

STUDY QUESTIONS FOR LECTURE EXAM

WFS 340: Wetlands Ecology and Management

What is a Jurisdictional Wetland?

- 1) Know the 3 USACE criteria that are necessary for an area to be classified as a jurisdictional wetland.
- 2) Know low-water depth that defines the beginning of the deepwater (aquatic) system.
- 3) Know the 5 USACE plant classifications, which are related to flood tolerance.
- 4) Know which USACE plant classifications (in #3) are considered hydrophytes.
- 5) Know the % horizontal coverage of hydrophytes that is necessary to meet USACE jurisdictional wetland criteria, and how to calculate percent dominance using the 50/20 dominance rule.
- 6) Know the 3 types of histosols, and what makes them different with respect to identifiable plant fibers.
- 7) Know percent composition of organic C required to be classified as an organic soil, and how clay may influence this percentage.
- 8) Know 3 of the 5 hydric soil indicators commonly used in the field.
- 9) Know the hydric soil chroma criteria for Munsell charts.
- 10) Know the gas responsible for the “rotten egg” smell in wetlands that have been inundated for long durations.
- 11) Know the USACE criterion for inundation that indicates wetland hydrology.
- 12) Know the 6 USACE hydrologic zones, and how they differ with respect to growing season flooding duration. Also, know which zones qualify as “wetland hydrology.”
- 13) Know 4 of the 7 wetland hydrology indicators commonly used in the field.
- 14) Understand the function of aerenchyma.

Wetland Regulation

- 1) Know the Federal legislative act that prevents the filling of jurisdictional wetlands.
- 2) Know the provision of the Food Security Act that penalizes farmers for cultivating wetlands.
- 3) Understand what constitutes a jurisdictional wetland as per federal law.
- 4) Know the effects of the SWANCC decision and overturn of the Tulloch Rule on the definition of a jurisdictional wetland.
- 5) Know the difference between a Nationwide 27 and 30 permit.
- 6) Be able to describe “significant nexus” and understand the consequences of the Rapanos decision (read Leibowitz et al. 2008). Know the current legislation that is proposing to protect isolated wetlands.
- 7) Know what constitutes an isolated wetland in Tennessee according to state law.
- 8) Be able to define “water” and “pollution” as they relate to regulating wetlands in Tennessee.
- 9) Know the state legislative act that helps protect wetlands in Tennessee and the state agency that is in charge of wetland regulation.
- 10) Know the name of the state permit that is required for any activity that results in pollution of state waters.

Wetland Losses and Human Impacts

- 1) Know the pre-European settlement and current acreage of wetlands in the lower 48 states.
- 2) Know the most common wetland type in the United States and what State influences this percentage most.
- 3) Be able to describe the difference between a bog and a fen.
- 4) Know the most common wetland type in the lower 48 and Southeast.
- 5) Know where most of the coastal wetlands are located.
- 6) Know the primary legislation responsible for wetland loss in the United States.
- 7) Know which 3 states have lost the most acreage of wetlands, and what percent of Tennessee wetlands have been lost.

- 8) Know the percent of hardwood bottomlands that have been deforested in the MAV.
- 9) Know the Act in Tennessee that helps conserve, restore, and manage wetlands in the State.
- 10) Know how many hectares of wetlands are currently lost each year.
- 11) Know what is the #1 anthropogenic cause for wetland loss and how most wetlands have been destroyed.
- 12) Be able to list and describe 4 of the 6 ways that humans can negatively affect wetlands.
- 13) Know the 2 primary reasons that rivers are channelized and leveed.
- 14) Know the 2 primary uses of peat worldwide, and how use differs between the western and eastern hemispheres.
- 15) Be able to explain the primary causes of Louisiana coastal erosion.
- 16) Understand the effects of Hurricane Katrina on wetland loss in Louisiana.

Wetland Values

- 1) Know the 3 general categories of wetland values.
- 2) Be able to recall 6 of the 11 wetland values discussed in class.
- 3) Know approximately what percentage of breeding birds in North America use wetlands at some time during their life cycle.
- 4) Know that approximately 4% of the world's surface is wetlands and 40% of the world's species depend on them.
- 5) Know that approximately 50% of threatened or endangered species in the United States use wetlands.
- 6) Be able to describe how wetlands help slow discharge into a stream or lake after a rain event.
- 7) Understand the importance of streamside vegetation and coastal wetlands in bank stabilization.
- 8) Know the name of the wetlands that are important in groundwater recharging the Ogallala Aquifer.
- 9) Be able to describe how wetlands can improve water quality.
- 10) Know the #1 mammal harvested from wetlands for fur.
- 11) Know the approximate profit value of bottomland hardwood timber.
- 12) Be able to list some recreational uses of wetlands.
- 13) Be able to recall the estimated total global worth of natural systems, and what percentage is attributed to wetlands.

Moist-soil Management

- 1) Be able to describe the major life cycle events of North American dabbling ducks throughout the annual cycle, and how these events influence seasonal diet composition of females, males and ducklings.
- 2) Be able to describe (or draw a timeline) when we focus on management of amphibians, shorebirds, breeding wood ducks, and migratory waterfowl in Tennessee.
- 3) Be able to describe how you would manage the hydrology and vegetation using water control structures and natural and mechanical manipulations for a complex of moist-soil units to meet the needs of all communities in #2.
- 4) Know the 5 components of a waterfowl management complex.
- 5) Know approximately what percentage of a management area should be refuge.
- 6) Understand the Cowardin definition of moist-soil wetlands and how it relates management.
- 7) Understand the effects of hydrologic management in wetlands.
- 8) Know the 3 primary foods available for waterfowl in flooded moist-soil wetlands.
- 9) Know the 3 common types of water control structures, and which is most preferred.
- 10) Be able to describe 3 methods that can be used to move water among moist-soil impoundments, and which is cheapest.
- 11) Know the 3 primary reasons why managers in the Southeast may forego mechanical manipulations until autumn.
- 12) Know which mechanical manipulation generally is best at setting back succession.
- 13) Be familiar with our results on autumn mechanical manipulations.
- 14) Be able to describe the hemi-marsh concept and how it can influence waterbird species richness and waterbird and food resource abundance.

- 15) Be able to explain when burning or grazing might be used in managing moist-soil wetlands, and know the influences of these techniques on vegetation and aquatic invertebrate responses.
- 16) Know which herbicides are best for controlling broad-leaved emergent plants that are non-desirable, and which are used for total vegetative kill.
- 17) Know the 2 reasons why agricultural plots ideally should be placed in close proximity to natural wetlands.
- 18) Be able to describe how you would incorporate agriculture (including crop type) into managing for waterfowl, reflecting on differences in seed decomposition and TME.
- 19) Be able to provide several biological reasons for providing natural wetlands for waterfowl (not solely agriculture).

Greentree Reservoir Management

- 1) Understand the Cowardin definition of hardwood bottomlands and how it relates hydrology.
- 2) Know the species of bottomland red oaks that we attempt to encourage in the Southeast.
- 3) Know the 2 species of waterfowl that use hardwood bottomlands all year in Tennessee.
- 4) Know the primary 4 reasons that waterfowl use hardwood bottomlands in fall and winter.
- 5) Know the 3 primary waterfowl foods in hardwood bottomlands.
- 6) Be able to provide the definition of a greentree reservoir (GTR).
- 7) Be able to describe goals of GTRs, and how these goals are achieved through management.
- 8) Be able to describe the difference in hydrology between a natural hardwood bottomland and typical historic flooding in a GTR.
- 9) Know at least 3 of the negative effects of historic GTR flooding.
- 10) If hydroperiod is extended substantially, be able to provide some tree species that could begin to become dominant (i.e., overcup oak, water tupelo, baldcypress).
- 11) Know that timber value of typical red oaks in hardwood bottomlands is about 2X greater than water-tolerant white oak species, such as overcup and swamp chestnut oaks.
- 12) Be able to explain why waterfowl seem to prefer smaller red oak acorns.
- 13) Given a certain number of GTRs on a management area, be able to conceive a possible rotational flooding scheme. In particular, address flooding duration, depth and timing.
- 14) Be able to describe forest opening management in GTRs.

Waterfowl Carrying Capacity

- 1) Know the 4 waterfowl flyways.
- 2) Be able to describe the history and goals of the North American Waterfowl Management Plan, and how it is implemented. Especially understand how duck-use days are used in implementation.
- 3) Know the 2 Joint Ventures that include west and middle Tennessee (i.e., Lower MS Valley and Central Hardwoods, respectively).
- 4) Be able to define duck energy-days (DED).
- 5) Be able to describe in detail the concept of duck energy-days, relating it to the DED formula.
- 6) Know the 3 primary reasons why waterfowl managers calculate DEDs.
- 7) Know the 3 common methods for estimating food resources in wetlands, and be able to compare and contrast the advantages and disadvantages of each.
- 8) Understand the results from recent research on the availability of rice, corn, grain sorghum and soybean in harvested fields (i.e., Scott Manley's, Josh Stafford's and Melissa Foster's studies).
- 9) Be able to describe the steps you would take to calculate DEDs using the dot method.
- 10) Be able to describe some future research needs for duck energy-day calculations.

Additional Topics (10% of exam)

Wetlands Conservation Programs: Guest lecture by Wally Akins. **Noxubee NWR Field Trip:** Dave Richardson, **MSU Team Duck Presentations:** Dr. Rick Kaminski, Dr. Brian Davis, and students. **MSU Captive Deer Facility:** Steve Tucker.

This list of questions is not inclusive. Other questions could appear on the lecture exam from other material discussed in class or during the Mississippi Field Trip.