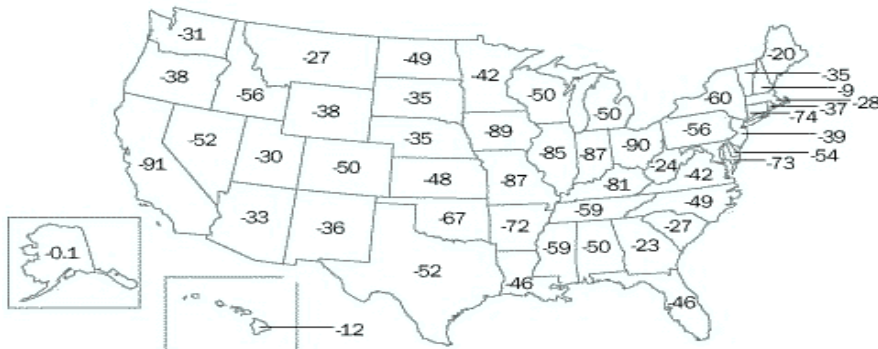




## Wetland Loss Trends

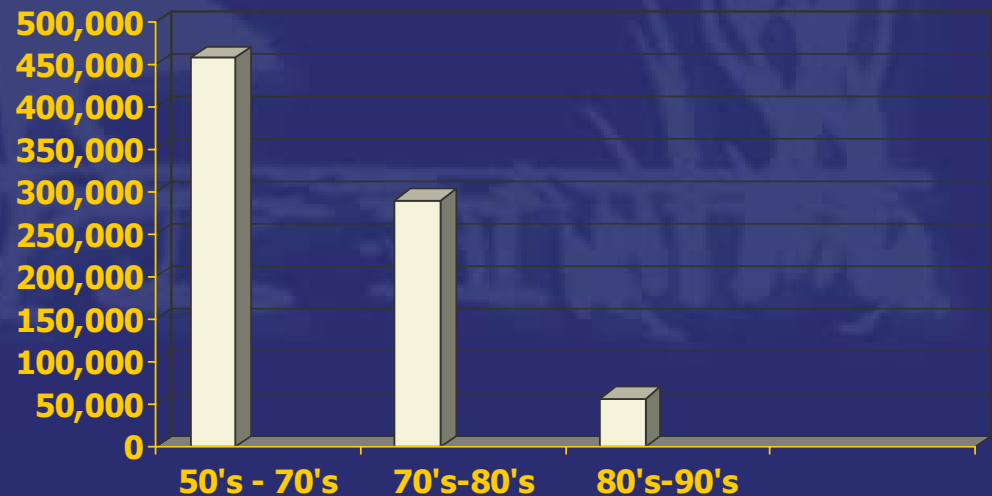
Since the 1700's, the U.S. has lost over 50% of its wetland resources. With this loss comes the loss of the many functions and values wetlands provide.

Percentage of Wetlands Acreage Lost, 1780's-1980's



Twenty-two states have lost at least 50 percent of their original wetlands. Seven states—Indiana, Illinois, Missouri, Kentucky, Iowa, California, and Ohio—have lost over 80 percent of their original wetlands. Since the 1970's, the most extensive losses of wetlands have been in Louisiana, Mississippi, Arkansas, Florida, South Carolina, and North Carolina.

Source: Mitch and Gosselink. Wetlands. 2nd Edition, Van Nostrand Reinhold, 1993





## Major Causes of Wetland Loss And Degradation

### Human

- Drainage
- Dredging and stream channelization
- Deposition of fill material
- Diking and damming
- Tilling for crop production
- Levees
- Logging
- Mining
- Construction
- Run-off
- Air and water pollutants
- Excess nutrients
- Toxic chemical release
- Non-native species introduction
- Grazing by domestic animals

### Natural

- Erosion\*
- Subsidence\*
- Sea Level Rise\*
- Droughts
- Hurricanes and Other Storms

\* Influenced in some cases  
by human activities



## Times Change

- THEN: Farmers were paid to drain wetlands and convert them to farm lands.
- NOW: Farmers paid to reconvert farm lands to wetlands.





# Stemming the Tide of Wetland Loss – Management Options

Preservation

Restoration

Conservation

Education

Regulation





## Regulations/Policy

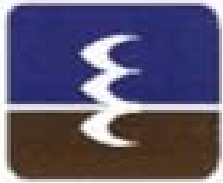
- **Clean Water Act** – Wetlands are defined as “waters of the United States” All dredging and filling of wetlands requires a Section 404 permit.
- **Swampbuster** – Provision within the Farm Bill denying subsidies to farmers who drain and fill wetlands for agriculture.
- **Endangered Species Act** – All agencies and citizens are entitled to enforce protection of wetlands that offer unique habitat for endangered species.
- **No Net Loss** – Presidential Mandate calling for no net loss of wetlands influencing compensatory mitigation.



Wetlands are protected by Federal, State, and Local laws, regulations, policies, and procedures. The leading wetland regulatory tool is Section 404 of the Clean Water Act.

Clean Water Act of 1972 promises the nation:  
Swimmable – Fishable - Drinkable Waters

Section 404: Regulates dredge and fill activities in “Waters of the US” otherwise known as navigable waters. Some wetlands are considered waters of the U.S.



## Compensatory Mitigation

- President Bush Senior decreed that there should be “no net loss” of wetlands. This prompted the growth of compensatory mitigation projects.
- The act of restoring, enhancing, or in some cases, creating wetlands to compensate for permitted losses of wetlands.
- Wetlands created, enhanced or preserved as part of mitigation should be of the same type of wetland lost, be located in the same watershed of loss, and should fully replace if not exceed the loss in functions and values.



# Federal Permit Review Sequence:

## AVOID – MINIMIZE – MITIGATE



**Can You Build  
Elsewhere?**



**Can you reduce  
the impact to  
wetlands**



**Please compensate the  
the watershed by creating,  
restoring, or enhancing  
wetlands.**



## Restoration

- Restoring the biological, physical, and chemical function of a wetland.
- A simple and useful definition of restoration was developed by the National Research Council (NRC). In its 1992 report, *Restoration of Aquatic Ecosystems*, NRC defined restoration as the "return of an ecosystem to a close approximation of its condition prior to disturbance."





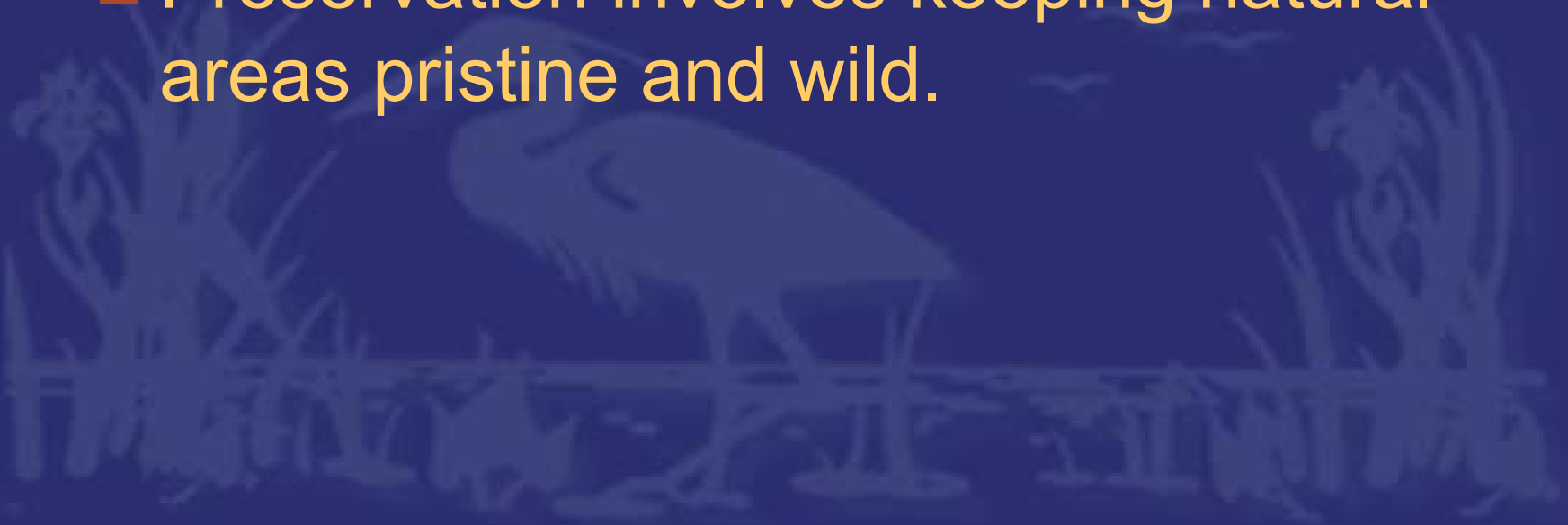
# Restoration/Creation/Enhancement

- ***What is Restoration?*** Restoring the biological, physical and chemical function of a wetland.
- ***What is Creation?*** Creation is the "construction of a wetland in an area that was not a wetland in the recent past (within the last 100-200 years) and that is isolated from existing wetlands (i.e., not directly adjacent)" (Gwin et al., 1999). In other words, creation occurs when a wetland is placed on the landscape by some human activity on a non-wetland site (Lewis, 1989). Typically, a wetland is created by excavation of upland soils to elevations that will support the growth of wetland species through the establishment of an appropriate hydrology.
- ***What is Enhancement?*** Gwin et al. (1999) define enhancement as "the modification of specific structural features of an existing wetland to increase one or more functions based on management objectives, typically done by modifying site elevations or the proportion of open water. Although this term implies gain or improvement, a positive change in one wetland function may negatively affect other wetland functions".
  - For example, increasing the area of deep water by excavating parts of an emergent wetland may provide more duck habitat (the desired wetland value), but may decrease foraging and cover habitat for young fish.



# Preservation

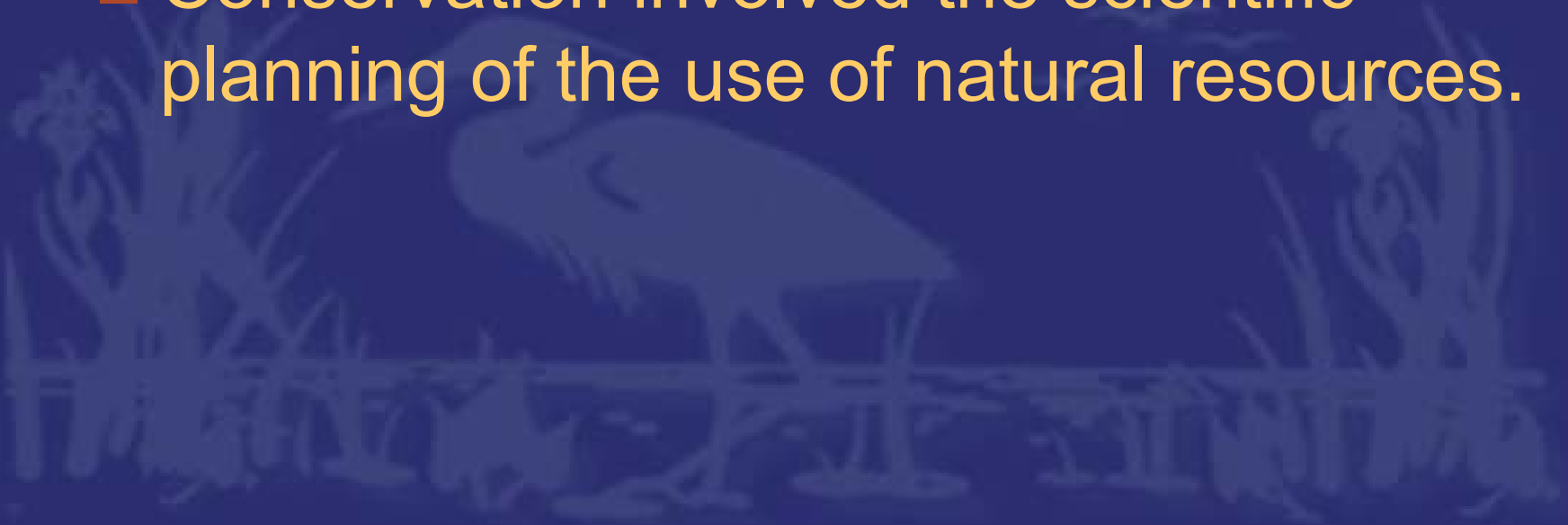
- Preservation involves keeping natural areas pristine and wild.





# Conservation

- Conservation involved the scientific planning of the use of natural resources.





## Wetlands of the World

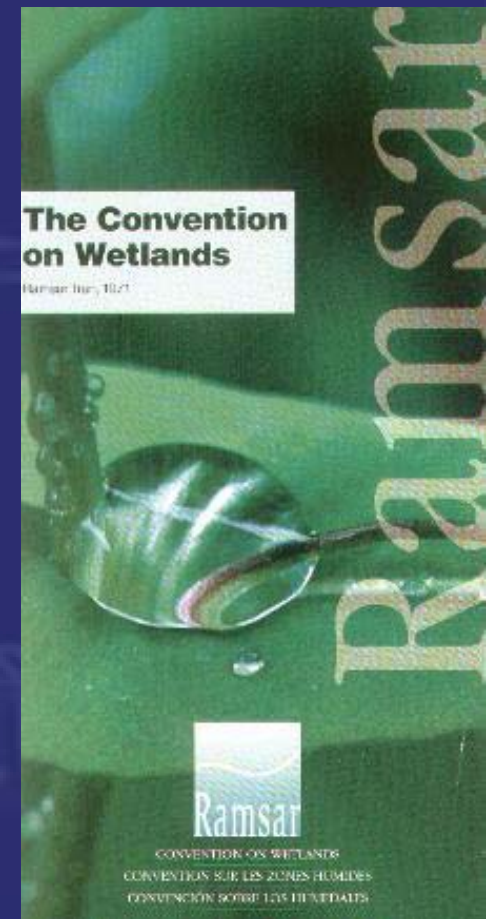
- Wetlands are found on every continent except Antarctica.
- Wetlands cover 6% of the earth's surface.
- All wetlands are under threat.
- The wetlands of Iraq are thought to be the location of the Garden of Eden.



# RAMSAR

***Mission: "the conservation and wise use of wetlands by national action and international cooperation as a means to achieving sustainable development throughout the world".***

- The Convention on Wetlands, signed in Ramsar, Iran, in 1971.
- There are presently 135 Contracting Parties to the Convention, with 1235 wetland sites, totaling 106.6 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.
- Ramsar is the only global environmental treaty dealing with a particular ecosystem.





# Education

Education has helped and continues to help wetlands by raising awareness and understanding. Many people still view wetlands as dark, stinky and murky places full of mosquitoes, snakes and disease. As we have learned through the previous slides, this image can be no further from the truth. Wetlands are vital, varied and beautiful ecosystems without which life on earth would be highly compromised.

There are many organizations and agencies working to help people better understand the importance of wetlands. This course is one education tool. You are another. Now that you understand why wetlands are important, you can help spread the word.

Help share the wonders of wetlands.



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wetlands 101

## **Get Involved:** There are many ways to get involved in protecting and restoring wetlands in your community:

- Contact your local Corps of Engineers District Office to participate in permit decisions that affect wetlands in your area. Call 1-800-382-7828 for details.
- When landscaping your property, keep wetlands in mind. Plant native grasses or trees as buffers along any wetlands to protect water quality.
- To reduce polluted runoff into wetlands and other waters, limit the amount of chemicals applied to your lawn.
- Minimize and avoid impacts on wetlands when developing or improving a site. Get advice from your state environmental agency before you alter a wetland.



## Get Involved cont.

- Work with neighbors to help protect the health of a wetland near you. Clean it up and keep it free of trash.
- Ask what your local government is doing to protect wetlands in your community.
- Investigate the possibility of restoring or improving a local wetland.
- Invest in wetlands by buying duck stamps. Proceeds from these waterfowl stamps support wetland acquisition and restoration. The stamps are available on-line at the U.S. Fish and Wildlife Service's web site ([www.fws.gov](http://www.fws.gov)) or at your local post office.
- Join a volunteer group like Frog Watch ([www.nwf.org/frogwatchUSA/](http://www.nwf.org/frogwatchUSA/)) to help protect wetland animals and save their habitat.
- Locate wetlands near you ([www.nwi.fws.gov](http://www.nwi.fws.gov)). Contact a local parks department or Wildlife Refuge ([refuges.fws.gov/](http://refuges.fws.gov/)) about visiting wetlands.
- For additional information, visit the U.S. Environmental Protection Agency's website ([www.epa.gov/owow/wetlands](http://www.epa.gov/owow/wetlands)), or call the toll-free Wetlands Helpline at 1-800-832-7828.



## Self - Quiz 7

**Using the knowledge gained from previous slides, answer the following questions. Answers can be found on the next slide.**

- 1) Wetlands cover what percentage of the earth?
- 2) Match the authority with its protective powers.

a. Clean Water Act	Net Gain
b. Swampbusters	Critical Habitat
c. Clean Water Action Plan	Agricultural Conversions
d. Endangered Species Act	Dredge and Fill
- 3) What is the difference between Preservation and Conservation?
- 4) What may you be required to do in order to compensate for the loss of wetlands resulting from a construction project?
- 5) What is the name of the International Convention for Wetlands?



## Self – Quiz 7 Answers

- 1) Over 6%
- 2)
  - a. Dredge and Fill
  - b. Agricultural Conversions
  - c. Net Gain
  - d. Critical Habitat
- 3) Conservation involves the scientific planning of the use of natural resources, while preservation involves keeping natural areas pristine and wild.
- 4) Compensatory mitigation.
- 5) RAMSAR



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Thank you for taking time to learn about wetlands. We hope that this presentation has helped you gain a better understanding of appreciation for wetland systems. If you need additional information, feel free to contact the education department at [dir.educate@wetland.org](mailto:dir.educate@wetland.org). We would be happy to answer any questions you may have.

Links to the test pages may be found on [http://www.wetland.org/educ\\_wetlandinfo.htm](http://www.wetland.org/educ_wetlandinfo.htm)