



Highland Lakes Steward

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MISSION

The Texas Master Naturalist program is a natural resource-based volunteer training and development program sponsored statewide by Texas A&M AgriLife Extension and the Texas Parks and Wildlife Department.

The mission of the program is to develop a corps of well-informed volunteers who provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities for the state of Texas

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HELLO TO A RIVER

By Linda O’Nan

Lake and river season is here! Don’t you just love to slide your kayak or canoe into the water early in the morning and just glide along sleek as an otter? The way the water meets the sky is a treat for the senses. The grand solitude-- birds and turtles are only mildly startled as you make your way up the main body of the lake. The great blue herons that nest here on my lake look and sound prehistoric—the grandsons call them “pterodactyls”!

I live on Lake Marble Falls and recently witnessed the “Big Bridge Bang”—the demolition of the old bridge, truly a memorable event shared with a fellow naturalist on a recent Sunday morning. Paddling our way up the lake in a tandem kayak, it was just a perfect morning. The early dawn quiet would be short lived. An osprey often hangs out at the mouth of the creek arm below my house, and I had hoped we would catch a glimpse of him. Kingfishers often lead the way out to the lake in front of your boat. After 25 minutes or so at a good dual pace, we positioned the kayak in the “safe zone” along with a flotilla of other boaters awaiting the big event. We were surprised to see a nearby boat with official-looking types aboard being piloted by a driver with a duck tucked under his arm! We guessed the duck was being officially escorted from the “bridge over troubled waters”....anyway, before we hardly had time to react, the thunderous implosion occurred quickly. The sound reverberated through the water and felt and sounded



unbelievable. It was a spectacular sight and one I will never forget.

Some of the best times in my life have been spent on or around lakes and rivers. The “need for speed” motorboating and skiing as a teen have been replaced with the quiet heady charms of kayaking. The ocean-style kayak is the perfect vehicle for a less than agile aging river rat. It always runs and starts up as long as I do. So get out there and enjoy all the wonderful waterways here in the Highland Lakes. We are so fortunate to have so many opportunities to explore.

One of my favorite books, and required reading for students at Texas State University, Goodbye to a River, by John Graves, will inspire you to seek out your own river adventure. Check out Lake Marble Falls, too. Don’t forget to look for the lucky duck.

Old girl scout canoeing song: “My paddle clean & bright flashing like silver, swift as the wild goose flight, dip, dip and swing.”

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Please submit pictures, articles, reports, stories, announcements, etc. to

chili865@gmail.com.

Photos should have captions and appropriate credits. The deadline for submissions to each month's newsletter is the 10th of the month and publication will be by the 15th.

MAY MEETING

by Pat Campbell

The next meeting for the HLMN will be May 1. We are going to go to Ed and Sue Lilly's ranch outside of Lampasas. After arriving about 9:45, we are going to go through three stations - Landscaping with native plants, gardening, and a riparian area. This should take us to lunchtime. A business meeting will follow. We need to RSVP to them by April 25 to sue.lilley@hotmail.com or 512-556-6646. Please remember to bring drinks, your lunch, lawn chair, sun protection, walking shoes and whatever else you think you will need for the day.

The ranch is located at 889 CR 3040. Maps were passed out at the meeting. If you did not get one, take I 83 out of Lampasas to FM 580E. Turn right and go 2.6 miles to CR3040, which will be on your right. Go .7 miles to 889. Turn left into drive and proceed about half mile until you see the house. There will be plenty of parking. It is generous of the Lilly's to share their ranch with us, so hope we all turn out to support them. It should be a fun day.

See you all there!

APRIL MEETING

Photo by Jerry Stone

Bonnie Baskin from the Hill Country Science Mill located in Johnson City provided us with details on their goals and plans. The Hill Country Science Mill, a regional science center, won't actually open until 2014. There will be amazing resources available geared primarily to children to encourage them in pursuing the sciences. There will possibly be volunteer activities for the future.

Bonnie, educated at the University of Miami, is a PhD and has been a scientist and biotech entrepreneur. She founded and ran two biotech companies, and sits on a number of non-profit and for-profit boards. She certainly has a great science background and we are very fortunate to have her expertise and energy in bringing her dream to fruition.



FRIENDS OF THE UPPER HIGHLAND LAKES NATURE CENTER (UHLNC)

by Billy Hutson



March has been a busy month with several hundred hours of volunteer service dedicated to the HLMN through the nature center friends group. Trails are almost finished and the fence is perhaps 1/2 done. Generous volunteers have made all of this happen with several new class members making a big difference, thanks to Terri Benge, Bob Caruthers, Cris Faught, Jo Ellen, and Paula, along with the regular volunteers, both members and nonmembers of the HLMN. We are working our way to the big opening on May 25th which is free to all the public. Please go to <http://www.rprtexas.com/> and scroll to May 25th events and see the fantastic array of military and public support agencies that will be displaying their prowess.

Special thanks goes to our strippers who have done a great job in stripping ashe juniper posts for the peripheral fence around the nature trails that we have been working on.

Our lineup of stations for the big event has 12 stations including the following:

- Bird Station- Sherry Bixler
- Reptiles - Robert Lindsey
- ◆ Archaeology- LUAS
- ◆ Water conservation- Watershed Team

- ◆ Green Marble Falls- Gabe and Jennifer Jones
- ◆ Art in nature- Joan Wyde and Cindy
- ◆ Native Americans- The Garcias
- ◆ Entomology/Monarchs- Joan M. and Sondra
- ◆ Art in nature - Carol Navarro Adams
- ◆ Art fun- Heike Jost - (501c3 free art organization)
- ◆ Crime stoppers station- with jail for kids
- ◆ Geology - Chelsea Weathers (Senior at U.of Col.,)
- ◆ Hawking- at the entrance by the one and only - Phil Wyde- the Hawk himself.

In addition we have approx. 12 volunteers to help that day and welcome anymore that wish to participate.

It's going to be a barrel of fun and excitement so plan that day in your calendar.

The Llano Uplift Archaeological Society (LUAS) has dug several test holes to find the nature center prehistoric sites. Several sites have been successfully tested and progress is being made toward a permanent excavation site/display. Keep up with our common web site (when finished in a few weeks) for further updates.

FINCHES

By Joanne Fischer

I have to begin by calling attention to the fact that if you read the March issue of the Steward, you noticed that Sherry Bixler “signed off” from the bird series that she has written for almost three years. We are all sad that she decided to take a break because we have enjoyed and learned much from the articles she submitted each month. However, that being said, I have decided to try to step in and fill her shoes – large as they may be (Sherry – that’s large figuratively, not literally!)

I decided since many of us have fed two voracious species this winter (American Goldfinches and Pine Siskins) that I would focus on finches. I will also include the Lesser Goldfinch since it is in the same family and genus and is a year round resident of Texas. Finches, including the Pine Siskin, are in the family Fringillidae and the three species mentioned are all of the genus *Carduelis*. All are primarily seed eaters with a penchant for thistle (niger) and sunflower seeds. They do also eat seeds heads on grasses and flowers as well as buds on trees and are very active and acrobatic in their foraging activities.

Pine Siskins and American Goldfinches breed in coniferous and mixed forests across the northern United States and southern Canada. They nest late in the season compared to most other songbirds. The late breeding is likely an adaptation to food supply since one of the finches favorite foods is thistle seed and it is most abundant in July and August in their breeding territory. An added advantage of the late breeding, however, is that by late June most female Brown-headed Cowbirds have stopped laying eggs so fewer of the



American Goldfinch - Breeding Plumage

finches nests are parasitized.

The finches are irruptive migrants throughout the south (including Texas) and may appear in large numbers one winter and fail to appear the next. This migratory behavior is in response primarily to dwindling food supplies in their breeding ranges rather than to cold weather.

A fascinating aspect of the American Goldfinch is its molt pattern. This species has a complex alternate molt strategy which means it has a basic and an alternate plumage in each annual cycle. Or, put another way, it has a distinctly different “breeding plumage” from its “winter plumage”. People who are familiar with the American Goldfinch up north during the breeding season hardly recognize the bird during the winter months.

The adult male's basic plumage (winter) is a rather



American Goldfinch - Winter Plumage

(Continued on page 5)

PEST OF THE MONTH

CHINABERRY, *MELIA AZEDARACH*

By Fredi Franki

Chinaberry is on the Texas Forest Service's list of "Dirty Dozen" meaning it is among the worst of invasive plants in Texas. The tree has some redeeming qualities; very drought tolerant, grows in poor soil, provides good shape, has lavender flowers in spring, and nice fall foliage color. The tree was introduced here in the 1800's from Asia and was sold in the nursery trade.

Chinaberry has a proven record of being invasive. It grows 5-10 feet in the first two years in spite of soil or weather conditions. It has few diseases and spreads easily. It will out-compete native vegetation and take over the landscape. Birds love the berries and that helps spread the plant far and wide. The root system sends up sprouts, forming a dense thicket around the original tree. The berries and other parts of the tree can be deadly to pets, livestock, and humans if ingested. Arsenal AC, Pathway, Garlon 3A and Garlon 4 will successfully kill Chinaberry when applied to a freshly cut stump. Always research and read the label before use.

An invasive species is defined as a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.



Finches (Continued from page 4)

drab olive color with broad white wing bars. The pre-alternate molt which begins in early spring (breeding plumage) involves primarily head and body feathers. At this time the male becomes a bright, glowing yellow with a small black cap.

In Texas we often find the Pine Siskin in flocks with the American Goldfinch. The Pine Siskin is brown above and pale grayish or buffy below and is heavily streaked with darker brown. Characteristic are yellow patches on the flight feathers of the wing and at the base of the deeply notched tail. The sexes look alike. Pine Siskins can be quite quarrelsome at feeders and often lunge at each other and other species visit-

ing the feeders.

The Lesser Goldfinch is a year round resident of the southwestern states and inhabits dry brushy country and open woodlands. The Lesser Goldfinch does not molt to a drab winter plumage like the American Goldfinch. The male is glossy black above and yellow below with contrasting white patches in the wings and tail. The female resembles the female American Goldfinch with a greenish back and yellow underpart, but she lacks the whitish rump of the American Goldfinch.

A little known fact about all of these finches is that they are known to incorporate imitations of other species' calls into their song. Lesser Goldfinches use many "borrowed" calls, Pine Siskins fewer and American Goldfinches the fewest.

THE VERY INTERESTING AND MISCONSTRUED ROLY POLY PILL-BUG (*ARMADILLIDIIDAE VULGARE*)

By Phil Wyde

I suspect that many of you will stop reading this article as soon as you see the pictures of the main subject of this article, *Armadillidium vulgare*, most commonly known as roly polies or pillbugs. After all this creature is certainly not warm, cuddly, cute or colorful. However, if you do read on I think that you will be amply rewarded. *Armadillidium vulgare* is a very interesting biologic entity, worthy of any Master Naturalist's attention. As a bonus, with what you will learn by reading to end of this article you can become a wonderful and brilliant hero to your grandchildren, grandneices and grandnephews who will marvel as you tell them a host of wondrous things about one of their favorite bugs. And there is even something for those of you that don't have grandchildren, grandneices or grandnephews, but are gardeners. I am sure that you want to know if the roly poly bug is good or bad to have in your garden or compost pile. As for me, I primarily picked roly polies to write about because although I see them almost every day in all sorts of places, I did not know a thing about them! Writing this article gave me a chance to rectify this deficit. (I have to admit, that I also wouldn't mind being a hero in the eyes of my grandchildren – or have a group of young children look at me in awe on one of our interpretive hikes.)

Before discussing the biology and biological classification of roly polies, I would like to tell you some general things about these creatures, the first of which is a partial list of some of the common names for *Armadillidium vulgare*; this list includes the names "pillbug," "chiggy-wig," "potato bug," "roly poly" and "woodlouse." As you will already have noticed, I, like most children, prefer the name roly poly. I am sure that I do not have to tell you how these creatures got this unusual name.



Figure 1. Common roly poly pillbug from ref. 1)



Figure 2. Roly poly pillbug in defensive ball; from ref. 1.

But just in case there are a few like Cindy Sterling that cannot figure it out, it comes from the ability of pillbugs to roll into a ball (see Fig. 2). This ability to form a ball with their bodies is called "conglobation" and is not done just for fun; apparently it is a key defense

mechanism of roly polies and other creatures that do this. (Conglobation may also reduce respiratory water loss (ref. 1 and 2).) An indication of the importance of conglobation to the survival of roly polies is the fact that even new born roly polies have the ability to roll into a ball (ref. 7).

Roly polies are found in many places in the world, but most commonly in temperate forests, rainforests and grasslands (ref. 5). They are almost always found in moist areas and are especially common under dead logs, rocks and decaying leaves. They begin life as an egg, but soon hatch into tiny roly polies that are tiny images of their parents. As they grow they molt and shed their old exoskeletons. They repeat this molting and shedding process up to 12 times before becoming about 0.75 inches long and full adults.

Throughout their lives roly polies are covered by a hard exoskeleton made of chitin. Like insects, WHICH THEY ARE NOT, roly polies have a body composed of three parts: the head (which is fused to the first segment of the thorax), the thorax (the 7 segments of the thorax that are not fused to the head are called the pereon), and the abdomen (which is also called the pleon). Pillbugs have 7 pairs of jointed legs and 2 pairs of antennae (but one pair is barely visible). The antennae, mouth and simple eyes are located on the head. A pair of abdominal uropods are at the posterior end of the pillbug. These specialized parts both help the locomotion of the roly polies as well as aid these creatures in taking up water.

Pillbugs primarily eat decaying plants and animals, but they also can feed on living plants especially when the plants are young and have tender leaves. Many different animals eat roly polies. I have already indicated that the main protection of roly polies is their ability to roll into an armored ball. They apparently can also emit a foul odor which may deter some of their predators and thus serve as an ancillary protective mechanism (ref. 7).

As much as it may pain you, it is worthwhile looking at the biologic classification of roly polies (ref. 1). They belong to the kingdom, Animalia; phylum, Arthropoda; subphylum, Crustacea; class, Malacostraca; order, Isopoda; suborder, Oniscidea; family, Armadillidiidae; and genera, Armadillidium. Even for those of you totally turned off by taxonomy, you should be beginning to radiate with excitement because you recognize from the list of names just presented that roly polies are crustaceans, arthropods and invertebrates, and thus are related to such well-known creatures as

shrimp, crabs, crayfish, krill and barnacles – and hopefully just after your excitement starts to subside, you realize that all of these familiar crustaceans live in water and the subject of this article does not. I trust that then some of you will have an epiphany and realize that Armadillidiidae are TERRESTRIAL crustaceans. Think about it! How many people, even Master Naturalists, know this?! Unfortunately, I am afraid the fact that roly polies are terrestrial crustaceans will not impress your grandkids, grandnieces or grandnephews. What should impress them, and children on your interpretive hikes, is that you know that roly polies are NOT an insect. You can ask them how come they are not, and then wow them with the fact that insects only have six legs and roly polies have many more than this. (There are a number of other reasons that roly polies are not insects, but these are more likely to bore children than impress them.)

Before leaving the subject of biologic classification and get to the really neat things about roly polies, you should be aware that there are 15 different genera in the family Armadillidiidae. They are all separated from other woodlouse families by the two-segmented nature of their antennal flagellum, by the form of their uropods and by their ability to roll into a ball (ref. 1 and 4).

It turns out that many children prize roly polies and try to keep them as pets. Would you believe that this can be done (ref. 1)? Please note, to have happy roly poly pets you need to keep them in very moist habitats with low light. For you skeptics, roly polies can live two to three years in captivity (ref. 1 and 3) and possibly 5 years (ref. 7). If you have any questions, ask Sheryl Smith-Rogers, a member of our Master Naturalist Chapter and the author of reference 3.

Let's get to the fun stuff. You already know that roly poly pillbugs are crustaceans, not insects. But do you know that they breathe through gills (ref. 6)? (That is why they require moist environments to breathe.) Interestingly enough, although they have gills, roly polies cannot survive if submerged in water (ref. 6). (I should add that roly polies do not get all of their oxygen from gills; they also have a primitive lung-like organ that helps them survive in their terrestrial habitat; (ref. 7).

Another interesting fact is that female roly polies can have one to three broods per year. When their eggs are formed, the female places them in a brood pouch (up to 50 at a time). The pouch is located on the underside of the female (ref. 6 and 7 and it is

formed by overlapping thoracic plates. After hatching the tiny juvenile pillbugs remain in the pouch for several days before exiting to face the world. Interestingly, the pouch that holds the eggs and just hatched juvenile roly polies is called a marsupium, no doubt because of the rough similarity of the roly poly birthing process to that of marsupials.

Get this. Roly polies do not urinate and can drink using their anus. They apparently do not have to urinate because they can tolerate ammonia gas, which they can pass directly through their exoskeletons (ref. 6). They do not have to drink using their anus since they can also drink using their mouths. As if both of these traits are not enough, roly polies also eat their own solid wastes (feces). It turns out that each time a pillbug excretes solid waste, it loses a little copper, an essential element that it needs to live. In order to conserve this metal, it consumes some of its waste. (This process is called coprophagy and is practiced by a number of other species.)

Did you know that sick roly polies can turn bright blue and that their blood is blue (ref. 6.)? They don't turn blue every time that they are sick, only if they are infected with iridovirus. The color change is due to reflected light from virus-infected areas. The cause of

the blue colored blood is that their blood is rich in hemocyanin. Unlike hemoglobin which contains iron, hemocyanin contains copper ions which when oxygenated, appears blue.

Other interesting facts about roly polies (taken from ref. 7) are that roly polies can die if left exposed to sunlight (explaining their predilection for hiding under rocks, logs and leaves); roly polies cannot bite or sting; they are cold blooded and react strongly to humidity levels and temperature levels, as well as to light. Julie Curl (ref. 7) has observed social behaviors in roly polies. These behaviors include fighting over food and communicating by tapping each other with their antennae.

So do roly poly pillbugs serve any "useful" functions (ref. 7; this is of course from a human perspective). One positive function is that they help decompose organic material from dead plants, animals and waste products and help return this material back to the soil. In addition since roly polies are sensitive to changes in the environment they can be used as biological indicators for the health of ecosystems. Still another positive is that these bugs are a food source for other animals. Finally, roly poly bugs may eat the eggs of harmful insects such as stink bugs.

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GALLERY

By Jerry Stone



Pipevine Swallowtail on Texas Paintbrush taken 3/14



Pipevine Swallowtail on Azelea taken 3/23 in Horseshoe Bay.



Slender-Stem Bitterweed taken 3/23 in Horseshoe Bay.



Huisache Daisy taken 3/27 in Horseshoe Bay.



Claret Cup Cactus taken 3/29 in Horseshoe Bay.



Winecup taken 3/30 near Spicewood.

GALLERY

By Jerry Stone



Rain-Lily taken 4/6 in Horseshoe Bay.



White Prairie Verbena taken 3/30 near Spicewood.



White Prickly Poppy taken 4/1 in Horseshoe Bay.



Lace Cactus taken 3/31 in Horseshoe Bay.



Common Checkered-Skipper on Lindheimer Daisy taken 3/25 at the Trails of HSB