



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 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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ORIOLES AND TO FEED OR NOT TO FEED

By Sherry Bixler

Colorful orioles are favorite birds in both suburban and rural areas. Their melodic songs and bright colors can be heard and seen spring through fall in the hill country where we have four species. The Orchard, Bullock's and Scott's Orioles are breeding birds while the Baltimore Oriole is a migrant. Hooded Orioles have been reported on rare occasions. Other orioles found in North America are the Altamira and Audubon's Oriole in south Texas, the Streak-backed Oriole in southern Arizona and the Spot-breasted Oriole in Florida.

Orioles are generally 7 to 10 inches long with Orchard Orioles the smallest. They are insect eaters with sharp, pointed bills, but will eat fruit and nectar. Orange halves are a favorite and oriole feeders provide nectar since hummingbird feeders have openings that are too small for orioles. Male orioles are brightly patterned in orange, yellow or rust with black markings while females are duller and mostly yellow.

At one time the Baltimore and Bullock's Orioles were lumped together and known as Northern Orioles but scientific advances have led experts to re-split the two species.

Orioles are master weavers and may suspend their finely woven nests from a



Orchard Oriole

limb or weave it around a branch. They lay 3 to 5 eggs and are frequent cowbird hosts. Carol Adams and I removed cowbird eggs from one Orchard Oriole nest at Inks Lake three times in a one week period.

Providing orioles and hummingbirds with nectar should be carefully monitored as fermented nectar can cause liver damage. Damp birdseed can also be a problem as it provides a home for the *Aspergillus fumigatis* mold which can be lethal for birds. Feeding birds

began in earnest in the 1950's and today at least a third of U. S. households feeds birds. The range expansion of some species has been linked to having this additional source of food, since food availability at the edge of a species' range defines that range. Birds will move into new areas if more food is available. Feeding birds also helps weaker birds survive, especially in the winter.

Drawbacks of feeding birds include attracting sick birds that may spread disease and attracting predators such as cats and hawks. Undesirable species may also visit the feeders. But advantages far outweigh disadvantages if care is taken to provide fresh food. A tree or brush pile fairly near the feeder is useful for cover when predators strike. And watching the ever-changing bird life around a feeder is well worth the effort.

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OCTOBER MEETING

by Linda O'nan

Our October 3 HLMN meeting will be held at the LBJ EVENT CENTER, in Johnson City, just west on Hwy. 290, at 1 PM. Join us for lunch at the Pecan Street Brewing Co. on the square in Johnson City at 11:30. Featured speaker is Dr. Rudy Rosen, a research professor in the biology department at Texas State Univ. where he is Director of Conservation Leadership Initiative. Dr. Rosen has served in international and national executive leadership positions for 3 of the nation's largest nonprofit conservation advocacy organizations. He served as environmental cabinet member for 2 governors and was director of fish, wildlife and coastal public agencies for Texas and Oregon. He has served on 130 national and international boards and commissions. He has published books and over 400 articles on conservation issues. His topic will focus on water/watershed issues. We are fortunate to welcome him to our group this month, so don't miss this important program.

WATERSHED PROJECT

by Sammye Childers

The Watershed Project Team is pleased to announce that an exhibit will be presented before/after the October HLMN General Meeting, to share with fellow members the recent assets that HLMN has acquired. This will include the Watershed Model, beautiful posters and the permanent display components that will be available to all members to enhance their programs and demonstrations. Please reserve time to stop by and share ideas and think of the myriad of future possibilities. The team is very excited about those possibilities and we hope you will be too.

Stewardship

An ethic that embodies cooperative planning and management of environmental resources with organizations, communities and others to actively engage in the prevention of loss of habitat and facilitate its recovery in the interest of long-term sustainability

SEPTEMBER MEETING

by Linda O'Nan,

Mike Childers Photo by Jerry Stone



For our Wednesday, September 5th monthly meeting, Bill Wren, special assistant to the Superintendent at the McDonald Observatory in Ft. Davis, Texas provided a very enlightened program on "Dark Skies". Effectively, he used some photos of several lighting situations in our area to illustrate the pervasiveness of the problem and how

good planning and investment can make a tremendous difference in the amount of light pollution we are creating..

THE MILKWEED COMMUNITY

by Joan Mukherjee



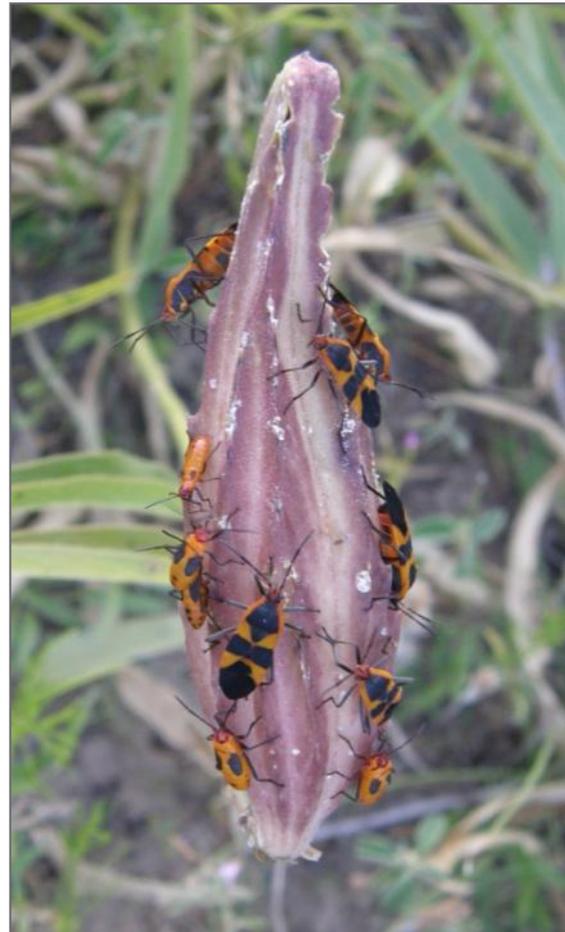
They smoothly floated by, in no hurry, completely oblivious to me. Those two jackrabbits were only one of the many wonderful experiences in my milkweed patch.

Let me begin at the beginning. I work as a volunteer monitor of monarch butterflies. Then Fred Zagst of Highland Lakes NPSOT initiated a project of collecting milkweed seed for Monarch Watch. Thus I have spent not only spring but much of summer in my patch of antelope horns milkweed, *Asclepias asperula*. Through regular visits I came to know the milkweed community.

The first milkweed started emerging in March. Soon it was blooming and the monarch butterflies began to arrive from Mexico to lay their eggs. The Monarch is an insect in the order Lepidoptera, family Nymphalidae, species *Danus plexippus*. By April I began to count eggs and first, second, third, fourth and fifth instar caterpillars. About four days after laying, the egg hatches and the first instar emerges. Each time the caterpillar sheds his skin he becomes the next instar. The baby caterpillars, first instars, make little round holes in the milkweed leaf after first removing the hair. As soon as they are big enough, they cut the

large vein at the base of a leaf to prevent the plant from flooding the leaf with poisonous chemicals. Then they eat the entire leaf, leaving no part uneaten. It may take a caterpillar an hour to cut the vein but only 20 minutes to eat the leaf. You can see where caterpillars have been by bare stems with two rows of stubs where the leaves were. They may eat some of the flowers too since the 4th and 5th instars are often found in the bloom. After about two weeks they become big fat striped fifth instar caterpillars. They leave the plant to find a safe place to make their chrysalis, often a dry twig. After about two weeks they emerge, clinging to the chrysalis shell while they pump their wings with fluid and wait for them to dry (left photo). After a few hours they sail off across the meadow. During May the milkweed begins to dry up, forming seedpods while the monarchs make their way north.

While monitoring caterpillars I began to notice bright orange and black insects on the milkweeds. They were Large Milkweed Bugs, in the order Hemiptera, family Lygaeidae, species *Oncopeltus fasciatus*.



They feed on the milkweed sap and seeds and do not harm the monarch caterpillars other than sapping the milkweed plants. Usually milkweed bugs are found on the plant in clusters of nymphs and adults (see photo prev. page). Unlike the monarch, milkweed bugs do not undergo complete metamorphosis. In a day the female lays about 30 orange eggs which hatch in about a week. The baby black-spotted, bright orange nymphs never pupate; they molt about five times as they grow and gradually transform into orange and black adults.

Soon the milkweed pods are growing fat and turning yellow, brown or a deep red. They will be ripe in May and June. Monarch Watch wants ripe milkweed seed for propagation of more milkweed plants. Milkweed does not ripen all at once and as soon as it is ripe it explodes in a blizzard of fuzzy parachutes each carrying a nice brown seed. How does one know when to pick the pod? Ripe is when the seed turns brown but the pod can be yellow, brown or red. A ripe pod feels spongy when pinched and if one places thumbs on each side of the pod's valve it should pop open and show the seed. The valve is where the pod opens and is usually wider than the other valleys in the pod---see photo prev. page. I began walking the patch morning and evening to catch the pods at their peak. That is when I met the jackrabbits, deer, a rat snake, more Large Milkweed Bugs and the Red Milkweed Beetle.



The Common Red Milkweed Beetle is a species of longhorn beetles, order Coleoptera, family Cerambycidae, species *Tetraopes tetrophthalmus*, meaning four eyes. It has four eyes because its antennae actually

bisect each eye, giving it four eyes. It has black spots and like the milkweed bug it is bright red. It too feeds on milkweed sap incorporating the toxins into its body. The beetle in the photo below left is not *T. tetrophthalmus*, but a close cousin because he has only 7, not 11 black spots.

There are 457 species of insects found to use milkweed in one way or another. The nymph of an assassin bug, order Hemiptera, family Reduviidae (photo



below) is probably using the milkweed to stalk prey. However, many insects are milkweed specialists, relying on milkweed for survival. Other specialists than those discussed above include four species of milkweed aphids, a milkweed tussock moth whose larvae feed on the plant and several species of beetles. Milkweed is a challenging plant, covered with hairs and containing a gummy, sticky latex that gums up mouthparts and contains compounds toxic to most insects. Many milkweed insects are brightly colored like the milkweed bug and milkweed beetle. Their coloring is aposematic, a red warning of the insect's inedibility. Maybe it is not a warning at all, maybe these insects know that they are inedible so they can take pleasure in being beautifully clad.

As the summer became hot and dry the milkweed plants dried up and became dormant. The insects, too, disappeared, probably also becoming dormant. July rains brought out a few new leaves but most of the plants are waiting for the winter rains to resuscitate them for a spring fling. I am looking forward to another spring and summer in the patch. I sure hope I see those jackrabbits again.

TIDBITS ABOUT CENTIPEDES

by Phil Wyde

In this article I am going to talk about a central Texas animal that we see a lot of, but may not know much about, centipedes. I am going to use the same format that I used last time. That is I will leave out the more esoteric details about centipedes and limit my information to their more interesting characteristics – of which there are quite a few.

I will start out with one of the most obvious thing about centipedes; they have a lot of legs or feet. Indeed, their name would suggest that they have 100 feet. However, as you can see from Fig. 1 of a rather typical centipede, centipedes have many legs, but most do not actually have 100. In fact, the number of legs can vary from less than 20 to over 300 (ref 1, 2). However, regardless of the number of legs present, centipedes always have only one pair of legs per body segment. Another interesting fact is that centipedes always have an odd number of pairs of legs, for example 19 or 21 (i.e., 38 or 42 legs), never an even number, for example 20 or 22 pair. I am now going to give you a fact that you can use. Millipedes (“1000 feet”), unlike centipedes, have two pair of legs/segment (ref 3). This gives you a ready means to differentiate between the two if you happen to see a many legged creature on a hike or while working in your yard. Of course, the “pede” will have to be going slow enough for you to see and count how many legs it has/segment.

Here are some more interesting generalities about centipedes (taken from ref. 1). They are usually not brightly colored (I will talk about an important exception below). Indeed, most are brown or dull reddish brown and cave dwelling and subterranean species often are colorless. Centipedes may range in size from a few millimeters to 30 centimeters (12 inches). There are estimated to be 8,000 species worldwide and they can be found above the Arctic Circle, in deserts and tropical forests. However, wherever they live they require a moist micro-habitat since unlike insects and arachnids they do not have a waxy outside cuticle (shell). Without this waxy covering they lose water rapidly through their skin (ref 1, 3, 4). Accordingly, they are usually found in soil, under leaf piles, under stones, under dead wood or inside logs, all



Figure 1. Common Centipede

places where there often is some moisture.

Trying to keep to my promise to limit this discussion, I will only talk about a few other parts of a centipede (ref 1, 4). One of their more interesting appendages is their antennae. Centipedes usually have a pair on their heads and they use these as their principle means to find prey. The head of centipedes also has a pair of elongated mandibles—which they use to pull and tear off their food. Near these mandibles are venom glands. The venom helps centipedes to kill or paralyze their prey (ref 4). Now get this. In some species (see Fig 1) the final pair of legs acts as sense organs similar to the antennae found on the head. However, these sense organs face backwards and sense things behind the centipede. The final segment of centipedes has the reproductive organs.

Interestingly, most centipedes do not have true, or even compound, eyes. Instead most have a variable number of ocelli or light sensing organs. Sometimes these are clustered to form compound eyes, but in most species the centipede sees only dark and light. Indeed, some centipedes do not even have ocelli. (Obviously Helen and Cindy, these would not even see light and dark.) Like insects, centipedes breathe through a tracheal system typically with a single opening, or spiracle, on each body segment.

Forcipules are an appendage unique to centipedes

(Fig. 2, ref 5). The forcipules are pincer-like modifications of the first pair of legs. They are used in the capture of prey, injection of venom and for holding onto captured prey. Venom glands run through a tube almost to the tip of each forcipule.



Figure 2 Closeup of Forcipules

Centipedes do not copulate to reproduce (ref 4). Males deposit a spermatophore (special case containing the sperm) for the female to take up. In some instances the male performs a courtship dance to induce the female to take up his sperm. In other instances he just leaves the spermatophore for the female to find. In temperate zones, egg laying occurs in spring and summer. In more tropical areas there is no seasonality to this very important biological act. In a few species parthenogenesis occurs (the egg can start dividing and produce young without any participation of males or sperm). In some centipede genera the fertile eggs are laid singly in holes in the soil and then covered with soil and/or leaves. In contrast, in some genera, the females show parental care, i.e., they stay with the eggs, guard them and even lick them to protect them from fungi which the eggs are very susceptible to. Some female centipedes even do more. They stay with the newly hatched centipedes until the young are ready to leave. Some species of Scolopendromorpha (giant) centipedes are matrophagic (i.e., the offspring eat their mother).

Speaking of eating, all centipedes are predators (ref 1, 3, 6). In fact, as a group they comprise one of the



Figure 3. Centipede Mother Protecting Eggs

largest groups of land dwelling invertebrate predators. They eat a wide variety of prey with insects and spiders being among their most favorite food. Within the Geophilomorph group of centipedes, earth worms appear to be the favorite food. This makes sense since centipedes of this group burrow through the soil and earthworm bodies can easily be pierced by the venomous claws of this centipede. Observations suggest that Geophilomorphs cannot subdue earthworms larger than themselves. It also appears that centipedes and spiders may frequently prey on one another. Centipedes are also eaten by a number of different invertebrates and vertebrates. Included in the latter group are birds, mice, salamanders and snakes. As you probably have already surmised, centipedes kill by grasping their prey with their powerful fangs and inject their venom. But did you know that millipedes are not predators. They feed mostly on decomposing organic matter. However, they sometimes damage very young plants by feeding on their leaves, stems and roots.

The largest centipedes belong to the Scolopendromorpha group (ref 3). These may grow to be about 6 to 8 inches long. However, lucky for us most species are less than 1.5 inches long. *Narceus americanus* (Order Spirobolida) in west Texas grows to 4 inches long. Redheaded centipedes (discussed below) can grow even bigger. Speaking of growing, additional leg-bearing segments are produced during each molt and each molt represents a stage (instar) in the centipede's life. Some centipedes have been known to live 6 years.

Centipedes can be a nuisance, but usually do not bite unless provoked (ref 3). Usually the bite is not of medical significance except to small children and those allergic to the centipede's venom. Millipedes do not bite, but can release an irritating fluid from special glands that reside at the base of their legs if disturbed. This fluid can be irritating to the skin and eyes. (Some species can squirt their fluids several inches.)

That brings me to my last topic, red headed centipedes (*Scolopendra heros*) of which I have seen several since I moved to this area (ref 6). These centipedes are fast moving, aggressive and large (average 6.5 inches). They have been called "giant desert centipedes," but this name is misleading since they can be found in Arkansas, southern Missouri, Louisiana and Kansas as well as Oklahoma, Texas, New Mexico, Arizona and Northern Mexico. There are other color variants, but I have only noticed ones that match the centipede shown in Fig 4. As you already know since you read everything that I write, the bright coloration is known as "aposematic" coloration (a coloration that is thought to function as a warning for potential predators to stay away).

As mentioned above most centipedes eat insects, spiders and things smaller than themselves. However, centipedes belonging to the Scolopendromorphs

("giant" centipedes) have been found feeding on toads, small snakes and vertebrates. Moths are a preferred diet for captive giant redheaded centipedes (ref 6). Unlike the common centipede, the bite of redheaded centipedes can be quite painful.

I hope now that you know more about centipedes and millipedes you will look at them in a favorable light. Also think about all of the things that you can tell your charges or fellow hikers if you see one on an interpretive hike.

References

<http://en.wikipedia.org/wiki/Centipede>).

Arthur, W. 2002. "The interaction between developmental bias and natural selection from centipede segmentation to a general hypothesis". *Heredity* 89 (4): 239–246.

<http://insects.tamu.edu/fieldguide/cimg379.html>.

Lewis, J.G.E. 2007. *The Biology of Centipedes*. Cambridge University Press. ISBN 978-0-521-03411-1.

Fox, R. (June 28, 2006). "Invertebrate Anatomy OnLine: *Scutigera coleoptrata*, house centipede". *Lander University*. <http://webs.lander.edu/rsfox/invertebrates/-scutigera.html>.



Figure 4 Red Headed Centipede

GALLERY

by Jerry Stone

These pictures were taken on 9/3 of an Eastern Carpenter Bee (*Xylocopa virginica*) on Esperanza (*Tecoma stans*) in my backyard in Horseshoe Bay. The bee was robbing nectar by slitting the sides of the esperanza flower tubes. The flower picture clearly shows these slits. According to Kim Bacon who provided to bee identification, the bee is “providing very little if any pollination, just a stop at the bar before heading home”.

It is a male Eastern Carpenter Bee as determined by the white face, and thus does not have a stinger. One can differentiate the Carpenter bee from a bumblebee as bumblebees have an abdomen that is completely clothed with dense hair.



GALLERY

by Jerry Stone



Photo of Snow-on-the-Mountain (*Euphorbia marginata*) taken on 8/31/12 in Horseshoe Bay. The showy leaves are variegated green and white. The actual flowers are tiny and are surrounded by white 5 petal-like bracts.



Skeleton Plant (*Lygodesmia texana*) taken on 8/31/12 in Horseshoe Bay.



Buffalo Bur (*Solanum rostratum*) taken on 8/30/12 in



Gay-Feather (*Liatris mucronata*) taken on 8/30/12 in the Round Mountain area.



Queen Butterfly (*Danaus gilippus*) taken on 8/11/12 at Trails of Horseshoe Bay.

GALLERY

by Jerry Stone



Fall Gumweed (*Grindelia lanceolata*) taken on 8/30/12 in the Round Mountain area.



Dwarf Dalea (*Dalea nana*) taken on 8/11/12 at Slickrock Creek in Horseshoe Bay.



Lindheimer's Morning Glory taken on 8/11/12 at Slickrock Creek in Horseshoe Bay.



Bluehearts (*Buchnera floridana*) taken on 8/11/12 at Slickrock Creek in Horseshoe Bay.



Buttonbush (*Cephalanthus occidentalis*) taken on 8/21/12 at Slickrock Creek in Horseshoe Bay.

SEPTEMBER - OCTOBER EVENTS & VOLUNTEER OPPORTUNITIES	
Texas Stream Team Monitoring Training at the Waco Wetlands	Sep 22
Kids Day Out Burnet - Galloway - Hammond Recreation Center	Sep 22
Entomology Specialist Training College Station, TX	Sep 24-28
Migratory Dragonfly Short Course Austin, TX	Sep 29 9:30am-4pm
Renewable Energy Roundup and Green Living Fair Frederickburg, TX	Sep 29-30
FUTURE EVENTS & VOLUNTEER OPPORTUNITIES	
HLMN October Monthly Meeting - Dr. Rudy Rosen - Water/Watershed Issues LBJ Conference Center - Johnson City	Oct 3 1pm
Fall Vegetation Survey Training (4 Sessions available) Lady Bird Johnson Wildflower Center	Oct 3-6
Native Plant Society of Texas Annual Symposium Kerrville, TX	Oct 4-7
Monarch Biology, Ecology & Research Cibolo Nature Center	Oct 12 9am-3pm
The Monarch Larval Monitoring Project Cibolo Nature Center	Oct 13 9am-noon
Refuge Week Balcones Canyonlands National Wildlife Refuge	Oct 13 8:30am-4pm
Texas Native Plant Week Various activities providing volunteer and advanced training opportunities	Oct 14-20
Fall Vegetation Surveys - Tuesdays thru Saturdays until completed (usually 2-3 weeks) Lady Bird Johnson Wildflower Center	Oct 16-finish
Native Plant Festival - Native Plant Society - Highland Lakes Chapter Inks Dam National Fish Hatchery	Oct 20 9am-3pm
Texas Master Naturalist Conference Camp Allen, Navasota, TX	Oct 26-28
Rainwater Revival http://rainwaterrevival.com/ Boerne, TX	Oct 27
Texas Society for Ecological Restoration Annual Conference - txser.org Rio Grande Valley & World Birding Center, Weslaco, TX	Nov 2-4
Project Feeder Watch New Season begins Your Backyard	Nov 10
HLMN Galveston Field Trip Galveston Island	Nov 11-15
4th Annual State of the Prairie Conference Kingsville, TX	Dec 6-9

For volunteer opportunities and events scheduled at Inks Lake State Park, Blanco State Park, and Balcones Canyonlands, Balcones Canyonlands Preserve, check these websites for information:

http://beta-www.tpwd.state.tx.us/state-parks/parks/find-a-park/inks-lake-state-park/park_events/

http://beta-www.tpwd.state.tx.us/state-parks/parks/find-a-park/blanco-state-park/park_events/

<http://www.fws.gov/southwest/refuges/texas/balcones/>

<http://friendsofbalcones.org/>

<http://www.ci.austin.tx.us/water/wildland/onlineregistration/ecowebevents.cfm>

Please submit pictures, articles, reports, stories, calendar and event entries, 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.