshments will be served.



Below:

Closeup of a butterfly's bent feeding tube (proboscis), imbibing juice from a cut orange. Photo taken from the web.



In this issue:

**Gardening for Caterpillars (Summary of the November NPP presentation by Berry Nall).
Butterfly Feeding Behaviors, Proboscis Morphology & Food Choice. Adapting the Butterfly Garden.**