Eye on Nature

TEXAS PARKS & WILDLIFE

SPRING 2006 A publication of the Wildlife Science, Research and Diversity Branch — *Getting Texans Involved*

Living gently on the land

By Mark Klym

Texas. The name brings different pictures to the minds of our many different communities, but the state has a long history of valuing our resources, the land, air and water around us. Texas is very rich in natural resources, and as these valuable commodities become increasingly scarce in the world today, the way we use them and the impact we have on the world around us becomes increasingly sensitive.

This issue of Eye on Nature is created to focus on the Design With Nature theme of the combined display of the Wildlife Diversity Program and the Infrastructure Division at Texas Parks & Wildlife Expo. This year, as Expo celebrates its 15th anniversary, the Design With Nature theme of living with the world around us is as important and as significant as ever.

This newsletter is a compilation of efforts from both divisions reflecting on what we are doing, and what you can do to leave a very small footprint of your passing. We hope you will choose to join us Oct. 7 & 8, 2006 for Texas Parks & Wildlife Expo. Stop by the Design With Nature tent and visit displays demonstrating some of the activities highlighted in this edition.

Mark is the coordinator of the Texas Wildscapes program and the Wildlife Division portion of the Design with Nature area at Texas Parks & Wildlife Expo. He works out of Austin.

TEXAS PARKS AND WILDLIFE DEPARTMENT MISSION STATEMENT
"To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations."

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www.tpwd.state.tx.us

Design with nature

at the Texas Parks & Wildlife Expo

By Ernie Gammage

When the Texas Parks & Wildlife Expo celebrates its 15th anniversary this coming October, one area that will be sure to be packed is the Design with Nature (DWN) display. Since 2003 this presentation has grown from a simple idea to one of the most popular stops for Expo visitors.

DWN began as a place to showcase how Texas Parks and Wildlife walks the walk in using design and materials to save resources and contribute to healthy ecosystems. Quickly, organizers added displays and information on how Expo visitors could incorporate sound practices in their own yards, homes and lives. Solar power, rainwater collection and wildscaping all became a part of the display. As the area grew, like-minded organizations such as Master Naturalists and the Bluebird Society brought their expertise to share with visitors.

Two Texas Parks and Wildlife divisions contribute to DWN, wildlife and infrastructure. "Design with Nature" is an opportunity for us to introduce Expo visitors to how they can create sustainable ecosystems and healthy habitat in Texas," says Mark Klym, wildlife division coordinator for DWN. "At the same time, we're able to demonstrate the things that we do as an agency to 'build green,' conserving energy and resources," says Dave Perry of the infrastructure division. Together, these two Texas Parks and Wildlife veterans bring life to an ever-changing landscape of ideas that can be used by every Texan.

Whether it's demonstrating photovoltaic power through a bubble blowing machine, showing samples of construction materials

made from the byproduct of coal combustion or demonstrating habitat-friendly plants for landscaping, DWN covers lots of ground. For the past several years, a hybrid automobile has been a real hit with visitors as they learn more about how these energy-efficient vehicles contribute to a healthy environment and save natural resources.

"Design with Nature has brought a whole new dimension to the Expo." says director Ernie Gammage. "It's one of the most important and dynamic areas on the grounds. The future health of the Texas outdoors depends on what we each do today, and no area demonstrates that more than Design with Nature." As moms and dads visit with experts and check out the newest solar panels, kids marvel at the butterflies in the butterfly tent. There's something for everyone!

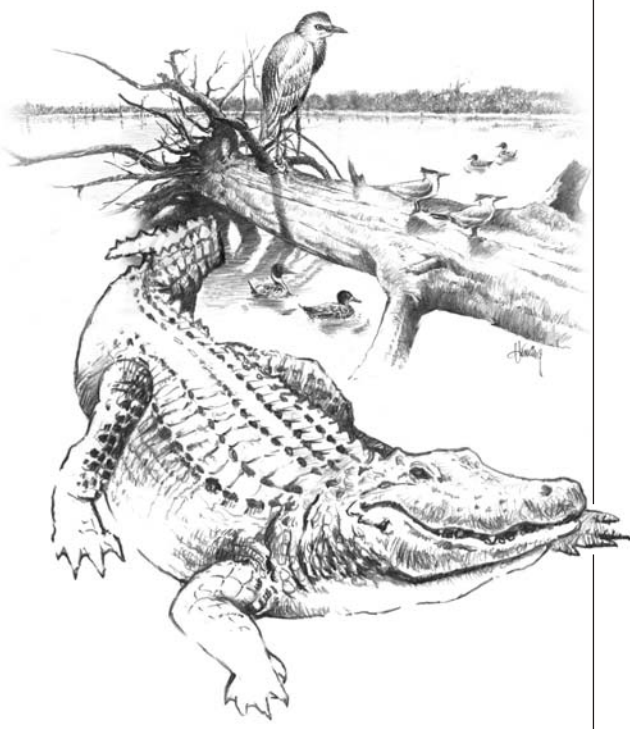
The Texas Parks & Wildlife Expo will be held this year in Austin at Texas Parks and Wildlife Department headquarters on Oct. 7 & 8. Admission is free. For more information, visit www.tpwd.state.tx.us/expo

Ernie is Director of Urban Outdoor Programs in the Education Division at Austin.

Sustainable design

at Sheldon Lake Environmental Learning Center

By Joe Smith



Sustainable design uses architectural and engineering strategies to sustain the earth's natural resources and preserve the environment while providing a high quality, healthy facility for the sites employees and visitors. Some of these strategies were used at a recent project at Sheldon Lake Environmental Learning Center (ELC) in Sheldon Lake State Park.

Sheldon Lake State Park & ELC is a 2,800-acre outdoor education and recreation facility located near Houston in northeast Harris County. The park is split into two units: Sheldon Lake and the Environmental Learning Center. The reservoir encompasses 1,200 acres, of which 800 are permanently inundated and 400 acres are marsh and swampland. Located on Carpenter's Bayou, a tributary of Buffalo Bayou, Sheldon Reservoir was constructed in 1942 by the federal government to provide water for war industries along the Houston Ship Channel. Texas Parks and Wildlife Department acquired the reservoir in 1952 and designated it as the Sheldon Wildlife Management Area; it was opened in 1955. Sheldon Lake was designated a state park in 1984.

Formerly in the "country," Sheldon Lake has survived a tremendous influx of urbanization over the past 45 years. Sheldon Lake is now a green and blue oasis for wildlife and people on the edge of Texas' largest city. The Environmental Learning Center provides an opportunity for school children, many from the inner city, to experience an outdoors environment, fish in ponds and learn about plants and animals that inhabit the site.

A recently completed project at the learning center transformed a maintenance building into a classroom and a park specimens study room, added new rest room buildings, created pond structures for nature study, constructed new wetland areas and improved the parks trails. As part of this project, the State Energy Conservation Office (SECO) provided a $100,000 grant to demonstrate five alternative energy technologies for educational purposes for ELC visitors.

Alternative energy technologies seek to reduce dependence on non-renewable resources such as oil, coal and natural gas by producing energy from the sun and wind and by reducing energy consumption. The technologies demonstrated at Sheldon Lake Environmental Learning Center include Solar Photovoltaic (PV) Power, Solar Water Heating, Wind Power, Geothermal Heat Pump and Constructed Wastewater Wetlands.

Solar Photovoltaic (PV) panels produce electricity when illuminated by the sun. This project installed 14 PV panels. Eight panels are on a fixed array oriented to the south and inclined at 40 degrees from horizontal. Six panels are on a tracking array oriented at 25 degrees and track the sun from east to west between morning and sunset. The tracking array has an instantaneous power meter and a joystick control, allowing students to change the orientation of the array and observe the effect on power production. Each 2.5'x5' PV panel and is rated at 170 watts, giving a combined maximum potential of 2,380 watts. The installation is expected to produce a large part of the electrical power consumed by the new construction at the park.

An array of six PV panels was installed at the Constructed Wastewater Treatment Wetlands (see below) supplying electricity to the two pumps required as a part of this system. This is all of the power required for the treatment of the wastewater produced at the park.

Solar water heating utilizes a closed loop system which circulates distilled water through the collector and back to a 10-gallon storage tank. Water for use in the park is circulated from an 80-gallon storage tank through a heat exchanger located in a 10-gallon tank. Heat is transferred from the distilled water to the domestic water. Hot water for use in the two rest rooms is drawn from the 80-gallon tank.

The geothermal heat pump is similar to a conventional air conditioner which extracts heat from a building and transfers that heat to the outside air through the condensing unit. The geothermal heat pump transfers heat to the earth. There are nine geothermal wells 250 feet deep with a loop of 1" polyethylene pipe, through which water circulates. The wells are connected in series creating a geothermal loop. A pump circulates water through the wells and back to a heat exchanger in the condensing unit of the heat pump. The heat from the building is transferred to the water in the geothermal loop and then to the earth through the geothermal wells. The heat pump can transfer heat more efficiently than a conventional unit making the geothermal heat pump up

[Continued on Page 4]

[Sheldon Lake Continued]
to 50% more efficient than a conventional unit. In the winter time the process reverses and the heat pump extracts heat from the ground into the building.

The wind turbine has a 3-blade 6.5' diameter rotor mounted on a tower 80 feet tall. The tower is located in a field 200 feet from the classroom. The rotor converts the linear motion of the wind into a rotary motion which drives a generator. The wind turbine will produce 1,800 watts of electricity in a 35-mile-per-hour wind.

A wastewater wetlands was constructed as an alternative to a standard wastewater treatment plant to:

- Reduce use of electrical power by the natural treatment of wastewater
- Reduce carbon and other toxic emissions
- Sequesters carbon through biological processes

The wastewater from the park storage tank located adjacent to the constructed wetlands flows through a series of four ponds breaking down and becoming food for the plants, micro-flora and fauna. The wasterwater wetlands has proven to be very effective producing high quality water requiring no further treatment. If the wetlands ever fill, the PV powered pumps will circulate through a sprinkler system over the pond area to quickly evaporate excess water.

Many of the operating characteristics are available to be viewed in real time at a web site, http://chuck-wright.com/wcsd/display/frametop.php?site=sheldon. Some of the data available includes:

- Fixed Array Power
- Tracking Array Power
- Wind turbine Power
- Wind Speed
- Outdoor Temperature
- Water Temp. Into the Heat Pump
- Water Temp. Out of the Heat Pump
- Total Power Generated Year to Date
- Total Power Used Year to Date
- Emissions Reduction Due to Alternative Energy Systems

Historical data for these parameters will also be available providing a useful tool for the students in their study and understanding of alternative energy systems.

Texas Parks and Wildlife Department is proud to have partnered with SECO to provide this showcase of alternative energy demonstrations for the benefit of the schoolchildren visiting the ELC. We believe it will help raise the overall understanding of the importance of sustainable energy systems.

Joe Smith is an engineer working with the Infrastructure Division at Texas Parks and Wildlife Department in Austin.

Texas Wildscapes –

Living gently in the garden

By Mark Klym

TEXAS WILDSCAPES

I love my garden, but really wonder at the impact of all that water and all those chemicals I use. And how come I don't have the birds and butterflies that I read about in Texas newsletters? The answer may be found in a program Texas Parks and Wildlife Department has sponsored since 1994 — Texas Wildscapes.

The Texas Wildscapes program was designed to restore some of the habitat that wildlife is losing daily on Texas private lands. The emphasis that the program places on native plants however, results in protection of some of our plants that are listed as threatened, endangered or species of concern by reducing the competition these plants face from exotic species.

Wather hyacinth invades.

The use of native plants further minimizes the impact our garden has on the environment around us by reducing water consumption. Texas native plant species are adapted to our natural water supply of drought and flood cycles. These plants, even in a somewhat formal setting, will require considerably less water than the traditional exotic species we tend to use in our gardens. The five day watering cycle recommended by communities during periods of water restriction can often be extended several days through the use of plants adapted to xeric situations.

Finally, native plants are adapted to the soil conditions, to the pests that are likely to infest them, and even to the viruses and diseases that are likely in our different regions. This means there will be less need to amend the soils, to treat for caterpillar or insect infestations, to treat for fungus or viral conditions, etc. The birds, small mammals, predatory insects, amphibians and other wildlife you will be attracting will aid the plants in dealing with these issues as well. These predators will then not consume the poisons traditionally used in gardening, reducing the impact on their systems.

The program is changing slightly. With recent emphasis on the impact of invasive plants, both the Texas Wildscapes and the Best of Texas Backyard Habitats program are taking a stand that the use of these species in our habitats needs to be discouraged. While some of the species, like Pyracantha and Ligustrum have been promoted heavily in some backyard bird habitat books, Texas Wildscapes and the Best of Texas Backyard Habitats programs contend that the additional shelter and food resources provided by these species does not offset

[Continued on Page 5]

[Texas Wildscapes Continued]
the loss of diversity associated with their use, and so the use of these and other invasive species in a habitat applying for certification can result in the application being unsuccessful.

Your backyard habitat, designed to attract birds, butterflies and other wildlife to your garden, can help you to leave a smaller track on the land you manage. For more information, see www.tpwd.state.tx.us/wildscapes or visit the wildscapes display at the 2006 Texas Parks & Wildlife Expo in the Design With Nature area.

Mark is the coordinator of the Texas Wildscapes program and the Wildlife Division portion of the Design with Nature area at Texas Parks & Wildlife Expo. He works out of Austin.

For information on Texas Wildscapes or Best of Texas Backyard Habitats see **www.tpwd.state.tx.us/wildscapes**

Terrestrial Invasives to avoid:	**Suggested Native Alternatives:**
Japanese Honeysuckle	Chinkapin oak
Nandina	Autumn sage
Bamboo	Turk's cap
Chinese Tallow	Yaupon
Chinaberry	Yellow bells
Pyracantha	Cardinal flower
Ligustrum species	Coral honeysuckle
Red-tipped photinia	Blue mistflower
Asian jasmine	Coral berry
Eleagnus	Agarita
Euonymus	Mexican plum

Living gently on the land

Garden plant selection

By Jason Singhurst and Mark Klym

What are Invasive Plants and Why Should I Avoid Them? Both gardeners and naturalists can often be heard discussing a species of plant as "very invasive," but while they often use the same term, they are likely referring to very different behaviors, and will probably disagree on whether some plants should be considered "invasive" or not.

For the gardener, an "invasive" plant is usually one that, when placed in the garden, will quickly "take over," crowding the area that has been selected for it and requiring extensive effort on the part of the gardener to keep it "under control." The naturalist on the other hand, looks at an "invasive" species as one that, when introduced to an area tends to escape cultivation and colonize in the wild, persists for a year or more, often forming monoculture plantings that aggressively exclude other species or, more often, crowd other species to the point of choking them for light or resources. These are the "invasive" plants we encourage gardeners to avoid.

Effects of Salt Cedar. This is what remains of the river.

Invasive species often share some noted characteristics — rapid growing and reproduction by more than one means. They often originate in regions that are very climatically and geographically similar to our own. As a result, these are often plants that, when first introduced, are promoted as "highly adapted" "great for this region" plants.

Many of the invasive plants are also species that are "highly favored" by birds or other wildlife according to the popular publications. These are the species you will often find recommended in popular publications for attracting birds, butterflies, dragonflies or other species to your backyard. The question one should ask is, does the fact that the birds consume the berries automatically over ride any potential impact this plant might have in the region around me?

Pyracantha for example, is one of the species that is often recommended as a great plant for bird gardens. The birds are said to relish the berries, the thick foliage tends to provide additional shelter for the birds both as nesting and escape habitat, and the spines discourage some predators. Some well known research and educational facilities at one time recommended this plant as an ideal plant for Texas. The plant however is highly invasive, noted for creating situations that choke out other species when introduced. Are there alternatives? Yes. There are several native berry producing, evergreen plants with a growth habit of thick foliage. And some even produce quite formidable spines!

PHOTO COURTESY OF CITY OF AUSTIN

Ligustrum chokes out native grasses in Austin.

What is being done to reduce the impact of these plants in our state? Texas Department of Agriculture, under direction of the legislature, is developing a list of noxious plants that will be discouraged

[Continued on Page 6]

Get involved in Texas Nature Trackers

By Marsha Reimer

PHOTO COURTESY OF U.S. FISH AND WILDLIFE SERVICE

We share this amazing planet with over a million kinds of living things. Unfortunately, the rate of extinction for certain species is currently at an all time high. In the past century we have lost 34 species of freshwater mussels in the United States alone. The famous entomologist, Edward O. Wilson, is quoted as saying "Each species is a masterpiece, a creation assembled with extreme care and genius." When we lose species our world becomes less biologically diverse. Why should we care about the diversity of living things or biodiversity on this planet? No living thing stands alone. All living things are interconnected and that includes humans. Therefore, the loss of one species can affect untold others. There are times when the extinction of species occurs before we are able to understand their interconnection. It is thought that there was a strong connection between the now extinct Dodo and calvaria tree on the island of Mauritius. Dodos became extinct during the late 1600s and soon after people noticed that the seeds of the calvaria tree stopped sprouting. Some scientists think that the seeds sprouted after they were ingested by Dodos.

There may be more than 200,000 kinds of plants and animals native to the United States alone. The status of many of these plants and animals is not known. National heritage programs and The Nature Conservancy looked at the status of over 30,000 U.S. plants and animals over the past 20 years (Stein, Kutner, and Adams 2000). They found that 1% of those plants and animals were presumed or possibly extinct, 7% were critically imperiled, 8% were imperiled and 16% were vulnerable.

In Texas, the status of many species is unknown. The Texas Parks and Wildlife Department's Texas Nature Trackers is a citizen science monitoring effort designed to involve volunteers of all ages and interest levels in gathering scientific data on species of concern in Texas through experiential learning. The goal of the program is to enable long-term conservation of these species and appreciation among Texas citizens. Projects under the Texas Nature Trackers umbrella involve monitoring a variety of exceptional Texas species such as Texas horned lizards, hummingbirds, monarch butterflies, freshwater mussels, amphibians, prairie birds, Bald Eagles and prairie dogs. These projects are only the beginning. Look for more ways to get involved in the future.

"Every individual matters. Every individual has a role to play. Every individual makes a difference." —Jane Goodall

Stein, B.A., L.S. Kutner, and J.S. Adams, Editors. 2000. Precious Heritage, the Status of Biodiversity in the U.S. Oxford University Press. Pg 93-118.

Marsha Reimer is the Coordinator of the Texas Nature Trackers program out of Austin.

[Garden plant selection Continued]

within the state. Texas Parks and Wildlife Department has a committee working to develop a list of species we would like to see included on that list. Last fall, interested parties from across Texas and surrounding areas met at the Lady Bird Johnson Wildflower Center to discuss the impact and possible actions to control invasive plant species in Texas. This conference may become an ongoing event at the Wildflower Center. Several agencies, including Texas Parks and Wildlife Department, have produced literature, displays and educational programming about invasive species.

What can you do to help? When making decisions about landscape additions, check your choices against the lists at www.texasinvasives.org. If you have invasive species on your property, remove them as soon as possible. Until this is possible, preventing the spread of seed by removing seed heads is a viable alternative. Use plants that are native to your region. Regional lists can be found in the book *Texas Wildscapes; Gardening for Wildlife*. Sally and Andy Waszowski's book *Texas Native Plants* is also a good reference. Avoid the temptation to collect seed from neighboring regions to plant in your garden.

Spring Lake before invasives removal.

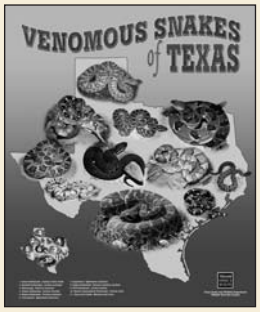
These simple steps will make it unlikely that your garden will contribute to the invasive species problem facing our state.

By making careful choices to use in our gardens, we can have a smaller impact on our world around us.

Jason is a botanist/plant community ecologist. Mark is the coordinator of the Texas Wildscapes program. Both work out of Austin.

Wild Stuff!

Wildlife Poster Sale



Posters Available:

Bats of the Western United States (pictured)
Venomous Snakes of Texas (pictured)
You Can Help Texas Turtles

$2 each plus $3 shipping and handling for up to 4 posters. Shipping $1 per poster after 4 posters.

Migratory Landbirds of the Southeast (pictured)
Common Feeder Birds of Eastern North America
Common Feeder Birds of Western North America

$2.00 each plus $1 shipping and handling each.

Checks for all above should be made payable to the Nongame Fund and sent to:
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

Hummingbird Wheel still only $11.95!

(Includes shipping and handling)

Check should be made payable to the Hummingbird Roundup and sent to:
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

[The back porch Continued]

These public values often come at a private cost – primarily to the landowner. How we capture these costs, and assign an economic value to ecosystem products is the most pressing challenge we face. In some states, aesthetic views are valued so highly that municipalities have agreed to purchase conservation easements to protect their "view sheds."

Atmospheric carbon is a growing concern globally, causing many corporations to consider restoring forestlands in order to extract and "fix" atmospheric carbon in the tissues of trees. This is done in a type of eco-marketplace that affords financial credit to plant trees, thereby offsetting pollution from industrial activities.

Most significantly, the value of water rights in Texas is already surpassing the value of land in many parts of the state. This is causing landowners to consider land practices that maintain and enhance water flows and generate recharge. This means positive things for wildlife as well. Imagine a system whereby habitat is valued not only for the wildlife it produces, but also for clean, abundant water – a vital resource with a huge economic impact. This could translate into various land protection programs, including conservation easements or landowner associations affecting thousands of acres. An example is Government Canyon State Natural Area near San Antonio. This public-private partnership was established to protect a vital groundwater recharge area, but it also provides habitat for rare species. In addition, it allows recreational use readily accessible by an urban population.

Wildlife conservation in Texas is best accomplished through long-term goals based on landscape-level priorities instead of on a species by species basis. In the months and years to come, you will be hearing more about TPWD's Wildlife Action Plan. It is a comprehensive strategy used to identify conservation priorities, combined with implementation of on-the-ground projects to address those priorities (see Eye on Nature Spring 2005). This strategy will include innovative approaches to conserve landscapes that harbor the great diversity of wildlife in Texas we all value. I am looking forward to the challenges ahead. I hope you are too.

Matt is director of the Wildlife Diversity Program working out of Austin.

The Back Porch

KEEP TEXAS *wild!*

Valuing nature

By Matt Wagner

Greetings! As the new Program Director for Wildlife Diversity at Texas Parks and Wildlife Department, I'm looking forward to regular communication with you through Eye on Nature. Please call on any of us with issues and ideas on how best to manage for wildlife diversity in this great state.

I want to share with you some of my perspectives. After 17 years with the department, it has become clear to me that habitat conservation in Texas is all about values. Values can be ethical, spiritual, economic or otherwise. Economically, the loss of Coastal Marsh as a barrier to devastating hurricanes was never more evident than during the ordeal of Katrina. Assigning value to the products and services that ecosystems provide is especially important in a private land state like Texas.

Several examples are helpful here. The most obvious is wildlife-related recreation. Revenues from hunting leases generate millions of dollars an nually, and motivate landowners to engage in habitat protection over millions of acres. From a biologist's viewpoint, deer are a byproduct of land stewardship. The same can be said about rare songbirds inhabiting forested areas or native grasslands.

What do songbirds and deer have in common? Habitat. That shrinking resource is threatened by fragmented land ownership, urbanization, and non-sustainable agricultural practices. Deer hunting and other nature-based tourism promise to keep open spaces open in many areas of the state, but these activities hold only partial answers. We must think in broader terms of the products that healthy ecosystems provide — values such as a beautiful view, the air-cleansing properties of trees, and abundant, clean water.

[Continued on Page 7]

4200 Smith School Road
Austin, Texas 78744

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