



## **An Electronic Field Trip: Restoring and Protecting the Gulf Coast**

### **Instructional Design Plan**

The **goals** of the EFT are to

- Increase participant awareness about the current coastal restoration and conservation activities, future plans for restoration and conservation, the economic value and benefits of the Gulf of Mexico, and possible citizen actions to protect the Gulf of Mexico
- Promote action to help protect the Gulf of Mexico
- Answer participants questions related to the EFT content by a panel of experts who provide sound science responses
- Disseminate sound science about the Gulf of Mexico through multimedia
- Increase environmental literacy of audience
- Provide environmental education to underserved populations

The **intended audience** for the EFT consists of

- Middle and high school students in Louisiana
- Middle and high school students in other Gulf of Mexico states
- General audience

**Desired outcomes** are

- Increased participants' knowledge of restoration and conservation of the Gulf of Mexico
- Increased participants' knowledge of the economic value of the Gulf of Mexico
- Increased participants' awareness of the relevance of the Gulf of Mexico to participants' lives
- Positive actions planned/under-taken by participants to protect the environment and the Gulf of Mexico

**Louisiana Grade Level Expectations (GLEs)** are at [lpb.org/thinkagain](http://lpb.org/thinkagain) (pdf)

**Methods of Instruction** are

- A 20 minute introductory video—to be watched prior to the live field trip—explains the value of the Gulf Coast region to the nation and how the fragile region is threatened. Questions may be submitted in advance to be answered during the live field trip.
- A live 20 minute electronic field trip delves further into the problem of coastal and wetland loss by exploring the quickly eroding Louisiana coast and wetlands, restoration and protection techniques being implemented, and ways that you can help.
- A 25 minute Q&A with a panel of experts follows. Links to additional resources offer more detailed background information and ways that you can help.



## Evaluation of Instructional Success

- An optional pre-test/post-test can be used to demonstrate a positive change in knowledge at [lpb.org/thinkagain](http://lpb.org/thinkagain) (Pre-test pdf) (Post-test pdf).
- Students individually or as a group develop and implement an action plan for involvement in help restore or preserve the environment. A plan can be as simple as cleaning-up or recycling at school; recycling, protecting the environment, and preventing ground water contamination at home; or a more extensively plan to work with organizations on the coast or in wetlands.

## Overview of Instructional Content

### Introductory Video

- Introduction economic value of the Gulf of Mexico region
- Threats to the Habitats

### Live Electronic Field Trip

- Value of the Louisiana Gulf Coast and Wetlands
  - Energy—oil/gas
  - Shipping
  - Seafood
  - Tourism
- Loss of Viability of Gulf/Coast
  - Land Erosion-
    - Levees prevent sediment deposit
    - Rising waters
    - Storm damage
    - Salt Water Intrusion
    - Channeling
  - Pollution
    - Farm run off
    - Oil spills
    - Drainage from towns/cities
  - Hypoxia
- Economic and Quality of Life Impact
  - Locally/nationally
- What is GOMA and its purpose?
- Restoration Activities
  - Dredging and sediment relocation
  - Rebuilding barrier islands
  - Fencing to create sand dunes



- River diversion
- Challenges
- How to help

## Supporting Resources

### Glossaries and Concepts

Office of Coastal Protection and Restoration

<http://coastal.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&nid=143&pnid=0&pid=104&catid=0&elid=0>

NOAA's State of the Coast Glossary

<http://stateofthecoast.noaa.gov/glossary.html>

What is an Estuary?

<http://www.btnep.org/BTNEP/about/whatisestuary.aspx>

What is BTNEP?

<http://www.btnep.org/BTNEP/about/whatisBTNEP.aspx>

Estuarine Literacy (Underlying Concepts)

<http://estuaries.gov/Teachers/Default.aspx?ID=181>

### Video Gallery

From LPB

“Protecting the Wetlands: A Matter of Survival” [http://beta.lpb.org/index.php/E-Trips/e-trip\\_archive/protecting\\_the\\_wetlandsa\\_matter\\_of\\_survival](http://beta.lpb.org/index.php/E-Trips/e-trip_archive/protecting_the_wetlandsa_matter_of_survival)

“Washing Away” <http://www.lpb.org/programs/washingaway/about.html>

Significance of Louisiana Wetlands <http://www.lpb.org/programs/washingaway/significance.html>

“Washing Away: After the Storm”

[http://beta.lpb.org/index.php/programs/washing\\_away\\_after\\_the\\_storm/washing\\_away\\_after\\_the\\_storms](http://beta.lpb.org/index.php/programs/washing_away_after_the_storm/washing_away_after_the_storms)

From Louisiana Universities Marine Consortium (LUMCON)

An animation of process of hypoxia and effect on sea life

[http://www.gulfhypoxia.net/Overview/hypoxia\\_flash.asp](http://www.gulfhypoxia.net/Overview/hypoxia_flash.asp)



From the USGS

“Sea-Level Rise, Subsidence, and Wetland Loss”

[http://www.youtube.com/watch?v=RL3n19GRFSM&safety\\_mode=true&persist\\_safety\\_mode=1](http://www.youtube.com/watch?v=RL3n19GRFSM&safety_mode=true&persist_safety_mode=1)

OR <http://gallery.usgs.gov/videos/347>

“Potential Effects of Elevated CO2 and Climate Change on Coastal Wetlands”

[http://www.youtube.com/watch?v=MHEVbpKmlI0&safety\\_mode=true&persist\\_safety\\_mode=1](http://www.youtube.com/watch?v=MHEVbpKmlI0&safety_mode=true&persist_safety_mode=1)

OR <http://gallery.usgs.gov/videos/357>

“Effects of Sea-Level Rise on Coastal Wetlands in the Mississippi Delta”

[http://www.youtube.com/watch?v=ksNHlnIUUVw&safety\\_mode=true&persist\\_safety\\_mode=1](http://www.youtube.com/watch?v=ksNHlnIUUVw&safety_mode=true&persist_safety_mode=1)

OR <http://gallery.usgs.gov/videos/257>

“Coastal Louisiana: Impacts of Hurricanes on Salt Marsh and Mangrove Wetlands”

[http://www.youtube.com/watch?v=sEVoacsEQQ0&safety\\_mode=true&persist\\_safety\\_mode=1](http://www.youtube.com/watch?v=sEVoacsEQQ0&safety_mode=true&persist_safety_mode=1)

OR <http://gallery.usgs.gov/videos/258>

From CWPPRA at <http://lacoast.gov/new/Ed/Videos.aspx>

“Rebuilding Coastal Louisiana”

“Marsh Creation-Step by Step”

“Coastal Louisiana: Impacts of Hurricanes on Salt Marsh and Mangrove Wetlands”

“Effects of Sea-Level Rise on Coastal Wetlands in the Mississippi Delta”

## Article

“Elevated Atmospheric CO2 May Help Coastal Wetlands Keep Pace with Sea-Level Rise”

<http://soundwaves.usgs.gov/2009/05/index.html>

## EPA Flyers

“Ten Ways to Protect Estuaries” <http://www.epa.gov/owow/oceans/tenways.pdf>

“You Dump It, You Drink It. Recycle Used Motor Oil”

<http://www.epa.gov/osw/consERVE/materials/usedoil/campgn/en-dumpbr.pdf>

## Environmental Plans

- *Louisiana’s Master Plan Update*, Coastal Protection and Restoration , <http://coastal.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&nid=150&pnid=0&pid=123&catid=0&elid=0>
- *Comprehensive Conservation Management Plan* , Management Conference, Barataria-Terrebonne Estuary Program, <http://www.btneep.org/BTNEP/about/theplan.aspx>
- *Governors’ Action Plan for Healthy and Resilient Coasts*, Gulf of Mexico Alliance, [http://www.gulfofmexicoalliance.org/actionplan/actionplan\\_1.html](http://www.gulfofmexicoalliance.org/actionplan/actionplan_1.html)



- *Governors' Action Plan II*, Gulf of Mexico Alliance, [http://www.gulfofmexicoalliance.org/actionplan/actionplan\\_II.html](http://www.gulfofmexicoalliance.org/actionplan/actionplan_II.html)

### **Land Loss Map**

Southeast Louisiana Land Loss, Coastal Wetlands Planning, Protection and Restoration Act, [http://lacoast.gov/new/Pubs/Map\\_data/2050\\_25X25\\_FINAL\\_medium.jpg](http://lacoast.gov/new/Pubs/Map_data/2050_25X25_FINAL_medium.jpg)

### **Lesson plans and educational resources**

Louisiana Marine Education resources (LaMer), <http://www.lamer.lsu.edu/>

### **For news, videos, and audio clips about the Gulf**

Gulfwatch.org

### **How to Help Restore or Protect the Gulf of Mexico and Wetlands**

#### **Suggestions**

Environmental Protection Agency suggests "Ten Ways to Protect Estuaries" <http://www.epa.gov/owow/oceans/tenways.pdf>.

CWPPRA suggests how you can make good personal choices and ways you can be involved <http://lacoast.gov/new/GetInvolved/Default.aspx>.

Estuaries.gov suggests things you can do to protect estuaries at home, on the water, on the beach, and in the community <http://estuaries.gov/GetInvolved/Default.aspx?ID=211>.

Estuaries.gov also encourages you to participate in the annual National Estuaries Day (9/24/2011) <http://estuaries.gov/GetInvolved/Default.aspx?ID=153> and gives suggested school activities <http://estuaries.gov/GetInvolved/Default.aspx?ID=287>.

America's Wetlands Resource Center tells how you can help <http://www.americaswetlandresources.com/youcanhelp/index.html>.

See what Harry Hurst Middle school students, the Wetland Watchers, have done [http://www.wetlandwatchers.org/?page\\_id=107](http://www.wetlandwatchers.org/?page_id=107).

Follow suggestions made in the collaborative "Primer on Hypoxia." [http://gulfofmexicoalliance.org/pdfs/Primer\\_on\\_Hypoxia\\_in\\_the\\_Gulf\\_of\\_Mexico.pdf](http://gulfofmexicoalliance.org/pdfs/Primer_on_Hypoxia_in_the_Gulf_of_Mexico.pdf) 1) Become educated on proper fertilization practices or minimize use of fertilizers overall, 2) Preserve land adjoining rivers and streams to help prevent nutrient runoff, 3) Support the protection and restoration of natural wetlands and construction of artificial wetlands that can help reduce nutrients before they enter streams, 4) Support best waste-water management and treatment practices in your community.



Wonder what best practices are? See the EPA's Source Water Protection

<http://water.epa.gov/learn/training/dwatraining/upload/dwaSWP-bestpracticesforSWP.pdf>.

### **Volunteer**

Register to volunteer at <http://volunteer.btneq.org/> where coastal restoration agencies and partners can look to find willing volunteers who want to "do something."

Find volunteer work by state <http://estuaries.gov/students/Default.aspx?ID=208>.

Volunteer with the Coastal Restoration Corps to work on US coastlines

<http://www.habitat.noaa.gov/pdf/Coastal%20Restoration%20Corps%20workshop%20two-pager%20final.pdf>.

Take part in one of the Classroom Projects developed by Louisiana Sea Grant

<http://www.lamer.lsu.edu/projects.htm>.

Take part in the LSU Ag Center 4-H Youth Wetlands Program

[http://text.lsuagcenter.com/en/4H/about\\_4H/programs/science\\_engineering\\_technology/Youth+Wetlands+Week/](http://text.lsuagcenter.com/en/4H/about_4H/programs/science_engineering_technology/Youth+Wetlands+Week/).

Volunteer for one of the projects sponsored by the Coalition to Restore Coastal Louisiana

<http://www.crcl.org/coalitionprograms/communitybasedrestoration.html>.

### **Recycle**

Want to recycle? Learn how: Recycling 101 <http://earth911.com/recycling/>.

Check your city's website to learn more about recycling in your community or check the **free app**

**iRecycle** <http://earth911.com/irecycle/>. In Baton Rouge check the Baton Rouge Recycling Office

<http://brgov.com/dept/recycle/>.

Want to recycle at school, see the recycling classroom activities for Grades K-5 at

<http://brgov.com/recycle/classroom.htm>.

Many communities now have specific days on which household hazardous waste is collected. Check your city's website for more information. In Baton Rouge check

<http://brgov.com/recycle/householdhazardous.htm>.