

Wetlands and Wildlife

Page 1

Definition

- Transitional habitat between terrestrial and aquatic habitats where water is at or near the surface or the land is covered by shallow water.
- Wetlands - Must have one or more of the following:
 - at least periodically the land supports predominantly **hydrophytes**.
 - the substrate is predominantly undrained **hydric soil**.
 - Soil that has evidence of anaerobic condition
 - Reduced (opposite of oxidized) metals cause color changes
 - Reduced sulfur compounds cause "rotten egg" smell
 - the substrate is nonsoil and is **saturated with water or covered by shallow water** at some time during the growing season of each year.

*Cowardin et al.,
National Wetlands Classification System*

Page 2

Distribution and Status

- Once occupied 87 million ha in lower 48 U.S.
- Lost 53-54% of original wetlands since colonization.
- Losses differ among states

- | | |
|--------------------|----------------------|
| • California - 91% | • Alaska 0.1% |
| • Iowa - 89% | • New Hampshire - 9% |
| • Ohio - 90% | • Hawaii - 12% |
| • Missouri - 87% | • Maine - 19% |
| • Indiana - 87% | |
| • Illinois - 85% | |

Page 3

Causes of Wetland Loss

- **Direct causes**
 - Drainage
 - Dredging and stream channelization
 - Filling
 - Construction of dams, levees, seawalls
 - Mining wetland soils for peat, coal, sand, gravel or other materials

Primary loss due to conversion of wetlands to agriculture.

Page 4

Wetland Hydrology

- **Hydroperiod** - seasonal pattern of the water level of a wetland.
 - **flood duration** - amount of time wetlands have standing water.
 - **flood frequency** - number of times wetland is flooded during a given period.
- Some wetlands have standing water only part of the year
 - Vernal pools (vernal = spring)
 - Floodplain forests
 - Prairie potholes
- Others are almost permanently flooded

Page 5

Wetland Hydrology

- **Benefits of occasional drying**
 - Exposes organic material on bottom to oxygen
 - Increases decomposition, nutrients become available
 - Increases productivity
 - vegetation biomass
 - biomass of consumers, esp. invertebrates
 - "Reservoir Effect"
 - When dams are built to create reservoirs, the new lake typically has high productivity for several years, then productivity declines
 - Mimics the re-flooding of a dried-up wetland

Page 6

Wetland Water Management

- Managers mimic natural flood dry cycle by **drawdowns**
 - Produces short-term increase in nutrients
 - Promote annual plants -- food for waterfowl
 - Stimulate germination and rapid growth of aquatic plants
 - Increases production of invertebrates
 - Kills undesirable vegetation (e.g., water milfoil)
 - Reduces populations of exotic fish (e.g., carp)

Page 7

Prairie Potholes

- Millions of small, semipermanent ponds in north-central North America
- ~1/2 have already been lost to agriculture
- Produce 50% of ducks in North America
 - Only 10% of available habitat
- Periodic droughts cause ponds to dry up
 - Short-term decrease in duck reproduction
 - Long-term maintenance of wetland productivity



Page 8

Floodplain Forests

- Seasonally flooded forests along floodplains of rivers
- Permanent flooding would kill trees
- Cypress, pin oak, sycamore, sweet gum, red maple
- Important habitat for wintering waterfowl, breeding wood ducks, swamp rabbits

Page 9

Vernal Pools

- Small, seasonally flooded pools
- Dry for part of the year
 - no fish
 - Important breeding grounds for amphibians

Page 10

Oxbow Lakes

- Formed when meandering river forms a loop, then cuts a straighter channel (see diagram in book)
- Horseshoe Lake, IL: 485 ha oxbow
- Used to be perhaps the most important wintering area for Canada geese in the Mississippi Valley (~75,000 geese)

Page 11

Wetlands Made By Wildlife

- Beavers –
 - Construct many wetlands by damming streams
 - Reduce flood intensity, increase nutrients
 - Eventually, silt fills in the pond and the beavers abandon it
 - Pond drains, exposing soil
 - Fugitive upland vegetation invades bare soil
- Alligators
 - Maintain water holes in Everglades during dry season
 - Refuges for fish, invertebrates, etc.
 - Rich feeding areas for breeding birds (e.g., wood stork)

Legislation

- Rivers and Harbors Act (1824 1899)
 - Authorized U.S. Army Corps of Engineers to improve navigation
 - issued dredge and fill permits
- Clean Water Act (1972) Section 404
 - requires USACE permits for dredge and fill in “waters of the United States”
 - Jurisdiction lies under the “Interstate Commerce Clause” of the Constitution
 - Includes wetlands on and near rivers, lakes and streams

Legislation

- 2001 –Supreme Court ruled that the U.S. government has no jurisdiction over certain wetlands that are not directly connected to navigable waterways

Legislation

- 2003 –EPA and USACOE policy directives removed automatic federal protection from non-navigable and isolated waterbodies
 - ca. 20% of wetlands, 60% of streams in lower 48 affected
 - Decision to exert federal authority to protect these water bodies requires USACOE permission
 - Strong protests from sportsmen’s groups (Ducks Unlimited, etc.) and other environmental stakeholders

Legislation

- May 2006– Congress passes law prohibiting the implementation of the 2003 EPA and USACOE policy directives
- June 2006 – Supreme court gives split (4-1-4) decisions on 2 cases challenging Federal jurisdiction over non-navigable and isolated waterbodies
 - Rapanos vs. United States
 - Carabell vs. USACOE

Things to Remember

- Definition & types of wetlands
- Characteristics of prairie potholes, vernal pools, floodplain forests, oxbow lakes
- How the Clean Water Act section 404 protects wetlands
 - Challenges to federal jurisdiction
- Effects of drawdowns
- How beavers & alligators contribute to wetlands