



**St. Tammany Parish
Adopt a Pond and Park Programs
2025 - 2026 Official Teacher Packet**



Welcome!

This packet is designed to help teachers become familiar with the St. Tammany Adopt-A-Pond and Park Programs. Begin by reviewing its contents and keep on hand for future reference.

Use this Teacher Packet, the PowerPoint Program Introduction and the Water Quality Test Videos to help your group improve data collection methods and techniques. Ask the Adopt-A-Pond and Park Coordinators for helpful hints or clarification on program implementation using the Program Partners Contact List at the end of the Packet.

The teacher packet is conveniently divided into sections to quickly find topics, Action Items for Teachers, and answers to questions you may have about the Adopt-A-Pond and Park Programs.



Table of Contents

Section 1: Program Goals and Objectives	4
Section 2: Partner Roles and Responsibilities	6
Section 3: Activity Timeline	8
Section 4: Field Trip Expectations	9
Section 5: Lesson Activities and Methods	
A. Water Quality Monitoring	10
B. Tree Planting	12
C. Trail Walk	14
D. Wildlife Survey	15
E. Aquatic Invertebrates	16
F. Plant Community Survey	16
G. Marine Debris – Water Pollution	18
Section 6: Data Sheets	21
Section 7: Program Evaluations	22
Section 8: Science Standard Alignment	23
Section 9: Resources	25
Section 10: Partnership Contact List	26





SECTION 1: PROGRAM GOALS AND OBJECTIVES

The St. Tammany Parish Adopt a Pond and Park Programs are dynamic education programs that incorporate outreach measures and wetland plant community development to improve neighborhoods throughout the Parish. Constructed stormwater ponds relieve flood risks to adjacent lands and down-stream communities. These constructed habitats can also serve as tertiary treatment for a variety of pollution picked up during rainfall events. Local wetland habitat development in stormwater ponds provide outdoor education sites to cultivate lifelong stewards and future resource managers. The Park partnerships allow students to see how a natural wetland stores water and reduces water pollution to local waterways. Additionally, this program empowers participating schools and teachers to extend standardized curricula with information and data collected by students in a real-world situation. The ultimate benefit to citizens is improved water quality in river and stream habitats connecting through the Pontchartrain Estuary to the Gulf of Mexico.

Program Goals:

The main goal of the program is to develop awareness of the critical roles wetlands and constructed stormwater ponds play in achieving good water quality while providing excess water storage during high rainfall events.

Constructed stormwater ponds and the natural wetlands in local Parks provide hands-on learning opportunities, under the following topics:

1. Habitat Restoration – developing wetland and forest habitats in urban landscapes
2. Ecological Interactions – wetland plant and animal community development
3. Local Drainage - serves as storage for heavy rainfall and tropical storm surge, in local neighborhoods
4. TMDL Impairments – reducing potential nutrients, biological oxygen demand (BOD), total dissolved solids (TDS), and total suspended solids (TSS) in local waterways
5. Scientific Method - through STEM supported hands on, real world, outdoor classroom learning experience
6. Marine Debris – preventing storm produced debris and other pollution in waterways
7. Natural Resource Stewardship – connecting upland habitats through a variety of wetland habitats to the Gulf of Mexico, answering the question “How does this affect Me?”
8. Careers in Science and Technology highlighted in topic discussions

Program Objectives:

Program objectives support the goals through partnerships with the St. Tammany Parish School Board, St. Tammany Parish Government, the LA Sea Grant College Program and LSU AgCenter, St. Tammany Parish Mosquito Abatement and private industry. Two main categories (Environmental and STEM) outline the objective components.

Environmental Component Objectives

1. Plant retention/detention ponds with native trees and shrubs.
2. Monitor plant community development, including planted trees and shrubs and volunteer plants.
3. Monitor water quality at inflow and outflow of the ponds twice a school year (fall and winter) currently schools are only allowed one field trip during the school year.
4. Report data collected to St. Tammany Parish Government for personnel to track potential pollution reductions in waterways. The parish reports changes to Louisiana Dept of Environmental Quality.

STEM Components

1. Students learn water quality monitoring tests and to determine waterbody health
2. Students learn to plant trees and the importance of plants in wetland habitats
3. Students learn ecological monitoring (plants and animals recorded during visits)
4. Teachers expand lessons with data collected on field trips, allows for extension of STEM curricula, including comparative analysis data over time (graphing, statistics, verbal/written discussions, etc.)
5. A long-range objective for the Adopt a Pond and Park Programs is to increase numbers of informed citizens, stewardship of local wetland habitats, and develop future resource managers

In order to achieve the Goals and Objectives, the principle, program partners (St. Tammany Parish School Board, St. Tammany Parish Government, the LA Sea Grant College Program and LSU AgCenter, STP Mosquito Abatement) work together in order to tailor/adapt activities to accommodate desired results, while minimizing additional effort by participating teachers, volunteers and activity instructors. The program seeks input from participating teachers and partners throughout the year - after fall activities, prior to spring activities, and at the end of the school year.



Photographs of winter field trips.

Left: planting trees.

Right: collecting water for testing.

SECTION 2: PROGRAM BENEFITS AND PARTNER RESPONSIBILITIES

St. Tammany Parish Government is tasked with preventing and reducing pollution in local waterways. The Adopt a Pond Program was developed to enhance the aesthetics of stormwater ponds by planting trees and allowing wetland plants to grow. The ponds were constructed to reduce stormwater flooding, however stormwater picks up pollution as it flows across the land and hard surfaces like parking lots and roadways. Waterbodies across the Parish and State are monitored for health by the LA DEQ as directed by the USEPA. Federal Legislation mandates a standard of health for waters of the US (Clean Water Act) to ensure preservation of our natural resources and maintenance of safe waters for recreation and wildlife.

The Parish also supports efforts to increase tree canopy due to huge losses after devastating impacts from recent hurricanes, beginning with hurricane Katrina in 2005. Trees and other volunteer plants improve the aesthetics of the stormwater ponds, typically located in neighborhoods. Trees improve communities by providing cool inviting areas for recreation and relaxation. The environmental benefits of planting trees, as listed below, help community's lower costs and improve natural resources.

- **Energy Conservation:** A natural air conditioner. The evaporation from a single tree can produce a cooling effect of ten room size AC's operating 20 hours a day. This results in lower, local temperatures. In winter trees act as windbreaks and can reduce winter heating costs.
- **Water Filtration and Retention:** Trees capture and slow rainfall and their roots filter nutrients from the water. This capacity reduces stormwater runoff and potential flooding.
- **Wildlife Habitat:** Provides food and shelter for birds, insects and other wildlife.
- **Carbon Sink:** Ability to absorb carbon dioxide in the atmosphere.
- **Native Plants:** Reduces nuisance and invasive plants in local environments.

The Adopt a Pond and Park Programs help restore the tree canopy in St. Tammany and develop an engaged citizenry that appreciates and is responsible for local wetland habitats and our rich natural resources.

St. Tammany Parish Government uses the student collected data (citizen science) to inform state and federal agencies on the improvements to water quality due to the use of tree planted (developing wetland plant communities) in stormwater ponds.

LSU AgCenter/LA Sea Grant agents have partner with St. Tammany Parish to develop meaningful lessons on water pollution and marine debris; the importance of reducing pollution to local waterways; water testing (7 parameters) and what the tests mean; stormwater ponds; native and invasive plant communities with a focus on trees; wildlife associated with wetland areas. A lesson on ecology has been developed to track the growth of trees planted by students and the natural development of wetland plant communities.

Skills obtained from this project will directly align with science standards (Section 6). High School standards like - *Environmental Awareness & Protection, Ecosystems, Resources & Resource Management, and Human Impact and Sustainability*. Junior High science standards will align with *Biodiversity & Change* and *Genetics & Change*.

Agents will assist teachers in learning how to use the water testing kits (Teacher Professional Development Training) and potentially classroom presentations to students about the Adopt a Pond and Park Programs. Water quality and ecological data will be collected and shared with STPG.

St. Tammany Parish Mosquito Abatement show students how to collect aquatic insects and other macroinvertebrates, identify the animals and discuss their importance. Macroinvertebrates can be indicators of impaired water health. Some types of mosquitos are only associated with water contaminated by septic waste from broken or non-functioning treatment systems discharge into local waterways. Students learn to collect macroinvertebrates and identify them as an indicator of the health of a water body.

St. Tammany Parish School Board, through the science curriculum specialist and the career technical educator, will engage schools and teachers to participate in the Program. Prepare and manage teachers and students. Coordinate school fieldtrip scheduling, ensure that teachers administer pre- and post- evaluation tests to students so that partners may determine usefulness of the lessons and a change in stewardship attitudes toward pollution in waterbodies.

Teachers are encouraged to use the water Quality Test Kits to practice the methods for water monitoring **prior to field events**. For schools without test kits, LSU AgCenter/LA Sea Grant Agents can demonstrate water testing methods in the classroom, prior to the field trip, and provide test kits at field sites. Prepare the students for the pond or park trip they will participate in, making sure they are aware of proper dress and safety measures. As appropriate, teachers are responsible for getting approval for the field trip, line up transportation and coordinate chaperones.

Action Item: Teachers should use the water quality monitoring test kits and equipment to familiarize students with monitoring procedures prior to field trip events.

During the fall semester, school field trips to local parks or ponds will include student water quality testing and ecological monitoring. Ecological monitoring at the parks is conducted during the trail walk. Pond trips may include late fall/early winter tree planting.

During the winter/early spring (February - April) vegetative plantings and water quality monitoring will be conducted. Ecological monitoring data will be observational during tree planting activities.

Data collected on field trips will be maintained over time so that schools may use it for comparison to enhance lesson plans for STEM curricula. As an applied research project, students participating in the project will gain valuable experience using STEM methods learned in the classroom. This project reflects how science and technology are used in everyday life, in our own local communities.

NOTE: *A database and website are planned for future expansion of the programs, to ensure an easy way to share data and lesson activities.*



Students conducting water quality monitoring at a pond site.

Left photograph, testing water transparency.

Right photograph, mixing sample for nutrient measurement.

SECTION 3: ACTIVITY TIMELINE

The School Year is broken down into fall and winter/spring semesters. The spring semester coincides with winter (planting) field trips. Fall semesters are an opportunity for students to learn water quality testing, monitor previous year plantings and observe plant and animal communities. The School Coordinator will engage interested teachers and schools continuously throughout the year.

Fall Field Trip Preparation and Activities

1. New Teacher Assistance – program introduction and hands-on water quality kit instruction, **begins in September, occurs before field trip to pond site**
2. Teachers **administer student pre-evaluations and submit them** to program coordinators.
3. Teachers **conduct classroom water quality testing education with students** to prepare them for the field events
4. Fall pond trip, **scheduling dates from September – November**
5. Teachers **administer student the post-evaluations and submit them** to program coordinators, via email.

Winter/Spring Field Trip Preparation and Activities

6. Winter teacher assistance – additional classroom instruction as needed, **January**
7. Teachers **administer student pre-evaluations and submit them** to program coordinators.
8. Teachers **conduct classroom water quality testing education with students** to prepare them for field events
9. Winter pond trip is dependent on plant arrival, **target January – early March** (ideally February), if a school is not planting trips may be scheduled as late as April.
10. Teachers **administer student the post-evaluations and submit them** to program coordinators, via email.

End of Year

11. **Teachers complete the Program Evaluation** and return to program coordinators, after field events or before the end of the semester.
12. Year-end Program Summary and Next Year Planning Meeting with coordinators and instructors, **May/June.**

SECTION 4: FIELD TRIP EXPECTATIONS

Each school will be designated a retention or detention pond area near their school location. Teachers will assist students in conducting field activities with guidance from the instructors. When needed, additional volunteer instructors will be engaged to assist in student activities. Parents and chaperones are encouraged to participate in all activities, with the focus on students conducting tests and collecting data. Grant funds are an ongoing pursuit for subsequent Program years; however schools should try to procure water quality testing supplies and equipment on their own. The trees are provided by St. Tammany Parish through local funding or grant funding.

NOTE: All funding for this project can include public and private means and has **measures of accountability**. Schools are not required to provide funding; however, the partnership has the expectation that schools will provide substitute teachers and buses or other transportation.

Since these spaces are outdoor public spaces, each participant should be prepared with proper clothing and exercise safety precautions. Weather conditions may require warm clothing or rain jackets, teachers should be mindful of weather forecasts for field trips. Field sites do not have covered or indoor refuge from inclement weather. Alternately, cool/cold days in southeast Louisiana can change quickly, we suggest layered clothing in case the day warms up or cools off. Hats are suggested. Most sites have a variety of wildlife and should be observed only, and never be approached or picked up. Many sites have tall vegetation, long pants are suggested. These areas are developed wetlands and surfaces can often be slippery or wet after a rain, be sure to wear appropriate footwear.

What to wear

Do wear:

- Long pants/sleeves
- Gym clothes are best
- Belt loops are helpful
- Non-cotton clothes best
- Tennis shoes and socks
- Sweatshirt/jacket
- A change of clothes
- Tie hair back



Don't wear:

- Sandals
- Crocs
- Slip on shoes
- Rings
- Bracelets
- Nice clothes
- Cellphone or wallet
- Shorts

**Students will need to wear waterproof boots or shoes.
Water may be knee or thigh high in some areas.**

SECTION 5: LESSON ACTIVITIES AND METHODS

A. Water Quality Monitoring

Students participating in the Adopt a Pond Program can be engaged in various activities during class and field events. At each field event (Park and Pond), students will take water samples and measure parameters to determine habitat health. As driven by the Clean Water Act, enforced by US Environmental Protection Agency, through the LA Dept. of Environmental Quality, local governmental entities are required to decrease water pollution in local waterways and improve overall habitat health.

Students will take water samples and measure water conditions (pH, temperature, salinity, dissolved oxygen, turbidity, and excess nutrients) at a local detention/retention pond before and after vegetative plantings. Water quality measurements will be used by St. Tammany Parish to track improvements of water leaving the pond site and entering other waterbodies.

ACTION ITEM: Teachers should familiarize students with water quality testing equipment and instructions (utilize Water Quality Videos). Talk about why these specific tests or measurements are important in monitoring water bodies (Power Point Program Introduction provided to each teacher).

Water Quality Testing Supplies and Equipment:

- | | |
|---|-----------------------------------|
| • Water Transparency Tube (water clarity test) | # 77291 Forestry Suppliers |
| • Thermometer | # 77141 Forestry Suppliers |
| • Dissolved Oxygen titration kit
Reagent Kit #77195 | # 77191 Forestry Suppliers |
| • pH Comparator kit
Reagent Kit #77085 | # 77150 Forestry Suppliers |
| • Low Range Nitrate Nitrogen test kit
Reagent Kit #77094 | # 77101 Forestry Suppliers |
| • Low Range Phosphate test kit
Reagent Kit #77093 | # 77159 Forestry Suppliers |
| • Refractometer (salinity) | # 76593 Forestry Suppliers |
| • Pipettes, 3.0 mL – box of 100 | # 53892 Forestry Suppliers |
| • Bucket for water sample collection | school/teacher provides |
| • Rope to tie to bucket for water sample collection | school/teacher provides |
| • Waste container for used water quality tests | school/teacher provides |
| • Goggles and gloves for tests using acid solutions | can be found – Forestry Suppliers |
| • Pencil | school/teacher provides |
| • Data sheet | Google Drive |
| • Test instructions will be provide by Sea Grant | Google Drive |

Water Quality Testing Methods:

1. Teachers divided students into groups and assigned water quality parameters to test or measure. Due to time limitations, every student will not have time to conduct every test or measurement. Each group will begin by filling in the program data sheets. Data sheets include water quality test parameter results, weather and general site information and provide space to note plant and animal community development (animals, scat or tracks seen and tree and other plant growth).
2. Students will collect a sample of water from the pond in the bucket, take care not to disturb the bottom where soil or detritus can be re-suspended into the water column.
3. First measure the temperature and share with the group and make a note of the time water sample was collected. Students measuring Dissolved Oxygen will take a temperature measure at the start of each replicate test.
4. Conduct assigned test or measurement, carefully following the test instructions.
5. Record measurements on the data sheet provided.
6. Three replicate tests should be conducted for each parameter – at both the inflow and outflow- for a total of six measurements for each of the seven parameters.
7. Data should be submitted on the day of the field trip to LA Sea Grant Agent.

***Note:** Individual instructions for each water quality measurement can be found in the water quality kits. Classroom training can be provided upon request and is subject to the scheduling constraints of the trainer.*

What do the water quality tests mean? See supplemental resources titled the same can be found in the STPSS the google drive.



B. Tree Planting – for Pond events only

During the winter months students will plant trees at selected ponds sites, as identified by the Parish and Schools. The St. Tammany Parish Adopt a Pond Program is designed to integrate nature-based solutions into stormwater management. As landscape architects and urban foresters, our goal was to question and reimagine why traditional retention and detention ponds lacked natural features. By mimicking natural systems, we transformed these ponds to function more like natural habitats.

Our approach began with introducing low water channels that meandered through detention pond basins, creating shallow pools along the way to establish habitats within the water systems. We incorporated plant materials native to the specific areas to blend seamlessly with the existing landscape. These plantings not only enhance the naturalistic design of the ponds but also provide habitat for wildlife and improve water quality through natural filtration.

By emphasizing these nature-based solutions, we have made the ponds more aesthetically pleasing while also improving their functional performance. Plants, especially trees, uptake excess nutrients picked up by flowing rainwater to storm drains or over land aligning this methodology with the parish's broader objective to showcase how constructed stormwater ponds can emulate park habitats (natural watershed functions) and serve as practical environmental solutions.

Tree Planting Materials: selected trees and supplies provided by STP Adopt a Pond Program

- Sapling trees
- Dibbles
- Gloves
- Boots or water shoes as appropriate
- Tree bags and sled

Tree Planting Methods:

- Teams of two (minimum) obtain a dibble and tree bag
- Teams move to the selected planting area to begin planting
- Plants should be planted five to ten feet apart
- Protect the stem from becoming bent or broken
- Dig the hole to a depth equal to the length of the root.



Native Tree Species – potential plantings, based on site suitability

Bald Cypress (*Taxodium distichum*)

Hardiness Zones 4–10; features a spread of around 25' at maturity; grows to a height of 50–70'; medium growth rate; height increases of 13–24" per year; grows best in acidic, loamy, moist, sandy, silty loam, well-drained and clay soils; adaptable to wet or dry conditions; flood tolerant. Bald Cypress forms distinctive groves in swampy areas that provide adaptable ecosystems home to various wildlife.

Tupelo Gum (*Nyssa sylvatica*) also known as Tupelo, Black gum, or sour gum.

Hardiness Zones 4–9; Grows 30'-50' high; features a spread to 20'-30'; Prefers well-drained, acid soils, and full sun to partial shade. Grows best in acidic, loamy, moist, rich, sandy, silty loam and well-drained soils. Its fruit attracts birds and wildlife and offers food for bees in early to late spring.

Green Ash (*Fraxinus pennsylvanica*); also known as swamp ash

Hardiness Zone 2-9; features a spreading canopy capable of blocking sunlight and providing shade; grows to a height of 50-60 ft. with a canopy spread of about 25 ft.; fast growth rate; and prefers wet soils but can tolerate some drought. Seeds provide food for wood ducks, finches and cardinals.

Cow Oak (*Quercus michauxii*) also known as swamp chestnut oak

Hardiness Zones 5 to 9; Height reaches between 40' and 60' with a spread of 30'-50'; prefers acidic, moist loams in full sun. Thrives in sandy soils. Tolerates some part shade but not full shade. Tolerates wet soil and occasional flooding. Various wildlife consume acorns as well as livestock including cows, hence the additional common name of cow oak.

Live Oak (*Quercus virginiana*)

Hardiness Zones 8 to 10; Height reaches between 40'-80' with a spread of 60'-100'; characteristically has a short trunk with low branching and a broad-spreading rounded crown; easily grown in average to wet, well-drained soils in full sun and tolerates a wide range of soils. Acorns are consumed by a variety of wildlife.

Nuttall Oak (*Quercus nuttallii*)

Hardiness zones 5 to 9; reaches a height of 60'-80' feet with spread of 35'-50' capable of blocking sunlight; fast growth rate; tolerates wet soil as well as moderate drought. Prefers acidic, loamy, sandy, moist, wet, well-drained, and clay soils. Important species for wildlife management due to its high production of acorns.

Willow Oak (*Quercus phellos*)

Hardiness Zones 5 to 9; reaches a height of 40'-60' with a spread of 35'; tolerates poorly drained soils; prefers full sun and acidic soil; Prefers acidic, loamy, moist, sandy, well-drained, wet and clay soils. Important wildlife food source for mammals including wood ducks and mallards when areas are flooded.

Plum (*Prunus angustifolia* Marsh.)

Hardiness Zones 5 to 9; reaches a height up to 6'-25'; adaptable to sandy soils; performs well when planted on heavier clay loam soils; Early growth and survival requires weed and grass control. Plums are considered drought tolerant once established. Thorny thicket is valuable for wildlife nesting and fruit is consumed by numerous songbirds.

Persimmon (*Diospyros virginiana*)

Hardiness Zones 8 to 10; reaches a height 35'-60' with a spread of 15'-35'; adaptable to a wide range of soils; however, not tolerant to salt. Considered an excellent soft mast eaten by many wildlife species; low-value deer browse.



C. Trail Walk – for Park events only

Schools participating in the Park Program will take a trail walk to learn about natural wetland sites and associated plants and animals. Activities may include a wildlife scavenger hunt, Mystery Boxes, Tracks and Scat molding, and/or Aquatic Invertebrate collection and identification (see Section E).

Trail Walk Materials:

- Scavenger Hunt Sheet – can be found on the Google Docks files
- Clipboards and Pencils
- Track Molds – provided by the wildlife instructors
- Plaster – provided by the wildlife instructors
- Water
- Mystery Boxes – provided by instructors – students guess what is in the box by touch.

Trail Walk Methods:

1. Following water sampling collection at the lake, groups will engage in a scientific trail exploration guided by forestry experts and an interpretative ranger. The 3-mile hike through the park's nature trail will involve navigating an alleyway of oaks, exploring park wildlife, identifying trees, shrubs, and vines, with an emphasis on seasonal edible forage plants and berries along with native and invasive species.
2. Discuss the complex ecology of marshes and watersheds in Fontainebleau State Park, exploring topics like stormwater runoff and water pollutants.
3. Encourage students to document nature discoveries on a bingo card while learning about the scientific significance of each find. Or students will encounter Mystery Boxes.
4. Challenge students to identify tree species and consider their ecological benefits.
5. Provide specimens for viewing, hands-on interaction, and potential edible sampling of forage plants and berries.
6. Explore the scientific impact of pollution on land and water ecosystems, highlighting its effects on marine life.
7. Facilitate a discussion on scientific solutions to reduce pollution and enhance environmental sustainability.



D. Wildlife Survey – available for Park and Pond events

Wetland habitats, characterized by the plants (flora) and animals (fauna) present, are known as Communities. Animals play an active role in shaping the plant community and can modify their environment. For instance, a beaver constructs a lodge in streams, altering the habitat. While beavers may not be found in our pond sites, other animals may have adapted to the habitat or utilized local resources. During site inspections, visually scan for birds and mammals. Search wet areas for turtles, fish, or other aquatic animals. Record species and numbers observed, along with location details on the data sheet.

Wildlife Survey Materials:

- Bird Field Guide, Fish Guide, Turtle Guide, Snake Guide (provided at field event) or online resources can be utilized to identify animals
- Data Sheet
- Pencil
- Clip board

Wildlife Survey Methods:

1. Visually scan for avian species in trees or by water upon arrival.
2. Identify animal tracks and analyze scat for behavioral insights.
3. Observe fish or turtles in wet areas.
4. Check channelized water for aquatic life in dry sites.
5. Limit animal observations to 15 minutes, integrating them with plant surveys for a general assessment.
6. Animal observations should take no more than 15 minutes and can be noted as observed while surveying plants.



E. Aquatic Invertebrates Collection and Identification

Park and Pond Schools will also be offered Aquatic Invertebrate Collection and Identification activity. STP Mosquito Abatement will show students how to collect aquatic invertebrates and identify them using macroscopes and taxonomic keys. Invertebrate communities can indicate the health of a habitat.

Materials and Methods can be found in the Adopt a Pond and Park Program Teacher Packet Supplement Lesson Guide. The instructors for this exercise on the field trip are STP Mosquito Abatement experts.

F. Plant Community Survey – for Pond events

Teachers have an optional activity for students to monitor tree growth and plant community development, in addition to noting associated wildlife. This activity is described under Section C. Plant Community Survey.

The Plant Survey is designed to document community development over time. Previously planted trees (saplings) will be located and identified to species and monitored for survival and growth overtime. Volunteer trees will also be measured and monitored for growth. Measure tree height only, until trees develop trunk size greater than 2 inches around. An estimate of plant community development includes identifying dominate and unique plants at each pond site.

ACTION ITEM: Teachers should familiarize students with local, native and invasive tree species; and locate online taxonomic guides.

1. Trees and shrubs (woody plants)

Tree Survey Materials

1. Taxonomic Guide and list of previous tree plantings (provided at pond site event)
2. Tape measure
3. Flags – optional, as needed to identify selected trees to measure
4. Data Sheet
5. Pencil
6. Clip Board

Tree Survey Methods

1. Students should split into groups of at least 2, ideally 4 or 5.
2. Each group will choose an area of the site to make observations and take measurements.
3. One student in each group will record tree measurements
4. Other students will locate planted trees
5. Identify tree species
6. Measure tree height – from soil surface to top of tallest center stem

Repeat the method above for volunteer trees (trees that grew at the site but were not planted as part of the program).

2. Herbaceous Volunteer Plant Survey (lacking woody stems)

Survey Materials

1. Taxonomic Guide & Sample Plant Guide (provided)
2. Data Sheet
3. Pencil
4. Clip Board
5. Camera or Camera Phone - optional
6. Web access to online plant identification websites – optional

NOTE: A camera or phone with camera may be used to take photographs of unidentified plants. Photos should show any and all identifying parts - stem, bark, leaves and any blooms or seeds.





Survey Methods

1. Identify dominant herbaceous plants using sample plant guide provided.
2. If plants cannot be identified in the field, take a picture of the plant, taking care to capture flowers, leaves, and stems and identify using websites in the classroom
3. Estimate abundance within the planting area, by individual plant species. One (1) through Five (5) - 1 being least abundant to 5 being most abundant.
4. Give a brief description of plant community - are plants flowering, are leaves changing color (seasonally), are they healthy looking or stressed due to drought conditions.
5. Precipitation can be tracked using USGS (US Geological Survey) Water Watch website https://waterwatch.usgs.gov/?id=ww_current and may be used in the classroom to extend discussions about the plant community and conditions at the pond sites.

G. Marine Debris – Water Pollution

All organisms, including humans, depend on a clean and healthy ecosystem for a high quality of life. People can diminish the beauty and safety of beaches, coasts, rivers and surrounding habitats if they irresponsibly dispose of litter, abandon boats, or lose recreational or commercial fishing gear in the environment. Marine debris and litter are serious problems, but it is preventable. Keeping our beaches and waterways clean and healthy is everyone's responsibility.

Marine debris is an expensive post-tropical storm problem for coastal communities across the state. Past surveys of St. Tammany Parish marine debris shows \$12,000,000 in clean-up and disposal costs of waterways after Hurricane Ida; Three (3) million cubic yards of which are green materials alone that the parish separates from other debris and chips/shreds for composting.

Additional impacts occur during rain events, especially frequent, heavy down pours. As water moves across urban and rural landscapes it picks up all kinds of litter, oil and gas, nutrients, soils and other toxins that end up in rivers and streams and ending up in the Gulf of Mexico. Impacts from water pollution can impair aquatic animals (reproduction and growth) or directly kill them. Fish kills often occur when excess nutrients cause algal blooms that reduce oxygen in the water; or human health issues like West Nile virus transferred by mosquitos.



Photo borrowed from NOAA, Office of Response and Restoration [What is Marine Debris? | Marine Debris Program \(noaa.gov\)](https://www.noaa.gov/what-is-marine-debris/)

Preparing before a storm by picking up loose debris and securing outdoor items can reduce the amount of debris dislodged and distributed across landscapes during a storm. Reducing litter, oil and other chemical spills, maintaining sewage collection and treatment systems, can improve water quality throughout the watershed. St. Tammany Parish Government constructs stormwater ponds to collect excess rainwater and as a way to reduce water pollution impacts; stormwater ponds containing plants “treat” the water before it reenters the watershed. Marine debris is made of long-lasting materials like plastics, glass, wood, metal, and rubber.

Litter – waste disposed of in the wrong place. Litter can range in size from small wrappers to abandoned appliances. Litter can travel downstream through the watershed and enter the ocean, where it becomes marine debris.

Marine Debris – any solid, man-made product or material that ends up in our coastal environments. Marine debris negatively impacts the environment, wildlife, economies, human health and safety.

Degradation – the deterioration or breaking down of a substance into smaller pieces.

Watershed – an area of land that drains local streams, creeks and rivers into a larger body of water.



Marine Debris and Water Pollution Materials: provided by LA Sea Grant Marine Extension Agent

- Trash bags
- Gloves
- Litter sticks
- Flag Markers
- Marine debris degradation timeline information sheet
- Rope with items or pictures (Marine Debris Cards) of items attached
- Tarp
- Marine debris degradation cards

Marine Debris and Water Pollution Methods:

1. Lay the rope with debris items out across the tarp.
2. Start a discussion about the marine debris and ask questions like: What is litter? What is marine debris? Where does marine debris or litter come from? Where does it go? How does it get there?
3. Start at the end of the rope with the paper towel and work your way down the line discussing each item.
4. Ask students to guess how long it takes for each item to break down over time.
5. Discuss why these items can cause problems on land and in waterways and how they can affect marine life.
6. Ask students what can be done to fix this problem and reduce or eliminate marine debris/litter.

***NOTE:** Adapted from LA Sea Grant and BTNEP activities.*

SECTION 6: DATA SHEETS

Printable data sheets have been provided in electronic format through the St Tammany Parish School Board Google Site.

See Data Sheet File titled: Data Sheet_V2024.

SECTION 7: PROGRAM EVALUATIONS

Evaluations are an important tool in measuring the success and value of the program. Students will be asked questions in order to determine increased knowledge of topics before and after the program. Evaluations also help assess participant attitudes, behavior and science literacy. A teacher evaluation will take place at the end of the year to enhance the success of the program and improve areas that don't result in desired outcomes or support the goals and objectives of the project.

**Teacher suggestions and recommendations for additional lessons are essential to developing and maintaining a successful program for years to come!*

Instructions for Evaluations: provided on the google drive set up by STPSB

Teachers: Administer the Student Evaluation as a pre-test, before Classroom or Pond Field Event activities. To establish a baseline for student subject matter understanding.

Teachers: Administer the Student Evaluation, again as a post-test, after the Pond Field Event. Students will be tested to see if the materials were understood, as soon as possible after completion of the field trip.

Teachers: e-mail results to Carol Franze and/or Whitney Wallace, see contact list in this packet, **due by the end of the school year, prior to Summary and Next Year Planning Meeting in May/June.**

Defining Success

Long Range Successes for the Adopt a Pond and Park Programs include:

1. Increased stewardship in local wetland environments
2. Stormwater pollution reduction
3. Reduced flooding
4. Neighborhood aesthetics and recreation opportunities
5. Increased wildlife habitat
6. Develop resource managers

Working with our partners (government, school system, educators) successes will be estimated. STPG can determine reduced flooding and stormwater pollution. Increased wildlife habitat, neighborhood aesthetics and recreation will be observed at field events.

SECTION 8: SCIENCE STANDARD ALIGNMENT

JR. HIGH GRADE SCIENCE STANDARD ALIGNMENT:

Unit 5 Biodiversity & Change

7-MS-LS2-4: Interactions, Energy & Dynamics

- Construct an argument supported by empirical evidence that changes to physical/biological components of an ecosystem affect populations.
- **Clarification Statement:** Emphasis in on recognizing patterns in data, making inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.

3D Learning:

- SEP Evaluate: Engage in argument from evidence
- DCI: Ecosystem dynamics, functioning and resilience
- CC: Stability and change.

7-MS-LS2-5: Interactions, Energy & Dynamics

- Undertake a design project that assists in maintaining diversity and ecosystem services.
- **Clarification Statement:** Examples of ecosystem services could include water purification, nutrient recycling, habitat conservations or soil erosion.

3D Learning:

- SEP Reason Scientifically: Construct explanations and designing solutions.
- DCI: Engineering design – developing possible solutions
- CC: Stability and change.

Unit 5: Genetics & Traits

8-MS-ESS3-3: Earth & Human Activity

- Apply scientific principles to design a method of monitoring and minimizing human impacts on the environment.
- **Clarification Statement:** Examples of the design process may include examining human environmental impacts, assessing kinds of solutions that are feasible, designing/evaluating solutions that could reduce human impact. Ex: water usage, land usage, pollution.

3D Learning:

- **SEP:** Investigate/Reason scientifically; Construct explanations/design solutions.
- **DCI:** Human impacts on Earth's systems & developing possible solutions.
- **CC:** Cause and effect.

HIGH SCHOOL ENVIRONMENTAL SCIENCE STANDARD ALIGNMENT:

Unit 2: Environmental Awareness & Protection

HS-EV2-1: Design/evaluate solution to limit non-point source pollution into state waterways.

- **Clarification Statement:** Examples include nitrogen and phosphorus.

3D Learning:

- **SEP:** Reason Scientifically; Construct explanations/design solutions.
- **DCI:** Pollution/environment, Environmental choices, Defining/delimiting engineering problems.
- **CC:** Structure and function.

Unit 3: Ecosystems

HS-LS2-7: Design, evaluate, refine a solution for reducing impacts of human activities on the environment/biodiversity.

- **Clarification Statement:** Examples include urbanization and dissemination of invasive species.

3D Learning:

- **SEP:** Reason Scientifically; Construct explanations/design solutions.
- **DCI:** Ecosystem dynamics/functioning/resilience, Biodiversity and humans, Developing possible solutions.
- **CC:** Stability and change.

Unit 4: Resources & Resource Management

HS-EVS1-1: Analyze/interpret data to identify factors that affect sustainable development and natural resource management in Louisiana.

- **Clarification Statement:** Evidence of LA's natural resource wealth is found in understanding functions and values of varied ecosystems and environments.

3D Learning:

- **SEP:** Evaluate; Analyze and interpret data.
- **DCI:** Louisiana's natural resources (function/value of wetlands).
- **CC:** Stability and change.

Unit 6: Human Impact and Sustainability

HS-EVS1-2: Obtain, evaluate, communicate information on effectiveness of management or conservation practices for one of LA's natural resources with respect common considerations such as social, economic, technological, and influencing political factors over the past 50 years.

- **Clarification Statement:** Increases in commercial/recreational uses of land may result in the need for environmental policies and call for changes in long established practices.

3D Learning:

- **SEP:** Obtain, evaluate, communicate information.
- **DCI:** Resource management for Louisiana.
- **CC:** Systems and systems models.

SECTION 9: RESOURCES

Leaf Key to common trees in Louisiana – Guide to Louisiana trees.

<https://www.lsuagcenter.com/NR/rdonlyres/BA8FFA18-B7CD-4D98-88FF-AF234D5F9ACD/18437/pub1669LeafKey.pdf>

The Leaf Key can be found at the LSU AgCenter website at the link above and is in pdf format for printing ease or students can use the online version.

How to Use the Leaf Key

It is easy to identify the common trees of Louisiana with this guide. Long words have been left out and pictures are used to identify the leaves instead of written descriptions. Common trees include native and introduced trees from other parts of the United States or from foreign countries.

You can identify most tree leaves if you follow these steps:

1. Read the description at each numbered heading in the key on page 4 and by process of elimination find the group to which the leaf of any unknown tree belongs. Diagrams of the leaf characters used in the key are shown on page 5.
2. Turn to the picture numbers for this group. Leaf descriptions are repeated in the upper corner of the each page throughout the key.
3. Match the leaf with the picture it most closely resembles to find its name.

Wetland Plant Identification Websites:

USDA Natural Resource Conservation Service, Plant Materials Program

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/technical/publications/?cid=nrcs143_026853

Texas A&M Wetland Plant website

<https://aquaplant.tamu.edu/plant-identification/>

University of Florida, plant directory

<http://plants.ifas.ufl.edu/plant-directory/>

Introductory Program PowerPoint – Google Drive.

Video links for Water Quality Testing – Google Drive.

Printable Data Sheets – Google Drive.

The Globe Program: a worldwide science and education program (<https://www.globe.gov/do-globe/classroom-ready-activities/learning-activities>) is a great resource, see the hydrosphere section for water related education activities.

SECTION 10: PARTNERSHIP CONTACT LIST

STPPS Sheri Jones

Supervisor Curriculum & Instruction
985-898-5934 (office)

sherijones@spsb.org

Melissa Strata-Burger

Supervisor Curriculum & Instruction
985-898-5934 (office)

Melissa.strata-burger@spsb.org

Shannon Leger (main contact)

6-12 Science **Curriculum** Specialist

985-264-9979 (cell)

Shannon.leger@spsb.org

Stacey Alexius

Coordinator Career Technical Educator
985-898-3201 (office)

Stacey.alexius@spsb.org

STPG Spaff Goodnow

Landscape Architect

sgoodnow@stpgov.org

E. deEte Smythe

Regulatory Manager

edsmythe@stpgov.org

STP Mosquito Abatement Jennifer Bushnell

Outreach & Media Specialist

jbushnell@stpmad.org

LSU AgCenter & LA SeaGrant

Carol Franze, Marine Agent

cfranze@agcenter.lsu.edu

LSU AgCenter Forestry & Wildlife

Whitney Wallace: County Agent

wwallace@agcenter.lsu.edu

Participating Schools; Teacher/Principals – Pond and Park (denotes tree planting)

Slidell Jr. – Heritage Park 2X year

985-641-5914

Principal: G. Herdliska

George.herdiska@spsb.org

Teacher: Kristen Rushing

Kristen.rushing@spsb.org

Madisonville Jr. Pine Creek Acres

985-845-3355

Principal: P Morlier

paul.morlier@spsb.org

Teacher: Crystal Mergist

crystal.addison@spsb.org

Fontainebleau Jr. – Lapin Pond

985-875-4507

Principal: M Astugue

Michael.astuge@spsb.org

Teacher: Savannah Kennedy

Savannah.kennedy@spsb.org

Monteleon Jr. -McNamara

985-951-8088

Principal: J. Westcott

jennifer.westcott@spsb.org

Teacher: Trenton Nichols

Trenton.nichols@spsb.org

Boyet Jr. – Tenet Pond

985-643-3775

Principal: J. Clark

jennifer.clark@spsb.org

Teacher: Kayln Yount

kayln.yount@spsb.org

Covington High -Marquette Pond

985-892-3422

Principal: J Boudreaux

john.boudreaux@spsb.org

Teacher: Leslie Callaway

leslie.callaway@spsb.org

Salmen High- Tenet Pond

985-643-7359

Principal: L Jacobs

liza.jacobs@spsb.org

Teacher: Cherie Maser

Cherie.maser@spsb.org

Mandeville High – Marquette Pond

985-892-3021

Principal: C Monson

Christian.monson@spsb.org

Teacher: Caterina Braun

caterina.braun@spsb.org

Ag Science – 7th Grade – Park Program

Fifth Ward Jr. – Fontainebleau State Park

985-886-9273

Principal: M Simmons

Michelle.simmons@spsb.org

Teacher: Gilbert Hartzog

Gilbert.hartzog@spsb.org

Lee Road Jr. – Fontainebleau State Park

985-892-3636

Principal: B Smith

beth.smith@spsb.org

Teacher: Clinton 'Levi' Morgan

Clinton.morgan@spsb.org

Folsom Jr. – Fontainebleau State Park

985-796-3724

Principal: K Nicoulin

Kenita.nicoulin@spsb.org

Teacher: Laura Ragas

laura.ragas@spsb.org

Creekside Jr. – Camp Salmen

985-863-5882

Principal: L Virga

Lisa.virga@spsb.org

Teacher: Britanee Symons

britanee.symons@spsb.org

