

The Heartwood Herald

Newsletter of the Heartwood Chapter

August 2019



VOLUNTEER VOICES

Volunteering is the cornerstone of the Texas Master Naturalist program. Each month, the volunteer experience of a member will be featured. This month a recent Certified Texas Master Naturalist shares about volunteering for the milkweed planting project, The Woodlands Township Environmental Services Department, that is being generously housed and managed by the native plant nursery at Nature's Way Resources.

Who: Glenna Sloan (TMN 2019)

Where: Native Plant Nursery at Nature's Way Resources, (yes, alongside all the hills of mulch and soil, is a nursery of beautiful native potted plants!) 101 Sherbrook Circle, Conroe, TX 77385 (east end of FM 1488).

What kinds of milkweed are being planted:



Common Milkweed
Asclepias syriaca



Green Milkweed
Asclepias viridis



Orange Butterfly Weed
Asclepias tuberosa

What do you like most about your volunteer work: Both my grandparents had green thumbs. I never knew HOW to garden but I knew the names of most of the plants I grew up with. The milkweed project is my first real stab at gardening, so this is a novice's eye view. Thank goodness for the instruction and watchful eye of Carol Childres, nursery manager at Nature's Way Resources (NRW), which is the host for this project.

I like to do things right, meticulously and efficiently. I got pretty good at filling little pots with 50/50 mix of leaf mold compost and fungal compost and placing them in flats. I then graduated to tapping a dash of MycoStim, a root stimulant made of eight strain

of Mycorrhizae fungus and other nutrients that encourages a plant to develop a more expansive root system to grow faster with less water and fertilizer. After the MycoStim, I count out four milkweed seeds (maybe a few more). The seeds had undergone 30 days of cold stratification according to the procedure perfected by George Cates at Native American Seed, see <https://texasbutterflyranch.com/2013/03/13/how-to-get-texas-native-milkweed-seeds-to-germinate/>

According to Mr. Cates, soaking and washing the seeds removes natural chemicals that inhibit germination. When the seeds are moved from the cold darkness of the refrigerator to the bright light and warmth of the sun, they are “shocked” into sprouting. “The stratification process is meant to mimic nature,” he said, adding that the plants likely developed this dormancy strategy as an answer to drought conditions.



Carol Chidres and
Glenna Sloan

With Carol’s guidance, and advice from others who had planted milkweed before, I learned to plant the milkweed seeds by surface sowing, dropping the seeds on the soil mix and gently covering them, just barely. Each flat is then dated with a plastic tag, color-coded for the types of milkweed, to track seed germination.

Each work morning, I do my expert yoga side-straddle split and pick leaves and sticks off the babies to insure nothing interferes with their growth. The pots are watered daily or as needed by Carol or the volunteers. As the seedlings grow, they will be lightly fertilized once-a-week with either compost tea or a light solution of ocean harvest and super seaweed.

Milkweed plants grow taproots faster than green tops, requiring a transplant to a larger container, although their very long taproots do not make them good container plants. In addition, Monarch caterpillars may find the babies to munch on. And if aphids or milkweed bugs appear, some sort of nature-friendly elimination will have to be done or maybe that cloud of ladybugs NOAA saw on radar will descend! So far, so good, but vigilance is required!



It is a joy to see the seeds sprout and the seedlings thrive. Nature’s Way Resources has provided its best space for this project—under a shady tree canopy with cool breezes blowing. It is peaceful (albeit between trains and bulldozers moving premium mulch and soil) and I enjoy the company of other master naturalists as we work together. The thought of so many milkweed plants being planted as a result of my work brings delightful visions of thousands of Monarch butterflies!

Are you interested in learning more or volunteering with this milkweed project at Nature's Way Resources?

Contact Teri MacArthur at TmacArthur@thewoodlandstowship-tx.gov.

MILKWEED PLANTING TIPS

Asclepias (Milkweed) are sun-loving plants that are essential perennials for monarch butterflies, providing food for caterpillars and nectar for adult butterflies. They remain dormant until later in the spring than many other plants and bloom from mid-summer into early fall. Their milky sap makes them rabbit and deer resistant. Yet, they have a quirky nature, requiring patience and acceptance.

For plant care, milkweed can be divided into two groups: *Asclepias tuberosa* (Orange butterfly milkweed) and all other species, including *Asclepias syriaca* (common milkweed) and *Asclepias viridis* (green milkweed).

	<i>Asclepias tuberosa</i>	All Other <i>Asclepias</i>
Soil Type	Sandy or gravelly soil, gravel mulches	Wide range of soil types, including clay
Planting	Few handfuls of compost and organic fertilizer do not plant into rich, highly amended soil	Plant in compost-enriched soil
Sun	Plant in full sun	Plant in full to part sun
Watering	Infrequent, deep watering	Moisture loving

When planting, and after planting, do not divide or disturb the milkweed's long, carrot-like tap root. Oftentimes, milkweed will not grow much their first season in the ground. Take care not to overwater young transplants. After their second growing season, the plants will begin to get bigger and more robust and need deep, but infrequent watering.

Aphids are likely to appear and can suck the life out of the milkweed if not controlled. Consult this link for advice: <https://monarchbutterflygarden.net/control-aphids-milkweed-plants/>



Aphids



Milkweed Bugs

Perhaps even worse than aphids are milkweed bugs, which can appear as first glance to be a beneficial ladybug. Consult this link for advice: <https://monarchbutterflygarden.net/stop-milkweed-pests-ruining-milkweed-monarchs/>

To encourage re-seeding, leave milkweed stems intact over the winter. In mid-spring, remove old stems just above ground level.

Most milkweed species are late to wake in the spring. BE PATIENT! The roots and woody crown are alive, just waiting for consistently warm weather to wake-up and grow.

MONTHLY MEETING ADVANCED TRAINING RECAP

August 7, 2019: The August monthly meeting was held at the Big Stone Lodge in Dennis Johnson State Park. A group of local students captivated a gathering of some seventy people with their presentations of the research work they performed while working as interns at Mercer Botanic Gardens this year. The interns were sponsored by Harris County Precinct 4, the Houston Native Plant Society, and the Heartwood Chapter of Texas Master Naturalists.

Education interns Emilio Ordoñez and Julia Chamon created a handbook, training program, and map for use in a new volunteer Ambassador Program. Ambassadors will be qualified and trained to direct other volunteers. In addition, Emilio identified activities at Mercer that could qualify for Boy Scout merit badges.

Herbarium interns Marie Yañez, Abhishek Choudhury, Kateriñe Morris, and Jamie Lehen presented their studies of:

* *Artemisia ludoviciana* (white sage), which is used by Native Americans for relief from a number of ailments, including headaches, nosebleeds, fevers, colds stomach aches and menstrual disorders. It's also used in steam baths for rheumatism, fevers, washes for itching, rashes, skin eruptions, boils, and sores, as well as a deodorant and antiperspirant and in leaf poultices for spider bites.

* *Baccharis halimifolia*, (groundsel bush, a member of the daisy family) has been declared a pest in Australia, but is saltwater tolerant and used as a palliative and demulcent to treat consumption or tuberculosis.

* Duckweed, the world's smallest flowering plants is usually considered a nuisance because this plant can grow to cover water surfaces with a six-centimeter-thick mat, but certain species are edible.



* *Helianthus annuus* is a sunflower that was used in phytoremediation of soil following the Chernobyl and Fukushima disasters and in New Orleans after Hurricane Katrina. Sunflowers use phytoextraction exclusively, absorbing heavy metals from the soil, chelating, and storing the metal in its leaves and roots.



Horticulture interns Alan Torres, Sarah Brecher, and Nicholas Brockett presented their studies of weeds, orchids, and edible native plants. It was noted that there is no official classification for weeds, and what is or is not a weed is an entirely subjective determination. But in general, a weed is a plant that is growing in a place we do not want it to, putting it in opposition or in competition with the plants that we are trying to cultivate. The negatives of a weed include competition with desired plants and attracting pests. The benefits of a weed include erosion control, working as filler plants and as food or habitat for wildlife and pollinators, and being barometers for soil health.



Mosquito biocontrol initiative interns Darya Pineda McCreary and Jessica Mauch presented their research in a nature versus nature initiative to identify, evaluate, develop, research, and find naturally occurring native organisms to use as effective control tools for integrated mosquito management programs. Their research focused on identifying DNA variations among mosquito species and optimizing living conditions for aquatic

dero worms on which assassin mosquito larvae feed.

GRADUATION!

The 2019 Heartwood Initial Training Class held its graduation celebration on Saturday, July 20. Twenty-four interns completed the forty (or more) required classroom hours, thirteen interns received their initial certification, and four interns also qualified for re-certification for 2019. Welcome to the TMN tribe!!!



Back row: Course Director Teri MacArthur, John Marshall, Adrienne Quinn, Bruce Steimle, Glenna Sloan, Stephen Rushing, Nicholas Smith, Sarah Freeman, Terry Fitch, Kimberly Kidwell, and Hank Van Joslin. Front row: Virginia Young, Denise Mercier, Mary Sydow, Gail McConnell, Jaime Duncan, Carol Carothers, Terri Stinn, Joanne Muirhead, Brenda Reeves, Briane Beene, and Raven Wilson. Kneeling: Aram Derewetzky. Inserts: Alex Pickering, Chuck Dingman, and Melinda Jensen.



PRESIDENT'S MESSAGE

Carolyn Langlinais, President



Dear Members,

We're up in the triple-digits for our "feels-like" temperatures, but no one is slowing down. So many wonderful volunteers have made working on the Pollinator Project at Nature's Way Resources a part of their weekly routine. It is beautiful under the huge trees and it really is like visiting with old friends as we work the assembly line of planting milkweed. I hope each of you gets the opportunity to come out on a Wednesday and join us.

The Pollinator Project will come full circle at The Woodlands Landscape Solutions on September 28 where Heartwood will host a booth giving out vouchers for milkweed plants. We will inform the public about how important native plants are for encouraging our pollinators and provide instruction on how to take care of their plants once they take them home. Contact heartwoodsec@gmail.com if you have a couple of hours to share doing booth-duty that day.

Our new Communications Director, John Marshall, is busy making sure we have several ways to stay informed about what's going on. John is a veteran journalist who has worked as a writer and reporter for The Associated Press, as a producer and reporter for San Francisco's KGO Radio, as a television news anchor, and more recently as a local reporter for The Houston Chronicle. Now happily retired from the news business, he'll be leading the chapter's efforts on outreach and social media. Thank you so much for volunteering for this vital role, John!

It's time to start thinking about the roles that will open within the Chapter administration for 2020. It seems a bit early, doesn't it? It's only August! Nominations are declared in October and voting takes place at the November Chapter meeting. The current Executive Board has agreed to serve another year, but the Nominating Committee will consider nominations made before September 15. Contact diana.foss@tpwd.texas.gov to learn more.

There are also committee director positions that will be open for 2020. The directors for these positions are determined by the Executive Board. For an in-depth look at what each position entails, visit our [website](#). Contact me if you are interested in serving as a committee director. We know from volunteering that lots of hands make light work. Come join us!

Check out the schedule for the annual state meeting at <https://txmn.org/2019-annual-meeting/>. Registration is open now. The guidelines for the photo, art, and media

competitions are finally posted online also at https://txmn.org/files/2019/07/TMN-Photo-Art-Media-2019_KM.pdf. I hope to see you there!

HEARTWOOD CHAPTER EXPANDS TWITTER PRESENCE

By John Marshall, Communications Director

@**HeartwoodTMN** is the Heartwood Chapter's updated Twitter account of the Heartwood Chapter. Please "follow" us!

Twitter is a great way to get our message out. Tweets are increasingly being used by journalists, local officials, and others as a way to get updated information about what's important to them in their community. According to a recent report by the digital tracking service Omnicore, 74 percent of Twitter users say they get their news from Twitter. So, what better way to expand our mission on education, outreach, and community service?

With the "old" Twitter account, we had only one follower and only 52 "impressions" during the lifetime of the account. In a week's time, from July 29 to August 6, through tweets, re-tweets, likes, and expanding our base of who we are following, and likewise, who is following us, we've had more than 5,000 impressions. That doesn't necessarily mean that 5,000 people saw the tweet, but rather that the tweets from the updated account showed up in a Twitter user's timeline. Still, 5,000 opportunities to hear from our chapter is a lot more than 52.

To get the word out to even more people and expand our base, we ask you to follow the Heartwood Chapter's account @**HeartwoodTMN**. Once you're following, if you will "like" tweets from the account and also re-tweet, our reach will increase. If you don't have a Twitter account, it's simple to set one up. Just go to Twitter.com and "follow" us! Oh, and we'll also be working on expanding our social media reach through Instagram, Pinterest, and other networks. More on that coming up.

NATURE JOURNAL CHALLENGE

By Terrilyn MacArthur



What makes a great nature journal?

No doubt, we all have scribbled notes in many different formats. Especially for those of us who love to be out in nature, it's sort of a given that we make notes about the coolest sights in the outdoors. So, too, with photos. Lots are in different places, such as stuck in the pages of a field guide that we had used to identify whatever we shot a photo of.

So how about finding a fairly large format journal/notebook and use it as your collecting place for all those bits and pieces of nature notes? A little paper glue goes a long way in creating a memory page for any given outing. Add photos, follow-up writing once you ID the “thing,” and you have an easy entry. Leave a page or two between the pasted-in collections so that you can come back next year at the same time and update it—did you see the same thing again?

Here’s your challenge for this month: begin a box or bin with your pieces of nature writing and photos. Throw in a few at a time as you come across them, or make it a project to collect them from drawers and book pages, etc. Then on rainy days when you cannot get outdoors, pull a handful and start pasting. I’ll bet you will find that you have already made notes or taken photos of things in the same family, from the same trip outdoors, or find some other connection. Even if you just start putting all those pieces into the pages of your new collecting journal, it’s a start to making it a useful tool for your personal research into when you see the same things – whether seasonally or in similar locations, or . . .

Nature journaling doesn’t have to be pretty or especially well organized to be useful as your personal guide to your own nature trail or favorite location. However, by keeping like discoveries together, especially those that mattered enough to write a note about, you will expand your knowledge of whatever drew your attention that day.

What can weigh less than a nickel, fly nonstop 500 miles, have a heartbeat of a thousand, and hover almost indefinitely?



The Hummingbird!!

Hummingbirds are found only in the Western Hemisphere. The Ruby-throated hummingbird is the most prevalent local breeding species of 360 total hummingbird species. They can be seen in large numbers during their southern migration in late-August through September.

A NATURALIST PROFILE

Some of our members have extensive backgrounds and/or training in a naturalist discipline. Those featured in this newsletter have generously agreed to be “go-to” resource people. This month, we introduce to you Jim Renfro (TMN 2001) (j_renfro@att.net).



Jim Renfro became a certified Texas Master Naturalist with the Cradle-of-Texas chapter in Brazoria County, and is now a Heartwood Chapter member. In fact, as of July 20, 2019, Jim holds the distinction of having contributed the greatest number of volunteer hours of all Heartwood members at 8,000 hours! Jim has a master's degree in chemistry and was an industrial chemist for about thirty-five years. He became an avid birder after setting up a

backyard feeder and watching the birds it attracted. Jim is a permitted songbird and hummingbird bander.

Jim initially sought his permits while working on banding projects with biologists at both Texas Parks & Wildlife (TPWD) and United States Fish & Wildlife Service (USFWS). The TPWD project participated in Monitoring Avian Productivity and Survivorship (MAPS), a continent-wide collaborative effort among public agencies, non-governmental groups, and individuals to assist the conservation of birds and their habitats through demographic monitoring. The USFWS project studied wintering birds in the Columbia Bottomland forests of Brazoria County, Texas, respectively. Jim trained with Dr. Brent Ortego (TPWD) for songbirds and hummingbirds and Kelly Bryan (designated hummingbird banding trainer in Texas). Currently, Jim works independently on self-designed projects as do many other banders. Master Permittees (like Jim) may also have sub-permittees, who work under their direction.

Bird banders must each have a Federal Permit from the United States Geological Survey Bird Banding Lab (BBL) and a State (TPWD) Permit. Permits are issued directly to the bird-bander, are good for three years, and must be renewed. The permit application process is rigorous and taken very seriously by the agencies and the applicants.

Jim's Federal Master Bird Banding Permit authorizes him to capture the birds in a trap and to band passerines (generally songbirds) and hummingbirds. BBL provides a database software program for the bander to record all banding data that is directly uploaded to BBL. These data are then available to all researchers.

In Jim's experience, the Ruby-throated Hummingbirds are the only species that breed east of Interstate 35 in Texas and into Canada and Eastern United States. They are our summer hummer. Other non-breeding species that do occasionally appear in southeast Texas in winter and during fall migration include: Rufous, Black-chinned, Broad-tailed and Buff-bellied; and less frequently, Anna's, Calliope, and Allen's.

During the banding process, species, age, sex, and weight of the hummer are recorded. To differentiate species, age and sex, key plumage features, bill length/shape, shape of

key feathers, tail length are measured. Species must be determined before banding the bird. Age is separated into hatch year (HY) and after hatch year (AHY). Hatch year/first year plumage is replaced by the next spring with a basic molt to adult plumage. Birds molt again each year. Hatch year/pre-adult plumage is duller than the adult plumage that the birds will show for the rest of their lives. Hummingbirds reach breeding maturity by their second year. In comparison, the development of final adult plumage takes longer, up to three years, for some larger species such as Bald Eagles. Male Painted Buntings, and Baltimore Orioles require two years. Incomplete adult plumage probably means the second-year guy doesn't get the girl!

The lifespan of a hummingbird is probably three to five years in the wild, though there are many records of birds as old as seven years. Overall mortality in the wild may be close to 50% annually, it's a tough world out there!

Jim has data showing individual birds returning to breeding sites for multiple years, and it is a well-documented characteristic for songbirds and hummingbirds to return to their birth site to breed and to the same wintering sites, annually. The phenomenon is called site fidelity. Resident birds like Northern Cardinals and Northern Mockingbirds may never leave the two acres they're hatched in.

Jim's data is, of course, made possible by the band he gently and carefully places on a bird's leg. These bands are pre-numbered and issued by the BBL in an aluminum sheet, which Jim cuts into strips and molds into a ring using a special die. Ruby-throated Hummingbird females have band cut to 5.6 mm length which when closed has a diameter of about 1.36 mm. The bands are normally 1% of the bird's weight and should not alter the bird's behaviors.



The applied band fits loose enough to move up and down the tarsus without slipping off the bird's foot and lost.

Banding birds carries a huge responsibility, especially for the safety of the individual birds. Banders take this very seriously and treat it as a privilege.

Jim will be assisting Sumitra Prasad with hummingbird banding at the Kleb Woods Nature Center's Hummingbird Festival on Saturday, September 14, 2019, from 9 a.m. to 3:00 p.m.

For more information about hummingbirds and other birds, Jim recommends Cornell University's website: <https://www.allaboutbirds.org/>

HUMMINGBIRD FILL-IN-THE-BLANK QUIZ

1. There are _____ species of hummingbirds making them the _____ most diverse bird family on earth.

2. The average hummingbird weighs only about _____, less than what coin?

3. The Rufous hummingbird has the longest migration, flying as many as _____ miles from _____ to Mexico.



4. The Ruby-throated hummingbird flies _____ miles nonstop across what body of water? In preparation for migration, the hummingbird's weight may increase by as much as _____%.

5. The typical hummingbird beats its wings up to _____ times per second, and its heart rate can be as high as _____ beats per minute.

6. The hummingbird's wings connect to the body only from the shoulder joint, which allows the wing to rotate almost _____ degrees, enabling the bird to fly forward, _____, and to hover in mid-air, flight capabilities that are similar to insects and unique among birds.



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7. When hovering, the hummingbird's wings make a _____ motion.

8. At night or when food is not readily available, the hummingbird will enter a deep sleep state known as _____.

9. Male hummingbirds will mate with how many females? The female chooses whether to accept the male and usually bases this decision on whether the male has acquired a suitable _____.

10. The hummingbird nest is built by the _____ alone, usually of lichen and _____ that allows the nest to expand to accommodate the growth of the babies.

For answers, see <https://www.hummingbird-guide.com/hummingbird-facts.html>; <https://en.wikipedia.org/wiki/Hummingbird>

ASK A GEOLOGIST

By: Dr. Aram Derewetzky, PhD

Question: Why are hummingbirds only found in the Americas?

Answer: Hummingbirds are an amazing group of birds. They are remarkable fliers and feisty little guards, claiming our backyards as their territory. Found across a vast stretch of the globe from the Arctic Circle in the far north, to Tierra Del Fuego, a group of islands below the tip of South America, hummingbirds live anywhere from sea level to elevations of about 2,500 feet. They fill a gap in our ecosystem pollinating large numbers of flowering plants in exchange for nectar, yet none are found in Asia, Europe, Africa, or Australia. Why is that?

In classical biology, organisms evolve to fill a void in the ecosystem, a niche. Alfred Russel Wallace spent many years in Indonesia studying the natural history of the “Malay Archipelago.” You may know his name because he was the co-discoverer, along with Charles Darwin, of the theory of evolution. But in biology, his main claim to fame, besides his insect and bird collections is the so-called “Wallace line.” This line, drawn on a map of the islands of Southeast Asia shows an amazing variation in the biogeography of these islands. The farther west you go up to the island of Sumatra, the more the fauna resembled the faunas of Asia, including tigers, rhinoceros, elephants, and monkeys. The farther east, towards New Guinea, the more the fauna resembled the faunas of Australia, including possums, kangaroos, and cockatoos. Wallace recognized this segregation without knowing the mechanism. It turns out that during the Ice Ages (glacial intervals), the sea level was low enough to connect the western islands of what is now Indonesia together, up to the island of Bali. Between Bali and the next island to the east, Lombok, the water was deep enough to keep a “moat” around Lombok and the islands further east so that animals found it much harder to cross and establish populations in the eastern part of the Indonesian islands. Heading east, there are other islands with moats making it even more difficult for the fauna to migrate.

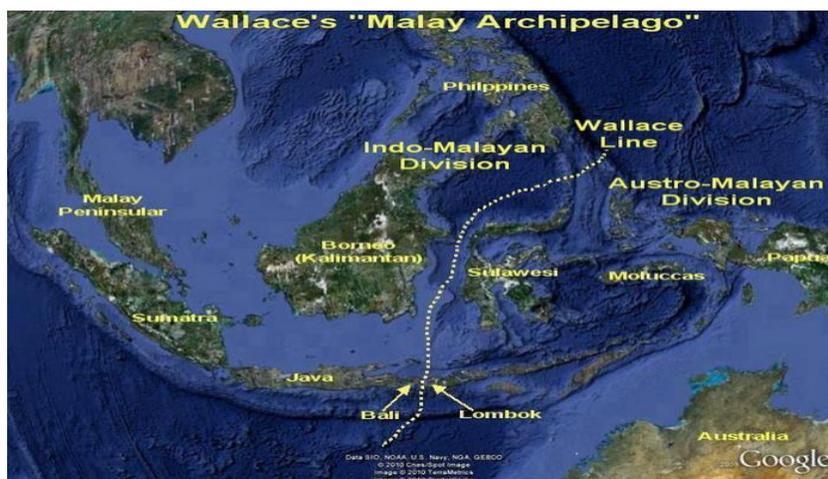


Figure 1. The “Classic” Wallace line from <https://indopacificimages.com>

The two complementary concepts that I just described help us understand the fate of the hummingbird. One is niche filling, and the other relates to geographic barriers.

Now, to the question at hand. Why are there no Old-World hummingbirds? After all, there are Old-World and New-World vultures and Old-World and New-World flamingos and cattle egrets, so why not Old-World hummingbirds?

First, we must understand the concept of phylogenetics. This concerns the genetic relationship of organisms. For instance, the Old-World and New-World vultures evolved separately and are not actually closely related, they just do similar things. In this case, carrion eating. Dolphins and tuna share a similar niche in the world's oceans. Dolphins and tuna are both apex marine predators, but one is a mammal and the other is a fish. They do similar jobs with different tools, but the tools superficially look similar. So, perhaps a better question to ask is, "Are there birds in the Old-World fill the hummingbird niche?" The answer is, "Yes." The sunbirds in the Old-World occupy the same niche as hummingbirds. They are nectar eaters and incidental pollinators of flowering plants. And they occur throughout Eurasia, Africa, and Australia.



Figure 2. Sunbird on the left and humming bird on the right, showing convergence of beak shape.

If you have followed me so far, you know there is one thing we still have not talked about. That something is the presence of flamingos and cattle egrets in the Old-World and New-World, and why not hummingbirds. Flamingos and cattle egrets are the same birds that are found in Africa and Eurasia, not only similar birds in the same niche. The prevailing theory for these birds is that flocks of them were blown off course and landed in South America, where the populations expanded into their new ranges. Two things keep that from happening with hummingbirds. The first is that hummingbirds do not flock; rather they are solitary. This would prevent a group of breeding birds from getting moved by a large storm. The second is that tropical cyclones (hurricanes) move from east to west, as we Houstonians well know.

These are the reasons there are no Old-World hummingbirds. Perhaps someday, a flock of sunbirds will be blown over from Africa and our friends the hummingbirds will have some more competition. Until then, we will just have to enjoy our local nectar eaters.

But wait. There is a major curve ball mother nature has thrown, striking the theories of biogeography and of the mote of the Atlantic preventing hummingbirds from colonizing Eurasia and Africa. That curve ball was found not once, but twice in Europe (once in Germany and once in France) in the unlikely preservation of intact hummingbird fossils in ancient lake sediments. (Unlikely because hummingbirds were not known to Europeans when the Americas were discovered and were thought to originate in the Americas, and because hummingbird bones are so delicate, few fossils have been found.) These hummingbirds died and drifted to the bottom of these lakes where there was no oxygen in the water, allowing for exceptional preservation of three hummingbird skeletons, two in Germany and one in France. These fossils are thirty and forty million years old respectively and reveal very modern traits--the long nectar extracting beak and the sternum modified for the hummingbird's unique figure 8 wing movement.

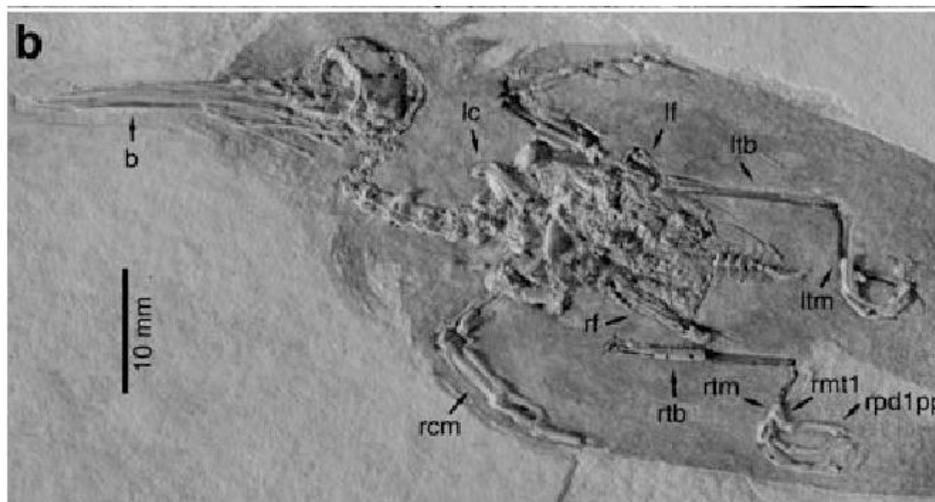


Figure 3. *Eurochilus* sp. from France from Louchart et al 2007, "Hummingbird with modern feathering: an exceptionally well-preserved Oligocene fossil from southern France."

So, what does this tell us about hummingbird evolution? It tells us that hummingbirds probably evolved in Europe and were somehow blown over to northern South America (the closest crossing) and established a beachhead in the New-World. Then the Old-World hummingbirds became extinct, leaving a remnant population in the New-World. Yet, this is only a theory. The world is truly a wonderful place full of mysteries!

APPS AND WEB RESOURCES

<https://journeynorth.org/monarchs/news/fall-2019/08012019-fall-migration-starts-month> Watch the progression of the fall migration of the monarch butterfly.

Merlin Bird ID App by Cornell Lab generates a photo list of possible birds based on size, primary color, what the bird was doing, e.g., eating at a feeder, on the ground, on a fence or wire, soaring or flying

<https://www.allaboutbirds.org/> also by Cornell Lab of Ornithology

Houston unveiled a plan to fight climate change by becoming a carbon-neutral city by 2050. View the draft at www.greenhoustontx.gov/climateactionplan/index.html

Galveston Ornithological Society's Jim Stevenson sends periodic free, low-resolution bird pictures with lines about the species. Just send an e-mail to galornsoc@earthlink.net. Even if you aren't a birder, these photos are simply exquisite!

<https://tfsweb.tamu.edu/elibrary/> elibrary of the Texas A&M Forest Service

WORLD CELEBRATION DATES

August 19	World Orangutan Day
August 22	National Honey Bee Day
September 5	Amazon Rainforest Day
September 16	International Day for the Preservation of the Ozone Layer
September 18	World Water Monitoring Day
September 21	World and National Cleanup Day

Source: https://en.wikipedia.org/wiki/List_of_environmental_dates

This newsletter is a produced by the collaborative efforts of Nick Barbara, Carol Carothers, Aram Derewetzky, Carolyn Langlinais, John Marshall, Glenna Sloan, and Gail McConnell.

Please send your ideas and/or article, puzzles/quiz challenges, photos for this newsletter to Heartwoodnewsletter@gmail.com.

PLAN FOR FUTURE EVENTS

Look for the Monday Heartwood Bulletin for in-depth volunteer and advanced training announcements.

BOARD OF DIRECTORS' MEETING

Your Board of Directors meets the last Monday of every month (or Tuesday, if Monday is a holiday) at 6:00 p.m. at the Jones Forest Classroom. Members and the public are invited to attend.

CHAPTER MEETING

Next month's chapter meeting will be on **Wednesday, September 11, 2019**, at **6-8:30 p.m.** (networking/pot-luck refreshments/dinner from 5:30 p.m.) at HARC, 8801 Gosling Rd, Spring, TX 77381.

Advanced training: Recycling Options

Presenter: Zoe Killian, The Woodlands Township, Environmental Education Specialist—Recycling, zkillian@thewoodlandstowship-tx.gov

Description: Zoe is the recycling expert for The Woodlands Township and will discuss the advantages of a closed-loop recycling economy and demystify what can be recycled in your community. Members are invited to bring an item for show and tell. Zoe will help find a way to recycle the item or send an answer out by email.

WATER CERTIFICATION

Deadline to complete eight hours of AT for water certification and 10 hours water-related volunteer time for re-certification is August 31, 2019.

HUMMINGBIRD FESTIVALS

September 14----- Kleb Woods Nature Center, 9:00 a.m. to 3:00 p.m.
http://www.pct3.com/Portals/45/docs/news/hummingbird_fest.pdf

September 14 and 21----- Gulf Coast Bird Observatory, Lake Jackson,
<https://www.gcbo.org/wp-content/uploads/2019/05/xhx2019-flier.pdf>

September 19-22----- Rockport/Fulton, <https://www.rockport-fulton.org/HB>

OTHER EVENTS

August 29 – Bayou Land Conservancy Wild and Scenic Film Festival, 6:00-9:30 p.m.,
Star Cinema Grill Vintage Park, 114 Vintage Park Blvd., Ste J, Houston, TX 77070,
<https://www.bayoulandconservancy.org/wild-and-scenic-film-festival>

September 14 – Native American Heritage Day, 1:00-3:00 p.m., Jesse H. Jones State
Park and Nature Center, 20634 Kenswick Dr, Humble, Texas 77338,
<https://www.hcp4.net/event/native-american-heritage-day/>

September 28 – Walker County Master Gardener Butterfly Festival, 10 a.m. to 4 p.m.,
102 Tam Rd, Huntsville, TX 77320.

September 28 – Woodlands Landscaping Solutions, 9 a.m. to 12 p.m., Recreation
Center at Rob Fleming Park, 6055 Creekside Forest Dr, Spring, TX 77389,
<https://www.thewoodlandstowship-tx.gov/Calendar.aspx?EID=7553>

September 28 – Landscapes Solutions, Butterfly Enthusiasts of Southeast Texas,
<https://www.naba.org/chapters/nababest/>

October 5 – Mercer Pollinator Festival and Specialty Plant Sale, 10 a.m. to 4 p.m.,
Mercer Arboretum, 22306 Aldine Westfield Rd, Humble, TX 77338,
<https://www.themercersociety.org/events-1/specialty-plant-sale-pollinator-festival>

20TH TEXAS MASTER NATURALIST PROGRAM ANNUAL MEETING

Rockwall, Texas; October 18-20

- Registration and Hotel Reservations at the Hilton Dallas/Rockwall Lakefront Hotel.
<https://txmn.org/2019-annual-meeting/>
- Sponsorship Requests:
<https://txmn.org/files/2019/03/Sponsors-for-2019-TMN-Annual-Meeting.pdf>
- Vendor Booth Requests: Deadline is September 27, 2019,
<https://txmn.org/files/2019/04/Vendor-Info-and-Application-Form-2019-FINAL.pdf>
- Video Contest: Deadline is September 30, 2019.
- Contests in Photo, Art, and Media: Deadline is October 18, 2019, the first day of the meeting.