Farm Fish Pond Management

South Carolina Department of Natural Resources

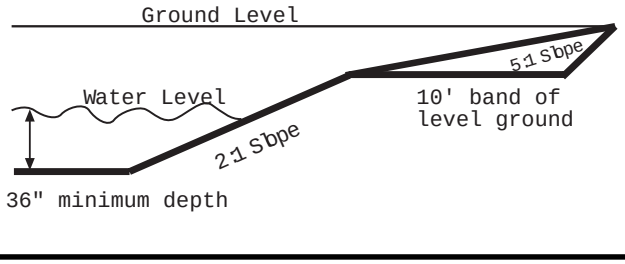
Excavated Pond Construction and Management

The following is a discussion of methods used to maximize quality fishing in excavated ponds located in the Coastal Plain. The discussion is divided into three parts: construction of the pond, manipulation of water quality, and fish population management.

Excavated ponds are fed by surface runoff, ground water, and by a combination of both. In the Coastal Plain, where the land is relatively flat, excavated ponds are largely dependent on groundwater. The most successful ponds will be located where the permanent water table is within a few feet of the surface. The water level in test holes bored in the area to be excavated will provide an estimate of the water level in the finished pond. All further references to the depth of the pond will be made relative to this estimate.

The ideal depth of a pond is 6-8 feet. Most biological production occurs near the water surface and water deeper than 8 feet is of little value as fish habitat. Very deep water (>10') may even create conditions that lead to oxygen depletions and fish kills during the summer. About 25% of the pond's area should be allotted to shallow' habitat, between three and four feet deep.

figure 1.



To prevent future weed problems, water shallower than 36" should be minimized (Figure 1). Edges should be constructed with a slope gradual enough to prevent bank sloughing. If anticipated water level is more than one foot below the existing ground level, then further bank grading is beneficial.

The effects of human activity should not initiate extensive erosion if a 5:1 slope (or flatter is created around the pond. Excess earth can be used to form fishing piers within the pond (Figure 2). A natural shaped pond is more aesthetically pleasing than a square pond.

Ponds that will be stocked with bream and bass should not be smaller than about 3/4 acre, as the predator-prey balance in smaller ponds can be disrupted by the harvest of only a few fish. Smaller ponds can be used to grow catfish or provide fishing for children. Small ponds can be excavated side by side at different times and then connected to form a larger body.

Because the ground is relatively flat in the Coastal Plain, surface runoff is minimal and most excavated ponds do not require water control structures. Any attempt to trap excess water by diking the pond edges will increase undesirable water level fluctuations. Excess water should be allowed to exit the pond as it's naturally lowest point, however connections to other surface waters will provide wild fish access to the pond and should be avoided.

Disposition of the excavated earth is an important consideration. Top soil should be retained separately, so that it can be spread on the banks of the finished pond. Subsoils are poor substrates for plant growth and if left adjacent to

figure 2.

the pond will erode back into the pond and become a source of muddy water every time it rains. Soil piles should be moved away from the pond or they should be banked so that runoff does not return to the pond. If the soil is moved off the property where it is excavated, a DHEC mining permit is required. However, exemptions can be given for legitimate pond construction projects. The DHEC can be contacted in the Charleston area at 740-1590.

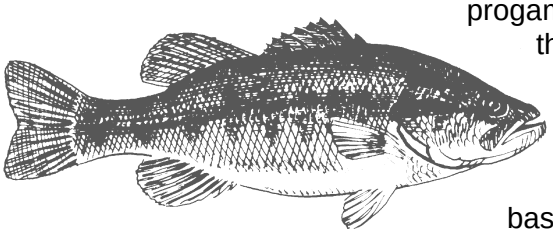
To prevent erosion, establish vegetation on the pond banks and soil piles soon after the completion of the pond. This will help prevent erosion and the muddy water it produces. Rye and wheat are suggested for late fall and winter plantings. Bermuda grass, bahiagrass, and brown millet make good spring and early summer plantings. Fescue, rye grass, and browntop millet can be used in the late summer and early fall. Spreading hay, fertilizer, and agricultural limestone will help in this effort. Initially it may be difficult to get good plant growth, but with time the soils age and become better suited to plant growth. Contact the local Natural Resource Conservation Service for additional planting advice.

Muddy water is a common occurrence in new ponds. While fish can tolerate muddy water, the plants that make up the bottom of the food chain cannot. Muddy water prevents light penetration, preventing microscopic plant growth and the fish food items that result. In most instances, once vegetation is established on the banks, ponds gradually clear. Occasionally the muddiness persists and requires additional steps. If the pond has a lime requirement (less than 20mg/1total alkalinity), the first step is to add the agricultural limestone, which usually promotes a gradual clearing. Infrequently, additional steps are required and your DNR biologist can help you if this occurs.

Waters in the South Carolina Coastal Plain are soft and infertile, which results in low productivity. In such cases, the proper use of lime and fertilizer can raise the pond's capacity to produce fish by three to four fold. Regular applications of high phosphorus fertilizer throughout the growing season will produce a healthy microscopic green algae bloom that increases fish production and shades out troublesome aquatic weeds. In ponds that will receive only light fishing pressure, fertilization is less important. Soft waters require the addition of agricultural limestone to enable fertilizer to be fully effective. It is common for ponds to require one to three tons of agricultural lime per acre. Once properly limed, excavated ponds are not likely to require liming for several years.

Wild fish are not usually a concern in excavated ponds, but if the pond connects with other surface water during construction, expect wild fish to be present in your pond. Elimination of wild fish prior to stocking is required, because competition from wild fish is a major cause of poor fishing in ponds. Stock only recommended fish species and prevent introduction of oother species by prohibiting fishing with minnows.

Do not over stock your pond! Overstocking is a major cause of population imbalance and dissatisfactory fishing. The state farm pond progam will provide the proper number of bass, bluegill, and shellcracker, based on the surface acreage of each pond. Channel catfish may also be stocked in bass/bream ponds at a rate of 50-100 per acre during initial stocking, but they are not provided by the state, and are not a necessary component of a properly managed pond. A list of private hatcheries is available from your local District Biologist. Stocking triploid grass carp is helpful in preventing future aquatic weed problems. Additional pond management information is covered in the SCDNR Fish Pond Management Guide.



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