



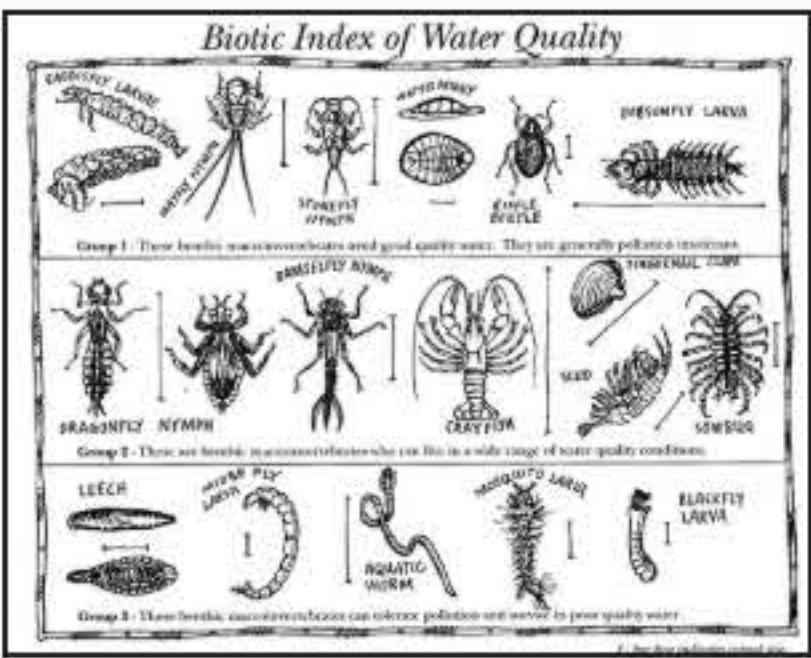
Testing Water Quality Improvement Using Macroinvertebrates

Last May during the water willow planting at SHSU Bearkat Camp, our high school volunteers examined the Lake Livingston shore for the presence of macroinvertebrates, or what the layman would call "water bugs". These are aquatic creatures without backbones: beetles, clams, worms, leeches, and immature stages in the life cycle of flying insects like dragonflies, damselflies, and mayflies.

These organisms are good indicators of the pollution level and oxygen capacity of the water they live in. They live on decaying material and leaves in the pond for a surprisingly long time. For example, dragonflies live as fierce underwater predators for several years before they emerge to fly and mate.

Macroinvertebrates are easy to collect and can be seen without a microscope. They also show strikingly different sensitivity to pollution and fall into three distinct groups:

- Group 1: Intolerant of pollution, require a high level of oxygen
 - Examples: mayfly larvae, caddisfly larvae
- Group 2: Tolerate moderate pollution levels and require moderate oxygen levels
 - Examples: dragonfly larvae, crayfish, freshwater clams
- Group 3: Tolerate pollution and low oxygen levels
 - Examples: leeches and aquatic worms



Oxygen level requirements and pollution sensitivity are good measures to track because they directly apply to the kinds of fish that can live in the lake and the utility of using the lake for drinking water. In addition, this is a fun activity that can teach students about aquatic ecology in an outdoor setting.

This season we will stake out mesh bags with leaves for a week before each planting day to attract and capture macroinvertebrates. Then we will identify, sort and count the number of organisms found in each of the three pollution sensitivity groups.

By comparing the relative numbers from year to year, we hope that we will be able to show the effectiveness of plantings in improving water quality and fish habitat in Lake Livingston.

Tina Davies, Macroinvertebrates Testing Manager

Active 2019 with Old and New Activity Planned

Friends of Lake Livingston (FoLL) has many exciting things planned for this year as we implement many of the new strategies adopted in 2018. Our major high school plantings will occur this fall in September due schedule conflicts in the spring. Our nine high schools will be split into two group plantings with one extending the SHSU Bearkat Camp site and the other likely in Belle & Ford lake, close to Carolina Creek. Additionally, we are planning several smaller adult volunteer plantings starting in May and extending through the summer months.

New Plants at TDC Ellis

Our partners at TDC Ellis/Lee Horticultural have begun experimenting with six new aquatic plant species. Once they've perfected propagation techniques, plants will be distributed to the high schools in preparation for fall planting. The new plants include:

- Emergent Species: Bulrush: Giant (*Schoenoplectus californicus*) & American Water-Willow (*Justica Americana*)
- Submerged Species: Water Stargrass & (*Heteranthera dubia*)
- Floating Leaved Species: & Yellow Water Lily, Spatterdock or Cow Lily (*Nuphar luteum*) and American Lotus (*Nelumbo lutea*)

Riparian Restoration Demo Site Selected

A demonstration site at Carolina Creek on the northwest side of the lake was selected for our first "Riparian Restoration project to provide wetland/shoreline preservation. One of our new partners, [Carolina Creek Christian Camp](#) on Thomas Lake Road, will provide access to the site. Texas A&M Forest Service has donated 600 wetland tree species (bald cypress, cherry bark oak, Overcup oak), and 300 button bushes for initial propagation at the Ellis Unit for use in our shoreline riparian restoration projects going forward.

Funding Our Habitat Creation Efforts



Following a fevered effort at grant writing, FoLL received a \$1,000 grant from [Mossback Fish Habitat](#) toward the purchase of fish habitat/attractors to be built and installed in collaboration with TPWD and TRA. Several artificial reef habitat/fish attractor kits will be constructed at the TRA dam facility, then transported to selected sites at Indian, Palmetto, White Rock and Carolina Creeks. The GPS coordinates for the sites will be added to the TPWD artificial fish reef/habitat locations on Lake Livingston.

Additionally, our team was recently awarded a \$1000 grant for Sam Houston Electric Cooperative, which will likely go toward our riparian projects.

We don't want our adult volunteers to get too comfortable, so be on the lookout for requests for help on the habitat/attractor construction and the summer planting schedule to test out our new plants.

Cheers, Scott Ball - FoLL Project Director

Buy Our Inmate-Designed Poster



We've told you before about our partner program with TDC Ellis in Huntsville and Lee College Horticulture Program. Well, Francisco "Cisco" Montalvo graduated from our Inmate Texas Master Naturalist program in November 2018 and was recently released. Just before his release, he painted this image, in his cell with trimmed toothbrushes.

You can purchase a print of this stunning dragonfly for \$40. You will receive an art-quality 24 x 18" poster, printing donated by award winning C&D Printing in Largo, FL,

Check the back for an Artist Bio. Here's an excerpt from Cisco, "People like you appreciate the beauty in the things around us, you are our voices of conservation and preservation and bring attention to the smallest things around us. It is from you, that I truly draw inspiration from."

FoLL will be giving 20 percent of the proceeds of this fundraiser to Cisco to help him begin his new life as an artist.



Order Yours Now!

Leadership Team Expands

You can see that our project has expanded in the past couple of years into new and exciting areas. To meet the leadership requirements for each of the new strategic areas - riparian reparation, planting site measurement, and fish habitat/attractors, the FoLL project team has added three new leaders.

All three are members of Heartwood Chapter of Texas Master Naturalists and include Bill Morris to head Riparian Restoration, Tina Davies to direct macroinvertebrate testing, and Kat Morris to drive the fish attractor/habitat project. Existing team members will be lending their expertise to each new area, coordinating a larger team of volunteers and promoting the overall effort.

Welcome to New Partners

- City of Houston Public Works
- Houston Wilderness Society

FoLL Project Team

Project Director - [Scott Ball](#)
 Director Finance - Outreach - [Ron Diderich](#)
 Director Research & Monitoring - [Steve Barr](#)
 Director Communications - [Beth Miller](#)
 Horticultural Specialist - [Scooter Langley](#)
 Macroinvertebrates - [Tina Davies](#)
 Fish Habitat - [Kat Morris](#)
 Riparian Manager - [Bill Morris](#)
 Boat Captain - Jerry James

