Ecology and Management of Cypress Swamps: A Review

Karla Brandt and Katherine C. Ewel*

Abstract

Cypress trees (Taxodium distichum) are found in wetlands throughout the southeastern Coastal Plain and north along the Mississippi River floodplain into southern Illinois. Three different forms are recognized: pondcypress, baldcypress, and dwarf cypress. Pondcypress is more tolerant of fire and low nutrient availability than baldcypress. Dwarf cypress is pondcypress that grows where nutrients are severely limited. Cypress trees in Florida grow under a wide range of conditions: nutrient-poor savannas, moderately productive isolated ponds, and diverse, highly productive river swamps.

Cypress swamps appear to be even-aged stands, although it is not clear if this is due to natural conditions or to previous management practices. Regeneration does not occur every year because of variations in seed production and water level. Seeds are not produced every year by every tree, and they will not germinate under standing water; seedlings cannot tolerate long inundation. Regeneration also seems to be best in nearly full sunlight. It is therefore possible that most regeneration occurs only once in several years.

Most cypress swamps in the Southeast were harvested during the late 1800s and early 1900s. The wood was used for a variety of purposes, some of which, such as the use of hollowed logs for water mains, exploited the rot-resistant properties of the heartwood in centuries-old trees. Logging practices included girdling large trees several months before harvest to remove enough water from the wood to float the logs out of deep swamps after cutting. Later, levees and railroads were built to provide access to remote swamps.

Modern forestry practices in cypress swamps are quite different. Rubber-tired feller-bunchers and skidders are now widely used for harvesting. Although there is some evidence that thinning can increase the growth rates of remaining trees, clearcutting is widely used, in part because all sizes of trees can be made into chips for mulch. Soil compaction by large machinery can hinder regeneration, although Florida's sandy soils may not be so susceptible. The ability of cypress stump sprouts to produce seed one or two years after logging may compensate for loss of advance regeneration.

Estimating biomass of cypress swamps is not easy, because irregular tree shapes in different kinds of swamps make volume tables difficult to interpret. Nor can age of a cypress tree be determined precisely because of the propensity for producing false growth rings.

Cypress swamps offer more than fiber production. They provide food, cover, and nesting sites for a variety of wildlife species. The importance of swamps in reducing flooding is well known. Intact cypress swamps may keep regional water supplies high because of their slow evapotranspiration rates. Finally, cypress swamps in many parts of Florida are providing some degree of advanced wastewater treatment. These uses must also be considered in formulating management plans for cypress swamps.

Introduction

The Atlantic and Gulf coastal plain states in the southeastern United States contain at least half the wetlands in the lower 48 states, according to preliminary results from the National Wetlands Inventory (summarized by Mitsch and Gosselink, 1986). More than 40% of these wetlands (8 million hectares, or 20 million acres) are in Florida and Louisiana. This concentration of wetlands has provided the region with a wealth of opportunities for both passive and active uses. Population pressure and increasing demands on a shrinking resource base have brought some of these uses into conflict, requiring a more careful assessment of the demands that each use places upon the resource.

Forest swamps occupy large areas in Florida and Louisiana, especially. Swamps cover 28% of commercial forest land in Florida (Dippon, 1983). Most of these swamps are dominated by baldcypress (Taxodium distichum) and/or pondcypress (considered by some to be closely related [T. distichum var. nutans], and by others to be a distinct species [T. ascendens]). Cypress swamps line rivers and lakes, and they occupy long, meandering channels and isolated ponds. Swamps have been important in shaping the economic and cultural development of Florida and Louisiana, and they remain important as the ecological relationships within them and the landscapes they occupy are explored.

Historically, commercial interest in swamps was limited to timber harvest. Little attention was paid to long-term management techniques. The resistance of

*Graduate Student and Professor, respectively, Department of Forestry, IFAS, University of Florida, Gainesville, FL 32611