

Fredericksburg Nature Notes



Newsletter of the Friends of the Fredericksburg Nature Center

August, 2021 Volume 2 Number 7

<http://fredericksburgnaturecenter.com/>

Editor's Musings: **Lonnie Childs**

Dear Friends of the Fredericksburg Nature Center,

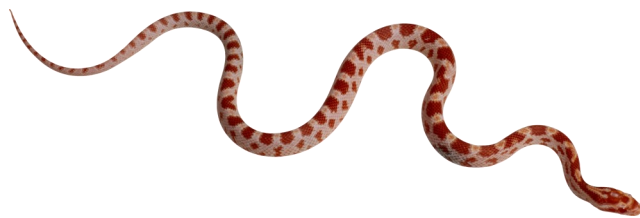
This month we mourn the passing and yet celebrate the life of our Founder, Mentor, and Leader of twenty years, Bill Lindemann. Our nature center and FFNC would literally not exist without his vision, tenacity, hard work, and leadership. Please see the announcement on page 2 with details about the upcoming Celebration of Life which will honor Bill and his exemplary life.

The cooler temperatures and extraordinary rainfall events this summer have kept many species blooming and remaining healthy for a longer period, which has allowed us even more enjoyment of our natural world during a season when we normally are just trying to stay inside and escape the incessant heat. Go early, and it is still possible to experience a pleasant hike along the trails.

Our feature story highlights the diversity of micro-habitats that make FNC a natural wonder and a great example of how the natural world needs to look and function. We are doing our little part in educating our constituents about the world saving need to preserve diversity through the example of FNC.

Happy Nature Trails!

Lonnie



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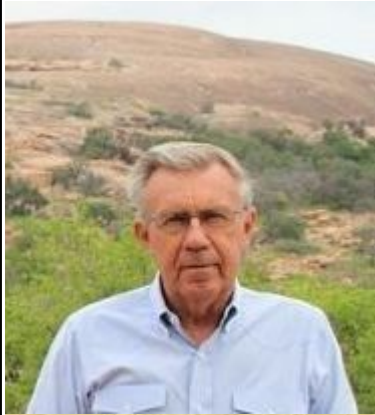
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OUR MISSION STATEMENT: "To enhance, protect and interpret the natural ecosystems of the Texas hill country while providing educational and quality of life opportunities for members of the community and visitors"

Celebration of Life—Bill Lindemann



IN MEMORIAM

Bill Lindemann

Founder and President of the Friends of the Fredericksburg Nature Center for twenty years, passed away on July 19, 2021.

A Celebration of Life for Bill is planned for Friday, August 27th, beginning at 10:00am in Lady Bird Johnson Municipal Park in Fredericksburg.

The event will be held outdoors near the park entrance - look for signs. There will be limited seating, so bring your lawn chairs just in case.

Donations in Bill's honor made be made to:

Friends of Fredericksburg Nature Center
In Memory of Bill Lindemann
P.O. Box 2082
Fredericksburg, Texas 78624

or the Charity of your Choice.





"We love our volunteers! Their work today secures a tomorrow for FNC."
FFNC Board

Volunteers at Work at FNC



The Trail Crew installed the new FNC entrance sign. L-R: Frank Garcia, Billy Guin, Tom Hynes, Lonnie Childs



New wayfinding signs installed by the Trail Crew

Nita Hazle digs digging at the Butterfly Garden.



Photos by Lonnie Childs



Tuesday Fundays are always on! We gather every **Tuesday at 8:30am** in summer near Pavilion #1 to split up into work parties on the trails, gardens, or the Bird Blind. Typical tasks involve gardening skills and trail maintenance, but no experience is necessary. Use it as a learning opportunity. Work in whatever area you choose for as long as you choose. We work some and have a lot of fun outside in the beauty of nature. It's both good exercise for the body and good for the soul.

Contact Gracie Waggener at gwaggener@flow-apps.com to receive a weekly email notification.



“Lizards of every temper, style, and color dwell here, seemingly as happy and companionable as the birds and squirrels.”

John Muir

Observations Along the Trail



Termite Tubes—Termites dehydrate easily and so live underground and in moist areas. To avoid exposure to our summer heat, they build these tunnels above ground to explore for food, access food., or for their young to emerge. If you find these attached to the side of your house, call the exterminator!

Texas Spiny Lizard (*Sceloporus olivaceus*)

The Texas Spiny Lizards are diurnal, eat mostly insects, and are arboreal, which explains their defensive back pattern. Being insectivores, they are good additions to your garden. Another defensive mechanism is their ability to disconnect their tail when seized by a predator and subsequently grow a new one. Unfortunately, they are relatively slow and subject to predation by cats.



What is that green litter on the forest floor? Leafcutter Ant Debris

It's a trail of cut leaves waiting to be carried into the Ant mound where it will be used as a matrix on which fungus will be grown for food. Leafcutter Ants can be quite damaging to vegetation.

Photos by Lonnie Childs

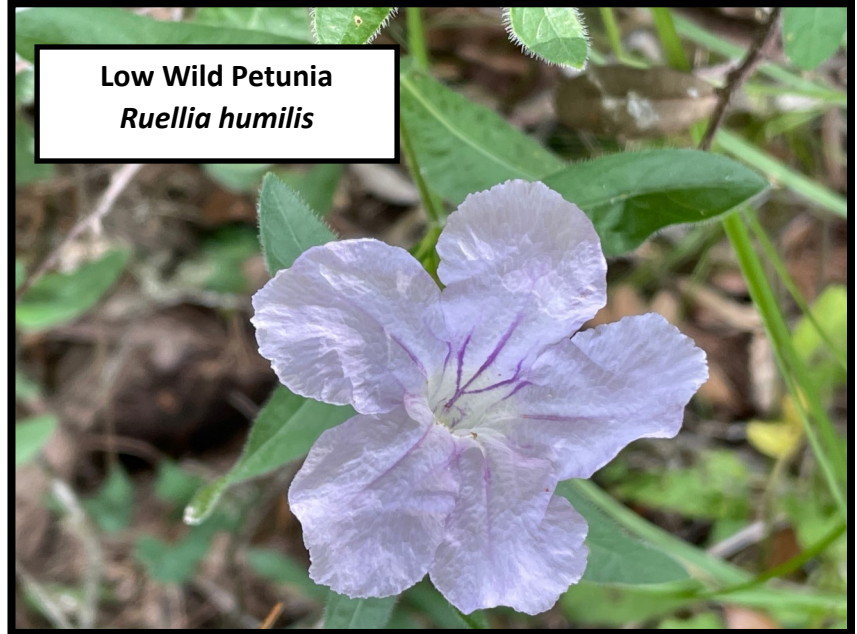


"When Mother Nature made purple flowers, she was just showing off."

Maria Morada

Observations Along the Trail

PURPLES on the PRAIRIE



Photos by Lonnie Childs



"There are always flowers for those who want to see them."

Henri Matisse

Observations Along the Trail

YELLOWS on the PRAIRIE



Square-bud or Texas Primrose, Berlandieri's Sundrops
Calylophus berlandieri



Golden Aurea, Golden Prairie Clover
Dalea aurea



Zexmenia
Wedelia acapulcensis var. *hispida*



Engelmann's or Cut-leaf Daisy
Engelmannia peristenia
Note the petals curled in to block summer heat.

Photos by Lonnie Childs



"Where flowers bloom so does hope."

Lady Bird Johnson

Observations Along the Trail

WHITES



Buttonbush *Cephalanthus occidentalis*

A multi-stemmed shrub which grows 6-12 ft tall along streams and ponds. The striking flowers are also known as Honey Balls since their nectar produces good honey, thus making them great plants for bees. You can find them growing near the bridge along Live Oak Creek.

Hill Country or Prairie Rain Lily

Cooperia pedunculata

This is one of 2 similar Rain Lily species, the other being *drummondii* which blooms in Sept-Oct. Rain Lily's of course bloom after rains. I found this one lonely flower on the Prairie enduring from past rains.



Prairie Flame-leaf Sumac *Rhus lanceolata*

A thicket-forming, small, deciduous tree that grows to 20 ft. tall. The yellowish-white flowers will mature to a dark red mass of sticky berries which are popular with birds and which they will deposit along fence-rows. In the late fall, the leaves will turn bright red and yellow, luminescing in the afternoon sun.



Photos by Lonnie Childs



"What a lonely place it would be to have a world without a wildflower!"

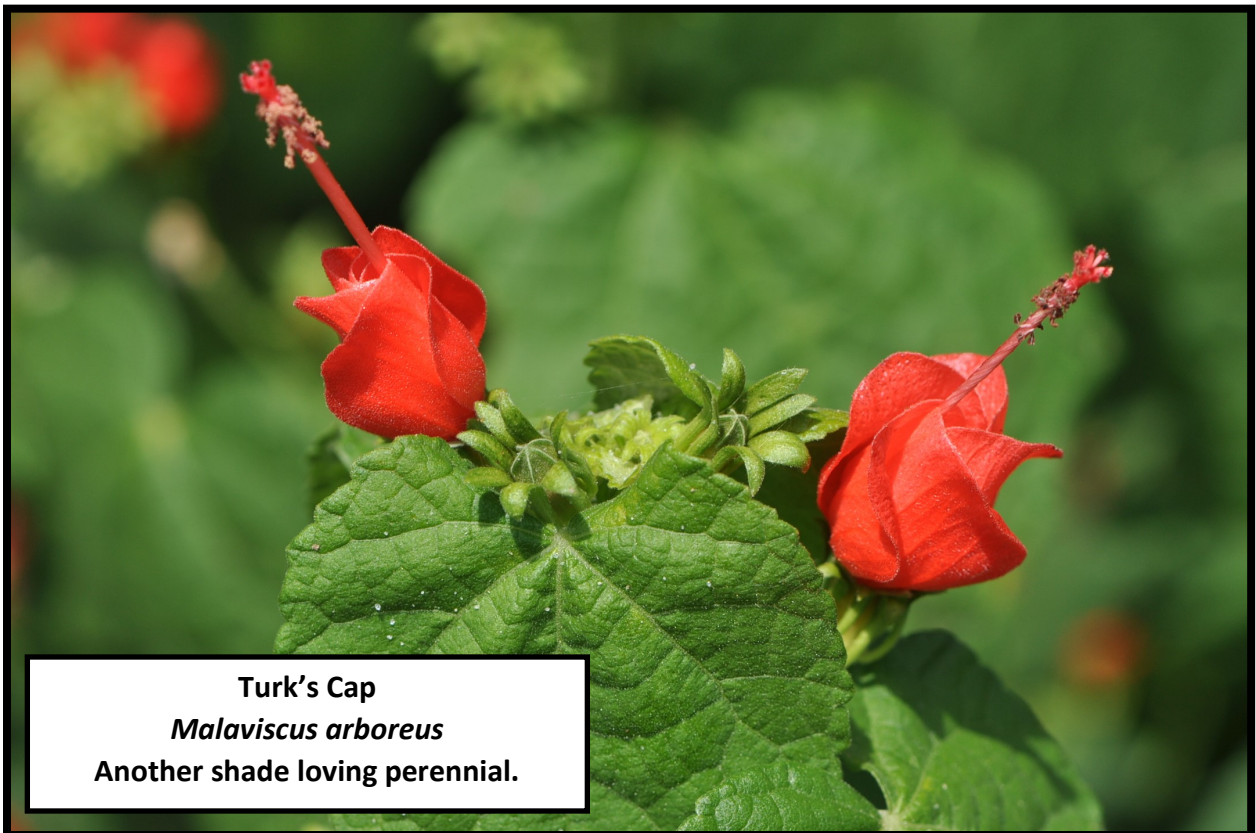
Roland R. Kemler

What's Blumen at the Butterfly Habitat?

Blooms!



Pigeonberry Flower and Berries
Rivina humilis
Perennial herb that grows under trees. Berries are good food source for birds.



Turk's Cap
Malaviscus arboreus
Another shade loving perennial.

What's Flutterin' at the Butterfly Habitat?

Butterflies!



Photo by Lonnie Childs

Bordered Patch

Chlosyne lacinia

Large numbers are visiting the gardens now!

Queen

Danaus gilippus

These Monarch wannabes are nectaring at the Gregg's Blue Mistflower all summer.



Photo by Lonnie Childs

Photo by Bill Lindemann



Giant Swallowtail

Papilio cresphontes

The largest North American butterfly is a regular visitor to FNC.

Photo by Lonnie Childs



"The wildlife and its habitat cannot speak, so we must and we will."

Theodore Roosevelt

Feature Story: *The 7 Micro-habitats of FNC* by Lonnie Childs

In 2000, when Bill Lindemann first discovered the 15 acre tract of land in LBJ Municipal Park that would become FNC, his trained eye and expertise in the natural world saw something very different than what traditional park planners might have seen. Although the parcel might not have met any needs called for in the city's master plan, Bill had identified a need for a local nature park that could be enjoyed by local citizens and by visiting tourists searching for birding locales. To its benefit, the tract had been untouched by human hands for 35 years which allowed it to "re-wild" itself. But more than that, Bill's keen observational talent allowed him to take note of the great diversity of micro-habitats and species that were resident in this small geographic area. This jewel in the rough fueled his vision for a future nature park that would become Fredericksburg Nature Center.

What is a micro-habitat? Let's start with the definition of a habitat which can be viewed at two different levels—the species level or a general level. According to the European Environment Agency, at the species level, *"it means either the area and resources used by a particular species (the habitat of a species)"* or at a broader level, *"an assemblage of animals and plants together with their abiotic (i.e. physical) environment."* We will be utilizing the term in the latter context and discussing habitats defined by the terrain and the vegetation that inhabits that specific terrain. Another word to describe this more general definition of habitat might be an ecosystem. A micro-habitat is simply a habitat contained within a small geographic area, even as small as a few square feet. At FNC, we are mostly talking about micro-habitats that encompass areas of less than 1-2 acres.

How does existing topography and climate contribute to the creation of habitats? The physical foundation of the Edwards Plateau, upon which FNC sits, was laid down during the Cretaceous Period (65-135 million years ago) when this area was covered by a shallow sea. Thick sedimentary deposits of limestone and sandstone were deposited during this period. When the shallow seas receded, drainage patterns began to establish themselves as water made its way to the depression which became the Gulf of Mexico. The topography that we see today is a result of the erosional activity which has occurred over these millions of years since the sea receded. The results of this erosional activity are mesas capped with harder sediments, canyons where softer limestones were deposited, steep slopes, and a few wide river valleys such as the Pedernales.

The erosional sculpting left broad areas with ample sunlight or shaded canyons with limited sunlight. The drainages provided plentiful water and cooler temperatures, while mesa tops retained little water and baked in the sun. Erosion diminished the soil levels in higher or steeper terrain and deposited soil in the valleys and lower lying areas. Overlying all of these geologic activities was a changing climate which determined rainfall amounts and temperatures.

The combined outcomes of all of those factors determined what vegetation may thrive in certain areas,



"Fungi are the grand recyclers of the planet and the vanguard species in habitat restoration."

Paul Stamets

Feature Story: *The 7 Micro-habitats of FNC* (continued)

what resources are available, and thus which animals may live there. The confluence of geological forces, climate, and biology constantly created new habitats and diminished others over time. Scientists often describe the Edwards Plateau ecoregion as a mosaic of woodlands and grasslands where the composition of the mosaic and percentages that the specific elements occupy has changed over time and continues to do so, increasingly contingent on land use practices in historical times. Humans experience only a tiny sliver of the evolution of habitats in our limited time on earth. We forget that what is here today was not here yesterday and will be gone tomorrow in geologic time. Habitats are ever-changing.

The topography of FNC is a direct result of all these geophysical forces at work. Our location on the Live Oak Creek drainage actively continues those forces, while the geologic record that we find here gives us clues to its active geologic history. The outcomes of that history are manifested in the diversity of micro-habitats that we enjoy at FNC, from a riparian zone with wetlands to a classic prairie to the arid habitat that sits atop our Hensell sandstone bluff. Our diversity of habitats enabled the diversity of species that we find at FNC—~265 plant species, 180 birds including migrants, 100 butterflies, and 50+ odonates (dragonflies and damselflies). Let's go explore the 7 micro-habitats of FNC.

Cedar Break Along the Vista Oak Trail just below the Bird Blind area, the trail traverses under a shady canopy of Cedars, actually Ashe Junipers, inhabited by a paucity of smaller vegetation. Look to the right on the hillside, and you will see an even thicker growth of Juniper where no other vegetation is allowed in. This represents a classic Cedar Break—an impenetrable growth of trees that was impassable by early immigrants.



Ashe Junipers have inhabited the Hill Country for thousands of years, but its' distribution in pre-European times was limited to rocky canyons, steep slopes, and mesa tops. If it tried to encroach on adjacent grasslands, periodic wildfires served as a biological control on the invading trees, since the species is not fire tolerant. European immigrants fought and thus reduced the impact of the periodic wildfires. By diminishing the biological control of the Junipers, they unwittingly allowed the invasive spread of Junipers into grasslands and even Post Oak savannas. Today, millions of dollars are spent to reverse or limit the effects of the Juniper invasion! We do not need to eradicate all Junipers, just limit the expansion of their territory. Old growth Junipers are lovely and provide berries as a bird food source and nest-building material for our endangered



"Numerous studies document the benefits to students from school grounds that are ecologically diverse and include free play areas, habitats for wildlife, walking trails, and gardens." ~ Richard Louv

Feature Story: The 7 Micro-habitats of FNC (continued)

Golden-cheeked Warbler.

As I mentioned earlier, look around on the ground and you will find sparse vegetation under the Junipers. Neither sunlight or rainfall can easily penetrate the Juniper thatch. Up to 60% of rainfall is trapped in the thatch during a rain event and never reaches the ground. Thus, a Cedar Brake dramatically reduces botanical diversity. Under the Juniper canopy, you will only find our two native Yuccas, a few grasses, and some small scattered forbs that have found shafts of light and that can tolerate the partial shade.

Arid Southwest Moving on down the Vista Loop trail, you will encounter a rocky bluff sculpted with craggy features. This is the sandy remains of the Hensell Formation dating back to about 112 million years ago. The sculpted rock that you see was shaped by an ancient streambed that parallels and pre-dated the current Live Oak drainage by millions of years.

The soil here is a thin layer of sand and clay on a steep hillside. In other parts of the county, thick deposits of this Hensell Sand grow our wonderful peaches. Here there are some thicker deposits up the slope, but near the pour-off to the creek, there are only pockets of soil here and there. Rainfall quickly runs off the bluff to the creek below, and combined with the sunny exposure, makes for the arid habitat.



Only very drought tolerant plants that can grow in thin soils will survive here—think desert. Of course, our native Prickly Pear does fine along with Beargrass (*Nolina*) and our native Fragrant Mimosa. Small forbs like *Zexmenia*, Engelmann's Daisy, Lazy Daisy, and Gray Golden Aster will survive here. Our most interesting species growing here is the Sandyland Bluebonnet (*Lupinus sub-carnosus*) which is inhabiting terrain about 100 miles west of its normal habitat. It is a mystery how it resides in FNC.

Riparian Zones are the areas immediately adjacent to streams and rivers. These are cooler, shadier, and of course wetter environs that support a more extensive diversity of flora and fauna. We feel very fortunate to have Live Oak Creek with its year round flow of water and the accompanying biologically rich habitat.

One error that many landowners make with riparian areas is to clean them up by removing shrubs and small trees while mowing down the grass. While pleasing to the human eye maybe, the result is a riparian raceway that allows water to quickly runoff the banks and down the stream to the Gulf of Mexico, never to return maybe. Your goal should be to slow down and retain the water as opposed to maximizing the speed with which it travels to the Gulf.



"There are never victories in conservation. If you want to save a species or a habitat, it's a fight forevermore. You can never turn your back."
George Schaller

Feature Story: The 7 Micro-habitats of FNC (continued)

Healthy riparian zones are messy to the human perspective. They need all the vegetative layers intact in the battle to slow and retain water. Start with those large anchoring trees (Bald Cypress, Sycamores, and Willows) whose roots run deep and wide and serve as the foundation to hold the soil and catch debris. Don't remove that debris! It catches more soil and allows it to build where seeds of trees, shrubs, or grasses can take hold. As the soil bank builds, it behaves like a sponge—catching and retaining water, raising the water table and hence the water level of your stream. The healthy and diverse vegetation will in turn support an increasing diversity of wildlife

Stand on the bridge over Live Oak Creek, and you will notice our lush vegetation. Large Bald Cypress, Sycamores, and Willows tower over you. Underneath, you will find an understory of gorgeous Buttonbush and Elderberry. Lower down grow luscious stands of Eastern Gama-grass, Switchgrass, and Giant Sedge assisting the anchoring trees in retaining the soil. Just to beautify the scene, look for wildflowers like Tall Aster Cardinal Flower to cap off the view. The layers of vegetation from top to bottom encompass a healthy riparian zone.



If you own or manage a riparian area, you must come to grips with the periodic flooding which you will suffer. In our twenty years of FNC, we have experienced many lesser floods and two major events in 2007 and 2018. These events are inevitable in the Hill Country and will do major damage as viewed by humans. In the view of Mother Nature, they represent part of the cycle of destruction and rejuvenation that creates our natural landscape. The 2018 flood scoured the bank across Live Oak Creek leaving only the strongest trees standing and piles of debris. What is missed by many is that because we had a healthy riparian area with a healthy vegetative load with deep roots, we at least retained our soil bank, which takes many years to refresh if you lose it. Today, after only three years, the understory vegetation has re-grown, and one would never suspect the damage done by the recent flood.

Mature Live Oak Forest Hiking up the trail and out of the Riparian Zone, you will reach a shady forest resting on a slope composed of somewhat thinner soils. Several overarching Plateau Live Oaks (*Quercus fusiformis*) provide the shady habitat which has existed for several hundred years, judging by the size of the trees.



"Ants are the dominant insects of the world, and they've had a great impact on habitats almost all over the land surface of the world for more than 50-million years." **E. O. Wilson**

Feature Story: The 7 Micro-habitats of FNC (continued)

Due to the shady conditions, the vegetation underneath is sparse—Sugar Hackberries planted by bird deposits reach for sunlight, Yuccas, and Greenbriar. What you won't find is young Live Oaks. If the deer don't eat the acorns, they eat the saplings, leaving no succeeding generation for the future, which might mean the end of this micro-habitat at some juncture.



This old growth forest habitat differs from our ubiquitous denser Live Oak mottes consisting of trees whose age is one hundred years or less. Much like the Ashe Junipers, the incursion of these mottes out into the prairies was enabled by the elimination of the periodic

wildfire cycle.

Prairie Emerging from the shade of the Live Oaks, you may be blinded by the sunlight showering the open grassland in view. The combination of deeper sandy soil and full sunlight creates the conditions for the Prairie habitat. This micro-habitat supports our greatest diversity of plant species and could be labeled wildflower heaven. Grasses are the foundational plants which consist of mid-grass species like Little Bluestem, Side-oats Gramma, and Hairy Gramma. A small colony of Buckley's Yucca exist on one side. Surrounding the Prairie are woodlands which will make every attempt to encroach upon the savanna, since they are not held back by wildfire. A good wildfire would also improve the health of the soil and stimulate a rejuvenation of many of the resident species, especially the grasses. To name just a few of the prevalent wildflowers—



Calylophus, Mealy Blue Sage, Skeleton Plant, Golden Dalea, Prairie Verbena, Engelmann's Daisy, Zexmenia, Lazy Daisy, Gray Golden Aster, Rain Lily..... You get the idea.



“The only way we can reduce the number of these endangered species is to improve and provide additional habitat where they can live and reproduce.”

Lorne Greene

Feature Story: *The 7 Micro-habitats of FNC* (continued)

Post Oak Savanna Adjacent to the Prairie sits an overgrown Post Oak Savanna whose mainstay species are Post Oaks (*Quercus stella*) and Blackjack Oaks (*Quercus marilandica*) normally spaced out enough to allow sunlight to penetrate the canopy and thus support the growth of grasses and forbs underneath—an open forest. Periodic wildfires would clean out woody shrub species growing underneath while the Oaks survived because they had evolved a fire-proof shield of thick bark. Our Post Oak Savanna has not experienced fire in a century perhaps, and thus other woody species have taken the opportunity to move in and convert the habitat to more of a shrubby woodland or thicket. Species like Ashe Juniper, Flame-leaf Sumac, Mustang Grapes, and Greenbriar are the main invaders. Perhaps one day, FFNC will take on the laborious task of removing the unwanted species and restoring the underlying Post Oak Savanna.

Wetlands Our final micro-habitat is really micro in size and scope, but nonetheless significant. Some consider this micro-habitat as solely part of the Riparian Zone, which it is. But given its' unique plant communities and function, we think it deserves its' own status as a micro-habitat. Below the dam exist gravel bars barely submerged underwater and muddy banks on which grow some interesting plant species such as Giant Sedge, ancient Spikerushes, and American Water Willows. These are plants that prefer “wet feet” and whose roots perform an important ecological service in filtering and cleaning the water. Wetlands also serve as prime habitat for Dragonflies and Damselflies, so this area is where you should venture to see one of our 50+ species that live in FNC.



If I leave you with one significant thought after our journey through our 7 micro-habitats, it would be diversity, diversity, diversity... We are proud at FNC that our little 15 acres serves as an example of that, but we want to encourage you to pursue the promotion of diversity in your own land, however big or small that might be. Along with the challenge of combatting Climate Change, scientists will tell you that the flip side of that challenge is the immediate imperative to reverse course on the accelerating loss of diversity in both species and their supporting habitats. You can help—one micro-habitat at a time.



"The wealth of the nation is its air, water, soil, forests, minerals, rivers, lakes, oceans, scenic beauty, wildlife habitats and biodiversity... that's all there is. That's the whole economy. That's where all the economic activity and jobs come from. These biological systems are the sustaining wealth of the world."
Gaylord Nelson

Feature Story: *The 7 Micro-habitats of FNC* (continued)



The Fern Grotto on Live Oak Creek. Maidenhair Fern (*Adiantum capillus-veneris*) grows on the sandstone bluff enlivened by the water dripping from the year-round seeps that emanate from the sandstone. On the embankment ten feet above this lush mini-habitat resides our Arid Southwest micro-habitat. This serves as an example of how a few feet can mean a drastic difference in environmental conditions and thus habitat.

Bird Feeder Tip of the Month



Keep Track of Your Visitors

By observing their comings and goings over the seasons, you'll know what birds to expect and when. You'll also learn about the habits of each of the visiting species. Go one step further by joining a program such as **Project FeederWatch** (<https://feederwatch.org>) where you'll report your sightings to ornithologists who record bird trends across North America.

Source: *Birds and Blooms* <https://www.birdsandblooms.com>



"Study nature, love nature, stay close to nature. It will never fail you."

Frank Lloyd Wright

Go to our website for online renewal or print & mail our membership form.



Mexican Hat
Ratibida columnaris

Please consider continuing to support FFNC.

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**Comments, questions, or future newsletter submissions can be sent to
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