Paddlefish Reintroduction Experiment

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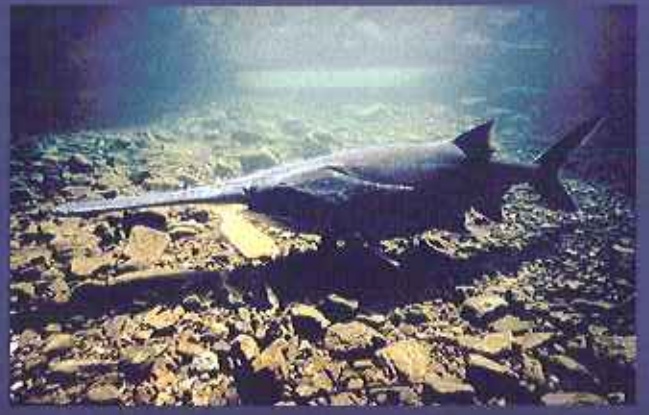
CADDO LAKE INSTITUTE

This presentation provides background on the work leading to the Paddlefish Reintroduction Experiment and some description of the experiment.

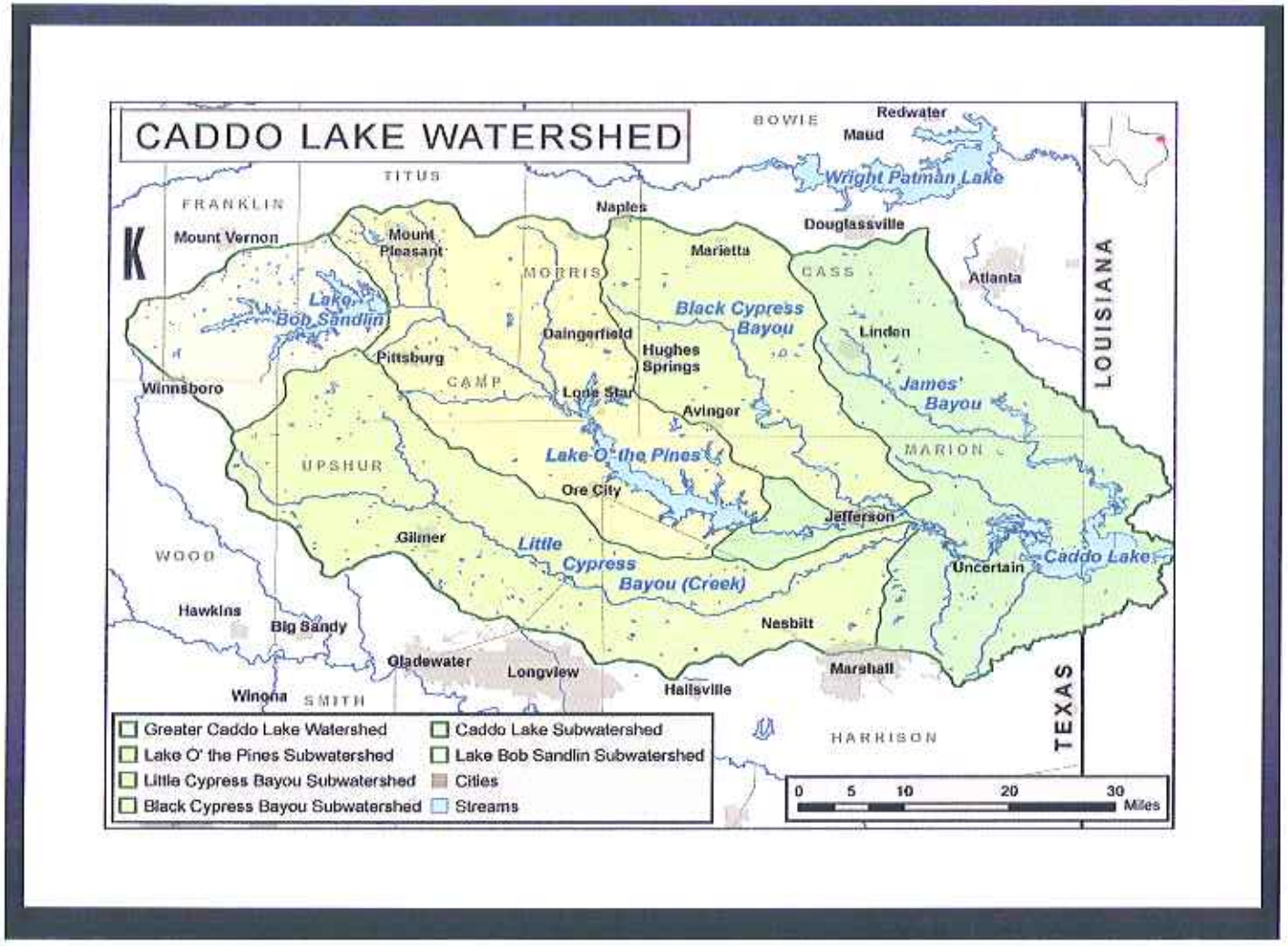
American Paddlefish

- Older than dinosaurs
- Grows up to 7 feet long
- Weighs up to 200 pounds
- Lives for 30 years
- Filter feeder eating plankton
- Shark-like skin
- Skeleton of cartilage
- Spawns on gravel bars



Paddlefish have not been seen in the Caddo Lake watershed and most other river basins in Texas for many years. The species is listed as threatened in Texas. Thus, the paddlefish provides a good example of what the Caddo Lake watershed has lost and what might be reestablished by changing the flows in the watershed and other activities.

Paddlefish are filter feeders, often swimming with their mouths open to collect plankton to eat. As a result it is not a game fish that will bite on a hook with bait.



Caddo Lake is about 50% in Texas and 50% in Louisiana, but its watershed is more than 90% in Texas. Thus, to assure Caddo Lake stays healthy, Caddo Lake Institute (CLI) and others have focused to a large degree on keeping the watershed healthy.

Caddo Lake is well known, as it is Texas' only large naturally-formed lake. It attracts visitors from all over the world.

In fact, over 20,000 acres of the lake and surrounding wetlands have collectively been designated as a Wetland of International Importance under the international Ramsar Convention.

Ramsar Convention on Wetlands

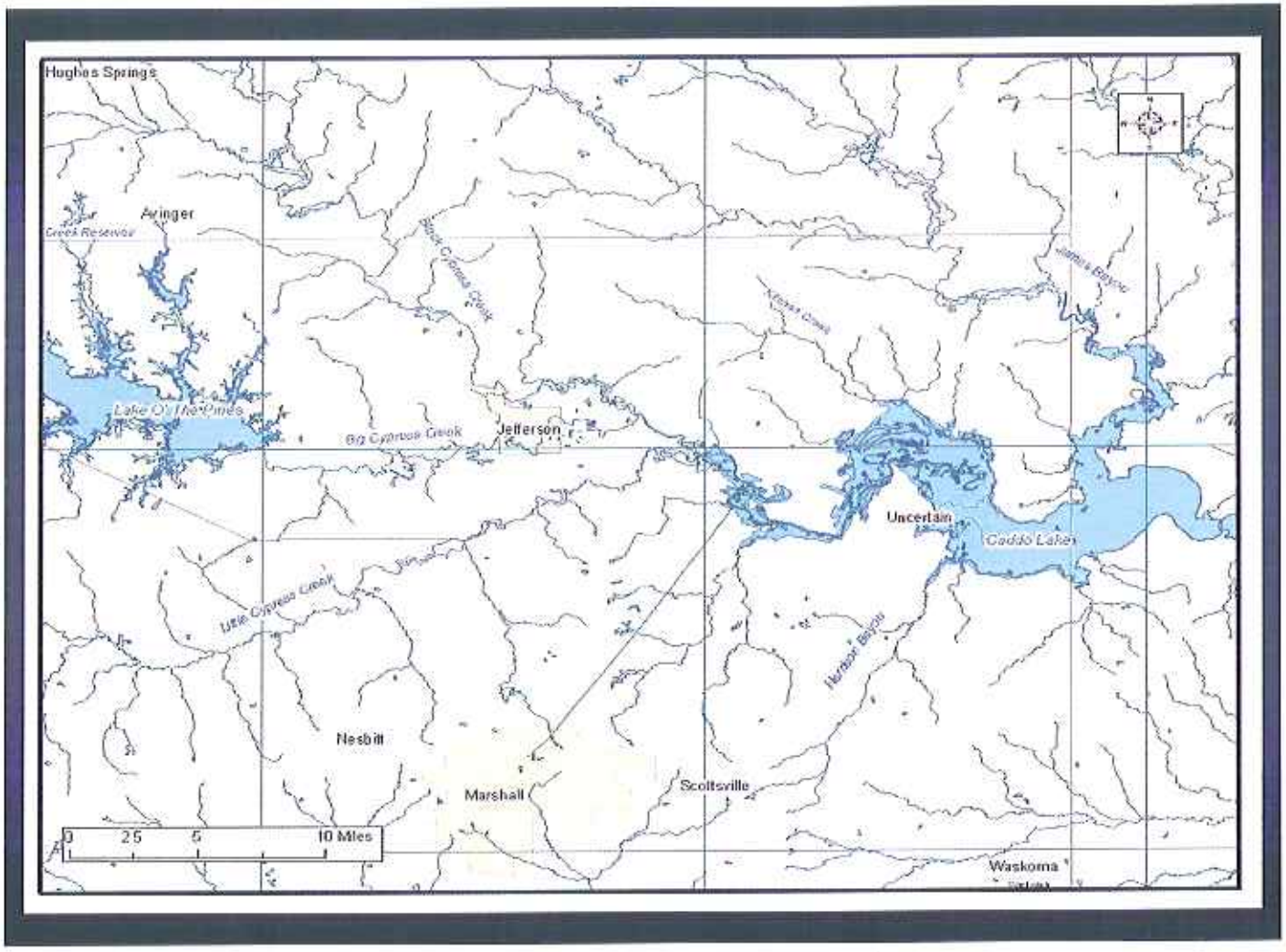
- International treaty adopted in 1971 and signed by 160 nations
- Protects "wetlands of international importance"
- A framework for international cooperation

The convention is used around the world to identify and help protect important wetlands.

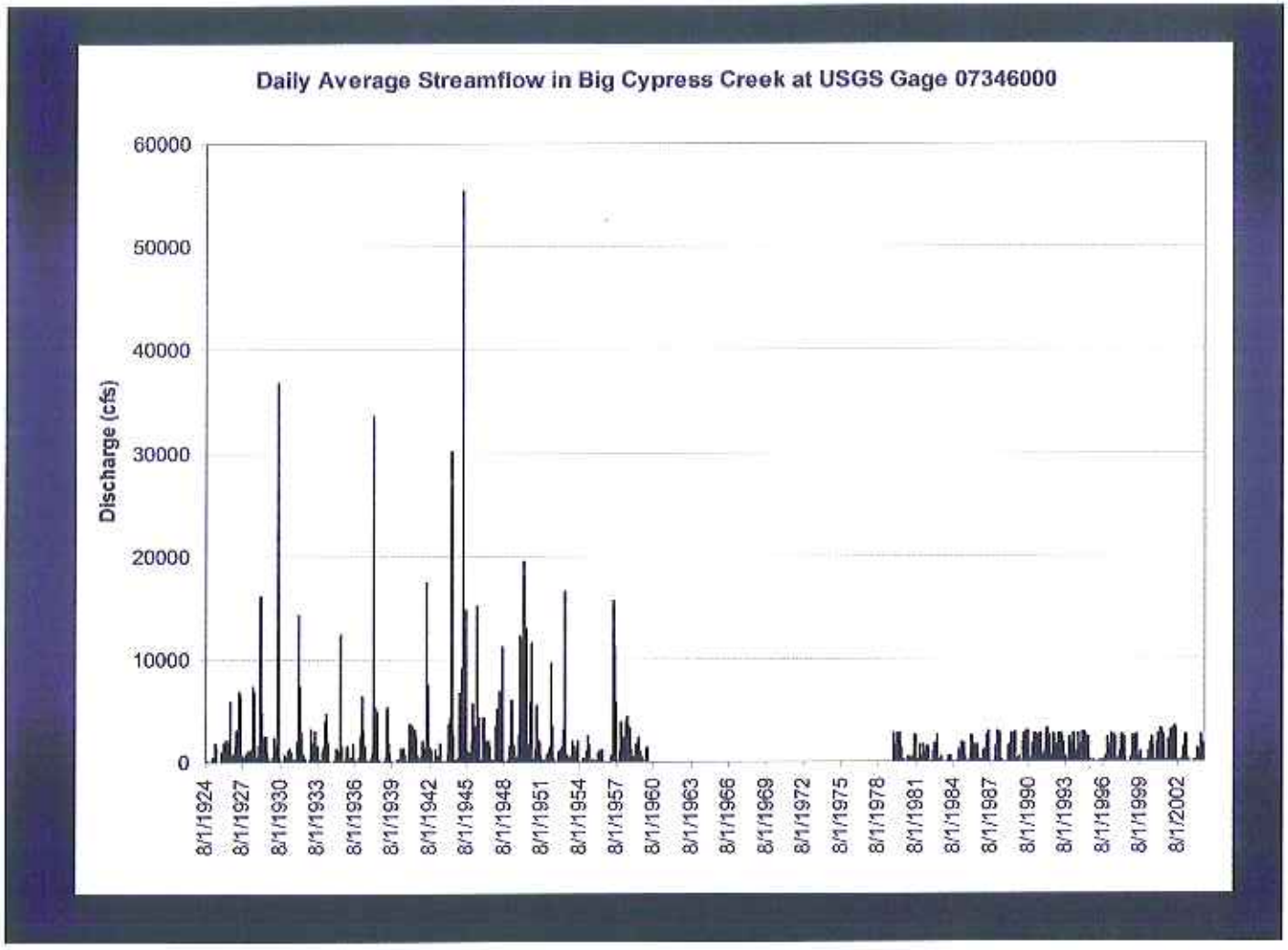
Caddo Lake was the 13th wetland system in the U.S. designated as internationally important. There are now about 40 such wetlands systems, including the Everglades in Florida and the Chesapeake Bay system.

Big Cypress

Big Cypress Bayou is the major river feeding Caddo Lake. It flows through Jefferson, Texas and into the lake after being joined by Black Cypress Bayou and Little Cypress Bayou, downstream of Jefferson.



In 1960, the dam for Lake O' the Pines was completed on Big Cypress Bayou upstream of Jefferson. The reservoir was built to protect Jefferson and other communities from flooding and to provide water supplies for a number of cities, industries and other users.



Before the dam, the flows down Big Cypress were at times enormous, flooding Jefferson. After the dam, the amount of flow at any one time is limited to about 3000 cubic feet per second, and that change has affected the fish and wildlife habitat in Big Cypress and Caddo Lake.

Loss of Paddlefish

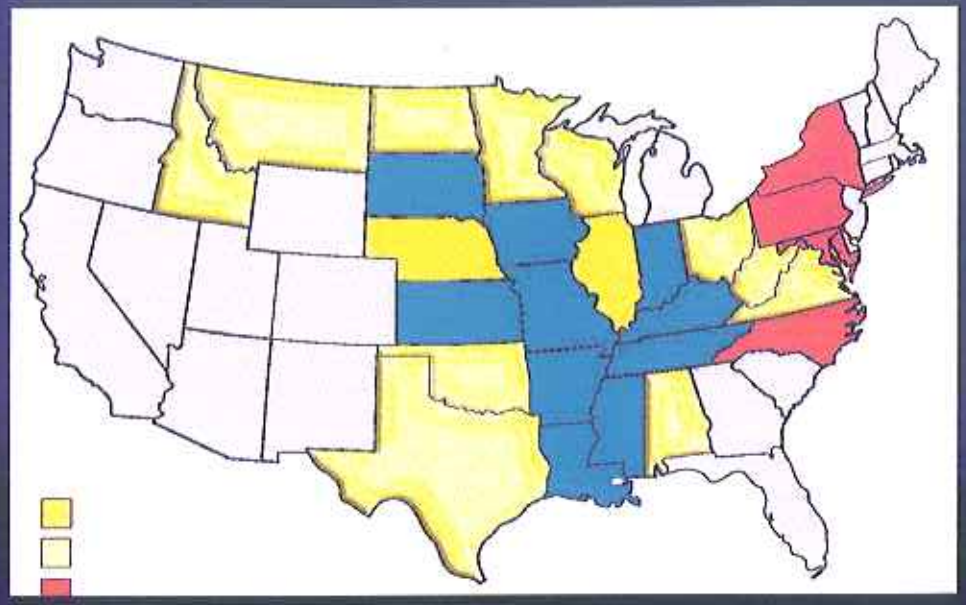
Such changes in flows and other activities of humans along Big Cypress have reduced habitat for many fish, including paddlefish.

Paddlefish are now rarely found and we are at risk of losing them completely in Texas.

The construction of the dam and other activities in the watershed are blamed for the loss of the paddlefish.

Historic Range & Status of Populations:

Blue – Stable
Yellow – Declining
Red – Extinct

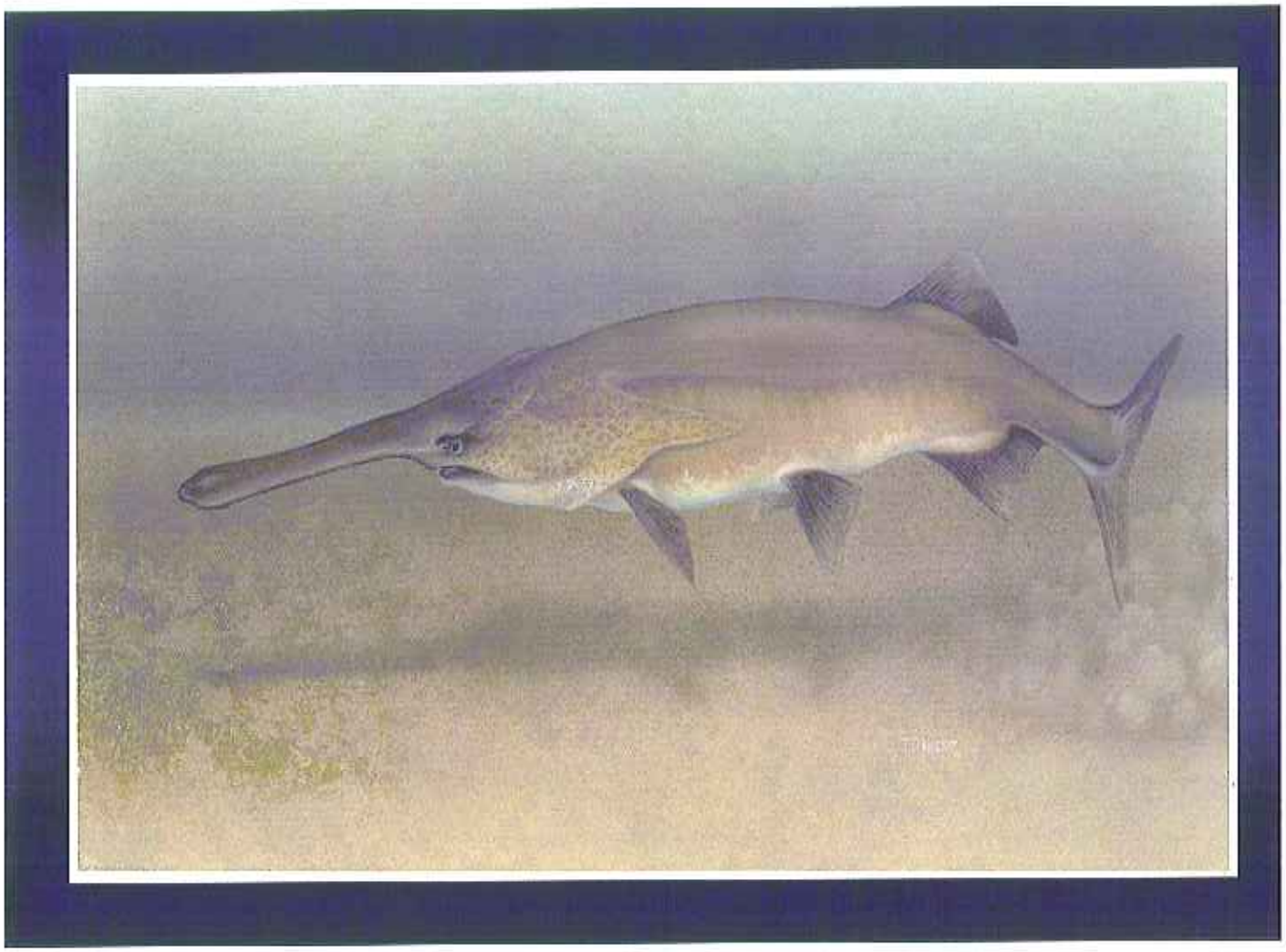


The loss of paddlefish has occurred in many states, not just Texas.

Instream Flow Restoration Goals From 2004

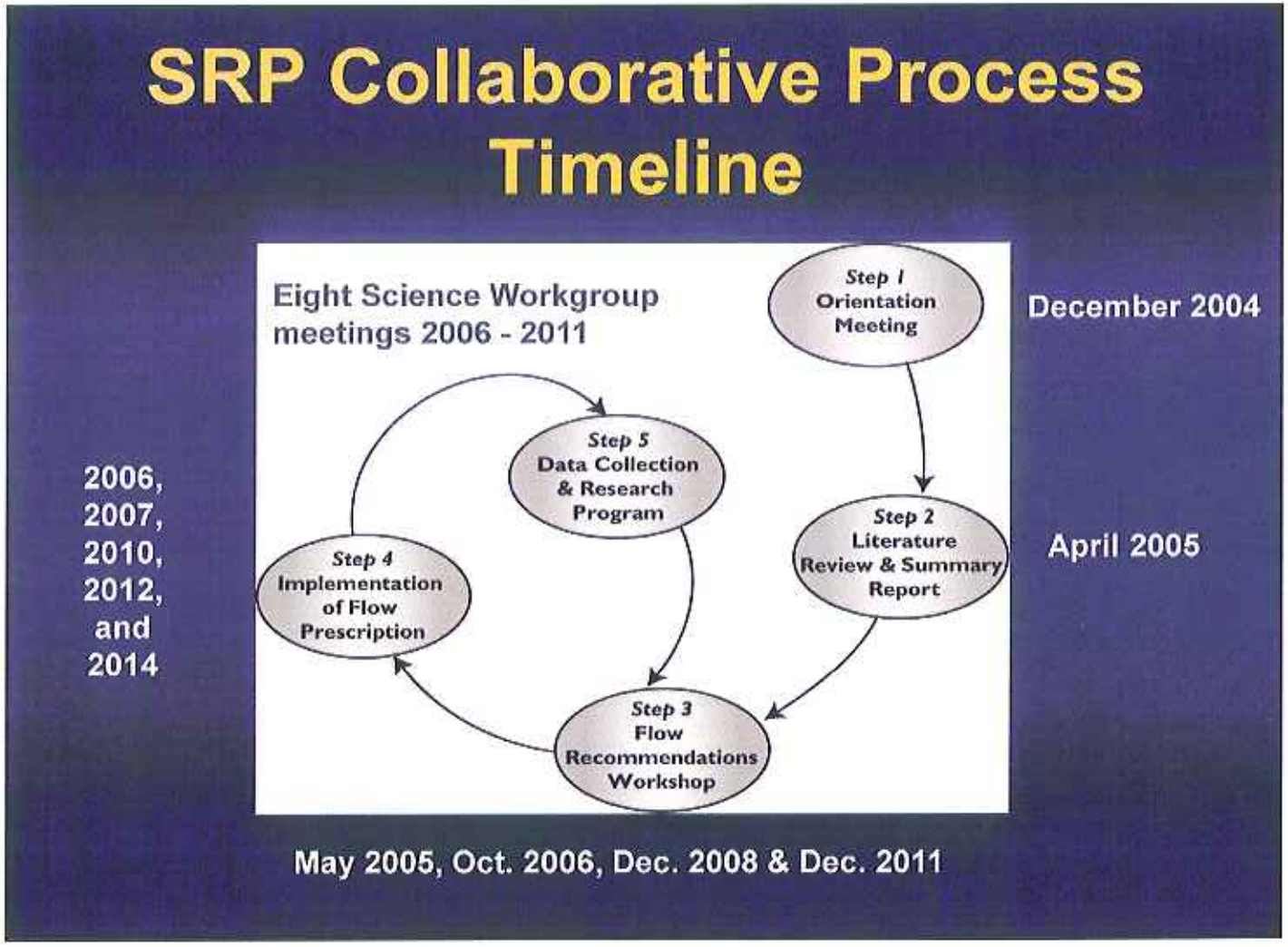
- Identify and implement new flow regimes to support the ecology and other values of Big Cypress Bayou and Caddo Lake.
- Revise release patterns from Lake O' the Pines (LOP) to enhance river flows, wetlands and fish habitats including those for paddlefish.

In an effort to restore the most healthy flows possible, given the constraints of dams and other man-made changes to the watershed, CLI, together with the Nature Conservancy, the U.S. Army Corps of Engineers, and the Northeast Texas Municipal Water District (NETMWD), initiated a new project in 2004. While the goals included wetland restoration and protection and improved fish and wildlife habitat and recreational uses, one specific goal was recovery of the paddlefish.



Polyodon spatula (American paddlefish)

SRP Collaborative Process Timeline



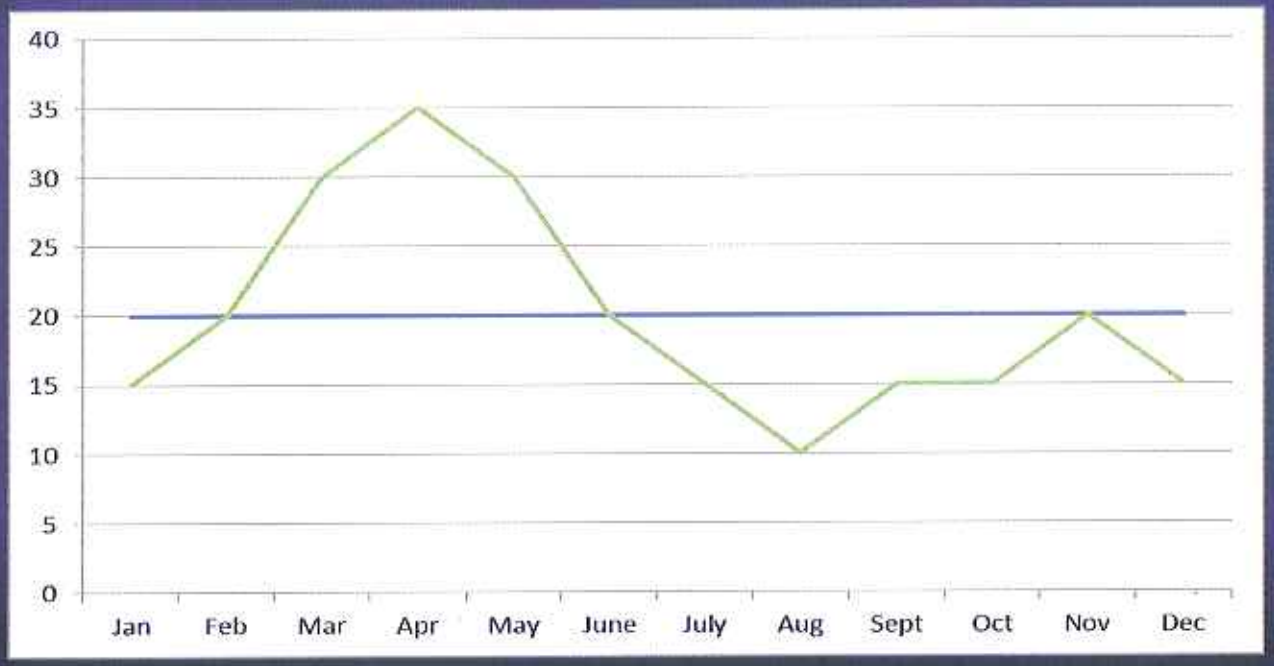
The process employed resulted in flow recommendations after about 7 years of work, including 4 workshops where as many as 50 scientist and 50 stakeholders would work together for 2-3 days. After each workshop, field studies and other work was completed to gather new information for proposals for flows. In 2011, a consensus was reached on a set of flow targets for the watershed.

Partners

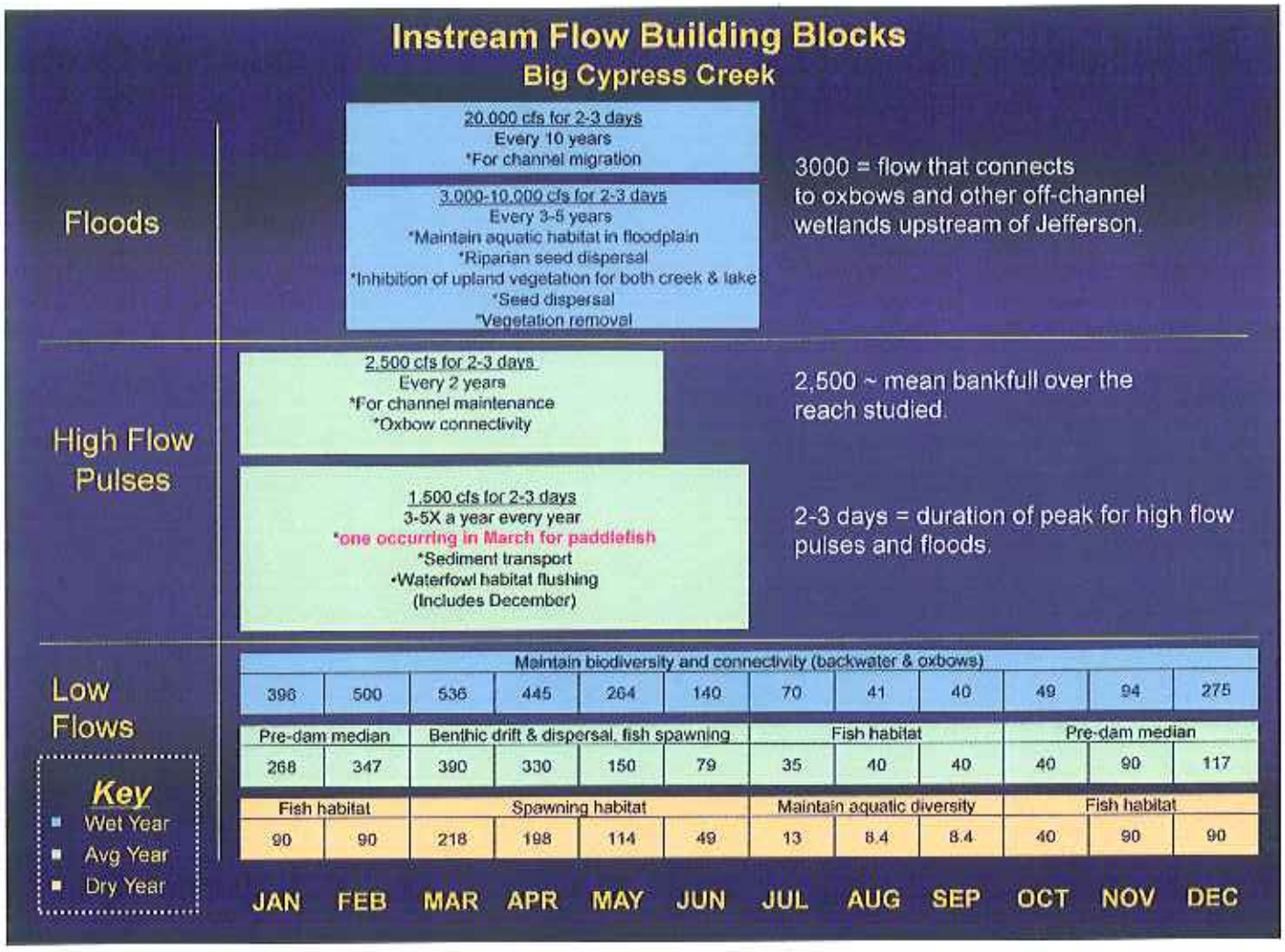
- Northeast Texas Municipal Water District
- U.S. Army Corps of Engineers
- Nature Conservancy
- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- Texas Parks and Wildlife Department
- Louisiana Department of Wildlife and Fisheries
- Cypress Valley Navigation District

This list provides just a few examples of the participants in this process.

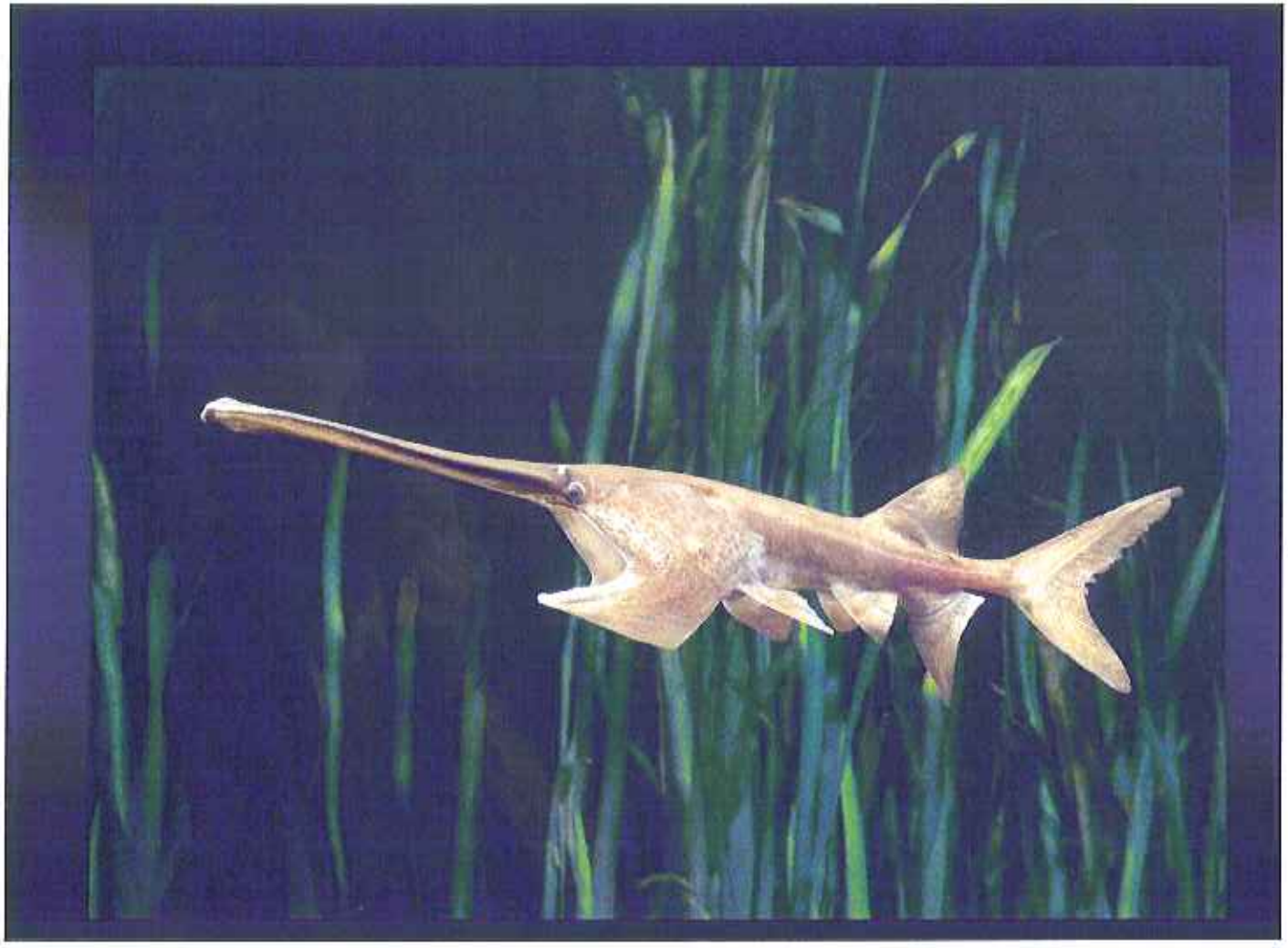
Simplified Instream Flow Regime Constant v. More Natural



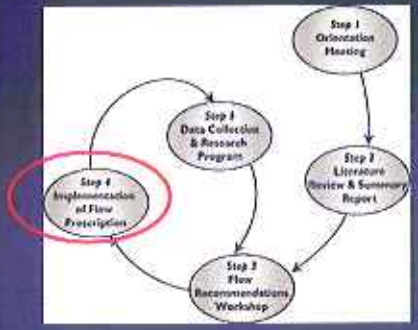
The goal was to develop flow recommendations that mimicked the natural conditions that existed in the past. While historically, releases from reservoirs were often constant, such as the blue line in the this chart showing a 20 cfs flow 24 hours a day and 365 days of the year, what occurs naturally before a dam is built is a flow regime that has high flows and low flows depending on rainfall, which, of course, varies from month to month and year to year, more like the green line.



The set of flow recommendations that came from the workshops are much more complex, with different flows each month, depending upon whether the year was determined to be a wet, dry or normal year. It includes pulse flows that are intended to reach specific goals, such as the 1500 cfs flow in red above which is expected to trigger spawning by paddlefish.



Polyodon spatula (American paddlefish)



Implementation Started 2011

U.S. Army Corps of Engineers and Northeast Texas Municipal Water District – voluntary agreement for five years to provide flow regimes by releases from Lake O' the Pines when water is available.

As a result of the 7 years of work, the Corps of Engineers and the NETMWD have agreed to try to provide the recommended flows for Big Cypress with releases of water from Lake O' the Pines.

U.S. Army Corps of Engineers Ecosystem Restoration

- City of Jefferson terrestrial components include bottomland and wetland restoration and urban wildscape
- Instream component includes new gravel shoals for paddlefish spawning

The Corps of Engineers also provided new spawning areas for paddlefish and other fish. The agency built a gravel shoal in Big Cypress upstream of Jefferson since years of the constant flows had caused heavy sedimentation and burial of the natural shoal that had existed at this site.

Paddlefish Spawning Shoals

- In 2008, gravel bars were constructed in Big Cypress upstream of Jefferson

The gravel shoal or bar was a major project, with the end result about two football fields in length.

Polyodon spatula (American paddlefish)

Paddlefish Experiment

Goal: To determine if the new release patterns from Lake O' the Pines and the new gravel shoals habitat will allow the return of the paddlefish.

Steps: U.S. Fish & Wildlife Service and the Caddo Lake Institute will release 2-to-3-foot-long paddlefish in 2014 and monitor their movements in Big Cypress and Caddo Lake.

With the new shoal and the new flows, CLI and others are able to experiment with the reintroduction of paddlefish. It is an experiment that will help evaluate the validity of the recommendations for new flows. Thus, the experiment may fail and scientists and stakeholders would then be asked to reevaluate their recommendations.

Monitoring

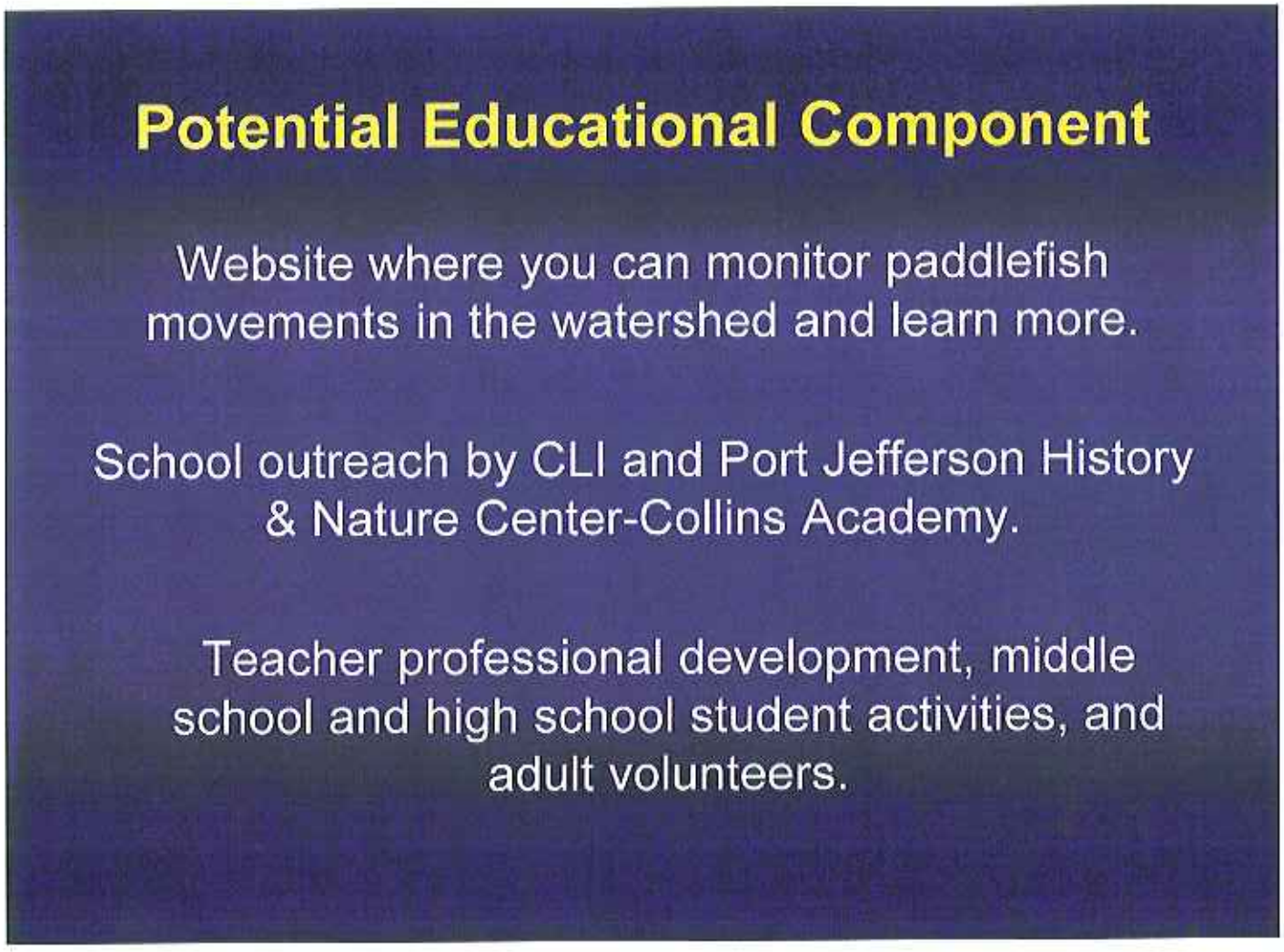
- Radio transmitters inserted into paddlefish
- Radio receiver towers along Big Cypress and Caddo Lake
- Monitoring from boats

A radio transmitter will be put in each paddlefish. Each radio signal will be different and with receiver towers and other tracking equipment, the movement of the paddlefish will be monitored for 6 to 12 months.

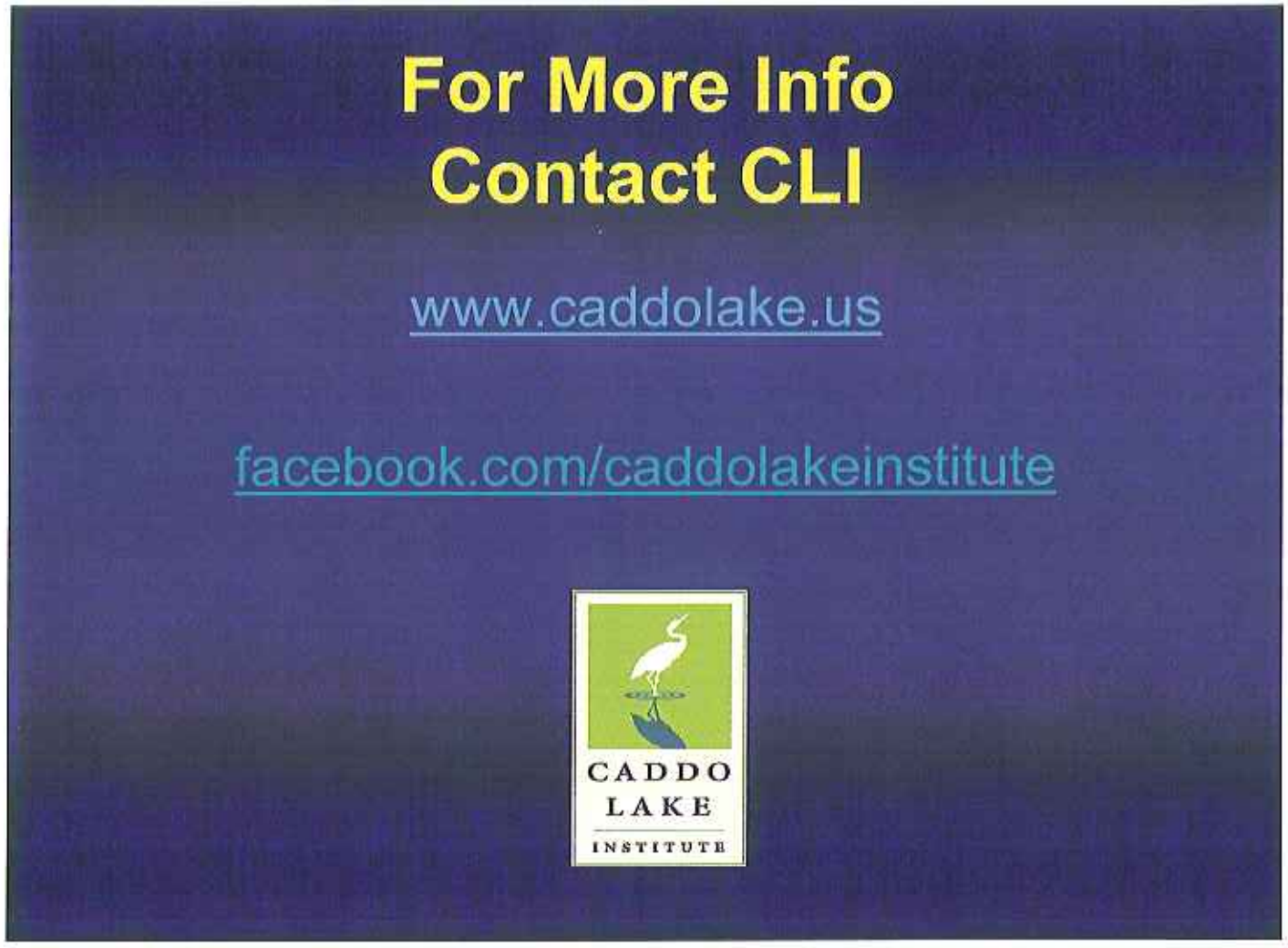
At least three towers will be built - one at the spillway at Caddo Lake, one at the Caddo Lake State Park and one just upstream of Jefferson where the gravel shoal was added.

If the Experiment is a Success - Next Release 10,000

If successful, the experiment will justify a large-scale reintroduction, with a release of thousands of juvenile paddlefish.



The paddlefish will be tracked on a website and the experiment provides an excellent opportunity for teaching about the watershed, the need for healthy flows and the paddlefish itself. Schools, scout troops and others are being asked to adopt a paddlefish to use in the spring semester of 2014 for educational purposes.306



You can learn more about the project and other work of CLI on its website. Or visit CLI on its Facebook page.