

# THE TEXAS WATER SOURCE

UPDATING CAMP, MARION, AND UPSHUR  
COUNTY LANDOWNERS ON LAND  
MANAGEMENT AND WATER ISSUES

March 2020

## Dissolved Oxygen — What is the Forest’s Role?

In 2000, it was determined that that dissolved oxygen (DO) levels in Lake O’ the Pines were less than optimal for supporting fish and other aquatic species. Since then, local stakeholders such as industry and private landowners in the Lake O’ the Pines watershed have been invested in remediating these low oxygen levels because of the harm it can cause ecologically and economically to the watershed. Even though a stream on forested property may be away from the Lake O’ the Pines, the management or lack of management of that property can have consequences downstream.

DO is a measure of how much oxygen is dissolved in the water - the amount of oxygen available to living aquatic organisms. Oxygen enters water by diffusion from the air, as a byproduct of aquatic plant photosynthesis, and by aeration through water movement.

The amount of dissolved oxygen in a stream or lake can indicate a lot about its water quality. Multiple factors and pollutants can impair or reduce DO such as increased water temperature and excessive nutrients, oils, and other chemical compounds. Organisms within waterways such as fish, invertebrates, plants, and bacteria require DO for respiration. When DO falls below a certain threshold, some organisms cannot live.

Best Management Practices (BMPs) can be implemented to protect dissolved oxy-

gen levels during forest management activities. For instance - during harvest activities, it is recommended to leave a streamside management zone (SMZ) along streams. SMZs help DO by shading the stream, keeping the water cool. Cold water holds more oxygen than warm water.

The roots of trees and other plants within the SMZ help to hold soil in place, keeping it from eroding into the stream. SMZs also slow down water that may be flowing across the landscape carrying soil, leaves, limbs, pesticides, herbicides, and other pollutants. Once entering the SMZ, these pollutants are allowed to settle out before entering the stream.

Naturally occurring leaves, limbs, and logs in streams play an important role in ecosystems as habitat and food sources for fish and other aquatic organisms. However, too much of this organic matter can accumulate if it is regularly being dumped into the stream by water flow from the land. As this organic matter decomposes, oxygen in the stream is used up, leading to lower DO levels.

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### For more information:

- <http://tfsfrd.tamu.edu/storymaps/forestwatersheds>
- <https://bit.ly/2RgrB0x>

## Organization Spotlight

# Caddo Lake Institute



Caddo Lake Institute (CLI) is a non-profit scientific and educational organization founded in 1992 with the mission of protecting the ecological, cultural, and economic integrity of Caddo Lake and its associated wetlands and watersheds. The Institute address issues such as the need to return healthy flows of water to the lake, restore water quality in the watershed, control invasive species, and conserve significant lands.

CLI's work is not just limited to Caddo Lake due to the environmental influence of neighboring watersheds. In order to promote the water quality and health of Caddo Lake, CLI works with other local watersheds to promote the overall health of the Cypress River Basin.

Projects of importance to them include the restoration of the American paddlefish, securing adequate instream flows to sustain the ecological role of the watershed, removal and management of harmful invasive species, and the restoration of wetlands.

In 2010, the EPA awarded a technical assistance grant (TAG) to Caddo Lake Institute to obtain the services of a technical advisor to analyze technical reports pertaining

to cleanup of contamination at the Longhorn Army Ammunition Plant near Karnack.

The Army Base Realignment and Closure Division (BRAC) is overseeing the environmental cleanup of contamination at the site that resulted from the production of various defense items (such as explosives, pyrotechnics, illuminants, and rocket motors) beginning near the start of WWII, through the early 1990s. As a result of these efforts, approximately 7,000 acres of the 8,416-acre former installation have been found suitable for transfer to the U.S. Fish and Wildlife Service and are now being managed as the Caddo Lake National Wildlife Refuge.

### For more information:

- <https://caddolakeinstitute.org>

## Great Raft Invasives Program INVASIVES WATCH

The Great Raft Invasives Program (GRIP) is a project developed through a grant from the National Fish and Wildlife Foundation in 2012. Caddo Lake Institute initiated GRIP with the aim of helping individuals, organizations, and government entities to expand work on giant salvinia and other harmful invasive aquatic species beyond Caddo Lake.

The six principal lakes in this area are Caddo and Lake O' the Pines in Texas; and Cross, Wallace, Black Bayou, and Bistineau in Louisiana. Except for Lake O' the Pines, these are called "raft lakes" because they were created by the huge log jam on the Red River that persisted for hundreds of years before removal efforts in the 19th Century (see the January 2020 edition of *The Texas Water Source*). Although naturally formed, the raft lakes are now maintained by spillways or dams. Although Lake O' the Pines is not a naturally formed lake – it was created by the damming of Big Cypress Bayou – it is in-

cluded in this program because of its proximity to the raft lakes and its relationship to Caddo Lake.

Invasive aquatic plants and animals threatening any of the lakes of the Great Raft threaten all of these lakes. Their economic and recreational values are deeply intertwined. In particular, giant salvinia – because it is a rootless, floating plant – can easily move from one lake to another. Alligator weed, hydrilla, and water hyacinth are other non-native aquatic plants present in the lakes that can impair navigation, crowd out beneficial native plants, and spoil habitat for fish and other wildlife. Chinese tallow is an invasive wetlands tree that is rapidly displacing desirable native trees such as the mayhaw.

### For more information:

- [www.invasiveswatch.org](http://www.invasiveswatch.org)

# Giant Salvinia on Lake O’ the Pines

There has been an array of invasive vegetation with varying degrees of impacts present at Lake O’ the Pines (Table 1.). Giant salvinia was discovered at the lake’s boat ramps in October 2012. Giant salvinia is a free-floating fern native to southeastern Brazil and northeastern Argentina. The species was brought into the U.S in 1995 through South Carolina, where it was a popular plant for water gardens and sold in the nursery trade.

Giant salvinia varies in color from green to gold to brown with floating leaves in pairs about ½ inch wide and 1 inch long. It is somewhat similar in appearance to our native duckweed, but bigger. The upper portion of the leaf is covered in dense, white hairs joined at the leaf tip. The shape of the tip traps air, helping the plant be buoyant and float. Giant salvinia prefers tropical, subtropical, or warm temperatures and grows best in nutrient-rich, slow-moving waters such as ditches, canals, ponds, and lakes.

Giant salvinia is aggressive in its ability to spread in lakes and waterways. It only takes a small fragment of salvinia to multiply vegetatively and produce mats, called a “sudd.” These mats of salvinia can double in size in less than a week and form layers that can be up to 3 feet thick in depth. The species has been reported in over a dozen water bodies and lakes within Texas. Typically, giant salvinia is spread to new waterbodies through

boats and other recreational crafts transporting the invasive species, hence why the species was easily identified at the Lake O’ the Pines boat ramp.

Giant salvinia mats cause problems in water bodies and damage aquatic ecosystems by:

- preventing light from entering the water, thus stopping the growth of tiny organisms that form the base of the food chain for other aquatic organisms;
- outgrowing and replacing native plants that provide food and habitat for native animals and waterfowl;
- blocking out sunlight and reducing dissolved oxygen concentrations, which degrades water quality for fish and other aquatic animals;
- dying and sinking to the bottom, where the decomposition process uses up even more oxygen.;
- impeding the natural exchange of gases between the water and the atmosphere, which can lead to stagnation of the waterbody;
- interfering with fishing, boating, and swimming.

Ultimately, these processes can kill all plants, aquatic insects, and fish living below the mats. The mats also provide ideal conditions for mosquitoes to breed.

To help reduce the spread of giant Salvinia:

- Remove all plant material from your boat, trailer, tow vehicle, and gear, and place it in a trash receptacle BEFORE leaving any body of water.
- Eliminate water from all motors, jet drives, live wells, boat hulls, etc., before transporting it anywhere.
- Clean and dry anything that came in contact with the water before you enter another body of water.
- Do not release or put plants into a body of water unless they came out of that body of water.

**Table 1.** Shows the invasive species identified at Lake O’ the Pines with their respective impact.

Common Name	Scientific Name	Current Impact at Lake O’ the Pines
<b><u>Aquatic Plants</u></b>		
Alligatorweed	<i>Alternanthera philoxeroides</i>	Major
Egeria	<i>Egeria densa</i>	Minor
Eurasian Watermilfoil	<i>Myriophyllum spicatum</i>	Minor
Giant Salvinia	<i>Salvinia molesta</i>	Major
Hydrilla	<i>Hydrilla verticillata</i>	Major
Parrotfeather	<i>Myriophyllum aquaticum</i>	Minor
Water Hyacinth	<i>Eichhornia crassipes</i>	Major
<b><u>Terrestrial Plants</u></b>		
Bahiagrass	<i>Paspalum notatum</i>	Major
Bermudagrass	<i>Cyndon dactylon</i>	Major
ChinaberryTree	<i>Melia azedarach</i>	Minor
Chinese Privet	<i>Ligustrum sinese</i>	Minor
Chinese Tallow Tree	<i>Triadica sebifera</i>	Major
Elephant Ear	<i>Colocasia esculenta</i>	Minor
Japanese Climbing Fern	<i>Lygodium japonicum</i>	Minor
Japanese Honeysuckle	<i>Lonicera japonica</i>	Minor
Japanese Privet	<i>Ligustrum japonica</i>	Minor
Johnsongrass	<i>Sorghum halepense</i>	Major
Kudzu	<i>Pueraria montana</i>	Minor
Nandina	<i>Nadina domestica</i>	Minor

Source: Lake O’ The Pines Natural resources Specialist

**For more information:**

- <https://bit.ly/36UQx4s>
- <https://on.doi.gov/36VSjC9>

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## Forest Landowners Associations

Local landowner associations help landowners stay informed on what is going on in the forest industry and what options are available to private forest landowners. The **Northeast Texas Forest Landowners Association** (NETFLA) does just that for landowners with forested property in Camp, Franklin, Morris, Titus, Upshur, and Wood counties.

NETFLS meets at least four times a year for business and programs, including a spring field trip. Past trips have included hardwood and softwood sawmills, commercial seedling nurseries, and Tree Farm tours. The Association also publishes a quarterly newsletter to keep members informed on timber-related topics, including wildlife management, timber prices, and tax issues.

For information on how to join, go to the Association's website: [www.netforest.org](http://www.netforest.org); or contact Glenn Weiss at [gjweiss@windstream.net](mailto:gjweiss@windstream.net).

Landowners in Bowie, Cass, Marion and Red River counties have the **East Texas Timberland Owners Association** (ETTOA). This association also has a quarterly newsletter to keep its members up to date on forest ownership issues. They are planning a tour to visit Arborgen's Bluff City, AR, seedling nursery in the fall. Contact Jerry Voss at [vossjerry1@yahoo.com](mailto:vossjerry1@yahoo.com) for membership information.

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