



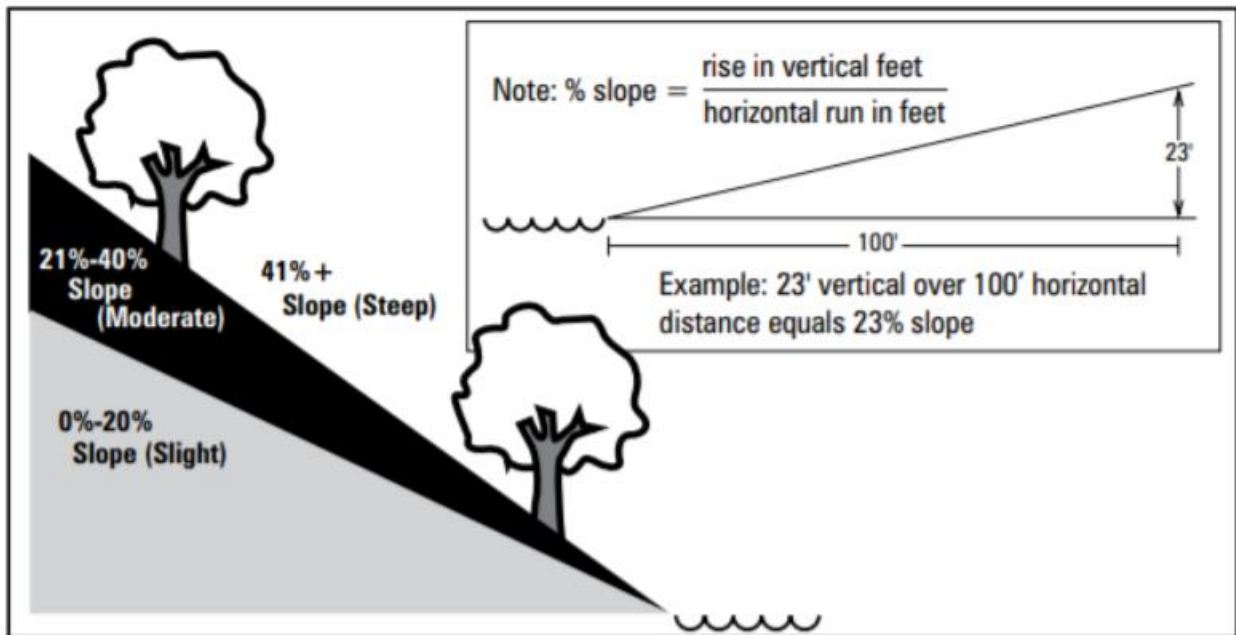
Riparian Habitat

Natural isolated depressions and ephemeral drainage ways provide a unique wildlife habitat, increase tract diversity, and enhance aesthetics. Many species of wildlife can use these areas for a source of water, cover, and/or travel corridor. Drainage ways and depressions also service as “nutrient sinks” and are vital in maintaining water and air quality (filtering and reduction of atmospheric carbon). If harvest operations are to ever occur in these areas follow all of the best management practices (**BMP**'s) for this area. The **BMP**'s say a 40 foot Streamside Management Zone (**SMZ**) is the minimal width on each side of the channel for a perennial stream (constant stream throughout the year) and a 20 foot **SMZ** for an intermittent stream (flowing at certain times of the year) with less than 20% slope. An **SMZ** is not a buffer and trees can be thinned out within as long as a certain density is retained and other **BMP**s are followed during the harvesting such as reducing rutting. 25 ft² of basal area and 25% canopy cover must be maintained within the 20 feet **SMZ** of an intermittent stream. 50 ft² of basal area and 50% canopy cover must be maintained within the 40 feet **SMZ** of a perennial stream. Stream bank trees should not be cut. These are only minimal guidelines to follow. Harvest operations should be conducted during dry periods to prevent excessive rutting. Although these areas may be prescribed burned, avoid high intensity fires and use caution because of increased smoke management risks, damage to thinned barked hardwoods, and equipment operability limitations.

Other harvesting options to improve stand dynamics and wildlife habitat are to remove smaller, co-dominant tree species from the hardwood stand. Undesirable trees can be removed around selected dominant acorn, nut, and fruit species to encourage growth, stimulate mast-production, and open up the understory to promote native grasses and forb production that is beneficial to wildlife. This can be achieved by mechanical removal, girdling with axe or chainsaw, or by a selective herbicide application (Garlon or another triclopyr product) using a hack and squirt or basal bark method.



Slope Class	Minimum Width (ft) of SMZ on each side			
	Perennial (ft)	Intermittent (ft)	Perennial Trout Stream (ft)	Intermittent Trout Stream (ft)
Slight (<20%)	40	20	100	35
Moderate (21%-40%)	70	35	100	35
Steep (>40%)	100	50	100	50



Slope and SMZ Diagram

Pond Management:

Typical pond management include aspects to enhance food availability for fish, controlled harvesting to maintain a sustainable predator/prey population, aquatic vegetation control, and reducing probability for fish kills. Water quality is one of the most important factors for sustainable management of ponds, as the entire pond dynamic is affected by water quality; such as pH, alkalinity, and dissolved oxygen (DO). Some of these factors fluctuate daily (such as DO



and pH), weekly or monthly (such as alkalinity). In sustainably managed ponds, nighttime DO levels should not drop below 3 – 4 parts per million (ppm or mg/l). Pond pH typically fluctuates between 6.5 and 9.0. If the pH drops below 5 or rise above 10 fish kills may occur.

Fish Population: Unmanaged ponds will generally become overcrowded with small, stunted green sunfish or bullhead catfish. It is best to start over and eliminate all of these fish. The choice of fish to be stocked (or restocked) depends on the overall goals. Largemouth bass and bluegill sunfish combinations are the most common recreational fish to be stocked. Catfish can be stocked in addition with largemouth bass or bluegill. Bluegill should be stocked first; in early autumn (September) to be sure they grow and mature enough to spawn in the spring. Largemouth bass should be stocked at 20 to 30 fish/acre in the following May or June; allowing them to grow rapidly, feeding on young bluegill. Catfish may be stocked at 200 to 500 fish/acre in the fall or spring; be sure the catfish are as large as the largemouth bass when stocking.

You should not stock crappie, gizzard shad, bullhead catfish and flathead catfish; these species rapidly overcrowd ponds and may reduce other populations. Redear sunfish can be stocked 20 – 25% readear in place bluegill. Ponds should not be fished for one year following stocking. To maintain good, consistent fishing, you must carefully control how many pounds of fish are removed each year. Fertile ponds can sustain an annual harvest of 25 – 35 lbs of bass/acre; infertile ponds should not have more than 10 – 15 lbs of bass/acre removed. Bluegill should be harvested ~ 10 – 15 bluegill per a pound of bass. Populations should be checked every 1 – 2 years to ensure that fish populations are still in balance. Contact your local district fisheries biologist with the GADNR for assistance.

Fish Enhancement Techniques: To enhance current pond populations the following can be done: 1) adding fish shelters/habitat, 2) supplemental feeding, 3) checking and adjusting water levels, and 4) aeration. Artificial reefs or fish shelters help young fish escape predation. Old Christmas trees, eastern red cedar trees, and brush can be used as “natural” shelters. Other shelter options include creating a stake bed by driving stakes into the bottom of a pond, and rock and tire piles. All structures should not be placed any deeper than 2 – 6 feet below water. Do not place more than 3 structures per acre. For supplemental feeding, be sure to offer the feed in the same area and at the same time each day. Do not overfeed fish; supply what will be eaten in ~10 – 15 minutes. Do not feed fish more than 15 lbs of feed per acre per day. Feeding should be done from April through October.

Winter feeding is not required, although can improve bluegill growth and reproduction. If feeding is continued through winter months, be sure to supply feed that sinks to the bottom of the pond and provide no more than 3 lbs of feed per acre per day. Adjusting water levels with a drain can enhance fish populations and control aquatic vegetation. In relatively deep ponds, water can be drained 2 – 3 feet in late fall and maintained throughout winter. This helps control aquatic



vegetation as a result of freezing and drying on areas of exposed pond bottom. Lowered water levels also concentrate fish, increasing forage opportunities to bass. Ponds should be refilled during March and April.

Fertilization: To increase fish yields, ponds should be fertilized to provide phytoplankton with adequate nutrients for growth, increasing food availability throughout the food chain, and consequently increasing total amount of fish capacity the pond is able to support. Well-managed, fertile ponds can support 300 – 600 lbs/fish/acre. Liming must be done before any fertilization is added to a pond. The amount of lime needed before fertilization depends on chemical characteristics of bottom sediments (mud). A soil sample should be taken from the bottom of the pond and analyzed to determine amount of lime required. Do not fertilize ponds earlier than March 21, or before water temperatures have reached a minimum of 60°F. Within 2 weeks of fertilizing, phytoplankton blooms should be stimulated. Do not fertilize ponds with an aquatic vegetation problem, as fertilization will only increase vegetation growth.

Aquatic Vegetation Control: Aquatic vegetation control can be performed utilizing physical, chemical or biological means. Physical control can be done by hand removal. Chemical control must be done using herbicides approved for aquatic use, and the weeds to be controlled must be accurately identified. Oxygen depletion can occur after applying herbicides. Check with the extension office, fisheries biologist, or an aquaculture specialist for proper plant identification and treatment recommendations. Biological controls, stocking of grass carp (“white amur”) are often the simplest and most economical long term methods to control rooted vegetation in new/recently treated ponds. Grass carp do not stir up mud or disturb nests of other fish, and during warmer months can eat up to 30 – 40% of their body weight in vegetation daily. The number of required triploid grass carp needed for effective vegetation control depends on the type of vegetation present and intensity of the problem. If largemouth bass is already present, grass carp must be 8 inches or longer before being stocked, as the largemouth bass will eat carp fingerlings.

Install wood duck boxes. If possible, installing and maintaining wood duck boxes around the perimeter of open ponds would enhance the area for wood ducks. Install a maximum of one box for every 200 yards of shoreline. Boxes may be installed on posts in the water or on trees along the edge. Maintain predator guards around each post or tree to prevent predators such as raccoons or snakes from entering the box. You might also talk with a Private Lands Biologist with the Georgia Department of Natural Resources for advice on managing for ducks and other wildlife.

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Leave snags and den trees: Standing and fallen dead trees provide den sites for raccoons, opossums, squirrels and snakes. Snags also provide cavity sites for birds including woodpeckers, chickadees, flycatchers, and bluebirds. Fungi and insects on dead trees are food for wildlife.