

Chapter 2

The Vegetative Communities Associated with Mammals of the South

Beverly Collins, Philip E. Hyatt, and Margaret K. Trani

Introduction

This chapter describes the ecoregions and vegetation types associated with mammals of the South. The distribution of mammals in the South reflects historic biogeographical processes as well as physiography and vegetation. For example, there are clear differences in the mammal fauna of the Blue Ridge Mountains as compared to that of the Coastal Plain physiographic area. Within the Coastal Plain there are differences in the mammal faunas among mesic pine flatwoods, mixed hardwood forests, and floodplain forests. Mammalian distributions are often best predicted at the scale of physiographic province (considering geomorphology, soils, topography, and micro-climatic differences) and broadly defined vegetation types. Within the broad vegetation categories, adherence to specific cover types may be of value in predicting the presence or absence of a particular mammal; thus, the basic types of Hamel (1992) and Wilson (1995) are incorporated within the vegetation descriptions in this book.

Herein, the vegetation classification follows Martin and others (1993*a,b*). Accounts are grouped by ecoregion and are organized by geography from interior to coastal areas. For each broad vegetation type, plant species, physical features, and environmental influences on plant associations are described. Specialized or relict habitats, such as mountain balds or Carolina bays, are described within the broad vegetation type. Aquatic and wetland habitats also are described. The scientific names of plant species used in this chapter are presented in Table 2.1. Common names were taken from the PLANTS Database

(www.plants.usda.gov). Mammal species known to occur (or those with a high likelihood of occurrence) in each terrestrial community are listed in Table 2.2. The vegetation categories are superimposed on the National Hierarchical Framework of Ecological Units (Avers et al. 1994, Keys et al. 1995) and the ecoregions of the United States (Bailey 1995). From interior to coastal areas, these ecoregions are the Interior Low Plateau and Highlands, Cumberland Plateau and Mountains, Blue Ridge and Ridge and Valley, and Coastal Plain and Coastal Fringe.

The Interior Low Plateau and Highlands

The western mesophytic/oak-hickory forest is broadly distributed over the Interior Low Plateau, Coastal Plain, and Interior Highlands regions of western Kentucky, Tennessee, northern Mississippi, Alabama, northern Arkansas, and portions of eastern Oklahoma and eastern Texas. Dominant deciduous trees of this forest include white oak, northern red oak, black oak, bitternut hickory, and shagbark hickory. Common associates include sweet pignut hickory, white ash, black walnut, black cherry, chinquapin oak, American basswood, and American elm (Bryant et al. 1993). Across the area, species associations reflect climatic moisture and temperature gradients as well as local topography. Bryant et al. (1993) describe a trend towards increasing dominance of oaks and hickories from east to west and an increase in pines from north to south. Pin oak and shingle oak are codominant in the north; to the south, black hickory, mockernut hickory, southern red oak, overcup oak, Shumard oak,

blackjack oak, and post oak occur widely depending on site quality. Xeric species occur on dry glades, steep slopes, and exposed surfaces; oaks and hickories are associated with ridges and upper slopes; and mesic species are confined to sheltered areas (e.g., ravines and coves). Aquatic and wetland habitat for hydric species in this region includes riverine systems from springs to large rivers; palustrine wetlands in the Mississippi River drainage; and lakes and reservoirs.

A number of types of open or grassland communities occur as patches or remnants of historically widespread vegetation, generally thought to have been maintained by fire, within the western mesophytic forest region. In the Interior Highlands of northwestern Arkansas, prairies on the Springfield Plateau and in the Arkansas Valley support little bluestem, big bluestem, Indian grass and switch grass. Other prairies occur in Arkansas, western Kentucky, and Louisiana (DeSelm and Murdock 1993) on loess or alluvial deposits associated with the current or historical Mississippi River drainage. Barrens, which are deep-soil grassland with stunted trees and shrubs and scattered groves of trees (Baskin et al. 1999), occur in the Central Basin of Tennessee and Alabama, Karst Plain of Kentucky and southern Indiana, and Highland Rim of Tennessee. Plants common to many barrens include little bluestem, Indian grass, and big bluestem. Both legumes and composites are well represented. Cedar or limestone glade communities on rocky or shallow soils are dominated by forbs and grasses (Walker 2001). These communities occur extensively in the Central Basin of Tennessee, northern Alabama, and northern Arkansas and also are found in the Outer Bluegrass and Pennyroyal Plain areas of Kentucky (Baskin and Baskin 1999). Glades support grasses such as poverty dropseed and witchgrass, endemic herbs such as purple tassels and whiterim scurfpea, and scattered woody plants such as persimmon, eastern red cedar, and upland swamp privet (Baskin and Baskin 1999). Scattered open woodland communities of southern Illinois, western Kentucky, and middle Tennessee, dominated by post oak, red cedar, or chestnut oak, represent later successional vegetation of barrens or savanna communities (Fralish et al. 1999).

The Cumberland Plateau and Mountains

Mixed mesophytic forest covers the unglaciated southern portion of the Allegheny Mountains, Cumberland Mountains, and the Allegheny and Cumberland Plateaus (Hinkle et al. 1993) from southwestern West Virginia south to Alabama. In this highly dissected region, species associations differ with topography and landform. The major forest types include:

pine forests, with Virginia pine, pitch pine, shortleaf pine, white oak, blackjack oak, or eastern white pine, occurring on dry, sandy ridges; on upper slopes and exposed sites, dry oak forests supporting blackjack oak, post oak, and scarlet oak; mesic to dry forests having eastern white pine, chestnut oak, white oak, American beech, chinquapin oak, hickory, northern red oak, scarlet oak, and Virginia pine; mesic slopes supporting "typical" mixed mesophytic forests of American beech, tuliptree, white oak, sugar maple, shagbark hickory, northern red oak, white oak, white ash, black cherry, white basswood, yellow buckeye, and chestnut oak; eastern hemlock, tuliptree, sweet birch, and white oak occur in cold-air-drainage or wetter sites; lower slopes and swales support red maple, river birch, American holly, blackgum, and white oak; American sycamore occurs along headwater and small streams and river birch, tuliptree, and sweetgum occur along the larger streams that comprise most of the region's aquatic habitat. Rhododendron can form dense thickets in eastern hemlock areas on north-facing slopes associated with acidic soil and cold-air-drainage.

Grasslands such as glades and barrens are less common in the Cumberland Plateau and Mountains region than in the Interior Low Plateau. Sandstone glades on the Cumberland Plateau in Alabama and Tennessee support lichen and moss mats. Deep soils support pineland three-awn grasses, little bluestem, and wild oat grass, and a variety of forbs including lance-leaf tickseed, Michaux's wood-aster, Appalachian stitchwort, and small-head gayfeather. Grasses, legumes, and composites dominate barrens on the Cumberland Plateau in both Tennessee and Kentucky (DeSelm and Murdock 1993). The region has abundant clifflines, rockhouses, caves, and surface mines that often support a unique flora. For example, rockhouses with a cave-like environment support mosses and ferns with tropical affinities (Farrar 1998) and flowering plants such as Cumberland stitchwort and Lucy Braun's snakewort.

The Blue Ridge and Ridge and Valley

This region includes the northern Blue Ridge and valleys of central and northern Virginia, and the southern Blue Ridge and valleys of eastern Tennessee, western North Carolina, northwestern South Carolina, and northern Georgia. Broad vegetation types in this region include spruce-fir and northern hardwoods (collectively considered in this guide as "high elevation forests"), and Appalachian oak forests. These vegetation types are distributed along latitudinal and elevation gradients, with local variation due to factors, such as slope exposure, that influence moisture regimes.

Appalachian oak forest covers low elevation ridges, slopes, and valleys of the northern and southern Blue Ridge and Ridge and Valley physiographic provinces. This forest includes Virginia pine-pitch pine (yellow pine), eastern hemlock-eastern white pine, cove forest, and oak-hickory cover types of Hamel (1992) and Wilson (1995). Forest communities vary within the broad Appalachian oak forest, but oak species occur or are dominant throughout much of the area (Stephenson et al. 1993). Chestnut, northern red, and scarlet oaks generally occur at higher elevations or on more xeric sites, and are more widely distributed in the northern Blue Ridge and Ridge and Valley of Virginia. High elevation northern red oak forests, with stunted trees and American beech as a common associate, occur on exposed and south-facing slopes, such as those between 1200 and 1600 m in the Balsam Mountains of North Carolina (Odom and McNab 2000). White and black oak can occur over a range of elevations, generally on more mesic sites throughout the region. Red maple is a common associate. Oak-hickory forest occurs widely at low to moderate elevations on subxeric to mesic sites (Stephenson et al. 1993). Dominant species include hickory (sweet pignut, mockernut, shagbark, and bitternut), chestnut oak, northern red oak, and white oak. Other associates include black oak, scarlet oak, red maple, tuliptree, sweet birch, yellow birch, and American beech. Oak forests grade into yellow pine forests, dominated by table mountain pine, Virginia pine, or pitch pine with chestnut oak and scarlet oak, on xeric ridgetops with south or southwestern aspects and, often, shallow, rocky soils (Stephenson et al. 1993, Elliot et al. 1999). Oak heath forests with chestnut oak, eastern white pine, or shortleaf pine also occur on dry or exposed sites at lower elevation (Simon et al. 2005). Eastern hemlock stands occur locally at higher elevations and/or along streams or on north-facing slopes associated with acidic soil and cold air flow throughout the region (e.g., Elliot et al. 1999). Rhododendron commonly forms dense thickets in these areas. Cove forests, on moist, north-facing slopes and in sheltered ravines, include mixed mesophytic species such as red and sugar maple, tuliptree, American basswood, American beech, yellow buckeye, northern red oak, white oak, various hickories, black cherry, and black walnut. At higher elevations (> 1200 m), cove forests contain yellow birch, American beech, sugar maple, and yellow buckeye (Odom and McNab 2000).

The northern hardwoods forest occurs at elevations above 1200–1300 m in the southern Blue Ridge and at 900–1000 m in the northern Blue Ridge and Ridge and Valley in Virginia. White et al. (1993) describe several northern hardwood associations. At elevations above 1300 m, northern red oak is often dominant in

association with red maple, Carolina silverbell, yellow birch, eastern hemlock, American beech, and sugar maple. Other associates are American basswood, white ash, black cherry, sweet birch, and eastern white pine. Beech orchards or gaps dominated by American beech, yellow buckeye, yellow birch, red maple, Carolina silverbell, and often some red spruce, may occur on high elevation ridges or sites with concave topography. High elevation sites on north-facing slopes with accumulated remnants of periglacial fragmented rocks may be dominated by yellow birch, yellow buckeye, red maple, and mountain maple. On mesic, north-facing slopes, sugar maple and yellow buckeye share dominance with American beech.

Spruce-fir forest occurs on the high peaks of the Southern Blue Ridge in Virginia, Tennessee, and North Carolina (Trani 2002; Simon et al. 2005), largely at elevations above 1380 m. Dominant trees include red spruce and Fraser fir. Within the region covered by this book, balsam fir occurs only in one stand on Hawksbill Mountain in the Shenandoah National Park in Virginia. Red spruce reaches a limit on dominance at elevations of approximately 1600–1800 m, at which point Fraser fir becomes more dominant until often forming pure stands at the highest elevations (> 1900 m) (White et al. 1993; Odom and McNab 2000). Additional canopy associates include yellow birch, striped maple, mountain maple, sugar maple, red maple, American beech, fire cherry, and common serviceberry. Catawba rosebay, hobblebush, American mountain ash, and common elderberry are found in the understory and unique to spruce woods. In sites infested by the balsam woolly adelgid (*Adelges piceae*), fir stands may have standing dead trees and snags, with regenerating fir trees and thickets of blackberry or Catawba rosebay (Odom and McNab 2000).

Rock outcrops and Pleistocene talus slopes occur widely on peaks and slopes of the Ridge and Valley in Virginia. Balds and rock outcrops also occur throughout the southern Blue Ridge Mountains on or near the tops of the highest peaks (DeSelm and Murdock 1993). Heath balds are dominated by ericaceous evergreen shrubs such as Catawba rosebay, rhododendron, mountain laurel, and sand-myrtle (White et al. 2001). Grassy balds are isolated, open grasslands of uncertain origin that are dominated by flattened oat grass, dwarf cinquefoil, sheep sorrel, various asters, sedges, goldenrod, and violets (Wiser and White 1999). Many balds are experiencing shrub and tree encroachment (e.g., ericaceous shrubs, fire cherry, blackberry, oaks, and hawthorns) from adjacent forest communities. High elevation rock outcrops typically have exposed or lichen-covered bedrock and

thin soil (< 30 cm deep) that supports herbs, shrubs, and stunted trees (Wiser and White 1999). Common species among outcrops include wretched sedge, Michaux's saxifrage, tufted bulrush, American mountain ash, highbush blueberry, and Catawba rosebay (Wiser and White 1999). Ridge and Valley cedar glades support mosses and lichens, herbs such as aromatic aster and straggling St. Johnswort, and grasses such as poverty oatgrass, puffsheath dropseed, and little bluestem (Baskin and Baskin 1999). Shale barrens farther north in the central Appalachians of Virginia support endemics such as shalebarren ragwort and Virginia whitehair leather flower (Braunschweig et al. 1999). Barrens that support smooth purple coneflower and Schweinitz's sunflower are scattered throughout the southern Blue Ridge and also into the Piedmont (see next section), usually on soils with high concentrations of calcium and magnesium (Walker 2001). In the absence of occasional fires, open pine canopies may develop on these barrens.

Seeps and high-gradient streams characterize the southern Blue Ridge. Bogs and fens, usually less than 2 ha in size, occur at elevations throughout the region, in association with canopy and shrub species typical of spruce-fir, northern hardwoods, cove hardwoods, oak-hickory, and mixed pine-hardwood forest species. Bogs typically are nutrient-poor, rain-fed, acidic peatlands that formed under closed drainage (Richardson and Gibbons 1993). They may be treeless and frequently are characterized by a layer of shrubs and a sphagnum cover, although sedges may occur there. Fens are groundwater-fed wetlands, richer in nutrients and less acidic than bogs, with slow, internal drainage. Canopy species of bogs and fens include red maple, eastern white pine, eastern hemlock, pitch pine, and red spruce. Shrub species include black willow, Catawba rosebay, hobblebush, and mountain laurel. Herb species include numerous rushes and blueberry.

The Piedmont

Since European settlement, land in the Piedmont Physiographic Province has been intensively managed through clearing for agriculture and pasture land, pine plantations (primarily loblolly pine), and fire suppression or prescribed burning. Today, oak-hickory-pine forest covers uplands throughout the Province. Dominant overstory species of this widespread forest include white oak, post oak, shortleaf pine, and loblolly pine. Other components include bitternut hickory, sweet pignut hickory, shagbark hickory, mockernut hickory, persimmon, sweetgum, tuliptree, Virginia pine, scarlet oak, southern red oak, blackjack oak, chestnut oak, and black oak. Although overstory composition generally

is consistent throughout the region, stand composition, structure, age, and understory composition differ from site to site regarding topography, soils, and land use history. Sweetgum and red maple can become dominant in stands, and, in the lower Piedmont, water oak and willow oak are common. Seeps, small to large streams, lakes, and reservoirs support wetland flora in the Piedmont region.

Granite outcrops occur in the Piedmont from eastern Alabama northward through Virginia (Shure 1999). Exposed rock supports lichens and mosses. Soil islands on outcrops undergo succession through an annual and perennial herb community with species such as Porter's sunflower, polytrichum moss, broomsedge, and yellow sunnybell to a herb-shrub-tree community with loblolly pine and, often, hardwoods such as eastern red cedar and sweet pignut hickory. Marginal zones may have endemics such as granite flatsedge or outcrop specialists such as quill fameflower (Shure 1999).

The Coastal Plain and Coastal Fringe

The Atlantic and Gulf Coastal Plain regions, like the Piedmont, have a long history of agriculture and plantation forestry. Through the region, differences in elevation, soils, fire frequency, inundation, and exposure to hurricanes shape vegetation singly and in concert with land use. In the upper Atlantic Coastal Plains, higher areas of sandhills of old remnant dunes and shorelines support xeric pine forests. The longleaf pine-turkey oak sandhills association is characterized by an overstory dominated by longleaf pine, a deciduous oak understory, and a ground cover of perennial grasses such as three-awn and bluestem (Stout and Marion 1993). Slash pine, loblolly, sand pine, and shortleaf pine may occur there. Associated hardwoods include Chapman white oak, bluejack oak, blackjack oak, live oak, pignut hickory, mockernut hickory, persimmon, wax myrtle, and dwarf palmetto. Sand pine scrub, characterized by a sand pine overstory and a dense understory of evergreen shrubs, is limited to Florida and the coastal dunes of Alabama (Stout and Marion 1993). Understory species include myrtle-leaf oak, Chapman white oak, sand live oak, scrub oak, sand heath, scrub palmetto, saw palmetto, silk bay, gopher apple, beaksedge, and Feay's palafox. Other plants include rusty lyonia, dwarf palmetto, and scrub hickory.

Southern mixed hardwood forest occurs on dry to mesic slopes and uplands from coastal Virginia southward to Florida and westward to Louisiana. Dominant tree species include post oak, shortleaf pine, loblolly pine, sweetgum, black oak, laurel oak, pignut hickory, Virginia pine, scarlet oak, white oak,

sourwood, and red maple (Ware et al. 1993). Other trees commonly encountered include American beech, southern magnolia, bitternut hickory, shagbark hickory, mockernut hickory, flowering dogwood, persimmon, tuliptree, eastern redbud, blackjack oak, southern red oak, and shumard oak. Pine is associated with pine plantations or areas where fire is sufficiently frequent to maintain longleaf, slash, or sand pine communities (Ware et al. 1993).

Pine flatwoods occur within the Lower Coastal Plain on flat, low topography that generally floods seasonally. Flatwoods are managed by prescribed fire, and have an open overstory of pines and an extensive shrub layer. Species composition and stand structure varies with management history. Characteristic species include longleaf, slash, and pond pine in association with saw palmetto, three-awn, gallberry, fetterbush, wax myrtle, and various ferns. Other canopy codominants include live oak, water oak, sweetgum, red maple, and ash.

Coastal live oak and maritime forest occurs on barrier islands and along the coastline of the Atlantic and Gulf Coastal Plains where elevation is less than 90 m. Coastal live oak occurs at inland sites whereas maritime forests rarely extend more than 400–500 m inland. Historically, this coastal zone was classified as needleleaf evergreen forest. Upland areas are covered by subclimax pine forest, with an understory of grass and sedge. In the absence of fire, mesophytic habitats support evergreen-oak and magnolia forest. The extensive coastal marshes and interior swamps of this region are dominated by water tupelo and bald or pond cypress. The maritime forest community encompasses a complex assemblage of plant species. Sand dunes and scrub along the coast yield to scrub forest, evergreen forest, and often bay marsh. Dominant trees include laurel-leaf oak, sweetbay magnolia, American holly, eastern red cedar, longleaf pine, and southern red oak. Associated species include loblolly and slash pine; cabbage and saw palmetto thrive in the understory.

Coastal marsh and wet prairie extends 400–500 m inland along the coast within several sections of the Lower Coastal Plain Mixed Forest Province. Throughout much of the Atlantic and eastern Gulf Coast, marsh communities are dominated by eastern baccharis, sea oxeye, saltmarsh bulrush, and camphorweed. Other typical species include soft rush, eastern baccharis, marsh elder, and cattail. The marshes and coastal prairies of eastern Texas and Louisiana are dominated by bluestem and coastal sachuiste prairies and southern cordgrass prairies. In Florida, marshes are most abundant north of the freeze line, and then are displaced by mangrove forests and tidal marsh south of this line. In southern

Florida, wet prairies are described by soil type and dominant plant taxa (Gunderson and Loftus 1993). On peat substrates, they are found on wetter sites in conjunction with tree islands, and are characterized by beaksedge, spikerush, or maidencane. Additional species include water rush, southern swampily, Egyptian paspalum, and arrowhead. The wet marl prairie is a diverse community. Sawgrass is typically a codominant with beaksedge, black sedge, whitetop sedges, and muhly grass.

Southern floodplain forest includes bottomland hardwood forests and deepwater alluvial swamps within the riparian zones of rivers and streams (Sharitz and Mitsch 1993) that traverse the Atlantic and Gulf Coastal Plains. The upper limits occur in the Upper Coastal Plain and Lower Piedmont, whereas the coastal boundaries occur in estuaries and tidal systems where the vegetation grades into marsh. Species composition is associated with disturbance as well as physical and hydrologic gradients. Cherrybark oak, swamp chestnut oak, and blackgum are characteristic of areas with short hydroperiods (Sharitz and Mitsch 1993). Other bottomland hardwood species such as overcup oak, water hickory, green ash, American elm, sugarberry, and laurel oak occur on poorly drained sites. Sloughs, oxbows, and swamps with long hydroperiods support water tupelo, bald cypress, and planertree. River levees support riverfront hardwoods such as American sycamore, whereas levee deposits typically support early successional stands of black willow and eastern cottonwood, river birch, and silver maple.

At the interface between aquatic and terrestrial systems, the floodplain forest provides diverse habitat for numerous mammals. The predominance of woody communities, presence of surface water and abundant soil moisture, diversity and interspersed habitat features, and the linear nature of bottomland forest along streams and rivers for dispersal and migration are important attributes of this community.

Pocosin and Carolina bay depression wetlands occur within the Atlantic Coastal Plain. Pocosins, also known as bays, bayheads, xeric shrub bogs, and galls (Richardson and Gibbons 1993), occur from Virginia to South Carolina in relatively broad flat uplands, shallow basins, and drainage basin heads with sandy humus, muck, or peat soil. The majority occur in North Carolina. Pocosins are low, dense forests. Dominant species include pond pine, sweetbay magnolia, loblolly bay, red bay, red maple, titi, azalea, wax myrtle, gallberry, greenbrier, and sphagnum. Carolina bays occur from North Carolina south to Georgia. Typical bays have a characteristic oval shape and northwest-southeast orientation, but size can range among bays from a few to thousands of

hectares (Richardson and Gibbons 1993). Hydrology and vegetation vary widely among bays. Forested bays can have pond or bald cypress and blackgum in wetter interiors, with pond pine, loblolly pine, or mixed mesophytic hardwoods including eastern red cedar, black cherry, red maple, water oak, sweetgum, or wax myrtle on drier sites. Herbaceous bays vary from open-water pond types dominated by floating-leaved species such as American white waterlily to depression meadow and marsh types dominated by emergent species such as southern cutgrass, maidencane, and Walter's sedge (DeSteven and Toner 2004).

Remnants of a once-extensive prairie occur in the lower western Gulf Coastal Plain of east Texas and southwestern Louisiana. As in other grasslands, species composition varies with site moisture: grama, switchgrass, little bluestem, and Florida paspalum are found on wetter sites; little bluestem and Indian grass are more common on upland sites. DeSelm and Murdock (1993) characterize many of the extensive grasslands in Florida as dry prairie. These occur along the St Johns and Kissimmee rivers and areas west of Lake Okeechobee.

A number of subtropical vegetation types are found predominantly in the Florida peninsula. These include tropical hardwood and rockland pine forest, the Everglades, and mangrove forests.

Subtropical hardwood and rockland pine forest occur along the Miami Rock Ridge, a broad outcropping of limestone which extends from Miami to Homestead and west to Lone Pine Key, the Florida Keys, and Big Cypress Swamp (Snyder et al. 1990). The tropical hardwood forest consists of largely broadleaf evergreens of Caribbean origin. Common hardwoods include gumbo limbo, pigeon plum, and white stopper. Other common species include false tamarind, Florida strangler fig, live oak, laurel oak, Florida poison tree, mastic, West Indian mahogany, Jamaica dogwood, thatch palm, cabbage palmetto, and Florida royal palm. Florida slash pine is the single canopy tree of the rockland pine forest. Subcanopy development is slight, with occasional hardwoods such as tamarind and live oak on sites protected from fire.

The Everglades occupy an extensive marl and limestone shelf covered with muck and sand over

substantial portions of southern Florida. A number of forest types occur there. Broad-leaved, hardwood forests include bayheads (swamp forests) or hammocks (upland forests), which occur as emergent tree stands surrounded by marsh (Gunderson and Loftus 1993). Dominant species of bayheads include red bay, sweet bay, dahoon holly, and black willow. Common overstory trees in the hardwood hammocks include gumbo limbo, sugarberry, live oak, false tamarind, persimmon, Florida strangler fig, and cabbage palmetto. Some wetland forests are dominated by pond cypress with sawgrass, three-awn, and white-top sedge graminoid understories. Bald cypress occurs in somewhat wetter cypress savanna communities along with red maple, sawgrass, or other grasses (Sharitz and Mitsch 1993). Pond apple forests support high densities of epiphytes (e. g., air plants); Carolina ash, dew-flower, and common elderberry also occur there. Monotypic willow stands (Gunderson and Loftus 1993) often have an understory of sawgrass on higher sites, and aquatic herbs such as marsh mermaid weed on the wetter sites. Graminoid wetlands include sawgrass marshes and wet peat prairies. Sawgrass marshes occur on sites that have annual water depths of 10–20 cm (Gunderson 1990) and are comprised of monotypic stands of sawgrass with spikerush, cattail, saltmarsh morning glory, and southern swampily.

Mangrove forests, buffered by barrier island formations, occur along both coasts of Florida, in estuarine ecosystems and inland areas subject to saline intrusions (Gilmore and Snedaker 1993). Dominant species include red, black, and white mangrove. Button mangrove is a common associate. These species occasionally occur in zones defined by different water levels: red mangrove occupies the lowest zone; black mangrove the intermediate zone; and white mangrove and button mangrove, which does not have root modification for saturated, saline soils or viviparity of propagules (Odum and McIvor 1990), occupy the highest zone (Florida Natural Areas Inventory 1990). Other species associated with mangrove forest include seashore saltgrass, Roemer's rush, spikerush, and glasswort. The mangrove forest often grades into sea grass beds, tidal marshes, shell mounds, coastal berms, maritime hammocks, and other coastal communities.

Aquatic Associations

There are a number of mammals for which the aquatic environment is an essential part of their life cycle. Some mammals obtain all or a portion of their foods from aquatic habitats, such as the common water shrew and northern river otter, whereas others inhabit dens and lodges within or directly adjacent to the water (e.g., American beaver, round-tailed muskrat). Other species are less associated with aquatic habitats (e.g., red wolf, American mink) yet forage in forested wetlands and riparian areas.

Table 2.3 presents mammal associations within five major categories of aquatic habitats in the South: palustrine, estuarine, lacustrine, riverine, and marine (NatureServe 2007). Palustrine habitats are marsh environments that lack flowing water and contain ocean derived salts. Estuarine habitats are those formed by a partially enclosed body of water connected to the sea and diluted with fresh water from

land drainage (e.g., a water passage where the tide meets the current of a stream). Lacustrine habitats include the shore, shallow-water, and deep water area of lakes. Riverine habitats include the banks of springs and pools, creeks, streams, and rivers. Marine habitats are those bordering the sea; they extend out as far as wave action occurs and light penetrates to the ocean bottom.

Conclusion

In summary, the diversity of landforms and vegetative communities in the South provide an array of habitats for mammals. Although it is difficult to make generalizations regarding a fauna as diverse as that found in the South, this chapter reflects an effort to categorize distributions at multiple, appropriate levels. In most situations, local faunas also will vary based on forest age, patch size, structural diversity, and disturbance history.

References

- Avers, P. E., D. T. Cleland, W. H. McNab, M. E. Jensen, R. G. Bailey, T. King, C. Goudney, and W. E. Russell. 1994. National hierarchical framework of ecological units. Pages 48–61 in L. H. Foley, compiler. *Silviculture: From the cradle of forestry to ecosystem management*. Proceedings of the national silviculture workshop. United States Forest Service, General Technical Report SE-88, Washington, D. C., USA.
- Bailey, R.G. 1995. Description of the ecoregions of the United States. United States Forest Service, Miscellaneous Publication 1391, Washington, D. C., USA.
- Baskin, J. M. and C. C. Baskin. 1999. Cedar glades of the Southeastern United States. Pages 206–219 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.
- Baskin, J. M., C. C. Baskin, and E. W. Chester. 1999. The big barrens region of Kentucky and Tennessee. Pages 190–205 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.
- Braunschweig, S. H., E. T. Nilsen, and T. F. Wieboldt. 1999. The mid-Appalachian shale barrens. Pages 83–98 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.
- Bryant, W. S., W. C. McComb, and J. S. Fralish. 1993. Oak-Hickory forests (Western mesophytic/oak-hickory forests). Pages 143–201 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- DeSelm, H. R. and N. Murdock. 1993. Grass-dominated communities. Pages 87–141 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- DeSteven, D. and M. M. Toner. 2004. Vegetation of Upper Coastal Plain wetlands: Environmental templates and wetland dynamics within a landscape framework. *Wetlands* 24:23–42.
- Elliot, K. J., J. M. Vose, W. T. Swank, and P. V. Bolstad. 1999. Long-term patterns in vegetation-site relationships in a Southern Appalachian forest. *Journal of the Torrey Botanical Society* 126: 320–334.
- Farrar, D. 1998. The tropical flora of rockhouse cliff formations in the Eastern United States. *Journal of the Torrey Botanical Society* 125:91–108.
- Florida Natural Areas Inventory. 1990. Guide to the natural communities of Florida. Florida Natural Area Inventory and Florida Department of Natural Resources. Tallahassee, Florida, USA.
- Fralish, J. S., S. B. Franklin, and D. C. Close. 1999. Open woodland communities of southern Illinois, western Kentucky, and middle Tennessee. Pages 171–189 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.
- Gilmore, R. G., and S. C. Snedaker. 1993. Mangrove forests. Pages 165–198 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Gunderson, L. H. 1990. Historical hydropatterns in vegetation communities of Everglades National Park. Pages 1099–1111 in R. R. Sharitz and J. W. Gibbons, editors. *Freshwater wetlands and wildlife*. Ninth Annual Symposium, Savannah River Ecology Laboratory, Charleston, South Carolina, USA.
- Gunderson, L. H., and W. F. Loftus. 1993. The Everglades. Pages 199–256 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Hamel, P.B. 1992. The land manager's guide to the birds of the South. The Nature Conservancy, Chapel Hill, North Carolina, USA.
- Hinkle, C. R., W. C. McComb, J. M. Safley, and P. A. Schmalzer. 1993. Mixed Mesophytic Forests. Pages 203–253 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Keys, J. E., C. A. Carpenter, S. L. Hooks, F. G. Koenig, W. H. McNab, W. E. Russell, and M. L. Smith. 1995. Ecological units of the Eastern United States: First approximation. United States Forest Service, Technical Publication R8-TP 21, Atlanta, Georgia, USA.
- Martin, W. H., S. G. Boyce, and A. C. Echternacht, editors. 1993a. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Martin, W. H., S. G. Boyce, and A. C. Echternacht, editors. 1993b. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- NatureServe. 2007. An online encyclopedia of life [Database]. Version 6.1. Association for Biodiversity Information. <http://www.natureserve.org/>
- Odom, R. H., Jr., and W. H. McNab. 2000. Using digital terrain modeling to predict ecological types in the Balsam Mountains of western North Carolina. USDA Forest Service, Southern Research Station, Research Note SRS-8.

- Odum, W. E., and C. C. McIvor. 1990. Mangroves. Pages 517–548 in R. L. Myers and J. J. Ewel, editors. *Ecosystems of Florida*. University of Central Florida, Orlando, Florida, USA.
- Richardson, C. J., and J. W. Gibbons. 1993. Pocosins, Carolina bays, and mountain bogs. Pages 257–310 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Sharitz, R. R. and W. J. Mitsch. 1993. Southern floodplain forest. Pages 311–372 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Shure, D. L. 1999. Granite outcrops of the southeastern United States. Pages 99–118 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.
- Simon, S. A., Collins, T. K., Kauffman, G. L., McNab, W. H., Ulrey, C. J. 2005. Ecological zones in the southern Appalachians: First approximation. USDA Forest Service, Southern Research Station, Research Paper SRS-41.
- Snyder, J. R., A. Herndon, and W. B. Robertson, Jr. 1990. South Florida rockland. Pages 230–274 in R. L. Meyers and J. J. Ewel, editors. *Ecosystems of Florida*. University of Central Florida, Orlando, Florida, USA.
- Stephenson, S. L., A. N. Ash, and D. F. Stauffer. 1993. Appalachian oak forests. Pages 255–303 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Stout, I. J. and W. R. Marion. 1993. Pine flatwoods and xeric pine forests of the Southern (lower) Coastal Plain. Pages 373–446 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Lowland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- Trani, M. K. 2002. Terrestrial ecosystems. Pages 3–46 in D. N. Wear and J. G. Greis, editors. *Southern forest resource assessment*. United States Forest Service, General Technical Report SRS-53, Asheville, North Carolina, USA.
- Walker, J. L. 2001. Sensitive plant communities. Pages 48–71 in J. Dickson, editor. *Wildlife of the Southern forests: Habitat and management*. Hancock House, Blaine, Washington, USA.
- Ware, S., C. Frost, and P. D. Doerr. 1993. Southern mixed hardwood forest: The former longleaf pine forest. Pages 447–493 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States*. John Wiley and Sons, New York, New York, USA.
- White, P. S., E. R. Buckner, J. D. Pittillo, and C. V. Cogbill. 1993. High-elevation forests: Spruce-fir forests, northern hardwood forests, and associated communities. Pages 305–337 in W. H. Martin, S. G. Boyce, and A. C. Echternacht, editors. *Biodiversity of the Southeastern United States: Upland terrestrial communities*. John Wiley and Sons, New York, New York, USA.
- White, P. S., S. P. Wilds, and D. A. Stratton. 2001. The distribution of heath balds in the Great Smoky Mountains, North Carolina and Tennessee. *Journal of Vegetation Science* 12:453–466.
- Wilson, L. A. 1995. The land manager's guide to the amphibians and reptiles of the South. The Nature Conservancy, Chapel Hill, North Carolina, USA.
- Wiser, S. K. and P. S. White. 1999. High-elevation outcrops and barrens of the Southern Appalachian Mountains. Pages 119–132 in R. C. Anderson, J. S. Fralish, and J. M. Baskin, editors. *Savannas, barrens, and rock outcrop plant communities of North America*. Cambridge University, Cambridge, UK.

Table 2.1. Common and Scientific Names of Plant Species.

COMMON NAME	SCIENTIFIC NAME
Conifers and relatives	
Cedar	<i>Juniperus spp.</i>
Cedar, Eastern red	<i>Juniperus virginiana</i>
Fir	<i>Abies spp.</i>
Fir, Balsam	<i>Abies balsamea</i>
Fir, Fraser	<i>Abies fraseri</i>
Cypress	<i>Taxodium spp.</i>
Cypress, Bald	<i>Taxodium distichum</i>
Cypress, Pond	<i>Taxodium ascendens</i>
Hemlock	<i>Tsuga spp.</i>
Hemlock, Eastern	<i>Tsuga canadensis</i>
Pine	<i>Pinus spp.</i>
Pine, Eastern white	<i>Pinus strobus</i>
Pine, Loblolly	<i>Pinus taeda</i>
Pine, Longleaf	<i>Pinus palustris</i>
Pine, Pitch	<i>Pinus rigida</i>
Pine, Pond	<i>Pinus serotina</i>
Pine, Sand	<i>Pinus clausa</i>
Pine, Shortleaf	<i>Pinus echinata</i>
Pine, Slash	<i>Pinus elliotii</i>
Pine, Table mountain	<i>Pinus pungens</i>
Pine, Virginia	<i>Pinus virginiana</i>
Spruce	<i>Picea spp.</i>
Spruce, Red	<i>Picea rubens</i>
Flowering plants	
Woody species – Trees and Shrubs	
Ash	<i>Fraxinus spp.</i>
Ash, American mountain	<i>Sorbus americana</i>
Ash, Carolina	<i>Fraxinus caroliniana</i>
Ash, Green	<i>Fraxinus pennsylvanica</i>
Ash, White	<i>Fraxinus americana</i>
Azalea	<i>Rhododendron spp.</i>
Basswood, American	<i>Tilia americana</i>
Basswood, White	<i>Tilia americana var. heterophylla</i>
Bay, Loblolly	<i>Gordonia lasianthus</i>
Bay, Red	<i>Persea borbonia</i>
Bay, Silk	<i>Persea humilis</i>
Beech, American	<i>Fagus grandifolia</i>
Birch	<i>Betula spp.</i>
Birch, River	<i>Betula nigra</i>
Birch, Sweet	<i>Betula lenta</i>
Birch, Yellow	<i>Betula alleghaniensis</i>
Blackberry	<i>Rubus spp.</i>
Blueberry	<i>Vaccinium spp.</i>
Blueberry, Highbush	<i>Vaccinium corymbosum</i>

COMMON NAME	SCIENTIFIC NAME
Buckeye, Yellow	<i>Aesculus flava</i>
Cherry	<i>Prunus spp.</i>
Cherry, Black	<i>Prunus serotina</i>
Cherry, Fire	<i>Prunus pensylvanica</i>
Cottonwood, Eastern	<i>Populus deltoides</i>
Dogwood, Flowering	<i>Cornus florida</i>
Dogwood, Jamaica	<i>Piscidia piscipula</i>
Elderberry, Common	<i>Sambucus nigra spp. canadensis</i>
Elm	<i>Ulmus spp.</i>
Elm, American	<i>Ulmus americana</i>
Fetterbush	<i>Lyonia lucida</i>
Fig, Florida strangler	<i>Ficus aurea</i>
Gallberry	<i>Ilex glabra</i>
Gum, Black	<i>Nyssa sylvatica</i>
Gum, Sweet	<i>Liquidambar styraciflua</i>
Gumbo limbo	<i>Bursera simaruba</i>
Hawthorn	<i>Crataegus spp.</i>
Hickory	<i>Carya spp.</i>
Hickory, Bitternut	<i>Carya cordiformis</i>
Hickory, Black	<i>Carya texana</i>
Hickory, Mockernut	<i>Carya alba</i>
Hickory, Scrub	<i>Carya floridana</i>
Hickory, Shagbark	<i>Carya ovata</i>
Hickory, Sweet pignut	<i>Carya glabra</i>
Hickory, Water	<i>Carya aquatica</i>
Hobblebush	<i>Viburnum acerifolium</i>
Holly, American	<i>Ilex opaca</i>
Holly, Dahoon	<i>Ilex cassine</i>
Huckleberry, Bear	<i>Gaylussacia ursina</i>
Laurel, Great	<i>Rhododendron maximum</i>
Laurel, Mountain	<i>Kalmia latifolia</i>
Lyonia, Rusty	<i>Lyonia ferruginea</i>
Magnolia	<i>Magnolia spp.</i>
Magnolia, Southern	<i>Magnolia grandiflora</i>
Magnolia, Sweetbay	<i>Magnolia virginiana</i>
Mahogany, West Indian	<i>Swietenia mahagoni</i>
Mangrove, Black	<i>Avicennia germinans</i>
Mangrove, Button	<i>Conocarpus erectus</i>
Mangrove, Red	<i>Rhizophora mangle</i>
Mangrove, White	<i>Laguncularia racemosa</i>
Maple, Mountain	<i>Acer spicatum</i>
Maple, Red	<i>Acer rubrum</i>
Maple, Silver	<i>Acer saccharinum</i>
Maple, Striped	<i>Acer pensylvanicum</i>
Maple, Sugar	<i>Acer saccharum</i>
Oak	<i>Quercus spp.</i>

COMMON NAME	SCIENTIFIC NAME
Oak, Black	<i>Quercus velutina</i>
Oak, Blackjack	<i>Quercus marilandica</i>
Oak, Blue Jack	<i>Quercus incana</i>
Oak, Chapman white	<i>Quercus chapmanii</i>
Oak, Cherrybark	<i>Quercus pagoda</i>
Oak, Chestnut	<i>Quercus prinus</i>
Oak, Chinquapin	<i>Quercus muehlenbergii</i>
Oak, Laurel-leaf oak	<i>Quercus laurifolia</i>
Oak, Live	<i>Quercus virginiana</i>
Oak, Myrtle-leaf	<i>Quercus myrtifolia</i>
Oak, Northern pin	<i>Quercus ellipsoidalis</i>
Oak, Northern red	<i>Quercus rubra</i>
Oak, Overcup	<i>Quercus lyrata</i>
Oak, Pin	<i>Quercus palustris</i>
Oak, Post	<i>Quercus stellata</i>
Oak, Sand live	<i>Quercus geminata</i>
Oak, Scarlet	<i>Quercus coccinea</i>
Oak, Scrub	<i>Quercus ilicifolia</i>
Oak, Shingle	<i>Quercus imbricaria</i>
Oak, Shumard	<i>Quercus shumardii</i>
Oak, Southern red	<i>Quercus falcata</i>
Oak, Swamp chestnut	<i>Quercus michauxii</i>
Oak, Turkey	<i>Quercus laevis</i>
Oak, Water	<i>Quercus nigra</i>
Oak, White	<i>Quercus alba</i>
Oak, Willow	<i>Quercus phellos</i>
Palm, Florida royal	<i>Roystonea elata</i>
Palm, Thatch	<i>Thrinax spp.</i>
Palmetto, Cabbage	<i>Sabal palmetto</i>
Palmetto, Dwarf	<i>Sabal minor</i>
Palmetto, Saw	<i>Serenoa repens</i>
Palmetto, Scrub	<i>Sabal etonia</i>
Persimmon	<i>Diospyros virginiana</i>
Planertree	<i>Planera aquatica</i>
Poison tree, Florida	<i>Metopium toxiferum</i>
Pond apple	<i>Annona glabra</i>
Redbud, Eastern	<i>Cercis canadensis</i>
Rosebay, Catawba	<i>Rhododendron catawbiense</i>
Sand-myrtle	<i>Leiophyllum buxifolium</i>
Serviceberry, Common	<i>Amelanchier arborea</i>
Sugarberry	<i>Celtis laevigata</i>
Sycamore, American	<i>Platanus occidentalis</i>
Titi	<i>Cliftonia monophylla</i>
Tuliptree	<i>Liriodendron tulipifera</i>
Tupelo	<i>Nyssa spp.</i>
Tupelo, Water	<i>Nyssa aquatica</i>
Walnut, Black	<i>Juglans nigra</i>
Wax myrtle	<i>Myrica cerifera</i>
White stopper	<i>Eugenia axillaris</i>

COMMON NAME	SCIENTIFIC NAME
Willow	<i>Salix spp.</i>
Willow, Black	<i>Salix nigra</i>
Herbaceous species – Forbs and Vines	
Airplant	<i>Tillandsia spp.</i>
American white waterlily	<i>Nymphaea odorata</i>
Appalachian stitchwort	<i>Minuartia glabra</i>
Aromatic aster	<i>Symphyotrichum oblongifolium</i>
Arrowhead	<i>Sagittaria spp.</i>
Aster	<i>Aster spp.</i>
Camphorweed	<i>Pluchea spp.</i>
Carolina silverbell	<i>Halesia carolina</i>
Cattail	<i>Typha spp.</i>
Cumberland stitchwort	<i>Minuartia cumberlandensis</i>
Dewflower	<i>Murdannia spp.</i>
Dwarf cinquefoil	<i>Potentilla canadensis</i>
Eastern baccharis	<i>Baccharis halimifolia</i>
False tamarind	<i>Lysiloma latisiliquum</i>
Feay's palafox	<i>Palafoxia feayi</i>
Glasswort	<i>Salicornia spp.</i>
Goldenrod	<i>Solidago spp.</i>
Gopher apple	<i>Licania michauxii</i>
Greater tickseed	<i>Coreopsis major</i>
Greenbrier	<i>Smilax spp.</i>
Lance-leaf tickseed	<i>Coreopsis lanceolata</i>
Lucy Braun's white snakeroot	<i>Ageratina luciae-brauniae</i>
Marsh elder	<i>Iva frutescens</i>
Marsh mermaidweed	<i>Proserpinaca palustris</i>
Mastic	<i>Sideroxylon foetidissimum</i>
Michauxi's saxifrage	<i>Saxifraga michauxii</i>
Michaux's wood-aster	<i>Eurybia spp.</i>
Pigeon plum	<i>Coccoloba diversifolia</i>
Porter's sunflower	<i>Helianthus porteri</i>
Purpletassels	<i>Dalea gattereri</i>
Quill fameflower	<i>Talinum teretifolium</i>
Saltmarsh morning glory	<i>Ipomoea sagittata</i>
Sand heath	<i>Ceratiola ericoides</i>
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>
Sea oxeye	<i>Borrichia frutescens</i>
Sheep sorrel	<i>Rumex acetosella</i>
Small-head gayfeather	<i>Liatris microcephala</i>
Smooth purple coneflower	<i>Echinacea laevigata</i>
Southern swampily	<i>Crinum americanum</i>
Straggling St. John's-wort	<i>Hypericum dolabriforme</i>
Tamarind	<i>Tamarindus indica</i>
Violet	<i>Viola spp.</i>
Virginia white-hair leatherflower	<i>Clematis coactilis</i>
Whiterim scurfpea	<i>Pedimelum subacaule</i>
Yellow sunnybell	<i>Schoenolirion croceum</i>

COMMON NAME	SCIENTIFIC NAME
Grasses and grass-like species	
Big bluestem	<i>Andropogon gerardii</i>
Broom-sedge	<i>Andropogon virginicus</i>
Cordgrass	<i>Spartina</i> spp.
Dropseed	<i>Sporobolus</i> spp.
Dropseed, Poverty	<i>Sporobolus vaginiflorus</i>
Dropseed, Puffsheath	<i>Sporobolus neglectus</i>
Egyptian paspalum	<i>Paspalidium geminatum</i>
Flattened oatgrass	<i>Danthonia compressa</i>
Florida paspalum	<i>Paspalum floridanum</i>
Grama	<i>Bouteloua</i> spp.
Indiangrass	<i>Sorghastrum</i> spp.
Little bluestem	<i>Schizachyrium scoparium</i>
Maidencane	<i>Panicum hemitomon</i>
Muhly grass	<i>Muhlenbergia</i> spp.
Poverty oatgrass	<i>Danthonia spicata</i>
Seashore saltgrass	<i>Distichlis spicata</i>
Southern cutgrass	<i>Leersia hexandra</i>
Switchgrass	<i>Panicum virgatum</i>
Three-awn	<i>Aristida</i> spp.
Three-awn grass, Pineland	<i>Aristida stricta</i>
Wild oat grass	<i>Avena fatua</i>
Witchgrass	<i>Panicum capillare</i>

COMMON NAME	SCIENTIFIC NAME
Rushes	
Roemer's rush	<i>Juncus roemerianus</i>
Saltmarsh bulrush	<i>Scirpus robustus</i>
Soft rush	<i>Juncus effusus</i>
Sedges	
Beaksedge	<i>Rhynchospora</i> spp.
Beaksedge, Florida whitetop	<i>Rhynchospora floridensis</i>
Beaksedge, Giant whitetop	<i>Rhynchospora latifolia</i>
Beaksedge, Starrush whitetop	<i>Rhynchospora colorata</i>
Blacksedge	<i>Schoenus nigricans</i>
Granite flatsedge	<i>Cyperus granitophilus</i>
Sawgrass	<i>Cladium mariscus</i>
Spikerush	<i>Eleocharis</i> spp.
Walter's sedge	<i>Carex striata</i>
Water rush	<i>Rhynchospora inundata</i>
Wretched sedge	<i>Carex misera</i>
Tufted bulrush	<i>Trichophorum caespitosum</i>
Non-vascular species	
Polytrichum moss	<i>Polytrichum commune</i>
Sphagnum	<i>Sphagnum carolinianum</i>

Table 2.2. Mammals Associated with Vegetative Communities in the South.																		
SCIENTIFIC NAME	COMMON NAME	VEGETATIVE COMMUNITY																
		Everglades	Coastal Live Oak/Maritime	Mangrove Forest	Subtropical Marsh/Wet Prairie	Tropical Hdw/Rockland Pine	Mesic Pine Flatwood	Xeric Pine Forest	Southern Mixed Hardwood	Southern Floodplain Forest	Pocosin/Carolina Bay	Oak-Hickory-Pine Forest	High Elevation Forest	Appalachian Oak Forest	Mountain Bog/Fen	Mixed Mesophytic Forest	W. Mesophytic/Oak-Hickory	Grass-dominated
DIDELPHIMORPHIA																		
Family Didelphidae																		
<i>Didelphis virginiana</i>	Virginia opossum	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INSECTIVORA																		
Family Soricidae																		
<i>Blarina brevicauda</i>	Northern short-tailed shrew	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X
<i>Blarina carolinensis</i>	Southern short-tailed shrew		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
<i>Blarina hylophaga</i>	Elliot's short-tailed shrew																	
<i>Cryptotis parva</i>	Least shrew	X	X	X	X	X	X	X		X	X							X
<i>Notiosorex crawfordi</i>	Crawford's desert shrew																	
<i>Sorex cinereus</i>	Masked shrew											X	X	X	X			
<i>Sorex dispar</i>	Long-tailed shrew											X	X	X				
<i>Sorex fumeus</i>	Smoky shrew												X	X	X	X		
<i>Sorex hoyi</i>	Pygmy shrew												X	X	X	X	X	
<i>Sorex longirostris</i>	Southeastern shrew		X		X	X		X	X	X	X	X	X	X	X	X	X	X
<i>Sorex palustris</i>	American water shrew												X	X	X	X		
Family Talpidae																		
<i>Condylura cristata</i>	Star-nosed mole						X		X	X	X			X				
<i>Parascalops breweri</i>	Hairy-tailed mole											X		X	X	X		
<i>Scalopus aquaticus</i>	Eastern mole		X				X	X	X	X	X	X		X	X	X	X	X
CHIROPTERA																		
Family Molossidae																		
<i>Eumops glaucinus</i>	Wagner's bonneted bat						X		X	X	X							
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	X	X		X	X												X

Table 2.2. Mammals Associated with Vegetative Communities in the South.

SCIENTIFIC NAME	COMMON NAME	VEGETATIVE COMMUNITY																
		Everglades	Coastal Live Oak/Maritime	Mangrove Forest	Subtropical Marsh/Wet Prairie	Tropical Hdwd/Rockland Pine	Mesic Pine Flatwood	Xeric Pine Forest	Southern Mixed Hardwood	Southern Floodplain Forest	Pocosin/Carolina Bay	Oak-Hickory-Pine Forest	High Elevation Forest	Appalachian Oak Forest	Mountain Bog/Fen	Mixed Mesophytic Forest	W. Mesophytic/Oak-Hickory	Grass-dominated
Family Vespertilionidae																		
<i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat																	
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat																	
<i>Eptesicus fuscus</i>	Big brown bat		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Lasionycteris noctivagans</i>	Silver-haired bat	X				X	X	X	X		X	X	X	X	X	X	X	X
<i>Lasiurus borealis</i>	Eastern red bat	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X
<i>Lasiurus cinereus</i>	Hoary bat		X				X	X	X	X	X	X	X	X	X	X	X	X
<i>Lasiurus intermedius</i>	Northern yellow bat	X	X	X	X	X	X	X	X	X	X							
<i>Lasiurus seminolus</i>	Seminole bat	X	X	X	X	X	X	X	X	X	X	X	X				X	
<i>Myotis austroriparius</i>	Southeastern myotis	X	X			X	X	X	X	X	X						X	
<i>Myotis grisescens</i>	Gray myotis							X	X		X				X	X	X	
<i>Myotis leibii</i>	Eastern small-footed myotis								X				X	X		X	X	
<i>Myotis lucifugus</i>	Little brown myotis								X		X		X	X	X	X	X	
<i>Myotis septentrionalis</i>	Northern long-eared myotis										X	X	X	X	X	X	X	
<i>Myotis sodalis</i>	Indiana myotis										X	X	X	X		X	X	
<i>Nycticeius humeralis</i>	Evening bat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<i>Pipistrellus subflavus</i>	Eastern pipistrelle	X	X			X		X	X	X	X		X	X	X	X	X	
XENARTHRA																		
Family Dasypodidae																		
<i>Dasypus novemcinctus</i>	Nine-banded armadillo	X	X		X	X	X	X	X	X	X					X		
LAGOMORPHA																		
Family Leporidae																		
<i>Lepus americanus</i>	Snowshoe hare																	
<i>Lepus californicus</i>	Black-tailed jackrabbit												X					
<i>Sylvilagus aquaticus</i>	Swamp rabbit	X	X				X		X		X					X	X	X

Table 2.2. Mammals Associated with Vegetative Communities in the South.														
SCIENTIFIC NAME	COMMON NAME	VEGETATIVE COMMUNITY												
		Everglades	Coastal Live Oak/Maritime	Mangrove Forest	Subtropical Marsh/Wet Prairie	Tropical Hdwld/Rockland Pine	Mesic Pine Flatwood	Xeric Pine Forest	Southern Mixed Hardwood	Southern Floodplain Forest	Pocosin/Carolina Bay	Oak-Hickory-Pine Forest	High Elevation Forest	Appalachian Oak Forest
<i>Sylvilagus floridanus</i>	Eastern cottontail		X				X	X		X	X	X	X	X
<i>Sylvilagus obscurus</i>	Appalachian cottontail											X	X	
<i>Sylvilagus palustris</i>	Marsh rabbit	X	X		X	X	X				X			
RODENTIA														
Family Castoridae														
<i>Castor canadensis</i>	American beaver		X				X		X	X	X	X		X
Family Geomyidae														
<i>Geomys breviceps</i>	Baird's pocket gopher							X						
<i>Geomys pinetis</i>	Southeastern pocket gopher						X	X						X
Family Heteromyidae														
<i>Chaetodipus hispidus</i>	Hispid pocket mouse							X				X		X
Family Muridae														
<i>Blomys taylori</i>	Northern pygmy mouse							X						
<i>Clethrionomys gapperi</i>	Southern red-backed vole											X	X	
<i>Microtus chrotorrhinus</i>	Rock vole											X	X	X
<i>Microtus ochrogaster</i>	Prairie vole							X						X
<i>Microtus pennsylvanicus</i>	Meadow vole		X						X	X		X	X	X
<i>Microtus pinetorum</i>	Woodland vole						X			X		X	X	
<i>Mus musculus</i>	House mouse		X			X	X			X		X	X	
<i>Neofiber alleni</i>	Round-tailed muskrat	X			X						X			
<i>Neotoma floridana</i>	Eastern woodrat		X		X		X	X	X					X
<i>Neotoma magister</i>	Allegheny woodrat											X	X	X
<i>Ochrotomys nuttalli</i>	Golden mouse		X				X	X	X	X	X	X	X	X
<i>Ondatra zibethicus</i>	Common muskrat									X				
<i>Oryzomys palustris</i>	Marsh rice rat	X	X		X					X	X	X		X

Table 2.2. Mammals Associated with Vegetative Communities in the South.

SCIENTIFIC NAME	COMMON NAME	VEGETATIVE COMMUNITY																
		Everglades	Coastal Live Oak/Maritime	Mangrove Forest	Subtropical Marsh/Wet Prairie	Tropical Hdwd/Rockland Pine	Mesic Pine Flatwood	Xeric Pine Forest	Southern Mixed Hardwood	Southern Floodplain Forest	Pocosin/Carolina Bay	Oak-Hickory-Pine Forest	High Elevation Forest	Appalachian Oak Forest	Mountain Bog/Fen	Mixed Mesophytic Forest	W. Mesophytic/Oak-Hickory	Grass-dominated
<i>Peromyscus attwateri</i>	Texas mouse	X	X		X	X			X		X					X	X	X
<i>Peromyscus gossypinus</i>	Cotton mouse	X	X	X	X			X	X	X	X				X	X	X	X
<i>Peromyscus leucopus</i>	White-footed mouse		X						X	X	X	X	X	X	X	X	X	
<i>Peromyscus maniculatus</i>	Deer mouse											X	X	X	X	X	X	X
<i>Peromyscus polionotus</i>	Oldfield mouse		X				X				X							
<i>Podomys floridanus</i>	Florida mouse							X				X						
<i>Rattus norvegicus</i>	Norway rat		X					X			X	X	X	X	X	X	X	
<i>Rattus rattus</i>	Black rat	X	X				X					X						
<i>Reithrodontomys fulvescens</i>	Fulvous harvest mouse							X	X		X						X	X
<i>Reithrodontomys humulis</i>	Eastern harvest mouse						X		X	X								X
<i>Reithrodontomys megalotis</i>	Western harvest mouse															X	X	X
<i>Reithrodontomys montanus</i>	Plains harvest mouse																X	X
<i>Sigmodon hispidus</i>	Hispid cotton rat	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
<i>Synaptomys cooperi</i>	Southern bog lemming								X	X		X	X	X	X	X	X	X
Family Myocastoridae																		
<i>Myocastor coypus</i>	Nutria	X	X		X				X									
Family Sciuridae																		
<i>Glaucomys sabrinus</i>	Northern flying squirrel											X						
<i>Glaucomys volans</i>	Southern flying squirrel	X	X			X	X	X	X		X	X	X	X	X	X	X	X
<i>Marmota monax</i>	Woodchuck						X	X			X	X	X	X	X	X	X	X
<i>Sciurus carolinensis</i>	Eastern gray squirrel	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X
<i>Sciurus niger</i>	Eastern fox squirrel	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X
<i>Tamias striatus</i>	Eastern chipmunk										X	X	X	X	X	X	X	X
<i>Tamiasciurus hudsonicus</i>	Red squirrel											X	X	X	X	X		X

Table 2.2. Mammals Associated with Vegetative Communities in the South.

[illegible]

SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT				LACUSTRINE HABITAT		RIVERINE HABITAT				MARINE HABITAT						
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water		Big River	Creek	Low Gradient	Medium River	Moderate Gradient	Pool
DIDELPHIMORPHIA																						
Family Didelphidae																						
<i>Didelphis virginiana</i>	Virginia opossum		X	X	X												X				X	
INSECTIVORA																						
Family Soricidae																						
<i>Blarina brevicauda</i>	Northern short-tailed shrew	X	X		X			X								X					X	
<i>Blarina carolinensis</i>	Southern short-tailed shrew				X			X														
<i>Blarina hylophaga</i>	Elliot's short-tailed shrew				X			X				X										
<i>Cryptotis parva</i>	Least shrew	X	X	X	X	X		X														
<i>Notiosorex crawfordi</i>	Crawford's desert shrew				X																	
<i>Sorex cinereus</i>	Masked shrew	X	X	X	X			X									X				X	
<i>Sorex dispar</i>	Long-tailed shrew				X																	
<i>Sorex fumeus</i>	Smoky shrew		X		X				X								X				X	
<i>Sorex hoyi</i>	Pygmy shrew	X	X	X	X																	
<i>Sorex longirostris</i>	Southeastern shrew	X	X	X	X																	
<i>Sorex palustris</i>	American water shrew	X	X	X	X	X	X		X							X					X	
Family Talpidae																						
<i>Condylura cristata</i>	Star-nosed mole	X	X	X	X	X										X						
<i>Parascalops breweri</i>	Hairy-tailed mole	X			X																X	
<i>Scalopus aquaticus</i>	Eastern mole	X	X		X																	
CHIROPTERA																						
Family Molossidae																						
<i>Eumops glaucinus</i>	Wagner's bonneted bat				X																	
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat				X																	

Table 2.3. Mammals Associated with Aquatic Habitats in the South.

SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT					LACUSTRINE HABITAT		RIVERINE HABITAT						MARINE HABITAT				
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water	Big River	Creek	Low Gradient		Medium River	Moderate Gradient	Pool	Spring/Spring Brook
Family Vespertilionidae																							
<i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat	X			X	X										X			X	X	X		
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat				X	X										X			X	X	X		
<i>Eptesicus fuscus</i>	Big brown bat	X	X	X	X	X				X					X	X	X	X	X	X	X		
<i>Lasionycteris noctivagans</i>	Silver-haired bat	X	X	X	X								X		X	X	X	X	X	X	X		
<i>Lasiurus borealis</i>	Eastern red bat	X	X	X	X							X			X	X	X	X	X	X	X		
<i>Lasiurus cinereus</i>	Hoary bat	X	X	X	X							X	X		X	X	X	X	X	X	X		
<i>Lasiurus intermedius</i>	Northern yellow bat		X	X	X							X	X		X	X	X	X	X	X	X		
<i>Lasiurus seminolus</i>	Seminole bat		X	X	X							X	X		X	X	X	X	X	X	X		
<i>Myotis austroriparius</i>	Southeastern myotis	X	X	X	X	X					X	X				X	X	X	X		X		
<i>Myotis grisescens</i>	Gray myotis		X		X	X									X	X	X	X	X	X	X		
<i>Myotis leibii</i>	Eastern small-footed myotis				X					X						X	X	X		X	X		
<i>Myotis lucifugus</i>	Little brown myotis	X	X	X	X										X	X	X	X	X	X	X		
<i>Myotis septentrionalis</i>	Northern long-eared myotis	X			X	X				X						X	X	X			X		
<i>Myotis sodalis</i>	Indiana myotis		X		X					X						X		X	X	X	X		
<i>Nycticeius humeralis</i>	Evening bat		X	X	X	X				X													
<i>Pipistrellus subflavus</i>	Eastern pipistrelle	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X		
XENARTHRA																							
Family Dasypodidae																							
<i>Dasypus novemcinctus</i>	Nine-banded armadillo				X																		
LAGOMORPHA																							
Family Leporidae																							
<i>Lepus americanus</i>	Snowshoe hare	X	X																				
<i>Lepus californicus</i>	Black-tailed jackrabbit																						

SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT				LACUSTRINE HABITAT		RIVERINE HABITAT				MARINE HABITAT						
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water		Big River	Creek	Low Gradient	Medium River	Moderate Gradient	Pool
<i>Sylvilagus aquaticus</i>	Swamp rabbit	X		X	X	X											X					
<i>Sylvilagus floridanus</i>	Eastern cottontail				X																	
<i>Sylvilagus obscurus</i>	Appalachian cottontail	X																				
<i>Sylvilagus palustris</i>	Marsh rabbit			X	X	X			X			X										
RODENTIA																						
Family Castoridae																						
<i>Castor canadensis</i>	American beaver	X	X	X	X										X		X	X	X			X
Family Geomyidae																						
<i>Geomys breviceps</i>	Baird's pocket gopher																					
<i>Geomys pinetis</i>	Southeastern pocket gopher																					
Family Heteromyidae																						
<i>Chaetodipus hispidus</i>	Hispid pocket mouse																					
Family Muridae																						
<i>Baiomys taylori</i>	Northern pygmy mouse																					
<i>Clethrionomys gapperi</i>	Southern red-backed vole	X	X		X																	
<i>Microtus chrotorrhinus</i>	Rock vole		X		X																	
<i>Microtus ochrogaster</i>	Prairie vole																					
<i>Microtus pennsylvanicus</i>	Meadow vole	X	X	X	X				X													
<i>Microtus pinetorum</i>	Woodland vole	X	X	X	X				X													
<i>Mus musculus</i>	House mouse																					
<i>Neofiber alleni</i>	Round-tailed muskrat	X	X	X					X													
<i>Neotoma floridana</i>	Eastern woodrat	X	X		X																	
<i>Neotoma magister</i>	Allegheny woodrat																					
<i>Ochrotomys nuttalli</i>	Golden mouse	X	X		X																	

Table 2.3. Mammals Associated with Aquatic Habitats in the South.

SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT				LACUSTRINE HABITAT		RIVERINE HABITAT						MARINE HABITAT				
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water	Big River	Creek		Low Gradient	Medium River	Moderate Gradient	Pool
<i>Ondatra zibethicus</i>	Common muskrat		X	X	X			X	X					X	X	X	X	X				
<i>Oryzomys palustris</i>	Marsh rice rat	X	X	X	X				X													
<i>Peromyscus attwateri</i>	Texas mouse																					
<i>Peromyscus gossypinus</i>	Cotton mouse		X		X																	
<i>Peromyscus leucopus</i>	White-footed mouse	X	X	X	X																	
<i>Peromyscus maniculatus</i>	Deer mouse	X			X																	
<i>Peromyscus polionotus</i>	Oldfield mouse																					
<i>Podomys floridanus</i>	Florida mouse																					
<i>Rattus norvegicus</i>	Norway rat								X													
<i>Rattus rattus</i>	Black rat				X																	
<i>Reithrodontomys fulvescens</i>	Fulvous harvest mouse																					
<i>Reithrodontomys humulis</i>	Eastern harvest mouse																					
<i>Reithrodontomys megalotis</i>	Western harvest mouse				X																	
<i>Reithrodontomys montanus</i>	Plains harvest mouse				X																	
<i>Sigmodon hispidus</i>	Hispid cotton rat				X																	
<i>Synaptomys cooperi</i>	Southern bog lemming	X	X	X	X																	
Family Myocastoridae																						
<i>Myocastor coypus</i>	Nutria			X				X	X	X				X	X	X	X	X				
Family Sciuridae																						
<i>Glaucomys sabrinus</i>	Northern flying squirrel		X		X																	
<i>Glaucomys volans</i>	Southern flying squirrel		X		X																	
<i>Marmota monax</i>	Woodchuck																					
<i>Sciurus carolinensis</i>	Eastern gray squirrel		X		X																	
<i>Sciurus niger</i>	Eastern fox squirrel		X		X																	

Table 2.3. Mammals Associated with Aquatic Habitats in the South.																							
SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT				LACUSTRINE HABITAT		RIVERINE HABITAT					MARINE HABITAT						
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water	Big River		Creek	Low Gradient	Medium River	Moderate Gradient	Pool	Spring/Spring Brook
<i>Tamias striatus</i>	Eastern chipmunk																						
<i>Tamiasciurus hudsonicus</i>	Red squirrel		X		X																		
Family Zapodidae																							
<i>Napaeozapus insignis</i>	Woodland jumping mouse	X	X		X												X					X	
<i>Zapus hudsonius</i>	Meadow jumping mouse	X	X	X	X	X																	
CARNIVORA																							
Family Canidae																							
<i>Canis latrans</i>	Coyote		X		X																		
<i>Canis rufus</i>	Red wolf		X	X	X				X														
<i>Urocyon cinereoargenteus</i>	Common gray fox		X		X																		
<i>Vulpes vulpes</i>	Red fox				X																		
Family Felidae																							
<i>Puma concolor</i>	Mountain lion		X	X	X																		
<i>Lynx rufus</i>	Bobcat		X		X	X		X	X			X						X			X		
Family Mephitidae																							
<i>Mephitis mephitis</i>	Striped skunk		X	X	X																		
<i>Spilogale putorius</i>	Eastern spotted skunk				X																		
Family Mustelidae																							
<i>Lontra canadensis</i>	Northern river otter		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Martes pennanti</i>	Fisher				X																		
<i>Mustela frenata</i>	Long-tailed weasel	X	X	X	X																		
<i>Mustela nivalis</i>	Least weasel			X	X																		
<i>Mustela vison</i>	American mink		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 2.3. Mammals Associated with Aquatic Habitats in the South.																						
SCIENTIFIC NAME	COMMON NAME	PALUSTRINE HABITAT				ESTUARINE HABITAT				LACUSTRINE HABITAT		RIVERINE HABITAT					MARINE HABITAT					
		Bog/Fen	Forested Wetland	Herbaceous Wetland	Riparian	Scrub-Shrub Wetland	Temporary Pool	Forested Wetland	Herbaceous Wetland	Lagoon	River Mouth/Tidal River	Scrub-Shrub Wetland	Tidal Flat/Shore	Deep Water	Shallow Water	Big River		Creek	Low Gradient	Medium River	Moderate Gradient	Pool
<i>Taxidea taxus</i>	American badger																					
Family Procyonidae																						
<i>Bassariscus astutus</i>	Ringtail				X																	
<i>Procyon lotor</i>	Northern raccoon		X		X																	
Family Ursidae																						
<i>Ursus americanus</i>	American black bear		X		X	X											X	X	X	X		
ARTIODACTYLA																						
Family Cervidae																						
<i>Cervus elaphus</i>	Elk	X	X	X	X	X																
<i>Odocoileus virginianus</i>	White-tailed deer		X		X		X															
Family Suidae																						
<i>Sus scrofa</i>	Feral pig		X	X	X	X	X	X		X	X						X	X	X	X		X