

# The Midden

May/June 2008

## Next Half of 2008

*by Sara Snell, President GBAC-TMN*

As a chapter we have had an extremely busy first half of the year. Featherfest is behind us, the eleventh Master Naturalist Class is completed, the end of year school field trips at Galveston Island State Park have been conducted, our AT committee provided us awesome educational workshops, and Stewardship opportunities abound from one end of Galveston Bay to the other and many places in between.

**Guess what?** The next half of the year will be just as busy with Camp Wild and Treasures of the Bay Teachers Workshop in June and a multitude of AT opportunities for the rest of the year. We have our on-going Stewardship activities at Armand Bayou, Carbide Park, Reitan Point, Sheldon Lake, Sundance Gardens, and Texas City Prairie Preserve and special Stewardship opportunities such as Horseshoe Marsh and our butterfly garden at Anahuac Wildlife Refuge. No one should say there isn't enough to do in our chapter – our problem seems to be too many wonderful things to do and not enough hours or days to do them all!

The Board welcomes two new members representing the Class of 2008, Verva Densmore and Beverly Williams. Thank you ladies for accepting this leadership role, we all look forward to working with you.

Have a great summer – see you in the marsh, prairie, bay, and beach – or wherever our activities may take you!

*Sara*

Cooper's Hawk

## Inside This Issue:

## Page

AT/ Stewardship/Volunteer Opportunities .....	2
Prairie Ponderings/Stream Team.....	3
Naturalist Spotlight of the Month.....	4
Diurnal Raptors AT .....	5
Lance Rosier.....	6
Wetland Wanderings .....	7
Seeing the Forest For the Trees.....	8
Up, Up and Away .....	9
Green Corner .....	11
Garbology.....	12
Estuarine Smorgasbord.....	14
Guppies from Julie.....	16



## June/July

### ADVANCED TRAINING OPPORTUNITIES

*by Shirley Foster, AT Chairperson*

#### **Water Monitoring Workshop**

(Texas Stream Team)

#### **Challenger 7 Park**

**Saturday June 7, 2008 9:00 AM - 4 PM**

**Class limited to 15**

**4 hours AT. Cost no charge**

**Richard Connors assisted by Mel Measeles** will be conducting a Water Monitoring Workshop for those of us who wish to volunteer to perform this vital once-a month service. Monitors are always needed. For sign-up and more information contact Mel Measeles [measeles@swbell.net](mailto:measeles@swbell.net)

#### **Freshwater PONDerings**

**Armand Bayou Nature Center**

**Saturday July 19, 2008 8:30 AM - 3:00 PM**

**5 hours AT. Class limited to 50.**

Several of our chapter members will share their knowledge and teaching talents for this multi-faceted workshop on Freshwater Ponds- surface and below. We will cover plant and animal life, water chemistry and check out some of the microscopic life we never get to see. Sign up begins at June 5 Chapter Meeting.

For more information contact Project Leader, Shirley Foster [MFoster689@aol.com](mailto:MFoster689@aol.com)

Register with Emmeline Dodd

[TXDODD@aol.com](mailto:TXDODD@aol.com)

#### **Wetland Plant Identification**

**Texas Agrilife Extension Galveston County**

**August 6, 13, 20, 27, 2008 9AM – 1 PM**

**16 hours AT. Class limited to 20.**

For more information, contact Dick Benoit

[rbenoitex@aol.com](mailto:rbenoitex@aol.com).

### EDUCATIONAL/OUTREACH OPPORTUNITIES

#### **Camp Wild**

**Galveston Island State Park**

**M-F June 2- June 6, 2008 8:00 AM - 1:00 PM**

A five-day fun filled hands-on experiential day camp for 4<sup>th</sup> and 5<sup>th</sup> graders at Galveston Island State Park.

#### **Treasures of the Bay - Teachers' Workshop**

**Various Locations**

**T-F June 17- June 20, 2008 9:00 AM - 3:00 PM**

This mini-Master Naturalist course for teachers is a great way to earn volunteer hours! To volunteer, please contact Julie Massey at 281-534-3413, ext 2, 2 or [jmassey@ag.tamu.edu](mailto:jmassey@ag.tamu.edu)

### STEWARDSHIP OPPORTUNITIES

*by Dick Benoit, Stewardship Chairperson*

#### May Project of the Month

**Marsh Mania** held at a number of sites Saturday, **May 31, 2008**. This is the eighth year it has been held and this year it will be a combination of **Marsh Mania/Prairie Pandemonium** at Armand Bayou Nature Center. **9 AM until Noon**, t-shirts, prizes presented when the work is completed. Contact ABNC for details.

Currently, there are no planned projects for the months of June and July.

#### **Ongoing activities:**

Mondays - **Reitan Point**, second and fourth, Contact Liz Gimmmler [gimmmler@consolidated.net](mailto:gimmmler@consolidated.net)

Tuesdays - **Texas City Prairie Preserve**, Contact Marybeth Arnold [mbarnold@aol.com](mailto:mbarnold@aol.com)

Wednesdays - **Wetland Restoration Team**, Contact Marissa Sipocz [m-sipocz@tamu.edu](mailto:m-sipocz@tamu.edu)

Fridays - **Sundance Garden**, Contact Trudy Belz [trudybelz@aol.com](mailto:trudybelz@aol.com)

**Prairie Friday**, Armand Bayou Nature Center, Dick Benoit [RBenoitTex@aol.com](mailto:RBenoitTex@aol.com) 9AM until Noon

## **PRAIRIE** *by Dick Benoit*

### **O N D E R I N G S**

Who are those crazy prairie people?

Why are they trying to restore America's, Texas's, and Galveston Bay Area prairies?

Do they have a mission founded in the Texas Master Naturalist mission statement, just as those who are working educating our citizens, in particular our teachers and youth?

Do you have a goal this year to help restore America's prairies? If you planted a flat of 4" x 4" prairie plants each week, in a year you would have restored an acre of prairie.

If everyone in the chapter had this goal, we would plant 150 acres of prairie in a year!

How many plants are you going to plant this year? None, 20, 100, 500, or an acre?

At **Armand Bayou Nature Center Prairie** 3000 plants are in the ground to date this year, with another 2000 one-gallon pots in the ready. The crazy Friday crew sprig about 250 plants a week thanks to the digging of Tom Solomon and Jim Duron.

**Texas City Prairie Preserve** has done an excellent job beginning to restore prairie, with about 2 acres planted this year with the leadership of Marybeth Arnold.

**Reitan Point Prairie** also has just completed its first year of restoration and has a lush 1 acre of diverse plantings, thanks to the dedication of Liz Gimmler.

**Sheldon Park Prairie** has begun this year with an excellent restoration plan under the leadership of Tom Solomon and Jim Duron.

We also have **Carbide Park Prairie** ready to come back on to the restoration plan, headed by our newest prairie proponent, Howard Lindsey.

The first weekend in May, Della Barbato, Gail Gawenis, Jim Duron, and 70 students from St. John School in Houston planted about 1500 sprigs of Bitter Panicum to control dune erosion at Hershey Beach in West Galveston Island.

## **Texas Stream Team**

*by Claudia Edwards*

Texas Watch has a new name, the Texas Stream Team. Now, the name is more descriptive of the primary focus of the Team, to monitor Texas waters. In a world with limited amounts of safe water, it is important to keep track of the many waterways of Texas. Each team member has a testing location that he or she monitors once a month, collecting data that is tracked and available on the Houston Galveston Area Council Website.

In addition to monitoring, the Stream Team has another focus, which correlates with our charter as Master Naturalists, and that is education. In a world of Nature Deficit Disorder among our youth, anything that gives students an appreciation for the natural world is very important.

With this in mind, two Stream Team members, Mel Measeles and Claudia Edwards, gave a demo of the water testing process to students of Mrs. Tiffany Garcia's Galveston Bay II Mini Course at Westbrook Intermediate School. There is a Wetlands area on site, where the water was collected, so the students participated in collecting data for Dissolved Oxygen and Ph, weather conditions, etc.

Next year, Mrs. Garcia will be teaching a new year-long course in Environmental Education, and will have more opportunities for Master Naturalists to work with her classes. Currently she is providing a 'nursery' for cord grass, which her students will be planting in a future field trip in conjunction with the Galveston Bay Foundation. For more information about her classes, contact Claudia Edwards at [Claudia@duckduckgoose.net](mailto:Claudia@duckduckgoose.net).

For those interested in becoming a Texas Stream Team member, a training class will be held at Challenger Park on June 7th, 2008 from 9am to 4 pm. For questions, contact Mel Measeles at [measeles@swbell.net](mailto:measeles@swbell.net).

## Naturalist Spotlight of the Month

### Carolyn Miles “Traveling Miles”

*by Irene Yodzis and Mary Vogas*

Educator, mother, traveler, web master! These words describe the naturalist we are spotlighting for this newsletter. Carolyn Miles, from the spring 2004 class, is our chapter web master.

Carolyn was born in Philadelphia, Pennsylvania. She came to Houston when she was four years old and attended Pasadena schools. As a child, she loved camping, backpacking and fishing. She also liked to work on cars. When she was in elementary schools, she participated in Girl Scouts and took ballet. When she was in middle school, she played the flute in the band, and while in high school she was on the swim team.

She attended the University of Texas in Austin and received a degree in accounting and a Master’s degree from UT in information systems. She worked in Houston for Coopers and Lybrand, an accounting firm, as a public accountant for fourteen years. During this time, she became a certified information systems auditor (CISA) and became a certified public accountant (CPA). While working at Coopers and Lybrand, she got married and had two sons. In 2002, she began working at the University of Houston at Clear Lake as a lecturer in accounting information systems. At both of her jobs, she enjoyed the variety that they gave her. With her first job, she went to different places with various clients and now at the UH, she works with new students each semester.

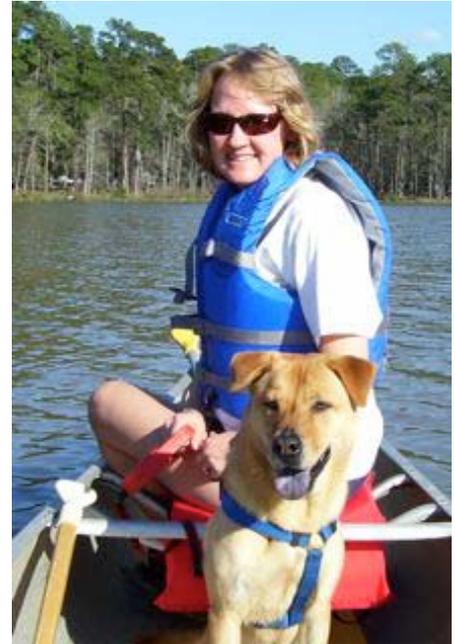
She is very involved with her two boys, ages 13 and 16 doing such things as a band chaperone, robotics team advisor, and on the board for the local swim meets. As a robotics team advisor, she worked with the students on testing the water on both sides of the Texas City Dike for salinity. The team won the state competition for this activity!

Through the years, her children have asked her many questions about nature that she could not answer. So, as a good mom, she looked for ways to find the answers. This led her to become a TMN. As a TMN, Carolyn works at the Texas City Prairie Preserve as a bird monitor. She monitors raptors when they come through the area.

Carolyn is very busy person. She oversees her mother, aunt, and her in-laws who are all over 75 years old. Also, she enjoys reading murder mysteries and likes mainly fiction books. She also loves to travel. She and her husband decided to have a small house and older cars so that they can travel. Traveling is one of Carolyn’s top priorities! Before she travels, she always reads about where she is going. She has visited China and Alaska. Her favorite place is Alaska because of the variety of things to see.

One thing she liked about Alaska is that there was little human impact like no paved trails where she visited. She also enjoys sailing and canoeing on Armand Bayou and at Huntsville State Park. Another hobby is to research family history including relatives who arrived here through Ellis Island.

It was our pleasure interviewing Carolyn. She excels in whatever activity she is doing whether it is being a professor at UH, a TMN or a mom. Carolyn likes variety in life and we are glad she has chosen our chapter to be part of her variety of life. If you like to travel, talk with Carolyn for this is one of her great pleasures in life.



# Diurnal Raptors AT

by Diane Humes

*“Spring has sprung the grass is ris’, I wonder where the birdies is.”*

Spring means hawk migration to Dick Benoit and on March 10, 2008, thirty-nine Master Naturalists sat at the feet of the master hawk watcher to prepare for the spring “river of raptors” when the birds fly and ride the thermals from southern winter homes to northern breeding grounds. Having watched and counted raptors on their spring/fall journeys for 33 years in Michigan and Texas, Dick gladly shared his “bird’s eye view” with us and highlighted the **Top 10 Raptors** for the Galveston Bay Area.

Diurnal raptors (birds of prey active during the day) are the **quiet** members of the bird family. They use their powerful talons and beaks to catch and eat prey.

They wear sophisticated colors of **brown, white, and black, with maybe some red**. Raptors include three main groups: the buteos, broad-winged soaring birds, accipiters, long-tailed, short-winged forest dodgers, and falcons, sharp-winged speed demons, as well as vultures, kites, eagles, Osprey, Northern Harrier, and Crested Caracara.

Our most common buteo is the **Red-shouldered Hawk**, seen in woodlots and **perching on wires**. The Broad-winged Hawk, the smallest buteo, migrates in huge numbers, looks as though “**dipped in ink.**” **Swainson’s Hawk** is a western bird, with a long tail and longer wings and may be blown to our area by a strong weather front. The **Red-tailed Hawk** **sits on posts** in open areas. He is large, with a **patagium**, the dark mark on the leading edge of the wing seen from underneath, usually has a “belly band” and a red tail.

Accipiters speed through forest trees to catch their meals; they are most likely to be seen picking off LGB’s at your bird feeder! The Sharp-shinned Hawk is the smallest, with a squared tail and the **Cooper’s Hawk** is larger with a white terminal band to his tail. A third accipiter, resident of northern forests, is the Northern Goshawk, a much larger bird with powerful talons and beak and a very bad temper. Approach his nest with proper armor and a helmet!

Falcons include the very **common American Kestrel**, the medium-sized Merlin, streaked “**from the nose to the toes,**” and the large and powerful Peregrine Falcon. The use of the chemical DDT gravely threatened the Peregrine Falcon; in the U.S. in 1972, no birds nested east of the Mississippi River. Hawk watch monitoring by scientists and citizens was begun to track bird population numbers. Today the eastern U.S. has 1600 nesting pairs of Peregrine Falcons – a result of the efforts of many dedicated conservationists.

Vultures, common in our area, are large, dark, carrion-eaters. The **Black Vulture** can be told in flight by its shorter wings and a quicker flap to the wing beats. The **Turkey Vulture** has a longer tail and slower wing beat and carries his **wings at a dihedral** angle. He has the best sense of smell in the bird world.

Kites are graceful fliers, elegant black and white birds. They snag and eat smaller prey while on the wing.



Look for the Red-tailed Hawk perched on a power pole not a wire



The Swallow-tailed Kite is considered the **second most beautiful bird in the world**. It picks snakes and lizards from tops of trees as it passes. The **White-tailed Kite** nests here, but was once nearly extinct in Texas from being shot for target practice. The Mississippi Kite, with its **shiny white head**, migrates in large numbers (200,000 +), munching cicadas as its staple food.

Eagles are **really big** birds. We might see a Bald Eagle during migration; adults older than 5 years have the white head and tail, while immature are less distinct. The **Crested Caracara**, is distinctive in flight with white head, white tail, and white wing patches on an otherwise dark bird. It eats carrion like a vulture.

The **Osprey** is a fisherman, often seen **flying carrying a fish in its talons, head always first**. It can be mistaken for an eagle, but is smaller, with white head and underbody, chocolate brown back and dark stripe through the eye. Ospreys, found on every continent except Antarctica, are common here around water, although do not nest. Continued at the bottom of the next page.

The Northern Harrier lives in open fields and even nests on the ground. It flies low over fields and marshes to locate prey by sound as it **“quarters” the field**. It has an owl-like facial disc, white rump patch, and carries its wings in a dihedral angle.

Success in counting hawks as they stream overhead by ones and twos or by the thousands, flying as high as 2 1/2 miles, requires teamwork and practice. **No hawk is 100% identifiable**, but the prepared mind and eye can do pretty well. Start with the Top 10 Raptors (see **highlighted birds**) in our area. Grab binoculars and a guidebook, a water bottle, sunscreen, and a comfortable chair, and come to Sylvan Beach or Little Cedar Bayou Park in LaPorte any day until the end of April to help spot, count, and ID the birds. If you're lucky, you might get to use a clicker

## Lance Rosier, Mr. Big Thicket

*by Nelda Tuthill*

Efforts to create a national park in the Big Thicket of East Texas began as early as 1927. By the mid-30's park proposals were developed and prominent figures were beginning to be drawn into the cause. But the most constant advocate for the Big Thicket for forty years was Lance Rosier.

By normal standards, he would be considered an uneducated man. He never got beyond the sixth grade but he began to learn the Latin names of plants and animals when he worked as a guide for scientists during the biological survey of the Big Thicket in the 1930's. He studied on his own. Books and articles were tucked away in nooks and crannies in his small house. His house behind the Saratoga Post Office, was in fact a library.

Lance was considered the world authority on plant life in the Big Thicket. “Those school doctors,” as Lance called them, (professors with Ph.D.'s) came from as far away as South America, Japan and France to be taught by this old man of the forest. There was “scarcely anything that flew, bloomed, walked or crawled within a thirty mile radius of Saratoga that Lance didn't know,” according to Pete A. Y. Gunter, author of *The Big Thicket: An Ecological Reevaluation*, one of the books studied by the GBA Master Naturalist Heritage Book Study Group. To “know” for Lance meant being able to recite the common and Latin names, explain the preferred habitat, annual life cycle and, when applicable, the medical or industrial use.

The title of “Mr. Big Thicket” was bestowed on Lance Rosier for his persistent labors as a guide, spokesman and botanical resource. He considered that an irony since he was a small man that never weighed more than 120 pounds. He led tours for congressmen, a Supreme Court Justice, reporters and students showing them the beauty of the Big Thicket but also quietly showing them the destruction being done by timber, farming and development interests.

Lance Rosier died on March 12, 1970. On October 11, 1974 President Gerald Ford signed a bill establishing the Big Thicket National Preserve. The preserve is made up of several units in an attempt to preserve representatives of all the botanical diversity of the Big Thicket. The largest of the preserve segments, at 24,942 acres near Saratoga, was named the Lance Rosier Unit.

## WETLAND *by Diane Humes*

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S** Spring is glorious in the wetlands! As naturalists, we are interested in the plants AND the wildlife, but it is going to be hard to top the sight of a Common Loon in full tuxedo i.e. breeding plumage, preening and displaying on Brays Bayou near downtown Houston! That is, unless you count hearing his calls wafting over the water!! The same fine day also included nesting cliff swallows swarming out from under the 75<sup>th</sup> Street Bridge when faced with the threat of a bucket being lowered to take a water sample.

The Mason Park Treatment Wetland continues performing its job of cleaning up the water; the most recent bacterial sample, taken after a rain, was astronomical, but the treatment marshes reduced the bacterial count by more than 99%. Must be doing something right...Wildlife seems to think so.



The Wetland Restoration Team has been stomping about in three counties collecting plants and then straightening and tidying up the nursery at NRG. (Must be spring cleaning!) The Team is also



befriending a somewhat “loony” mother killdeer that is making her nests in the driveway at NRG. We have to be careful where to step and drive, as her nests are barely distinguishable from the road! The Team also hosted the first-ever Trash Bash at Mason Park (more spring cleaning!!) and had over 100 volunteers collect 1200 pounds of trash and 8 automobile tires. It was a great job and a fun day.

Last, but not least, we have rescued nearly 500 spider lilies from eminent destruction from the construction at the new I-10 bridge over the Trinity River. The bridge is badly needed – try looking up

from underneath sometime – and the lilies will enjoy their new homes at ABNC and Sheldon Lake State Park. To learn more about wetland wanderings, check out the blog:

<http://wetteam.blogspot.com/>

# Seeing the Forest and the Trees

by Claudia Edwards

The Big Thicket is a Surprise. When you travel through the city and countryside of flat fields, pine plantations, gravel pits, gas stations and decaying mobile homes with vines covering their burned-out collapsing hulls, you have no idea that you are within a stone's throw of the Big Thicket. In 1981 this reserve was named an International Biosphere by the United Nations because of the diversity of its plant communities and value as corridors for birds and animals.



Yes, it is 97,550 acres, but it is split up into 12 Units, or separate areas, so you travel two lane roads that are shared with fast-moving tanker trucks. When we went into the forest at the Kirby Nature Trail, at first we could hear the trucks. After walking 20 minutes or so, the sound was quiet, and all we could hear were the birds. Birdwatchers here are actually bird-listeners, because it is usually so hard to see the birds. This early in the spring, the trees hadn't leafed out yet, so we saw woodpeckers and warblers.

The GBA Chapter had an Advanced Training opportunity to the Big Thicket National Preserve on March 20<sup>th</sup>. As Ranger Paula Rivers tallied the birds, she shared knowledge with us. The Preserve was set aside in the 1970's, and she described how her husband had been one of the loggers that took down the last of the old-growth long-leaf pine trees. Mr. Kirby, who the trail was named after, owned and operated the logging operation and would not allow timber to be taken out if it was under a certain diameter, something like 28 inches. Because of this careful management, the diversity was preserved, and left a legacy of trees for us.

We saw lots of large trees on the ground in the aftermath of Hurricane Rita, and Ranger Paula explained how this affected the forest today. The huge trees tore out the underbrush as they fell, reducing the show of dogwood blossoms in the spring, but also allowing light to reach the under story plants. Magnolias now blossom where they can be seen from the ground instead of only the air, and with the additional berries, fungus and bugs in the rotting trees, the black bears are returning to the area for the first time since the 1930's.

Fast-forward after lunch and down the road to another area, the Sundew Trail. This is another plant community entirely; the boggy area where insectivorous plants entice buggy prey to supplement the poor nutrition of there wet soil. Here, as in other portions of the Preserve, there is aggressive fire management to reduce invasive plant species. The Pitcher plants were blooming yellow blossoms for us. The Sundews would have been easy to miss without a guide. They were tiny splotches of red on the ground, but viewed with a magnifier were breathtaking with glowing red spines dripping with sticky dew.



Because of our two guides, Donna Rivers and Leslie DuBey, we got a Naturalist's view of the Big Thicket, leaving with new appreciation for what hides away on those forest trails. (For related article on Lance Rozier, "Mr. Big Thicket," see page 6.)

# Up, Up and Away, Birding by Design

by Louise Bell

Collage by Mel Measeles

Diane Olsen quadrupled our knowledge of birds at her workshop held at Moody Gardens on April 22. Diane, who is a Master Naturalist (class of 07), holds degrees in Marine Biology and Marine Fisheries, so she is well qualified to bring us information to increase our understanding of "Bird Biology"! After the workshop, participants toured the Aquarium and did a little birding on the grounds of Moody Gardens.

Some interesting information about birds includes the sheer number of birds; there are 9600 species of birds! They inhabit every continent and inhabit almost every environment. Birds arose from reptilian ancestors (dinosaurs) in the Mesozoic era about 150-200 million years ago. The Sandhill Cranes, which we see hanging around the Hitchcock marshes in December-January, are the longest existing bird species known to man. Skeletons date back to 10 million years ago.

To be assigned to the bird category, animals must have feathers, lack teeth, bipedalism and digitigrade, fusion and reduction of bones, pneumatic bones, small size (with a few exceptions) forearms designed for flight, centralized body mass, high metabolism, highly developed central nervous system and vision.

Of the above features, several struck me as quite interesting. First, the size. The vast majority of birds weigh less than 2 pounds, but of course, there are a few exceptions. Upper mass for flight seems to be about 35 pounds.

Then there is the centralized body mass, which is the body mass between the wings and the center of the body. Diane kept telling us to relate this to the Thanksgiving turkey breast. Muscles are in the center of the body with tendons that control the appendages. Most of the bones are hollow and connected to air sacs. Flight muscles can make up 40% of the centralized mass and create a lot of heat, thus the need for high metabolism. Also housed in the centralized body mass is the gizzard that is used to crush food as birds have no teeth. Their skull is light and doesn't require a counter balance of a heavy tail.

The shape of wings can tell you much about birds. Rounded and short wings are features of the woodland species. The heavier the foliage of the bird's habitat, the stubbier their wings will be. Long and narrow wings are for gliding and soaring. Broad and splayed wings provide extra lift for soaring birds. Wings that are pointed and backswept are built for fast flying. Primary feathers on the wings act as individual airfoils, providing forward thrust. The alular quills, three small, stiff quills arising from the first digit, act as an aerodynamic slot and spoiler, aiding or disrupting flow over the wing.

Tail feathers act like a rudder by being able to twist for maneuverability. Tails can also move up or down, and can be fanned out like a brake. Soaring birds fan their tails to give extra lift. Some perching and woodland birds use their tails as a counter weight.

Diane passed out a variety of feathers for us to observe, pointing out that feathers are strong, light, warm, flexible and are formed from keratin. Other cool feather features she noted were that feathers are molted at various times depending on life histories and where the birds live. Tapered feathers at the end of the wing helps to deaden sound, and some birds even have fine fringes to make them almost silent in flight. Some birds have preen glands that are used to keep feathers waterproof. For birds without preen glands, there are powder feathers. The barbs of powder feathers disintegrate into fine powder that is used in grooming and waterproofing, thus the name, powder feathers.

Diane concluded with flight patterns, which is another way to identify birds. When you see fast flapping birds in the air, they are probably pigeons, ducks, auks, or cormorants. Should birds flap slowly, then they are probably harriers, barn owls, or gulls. Intermittent flapping in the sky may be pelicans and larger birds. Random flapping indicates birds that are insectivores. Should you see hovering, that will probably be hummingbirds, kingfishers, and kestrels.



## Green Corner

### E-Waste

by Nelda Tuthill of the Green Team

Research has shown that more than 1.5 million tons of e-waste—TV's, monitors, computers, cell phones, batteries and more—are thrown into American landfills and incinerators every year. Some electronic products (CRTs, circuit boards, batteries, and mercury switches) contain hazardous or toxic materials such as lead, mercury, cadmium, chromium and some types of flame retardants. In particular, the glass screens, or CRTs, in computer monitors and televisions can contain as much as 27 percent lead.

“We don't have any federal regulations that address household electronic waste,” says David Willett of the Sierra Club. “Meanwhile, the European Union has policies that make manufacturers responsible for recycling their products and decreasing the levels of harmful metals used.”

Nine U. S. states have passed e-waste laws. In the 2007 Texas Legislature, the House and Senate passed bills to require Texas manufacturers of computers to provide a “reasonably convenient” recycling plan that requires no additional payments from consumers. The bill will go into effect on September 1, 2008.

The bill was backed by Dell and Hewlett-Packard. Dell and Hewlett-Packard provided some model legislation that was used as the basis for the bill that requires producers to provide free and convenient recycling for consumer's old computers. Under the legislation producers will be required to file yearly reports of the amount of material recycled. Disposal and recycling are supposed to happen in accordance with state and federal environmental regulations, but Texas has limited power over exports. According to *Laptop Experts*, “Hopefully, ‘innovative thinking’ doesn't mean just shipping the waste to China.”

In the meantime some manufacturers already have recovery programs. HP has said it will accept old electronics equipment, from PCs to TVs, that are dropped off at Office Depot outlets across the country from July 18 to September 6, free of charge. Currently Office Depot has a recycling program that requires the purchase of a special Tech Recycling Box available in three sizes for \$5, \$10, or \$15. Along with computer equipment, small televisions, fax machines, printers, scanners, telephones, digital cameras, video cameras, VCRs, DVD players, and MP3 players can be recycled in this process. In addition, cell phones, PDAs, rechargeable batteries and ink and toner cartridges can be recycled for free at Office Depot.

Dell went one further: It will pick up old computers and their accessories at the homes of customers. The catch: You have to buy a new Dell.

The EPA has established a program named “Plug-In to eCycling Partners.” These partners have committed to collecting, reusing, or recycling old electronics. In addition to Dell and HP, EPA's website shows AT&T, Lexmark, JVC, Panasonic, Staples, Sharp, Sony, Philips, Samsung Electronics, Wal-Mart, Toshiba, NEC, Sprint, T-Mobile, Motorola and others as partners. Go to the website [www.epa.gov/rcc/plugin/](http://www.epa.gov/rcc/plugin/) to reach the websites of these companies and learn about their recycling programs.

All these programs show how far recycling has come from the time, not so long ago, when major computer manufacturers were fighting legislators about fixed fees for recycling and resisting the idea that they should take full responsibility for disposal of electronics. Kate Krebs, executive director of the National Recycling Coalition in Washington, D.C. credits the change to public pressure. She cites photos—including one that accompanied a Mercury News investigation into electronic waste in late 2002. That photo showed shorelines in China littered with discarded computer parts and a scavenger working among them.

“This brought an emotional response to every American,” says Krebs, “who had ever taken a computer somewhere and worried that they have been part of the China shoreline.”

House Bill No. 2714 passed by the House of the Texas Legislature reads, “The purpose of this subchapter is to establish a comprehensive, convenient and environmentally sound program for the collection, recycling and reuse of computer equipment that has reached the end of its useful life. The program is based on individual manufacturer responsibility and shared responsibility among consumers, retailers, and the government of this state.”

The full text can be obtained at [www.capitol.state.tx.us/tlodocs](http://www.capitol.state.tx.us/tlodocs). The act becomes effective September 1, 2008.

# Garbology 102

by Diane Humes

Excavation of shell middens has told archaeologists a lot about the lives of Native Americans living along the Gulf Coast, including what they ate, what tools they used, what their society was like. Similarly, the modern landfill will give future archaeologists a lot to ponder. One of the earliest and largest, the Fresh Kills landfill in New York City, is an archaeological treasure trove of artifacts from the most advanced civilization on our planet. It is also the largest man-made structure in the world -- twenty-five times the size of the Great Pyramid of Khufu in Giza and forty times larger than the Temple of the Sun at Teotihuacan.

The modern landfill is the commonest method used for disposal of trash. Another method is incineration, used since the late 1800's as an alternative to open dumps. Incinerators produced foul odors, noxious gases, and gritty smoke. But, they did get rid of garbage, except for the 5 to 15% ash residue that required disposal. Incineration was widely used until passage of the Air Quality Act in 1967 and then the Clean Air Act of 1970. The city of Houston relied on 8 incinerators to handle solid waste from 1916 until 1975. The system was cheap, but belched ash and fumes into the air of the mostly poor, non-white neighborhoods in which they were situated. Incinerators were finally abandoned as Houston converted to landfills for its solid waste disposal; the Westpark Recycling facility is located on the site of a former "crematory." Landfills are important; the Houston-Galveston area generates 4.5 million tons of waste each year.

A modern resource-recovery ("waste to energy") facility is another option for waste disposal, especially in areas where landfills are unfeasible. Solid waste is mechanically sorted and all combustibles are processed for use as fuel for power companies. Resource-recovery facilities may burn the refuse for power generation. Modern plants are sophisticated and mostly safe, compared to old incinerators and may be a significant factor in waste disposal in the future. However, they are not without their

detractors. They will require strict adherence to highest standards of pollution control and monitoring, ash disposal, and need the highest standards of operator training to be acceptable to most people.

Litter is garbage "out of place." When Lady Bird Johnson campaigned for national beautification, the average number of littered objects along an average mile of U.S. highway was 3,279, mostly beverage containers. Statistics such as this led 11 states to enact "bottle bill" legislation. Consumers pay a deposit on specified beverage purchases; beverage distributors are required to accept returned containers and refund the deposit. These programs are highly successful in reducing litter. However, large beverage companies generally are opposed to them. They have taken two approaches: lobbying and advertising AND opening up recycling centers in most states not having a bottle bill. The result has been increased recycling, especially aluminum cans. Almost 60% of all aluminum cans are now recycled.

Recycling aluminum is highly economical compared to its production from raw materials. Therefore, a ready and lucrative market exists for recycled aluminum. Finding markets for other recyclables is often difficult. But, consider that **a resource is not actually recycled until it is also reused**. So, in order to truly reduce waste, we must create the markets. We must **buy recycled products**.

Consider Great Britain, which is the world's largest wine importer, but has no market for green glass, as its bottling industry mostly uses clear glass. What to do with all those wine bottles? One solution is for wine to be shipped to Britain in 24,000-liter containers and bottled there, saving shipping costs by 40% and reducing the amount of imported green glass. Still, most recycling programs are not financially self-sustaining; resource separation and collection is expensive. San Francisco's resource recycling plant cost \$38 million.

Although recycling began in an effort to reduce litter, it is now seen as a way to reduce use of natural resources, reduce volume in landfills, and lower greenhouse gas emissions. Metals and glass can be recycled almost indefinitely; paper can be recycled about 6 times before its fibers are too short to be useful. Plastics can be reused, but must be separated into their many different types. Many plastic products are difficult to dismantle and reuse. Recycling aluminum results in a 95% energy savings, steel 60% savings, paper 40%, and 30% for glass.

This leads us to source reduction – **use less stuff** - the preventive medicine of garbology. Source reduction implies the end of “planned obsolescence,” longer product lives, less packaging. These goals turn out to be less simple than supposed. Constant innovation and technological improvement provides us with more efficient, advantageous products (do you really want to drive that old gas guzzler?) Packaging serves many purposes – deters theft, protects product, prevents tampering, protects health. Some believe that good design should plan for an object’s eventual disposal before it is constructed. But, the Garbage Project concluded that the American waste stream is an incredibly complex system, consisting of threads of trash, energy, recycling, toxics, economics, politics, the environment, and the interconnected individual lives of all 250 million of us and we all resist micromanagement.

Some general conclusions can be drawn from the study of garbology. There is no one solution to managing waste; all current options - landfills, resource recovery, recycling, and source reduction - have advantages and disadvantages; all are expensive and **all** may be necessary. There is no garbage crisis except that of NIMBY.

#### Sources:

Melosi, Martin V. and Joseph A. Pratt. eds. *Energy Metropolis: An Environmental History of Houston and the Gulf Coast*. Pittsburgh: University of Pittsburgh Press, 2007.

Rathje, William and Cullen Murphy. *Rubbish! The Archaeology of Garbage*. Tucson: The University of Arizona Press, 2001.

“The Truth About Recycling.” *The Economist: Technology Quarterly*, June 7, 2007.

Landfills contain all manner of toxics that must never be allowed to leach out. Money is a great behavioral incentive. The city of Seattle reduced its landfill volume and increased recycling by charging more for excess trash and making recycling free. Composting yard waste and most food and recycling all paper will greatly reduce landfill volume. Hazardous products need to be used **properly and completely** before discarding the containers. We must create markets for recycled products and be willing to buy them.

Throughout civilization great waste generation has been a sign of economic and social vitality. Consider ancient Nineveh and other sites in Iraq from which archaeologists have found heaps of ceramic bowls, piled by the thousands like shells in a coastal midden, unbroken, apparently designed for a single use at a single site. Is it possible that these Uruk bowls from 3300 B.C. are the first single-serving fast food take-out containers? We can learn more than we could imagine from the study of garbage!



**It’s not exciting, but sure is important.**

# Digestion of the Estuarine Smorgasbord

by Louise Bell



Dr. Steve Alexander shows us some nice smelly marsh mud in the smooth cordgrass marsh at GISP.

May 9<sup>th</sup> and 10<sup>th</sup> were beautiful days, the wind pleasant, the MNs enthusiastic, and Dr. Steve Alexander was at his best as he led workshop participants through the Lake Como salt marsh. The workshop title, **Estuarine Smorgasbord**, whetted our appetites for learning about the plants dotting the marshes, and **learn** we did!

We started with the plant at the waterside, **smooth cordgrass**, or properly referred to as *Spartina alterniflora*. Cordgrass is a rhizomatous perennial grass, growing from two to four feet tall. The horizontal underground roots, called **rhizomes**, send up new plants that form thick clumps. Cordgrass also produces seed heads in the fall, so it can propagate by seeds as well.

As we gazed at the mass of plants in the marsh, it was clear that *Spartina alterniflora* was the dominant plant. Tides move the water in and out through the cordgrass but that doesn't bother this hardy plant at all. In fact, it thrives in water that has a **salinity measure of 23 parts per 1000**. (We used the refractometer to

*measure the salinity. Just for a reference, the ocean has 30-35 ppt.)* Smooth cordgrass accumulates sediment which enables other marine species, such as mussels, to settle. Just as Dr. Steve told us this, he gingerly pulled a Ribbed Mussel from the mud at the base of one of the plants.

One look indicates that cord grass is deciduous; the smooth cordgrass had new growth sprouting upward while still holding brown stems from the previous year. These will eventually fall into the mud, enriching the mud below as detritus. Cordgrass is a huge **producer** making large amounts of material per unit per year. Fortunately, it grows without competition. The black mud in which it grows is anaerobic or without oxygen. The black color comes from hydrogen sulfide, which is toxic. But not to worry! Our smooth cord grass takes oxygen from the air down to the roots and this keeps the hydrogen sulfide away from the plants.

Dr. Steve made us go back into our high school biology days when he reminded us that **plants have a circulatory system**. Showing us the salt on the cord grass leaves, he explained that hollow tubes (**xylem**) in the plants carry water from the roots to all parts of the plant and up to the leaves. The cordgrass excretes the salt in the water through its leaves. Most plants have green leaves, where the photosynthesis happens. When those sugars are made, they need to be given to every cell in the plant for energy. Enter **phloem**. The phloem cells are laid out end-to-end throughout the entire plant, transporting the sugars and other molecules created by the plant.

Smooth cordgrass accumulates sediment and serves as a **habitat** for other marsh critters. When seeds are formed in the fall, they are a **food source** for birds. Stands of cordgrass provide **nursery** and **protective habitat** for many aquatic species, especially juvenile crustaceans and fishes. The leaves, which die in late fall, decompose into a **nutrient-rich food source (detritus)** for many marsh residents, including oysters, shrimps, and crabs.

Directly behind the smooth cordgrass we saw the Saltmeadow cordgrass (**marsh hay**), *Spartina patens*. Early settlers to the Galveston- San Leon area used marsh hay to feed their cattle. This grass is also a perennial, growing taller than smooth cordgrass. Less tolerant of water in its roots than *Spartina alterniflora*, it grows farther inland.

**Gulf cordgrass**, *Spartina spartinae*, grows in a bunch with distinct stems arising from a central area. In the fall it produces a spike-like seed head that provides a meal for birds. Upland animals use this plant for cover. Like the other plants discussed, it has salt glands in the leaves.

Students we bring to the marsh love the **saltwort**, *Batis maritima*. This low-growing plant has succulent leaves that are easy to spot and the students are amazed at the salty taste of them. Storing the salt in the leaves gets the salt away from the other parts of the plant. At the end of the growing seasons, the leaves just fall off...they are no longer needed!

Another low-growing plant, **salt-flat grass**, *Monanthochloe littoralis*, inhabits the edges of the salt flat. Bunches of leaves sprout from lateral branches, about six inches apart. The salt-flat grass is sparser at the end of the salt flat and more robust as it grows at higher levels.

The **sea ox-eye daisy**, *Borrchia frutescens*, provided a bright yellow spot among the green grasses. Topping a stick-like bush with oval leaves, the daisies were about 1 inch in size.

**Annual glasswort**, *Salicornia bigelovii*, seemed to be a first cousin to the saltwort except it grew more upright. The succulent leaves store the salt in their leaves, keeping it from other parts of the plants. Plants rise from a horizontal plane. Although named **annual** glasswort, the roots continue to live underground in the winter so they are classified as a perennial. The succulent leaves turn red in the fall.

**Saltgrass**, *Distichlis spicata*, is a native, perennial, warm-season, sod-forming short grass with vigorous, creeping, scaly underground stems. The rather stiff leaf blades are sharp, folded or inrolled for part of their length. Seed pods form on the end of the stems.

**Virginia dropseed**, *Sporobolus virginicus*, forms a thick carpet of grass in the transition zone but it is not very abundant in the marshes. Dropseed thrives on the dunes on the beach, but is much smaller in the marshes.

We saw only remains of the **sea-lavender**, *Limonium nashii*, a dried stalk. But pictures provided by Dr. Steve indicated that it bore pinkish flowers on red stems. Branches of the colorful sea-lavender will grow from a circled pattern of beautiful, thick, grayish leaves this fall.

**Sea-blite**, *Suaeda lineraris*, is a straggly, herbaceous annual with a waxy appearance. The dark green leaves alternate on the stems. The seeds of sea-blite were used by pioneers to grind into a meal.

The **marsh elder**, *Iva frutescens*, is a perennial, deciduous shrub and just in front of the *Baccharis* bushes. These plants usually occur at elevations where their roots are not subject to prolonged flooding. These plants can be distinguished by the arrangement of their stems. *Iva* has opposite stems and leaves, *Baccharis* has alternate stems.

**Widgeon grass**, *Ruppia maritima* was uprooted for us to see because it grows under the water. It has an extensive root system and its leaves are hair-like and grow up to 4 inches long. Widgeon grass is a very important wildlife plant with the stems and leaves being heavily utilized by many duck species.

**Algae** are a critical segment of the marsh food cycle. Sea grasses have algae and diatoms, growing on its blades that provide food for fish. Microscopic algae growing on sediment and plant surfaces are a big food source for invertebrates, because they produce food through photosynthesis. By far, **most plant growth is eaten only after it dies, providing the basis for detritus**. Of course, this nutritious material couldn't be made without decomposition—colonies of bacteria and fungi. As the workshop concluded, the thought occurred to me that **the plants in the marsh HAD to be deciduous or annuals** so that they would die back, decompose, and turn, eventually, into detritus! Algae and detritus are important food sources for the worms, mussels, crabs, periwinkles and amphipods living on or in the regularly flooded sediments of the low marsh.

**What a cycle!**

## Guppies from Julie

by Julie Massey

Have you seen new faces in the prairies or marshes! Well, they may be one of the 24 new Galveston Bay Area Master Naturalists who just completed the 2008 Training Class! This was our 11<sup>th</sup> class! Wow!

These new Master Naturalists are now out in the prairies, marshes, leading beach walks and helping with education programs! We welcome them to the wonderful world and work of Texas Master Naturalists!

Many thanks to the volunteers who helped with the class! A special thank you to Barb Ellisor, Training Class Coordinator, for helping to coordinate three training classes!

### Treasures of the Bay Educators Workshop – June 17- 20, 2008

We will host the “Treasures of the Bay Educators” Workshop once again this summer! This four day mini-Master Naturalist workshop for local educators is a great way to meet new people, learn more and have fun this summer!

To volunteer with the workshop, please contact Julie Massey at 281-534-3413, Ext. 2, 2 or [jmassey@ag.tamu.edu](mailto:jmassey@ag.tamu.edu).

### October is the Statewide Texas Master Naturalist Meeting

Meet Texas Master Naturalists from across the state, enjoy the starry skies of Texas and share songs around the campfire! What a Master Naturalist life! All of this and much more happens at the Statewide Master Naturalist meeting!

Plan to join us at the Texas Master Naturalist Statewide Annual Meeting & Advanced Training to be held October 24-26, 2008, at the Mo Ranch in Hunt Texas. Mark your calendar and make plans to attend! More details will be available this summer!

### National ANSORP Meeting in New Braunfels

The Alliance of National Resource Outreach and Service Programs (ANSORP) will



host their 4th Annual Conference on Diverse Practices for Natural Resource Outreach and Service Programs. ANSORP is a national organization formed to support the development and maintenance of adult natural resource education and stewardship programs such as Master Naturalists, Watershed Stewards and Conservation Stewards.

The conference will be held from September 9 -11, 2008 at the T bar M Resort & Conference Center in New Braunfels, Texas. Check out their website <http://www.nralliance.org/index.php> in early June for more details.



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## The Midden

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