Abstract. The southern Appalachian region contains a variety of forested wetland types. Among the more prevalent types are riparian and bottomland hardwood forests. In this paper we discuss the temporal and spatial changes in wildlife diversity and abundance often associated with forest management practices within bottomland and riparian forests. Common silvicultural practices within the southern Appalachians are diameter-limit cutting, clearcutting, single-tree selection, and group selection. These practices alter forest composition, structure, and spatial heterogeneity, thereby changing the composition, abundance, and diversity of wildlife communities. They also can impact special habitat features such as snags, den trees, and dead and down woody material. The value of wetland forests as habitat also is affected by characteristics of adjacent habitats. More research is needed to fully understand the impacts of forest management in wetlands of the southern Appalachians.

1. Introduction

Recent estimates indicate that there are about 7.4 million ha of forested wetlands in the southeastern states of Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia (Cubbage and Flather, 1993). The more mountainous states of Kentucky, North Carolina, Tennessee, Virginia, and West Virginia contain an estimated 1.6 million ha of forested wetlands (Cubbage and Flather, 1993). Precise estimates are not available for area in forested wetlands within the southern Appalachian ecoregion. However, most of the forested wetlands in the southern Appalachians probably are associated with streams.

The area of wet forest in a river reach varies with stream gradient and surrounding topography. Generally, however, the gradient of first- and second-order streams results in only a area that meets the jurisdictional definition of wetlands. In more mountainous portions of the southern Appalachians, watersheds are relatively intact and wetland forests are continuous with upland forests. In coves and valleys, and near the periphery of the southern Appalachian region, many of the forested
wetlands and adjacent uplands have been converted to other non-forest land uses. Where wetland forests do occur, they frequently are only narrow fringes immediately adjacent to the stream or river. In managed forest landscapes, these narrow fringes usually are incorporated in streamside management zones (SMZs) (Wigley and Melchiors, 1993). Bottomland hardwoods (BLHs) occur in the region, but expansive floodplains such as those associated with lower gradient streams in the Gulf Coastal Plain and Mississippi Alluvial Valley are uncommon.

The relatively narrow configuration of forested wetlands in the southern Appalachians has important implications for their management. Actions that occur beyond the boundaries of the jurisdictional area can have significant effects on the quality of the riparian systems as habitat for terrestrial, semi-aquatic, and aquatic organisms. Therefore, when examining effects of management on wildlife, it is important to consider not only the management of wetland forests, but the management of adjacent upland forests as well.

Southern wetland forests provide habitats that generally support a rich wildlife community (Howard and Allen, 1989), including endangered or threatened species, and species that are candidates for listing (Ernst and Brown, 1989). For some species, the sometimes linear nature of forested wetlands in the southern Appalachians is important. Some species such as beavers (Castor canadensis), minks (Mustella vison), and prothonotary warblers (Prothonotaria citrea) are strongly associated with streamside habitats (Brinson et al., 1981), and often use the streams and wetland forests as travel corridors. Sometimes, however, relatively few species from the total community show a distinct affinity for riparian areas. For example, Murray and Stauffer (1992) found that in Virginia, total bird density and species richness showed no riparian influence. Only two species, acadian flycatchers (Empidonax virescens) and Louisiana waterthrushes (Seiurus motacilla), were closely associated with habitats near streams.

Forested wetlands in the South have significant potential for timber production. Separate data are not available for the southern Appalachian region. However, between the years 1984 and 2030, hardwood timber removals from BLH forests across the South are predicted to increase by approximately 64% (USDA For. Serv., 1988). Concurrently, between 1990 and 2030, area of BLHs in the South is projected to decrease by about 13% (USDA For. Serv., 1988). Thus, management of forested wetlands across the South may intensify. Future trends for the southern Appalachians, however, are unclear.

For these reasons, we must understand the consequences of managing forested wetlands for multiple products, including timber and wildlife. It is increasingly difficult and impractical to exclusively rely upon public land acquisition and set-asides as a key conservation strategy. This is particularly true in the eastern states which encompass the southern Appalachians; there, about 91% of forests are privately held (Waddell et al., 1989). Thus, it is evident that meaningful conservation strategies must consider and be compatible with the economic needs and goals of