

Management Strategies I (Small Impoundments)

- I. Purpose of next lectures is to provide “rules of thumb” for management; still should evaluate management implementation
- II. What is a small impoundment? A pond. The distinction between pond and reservoir is a blurry one.
 - A. In most cases, human made; although pothole lakes do occur
 - B. Tend to have very high watershed area:surface area ratios
 - C. Very productive (except southeastern US)
 - D. Are integrators of watershed use
 - 1. Cattle
 - 2. Fertilizers
 - 3. Pesticides
- III. Typical North American pond community
 - A. Top predator / carnivore - largemouth bass
 - B. Bottom carnivore/ benthivore - channel catfish
 - C. Primary prey fish - bluegill
- IV. Typical problem in ponds - over-reproduction (recall Swingle’s views on balance)
- V. Ideal characteristics of prey for top carnivore
 - A. Vulnerable but able to persist (do not want the predator to completely remove it)
 - B. High fecundity (able to resist high predation)
 - C. High trophic efficiency (able to efficiently convert phytoplankton or zooplankton to fish flesh)
 - D. Harvestable adult stages
 - E. Not harmful to other fish through exploitative competition
- VI. Species to stock into warmwater ponds
 - A. Prey/forage fishes
 - 1. Bluegill
 - 2. Gizzard shad
 - 3. Threadfin shad
 - 4. Threadfin x gizzard shad hybrid
 - 5. Fathead minnows
 - 6. Sliversides
 - 7. Green sunfish
 - B. Benthic carnivores
 - 1. Channel catfish
 - 2. Bullheads
 - 3. Flathead catfish
 - C. Open water carnivores
 - 1. Largemouth bass
 - 2. Smallmouth bass
 - 3. Crappies
 - 4. Muskellunge
- VII. Strategies for warmwater ponds - assume that classic largemouth bass/bluegill assemblage is used
 - A. All-purpose option - quality largemouth bass and bluegill fishing
 - 1. Implement a 300-380 mm slot limit on largemouth bass
 - 2. Make sure that 75 bass/ ha are harvested each year; combined effort on both sides of the slot

- B. Big bass option - trophy sized largemouth bass with little regard for sunfish angling
 - 1. Implement a 380 mm maximum size limit; harvest all largemouth bass below this size
 - 2. Harvest rates should be at least 75, 200-300 mm largemouth bass/ha/year and 12 300-380 mm largemouth bass/has/year
- C. Panfish option - trophy sized bluegill with little regard for largemouth bass
 - 1. Implement a 380 mm minimum limit for largemouth bass (will cause stockpiling of relatively small largemouth bass)
 - 2. These largemouth bass will reduce sunfish densities and result in rapid sunfish growth rates
- D. Largemouth bass only - result in large largemouth bass; dull fishing experience
 - 1. Take advantage of cannibalism
 - 2. Largemouth bass tend to show highly variable individual growth rates, often as a function of hatch date
 - 3. The protected class of largemouth bass in the slot will control bluegill densities
- E. Channel catfish
 - 1. Catfish
 - 2. Fathead minnows
 - 3. Not lots of regulations; although need to restock occasionally or strong overcrowding may occur
- VIII. Latitude effects - need to modify rules of thumb as a function of local soil chemistry and latitude
- IX. Adding hybrids to ponds
 - A. Bluegill x green sunfish
 - B. Hybrids are largely males; will not become overly dense
 - C. Need to restock occasionally
- X. Evaluating
 - A. Seine, angling
 - B. Occasional electrofishing, if possible
- XI. Other considerations
 - A. Vegetation
 - B. Fertilization (usually not recommended)