

Mississippi Alluvial Plain

Physical description

This riverine ecoregion extends along the Mississippi River, south to the Gulf of Mexico. It is mostly a flat, broad floodplain with river terraces and levees providing the main elements of relief. Soils tend to be poorly drained, except for the areas of sandy soils. Locations with deep, fertile soils are sometimes extremely dense and poorly drained. The combination of flat terrain and poor drainage creates conditions suitable for wetlands. Bottomland deciduous forest vegetation covered the region before much of it was cleared for cultivation. Winters are mild and summers are hot.

The wetlands of the Mississippi Alluvial Plain are an internationally important winter habitat for migratory waterfowl. The White River National Wildlife Refuge alone offers migration habitat to upwards of 10,000 Canada geese and 300,000 ducks every year. These large numbers account for one-third of the total found in Arkansas, and 10% of the waterfowl found in the Mississippi Flyway.

At one time, wetlands were very abundant across the Mississippi Alluvial Plain. The decline in wetlands began several centuries ago when the first ditches were dug to drain extensive areas. Clearing bottomland hardwood forests for agriculture and other activities resulted in the loss of more than 70% of the original wetlands. Presently, most of the ecoregion is agricultural, cleared of natural vegetation and drained by a system of ditches.

Dominant vegetation

On the Mississippi Alluvial Plain, changes in elevation of only a few inches can result in great differences in soil saturation characteristics, and therefore the species of plants that thrive. As a result, there is much variability within a bottomland hardwood ecosystem.

Figure 7 illustrates the different “micro-habitats” in a floodplain. At any point along a river, the cross-section may exhibit only some of these features, and in some cases rises immediately to upland cliffs or bluffs.

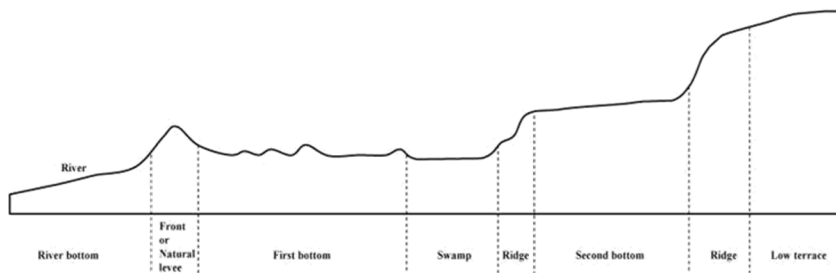


Figure 8. Typical cross-section of a bottomland system.

Different plant species grow in the different levels, or elevations, which are also sometimes called terraces. These terraces differ in the amount and duration of flooding. “Mesic” means having a moderate or well-balanced supply of moisture. Following are descriptions of the various levels shown in Figure 8.

- **River bottom:** open water; exposed sand or mud bars or banks that are free of vegetation or pioneered by herbs, willow, river birch, silver maple, or cottonwood; wooded islands.
- **Front levee:** wet-mesic forest.
- **First bottom:** wet forest, wet-mesic forest, swamp white oak savanna or woodland, often with sloughs interspersed; black oak occurs on some high ridges.
- **Swamp:** emergent marsh, shrub, alder swamp, sedge meadow, wet prairie.
- **Ridge:** ecotone.
- **Second bottom:** wet-mesic forest; wet-mesic oak-pine forest; swamp oak savanna.
- **Ridge:** ecotone.
- **Low terrace:** wet-mesic forest; wet-mesic oak-pine forest; scrub oak; river, upland oak savanna; cropland.

Subcanopy species in bottomland hardwoods include American holly, red mulberry, ironwood, and hop hornbeam. Shrubs such as spicebush, beautyberry, grasses, and false nettle may be present.

Native canebrakes are rare today, but were prevalent at one time in bottomlands where fire could occur, such as areas bordered by upland flats, where uplands experienced frequent fire.

Other plants grow on natural levees where ridges of silt and sand are deposited during flood conditions. These plants include sycamore, willows, river birch, and eastern cottonwood. Grasses include river oats and a diversity of forbs will grow on these deposits as well.

Farming

Bottomland deciduous forests at one time dominated the landscape across the Mississippi Alluvial Plain before they were harvested for timber and agriculture clearing.

Alluvial (stream-deposited) material covers almost the entire region, making the Mississippi Alluvial Plain one of the most agriculturally productive regions in the world. Large areas of the Mississippi Alluvial Plain (i.e., Delta) ecoregion have been cleared for crop production. The major agriculture crops in the ecoregion are rice, soybeans, corn, wheat, grain sorghum, and cotton.

Depending on how croplands are managed, some wildlife species benefit. Unfortunately, crop-fields are usually harvested in late summer or early fall (unless winter wheat is growing).

Plant succession

Three different patterns of succession can be recognized in major bottomland hardwood forests. In the early stages, several factors can affect which plant species predominates.

- In permanently flooded sites, succession can be halted. Stands can be 200 or 300 years old without change. The bald cypress – tupelo types represent the oldest trees on the floodplain.
- On poorly drained, low-elevation sites, succession depends on the rate and texture of sediment being deposited by flooding. The pioneer tree on low sites with heavy soils is usually black willow, followed by swamp privet, water elm, and buttonbush. These are eventually replaced by bald cypress, and then overcup oak-water hickory type.
- On higher elevations having better drained ridges, cottonwood is the primary pioneer species. After 45 years or more, the next species to enter succession is variable.
 - Gradual succession: shade-tolerant species can overtake the site. These include boxelder and sugarberry, with some elm and ash. Eventually, the site becomes an elm-ash-sugarberry type.
 - Abrupt succession: although sycamore, pecan and elm are present, other species such as ash, sweetgum, willow oak, and water oak are also present. This association may occur for 75 to 125 years, and then is usually replaced by elm-ash-sugarberry type.



Figure 9. Only a few tree species can withstand permanent flooding, such as bald cypress (photo) and water tupelo.

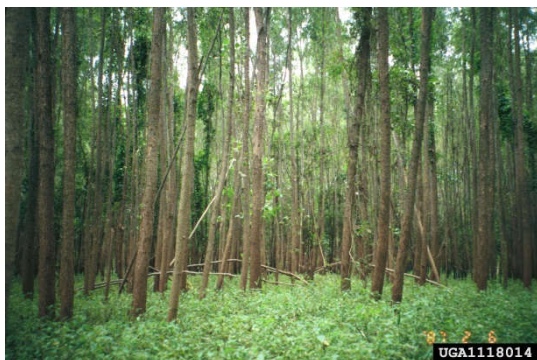


Figure 10. Black willows are one of the first trees to appear on low bottomland sites with heavy soils.

Figure 11. Eastern cottonwoods are fast-growing trees which can take root on sandbars and islands. Older trees typically appear on upper drainages which flood infrequently.



When flooding and sedimentation becomes temporary or ceases entirely, and soils start to mature, the climax stage begins. Oaks such as cherrybark, pin, and swamp chestnut appear. After 200 years or longer, an oak-hickory climax is attained. The oak-hickory cover type consists of post oak, bur oak, northern red oak, black oak, and white oak.

Wildlife associated with Mississippi Alluvial Plain

Birds

American bittern
American black duck
American wigeon
blue-winged teal
Canada goose
mallard
mourning dove
northern pintail
prothonotary warbler
red-eyed vireo
redhead
wood duck

Fish

bluegill
largemouth bass

Reptiles

eastern box turtle

Mammals

black bear
bobcat
eastern gray squirrel
raccoon
white-tailed deer