



PINEYWOODS POST

A publication of the Texas Parks and Wildlife Department for landowners and outdoor enthusiasts of the Pineywoods.

Summer 2013



Where does the time go? One minute it is early Spring and the next minute you look up and it is July. I hope everyone had a great 4th of July and enjoyed the unexpected and very welcome cool snap. I also hope you were able to get some of the spotty rains that popped up. I know in my part of the country we are getting pretty dry.

As biologists, land managers, and hunters it is already time to be thinking ahead to population surveys, MLDP paperwork, filling feeders, planting food plots, scouting, and hanging new stands. Before you get started on those projects, I hope you will take the time to read this edition of the Pineywoods Post. It is full of good information for land managers and nature lovers alike!

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In Memory of the 19 Wildland Firefighters who perished in AZ. on June 30th.

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CRITTER CORNER

Our National Symbol: The Bald Eagle

By Andrea Webb, TPWD District Biologist Carthage, TX.

America adopted the bald eagle (*Haliaeetus leucocephalus*) as its national symbol in 1782. By the mid 1900's, our national symbol was "threatened with extinction" due to nesting habitat loss, excessive shooting by farmers and ranchers, and the widespread use of an infamous pesticide called DDT. As a result of numerous recovery efforts including the enactment of legislation to protect eagles and the banning of DDT, the delisting of the bald eagle has become one of the great recovery success stories of our time. The bald eagle is a member of the Accipitridae family which also includes hawks, kites, and old world vultures. All females in this family tend to be bigger in size. The female bald eagle is no exception. The female can have an 8 foot wing span and weigh up to 14 pounds. The male has a 6 to 7 foot wing span and can weigh up to 10 pounds. Juveniles have mostly dark feathers and are commonly confused with the Golden Eagle (*Aquila Chrysaetos*). Juveniles will not reach sexual maturity until 4 to 5 years of age when they begin to grow their characteristic white head and tail feathers. Eagles are sexually monomorphic, meaning the male and female look alike. Eagles have an average life span in the wild of 15 to 20 years; however, eagles have been known to live up to 30 years in captivity.

Bald eagles are monogamous and will typically mate for life. The breeding season in the south is late fall. Eagles will nest in the top of large mature trees, usually proximal to bodies of water. Pairs tend to have high nest site fidelity unless nest sites have been disturbed. Pairs will make repairs and additions to the same nest year after year, so nests can easily reach up to 10 feet across and weigh up to half a ton! Typically one to three eggs will be laid and incubated for about 35 days by both parents. After the incubation period, the nearly helpless eaglets hatch and are then tended by both the male and female over the next 10 to 11 weeks (until they fledge). The parents will continue to care for the fledglings for several weeks after leaving the nest.

A dramatic decline in reproduction may have started as early as the late 1800's. Farmers, concerned about livestock predation by eagles, regularly shot them when encountered. Wide-spread land clearing and forest degradation also destroyed much of the existing nesting habitat. These factors combined with the length of time required for a juvenile to reach sexual maturity resulted in noticeable declines in eagle numbers. Congress passed the Bald Eagle Protection Act in 1940 in response to this decline. Shortly after World War II, DDT was introduced as the solution to elimination of mosquitoes and crop damaging insects. After spraying fields, precipitation would wash DDT into local waterways contaminating fish, invertebrates, and aquatic vegetation. As the chemical made its way up the food chain in contaminated food sources, it accumulated in the bodies of top end species like eagles. DDT poisoning affected the reproductive potential of the female bald eagle in several ways, including thinning of the egg shells. If a female was able to lay eggs, they would generally break during incubation under the weight of the brooding parents.

By 1963 as few as 417 nesting pairs remained in the wild. Eagles were on the brink of extinction. Intervention by the Secretary of the Interior resulted in listing of the bald eagle via the Endangered Species Preservation Act of 1966. Then in 1972, the United States officially banned the use of DDT. Large scale recovery efforts were initiated to save America's national symbol. Captive breeding programs, habitat protection, and subsequent laws set in place to protect this majestic bird began to pay off and numbers began to slowly improve. By 1995 the US Fish and Wildlife Service proposed the endangered status be downgraded to threatened status. By 1999, the number of breeding pairs throughout the lower 48 states had recovered so well that US Fish and Wildlife proposed for the bald eagle be delisted from the threatened and endangered species list. The bald eagle was officially delisted in 2007. The bald eagle is still protected under the Migratory Bird and Treaty Act, as well as the Golden and Bald Eagle Protection Act. The laws prohibit possessing, selling, killing, or harming eagles, their eggs, or nests.

An eagle sighting in East Texas was once a rarity, now it is common to see a pair of eagles soaring above a river or large reservoir. This majestic bird, a symbol of freedom and justice for all, will continue to be enjoyed by future generations for many years to come.

In the pineywoods, the number of nesting eagles has increased tenfold over the last 25 years and a large number of these nests are found on private lands. If you have a new or existing eagle nest on your property and would like some advice on recommended management activities, contact your local TPWD biologist.



BIOLOGIST BIO

ANDREA WEBB, TPWD WILDLIFE BIOLOGIST, CARTHAGE, TX

PW Post: What is your job title and what are your main job duties?

My job title is Natural Resources Specialist III, and my main job duties consist of conducting site visits and making habitat and wildlife recommendations for private landowners within Panola, Shelby, and San Augustine Counties, as well as issuing Managed Land Deer Permits (MLDP). Other duties also include river otter surveys, night-time spotlight surveys of deer, gobbler counts in the spring of turkeys, mourning dove surveys and banding, collection of age, weight, and antler data from hunter harvested deer, and winter-time browse surveys.

PW Post: How many years did you spend in college and what are your degrees in?

I spent a total of 5 years in college and graduated with a bachelor in science in forestry (BSF) with a major in wildlife management from Stephen F. Austin State University in May 2002.

PW Post: Can you tell our readers a little bit about your background and how you became interested in being a wildlife biologist?

Starting out in college, I had an interest in wolves and working around wildlife. I have always enjoyed fishing, camping, and hunting, so finding a career in the outdoors seemed to be the most interesting path for me. In order to more fully determine my interests, I took a number of internship opportunities that give me a wide exposure to different specialties. For example, I had the opportunity to do an internship job for the US Army Corps of Engineers for two summers working with the installation forester at several different army installations including Red River Army Depot and Fort Polk marking and cruising timber, supervising logging jobs, and marking bug spots. While at Fort Polk, I had the opportunity to assist a group of biologist working with red-cockaded woodpeckers identifying individuals that had been previously banded. I also had the opportunity to spend a week in Ely, Minnesota to study the life and biology of gray wolves, which has always been a passion of mine. Being able to take part in these opportunities got me interested in pursuing a wildlife career.

PW Post: What is your philosophy as a wildlife biologist?

Conservation and wise use of the natural resource base on which human populations are ultimately dependent, is what first comes to mind. Incorporating the “people” component into the equation for natural resource conservation is imperative for sustainably maintaining our quality of life. If we can teach our young people about where food comes from and how connected humans are to their environment, and how to best exercise wisdom in decision making regarding conservation and management of the resources, is really why I do what I do.

PW Post: What do you find the most challenging?

Trying to find a healthy balance between increasing human population and habitat fragmentation and management of our natural resources is one of the more challenging aspects of my job. We interact and provide technical guidance with more landowners every year, and most want to learn how to be more effective stewards of their property.

PW Post: What is the most amazing (or scary) experience you’ve had while working with wildlife?

One of the most amazing experiences I have had recently was the opportunity to travel out west to Alpine, Tx and assist with a trap and relocation project of bighorn sheep. After the sheep were wrangled by the helicopter cowboys, they were brought down to us off the mountain where we collected blood, nasal, and fecal samples. We put radio collars on the sheep and then transported them to another mountain range about 25 miles south. Watching the sheep being released on top of a mountain that they had not inhabited for a number of years was a very rewarding experience.

PW Post: Do you have any advice for students who want to be professional wildlife biologists?

Be persistent. Try and get as much education beyond a bachelor’s degree as possible and do as many internship positions as possible. The more connections you make, the more doors will open for you.

PW Post: What are your personal interests?

My family and spiritual life are my top priorities, we spend our time together hunting, fishing, camping, gardening, cooking, and raising chickens and honey bees.



WRIGHT PATMAN RATTLERS

BY PENNY WILKERSON, TPWD DISTRICT BIOLOGIST, ATLANTA, TX.



On a warm May afternoon there is not much better to do than stroll down a forest trail in the Pineywoods experiencing all the wonders nature has to offer. Accompanying Dustin Flowers, US Army Corps of Engineers (US ACOE) natural resource specialist for Lake Wright Patman, we

took to the hiking trail

near Rocky Point Campground, a US ACOE owned camp site on the south shore of Lake Wright Patman in Cass County south of Texarkana. But this was no leisurely stroll as Dustin and I are looking for some trouble, the timber rattlesnake (*Crotalus horridus*). Armed with snake tongs and hooks and wearing snake boots or chaps, we veer off the path to flip downed logs, poke around brush piles, and peer into hollow logs in search of this venomous pit viper or any other reptile.

Crotalus horridus, even the scientific name of east Texas' largest rattlesnake illustrates the feelings of fear that most folks have just hearing its name. A resident of much of the eastern United States, central Texas forms the western most reaches of this rattler's range in the south, northward to the forested drains of southern Minnesota and east to the Atlantic Ocean even into New Jersey and southern Vermont.

The timber rattlesnake, also known as the canebrake rattlesnake, is one of eleven snake species listed in Texas as a threatened species. Along with the Louisiana pine snake (*Pituophis ruthveni*) and the Northern scarlet snake (*Cemophora coccinea copei*), timber rattlers are pineywoods residents identified in the Texas Conservation Action Plan (TCAP) as a species of greatest conservation need (SGCN). This designation simply means that these snakes are in decline and in need of conservation for the animals themselves and for their habitats. Texas is not alone in its designation of the Timber rattlesnake as a threatened species as every state where the timber rattler is found has laws that provide at least some protection for the species.

The survey at Rocky Point did not yield any sightings of timber rattlers or any other snakes for that matter. May 2013's survey was the third survey on Corps of Engineers property near Lake Wright Patman that yielded no rattlesnake sightings. These seasonal time area counts are used to survey snakes when timber rattlers are most active during the day.

These surveys are part of a larger effort by Dustin, other Corps employees and volunteers to monitor herptiles (reptiles and amphibians) on US ACOE property near Lake Wright Patman and the Sulphur River.

Even though it is a little disheartening to spend time on the ground and not find a snake, it is important information about the distribution of timber rattlesnakes near Lake Wright Patman.

Although scattered sightings of individual timber rattlesnakes have been reported around campgrounds and on county roads in Bowie and Cass counties, no sightings have been confirmed by TPWD biologists or COE resource specialists, nor have any sightings been reported to the Texas Natural Diversity Database (TXNDD) which tracks sightings of priority species. That tells us that the population of timber rattlesnakes is definitely not high and probably patchy and isolated because they have not been detected using time area counts in upland and mesic (partially wet) habitats around the lake. Populations have shown a gradual decline over most of their range as a result of road mortality, sport hunting (still legal in some states), habitat fragmentation and habitat loss. Biologists and natural resource specialists across the Pineywoods and Post Oak Savannah ecoregions need your help to keep track of timber rattlesnakes and their occurrences. If you see a snake that you think might be a rattlesnake, first of all DO NOT approach it or pick it up!! Please do take a picture and a GPS location and report that you have a possible timber rattlesnake sighting to your local wildlife biologist. Find your closest biologist on the web at http://www.tpwd.state.tx.us/landwater/land/technical_guidance/biologists/.



2013 EASTERN TURKEY HARVEST

BY JASON HARDIN, UPLAND GAME BIRD SPECIALIST

Turkey hunters harvested a few more eastern turkeys in the pineywoods, post oak savannah and oak prairie ecoregions in 2013 than in 2012. The season runs from April 15 through May 14 in eastern and coastal counties with huntable populations. The harvest total of 185 birds was a 27% increase compared to the previous year but still well below the 10 year average of 276 birds. This is the time of year when newly hatched poults need a high protein diet (bugs) and will often be seen with the hen feeding in open areas with an abundance of grasshoppers. Pass along any poult sightings to your local biologist to help us keep track of nesting success. Although turkey nesting success is strongly tied to weather conditions in April and May, many areas appear to have a shortage of quality nesting and brood rearing habitat. If you have turkeys on or near your place and would like some suggestions on habitat improvements, contact your local biologist and schedule a site visit.

| County | 2012 | 2013 |
|---------------|------|------|
| Angelina | 4 | 2 |
| Bowie | 3 | 7 |
| Brazoria | 0 | 0 |
| Camp | 0 | 0 |
| Cass | 2 | 3 |
| Fannin | 12 | 12 |
| Fort Bend | 0 | 0 |
| Franklin | 0 | 0 |
| Grayson | 22 | 39 |
| Harrison | 1 | 1 |
| Hopkins | 1 | 1 |
| Jasper | 10 | 15 |
| Lamar | 22 | 20 |
| Matagorda | 0 | 0 |
| Marion | 2 | 2 |
| Morris | 0 | 0 |
| Nacogdoches | 7 | 7 |
| Newton | 12 | 16 |
| Panola | 3 | 5 |
| Polk | 6 | 8 |
| Red River | 27 | 37 |
| Sabine | 5 | 5 |
| San Augustine | 3 | 3 |
| Titus | 0 | 0 |
| Trinity | 0 | 1 |
| Upshur | 3 | 1 |
| Wharton | 1 | 0 |
| Wood | 0 | 0 |
| Total | 146 | 185 |



A 20 lb. gobbler harvested by David Campbell in Polk County with an 11 $\frac{3}{4}$ " beard and 1 $\frac{1}{8}$ " spurs.

WATERFOWL MANAGEMENT IN EAST TEXAS

JARED LAING TPWD WATERFOWL BIOLOGIST/ NE TX

As the TPWD waterfowl biologist for east Texas I am asked many questions. By far, the most common two questions that I am asked are: “What is the best waterfowl habitat in east Texas?”, and “How can I mimic that on my property?” My answer is always the same: “It depends”. There are so many factors influencing habitat quality and habitat use that we will likely never fully understand why birds do what they do. In some instances birds regularly use apparently poor habitats in one location and avoid habitats that appear to be in excellent shape in another location. The reasons for this are not well understood and have no definite answers. Before we move on, we will discuss what waterfowl habitat is and then proceed to improving habitat on your property.

Wintering waterfowl use a variety of habitat types in east Texas including lakes, rivers, stock tanks, beaver ponds, swamps, flooded bottomland hardwoods, natural marshes, and created wetlands. Daily habitat needs are met over the landscape on several types of wetlands on which they are conducting a few basic life requisite activities; feeding, loafing, and roosting. These activities can all occur at the same site or they may be specific to certain locations. For example, they may fly off the roost first thing in the morning and return after feeding to loaf there, or they may feed on their roost and also fly to other feeding areas. Consequently, we rarely manage for loafing and roosting habitats in east Texas as they occur naturally but it is important to ensure birds are left undisturbed on these areas. That leaves us to discuss feeding habitat. Feeding habitat largely depends on the group of waterfowl in question. Diving ducks, including ring necked ducks, scaup, and canvasbacks feed on plants and invertebrate/animal matter in the mud and typically seek out deeper water habitats than their dabbling duck cousins including mallards, gadwall, and green-winged teal. Dabblers are omnivorous and their diet typically consists of high energy seeds and aquatic invertebrates. They usually seek out shallow water habitats as their feeding habit of tipping up prevents them from reaching any foods deeper than about a foot.

“Which habitat type is the best”? There is no right answer. My preferred habitat is one that regularly holds lots of waterfowl with little to no management input. This can occur in stock tanks and on lakes but some of the most productive habitat types are often found along our major creek and river systems in the form of sloughs, backwaters, and beaver ponds.



This natural slough sits along the lower Sabine River in East Texas. The slough naturally dried out during the growing season, grew an abundance of pink smartweed and then refilled with water following fall rains. There were no human inputs into this system, only natural functions at work.

WATERFOWL MANAGEMENT IN EAST TEXAS CONT.

When natural wetlands become choked with dense perennial vegetation like cattails or cutgrass, control measures may be required to allow more desirable annual vegetation like barnyardgrass and pink smartweed to return to the system. Sometimes little more is necessary than periodically breaking a beaver dam so that mudflats will be exposed to grow vegetation.



A natural marsh with a dense stand of cattail requires management to improve habitat conditions for waterfowl. Cattail control measures include a prescribed burn after the marsh has dried out. Regrowth would then be treated with herbicide. After cattails are eliminated, disking may improve desirable seedling response.

If you don't have natural wetlands or ponds or lakes on your property, you may be able to create a wetland with water control structures and levees. Properties suitable for wetland construction must have soils capable of holding water and be flat enough to make levee construction economically feasible. As a general rule, construction of shallow water wetlands should not exceed \$350 per acre of the project. Both of these criteria typically occur in the floodplains or at the lower elevations across our landscape. Some of the best projects utilize natural terrain features that can back up substantial amounts of shallow water with minimal dirt work. Wetland construction projects may require a permit from the US Army Corps of Engineers (USACE) prior to any construction activities if the project is located within a jurisdictional wetland. A consultation with a professional from Texas Parks and Wildlife, Natural Resource Conservation Service, USACE or the US Fish and Wildlife Service during the planning phase can save thousands of dollars and many headaches down the road.

WATERFOWL MANAGEMENT IN EAST TEXAS CONT.

A well planned wetland will consist of average water depth from 12”-18” and taper from deeper water near the levee to dry ground over a broad area. While small ponds of 2-3 acres can be productive, the ideal size of constructed wetlands is usually greater than 5 acres.

If created properly, these wetlands provide feeding habitat for the seed-eating dabbling ducks including mallards, teal, and pintails. Stemming from natural processes in wetlands, it is in these leveed/created wetlands where the term “moist soil management” has evolved into the status quo for managing waterfowl habitat. Management activities such as water level manipulation, disking, prescribed burning and herbicide applications can maximize food production levels in the marsh.

Keep in mind that in order to benefit birds in the coming winter it is important to begin management activities as early in the growing season as possible. Even the current waterfowl season is not too early to start thinking about what management activities will need to be conducted the coming spring and summer to improve or maintain habitat conditions for birds coming south the following fall and winter. If you wait until September, there is not enough time to measurably improve habitat conditions for the current fall. You will however, be setting the table for the following season. Timing is critical for the desired response when implementing habitat management activities. For example, if you drain your water too late or all at once, the typical response is highly undesirable plants. Conversely, a slow early season drawdown tends to favor the annual plant species that most benefit waterfowl.

While there is no silver bullet for determining which waterfowl habitat is best, we know that feeding birds concentrate in areas with high density and abundance of preferred waterfowl foods. As the words Ray Kinsella heard whispered while standing in a cornfield in the movie *Field of Dreams* “If you build it, they will come”! Grow the food, and the birds should come. Happy hunting!



Ideal managed waterfowl habitat in east Texas that is dominated by pink smartweed and barnyardgrass. Approximately 30% open water at the start of the fall season.

Stewardship Snapshots



Photo by: Chuck Kowaleski

You might be wondering what this group of people I have selected for this month's "Stewardship Snapshot" have to do with stewardship. The answer is, **EVERYTHING!!!** Once in a blue moon and depending mostly on the budget, the entire TPWD Wildlife Division gets together to discuss what is going on in our respective part of the state, talk about exciting new research, new technology, agency business, ect... One such meeting just took place this last June. These 250 or so conservation leaders are the ones tasked with managing and protecting the wildlife resources of this state. I am proud to call these people friends and colleagues.

Send us your photos! Send us your wildlife, nature, hunter harvest, or interesting trail cam pictures. To submit your photo for consideration send an email to Rusty.Wood@TPWD.State.TX.US and tell us who took it, where, and when.

EAST TEXAS PLANTS PROPOSED FOR FEDERAL LISTING

BY DAVE HOLDERMANN, REGION 3 DIVERSITY BIOLOGIST

TWO East Texas rare plants were proposed for federal-listing under the Endangered Species Act (ESA) by the US Fish and Wildlife Service (USFWS) in September 2012. Texas Golden Gladecress (*Leavenworthia texana*) and Neches River Rose Mallow (*Hibiscus dasycalyx*) are endemic, found nowhere else in the world, to the Pineywoods of Texas. According to the Federal Register (September 11, 2012), the proposed listings are Texas Golden Gladecress (Endangered) and Neches River Rose Mallow (Threatened). Further, USFWS proposes designation of critical habitat for the Texas Golden Gladecress (1,353 acres) and Neches River Rose Mallow (178 acres). Region 2 USFWS Ecological Services Field Office in Corpus Christi, TX expects final rulings for the proposed listings and critical habitat designations by September 2013.



TEXAS GOLDEN GLADECRESS

Texas Golden Gladecress was first discovered by US Army Medical Corps doctor M.C. Leavenworth near San Augustine, TX in 1836-37, and subsequently the genus *Leavenworthia* was named in his honor by the famed 18-century botanist John Torrey. The genus *Leavenworthia* belongs to the mustard family (Brassicaceae) and contains 8 species – all found in southeastern USA. *Leavenworthia aurea*, a close relative of Texas Golden Gladecress, occurs in southeastern Oklahoma.

The inconspicuous, barely 3-inch tall Texas Golden Gladecress is an annual plant (sprouts from seed, flowers, and dies in a single growing season). Seeds of this plant germinate after fall rains and form a basal rosette of tiny leaves with a broad spade-like terminal lobe. Flowering mostly occurs in March and April but may extend into May. The flowers consist of four (a mustard character), bright yellow petals nested in a ring of greenish sepals and borne on a simple or branched stalk growing from the center of the rosette. The flowers are believed to be self-compatible (minimal cross-fertilization) and self-pollinating. Fruits consist of a flattened pod (0.6-1.2 inches long) containing 5-11 flattened seeds. After fruiting, the plant dies and withers with increasing summer temperatures. Texas Golden Gladecress is known from only 7 natural populations in northern San Augustine and northwestern Sabine counties, Texas. According to recent surveys of these sites, the total known global population of Texas Golden Gladecress is probably fewer than 2,000 plants. Its narrow distribution and rarity are owing to the “glade” habitat type (natural forest openings) where it grows. This habitat type is rare and small itself. Individual glades range in size from a square yard up to one-third square mile. Glades form on weathered surfaces of the Weches Geologic Formation, ancient marine sediments, where exposed “greenstone” (the mineral glauconite) strata produce uniquely thin, calcium-rich soils. The greenstone soils are cool-wet in winter and early spring and hot-dry in summer. Texas Golden Gladecress is one of a relatively small number of herbaceous plants that have evolved in this highly specialized environment.

All known Texas Golden Gladecress populations are on private land. The outstanding threat to this rare plant is habitat loss and degradation mostly resulting from glauconite quarrying. Glauconite or greenstone is mined for road bed and gas/oil well pad construction and also production of plant fertilizers. Over the last 15 years, glauconite pit quarries were excavated at 3 of the 7 sites supporting natural Texas Golden Gladecress populations. An introduced population in Nacogdoches County was eradicated by pipeline construction in 2011. Natural gas and oil exploration and production, invasion of native and nonnative vegetation, land use conversion, herbicide use, and climate change pose additional threats to Texas Golden Gladecress. There is a clear need to further explore the Weches Geological Formation to determine whether additional Texas Golden Gladecress populations exist and to conserve known populations. State and federal conservation programs have the potential to deliver incentives for the protection and management of Texas Golden Gladecress on private lands.

PLANT LISTING CONT.

NECHES RIVER ROSE MALLOW

Neches River Rose mallow is a perennial (surviving multiple years), herbaceous plant. It belongs to the mallow family Malvaceae and genus Hibiscus. This genus contains over 300 species worldwide mostly distributed in subtropical and tropical regions. Seven species of Hibiscus are recognized in Texas. It was first collected by I. Shiller near Apple Springs, Trinity County, TX in 1955, and described as a new species 3 years later (1958). Neches River Rose Mallow shares its range in Texas with two close relatives: Scarlet Rose Mallow (*H. laevis*) and Swamp Rose Mallow (*H. moscheutos*). The 3 species grow side-by-side at some East Texas localities.

Neches River Rose Mallow is a large plant (up to 7.5 ft. tall) consisting of several upright stems with alternately arranged leaves on distinct petioles. Leaves are narrowly halberd-shaped (bottle axe) with a forward lance (up to 4.5 in long), wide, narrow basal hilt (up to 5 in wide) and serrated leaf margins. Showy flowers are bell-shaped with creamy white petals (deep rose-colored at the base), prominent stamen column (also deep rose-colored), and arise from leaf axils in the upper portion of the plant. Flowering occurs in June through August with a single plant having up to 50 flowers. The fruit is a five-parted capsule with 14-22 coarsely haired, BB-sized, globe to kidney-shaped seeds per chamber. Various bumblebees, bees, moths and other insects probably aid in pollination. Seeds may be dispersed by flowing water, but also possibly by birds and mammals.

Neches River Rose Mallow is a plant of open, seasonally-flooded wet habitats often found near standing water. It might be said that it loves to have its head in the sun and its feet in the water. Associated habitats have been referred to as flatwood ponds, sloughs, oxbows, terraces and sandbars. Its narrow distribution is limited to Cherokee, Harrison, Houston, and Trinity counties mainly in association with the Neches River and Mud and Tantabogue Creek basins. An introduced population occurs in Nacogdoches County at Mill Creek Gardens. USFWS reports Neches River Rose Mallow populations at 11 different natural sites. Surveys of the Neches River Rose Mallow populations show wide year-to-year variation in numbers of plants. Most recent surveys at 8 sites counted fewer than 1600 total plants.

Because Neches River Rose Mallow hybridizes with both the more widespread Scarlet Rose mallow and Swamp Rose Mallow, hybridization seems to be a real threat to some Neches River Rose Mallow populations. At one population site, Neches River Rose Mallow grows side-by-side with the other two rose mallows and some plants in the mixed population exhibit morphological traits intermediate between *H. dasycalyx* and *H. laevis*. At least 3 of the 11 known native populations of the Neches River Rose Mallow occur along state highway rights-of-ways and are vulnerable to habitat loss and modification related to road maintenance activities such as herbicide treatments and other forms of vegetation management. Invasion of wet habitats by aggressive non-native and native woody plants such as Chinese tallow (*Sapium sebiferum*), sweetgum (*Liquidambar styraciflua*), and green ash (*Fraxinus pennsylvanica*) may pose a threat to Neches River Rose Mallow. Populations located on the Davy Crockett National Forest are relatively secure; however, 3 introduced populations on the national forest have shown sharp declines in recent years. The Texas Land Conservancy's Hibiscus Preserve (Houston County) encompassing 30 acres was created in 2004 and supports a population of approximately 400 Neches River Rose Mallows.



Executive Director
Carter P. Smith

Editors, *Pineywoods Post*
Chris Gregory
Rusty Wood



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