



# Pontchartrain Conservancy

Science for Our Coast ([scienceforourcoast.org](http://scienceforourcoast.org))

Facilitating Environmental Education for the Basin

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## Educational Program Descriptions

Four major themes run through our programming: Climate Science, Community and the Coast, Lagniappe, and Water Quality. Please read on to discover more about the specific programs offered in each theme. For an at-a-glance overview of which programs are available for your grade level, please consult the chart on pages 7-8.

### Climate Science

#### **An Environmental Science Investigation: Unpacking the Impacts of Climate Change**

*Grade level: 6th - 12th*

What is climate change? How can we identify the impacts of climate change in our ecosystems? In this lab, participants will be challenged to solve an environmental science mystery after exploring a current local phenomenon that may be related to climate change. They will identify relevant data to collect and analyze, use these clues to uncover connections, and create and share an illustrated mind map of their conclusions.

\*available at the Lighthouse, Bayou Saint John, Bucktown Harbor, or Northshore Nature Center

#### **After the Storm: The Effect of Stormwater on our Communities (Green Infrastructure can be added for MS and HS):**

*Grade level: Kindergarten - 12th*

What happens to stormwater in urban areas? How can we adapt to increased flooding related to rain events? In this lab, participants will complete a stormwater site evaluation, sweep the area for debris that will eventually impede the catch basins, and identify possible tools to aid in stormwater management.

\*available at the Lighthouse or at the School

**\*Green Infrastructure: Solving Urban Problems with Natural Solutions** (*Grade level: 6th - 12th*)

What is green infrastructure? How can it be used to adapt to changing climate trends? In this lab, participants will investigate a variety of green infrastructure methods, such as bioswales and rain gardens. After completion of the stormwater site evaluation, they will propose appropriate green infrastructure for the site.

\*available at the Lighthouse or at the School

**Hydrological Modifications: Using Technology to Manage Waterways (New Orleans Waterways can be added for MS and HS)**

*Grade level: 4th - 12th*

What are hydrological modifications? How do we use them to manage waterways? In this lab, participants will be challenged to solve a water management scenario. They will discover a variety of methods to manage waterways and debate stakeholder perspectives. The final challenge will be to design, build, and test possible solutions to the scenario.

\*available at the Lighthouse or at the School

**\*New Orleans Waterways: More than Just the Mississippi River** (*Grade level: 6th - 12th*)

What is the difference between a canal and a bayou? Where does Bayou Saint John start and end? In this lab, participants will be challenged to propose a viable canal project to meet the needs of industry. They will consider a variety of locations and debate stakeholder perspectives. The final challenge will be to design and defend their possible solutions to the scenario.

\*available at the Lighthouse, Bayou Saint John, City Park, or at the School

## Coast and Community

### **Land Loss and Restoration: Evaluating Challenges and Solutions for Coastal Louisiana**

*Grade level: 4th - 12th*

Why is Louisiana losing land? How can we save our coast? In this lab, participants will explore the causes of land loss, use a stream model to simulate a variety of land loss scenarios, and become decision-makers in an impact-based land loss game.

\*available at the Lighthouse or at the School

### **Multiple Lines of Defense: Exploring Louisiana Coastal Protections**

*Grade level: 4th - 12th*

Is coastal Louisiana prepared for the next big hurricane? What constructed and natural defenses are used to mitigate the effects of storm surge? In this lab, participants will construct a model town and propose and build ways to protect it from an imminent hurricane. In the aftermath of the storm, participants will evaluate the effectiveness of their protections and uncover current strategies to protect coastal Louisiana.

\*available at the Lighthouse or at the School

### **Wetlands 101: Uncovering the Hidden Value of Swamps and Marshes (Disappearing Wetlands can be added for MS and HS)**

*Grade level: Kindergarten - 12th*

What is the difference between a swamp and a marsh? Why are wetlands important to humans and other species? In this lab, participants will explore the biotic and abiotic factors that make up a wetland, identify characteristics of various local wetlands, and assess the value of a specific wetland.

\*available at the Lighthouse, Bucktown Harbor, City Park, or at the school. In addition, Bayou Saint John and Northlake Nature Center available for 4th grade and up

**\*Disappearing Wetlands: Assessing the Consequences of Human Development in Natural Areas** (*Grade level: 6th - 12th*)

How did a cypress swamp become the city of New Orleans? What are the long-term consequences of this development? In this lab, participants will be challenged to solve a development dilemma in the wetlands. They will discover a variety of obstacles to their development project and debate stakeholder perspectives. The final challenge will be to propose and defend a possible plan for their project.

\*available at the Lighthouse, Bayou Saint John, Bucktown Harbor, City Park, Northlake Nature Center, or at the School

## Lagniappe

**Ecosystems of the Pontchartrain Basin Watershed: Discovering Diverse Landscapes in Southern Louisiana**

*Grade level: 3rd - 12th*

What is the difference between a saline, brackish, and freshwater marsh? Would you find a raccoon in a brackish marsh? In this lab, participants will create model ecosystems, compare and contrast two ecosystems, and discover the consequences of the loss of a species for an ecosystem.

\*available at the Lighthouse, Bucktown Harbor, or at the School. In addition, Bayou Saint John available for 4th grade and up

## Water Quality

**Aquatic Macroinvertebrates: Using Biotic Factors to Determine the Health of Local Waterways**

*Grade level: 4th - 12th*

What is a Mayfly? Why are they important when investigating water quality? In this lab, participants will observe a variety of aquatic organisms, identify specific species, and interpret resulting data to infer the possible pollution status of the waterway.

\*available at the Lighthouse, Bayou Saint John, Bucktown Harbor, City Park, Northlake Nature Center, or at the School

**Marine Debris: A Global Issue with Local Solutions (Microplastics can be added for MS and HS)**

*Grade level: 4th - 12th*

What is marine debris? How does it impact our oceans? In this lab, participants will identify marine debris pathways, collect actual and potential marine debris, graph and interpret their data, and explore possible individual and societal solutions.

\*available at Bayou Saint John or at the School

**\*Microplastics (Grade level: 6th - 12th)**

What are microplastics? Where do they come from? In this lab, participants will answer these questions, examine the life cycle of an item made of plastic, and test different liquids and water samples in search of microfibers.

\*available at all locations

**Point and Nonpoint Source Pollution in Our Watershed: Tracking Pollution to its Source (Algal Blooms can be added for MS and HS, Watersheds can be added for all grade levels)**

*Grade level: 4th - 12th*

What is Point and Nonpoint Source pollution? How is the average person responsible for Nonpoint Source pollution? In this lab, participants will be challenged to solve a pollution mystery after exploring Point and Nonpoint Source pollution. They will identify a polluted waterway, use clues to track the pollution to its most likely source, and debate stakeholder perspectives on proposed solutions.

\*available at all locations

**\*Algal Blooms (Grade level: 6th - 12th)**

What is Algae? What are the consequences of frequent algal blooms? In this lab, participants will be challenged to solve an algal bloom mystery after exploring Point and Nonpoint Source

pollution. They will locate a dead zone, use clues to identify the stages of this phenomenon, and debate stakeholder perspectives on proposed solutions.

\*available at all locations

**\*Watersheds: Connecting our Nation's Waterways** (Grade level: 3rd - 12th)

What is a watershed? Where does the water in Southern Louisiana's rivers come from? In this lab, participants will build a model watershed to track the flow of water, artistically recreate the sub-watersheds of the Mississippi River Watershed, and identify the hydrological features that make up a watershed.

\*available at the Lighthouse or at the School

**Water Quality: Using Fieldwork to Solve Local Water Quality Mysteries (ROV can be added for MS and HS):**

*Grade level: 6th - 12th*

How do you know water is healthy? What tests can be used to determine its status? In this lab, participants will conduct a variety of tests that help to determine water quality, including tests for salinity, pH, dissolved oxygen, turbidity, and temperature. As they interpret their data, they will explore relationships between their results and the health of the water.

\*available at the Lighthouse, Bayou Saint John, Bucktown Harbor, City Park, or Northlake Nature Center

**\*ROV** (*Grade level: 6th - 12th*)

What is an ROV? How can they be used as a scientific tool? In this lab, participants will utilize an aquatic remotely operated vehicle to investigate water quality.

\*available ONLY at the Lighthouse or Bayou Saint John

**Programs At-A-Glance**

<b>Grade Level</b>	<b>Water Quality</b>	<b>Coast and Community</b>	<b>Lagniappe</b>	<b>Climate Science</b>
Kindergarten	N/A	• Wetlands 101	N/A	• After the Storm
1st Grade	N/A	• Wetlands 101	N/A	• After the Storm
2nd Grade	N/A	• Wetlands 101	N/A	• After the Storm
3rd Grade	N/A	• Wetlands 101	• Ecosystems of the Basin	• After the Storm
4th Grade	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris</li> <li>• Point and Nonpoint Source Pollution (Watersheds)</li> <li>• Water Quality</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101</li> </ul>	• Ecosystems of the Basin	<ul style="list-style-type: none"> <li>• After the Storm (Green Infrastructure)</li> <li>• Hydrological Modifications</li> </ul>
5th Grade	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris</li> <li>• Point and Nonpoint Source Pollution (Watersheds)</li> <li>• Water Quality</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101</li> </ul>	• Ecosystems of the Basin	<ul style="list-style-type: none"> <li>• After the Storm</li> <li>• Hydrological Modifications</li> </ul>
6th Grade	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris (Microplastics)</li> <li>• Point and Nonpoint Source Pollution (Algae Blooms)</li> <li>• Water Quality (ROV)</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101 (Disappearing Wetlands)</li> </ul>	• Ecosystems of the Basin	<ul style="list-style-type: none"> <li>• After the Storm</li> <li>• Environmental Science Investigation</li> <li>• Hydrological Modifications (New Orleans Waterways)</li> </ul>

7th Grade	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris (Microplastics)</li> <li>• Point and Nonpoint Source Pollution (Algae Blooms)</li> <li>• Water Quality (ROV)</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101 (Disappearing Wetlands)</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystems of the Basin</li> </ul>	<ul style="list-style-type: none"> <li>• After the Storm (Green Infrastructure)</li> <li>• Environmental Science Investigation</li> <li>• Hydrological Modifications (New Orleans Waterways)</li> </ul>
8th Grade	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris (Microplastics)</li> <li>• Point and Nonpoint Source Pollution (Algae Blooms)</li> <li>• Water Quality (ROV)</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101 (Disappearing Wetlands)</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystems of the Basin</li> </ul>	<ul style="list-style-type: none"> <li>• After the Storm (Green Infrastructure)</li> <li>• Environmental Science Investigation</li> <li>• Hydrological Modifications (New Orleans Waterways)</li> </ul>
High School	<ul style="list-style-type: none"> <li>• Aquatic Macro-invertebrates</li> <li>• Marine Debris (Microplastics)</li> <li>• Point and Nonpoint Source Pollution (Algae Blooms)</li> <li>• Water Quality (ROV)</li> </ul>	<ul style="list-style-type: none"> <li>• Land Loss and Restoration</li> <li>• Multiple Lines of Defense</li> <li>• Wetlands 101 (Disappearing Wetlands)</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystems of the Basin</li> </ul>	<ul style="list-style-type: none"> <li>• After the Storm (Green Infrastructure)</li> <li>• Environmental Science Investigation</li> <li>• Hydrological Modifications (New Orleans Waterways)</li> </ul>