



CENTER LINE

A Publication of Waukesha County's Retzer Nature Center

Summer 2012

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CAUGHT IN A SPINNING STORY

There are times when diminutive creatures, when discovered can be fascinating. There are also times when tiny critters can become frightening. Both reflexes, fascinating and frightening, could be carry-overs from ancient Greek mythology.

From Greek mythology comes the story of Athena, goddess of wisdom and war, a combination that already sounds fascinating (doesn't fit) and her confrontation with the disrespectful mortal Arachne.

As the story unfolds, Arachne was quick to learn and soon became a master weaver. She became so talented, the nymphs paid homage to see her beautiful designs, and the people of Athens would gather around her with hopes of learning from Arachne's extraordinary skills. She was always asked, "Who taught you to weave so beautifully?" Arachne would always reply "no one." Of course, you know the goddess of wisdom and war would finally get wind of this mortal's disrespect. The whole mess would soon hit the fan, so speak. Athena, disguised in the form of an old woman, visits Arachne, and tells her to respect the gods--the only wise thing to do. Arachne would have none of it, and again mocking the goddess, she challenged her teacher to an open weaving contest. Arachne probably missed a few stitches in her spindle that day, for Athena expected the challenge. Now the frightening part of her story.

Arachne wove a magnificent design showing all the escapades of the gods. It was not a mistake, however, in the application. Athena became angered at the mortal and her choices in design, but Athena could find no fault in the weaving. In a rage she rose up, striking Arachne in the face. Arachne finally got the message, but the damage was already done. Upon the death of a girl, Athena became saddened. She decided that Arachne should continue to weave for all eternity. Athena transformed Arachne's body into that of a spider, and to this day, the spider's descendants carry her name.

The Arachnid family contains some of the best architects to be found. Some are master weavers that can fashion silken strands into woven structures that gleam in the sunshine. Because of the variety of construction and the different forms achieved in weaving, the web shape of a spider's home can be used in identifying the builder. There are times when you may not want to come face to face with the builder, especially if the builder happens to be of a poisonous nature. Spiders like the Brown Recluse and the Black Widow would fit into this category. In general makeup, all arachnids have two body divisions in their anatomy, cephalothorax and abdomen, and they all possess four pairs of walking legs. They have two or more pairs of abdominal spinnerets (fingerlike glands) which are used to spin the silken threads used in the construction of their webs.

There's more to this weaving that greets the eye. Brief notes of interest in the construction:

1. The Black Widow Spider (*Theridiidae*) which you don't want to face, spins a tangled web that looks like a string tapestry; the fringe hanging from the

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Spinning Stroy cont.

bottom resembles a modern art piece. This "combfooted" spider uses its combs to fling silk strands over captive prey.

2. Funnel web spiders (*Agelenidae*) have long spinnerets that spin extensive sheet webs, which lead into a funnel. Here the weaver can hang out in privacy.

3. Sheet web weavers (*Linyphiidae*) spin flat, sheet-like or dome-shaped webs. The sheet web weavers wait behind the web until their prey becomes entangled on the surface. Then they yank the prey down into the web.

4. *Dictynid* spiders spin small, irregular webs of hackled threads. They have a structure called a cribellum. (A plate in front of the spinnerets) which forms the irregular web. Cribellate web builders create tiny triangular homes. After the framework is completed, the angles will be decorated in hackled threads. An artful display, with a taste of pyramid.

Of all the master weavers in spider kingdom, the creative juices are well spun by the orb weavers (*Araneidae*). Orb weavers vary in size, shape, and color, but their abdomens are all in the shape of a pancake. These spiders have eight eyes, arranged in two rows of four all the better to see you, my dear! Looking over the spider community, it appears to me that the orb weavers carry on the timeless tale from ancient Greek mythology. The favorite character in an up-to-date story could be the Black and Yellow Garden Spider – an arachnid of beauty and a masterful weaver or orb webery. The perfect construction-beauty, strength and viability.

Orb web construction is organic, functional, and up-to date, even through the schematics used were devised by the spiders log ago, before Greek mythology was even invented. Orb web construction weaves a pioneer prowess into it's creations by inventing wagon wheel-shaped webs.

Orb construction begins with a framework, starting with a bridge line between two adjacent uprights. The spider accomplishes this by walking between the uprights, or by flying. Yes, he has license to fly, and will use a breeze to carry the silk to an opposite side. The spider tightens a bridge line by walking backwards and forwards, strengthening the bridge with extra silk threads. The builder then makes another loop of silk which hangs below the bridge line. He walks to the middle, and spins another line vertically, and anchors it to a low twig at the bottom. Another vertical loop is spun from the other side of the bridge line and anchored halfway down the left upright. This line is carried across to meet other threads. Where the three silk strands meet is the center of the spider's web.

The main frame is now in place, it's time for the radical threads. There are many of these to be added to the pattern. When the architect thinks his model home has a sufficient number of radicals, he walks to the center of his web and lays down a few turns of strengthening spirals. When this job is accomplished to his satisfaction, he continues his walk from radius to radius, in an outward direction, laying down temporary non-sticky spirals. In the final operational project, the spider reverses direction. He follows the temporary spirals and lays down sticky ones, demolishing the first sets, as he returns to home base, the center of the web.

Orb construction has now been spun. Glistening in it's natural surroundings. The architectural marvel

(sponsored by a Greek goddess) is open for inspection. Up-to-date amenities have been woven

into the habitation, and it's panoramic view is beyond all expectations. One must always remember,

however, that all expectations are home spun.

To make a long story short, if you ever run into these amazing creatures (who are caught up in their yarns, in spite of Greek mythology), you might mention I told you so!

See you on the trail,

Shirley Blanchard

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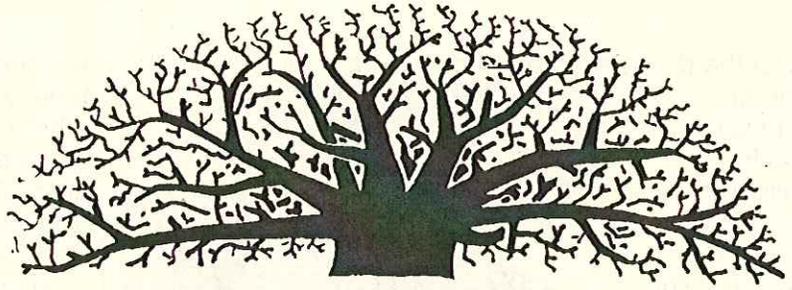
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HEARTWOOD



PURA VIDA!

Under the auspices of the Friends of Retzer Nature Center, 27 adventurous souls traveled to Costa Rica for 11 days earlier this year (February 22nd—March 3rd), to experience the beauty and wonders of the New World Tropical Rain Forest. The group was ably led by Carroll University Professor-Emeritus David Block and his wife Terese, and assisted by yours truly. In Costa Rica, we were hosted by the Tirimbina Rain Forest Center, its dedicated director Carlos Chavarria, and others from Tirimbina's excellent science and education staff. We saw wonders never dreamed of before, and we formed lasting friendships within our group and with the people at Tirimbina, as they guided us through this astonishing land.



Costa Rica is a pocket-sized Central American country, about 1/3 the size of Wisconsin, with a range of high volcanic mountains running down the center of it. Within a day's drive, you can go from lowland rain forests to mountaintop cloud forests; to active volcanoes, to western cattle ranches, to river mangroves, to tropical beaches. And we saw it all. And we brought back a trunk-full of great memories, as well as thousands of pictures.

Like any worthwhile thing, this trip began with suitable preparation. David spoke to the Friends annual meeting exactly one year ago, presenting the idea for this trip. Once the Friends decided to move ahead with it, Carlos visited us here at Retzer and gave us an overview of the trip. In the months leading up to our adventure, our tour group had regular meetings in seminar format—to learn about Costa Rica, its incredible lands, forests, birds, and animals, its history and culture, and its delightful people.

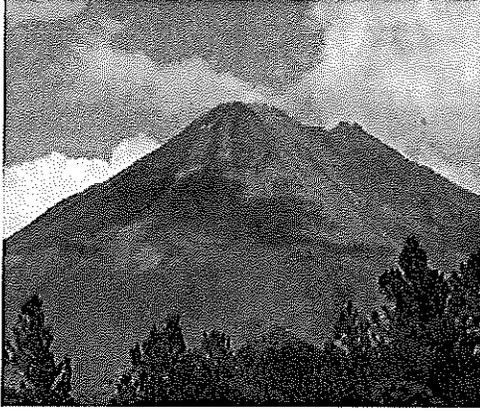


The long-awaited day of our departure came—and a long day it was! Leaving the Highway G park-and-ride at 3am, we traveled by bus to O'Hare airport, by plane to Charlotte, NC, and then on to San Jose Costa Rica (flying straight over Cuba and the Cayman Islands on the way). After a memorable roller-coaster landing at San Jose airport, we settled in at the hotel—concluding our first day (of 18 hours) by sampling local beers by the pool. The next day we made our way, by tour bus, up and over the mountains to Tirimbina. On our way, we stopped to see our first active volcano, Volcan Poas. The volcano has its own National Park, with forest trails and an overlook down into the crater—where an acid lake bubbles and belches acid steam.

The beautiful little town of Sarchi, on the way to Tirimbina, seemed like paradise. The weather was perfect, and all the shops, restaurants, even the church, had their doors and windows open; there were no mosquitoes or insects of any kind, and all the people (and

even the dogs) seemed to be out for a friendly stroll.

Sarchi specializes in making and selling beautifully painted oxcarts. The oxcart is a traditional symbol of Costa Rica; it was the mode of transportation



for the coffee farmers, to take their coffee beans to market along the treacherous mountain roads. Each farmer's ornate color scheme was one-of-a-kind, allowing his oxcart to be instantly recognized from a long distance.

The Tirimbina Rain Forest Center, our host resort and nature center, has a Milwaukee connection. The land there once belonged to the Uihlein family, who owned the Schlitz brewery. The Uihleins, along with the Milwaukee Public Museum, helped Tirimbina to become established as an eco-tourism and research center. The rain forest hall at the Milwaukee Public Museum was modeled after Tirimbina. The Tirimbina Center is now operating on its own—and it needs new organizations to partner with it and support it. We have a golden opportunity for the Friends of Retzer to partner with this successful tropical nature center, for mutual benefit.

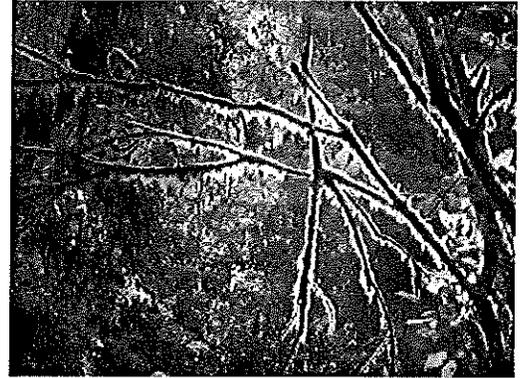
While at Tirimbina, we took a jungle boat trip down the spectacular Sarapiquí River. We went zip-lining through the rain forest canopy. We visited a local fair-trade coffee cooperative (and brought back coffee for family and friends), and experienced the incomparable Tirimbina Chocolate Tour (which took us on a journey of discovery from cocoa beans to delicious chocolate!). We went on a guided night hike, and experienced the nocturnal forest and its creatures. We had our meals in an open-air dining area, surrounded by feeding stations filled with forest birds.

After Tirimbina, we continued our voyage of discovery up winding mountain roads to the famous Monte-verde Cloud Forest, on the continental divide. Our hiking there took us to a mountaintop with a 50 mile view that encompassed both coasts, and gave us the opportunity to see some of the spectacular birds (850 species in all) that call Costa Rica home—including the Resplendant Quetzal, Central America's rare 'bird of paradise'. Next stop was the active volcano Arenal, whose recent eruptions are legendary (though it was quiet when we were there—only little puffs of steam). Then to the cowboy town of Fortuna,

to experience their yearly 'Tope' (horse festival)...and then we eased on down to the Pacific Coast. Another boat expedition on the Tarcoles River brought us face-to-face with local wildlife (including smiling crocodiles!). Our final stop before returning was the tropical paradise known as Manuel Antonio National Park, where the forest (complete with parrots and monkeys) meets the sea (with secluded beaches, coral reefs, and surf).

The people of Costa Rica have a saying, 'Pura Vida!' which translates as 'pure life'; this expresses their outlook, the day-to-day enjoyment of life that they feel. As we returned from our adventure, we found that the magical land of Costa Rica has stayed in our minds and hearts...

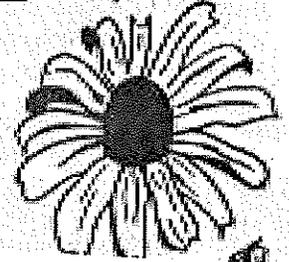
and we hope to return.



Larry

The Last Prairie

FIRE WITH FIRE



Biological control just sounds like an oxymoron. Releasing an exotic species to control an exotic species is always risky business. At least the scientific community is treating this with much more due diligence. It can take up to twenty years of study and trials before approving a release of something 'not from around here'. The control 'agent' must complete its life cycle on the 'host' (invasive species to be controlled) from start to finish (Van Driesche et al. 2002). If the larvae or adults depend significantly upon existing native plants, the United States Department of Agriculture will not allow the prospective attacker into the wild. Still, after all this rigorous testing, the metaphorical eye has only just begun its blink. It is simply not enough time to understand everything that will happen with the new

resident, which might dwell in its new residency until the end of the world. Year after year, new things may find ways to 'utilize' it, and it may find ways to 'utilize' new things.

Do we really need assistance from overseas talent? Can we not simply do battle with these ruffians until our own ecosystems 'figure out' how to deal with them? Hey, it could happen. Invasive species are tough, but Mother Nature hates a monoculture; just look at your lawn for confirmation. Granted, the 'diversity' may be mostly exotics, but unless a place was obliterated (plowed, paved, Superfund site), there are likely a few natives hanging on in every heavily-invaded area. Our violated natural communities will eventually balance out in one way or another. The subsequent question to this realization is always "but at what cost"? How many extirpations, and how many extinctions must occur before the dust settles? The only conclusion I can reach is: "too many". So, we manage what we can, but there are always too many acres, and too little time. This seems to be the common theme among natural resource managers, and also the answer to the above questions. As things begin to spiral out of control, we hold on tight to our tiny, relatively pristine, pixel-sized areas and fantasize about buckthorn that disappears with a magic wave of the hand. Since that rarely (if ever) happens, we hazard to reunite our alien weed species with some old adversaries from across the pond.

We already have some successful introductions. The Galerucella Beetles (two nearly identical species often present together: *Galerucella calmariensis* and *G. pusilla*) are the most famous. They eat the infamous purple loosestrife (*Lythrum salicaria*), lay eggs, and then their larvae eat it too. Where beetle populations are high, I have seen adults eating other species, but never to defoliation like loosestrife. So far, everything is going according to plan.

Now, let's view that risky business thing from another angle. For our new roommates, the loosestrife-loving, happy Galerucella Beetles, infested wetlands all over the United States are truly their 'land flowing with milk and honey'. Imagine you are reared in some laboratory somewhere, placed in very high-tech plastic containers, transported to a purple-haze wetland and then... freedom! Oh, glorious freedom! To crawl and fly where you will! To do as you please! Now, if only there was some food... why, you happen to be resting on some right now! And there's another plant over there... and there... and there. In fact... [*slowly pan camera out and up, make sure to catch purple field against the green tree line for contrast, pause for dramatic effect and... cue heavenly music*] there's a fuchsia-colored flowery feast for as far as your little bug eyes can see! Hallelujah on high!

So, the little beetles start being fruitful and multiplying. At the same time, our native predatory insects take notice of their particular cornucopia, consisting of beetle-shaped morsels that taste deliciously exotic; their populations begin to rise also. Concurrently, the ever-mighty purple loosestrife begins to wane ever so slightly. Is anyone else seeing red flags popping up? According to Corrigan and MacKenzie (2003), this is what happens: 1) Beetle populations skyrocket. 2) Loosestrife begins to show feeding stress. 3) Predators of beetles show a rapid increase in numbers. 4) Beetle populations crash with the increase in predation and reduction in food. 5) Loosestrife recovers while beetle populations are low. 6) Beetle populations begin to rise and the whole thing starts over again.

This needs to happen, and will happen with any successful biological control introduction. There is simply an abundance of food for the control agent to 'control'. The populations will cycle drastically until the target host is 'beaten down'. Years after an introduction, the goal is to have both agent and host be a regular part of the system, keeping each other in check. That is an important distinction; the goal is balance, not eradication. We want to literally decimate invasives, but this strategy alone will likely not extirpate them.

There are controls in the works for many of our invasive species. Cornell University is a particular hotspot for this type of research, and they are good at what they do. Even still, while it is a common enough practice in our human history, we should always take exquisite care when lighting the other end of a burning candle. On the other hand, what's a body to do? One thing is certain; biological control of invasive species is here to stay—buckle up!

Mike

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RETZER NATURE CENTER

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Friends of Retzer Nature Center

The Friends of Retzer Nature Center is a registered, 501 (c)3, organization dedicated to encouraging, perpetuating, and promoting the work of conservation and natural resource education.

The organization seeks the involvement of the community in the form of financial and volunteer support to work toward the continued growth and improvement of Retzer Nature Center. If you would like to become a member or view some of our projects and activities, please visit our web site at <http://FriendsOfRetzer.org>.

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