Sportfish Management in Ponds

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Defining Landowner Objectives

- Define “Quality” Fishing
- Target Species
- Management Conditions
  - Catch a lot of small fish
  - Balanced population
  - Trophy fish
Success starts at the beginning...

- Pond Design
- Pond Construction
- Stocking Strategy
...but requires maintenance

- Harvest Strategy
- Population Condition Checks
- Water Quality Management
- Structural Renovations
Pond Design and Construction

- Proper drain structure installation
- Site selection
  - Soil properties
  - Water supply
  - Watershed
- Fish habitat features
Most Common Stocking Strategies

- Predator-Prey Relationship
  - Bluegill or Redear Sunfish
  - Largemouth Bass
- Channel Catfish
- Keep it simple
Other Stocking Options

- **Crappie**
  - Avoid unless catching Crappie is the goal
  - Compete with Largemouth Bass

- **Grass Carp**
  - Used in some situations to control aquatic weeds

- **Different Bass Options**
  - Different strains
  - Genetic engineering
  - All female bass
Supplemental Forage

- Threadfin Shad
- Intermediate Bluegill
  - 3–5 inches
- Golden Shiners
- Rainbow Trout?
  - Red Swamp Grayfish?
  - Tilapia?
Ecology of a Pond Ecosystem

**Primary producers**
- light + nutrients + optimal temperature = plants
- Phytoplankton “bloom”
- Filamentous algae
- Macrophytes

**Consumers (fish and other things)**
- Shad
- Zooplankton
- Invertebrates
- Grasscarp
- Sunfish
- Largemouth bass

**Pond carrying capacity for fish**
- Maximum sustainable density
- 40 – 400 lbs per acre.
Maintaining the Balance

• “Balance” developed based on need for food
• Requires frequent harvest to maintain
  • 20–25 bass per acre per year
  • Removal based on relative weight
• Population characteristics to look for...
  • Bluegill reproduction (fry)
  • Intermediate Bluegill (3–5 inches)
  • Range of Largemouth Bass lengths and no “skinny” bass
Standard and Relative Weights

- **Standard Weight**
  - How much a fish is supposed to weigh given its length

- **Relative Weight**
  - Actual weight of a fish compared to standard weight
Bass Crowding or Stunted Bass

- Caused by lack of bass harvest
- A balanced population isn’t always the goal
  - A bass crowded population can provide a fishery with much higher catch rates

Crowded Largemouth Bass Standard Weight Curve

- Graph showing the relationship between weight and length for crowded largemouth bass.
Potential Reasons for Lack of Balance

- Aquatic vegetation reducing predator success
- Lack of predator harvest
- Not enough forage for predators
- Not enough primary productivity to support forage-base
- Poor water quality
- Competition with undesirable fish
Managing for Trophy Bass

• Requires frequent harvest or removal of intermediate bass
• Often uses supplemental forage
• Optional to use all-female bass populations or different strains
• Often requires a consultant to consistently manage conditions
• More infrequent catch rates
Guidelines for Harvest

• What can a landowner do?
  • Selective harvest while fishing

• What can a consultant do?
  • Selective removal with electrofishing
Fertilization

- Can be used to boost primary productivity
- Don’t fertilize just because you heard you were supposed to
- Feeding is a form of fertilization!
- Simple check using secchi depth
- Be careful with aquatic weeds

Secchi Depth | Fertilizer Recommendation
---|---
24 inches or greater | Fertilize
18–24 inches | No Action
18 inches or less | Dense Bloom. Watch.
Options for Fertilization

- **Granular Fertilizer**
  - Should not be broadcast or poured
  - Place on platform 18 inches below surface to allow to dissolve

- **Liquid Fertilizer**
  - Mix with water and broadcast or spray

- **Concentrated Powder**
  - No mixing required
  - Can be broadcast from bank or poured into boat propwash
Liming

- Balanced and appropriate levels of Alkalinity and Hardness
  - Essential for healthy primary production
  - Stabilizes pH, reducing stress on fish

**Fig. 1.** Changes in pH during a 24-hour period in waters of high and low total alkalinitities (Wurts and Durborow, 1992).
How to Lime a Pond

- Spread over entire pond, not just in one spot
  - Lime barge or boat prop-wash
- Lime in fall or winter, so pond is ready for spring bloom
- Hydrated lime
  - Increased hardness much more temporary (6–8 weeks)
  - Can kill fish at too high of a rate
Feeding Fish

- Not the best solution for undersized fish
  - Works best in conjunction with other management practices
  - Overfeeding can lead to excess nutrients and other water quality issues
  - Best use case is for feeding Catfish
Feeding Fish Properly

- Protein content of at least 30%
- All food should be consumed in 5-10 minutes
- No feeding with water quality issues
- Up to four times per day in optimal water temperatures

<table>
<thead>
<tr>
<th>Water Temperature</th>
<th>Feed Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 55°F</td>
<td>One time per day, warmest part of day</td>
</tr>
<tr>
<td>Between 65–80°F</td>
<td>Up to four times per day</td>
</tr>
<tr>
<td>Between 80–90°F</td>
<td>Two times per day, coolest part of day</td>
</tr>
<tr>
<td>Above 90°F</td>
<td>No Feeding</td>
</tr>
</tbody>
</table>
Fish Kills

- **Oxygen Depletion (Large fish die first)**
  - Rapid aquatic vegetation die-off as result of herbicide treatments
  - Algal bloom die-off
  - Excessive coverage of aquatic vegetation

- **Toxicity (Small fish die first)**
  - Improper use of copper sulfate or other potentially toxic herbicides
  - Other chemicals in use nearby
Infectious Fish Diseases

- Four different types:
  - Viral, bacterial, parasitic, and fungal
- Requires accurate diagnosis for any treatment
- If you don’t know, don’t start trying things
- UGA school of veterinary medicine can diagnose fish diseases
Pond Renovation (when it’s too far gone)

- Chemical eradication of all fish
- Draining pond and refilling
- Make sure everything is in good shape before starting over
  - Check all water control structures
  - Have a stocking and management plan
  - Make sure causes of water quality issues are fixed
  - Make sure edges are not impacted by sediment deposition
How to Choose Consultants

- Georgia Consultants List
  - **New**: sorted by region
  - Working on more updates
- Call around for multiple quotes
- Cheapest is not always the best
- Look for examples of previous work
- Reach out to experts to make sure a consultant recommendation makes sense

[Link: Georgia Pond Consultants List]
Sportsfish Management Take-Homes

- Always have a plan
- How a pond fishery is best managed depends on landowner objectives
- Different types of fisheries require different levels of resources to manage
Questions?

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