



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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TEXAS MUSSELS

By Billy Hutson

1. What is a Mussel?

A mussel is a bivalve much like an oyster or a clam. There are 57 Genera and 344 Species in the USA. 52 of these species have been found in Texas. 35 of these species have gone extinct in the USA since they are thought to have evolved in the Tennessee River Valley and 4 of those are now missing from Texas. They have an elaborate reproductive system in that they attract host fish through various schemes so that the Glochidia (larva) are attached to the fishes gills or fins for several weeks before dropping off to develop on the water floor. They are parasitic, but don't harm the fish host. Female mussels have unique methods of attracting the fish host by sporting structures that look like insect larva in order to get the fish to eat them so that the Glochidia can attach to their gills.



Texas endemic *Quadrula aurea*, Golden orb.
 Guadalupe River, April 2006

2. Importance of Mussels

Mussels have had important uses for many years by man. Native Americans harvested them for tools, ornamentation and food at a tolerable rate but man has since overharvested them on many accounts. The Spaniards over-collected them for their lust for pearls, the button industry put the pressure on them until synthetic buttons came along, while pollution and rapid water level changes have taken their nasty toll in the PROGRESS of man. But not just man has led to their scarcity. Natural more frequent scouring rains have denuded the stream

bottoms of their habitat. The Llano river for example was internationally known for its mussels and pearls but now supports very few.

They are an important part of the aquatic and terrestrial food chain in that they feed some of our land creatures (raccoons, muskrats, Gaspergou, etc) and become home and food to some of the benthic invertebrates. Their nutrient excretion or biodeposition (poop) provides nutrients for these invertebrates also. They increase water clarity because of their filtering eating habits and have various tolerances for pollution. Thus they are bioindicators for measuring pollution, like the Canary in the coal mine.

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3. Invasive Species

There are three main invasives to the mussel arena. First, there is the Asian clam (*Corbicula (spp)*), but I will not go into this one in depth as it may not actually be harmful. It has been in Texas since the 1960's and doesn't seem to have negative effects.

Another invasive that has proved to be very harmful is the Zebra Mussel (*Dreissena polymorpha*) which came into the Great Lakes in the 1980's. It has now largely eliminated native mussels from western Lake Erie. They are very destructive to water pipes where they clog them and on buoys and even on native mussels where they smother them. They escaped the Great Lakes and entered the Mississippi River all the way to New Orleans in one year. In 1999 they were noticed by an alert marina owner on a boat being transported from Lake Michigan to Lake Grapevine and reported to TPWD. It was cleaned and the Zebra Mussels were killed before launching. It was a close call for sure but they have since been seen in Lake Texoma and a stream that feeds Lake Lavon. More recently the Great Lakes have been invaded by the Quagga mussel (*D. rostriformis*) but not much data has been accrued at this time.

4. What can we, as M.N.'s do?

The duty we share with other nature minded citizens is to educate the public and be active in the identification and reporting of these species. TPWD has a course on mussels which I have taken and it is very useful for identification purposes. Wouldn't it serve our purpose to stop the Zebra mussel from entering our fresh water system? Brochures may be developed in the near future to be posted at boat launching places to advise people of this danger and help educated them. Marsha May of TPWD taught the class that I took and is now more closely tied to us as part of the M.N. system. If you want more info and especially if you want to take the classes that are coming up in January, you may reach her at marsha.may@tpwd.state.tx.us.

MUSSELS FORUM Carol Navarro Adams

Below is invitation to the Mussel forum in January. Would you please join us at one or more of the forums?

Paul Dorman, hatchery manager at Inks Lake Dam National Fish Hatchery, and I attempted to have a program at the Inks Lake State Park amphitheater this summer about the potential invasion of quagga and zebra mussels into Texas Highland Lakes. To my bewilderment, no one showed up. I grew up in the Finger Lakes area of upstate New York and was an eye witness to the damage these mussels can do to the ecology of a fresh water lake. It was awful for me to witness the zebra mussel take over my beloved Owasso Lake in central New York. It would be equally devastating to see that happen to Inks Lake, which I have grown to love. For this reason, I am passionately pursuing an awareness campaign in this area with the help of Paul and other professionals. Paul has a pulse on the potential for either species infecting the Highland Lakes and understands the gravity of the situation. He explained to me that because this little beast is hard to see in the water, its takeover of a body of water is insidiously silent and irreversible. We have joined together to sponsor a forum that will provide an opportunity to educate the local communities about these invasive mussels and explain how we can prevent this from happening here, too. Three agencies that support our natural environment are sending their top-notch professionals to this forum to spread the word.

Our very own Phil Wyde and Jerry Stacy are volunteers for the Colorado River Watch Network and

have put a mussel trap in at Inks Lake and will be monitoring the lake for invasive mussels on a monthly basis. Thank you guys! We are grateful that LCRA and other agencies are working together to monitor and create an awareness of this situation.

If you would like to volunteer to help spread the word about the forums or to assist at one of the forums, please send me an email at:

carol.navarro@tpwd.state.tx.us

Here is what you can do to help: put fliers about the forums in places you frequent, pass out wallet cards about the mussels, attend one of the forums, visit the website, develop good habits with your personal boat and teach others the same, volunteer to help educate your community about the mussels.

On January 18 and 19, Inks Lake State Park and the Inks Dam National Fish Hatchery are sponsoring three forums on the threat of invasive mussels in the Highland Lakes. Our purpose is to raise awareness of the potential for and consequences of an invasion by zebra and quagga mussels into the Colorado River. These mussels have already entered Texas waters and the likelihood of further infestation is great. Not only would this be an environmental disaster, it could have a serious economic impact on our communities.

The four speakers will be David Britton (AIS Coordinator, Fisheries & Aquatic Resource Conservation, USFWS - Division of Fisheries), Brian Van Zee (Regional Director, Inland Fisheries, TPWD), David Cowan (Clean Rivers Program Coordinator, LCRA), and Paul Dorman (Hatchery Manager, Inks Lake Dam National Fish Hatchery).

The only way to combat the spread is prevention. It is our hope that by educating the public we will keep these mussels out of the Colorado River system.

Please join us and lend your support to these efforts by attending the forum in your community. The schedule is as follows:

Burnet – Wednesday, January 18, 1:30-4:00 - Herman Brown Free Library

Marble Falls – Wednesday, January 18, 5:30-8:00 - Marble Falls Public Library

Kingsland – Thursday, January 19, 9:30-Noon - Kingsland Branch Library



Zebra mussels are small — only centimeters in size when fully grown



Hundreds of zebra mussels can catch a ride on any part of a boat left in the water.



Although small, zebra mussels cause big trouble. These mussels can quickly encrust things, such as this crayfish above.

For vital information about zebra mussels and other invasive species in Texas please visit

www.texasinvasives.org

2012 HLMN CHRISTMAS PARTY AND AWARDS BANQUET

Photos by Jerry Stone

2012 HLMN BOARD



Congratulations to the new 2012 HLMN Board: (L to R) Fredi Franki - President, Phillip Mitchell - Treasurer, Linda O'nan - Vice-President, and Sondra Fox - Secretary.

1000 HOUR PIN AWARDS!



Congratulations to: (L to R) Margy Butler, Ed Myatt, Sammye Childers, and Phil Wyde

500 HOUR PIN AWARDS!



Congratulations to: (L to R) Margy Butler, Fredi Franki, and Sondra Fox

250 HOUR PIN AWARDS!



Congratulations to: (L to R) Bonnie Mikels and John McClintock

INITIAL CERTIFICATION!



Congratulations to (L to R): Dennis Ellison, Nancy Ellison, Helen Dillon, and Vern Turner

2011 RECERTIFIED MEMBERS



Congratulations to the 2011 recertified members: (L to R) Bonnie Mikels, David Payton, Lee Kinard, Linda O'nan, Joan Stone, Marilynn Lageman, Penny Nichols, Harris Greenwood, Romelia Favrot, Melanie Huff, Cindy Sterling, Ed Lilly, Sue Lilley, Linda Fleming, Jerry Stone, Duke Dillon, Blair Feller, Maggie Booth, Phillip Mitchell, Ed Myatt



PLANTS FOR WINTER INTEREST IN THE GARDEN

POSSUMHAW HOLLY (*ILEX DECIDUAS*)

by Sammye Childers

We were not lucky enough to have possumhaws planted on our property by Mother Nature but we have now “adopted” three of them along the front of our home. They have quickly been added to our favorites list. Possumhaws would be among my top ten most valuable plants for area gardens.

Possumhaw Holly is a small tree (or large shrub) native to the Edwards Plateau and is generally grown as a multibranched, multistemmed specimen or hedge. It can reach a height of 20 feet or more but most often will not exceed 12 feet in height with the potential of a 12 foot spread. It may be grown in full sun or part shade; however, the berries, borne only on the female plants, are more abundant when the plant receives 6 hours or more of sun. It is very useful as an understory planting. You must have a male pollinator in the vicinity or supply one. It is best to purchase this plant from a trusted nursery as selections have been made for fruit that holds color throughout the winter. Late fall and winter are the best times to purchase this plant because female plants will have berries on them. ‘Warren’s Red’ variety is readily available in this area. Other varieties are available including varieties with orange or golden berries. For the first couple of years the plants may require modest pruning and training attention to attain desired shapes. Prune in early spring just before new growth begins. Be sure to allow plenty of room for this plant to spread since they look best when they develop a symmetrical canopy. Please note that the thin bark is susceptible to mechanical injury.

Possumhaws are both heat tolerant and cold tolerant. They require medium water and will grow in clay, sandy and Caliche type soils (they are very adaptive). The root structure has a depth of about 12 inches. Fertility requirements are low. They tend to sucker from the roots so possumhaws are best when forming a multitrunck screen. They have a medium to slow growth rate. They are generally free of most pest and diseases but may have occasional leaf spots or powdery mildew. Provide mulch to retain moisture but take care to leave a few inches of space around the trunk. Once established, this is a durable and drought tolerant species. Possumhaw hollies are listed in the high flammability category so might not be a wise choice for next to the home unless other precautions are taken.



The blooms occurring in March, April and May are not showy but are an excellent nectar source, especially the earliest blossoms. The leaves remain a vibrant green through Autumn, eventually turning yellow before falling. The striking red, orange or yellow berries remain on the bare branches all winter unless eaten by wildlife. The berries are much loved by birds, especially cedar waxwings and mockingbirds, and many small mammals. Possumhaw is a host plant for the dusty blue groundstreak butterfly. The plant is somewhat deer resistant but may need some protection while young.

To propagate, take softwood cuttings in June and July. They will root in approximately six to eight weeks. 2500 ppm IBA quick dips are generally recommended. A quick dip is a rooting compound that allows uniformity of coverage and more rapid absorption of IBA. IBA (indole butyric acid) is water soluble salts used as a plant rooting hormone. Plants grown from seeds may not remain true to the parent.

This plant is known by many common names including Possumhaw, Possumhaw Holly, Possum Haw, Bearberry, Deciduous Holly, Meadow Holly, Prairie Holly, Swamp Holly, Welk Holly and Winterberry. Parts of the plant are toxic to humans if ingested.

Possumhaws supply a much needed spot of color in months were little color is available. Plus, there is the added element of an unending parade of “surprises”. You just never know what the berries will entice into your landscape!

JANUARY MEETING - THE EAGLE LADY

Fred Franki



Doris Mager, aka the Eagle Lady, has visited our area several times in past years. She will be here again the first week of January. This is one of her favorite places to visit because she says everyone is so friendly and supportive. She will be our speaker at the January 4th meeting, but will not have the birds with her that day.

It was 1963 when Doris handled her first injured raptor. In 1979 she was instrumental in raising the last several thousand dollars needed to build an aviary for injured birds. To accomplish this, Doris lived in an eagle's nest for several days. In 1983 she founded SOAR, Save Our American Raptors. She has many fascinating stories to tell. Today she travels the country with a great-horned owl, E.T. and a crested caracara named Cara, plus various other raptors. Her purpose is to educate and raise funds for SOAR.

At our January meeting she will be sharing a few of her many stories. Throughout the week she will appear at various locations and showcase the birds.

INKS DAM NATIONAL FISH HATCHERY

- Saturday January 7th at 10:00 AM

The public is invited to visit the Inks Dam National Fish Hatchery. Cost: Free! Enjoy a presentation by

Doris Mager and her live raptors inside the warm maintenance building. Afterwards join us for a guided hike on our trails, visit our visitor center and our new Education Building and gardens.

INKS LAKE STATE PARK

- Inks Lake SP Annual Volunteer Appreciation Luncheon

Thursday, January 5th 11:30 am at Inks Lake State Park Maintenance Building

Inks Lake State Park staff and Friends Group would like to honor you, our beloved Master Naturalists and other volunteers with a special program and luncheon. We will have two guest presenters for your enjoyment. Jerry Stacy will be giving a presentation about the wood duck box 512-793-4689

- Birds of Prey Presentations
Friday, January 6th 3:00 - 4:00 pm and Saturday, January 7th at 1:00 - 2:00 pm, These presentations are free with park admission. Meet at the Park Store
- Owl Prowl with Doris Saturday, January 7th at 5:00 - 6:30 pm, Cost \$3.00 per person. Meet at the Park Headquarters

THE FALL, 2011 FIELD TRIP OF THE HLMN TO THE TRANS-PECOS AND THE BIG BEND RANCH STATE PARK A PERIPATETIC REVIEW

By Margy Butler



Ah, Alpine. The first stop on our journey. The beautiful lobby of the old Holland Hotel, home in Alpine for some in our group, and the place we gathered for breakfast each morning while in Alpine. A picturesque beginning for this odyssey.

Some stayed at the Maverick Inn, which is behind this adobe wall, still others at the Hampton Inn. We gave Alpine a good population boost the few days we were there. It was Homecoming weekend at Sul Ross, so we weren't the only visitors in town, but the place was dressed up and ready for company, and those of us there for Saturday morning were honored to watch the Homecoming parade and catch candy and



Mardi Gras beads as the floats rolled by.

But I've started in the middle....

This is how the trip began, this remarkable trip to the Trans-Pecos by 42 stalwart Naturalists in the fall of 2011. But of course, it seriously began months before, with a meeting held in the very depth of winter, 5 people there together, presenting the ideas they'd brought for field trips. And the Trans-Pecos struck a chord – specifically the Big Bend, more specifically Big Bend Ranch State Park. “No frills” stated the presenter. “Simple. Basic. Bad road in. But comfortable beds, good food, stunning geology, breathtakingly beautiful surrounds. VERY dark skies.” And while the others were thinking, she hurriedly added “It’s a great time to go while there’s still the opportunity to see it as close to pristine as it will ever be. Before they get a chance to improve the old rock road.”

That was the genesis of the odyssey. Trip was announced in February to take place over Halloween and the first week of November. Great support from Trip Committee, keen interest within the Chapter in attending, one thing led to another. Original plans: first day out, drive to Alpine and overnight there, have evening Botany lecture, then in the morning head south to the Ranch. But things kept coming up. “If we only had another day in Alpine we could...”. It quickly became clear that spending only one evening in Alpine was just not even sensible. Why lose the opportunity to learn more from the experts, to be better prepared for our study on those 300,000 plus acres of The Big Lonesome?



As more Sul Ross faculty accepted speaking engagements, we needed more time. So the additional day in Alpine was added, and here is what we did with the time:

A tour of the Center for Big Bend Studies and a presentation by its Director, Andy Cloud, regarding the current Archeological research being carried out at Paleo-Indian sites on the O2 Ranch in the Big Bend:

A tour of the A. Michael Powell Sul Ross State University Herbarium



Andy Cloud and some of his interested audience.



Dr. Powell explains the ins and outs of plant preservation.



Herbarium Cards ready to be filed.

and a plant species conservation and preservation presentation by its Curator and Director, Dr. Powell:

A Curator led tour of the Museum of the Big Bend by the Museum's Historian and Cartographer Matt Walter, including a tour of the Museum's very large ancient map collection:

A Botany lecture by LBJWFC and UT Botanist Michael Eason, who has spent the past several months doing a vegetative survey, cataloguing many rare species, in remote parts of Big Bend National Park:

A short Botany lecture by Dr. Martin Terry, SRSU Dept. of Biology, specifically regarding his extensive research with *Lophophora williamsii* (Peyote).

Then the next day, a morning session at Front Street Books in Alpine, guests of owner and proprietor Jean Hardy Pittman, who has done broad research, as well as her Botany Masters thesis, on the rare and endemic botany of the Solitario, the geological phenomenon where we would soon be hiking during our stay at BBRSP. That morning Dr. Powell and his



Extraordinary Rock Art (a replica)



Matt Walt showing an historic map.

wife Shirley, also a scientist and collaborator with Dr. Powell in research, met with us again at the bookstore, as we enjoyed coffee, cookies, books, and conversation.

At 10 A.M. we left Alpine for Lajitas and the Barton Warnock Environmental Education Center, where we had a great picnic lunch under the ocotillo roofed pergola, catered by Far Flung Outdoor Center. Roy Morey, author of the excellent plant book *Little Big Bend* was available after lunch for conversation, questions, and book signing, after which TPWD Botanist David Long led an excellent tour of the extensive native plant gardens at the Warnock Center. Then it was time to be on our way up the spectacular River Road and finally to the aforementioned rock road into Saucedo Headquarters, BBRSP.

To be continued...

All Photos used with permission from HLMN's and guests.



MOSSES

By Phil Wyde



I like to tell all of the kids that I take on scavenger hunts or nature walks that they need to look up, down and all around. I then go on to tell them that there are interesting things EVERYWHERE. If I have adults along, I tell them that when we go on a Master Naturalist Hike, we can hardly go 20 feet without stopping, discussing, debating and/or marveling over something. Today I would like to talk about a group of plants that here in Central Texas you mostly see when you look down. It is also a group of plants that get short-shrift – even from Master Naturalists. I am talking about moss. If they get noticed, all that is usually said is “That’s moss.” That is a shame because mosses are really quite remarkable and there is a lot more that can be said about them.

Before I start to tell you about moss, I have to tell you that although mosses are relatively “simple” compared to “higher” plants, their taxonomy and life cycles are somewhat complex. Thus, in this review I am going to limit the details and try to keep my comments as simple as possible. In fact, I will try to limit my information to what you can use on a scavenger or nature hike. Keep in mind that not all of the information will be suitable for everyone. For example the average child or adult may not care a hoot about gametes, but Master Naturalists such as Billy and Helen, or Park Interpreters such as Carol Navarro Adams and Sean Jones, probably could not feel fulfilled without knowing about gametes and the intimate lives of moss.

The first remarkable thing about mosses is that

there are approximately 12,000 species of moss. I find this interesting because in all of my long life and many wanderings, I did not think that I saw more than 6 different types of moss – if that. Fortunately, I do not have to do much genus or species identification on any hikes that I lead. I can impress most of the people listening to me by saying that the moss that we are looking at belongs to the plant division *Byrophyta*. The reason that I can do this and feel safe is that all mosses belong to this plant division. I can further impress my audience by saying that I think that the moss that we are looking at belongs to the plant class *Byrosida*. I will probably be right about since 95% of all moss species belong to this plant class. However if the moss that I was looking at was a sphagnum moss, (peat or bog moss), I would be wrong. Sphagnum mosses (there are a number of species of sphagnum moss) have been placed in the class *Sphagnumsida* and genus *Sphagnum*. In no instance would I dream of trying to identifying the species of moss I was looking at. The reason for my temerity would be that even though I have a fine magnifying glass given to me by a good friend to look at these plants, it is not easy to identify many of the species even when looking closely. That is because many of their identifying features are present only during a short time in their life cycle and because there are so many features on different mosses that look similar. Therefore, unless I am looking at a very common moss, I am going to say “That is a moss” and then go on to tell about some special things about mosses in general.

That is all that I am going to say on the taxonomy of mosses. If I went on, you would never read further and perhaps never read anything else that I write. However, before leaving the subject of genus *Sphagnum* I would like to point out that the mosses in this genus are diverse, widespread and economically important (e.g., as a fuel source). Also of interest to us, the leaves of sphagnum mosses have large dead cells alternating with living photosynthetic cells. The dead cells help store water.

Mosses are called “simple” plants because they are not vascular (i.e., do not have internal water-bearing vessels or veins [xylem]). This lack of vascularity also accounts for the fact that most mosses grow along or low to the ground; indeed, they rarely exceed 4 inches in height. (Some major exceptions are mosses that live in water. Why do you think that this is?) The fact that

mosses are herbaceous [non-woody] also contributes to this characteristic. I think that most kids would be interested in looking closely at moss especially with magnifying glasses. Doing so they could determine if the stems of the moss that they are looking at are simple or branched, and whether they are upright or lay along the ground.

You can also ask the children -- or adults, or even Master Naturalists and Park Interpreters -- if they think that mosses have leaves. Of course moss do have leaves, albeit very simple ones. The leaves cover the thin wiry stems of the plant and are very important to the plant. That is because they are not only important for photosynthesis, but also because it is through these simple leaves that mosses absorb water and nutrients. They DO NOT absorb water through their roots (rhizoids). These are used to anchor the moss plants to their substrate (e.g., rocks and trees). The reason that I think this last information about water uptake by the leaves and anchoring by the roots is suitable to all levels of audience is that I bet that few people at any level know this. There are several teaching opportunities here. First, this taking up of water by the leaves and not roots is in marked contrast to what most plants do! (We all know that most plants use roots to take up water.) Second, you can ask If mosses grow on trees, are they parasitic? I will save you from stress. They ARE NOT since the roots do not absorb water or take food from the tree or harm it in any way. Third, if mosses do not get food from the tree that they are on, how do they get their food? You can give your audience a hint. Mosses are green (i.e., have chlorophyll and photosynthesize to make their food).

Since mosses have no vascular system to carry water through the plant, they must have a damp environment in which to live. (They also need water to reproduce, but I am not going to get into that.) They also require sunlight since as I have just told you they are photosynthetic and require sunlight to conduct photosynthesis. Thus in most areas, mosses grow chiefly in areas of dampness and shade, such as wooded areas and at the edges of streams. So Master Naturalists HOW DO THEY GROW ON TOP OF THE HILL AT INKS DAM NATIONAL FISH HATCHERY in Central Texas during a severe drought? The answer is that some species can adapt to sunny, seasonally dry areas (even alpine rocks or stabilized sand dunes) and resist desiccation and adverse conditions for months. In the latter instance they can “come back to life” within hours of getting water. Also



check and see if they are not most often in areas that are shaded by nearby rocks.

What moss grow on can vary by species. Indeed, some moss species can be classified partially based on what they grow on, e.g., whether they grow preferentially on rocks, exposed mineral soil, disturbed soils, acid soil, calcareous soil, waterfall spray areas, sides of stream, downed logs, tree trunk bases, upper tree trunks, or tree branches. Some species are totally aquatic. Others such as sphagnum moss inhabit bogs, marshes or very slow moving waterways. As mentioned above, some of these water associated species are significantly longer than their terrestrial cousins. For example individual sphagnum moss plants can be 8 to 12 inches long. (In case you haven't figured it out, this is because they can grow longer since they are supported by the surrounding water.) Moss species growing on or under trees are often specific about the species of trees they grow on, such as preferring conifers to broadleaf trees, oaks to alders, or vice versa.¹

Since we lead so many scouts on hikes you should pay attention to this next bit of information. You are likely to be asked about it.

It is generally believed that in northern latitudes, moss grows best on the north side of trees and rocks. (They can grow on any side if the conditions are right.) It is probable that this occurs because mosses grow on the damper side of trees and rocks and in sunny, temperate, northern latitudes this will be more prevalent on the shaded north side of trees and rocks.

The next question is suitable for almost any audience. Before asking the question tell the rapt listeners that mosses differ very much from “higher” plants in that they DO NOT HAVE FLOWERS, FRUITS,

CONES OR SEEDS. Well then, how do mosses propagate and disseminate? The simple answer, and where you probably should stop with young children, is that most moss reproduce by spores. To try and hook naturalists, you should go on to tell them that most of the moss plant is HAPLOID (i.e., their vegetative cells have only one set of chromosomes [DNA set]). Only their spores, and only during one stage of development, do moss plants have DIPLOID cells (cells that have 2 sets of chromosomes). This is in marked contrast to most plants and animals which have two sets of chromosomes in their vegetative cells, and only their gametes are haploid. (In seed plants, the haploid generation is represented by the pollen and ovule, while the diploid generation is seen in all the other cells of the plant.) Regardless, moss spores have a diploid state initially, but as they mature, the spores undergo meiosis to become haploid again. The spore case then breaks off or open and the haploid spores are released to disseminate and start the cycle again (i.e., start new moss colonies). (I hope that I did not excite Billy and Helen too much.)

One thing that may impress addressees of any level is that a moss patch may produce millions of viable spores. Ask these listeners how many spores they think of these millions will successfully survive and generate new moss plants. The answer is grounded in the fact that moss spores must land in a favorable spot and then have optimal conditions, i.e., temperature, moisture, soil pH, light, etc., if they are to successfully survive and grow. You can emphasize that if the spores were like seeds of normal plants (e.g., tomatoes and beans), the initial conditions for the emerging plant to successfully survive would not have to be so ideal since the embryonic plant could live for at least some time using the food stored in the seeds or produced by the cotyledons (the initial leaves of "higher" plant seedlings) of the germinating plant until conditions improved. Alas, germinating moss spores do not have seed pods or cotyledons, or any similar structures, to provide any extra food supply to provide energy until conditions become more favorable. I saw one estimate indicating that is why even if a moss plant produces a million spores, it would be lucky if even just one spore eventually produced a mature plant.²

As with most things there are exceptions. In some mosses, green vegetative structures called gemmae are produced on leaves or branches, which can break off and form new plants without the need to go through the cycle of fertilization (resulting in a diploid state). This is a means of asexual reproduction and can lead

to genetically identical units (clonal populations) of moss. My question to you Master Naturalists is what are the advantages and disadvantages of asexual and sexual reproduction?

I will end this discussion by telling you some interesting tidbits that I gleaned from my readings. In preindustrial times moss was commonly used by different societies. For example Laplanders and many people living in the north and far north used mosses for bedding, dressing wounds, as diapers, insulation in boots and mittens, to fill chinks in wooden long houses and to line baskets.^{3,4} In present time, moss is used commonly by florists and home decorators. It is also used in Europe as a fuel, as a soil additive and in the smoking of malt in the production of Scotch whisky.⁴ In Finland, peat mosses have been used to make bread during famines.⁵ Mosses are also being used in biotechnology to try and produce pharmaceuticals and agricultural products.^{6,7}

I hope that now when you are leading a group on a scavenger or nature hike and you see a moss, you will say "That is a moss. I have some things that I would like to share with you about these extraordinary plants."

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Other references: <http://www.backyardnature.net/mosses.htm>
<http://www.naturegrid.org.uk/biodiversity/plants/crypmoss.html>

TUFTED TITMICE AND BIRD NAME CHANGES

By Sherry Bixler

There are two titmice species found in Texas. In most of the state Highway I-10 seems to be the major dividing line. In the hill country and west, the Black-crested Titmouse (*baeolophus atricristatus*) is the resident titmouse while the Tufted Titmouse (*baeolophus bicolor*) is found from east-central Texas throughout most of the eastern states.

Both species have jaunty crests and large dark eyes and are nearly two inches larger than chickadees. They are easily identified and readily visit feeders, making them favorite feeder birds.

In areas where territories overlap, hybridization occurs but biologists in the Balcones area have never found a Tufted Titmouse there.

Three other titmouse species are found in western states: the Oak Titmouse, Juniper Titmouse and Bridled Titmouse. Titmice species have undergone numerous name changes (see below).

Black-crested Titmice sing a clear PeerPeerPeer song while Tufted Titmice sing a slightly lower-pitched PeterPeterPeter. Both join in mixed-species flocks along with chickadees, nuthatches and small woodpeckers, but only during non-breeding seasons. They are an uncommon cowbird host.

Four to eight eggs are laid in tree cavities, old woodpecker holes, or nest boxes. Nests are lined with moss, leaves, fur, snakeskins and other soft substances. The birds dine on spiders, spider eggs, seed and a few snails, adding acorns in the winter.

The Oak Titmouse and Juniper Titmouse were once a single species with the name of Plain Titmouse. Many bird species have been given a new name, usu-



Black-crested Titmouse

West Texas A&M

ally to distinguish them from a similar species in another country. But many other species have been split or combined as new scientific technology unlocks facts not previously known. The Black-crested Titmouse and the Tufted Titmouse were split, only to be re-combined sometime in the eighties, and split again later. The Black-crested was first called the Black-crested Tufted Titmouse but is now simply the Black-crested Titmouse. This bird family has apparently puzzled scientists for a long time.

In South America where thousands of species can be found and scientific data is harder to establish due to the enormous amount of jungle, cloud-forest and other wild environments, the problem of naming, splitting and combining species is far more complex. In any country, birders should always note the location as well as the date and species for all birds sighted, as this information may be necessary if splits occur at a later date.

INKS LAKE STATE PARK VOLUNTEER APPRECIATION LUNCHEON

Carol Navarro Adams

Join us for our annual volunteer appreciation luncheon at *Inks Lake State Park*.
 Thursday, January 5th 11:30 am
 Maintenance Building
 Please bring a dish to pass and dress warmly!!

RSVP to Inks Lake Park Interpreter, Carol Navarro Adams 512-793-4689.

Don't miss the fun, good food and presentations!

We will provide the barbeque and beverages; you are welcome to bring a dish to pass. We will have enough door prizes so that every volunteer goes home with something beautiful as a token of our appreciation. There will be presentations by Jerry Stacy and Doris Mager, the Eagle Lady. Refer to Fredi Franki's column on P. 9 for more information.

Thank you for your contributions for making this little, green spot in our world a better place. I have really enjoyed getting to know you and working with you. We appreciate your help, humor and candor. You blur the lines of work and play for all of us. You will be amazed as I share with you what you have collectively accomplished at Inks Lake State Park this year.

Congratulations on all your awards at the state conference. You are the envy of my colleagues throughout Texas State Parks. We simply could not do what we do for the recreation programs, trail maintenance, interpretation and environmental education programs at Inks Lake State Park without you.

Reprint of a letter from Brent Leisure, State Park Director:

I came across some statistics that I thought were particularly helpful in revealing a very important aspect of our work in parks. Interpretation and education programs are a vitally important element of our mission. Through effective programming, we have an opportunity to connect park visitors to the resources in ways that make the value and significance of parks very real to them. Ultimately, we provide interpretive and education programs that hopefully transform visitors in some way and inspire them to make a life-long commitment to resource stewardship. The diversity of programs offered in Texas state parks understandably reflects the diversity of our park system. Whether it's a 'Mission Tour' at Goliad, a 'Birds of Prey' program at Bentsen Rio Grande ...Our state parks are truly outdoor classrooms. Our staff has embraced the importance of sharing our passion for the great outdoors and our appreciation for the his-





tory of this great state. Over 686,000 visitors have attended over 68,000 programs provided at our parks in 2010. More than 50,000 volunteer hours were logged in support of these programs. I thank you for taking on this very important task and all the while, doing it with accuracy, professionalism and passion. Let's support one another in accomplishing a very cool mission. I thank you.

My friends, the figures that Brent Leisure mentioned above were for 2010. These are the kind of numbers we usually have. But not this year. He did not post the 2011 numbers because many parks did not receive the visitation due to the drought, fires and heat. Here is an article from the Austin statesman that lets folks know we are in serious budget crisis. Master Naturalists, park hosts and volunteers are a big part of

the success in Texas State Parks. I hope that you realize that we could not continue to provide programming, beautiful trails and the myriad of other things without you now and in the future.

<http://www.statesman.com/news/texas/parks-and-wildlife-asking-public-for-4-6-2011/148.html>

At Inks Lake, we were down a little bit in visitation during July, but not as severely as parks that were closed due to fire or down because of the lack of water like Guadalupe State Park. We are so blessed to have dodged a fire and have fresh water at a relatively good level in our lake. And we are so blessed to have you, a cadre of Master Naturalist to support this park and other parks, especially in these hard times. I hope to see you all at the Volunteer Appreciation Luncheon. We would love to show our appreciation for you.

It's my great pleasure to serve at Inks Lake State Park and your support makes it all the more wonderful. Thank you! Cheers and Smiles, Gratefully yours, Carol



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

VOLUNTEER OPPORTUNITIES AND AT/EVENTS CALENDAR

Mike Childers

JANUARY EVENTS & VOLUNTEER OPPORTUNITIES	
Christmas Bird Count Burnet County	Jan 2
HLMN January Meeting - Doris Mager - The Eagle Lady Kingsland Library	Jan 4 1 pm
Inks Lake State Park Volunteer Banquet Inks Lake State Park Maintenance Barn	Jan 5 11:30am
Birds of Prey Presentation - Doris Megar Inks Lake State Park Store	Jan 6 3-4pm
Raptor Program - Doris Meager Inks Dam National Fish Hatchery	Jan 7 10am
Birds of Prey Presentation - Doris Megar Inks Lake State Park Store	Jan 7th 1-2pm
Owl Prowl with Doris Mager Inks Lake State Park Headquarters	Jan 7th 5-6:30pm
Invasive Mussels and the Highland Lakes 3 identical 2.5 hour programs at Burnet, Marble Falls, and Kingsland Libraries	Jan 18-19
Highland Lakes NPSOT Meeting - Alien Invaders - Invasive Plants of BCNWR Marble Falls Library	Jan 21 1 pm
UT Natural Science Center Identification Day University of Texas	Jan 22 1-4:45pm
Sparrowfest Flying X Ranch, Balcones Canyonlands NWR	Jan 28 7am
FUTURE EVENTS & VOLUNTEER OPPORTUNITIES	
Balcones Training Workshop for Bridges to Birding and Going Buggy Programs Balcones Canyonlands National Wildlife Refuge - Flying X Ranch	Feb 16 9am-4pm
2012 Master Naturalist Training Program Begins	Mar 1
Great Outdoor Program Inks Lake State Park	Apr 17-20
Great Outdoor Program Inks Lake State Park	Apr 23-26
Day in the Park Blanco State Park	May 11

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.